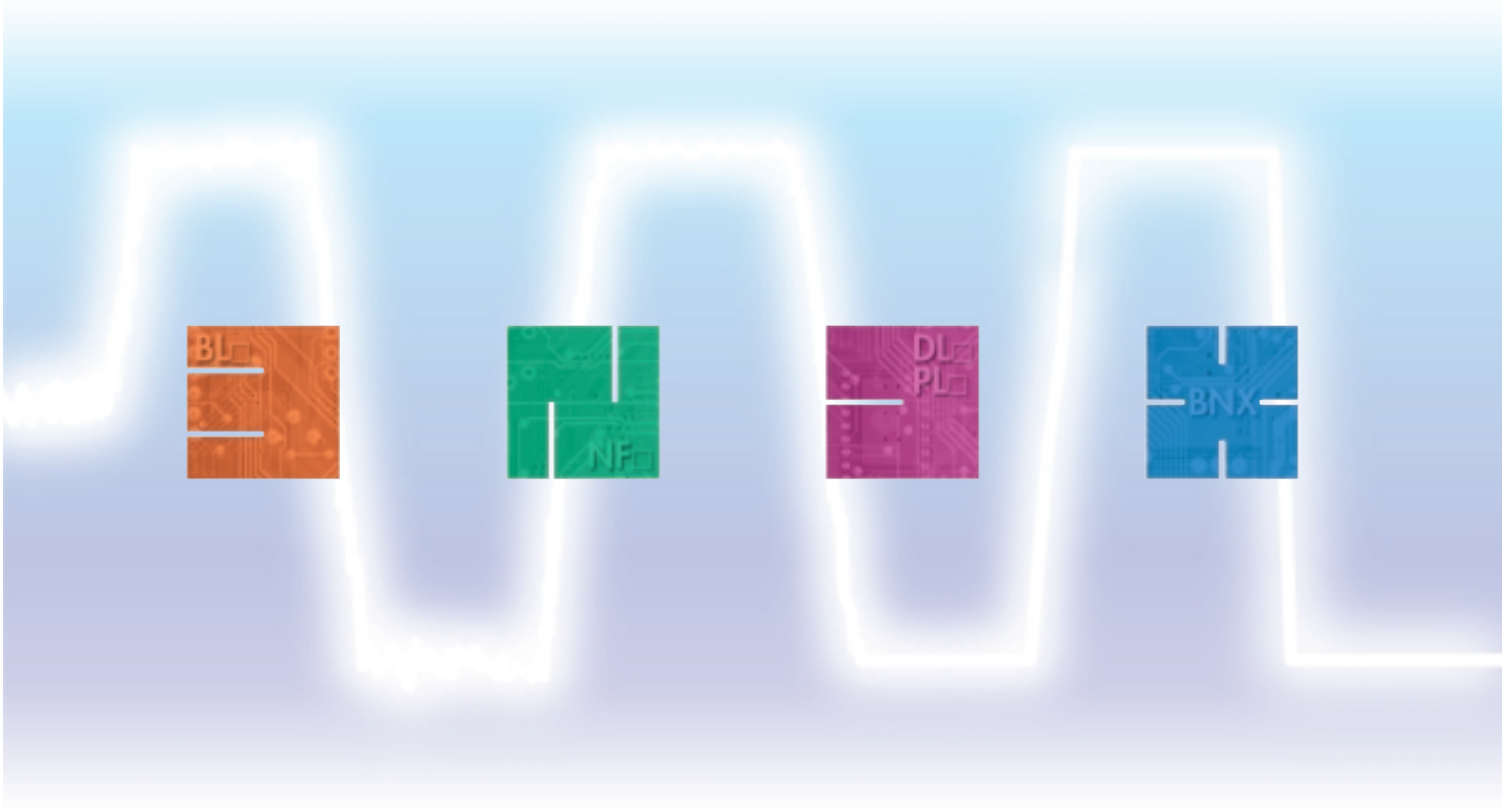
SMD/BLOCK Type
EMI Suppression Filters

EMIFIL®



Murata
Manufacturing Co., Ltd.

Innovator in Electronics

C31E.pdf
Mar.28,2011

Introduction

Murata Manufacturing Co., Ltd. has been developed the EMI suppression device market since the invention of 3 terminal capacitor DS310 series in 1979. Also, we have been struggling to develop and popularize new noise countermeasure technologies as well as new products in the concept of "Develop unique products", as the best solution partner of customers.
We hope you can find your key device to your noise problem.

Explanation of symbols in this catalog

	Features of each series	Features of each item
All Products	Flow soldering available	New product
	Reflow soldering available	Exist in design kit
	Meet large current lines	Rated current 1A or more
		Rated current 3A or more
		Rated current 10A or more
Chip Ferrite Bead	Meet high frequency noise up to 1-2GHz	
	Meet ultra high frequency noise up to 10GHz	
LC Combined Type Filter		Low cut off frequency type for UHF band noise which affects to digital TV tuner
Chip Common Mode Choke Coil		for high speed differential signal lines (USB2.0/LVDS/IEEE1394 etc.)
		for ultra high speed differential signal lines (HDMI/DVI/Display Port/USB3.0 etc.)
		Line impedance has been matched to transmission lines

for EU RoHS Compliant

- All the products in this catalog comply with EU RoHS.
- EU RoHS is "the European Directive 2002/95/EC on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment".
- For more details, please refer to our website 'Murata's Approach for EU RoHS' (http://www.murata.com/info/rohs.html).

CONTENTS

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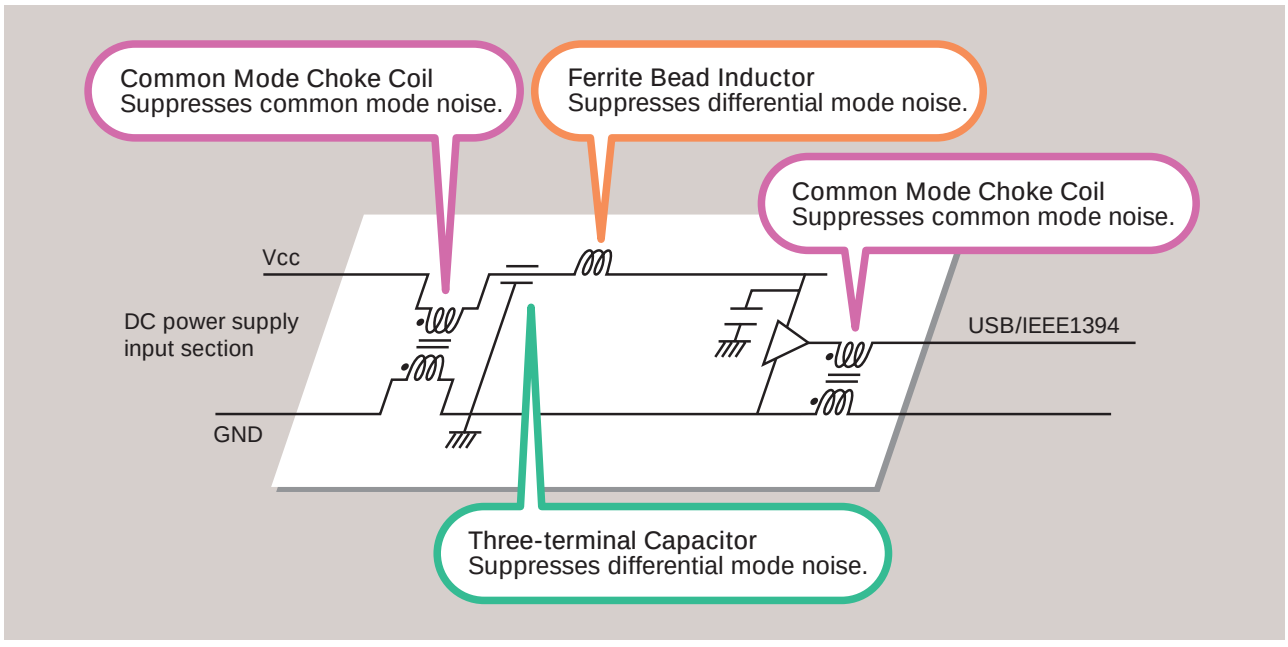
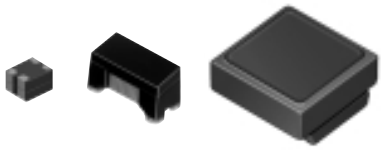
●Features & Suitable Circuits

Type	Features	Suitable Circuits
Ferrite Bead BLM/BLA Series 	· Miniaturized · Unnecessary of GND connection · Effective at low impedance line	· Application set with less noise radiation · Low impedance line
Capacitor Type NFM/NFA/NFE/NFR/ NFL/NFW Series 	· Great noise suppression effect · With effect as By-Pass capacitor (Lineup for Power) · Good noise separation from signal (LC filter for Signal) · Effective at high impedance line	· Application set with higher noise radiation · High impedance line · Circuit with By-Pass capacitor · Circuit driven by high frequency
Common Mode Choke Coil 	· Possible to suppress noise with less affect of ultra high speed signal · Great effect for common mode noise · Less magnetic saturation by current	· High speed differential signal line · I/F cable driver · Power line

●Example

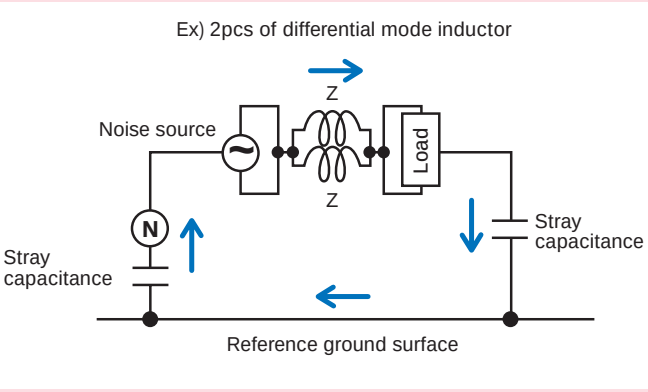


●Advantages to Use Common Mode Choke Coils



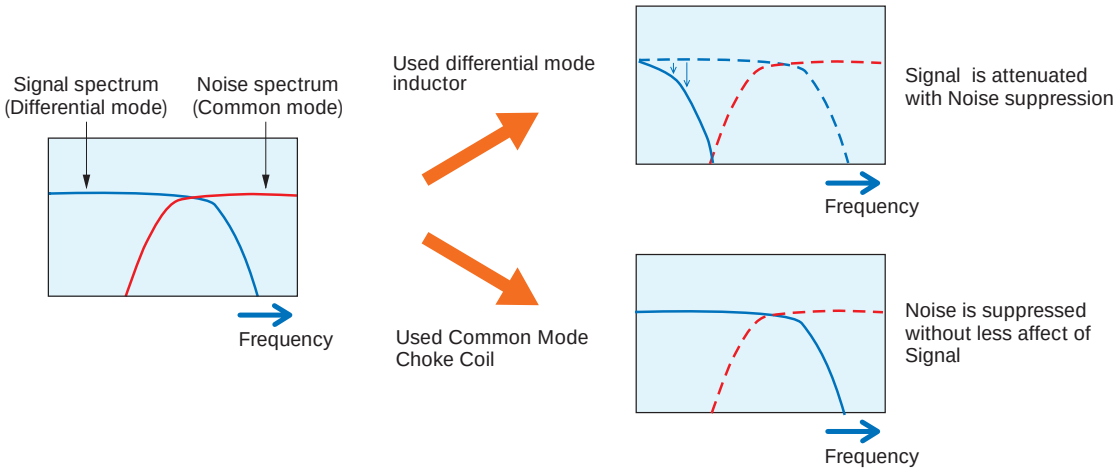
1. Great Effect for Common Mode Noise

Differential mode inductors work as a half impedance for common mode noise. Common Mode Choke Coils are effective for common mode noise.



2. Possible to Suppress Noise with Less Affect of Ultra High Speed Signal

Common Mode Choke Coils can suppress Noise with less affect of Signal, even if the frequency range of Signal and Noise are same, because of they separate each conductive mode of current.

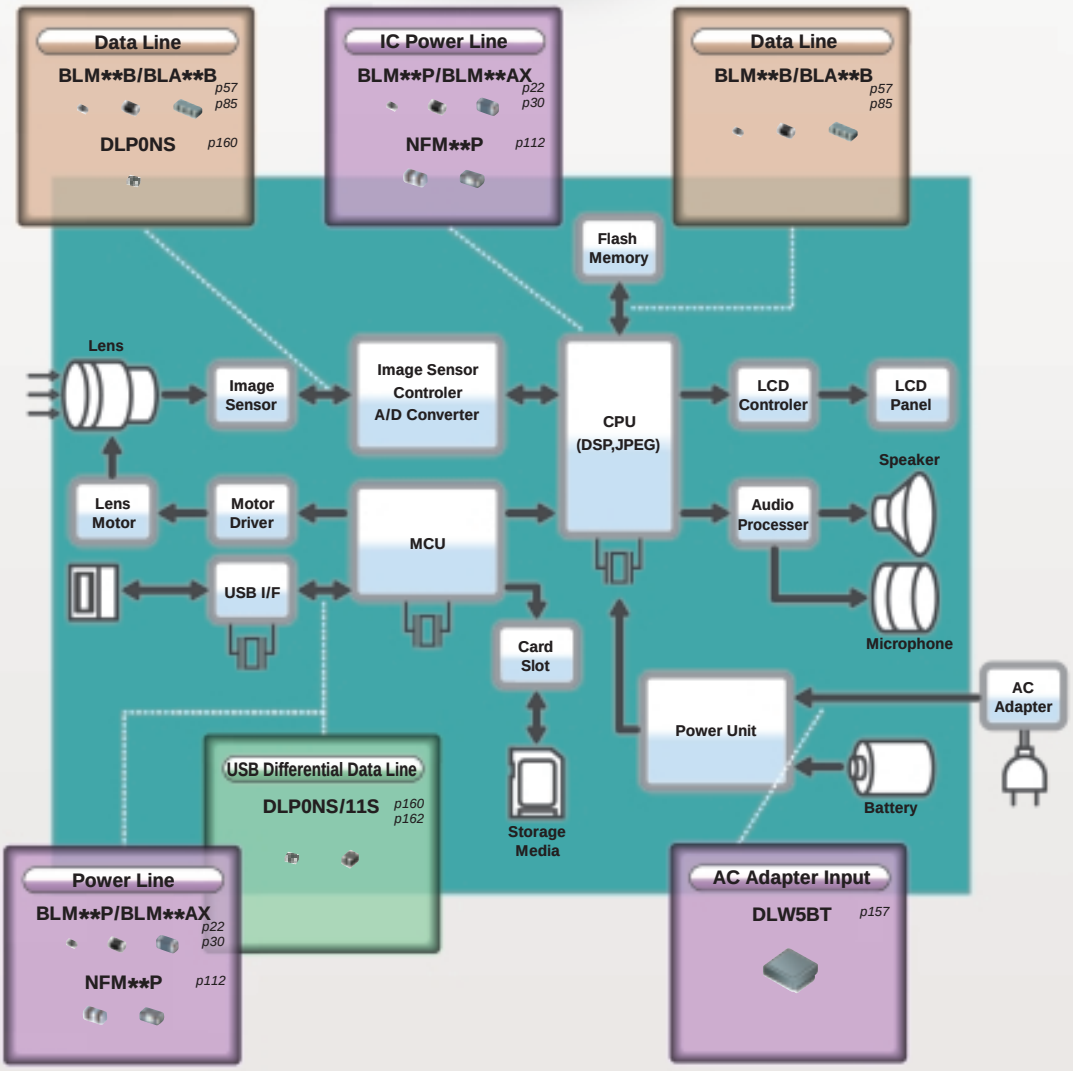


3. Less Magnetic Saturation by Current

Common Mode Choke Coils are effective for noise suppression of DC power lines, due to their less magnetic saturation at high power current, that comes from their construction of cancelling magnetic flux of differential mode current at each coils.

Digital Still Camera

Application Sample



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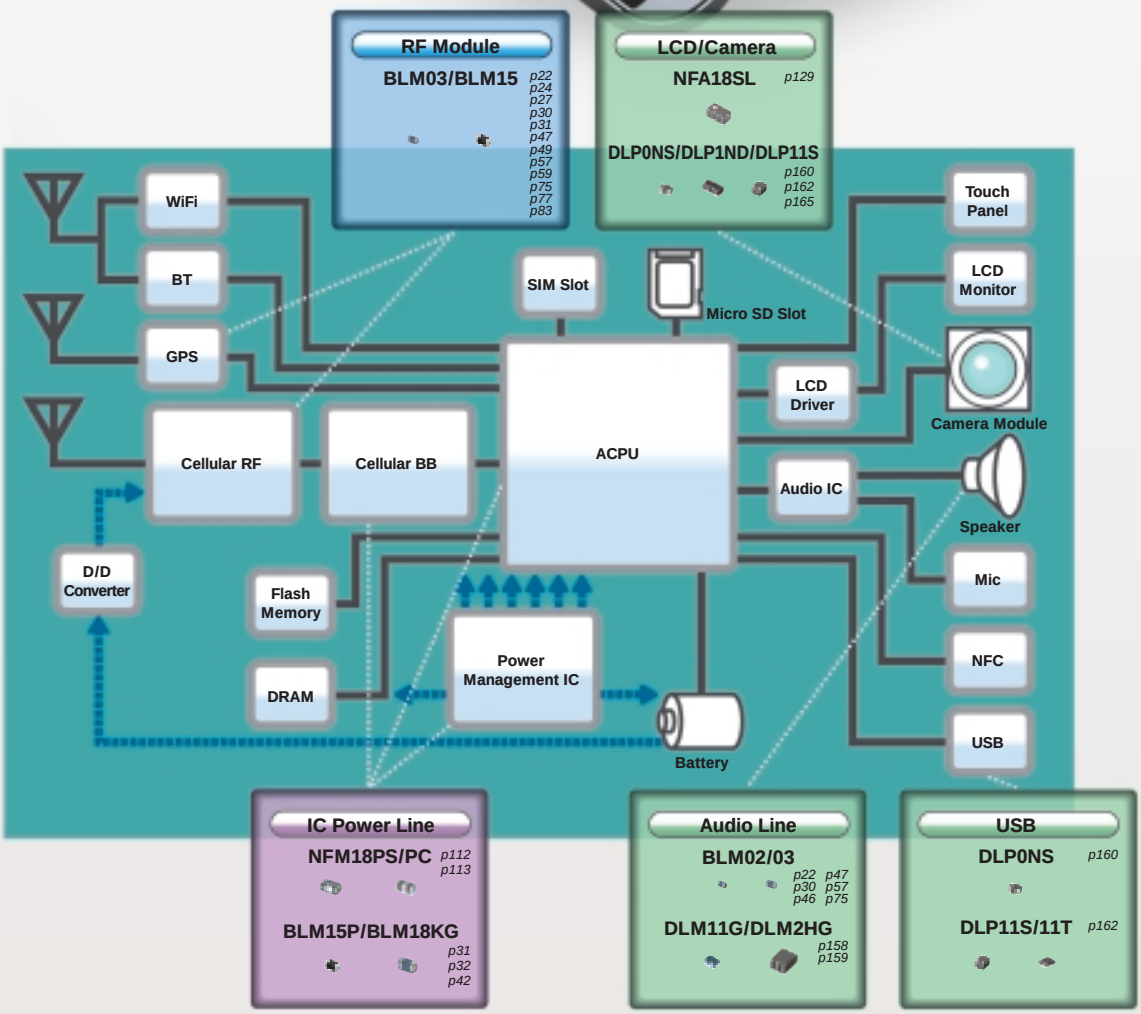
Smartphone

Application Sample



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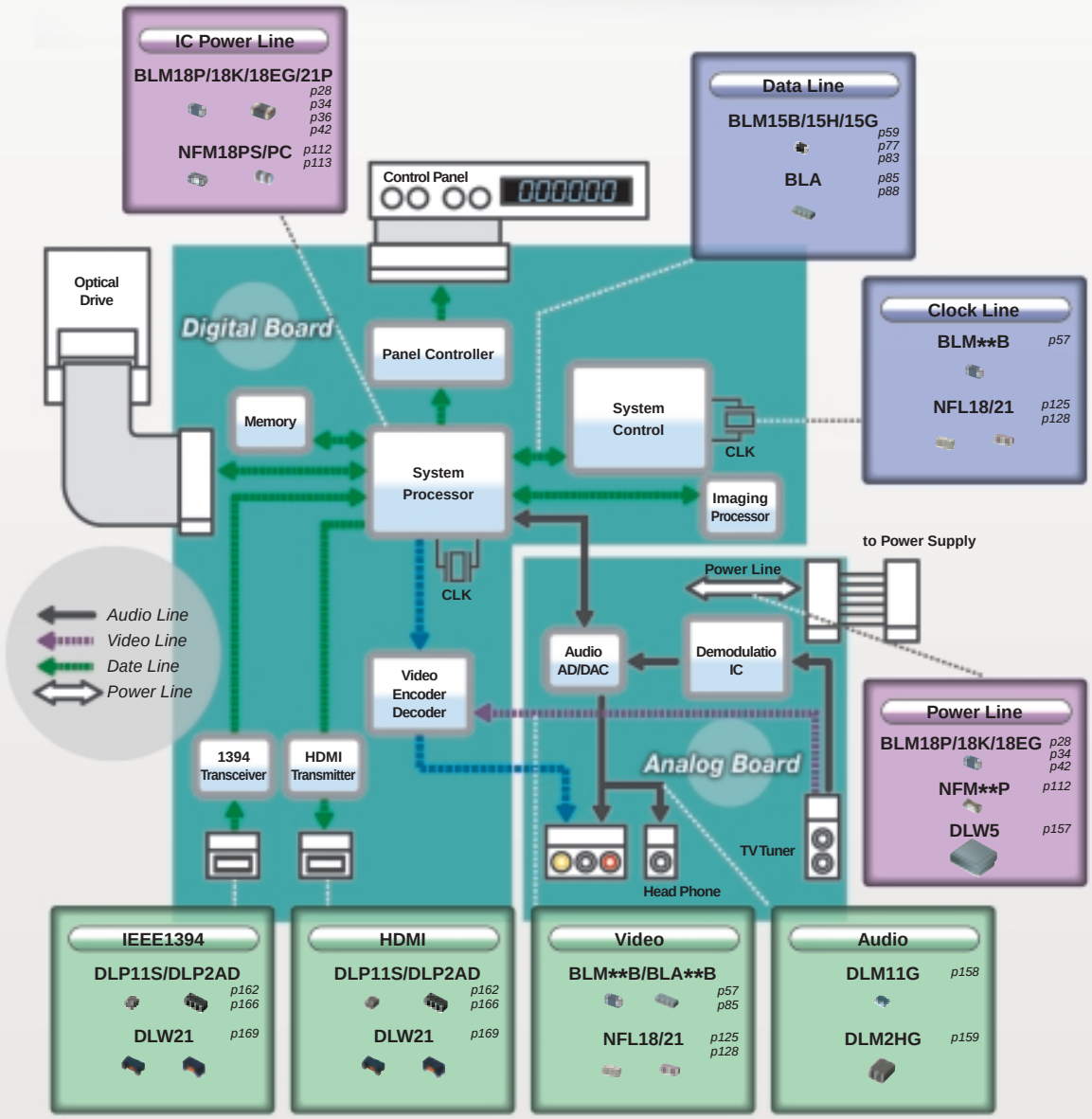
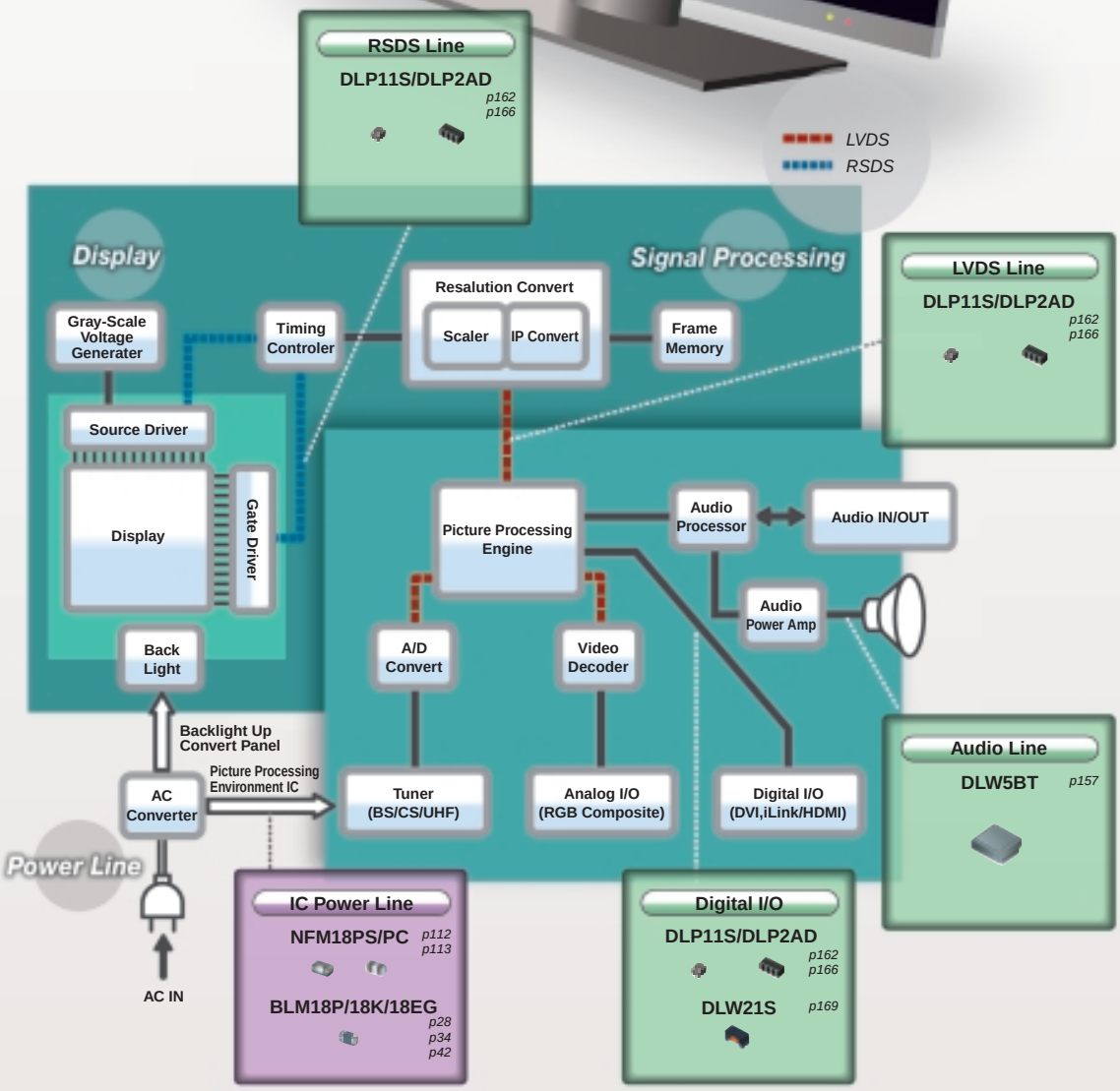
Blu-ray/DVD

Application Sample



LCD-TV

Application Sample



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EMI Filter Selection by Circuits and Noise Frequency

●Chip Ferrite Bead / Chip EMIFIL®

Circuit Type?

Noise Frequency?

Noise Frequency: Under 1GHz

Inductor Type (Suppression Effect: Normal)

Power Line	General Signal Line (Under 10MHz)	High Speed Signal Line (Over 10MHz)
BLM03AX p22 0201/0.2-1A/Imp.10-1000Ω	**BLM02A** p46 01005/Imp.10-120Ω	**BLM03B** p57 0201/Imp.10-600Ω
BLM03P p30 0201/0.75-0.9A/Imp.22-33Ω	**BLM03A** p47 0201/Imp.10-1000Ω	**BLM15B** p59 0402/Imp.5-1800Ω
BLM15AX p24 0402/0.35-1.74A/Imp.10-1000Ω	**BLM15A** p49 0402/Imp.10-1000Ω	**BLM18B** p63 0603/Imp.5-2500Ω
BLM15PX p31 0402/1.8A/Imp.120Ω	**BLM18A** p52 0603/Imp.120-1000Ω	**BLM21B** p67 0805/Imp.5-2700Ω
BLM15PG/PD p32 0402/1-2.2A/Imp.10-120Ω	**BLM18T** p56 0603/Imp.120-1000Ω	Array Type
BLM18P p34 0603/0.5-3A/Imp.30-470Ω	**BLM18R** p70 0603/Imp.120-1000Ω	**BLA2AB** p85 0804/Imp.10-1000Ω
BLM21P p36 0805/1.5-6A/Imp.22-330Ω	**BLM21A** p54 0805/Imp.120-1000Ω	**BLA31B** p88 1206/Imp.120-1000Ω
BLM31P p38 1206/1.5-6A/Imp.33-600Ω	**BLM21R** p72 0805/Imp.120-1000Ω	
BLM41P p40 1806/1.5-6A/Imp.60-1000Ω	Array Type	
Low DC Resistance Type	**BLA2AA** p85 0804/Imp.120-1000Ω	
BLM18K p42 0603/1.3-6A/Imp.26-600Ω	**BLA31A** p88 1206/Imp.30-1000Ω	
BLM18S p44 0603/1.5-6A/Imp.26-330Ω		

Capacitor Type (Suppression Effect: High)

Power Line	General Signal Line (Under 10MHz)	High Speed Signal Line (Over 10MHz)
NFM18PC p113 0603/2-4A/Cap.0.1-2.2μF	**NFM18C** p120 0603/Cap.22-22000pF	LC Combined
NFM21P p115 0805/2-6A/Cap.0.1-4.7μF	**NFM21C** p121 0805/Cap.22-22000pF	**NFL18ST** p125 0603/Cut off 50-500MHz
NFM3DP p116 1205/2A/Cap.0.022μF	**NFM3DC** p122 1205/Cap.22-22000pF	**NFL18SP** p127 0603/Cut off 150-500MHz
NFM31P p117 1206/6A/Cap.27μF	**NFM41C** p123 1806/Cap.22-22000pF	**NFL21S** p128 0805/Cut off 10-500MHz
NFM41P p118 1806/2-6A/Cap.0.2-1.5μF	Array Type	**NFW31S** p134 1206/Cut off 10-500MHz
NFM55P p119 2220/6A/Cap.1.5μF	**NFA31C** p124 1206/Cap.22-22000pF	RC Combined
T Circuit Filter Feed Through Type	T Circuit Filter Feed Through Type	**NFR21G** p136 0805/22-100Ω/Cap.10-100pF
NFE31P p110 1206/6A/Cap.22-2200pF	**NFE31P** p110 1206/Cap.22-22000pF	Array Type (RC/LC Combined)
NFE61P p111 2706/2A/Cap.33-4700pF	**NFE61P** p111 2706/Cap.33-4700pF	**NFA31G** p137 1206/6.8-100Ω/Cap.10-100pF
Block Type		**NFA18S** p129 0603/Cut off 50-480MHz
BNX022/023 p191 10-15A/Range1MHz-2GHz		**NFA21S** p132 0805/Cut off 50-330MHz

Noise Frequency: GHz Band

Inductor Type (Suppression Effect: Normal)

Power Line	General Signal Line (Under 10MHz)	High Speed Signal Line (Over 10MHz)
BLM15EG p27 0402/0.7-1.5A/Imp.120-220Ω	**BLM03HG** p75 0201/Imp.600-1000Ω	**BLM03HD** p75 0201/Imp.330-1000Ω
BLM18HE p79 0603/0.5-0.8A/Imp.600-1500Ω	**BLM15HG** p77 0402/Imp.600-1000Ω	**BLM15HD** p77 0402/Imp.600-1800Ω
BLM18EG p28 0603/0.5-2A/Imp.100-600Ω	**BLM15EG** p27 0402/Imp.120-220Ω	**BLM15HB** p77 0402/Imp.120-220Ω
	BLM18HG p79 0603/Imp.470-1000Ω	**BLM18HD** p79 0603/Imp.470-1000Ω
	BLM18HK p79 0603/Imp.330-1000Ω	**BLM18HB** p79 0603/Imp.120-330Ω
	BLM18EG p28 0603/Imp.100-600Ω	**BLM18HE** p79 0603/Imp.600-1500Ω

Capacitor Type (Suppression Effect: High)

Power Line	General Signal Line (Under 10MHz)	High Speed Signal Line (Over 10MHz)
NFM18PS p112 0603/2A/Cap.0.47-1.0μF		LC Combined
		NFL18ST p125 0603/Cut off 200-500MHz
		Array Type (LC Combined)
		NFA18S p131 0603/Cut off 50-480MHz
		NFA21S p132 0805/Cut off 50-330MHz

Inductor Type

Power Line	General Signal Line (Under 10MHz)	High Speed Signal Line (Over 10MHz)
	BLM15GG p83 0402/Imp.220-470Ω	**BLM15GA** p83 0402/Imp.75Ω
	BLM18GG p84 0603/Imp.470Ω	

Noise Frequency: High-GHz Band

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●Chip Common Mode Choke Coil

Circuit Type?

DC Power Line


DLW5AH p156
2014/0.2A/Imp.4000Ω


DLW5BS p156
2020/0.5-5A/Imp.190-3000Ω


DLW5BT p157
2020/1.5-6A/Imp.100-1400Ω

High Current Type Automotive Available


PLT10HH p173
12.9mmx6.6mm
/6-10A/Imp.400-1000Ω

High Speed Differential Signal Line

High Speed Signal Line
(USB/LVDS/IEEE1394 etc.)

DLP0NS p160
03025/Imp.15-120Ω

DLP11SN p162
0504/Imp.35-330Ω


DLW21H p171
0805/Imp.67-180Ω


DLW21S_SQ p169
0805/Imp.67-370Ω


DLP31S p164
1206/Imp.120-550Ω


DLW31S p172
1206/Imp.90-2200Ω

Array Type

DLP1ND p165
05025/Imp.35-90Ω


DLP2AD p166
0804/Imp.35-280Ω


DLP31D p168
1206/Imp.90-440Ω

Ultra High Speed Signal Line
(HDMI/DVI/Display Port etc.)

DLP11SA p162
0504/Imp.35-90Ω

DLP11TB p162
0504/Imp.80Ω


DLW21S_HQ p169
0805/Imp.67-120Ω

Audio Line

DLM11G p158
0504/Imp.600Ω


DLM2HG p159
1008/Imp.600Ω


DLW5BT p157
2020/1.5-6A/Imp.100-1400Ω

Guide of Digits in this Chart:

●for **BLM03P**

0201/0.75-0.9A/Imp.22-33Ω
Size (inch) Rated Current Impedance

●for **BNX022/023**

10-15A/Range1MHz-2GHz
Rated Current Effective Frequency Range

●for **NFR21G**

0805/22-100Ω/Cap.10-100pF
Size (inch) Resistance Capacitance

●for **NFA18S**

0603/Cut off 50-480MHz
Size (inch) Cut-off Frequency

●for **DLW5BS**

2020/0.5-5A/Imp.190-3000Ω
Size (inch) Rated Current Impedance

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BL□

Inductor Type

		Series	Size Code Inch (mm)	Impedance (Ω) at 100MHz	Effective Frequency Range
				10 100 1000	10kHz 100kHz 1MHz 10MHz 100MHz 1GHz 10GHz
For General Band Noise	Universal Type [Power Lines / Signal Lines]	**BLM03AX** p22	0201 (0603)	10 80 120 240 600 1000	
		BLM15AX p24	0402 (1005)	10 30 70 120 220 600 1000	
	Signal Lines Type — For General Signal Lines	**BLM02A** p46	01005 (0402)	10 70 120	
		BLM03AG p47	0201 (0603)	10 80 70 120 240 600 1000	
		BLM15AG p49	0402 (1005)	10 70 120 220 600 1000	
		BLM18A p52	0603 (1608)	120 150 220 330 470 600 1000	
		BLM21A p54	0805 (2012)	120 150 220 330 470 600 1000	
		BLM18T p56	0603 (1608)	120 220 600 1000	
		BLA2AA p85 (4 circuits array)	0804 (2010)	120 220 600 1000	
		BLA31A p88 (4 circuits array)	1206 (3216)	30 60 120 220 600 1000	
	Signal Lines Type — For High Speed Signal Lines	**BLM03B** p57	0201 (0603)	10 22 33 47 56 75 80 120 240 470 600	
		BLM15B p59	0402 (1005)	5 10 22 33 47 75 120 220 240 470 600 1000 1800	
		BLM18B p63	0603 (1608)	5 10 22 47 60 75 120 140 150 220 330 420 470 600 1000 1500 1800 2200 2500	
		BLM21B p67	0805 (2012)	5 60 75 120 150 200 220 330 420 470 600 750 1000 1500 1800 2200 2250 2700	
		BLA2AB p85 (4 circuits array)	0804 (2010)	10 22 47 75 120 220 600 470 1000	
		BLA31B p88 (4 circuits array)	1206 (3216)	120 220 600 470 1000	
	Signal Lines Type — For Digital Interface Lines	**BLM18R** p70	0603 (1608)	120 220 600 470 1000	
		BLM21R p72	0805 (2012)	120 220 600 470 1000	
	Power Lines Type	**BLM03P** p30	0201 (0603)	22 (0.9A) 33 (0.75A)	
		BLM15P* p31	0402 (1005)	10 (1A) 30 (2.2A) 60 (1.7A) 80 (1.5A) 120 (1.3A/1.8A)	
		BLM18P* p34	0603 (1608)	30 (1A) 33 (3A) 60 (0.5A) 120 (2A) 180 (1.5A) 220 (1.4A) 330 (1.2A) 470 (1A)	
		BLM21P* p36	0805 (2012)	22 (6A) 30 (3A) 60 (3A) 120 (3A) 220 (2A) 330 (1.5A)	
		BLM31P* p38	1206 (3216)	33 (6A) 50 (3A) 120 (3A) 390 (2A) 600 (1.5A)	
		BLM41P* p40	1806 (4516)	60 (6A) 75 (3A) 180 (3A) 470 (2A) 1000 (1.5A)	
		BLM18K* p42 (Low DC Resistance Type)	0603 (1608)	26 (6A) 30 (5A) 100 (3A) 70 (3.5A) 120 (3A) 220 (2.2A) 330 (1.7A) 470 (1.5A) 600 (1.3A)	
		BLM18S* p44 (Low DC Resistance Type)	0603 (1608)	26 (6A) 70 (4A) 120 (3A) 220 (2.5A) 330 (1.5A)	
For GHz Band Noise	Universal Type [Power Lines / Signal Lines]	**BLM15EG*** p27	0402 (1005)	120 (1.5A) 220 (0.7A)	
		BLM18EG* p28	0603 (1608)	100 (2A) 120 (2A) 220 (2A/1A) 330 (0.5A) 390 (0.5A) 470 (0.5A) 600 (0.5A)	
	Signal Lines Type	**BLM03HG** p75	0201 (0603)	600 1000	
		BLM03HD p75	0201 (0603)	330 470 600 1000	
		BLM15HG p77	0402 (1005)	600 1000	
		BLM15HD p77	0402 (1005)	600 1000 1800	
		BLM15HB p77	0402 (1005)	120 220	
		BLM18HG p79	0603 (1608)	470 600 1000	
		BLM18HE* p79	0603 (1608)	600 (0.8A) 1000 (0.6A) 1500 (0.5A)	
		BLM18HD p79	0603 (1608)	470 600 1000	
		BLM18HB p79	0603 (1608)	120 220 330	
		BLM18HK p79	0603 (1608)	330 470 600 1000	
For High-GHz Band Noise	Signal Lines Type	**BLM15GG** p83	0402 (1005)	220 470	
		BLM15GA p83	0402 (1005)	75	
		BLM18GG p84	0603 (1608)	470	

* The derating of rated current is required for some items according to the operating temperature on the each product page.

NF□

Capacitor Type

	Series	Size Code Inch (mm)	Capacitance (F)	Effective Frequency Range
Signal Lines Type	NFM18C p120	0603 (1608)	22 47 100 220 470 1000 2200 22000	10kHz 100kHz 1MHz 10MHz 100MHz 1GHz 10GHz
	NFM21C p121	0805 (2012)	22 47 100 220 470 1000 2200 22000	
	NFM3DC p122	1205 (3212)	22 47 100 220 470 1000 2200 22000	
	NFM41C p123	1806 (4516)	22 47 100 220 470 1000 2200 22000	
	NFA31C p124 (4 circuits array)	1206 (3216)	22 47 100 220 470 1000 2200 22000	
Power Lines Type	NFM18P p112	0603 (1608)	0.1 0.22 0.47 1.0 2.2	
	NFM21P p115	0805 (2012)	0.1 0.22 0.47 1.0 2.2 4.7	
	NFM3DP* p116	1205 (3212)	22000	
	NFM31P p117	1206 (3216)	27	
	NFM41P p118	1806 (4516)	0.2 1.5	
	NFM55P p119	2220 (5750)	1.5	
Universal Type [Power Lines / Signal Lines]	NFE31P p110	1206 (3216)	22 47 100 220 470 1500 2200	
	NFE61P p111	2706 (6816)	33 68 100 180 360 680 1000 4700	

NF□

LC(RC) Combined Type

	Series	Size Code Inch (mm)	Cut-off Frequency (MHz)	Effective Frequency Range
Signal Lines Type	NFL18ST p125	0603 (1608)	50 70 100 200 300 500	10kHz 100kHz 1MHz 10MHz 100MHz 1GHz 10GHz
	NFL18SP p127	0603 (1608)	150 200 300 500	
	NFL21S p128	0805 (2012)	10 20 50 70 100 150 200 300 400 500	
	NFA18S p129 (4 circuits array)	0603 (1608)	50 130 180 200 220 300 350 400 480	
	NFA21S p132 (4 circuits array)	0805 (2012)	50 80 200 280 300 310 330	
	NFW31S p134	1206 (3216)	10 20 50 100 150 200 300 400 500	
	NFR21G p136	0805 (2012)		
	NFA31G p137 (4 circuits array)	1206 (3216)		

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DL□/PL□

Common Mode Choke Coils
Large Current Common Mode Choke Coil for Automotive Available

		Series	Size Code Inch (mm)	Common Mode Impedance (Ω) at 100MHz	Effective Frequency Range
Signal Lines Type	For Audio Lines	DLM11G p158	0504 (1210)	600	
		DLM2HG p159	1008 (2520)	600	
	For Ultra High Speed Signal Lines	DLP0NS p160	03025 (0806)	15 28 67 90 120	
		DLP11S p162	0504 (1210)	35 67 90 120 160 200 240 280 330	
		DLP11TB p163	0504 (1210)	80	
		DLP31S p164	1206 (3216)	120 220 550	
		DLP1ND p165	05025 (1506)	35 67 90	
		DLP2AD p166 (2 circuits array)	0804 (2010)	35 67 90 120 160 200 240 280	
		DLP31D p168 (2 circuits array)	1206 (3216)	90 130 200 320 440	
		DLW21S p169	0805 (2012)	67 90 120 180 260 370	
		DLW21H p171	0805 (2012)	67 90 120 180	
		DLW31S p172	1206 (3216)	90 160 260 600 1000 2200	
Universal Type [Power Lines / Signal Lines]		DLW5BS*/DLW5AH p156	2020 (5050) / 2014 (5036)	190 350 1000 1500 3000 4000	
		DLW5BT* p157	2020 (5050)	100 250 500 1000 1400	
Large Current Type for Auto-motive Available		PLT10HH p173		400 500 900 1000 (at 10MHz)	

Effective Frequency Range: 10kHz 100kHz 1MHz 10MHz 100MHz 1GHz 10GHz

BNX

Block EMIFIL®

		Series	Height (mm)	Rated Voltage (Vdc)	Rated Current (A)	Effective Frequency Range
Power Lines Type	SMD Type	BNX022* p191	3.1	50	10	
		BNX023* p191	3.1	100	15	
		BNX024 p191	3.5	50	15	
		BNX025 p191	3.5	25	15	
	Lead Type	BNX002 p193	18 max.	50	10	
		BNX003 p193	18 max.	150	10	
		BNX005 p193	18.5 max.	50	15	
		BNX012* p194	12.0	50	15	
		BNX016* p194	12.0	25	15	

Effective Frequency Range: 10kHz 100kHz 1MHz 10MHz 100MHz 1GHz 10GHz

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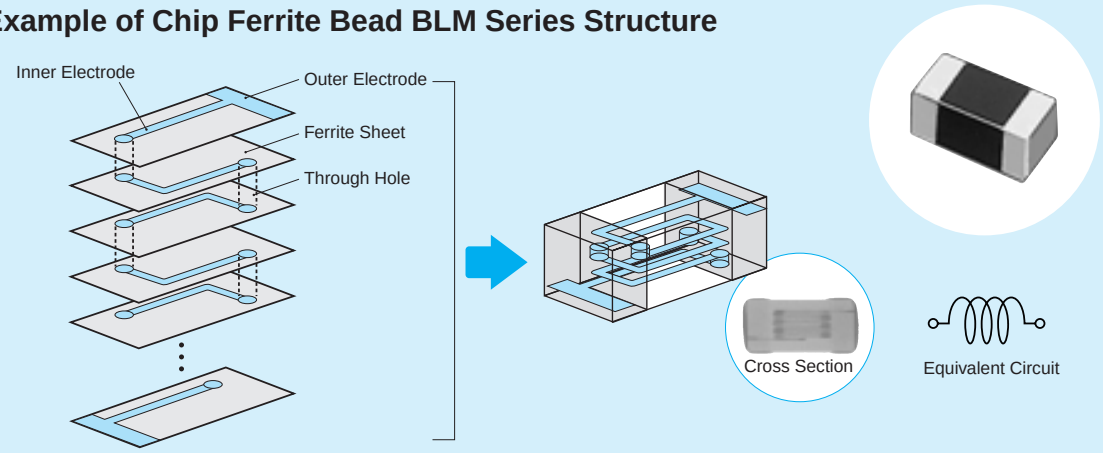
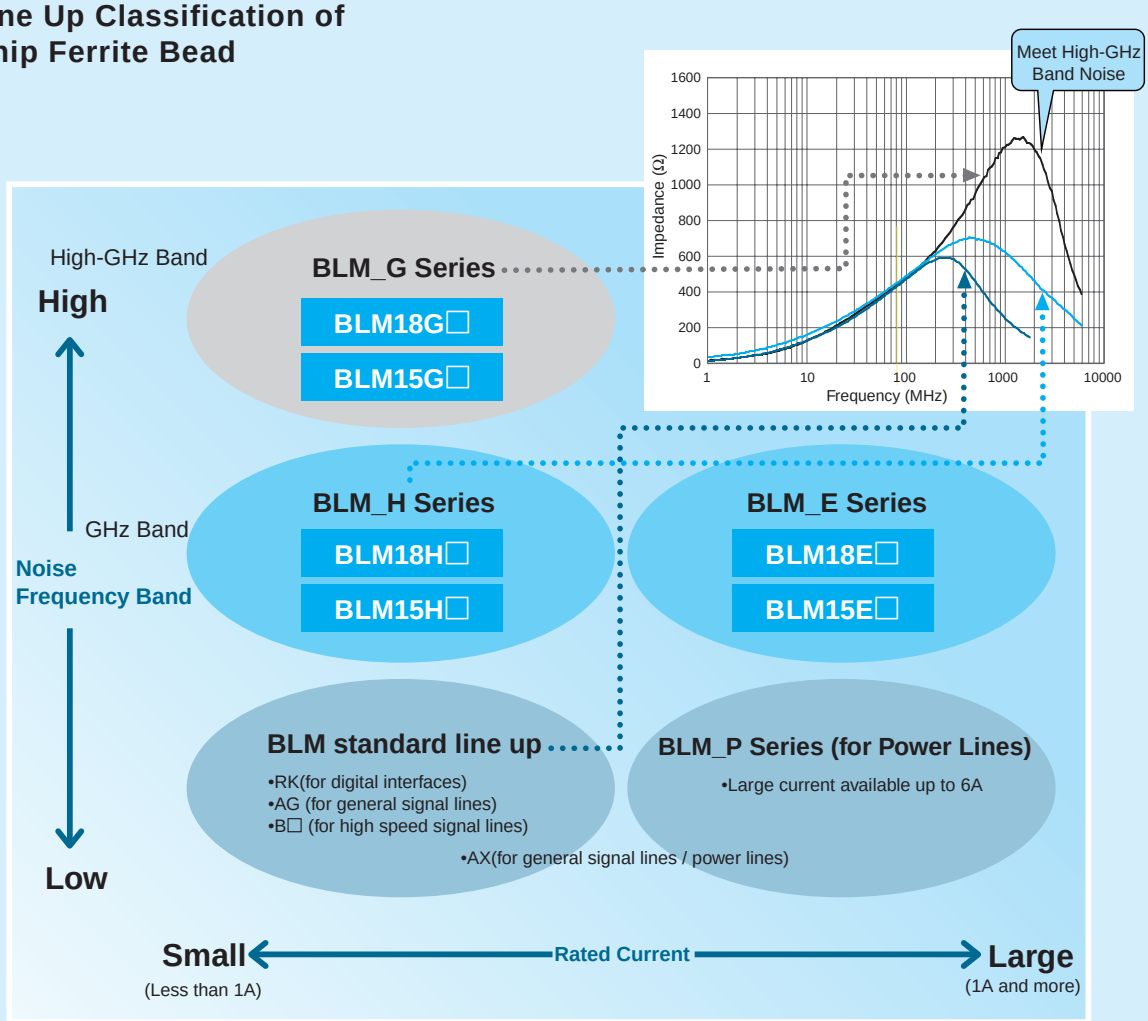
BL□

Chip Ferrite Bead

●Example of Chip Ferrite Bead BLM Series Structure



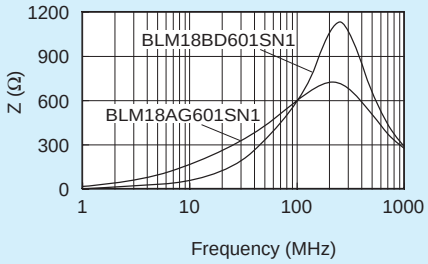
●Line Up Classification of Chip Ferrite Bead



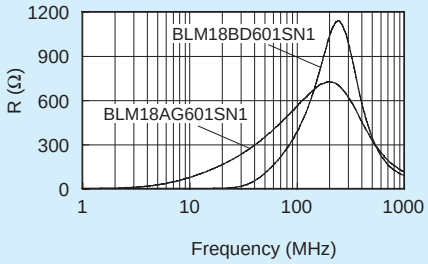
●Difference between BLM A type and B type (HG type vs HD/HB type)

A type: Impedance curve rises from low frequency range. Suppress noise in wide frequency range.
B type: Impedance curve rises sharply. Less damage to signal waveforms.

■Comparison of Impedance Curve

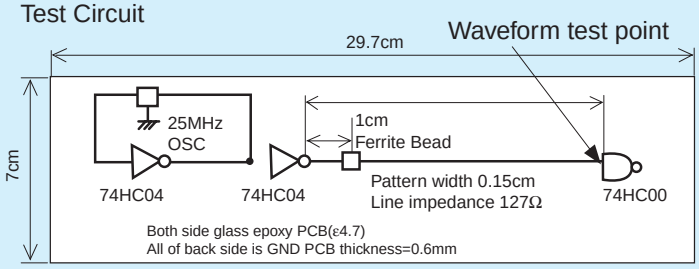


■Comparison of Resistance Element

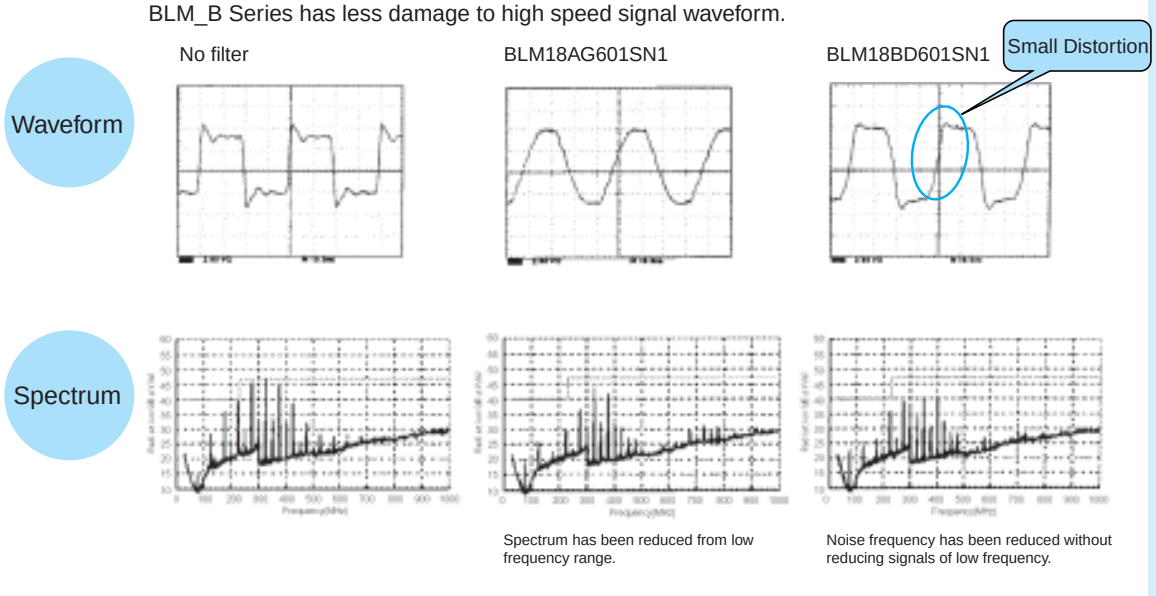


■Comparison of Test Effect (25MHz)

Test Circuit



BLM_B Series has less damage to high speed signal waveform.



Part Numbering

(Part Number)

BL	M	18	AG	102	S	N	1	D
❶	❷	❸	❹	❺	❻	❼	❽	❾

❶Product ID

Product ID	
BL	Chip Ferrite Beads

❷Type

Code	Type
A	Array Type
M	Ferrite Bead Single Type

❸Dimensions (L×W)

Code	Dimensions (L×W)	EIA
02	0.4×0.2mm	01005
03	0.6×0.3mm	0201
15	1.0×0.5mm	0402
18	1.6×0.8mm	0603
2A	2.0×1.0mm	0804
21	2.0×1.25mm	0805
31	3.2×1.6mm	1206
41	4.5×1.6mm	1806

❺Impedance

Expressed by three figures. The unit is in ohm (Ω) at 100MHz. The first and second figures are significant digits, and the third figure expresses the number of zeros which follow the two figures.

❻Electrode

Expressed by a letter.

Ex.)

Code	Electrode
S/T	Sn Plating
A	Au Plating

❼Category

Code	Category
N	Standard Type

❽Number of Circuits

Code	Number of Circuits
1	1 Circuit
4	4 Circuits

❹Characteristics/Applications

Code *1	Characteristics/Applications	Series
AG	for General Use	BLM02/03/15/18/21, BLA2A/31
AX		BLM03/15
TG		BLM18
BA	for High-speed Signal Lines	BLM15/18
BB		BLM03/15/18/21, BLA2A
BC		BLM03/15
BD		BLM03/15/18/21, BLA2A/31
PD	for Power Supplies	BLM15
PG		BLM03/15/18/21/31/41
PX		BLM15
KG	for Power Supplies (Low DC Resistance Type)	BLM18
SG		
RK	for Digital Interface	BLM18/21
HG	for GHz Band General Use	BLM03/15/18
EG	for GHz Band General Use (Low DC Resistance Type)	BLM15/18
HB	for GHz Band High-speed Signal Lines	BLM15/18
HD		BLM03/15/18
HE		BLM18
HK	for GHz Band Digital Interface	BLM18
GA	for High-GHz Band High-speed Signal Lines	BLM15
GG	for High-GHz Band General Use	BLM15/18

*1 Frequency characteristics vary with each code.

❾Packaging

Code	Packaging	Series
K	Embossed Taping (ø330mm Reel)	BLM21*1/31/41
L	Embossed Taping (ø180mm Reel)	
B	Bulk	All Series
J	Paper Taping (ø330mm Reel)	BLM03/15/18*3/21*2, BLA2A/31
D	Paper Taping (ø180mm Reel)	BLM02/03/15/18/21*2, BLA2A/31

*1 BLM21BD222SN1/BLM21BD272SN1 only. *2 Except BLM21BD222SN1/BLM21BD272SN1
*3 Except BLM18T

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Size Code (Inch)	Thickness (mm)	Type		Part Number	Impedance at 100MHz/20°C	Impedance at 1GHz/20°C	Rated Current	New / Kit / ≧1A / GHz / ≧3A / HiGHz / Flow / ReFlow
01005	0.2	For General Signal Lines	p46	**BLM02AG100SN1**	10ohm(Typ.)	-	500mA	Kit ReFlow
	0.2			**BLM02AG700SN1**	70ohm±25%	-	250mA	Kit ReFlow
	0.2			**BLM02AG121SN1**	120ohm±25%	-	200mA	Kit ReFlow
0201	0.3	For General Signal Lines	p47	**BLM03AG100SN1**	10ohm(Typ.)	-	500mA	Kit ReFlow
	0.3			**BLM03AG700SN1**	70ohm(Typ.)	-	200mA	Kit ReFlow
	0.3			**BLM03AG800SN1**	80ohm±25%	-	200mA	Kit ReFlow
	0.3			**BLM03AG121SN1**	120ohm±25%	-	200mA	Kit ReFlow
	0.3			**BLM03AG241SN1**	240ohm±25%	-	200mA	Kit ReFlow
	0.3			**BLM03AG601SN1**	600ohm±25%	-	100mA	Kit ReFlow
	0.3			**BLM03AG102SN1**	1000ohm±25%	-	100mA	Kit ReFlow
	0.3	Universal Type [Power lines/Signal lines]	p22	**BLM03AX100SN1**	10ohm(Typ.)	-	1000mA	Kit ≧1A ReFlow
	0.3			**BLM03AX800SN1**	80ohm±25%	-	500mA	Kit ReFlow
	0.3			**BLM03AX121SN1**	120ohm±25%	-	450mA	Kit ReFlow
	0.3			**BLM03AX241SN1**	240ohm±25%	-	350mA	Kit ReFlow
	0.3			**BLM03AX601SN1**	600ohm±25%	-	250mA	Kit ReFlow
	0.3			**BLM03AX102SN1**	1000ohm±25%	-	200mA	Kit ReFlow
	0.3	For High Speed Signal Lines (Sharp Impedance Curve)	p57	**BLM03BD750SN1**	75ohm±25%	-	300mA	Kit ReFlow
	0.3			**BLM03BD121SN1**	120ohm±25%	-	250mA	Kit ReFlow
	0.3			**BLM03BD241SN1**	240ohm±25%	-	200mA	Kit ReFlow
	0.3			**BLM03BD471SN1**	470ohm±25%	-	215mA	Kit ReFlow
	0.3			**BLM03BD601SN1**	600ohm±25%	-	200mA	Kit ReFlow
	0.3			**BLM03BB100SN1**	10ohm±25%	-	300mA	Kit ReFlow
	0.3			**BLM03BB220SN1**	22ohm±25%	-	200mA	Kit ReFlow
	0.3			**BLM03BB470SN1**	47ohm±25%	-	200mA	Kit ReFlow
	0.3			**BLM03BB750SN1**	75ohm±25%	-	200mA	Kit ReFlow
	0.3			**BLM03BB121SN1**	120ohm±25%	-	100mA	Kit ReFlow
	0.3			**BLM03BC330SN1**	33ohm±25%	-	150mA	New Kit ReFlow
	0.3			**BLM03BC560SN1**	56ohm±25%	-	100mA	New Kit ReFlow
	0.3			**BLM03BC800SN1**	80ohm±25%	-	100mA	New Kit ReFlow
	0.3	For Power Lines	p30	**BLM03PG220SN1**	22ohm±25%	-	900mA	Kit ReFlow
	0.3			**BLM03PG330SN1**	33ohm±25%	-	750mA	Kit ReFlow
	0.3	For GHz Band Noise — For General Signal Lines	p75	**BLM03HG601SN1**	600ohm±25%	1000ohm±40%	150mA	Kit GHz ReFlow
	0.3			**BLM03HG102SN1**	1000ohm±25%	1800ohm±40%	125mA	Kit GHz ReFlow
	0.3	For GHz Band Noise — For High Speed Signal Lines	p75	**BLM03HD331SN1**	330ohm±25%	-	200mA	New Kit GHz ReFlow
	0.3			**BLM03HD471SN1**	470ohm±25%	-	175mA	New Kit GHz ReFlow
	0.3			**BLM03HD601SN1**	600ohm±25%	-	150mA	New Kit GHz ReFlow
	0.3			**BLM03HD102SN1**	1000ohm±25%	-	120mA	New Kit GHz ReFlow
0402	0.5	For General Signal Lines	p49	**BLM15AG100SN1**	10ohm(Typ.)	-	1000mA	Kit ≧1A ReFlow
	0.5			**BLM15AG700SN1**	70ohm(Typ.)	-	500mA	Kit ReFlow
	0.5			**BLM15AG121SN1**	120ohm±25%	-	500mA	Kit ReFlow
	0.5			**BLM15AG221SN1**	220ohm±25%	-	300mA	Kit ReFlow
	0.5			**BLM15AG601SN1**	600ohm±25%	-	300mA	Kit ReFlow
	0.5			**BLM15AG102SN1**	1000ohm±25%	-	200mA	Kit ReFlow
	0.5		p51	**BLM15AG601AN1**	600ohm±25%	-	300mA	
	0.5			**BLM15AG102AN1**	1000ohm±25%	-	200mA	
	0.5	Universal Type [Power lines/Signal lines]	p24	**BLM15AX100SN1**	10ohm(Typ.)	-	1740mA	Kit ≧1A ReFlow
	0.5			**BLM15AX300SN1**	30ohm±25%	-	1100mA	New Kit ≧1A ReFlow
	0.5			**BLM15AX700SN1**	70ohm±25%	-	780mA	Kit ReFlow
	0.5			**BLM15AX121SN1**	120ohm±25%	-	680mA	Kit ReFlow
	0.5			**BLM15AX221SN1**	220ohm±25%	-	580mA	Kit ReFlow
	0.5			**BLM15AX601SN1**	600ohm±25%	-	420mA	Kit ReFlow
	0.5			**BLM15AX102SN1**	1000ohm±25%	-	350mA	Kit ReFlow

Continued on the following page.

Size Code (Inch)	Thickness (mm)	Type		Part Number	Impedance at 100MHz/20°C	Impedance at 1GHz/20°C	Rated Current	New / Kit / ≧1A / GHz / ≧3A / Hi-GHz / Flow / ReFlow
0402	0.5	For High Speed Signal Lines (Sharp Impedance Curve)	p59	BLM15BD750SN1	75ohm±25%	-	300mA	Kit ReFlow
	0.5			BLM15BD121SN1	120ohm±25%	-	300mA	Kit ReFlow
	0.5			BLM15BD221SN1	220ohm±25%	-	300mA	Kit ReFlow
	0.5			BLM15BD471SN1	470ohm±25%	-	200mA	Kit ReFlow
	0.5			BLM15BD601SN1	600ohm±25%	-	200mA	Kit ReFlow
	0.5			BLM15BD102SN1	1000ohm±25%	-	200mA	Kit ReFlow
	0.5			BLM15BD182SN1	1800ohm±25%	-	100mA	Kit ReFlow
	0.5			BLM15BB050SN1	5ohm±25%	-	500mA	Kit ReFlow
	0.5			BLM15BB100SN1	10ohm±25%	-	300mA	Kit ReFlow
	0.5			BLM15BB220SN1	22ohm±25%	-	300mA	Kit ReFlow
	0.5			BLM15BB470SN1	47ohm±25%	-	300mA	Kit ReFlow
	0.5			BLM15BB750SN1	75ohm±25%	-	300mA	Kit ReFlow
	0.5			BLM15BB121SN1	120ohm±25%	-	300mA	Kit ReFlow
	0.5			BLM15BB221SN1	220ohm±25%	-	200mA	Kit ReFlow
	0.5			BLM15BC121SN1	120ohm±25%	-	350mA	Kit ReFlow
	0.5			BLM15BC241SN1	240ohm±25%	-	250mA	Kit ReFlow
	0.5			BLM15BA050SN1	5ohm±25%	-	300mA	Kit ReFlow
	0.5			BLM15BA100SN1	10ohm±25%	-	300mA	Kit ReFlow
	0.5			BLM15BA220SN1	22ohm±25%	-	300mA	Kit ReFlow
	0.5			BLM15BA330SN1	33ohm±25%	-	300mA	Kit ReFlow
	0.5			BLM15BA470SN1	47ohm±25%	-	200mA	Kit ReFlow
	0.5			BLM15BA750SN1	75ohm±25%	-	200mA	Kit ReFlow
	0.5	For Power Lines	p31	BLM15PX121SN1	120ohm±25%	-	1800mA	New Kit ≧1A ReFlow
	0.5		p32	BLM15PG100SN1	10ohm(Typ.)	-	1000mA	Kit ≧1A ReFlow
	0.5			BLM15PD300SN1	30ohm±25%	-	2200mA	Kit ≧1A ReFlow
	0.5			BLM15PD600SN1	60ohm±25%	-	1700mA	Kit ≧1A ReFlow
	0.5			BLM15PD800SN1	80ohm±25%	-	1500mA	Kit ≧1A ReFlow
	0.5			BLM15PD121SN1	120ohm±25%	-	1300mA	Kit ≧1A ReFlow
	0.5	For GHz Band Noise	p77 For General Signal Lines	BLM15HG601SN1	600ohm±25%	1000ohm±40%	300mA	Kit GHz ReFlow
	0.5			BLM15HG102SN1	1000ohm±25%	1400ohm±40%	250mA	Kit GHz ReFlow
	0.5		p77 For High Speed Signal Lines (Sharp Impedance Curve)	BLM15HD601SN1	600ohm±25%	1400ohm±40%	300mA	Kit GHz ReFlow
	0.5			BLM15HD102SN1	1000ohm±25%	2000ohm±40%	250mA	Kit GHz ReFlow
	0.5			BLM15HD182SN1	1800ohm±25%	2700ohm±40%	200mA	Kit GHz ReFlow
	0.5			BLM15HB121SN1	120ohm±25%	500ohm±40%	300mA	Kit GHz ReFlow
	0.5			BLM15HB221SN1	220ohm±25%	900ohm±40%	250mA	Kit GHz ReFlow
	0.5		Universal Type [Power Lines/Signal Lines] p27	BLM15EG121SN1	120ohm±25%	145ohm(Typ.)	1500mA	Kit ≧1A GHz ReFlow
	0.5			BLM15EG221SN1	220ohm±25%	270ohm(Typ.)	700mA	Kit GHz ReFlow
	0.5	For High-GHz Band Noise	p83 For General Signal Lines	BLM15GG221SN1	220ohm±25%	600ohm±40%	300mA	Kit Hi-GHz ReFlow
	0.5			BLM15GG471SN1	470ohm±25%	1200ohm±40%	200mA	Kit Hi-GHz ReFlow
	0.5		For High Speed Signal Lines p83	BLM15GA750SN1	75ohm±25%	1000ohm±40%	200mA	Kit Hi-GHz ReFlow
0603	0.8	For General Signal Lines	p52	BLM18AG121SN1	120ohm±25%	-	500mA	Kit Flow ReFlow
	0.8			BLM18AG151SN1	150ohm±25%	-	500mA	Kit Flow ReFlow
	0.8			BLM18AG221SN1	220ohm±25%	-	500mA	Kit Flow ReFlow
	0.8			BLM18AG331SN1	330ohm±25%	-	500mA	Kit Flow ReFlow
	0.8			BLM18AG471SN1	470ohm±25%	-	500mA	Kit Flow ReFlow
	0.8			BLM18AG601SN1	600ohm±25%	-	500mA	Kit Flow ReFlow
	0.8			BLM18AG102SN1	1000ohm±25%	-	400mA	Kit Flow ReFlow
	0.6		p56	BLM18TG121TN1	120ohm±25%	-	200mA	Flow ReFlow
	0.6			BLM18TG221TN1	220ohm±25%	-	200mA	Flow ReFlow
	0.6			BLM18TG601TN1	600ohm±25%	-	200mA	Flow ReFlow
	0.6			BLM18TG102TN1	1000ohm±25%	-	100mA	Flow ReFlow

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0603	0.8	For High Speed Signal Lines (Sharp Impedance Curve)	p63	BLM18BD470SN1	47ohm±25%	-	500mA	Kit Flow ReFlow
	0.8			BLM18BD121SN1	120ohm±25%	-	200mA	Kit Flow ReFlow
	0.8			BLM18BD151SN1	150ohm±25%	-	200mA	Kit Flow ReFlow
	0.8			BLM18BD221SN1	220ohm±25%	-	200mA	Kit Flow ReFlow
	0.8			BLM18BD331SN1	330ohm±25%	-	200mA	Kit Flow ReFlow
	0.8			BLM18BD421SN1	420ohm±25%	-	200mA	Kit Flow ReFlow
	0.8			BLM18BD471SN1	470ohm±25%	-	200mA	Kit Flow ReFlow
	0.8			BLM18BD601SN1	600ohm±25%	-	200mA	Kit Flow ReFlow
	0.8			BLM18BD102SN1	1000ohm±25%	-	100mA	Kit Flow ReFlow
	0.8			BLM18BD152SN1	1500ohm±25%	-	50mA	Kit Flow ReFlow
	0.8			BLM18BD182SN1	1800ohm±25%	-	50mA	Kit Flow ReFlow
	0.8			BLM18BD222SN1	2200ohm±25%	-	50mA	Kit Flow ReFlow
	0.8			BLM18BD252SN1	2500ohm±25%	-	50mA	Kit Flow ReFlow
	0.8			BLM18BB050SN1	5ohm±25%	-	700mA	Kit Flow ReFlow
	0.8			BLM18BB100SN1	10ohm±25%	-	700mA	Kit Flow ReFlow
	0.8			BLM18BB220SN1	22ohm±25%	-	600mA	Kit Flow ReFlow
	0.8			BLM18BB470SN1	47ohm±25%	-	550mA	Kit Flow ReFlow
	0.8			BLM18BB600SN1	60ohm±25%	-	550mA	Kit Flow ReFlow
	0.8			BLM18BB750SN1	75ohm±25%	-	500mA	Kit Flow ReFlow
	0.8			BLM18BB121SN1	120ohm±25%	-	500mA	Kit Flow ReFlow
	0.8			BLM18BB141SN1	140ohm±25%	-	450mA	Flow ReFlow
	0.8			BLM18BB151SN1	150ohm±25%	-	450mA	Kit Flow ReFlow
	0.8			BLM18BB221SN1	220ohm±25%	-	450mA	Kit Flow ReFlow
	0.8			BLM18BB331SN1	330ohm±25%	-	400mA	Kit Flow ReFlow
	0.8			BLM18BB471SN1	470ohm±25%	-	300mA	Kit Flow ReFlow
	0.8			BLM18BA050SN1	5ohm±25%	-	500mA	Kit Flow ReFlow
	0.8			BLM18BA100SN1	10ohm±25%	-	500mA	Kit Flow ReFlow
	0.8			BLM18BA220SN1	22ohm±25%	-	500mA	Flow ReFlow
	0.8			BLM18BA470SN1	47ohm±25%	-	300mA	Kit Flow ReFlow
	0.8			BLM18BA750SN1	75ohm±25%	-	300mA	Kit Flow ReFlow
	0.8			BLM18BA121SN1	120ohm±25%	-	200mA	Kit Flow ReFlow
	0.8	For Digital Interface Lines	p70	BLM18RK121SN1	120ohm±25%	-	200mA	Kit Flow ReFlow
	0.8			BLM18RK221SN1	220ohm±25%	-	200mA	Flow ReFlow
	0.8			BLM18RK471SN1	470ohm±25%	-	200mA	Kit Flow ReFlow
	0.8			BLM18RK601SN1	600ohm±25%	-	200mA	Kit Flow ReFlow
	0.8			BLM18RK102SN1	1000ohm±25%	-	200mA	Kit Flow ReFlow
	0.8	For Power Lines	Standard Type p34	BLM18PG300SN1	30ohm(Typ.)	-	1000mA	Kit ≧1A Flow ReFlow
	0.8			BLM18PG330SN1	33ohm±25%	-	3000mA	Kit ≧3A Flow ReFlow
	0.8			BLM18PG600SN1	60ohm(Typ.)	-	500mA	Kit Flow ReFlow
	0.8			BLM18PG121SN1	120ohm±25%	-	2000mA	Kit ≧1A Flow ReFlow
	0.8			BLM18PG181SN1	180ohm±25%	-	1500mA	Kit ≧1A Flow ReFlow
	0.8			BLM18PG221SN1	220ohm±25%	-	1400mA	Kit ≧1A Flow ReFlow
	0.8			BLM18PG331SN1	330ohm±25%	-	1200mA	Kit ≧1A Flow ReFlow
	0.8			BLM18PG471SN1	470ohm±25%	-	1000mA	Kit ≧1A Flow ReFlow
	0.6		Low DC Resistance Type p42	BLM18KG260TN1	26ohm±25%	-	6000mA	Kit ≧3A Flow ReFlow
	0.6			BLM18KG300TN1	30ohm±25%	-	5000mA	Kit ≧3A Flow ReFlow
	0.6			BLM18KG700TN1	70ohm±25%	-	3500mA	Kit ≧3A Flow ReFlow
	0.6			BLM18KG101TN1	100ohm±25%	-	3000mA	Kit ≧3A Flow ReFlow
	0.6			BLM18KG121TN1	120ohm±25%	-	3000mA	Kit ≧3A Flow ReFlow
	0.8			BLM18KG221SN1	220ohm±25%	-	2200mA	Kit ≧1A Flow ReFlow
	0.8			BLM18KG331SN1	330ohm±25%	-	1700mA	Kit ≧1A Flow ReFlow
	0.8			BLM18KG471SN1	470ohm±25%	-	1500mA	Kit ≧1A Flow ReFlow
	0.8			BLM18KG601SN1	600ohm±25%	-	1300mA	Kit ≧1A Flow ReFlow
	0.5		p44	BLM18SG260TN1	26ohm±25%	-	6000mA	Kit ≧3A Flow ReFlow
	0.5			BLM18SG700TN1	70ohm±25%	-	4000mA	Kit ≧3A Flow ReFlow
	0.5			BLM18SG121TN1	120ohm±25%	-	3000mA	Kit ≧3A Flow ReFlow
	0.5			BLM18SG221TN1	220ohm±25%	-	2500mA	Kit ≧1A Flow ReFlow
	0.5			BLM18SG331TN1	330ohm±25%	-	1500mA	Kit ≧1A Flow ReFlow

Continued on the following page.

Size Code (Inch)	Thickness (mm)	Type		Part Number	Impedance at 100MHz/20°C	Impedance at 1GHz/20°C	Rated Current	New / Kit / ≧1A ≧3A / GHz / Hi-GHz / Flow / ReFlow
0603	0.8	For GHz Band Noise	For General Signal Lines p79	BLM18HG471SN1	470ohm±25%	600ohm(Typ.)	200mA	Kit GHz Flow ReFlow
	0.8			BLM18HG601SN1	600ohm±25%	700ohm(Typ.)	200mA	Kit GHz Flow ReFlow
	0.8			BLM18HG102SN1	1000ohm±25%	1000ohm(Typ.)	100mA	Kit GHz Flow ReFlow
	0.8		For High Speed Signal Lines (Sharp Impedance Curve) p79	BLM18HE601SN1	600ohm±25%	600ohm(Typ.)	800mA	Kit GHz Flow ReFlow
	0.8			BLM18HE102SN1	1000ohm±25%	1000ohm(Typ.)	600mA	Kit GHz Flow ReFlow
	0.8			BLM18HE152SN1	1500ohm±25%	1500ohm(Typ.)	500mA	Kit GHz Flow ReFlow
	0.8			BLM18HD471SN1	470ohm±25%	1000ohm(Typ.)	100mA	Kit GHz Flow ReFlow
	0.8			BLM18HD601SN1	600ohm±25%	1200ohm(Typ.)	100mA	Kit GHz Flow ReFlow
	0.8			BLM18HD102SN1	1000ohm±25%	1700ohm(Typ.)	50mA	Kit GHz Flow ReFlow
	0.8			BLM18HB121SN1	120ohm±25%	500ohm±40%	200mA	Kit GHz Flow ReFlow
	0.8			BLM18HB221SN1	220ohm±25%	1100ohm±40%	100mA	Kit GHz Flow ReFlow
	0.8			BLM18HB331SN1	330ohm±25%	1600ohm±40%	50mA	Kit GHz Flow ReFlow
	0.8		For Digital Interface Lines p79	BLM18HK331SN1	330ohm±25%	400ohm±40%	200mA	Kit GHz Flow ReFlow
	0.8			BLM18HK471SN1	470ohm±25%	600ohm±40%	200mA	Kit GHz Flow ReFlow
	0.8			BLM18HK601SN1	600ohm±25%	700ohm±40%	100mA	Kit GHz Flow ReFlow
	0.8			BLM18HK102SN1	1000ohm±25%	1200ohm±40%	50mA	Kit GHz Flow ReFlow
	0.5		Universal Type [Power lines/ Signal lines] p28	BLM18EG101TN1	100ohm±25%	140ohm(Typ.)	2000mA	Kit ≧1A GHz Flow ReFlow
	0.8			BLM18EG121SN1	120ohm±25%	145ohm(Typ.)	2000mA	Kit ≧1A GHz Flow ReFlow
	0.8			BLM18EG221SN1	220ohm±25%	260ohm(Typ.)	2000mA	Kit ≧1A GHz Flow ReFlow
	0.5			BLM18EG221TN1	220ohm±25%	300ohm(Typ.)	1000mA	Kit ≧1A GHz Flow ReFlow
	0.5			BLM18EG331TN1	330ohm±25%	450ohm(Typ.)	500mA	Kit GHz Flow ReFlow
	0.5			BLM18EG391TN1	390ohm±25%	520ohm(Typ.)	500mA	Kit GHz Flow ReFlow
	0.8			BLM18EG471SN1	470ohm±25%	550ohm(Typ.)	500mA	Kit GHz Flow ReFlow
	0.8			BLM18EG601SN1	600ohm±25%	700ohm(Typ.)	500mA	Kit GHz Flow ReFlow
	0.8	For High-GHz Band Noise p84		BLM18GG471SN1	470ohm±25%	1800ohm±30%	200mA	Kit Hi-GHz ReFlow
0805	0.85	For General Signal Lines p54		BLM21AG121SN1	120ohm±25%	-	200mA	Kit Flow ReFlow
	0.85			BLM21AG151SN1	150ohm±25%	-	200mA	Kit Flow ReFlow
	0.85			BLM21AG221SN1	220ohm±25%	-	200mA	Kit Flow ReFlow
	0.85			BLM21AG331SN1	330ohm±25%	-	200mA	Kit Flow ReFlow
	0.85			BLM21AG471SN1	470ohm±25%	-	200mA	Kit Flow ReFlow
	0.85			BLM21AG601SN1	600ohm±25%	-	200mA	Kit Flow ReFlow
	0.85			BLM21AG102SN1	1000ohm±25%	-	200mA	Kit Flow ReFlow
	0.85	For High Speed Signal Lines (Sharp Impedance Curve) p67		BLM21BD121SN1	120ohm±25%	-	200mA	Kit Flow ReFlow
	0.85			BLM21BD151SN1	150ohm±25%	-	200mA	Flow ReFlow
	0.85			BLM21BD221SN1	220ohm±25%	-	200mA	Kit Flow ReFlow
	0.85			BLM21BD331SN1	330ohm±25%	-	200mA	Flow ReFlow
	0.85			BLM21BD421SN1	420ohm±25%	-	200mA	Kit Flow ReFlow
	0.85			BLM21BD471SN1	470ohm±25%	-	200mA	Kit Flow ReFlow
	0.85			BLM21BD601SN1	600ohm±25%	-	200mA	Kit Flow ReFlow
	0.85			BLM21BD751SN1	750ohm±25%	-	200mA	Flow ReFlow
	0.85			BLM21BD102SN1	1000ohm±25%	-	200mA	Kit Flow ReFlow
	0.85			BLM21BD152SN1	1500ohm±25%	-	200mA	Kit Flow ReFlow
	0.85			BLM21BD182SN1	1800ohm±25%	-	200mA	Kit Flow ReFlow
	0.85			BLM21BD222TN1	2200ohm±25%	-	200mA	Kit Flow ReFlow
	1.25			BLM21BD222SN1	2250ohm(Typ.)	-	200mA	Kit Flow ReFlow
	1.25			BLM21BD272SN1	2700ohm±25%	-	200mA	Kit Flow ReFlow
	0.85			BLM21BB050SN1	5ohm±25%	-	500mA	Kit Flow ReFlow
	0.85			BLM21BB600SN1	60ohm±25%	-	200mA	Kit Flow ReFlow
	0.85			BLM21BB750SN1	75ohm±25%	-	200mA	Kit Flow ReFlow
	0.85			BLM21BB121SN1	120ohm±25%	-	200mA	Kit Flow ReFlow
	0.85			BLM21BB151SN1	150ohm±25%	-	200mA	Flow ReFlow
	0.85			BLM21BB201SN1	200ohm±25%	-	200mA	Flow ReFlow
	0.85			BLM21BB221SN1	220ohm±25%	-	200mA	Kit Flow ReFlow
	0.85			BLM21BB331SN1	330ohm±25%	-	200mA	Kit Flow ReFlow
	0.85			BLM21BB471SN1	470ohm±25%	-	200mA	Kit Flow ReFlow
	0.85	For Digital Interface Lines p72		BLM21RK121SN1	120ohm±25%	-	200mA	Flow ReFlow
	0.85			BLM21RK221SN1	220ohm±25%	-	200mA	Flow ReFlow
	0.85			BLM21RK471SN1	470ohm±25%	-	200mA	Flow ReFlow
	0.85			BLM21RK601SN1	600ohm±25%	-	200mA	Flow ReFlow
	0.85			BLM21RK102SN1	1000ohm±25%	-	200mA	Flow ReFlow

Continued on the following page.

Size Code (Inch)	Thickness (mm)	Type	Part Number	Impedance at 100MHz/20°C	Impedance at 1GHz/20°C	Rated Current	New / Kit / ≧1A ≧3A / GHz Hi-GHz / Flow / ReFlow
0805	0.85	For Power Lines p36	BLM21PG220SN1	22ohm±25%	-	6000mA	Kit ≧3A Flow ReFlow
	0.85		BLM21PG300SN1	30ohm(Typ.)	-	3000mA	Kit ≧3A Flow ReFlow
	0.85		BLM21PG600SN1	60ohm±25%	-	3000mA	Kit ≧3A Flow ReFlow
	0.85		BLM21PG121SN1	120ohm±25%	-	3000mA	Kit ≧3A Flow ReFlow
	0.85		BLM21PG221SN1	220ohm±25%	-	2000mA	Kit ≧1A Flow ReFlow
	0.85		BLM21PG331SN1	330ohm±25%	-	1500mA	Kit ≧1A Flow ReFlow
1206	1.1	For Power Lines p38	BLM31PG330SN1	33ohm±25%	-	6000mA	Kit ≧3A Flow ReFlow
	1.1		BLM31PG500SN1	50ohm(Typ.)	-	3000mA	Kit ≧3A Flow ReFlow
	1.1		BLM31PG121SN1	120ohm±25%	-	3000mA	Kit ≧3A Flow ReFlow
	1.1		BLM31PG391SN1	390ohm±25%	-	2000mA	Kit ≧1A Flow ReFlow
	1.1		BLM31PG601SN1	600ohm±25%	-	1500mA	Kit ≧1A Flow ReFlow
1806	1.6	For Power Lines p40	BLM41PG600SN1	60ohm(Typ.)	-	6000mA	Kit ≧3A Flow ReFlow
	1.6		BLM41PG750SN1	75ohm(Typ.)	-	3000mA	Kit ≧3A Flow ReFlow
	1.6		BLM41PG181SN1	180ohm±25%	-	3000mA	Kit ≧3A Flow ReFlow
	1.6		BLM41PG471SN1	470ohm±25%	-	2000mA	Kit ≧1A Flow ReFlow
	1.6		BLM41PG102SN1	1000ohm±25%	-	1500mA	Kit ≧1A Flow ReFlow
0804	0.5	For General Signal Lines p85	BLA2AAG121SN4	120ohm±25%	-	100mA	ReFlow
	0.5		BLA2AAG221SN4	220ohm±25%	-	50mA	ReFlow
	0.5		BLA2AAG601SN4	600ohm±25%	-	50mA	ReFlow
	0.5		BLA2AAG102SN4	1000ohm±25%	-	50mA	ReFlow
	0.5	For High Speed Signal Lines p85	BLA2ABB100SN4	10ohm±25%	-	200mA	ReFlow
	0.5		BLA2ABB220SN4	22ohm±25%	-	200mA	ReFlow
	0.5		BLA2ABB470SN4	47ohm±25%	-	200mA	ReFlow
	0.5		BLA2ABB121SN4	120ohm±25%	-	50mA	ReFlow
	0.5		BLA2ABB221SN4	220ohm±25%	-	50mA	ReFlow
	0.5		BLA2ABD750SN4	75ohm±25%	-	200mA	ReFlow
	0.5		BLA2ABD121SN4	120ohm±25%	-	200mA	ReFlow
	0.5		BLA2ABD221SN4	220ohm±25%	-	100mA	ReFlow
	0.5		BLA2ABD471SN4	470ohm±25%	-	100mA	ReFlow
	0.5		BLA2ABD601SN4	600ohm±25%	-	100mA	ReFlow
	0.5		BLA2ABD102SN4	1000ohm±25%	-	50mA	ReFlow
1206	0.8	For General Signal Lines p88	BLA31AG300SN4	30ohm±25%	-	200mA	Flow ReFlow
	0.8		BLA31AG600SN4	60ohm±25%	-	200mA	Flow ReFlow
	0.8		BLA31AG121SN4	120ohm±25%	-	150mA	Flow ReFlow
	0.8		BLA31AG221SN4	220ohm±25%	-	150mA	Flow ReFlow
	0.8		BLA31AG601SN4	600ohm±25%	-	100mA	Flow ReFlow
	0.8		BLA31AG102SN4	1000ohm±25%	-	50mA	Flow ReFlow
	0.8	For High Speed Signal Lines p88	BLA31BD121SN4	120ohm±25%	-	150mA	Flow ReFlow
	0.8		BLA31BD221SN4	220ohm±25%	-	150mA	Flow ReFlow
	0.8		BLA31BD471SN4	470ohm±25%	-	100mA	Flow ReFlow
	0.8		BLA31BD601SN4	600ohm±25%	-	100mA	Flow ReFlow
	0.8		BLA31BD102SN4	1000ohm±25%	-	50mA	Flow ReFlow

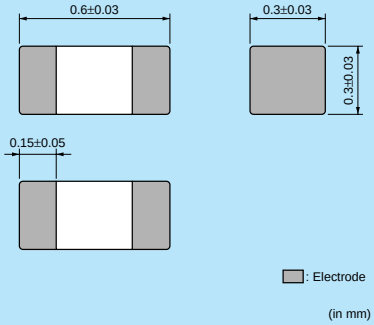
⚠Note • Please read rating and ⚠CAUTION (for storage, operating, rating, soldering, mounting and handling) in this catalog to prevent smoking and/or burning, etc.
• This catalog has only typical specifications because there is no space for detailed specifications. Therefore, please review our product specifications or consult the approval sheet for product specifications before ordering.

BLM03AX Series (0201 Size)

Hi Power Reflow OK

High Spec Ferrite Bead Ultra low dc resistance and wide impedance line up. Fit for both power lines and signal lines.

■ Dimensions



■ Equivalent Circuit

(Resistance element becomes dominant at high frequencies.)

■ Packaging

Code	Packaging	Minimum Quantity
D	180mm Reel Paper Tape	15000
J	330mm Reel Paper Tape	50000
B	Bulk(Bag)	1000

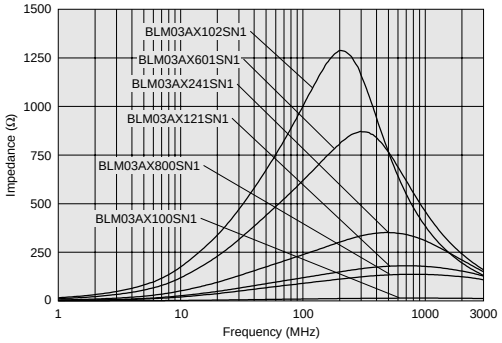
Refer to pages from p.91 to p.94 for mounting information.

■ Rated Value (☐: packaging code)

Part Number	Impedance (at 100MHz/20°C)	Rated Current	DC Resistance	Operating Temperature Range	
BLM03AX100SN1☐	10ohm(Typ.)	1000mA	0.05ohm max.	-55°C to +125°C	Kit ≧1A
BLM03AX800SN1☐	80ohm±25%	500mA	0.18ohm max.	-55°C to +125°C	Kit
BLM03AX121SN1☐	120ohm±25%	450mA	0.23ohm max.	-55°C to +125°C	Kit
BLM03AX241SN1☐	240ohm±25%	350mA	0.38ohm max.	-55°C to +125°C	Kit
BLM03AX601SN1☐	600ohm±25%	250mA	0.85ohm max.	-55°C to +125°C	Kit
BLM03AX102SN1☐	1000ohm±25%	200mA	1.25ohm max.	-55°C to +125°C	Kit

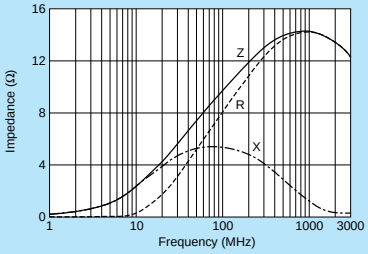
Number of Circuits: 1

■ Impedance-Frequency Characteristics (Main Items)

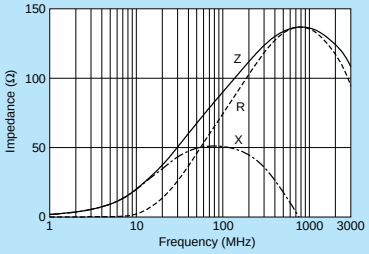


■ Impedance-Frequency Characteristics

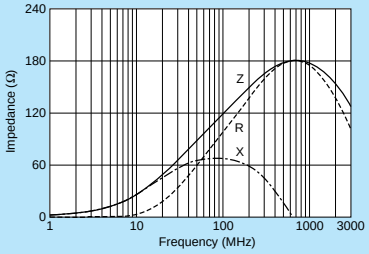
BLM03AX100SN1



BLM03AX800SN1



BLM03AX121SN1



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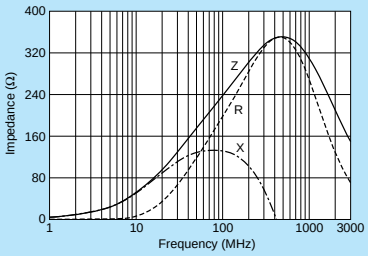
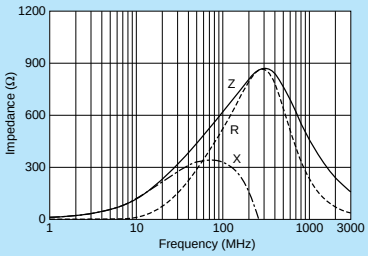
■ Impedance-Frequency Characteristics

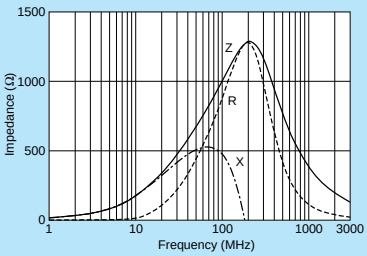
BLM03AX241SN1



BLM03AX601SN1



BLM03AX102SN1

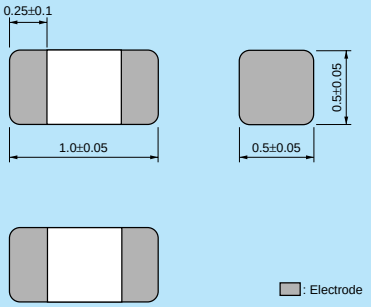


BLM15AX Series (0402 Size)

Hi Power Reflow OK

High Spec Ferrite Bead Ultra low dc resistance and wide impedance line up. Fit for both power lines and signal lines.

■ Dimensions



■ Equivalent Circuit

(Resistance element becomes dominant at high frequencies.)

■ Packaging

Code	Packaging	Minimum Quantity
D	180mm Reel Paper Tape	10000
J	330mm Reel Paper Tape	50000
B	Bulk(Bag)	1000

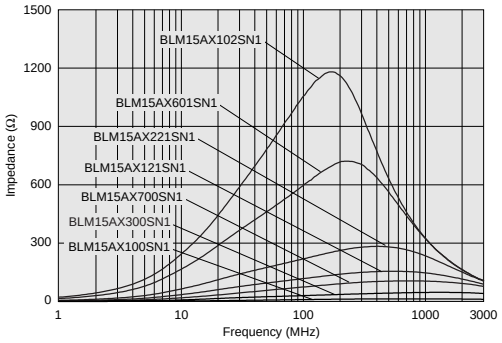
Refer to pages from p.91 to p.94 for mounting information.

■ Rated Value (☐: packaging code)

Part Number	Impedance (at 100MHz/20°C)	Rated Current	DC Resistance	Operating Temperature Range	
BLM15AX100SN1☐	10ohm(Typ.)	1740mA	0.015ohm max.	-55°C to +125°C	Kit ≧1A
BLM15AX300SN1☐	30ohm±25%	1100mA	0.06ohm max.	-55°C to +125°C	New Kit ≧1A
BLM15AX700SN1☐	70ohm±25%	780mA	0.1ohm max.	-55°C to +125°C	Kit
BLM15AX121SN1☐	120ohm±25%	680mA	0.13ohm max.	-55°C to +125°C	Kit
BLM15AX221SN1☐	220ohm±25%	580mA	0.18ohm max.	-55°C to +125°C	Kit
BLM15AX601SN1☐	600ohm±25%	420mA	0.34ohm max.	-55°C to +125°C	Kit
BLM15AX102SN1☐	1000ohm±25%	350mA	0.49ohm max.	-55°C to +125°C	Kit

Number of Circuits: 1

■ Impedance-Frequency Characteristics (Main Items)



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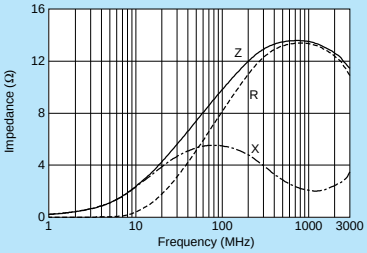
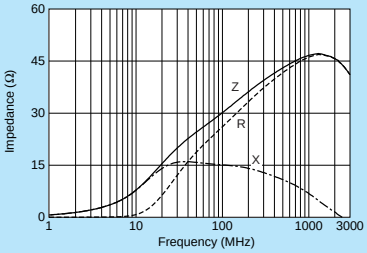
■ Impedance-Frequency Characteristics

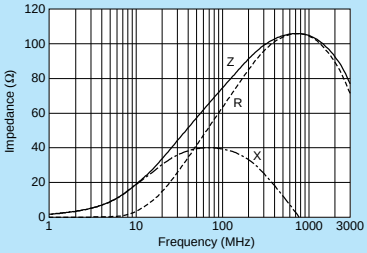
BLM15AX100SN1



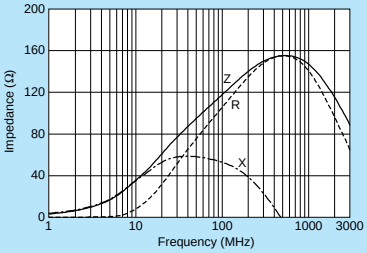
BLM15AX300SN1



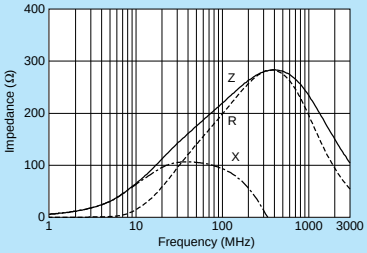
BLM15AX700SN1



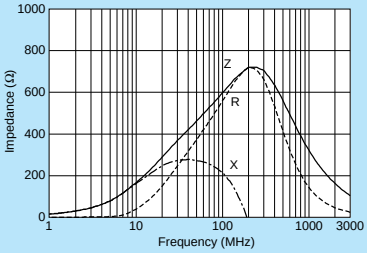
BLM15AX121SN1



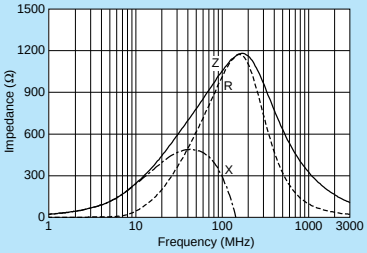
BLM15AX221SN1



BLM15AX601SN1



BLM15AX102SN1



Excellent for Both of Signal and Power Lines!
Multi Function Chip Ferrite Bead BLM□□AX Series

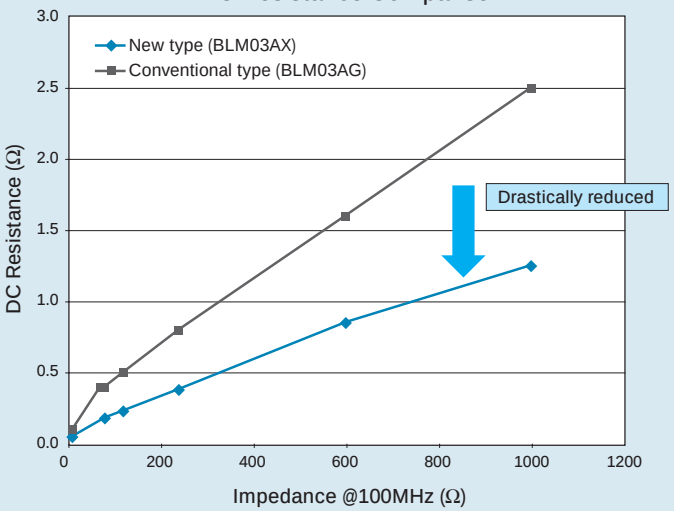
Feature

- 1/2 DC resistance than conventional type by latest technology
  New ferrite material
  Optimum ferrite firing condition
  Fine piling technology
  Advanced coil pattern design technology
- Improved stability of performance at heat shock
- Wide line-up from 10 to 1000ohm(@100MHz) useful for signal line

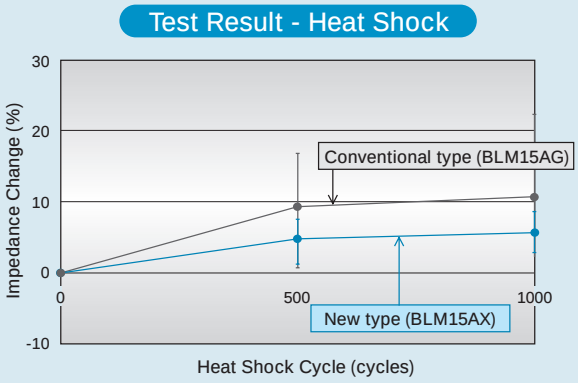
Advantage

- High Rated Current
  Good for Miniaturize of high power equipment
- Lower Voltage down at Ferrite bead
  Good for Battery driven equipment by saving running voltage margin
- Higher Reliability

Drastically Reduced DC Resistance



Test Result - Heat Shock

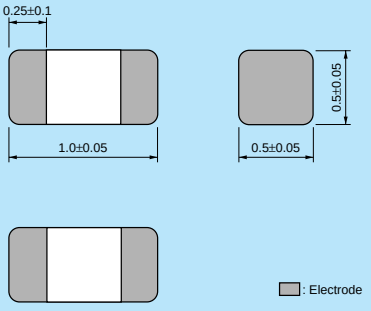


BLM15E Series (0402 Size)

GHz Hi Power Reflow OK

For GHz band noise, also capable to large current.

■ Dimensions



■ Equivalent Circuit

(Resistance element becomes dominant at high frequencies.)

■ Packaging

Code	Packaging	Minimum Quantity
D	180mm Reel Paper Tape	10000
J	330mm Reel Paper Tape	50000
B	Bulk(Bag)	1000

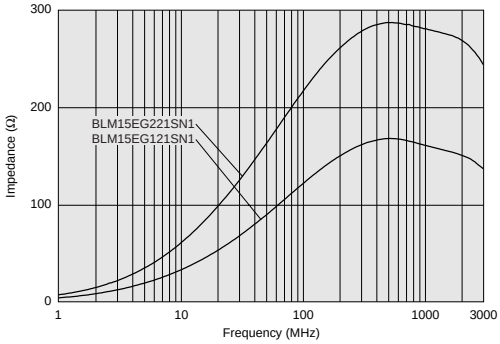
Refer to pages from p.91 to p.94 for mounting information.

■ Rated Value (☐: packaging code)

Part Number	Impedance (at 100MHz/20°C)	Impedance (at 1GHz/20°C)	Rated Current	DC Resistance	Operating Temperature Range	
BLM15EG121SN1☐	120ohm±25%	145ohm(Typ.)	1500mA	0.095ohm max.	-55°C to +125°C	Kit ≧1A
BLM15EG221SN1☐	220ohm±25%	270ohm(Typ.)	700mA	0.28ohm max.	-55°C to +125°C	Kit

Number of Circuits: 1

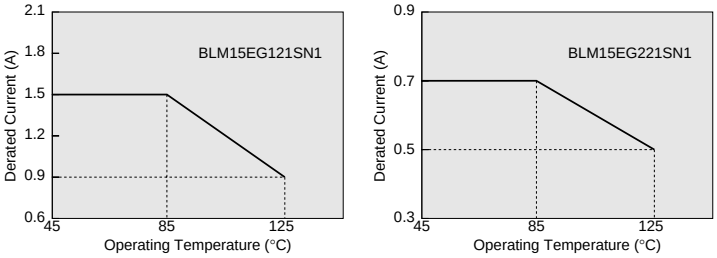
■ Impedance-Frequency Characteristics (Main Items)



■ Notice (Rating)

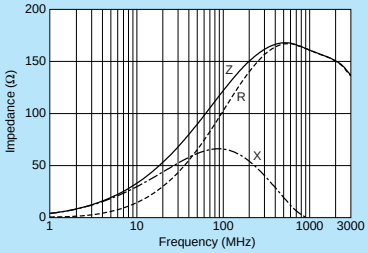
In operating temperature exceeding +85°C, derating of current is necessary for BLM15E series.
Please apply the derating curve shown in chart according to the operating temperature.

Derating

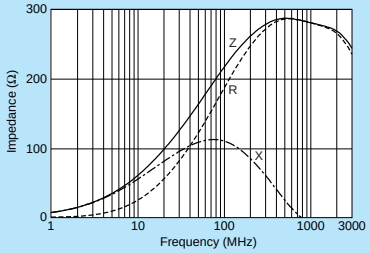


■ Impedance-Frequency Characteristics

BLM15EG121SN1



BLM15EG221SN1

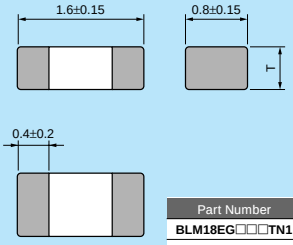


BLM18E Series (0603 Size)

GHz Hi Power Flow OK Reflow OK

For GHz band noise, also capable to large current.

■ Dimensions



Part Number	T
BLM18EG□□□TN1	0.5±0.15
BLM18EG□□□SN1	0.8±0.15

: Electrode

(in mm)

■ Equivalent Circuit

(Resistance element becomes dominant at high frequencies.)

■ Packaging

Code	Packaging	Minimum Quantity
D	180mm Reel Paper Tape	4000
J	330mm Reel Paper Tape	10000
B	Bulk(Bag)	1000

Refer to pages from p.91 to p.94 for mounting information.

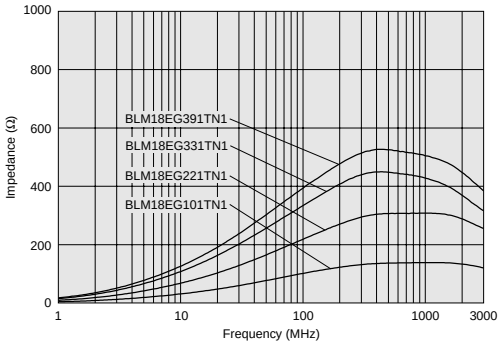
■ Rated Value (□: packaging code)

Part Number	Impedance (at 100MHz/20°C)	Impedance (at 1GHz/20°C)	Rated Current	DC Resistance	Operating Temperature Range	
BLM18EG101TN1□	100ohm±25%	140ohm(Typ.)	2000mA	0.045ohm max.	-55°C to +125°C	Kit ≧1A
BLM18EG121SN1□	120ohm±25%	145ohm(Typ.)	2000mA	0.04ohm max.	-55°C to +125°C	Kit ≧1A
BLM18EG221SN1□	220ohm±25%	260ohm(Typ.)	2000mA	0.05ohm max.	-55°C to +125°C	Kit ≧1A
BLM18EG221TN1□	220ohm±25%	300ohm(Typ.)	1000mA	0.15ohm max.	-55°C to +125°C	Kit ≧1A
BLM18EG331TN1□	330ohm±25%	450ohm(Typ.)	500mA	0.21ohm max.	-55°C to +125°C	Kit
BLM18EG391TN1□	390ohm±25%	520ohm(Typ.)	500mA	0.3ohm max.	-55°C to +125°C	Kit
BLM18EG471SN1□	470ohm±25%	550ohm(Typ.)	500mA	0.21ohm max.	-55°C to +125°C	Kit
BLM18EG601SN1□	600ohm±25%	700ohm(Typ.)	500mA	0.35ohm max.	-55°C to +125°C	Kit

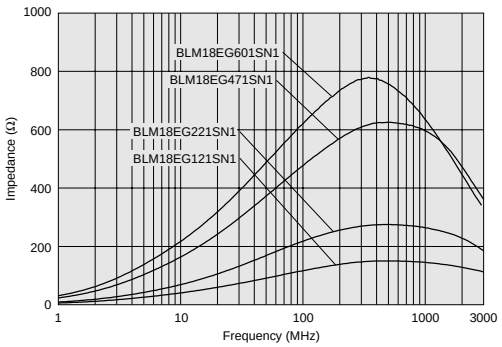
Number of Circuits: 1

■ Impedance-Frequency Characteristics (Main Items)

BLM18EG_TN Series



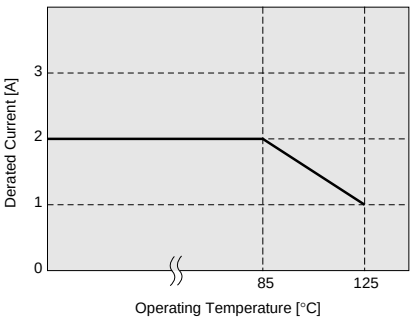
BLM18EG_SN Series



■ Notice (Rating)

In operating temperature exceeding +85°C, derating of current is necessary for BLM18EG series.
Please apply the derating curve shown in chart according to the operating temperature.

Derating

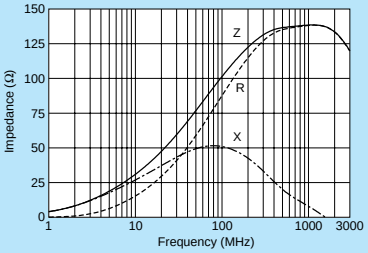


Continued on the following page.

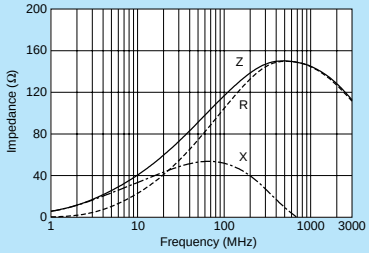
⚠Note • Please read rating and ⚠CAUTION (for storage, operating, rating, soldering, mounting and handling) in this catalog to prevent smoking and/or burning, etc.
• This catalog has only typical specifications because there is no space for detailed specifications. Therefore, please review our product specifications or consult the approval sheet for product specifications before ordering.

Impedance-Frequency Characteristics

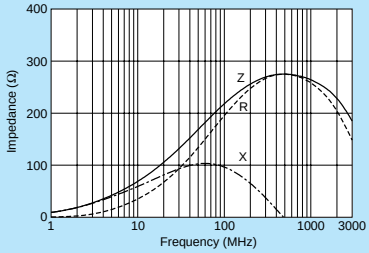
BLM18EG101TN1



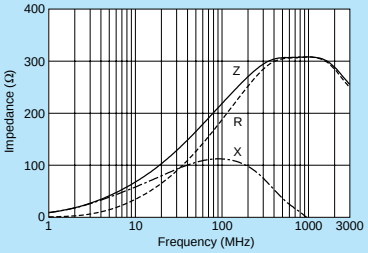
BLM18EG121SN1



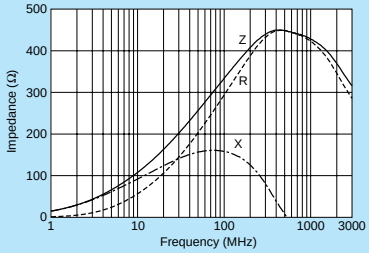
BLM18EG221SN1



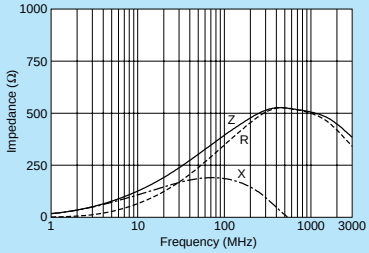
BLM18EG221TN1



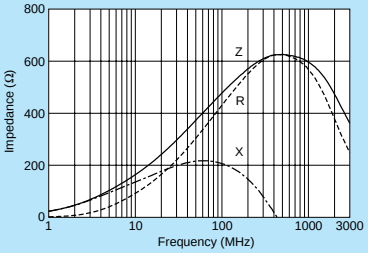
BLM18EG331TN1



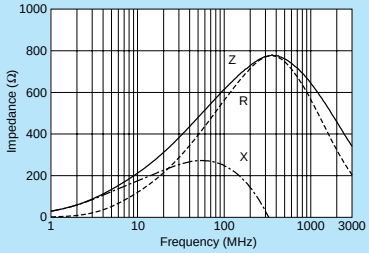
BLM18EG391TN1



BLM18EG471SN1



BLM18EG601SN1



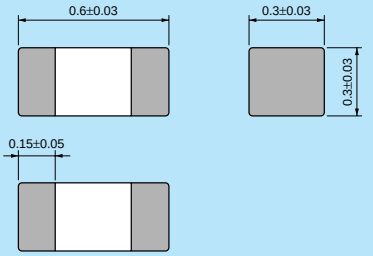
BLM03P Series (0201 Size)

Hi Power Reflow OK

0201 size for power lines.

*Please refer to the products which are designed for both power lines and signal lines.

■ Dimensions



■ Equivalent Circuit

(Resistance element becomes dominant at high frequencies.)

■ Packaging

Code	Packaging	Minimum Quantity
D	180mm Reel Paper Tape	15000
J	330mm Reel Paper Tape	50000
B	Bulk(Bag)	1000

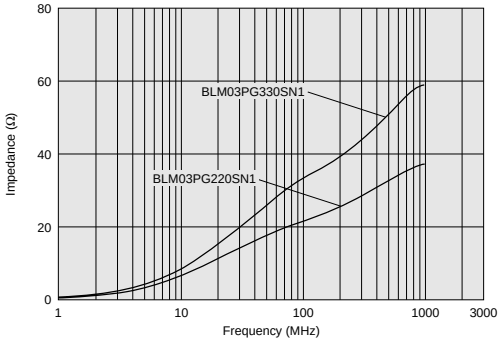
Refer to pages from p.91 to p.94 for mounting information.

■ Rated Value (☐: packaging code)

Part Number	Impedance (at 100MHz/20°C)	Rated Current	DC Resistance	Operating Temperature Range	
BLM03PG220SN1☐	22ohm±25%	900mA	0.065ohm max.	-55°C to +125°C	Kit
BLM03PG330SN1☐	33ohm±25%	750mA	0.090ohm max.	-55°C to +125°C	Kit

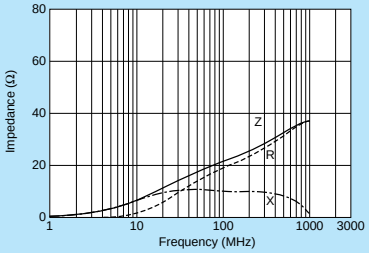
Number of Circuits: 1

■ Impedance-Frequency Characteristics (Main Items)

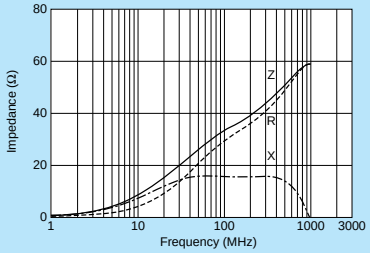


■ Impedance-Frequency Characteristics

BLM03PG220SN1



BLM03PG330SN1



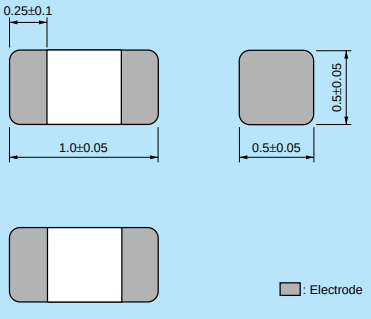
BLM15PX Series (0402 Size)

Hi Power Reflow OK

Improved DC resistance, meet larger current.

*Please refer to the products which are designed for both power lines and signal lines.

■ Dimensions



■ Equivalent Circuit

(Resistance element becomes dominant at high frequencies.)

■ Packaging

Code	Packaging	Minimum Quantity
D	180mm Reel Paper Tape	10000
J	330mm Reel Paper Tape	50000
B	Bulk(Bag)	1000

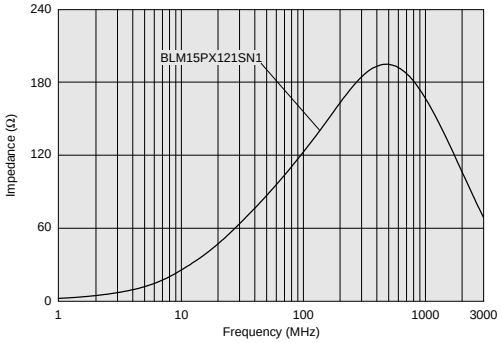
Refer to pages from p.91 to p.94 for mounting information.

■ Rated Value (☐: packaging code)

Part Number	Impedance (at 100MHz/20°C)	Rated Current	DC Resistance	Operating Temperature Range	
BLM15PX121SN1☐	120ohm±25%	1800mA	0.06ohm max.	-55°C to +125°C	New Kit ≧1A

Number of Circuits: 1

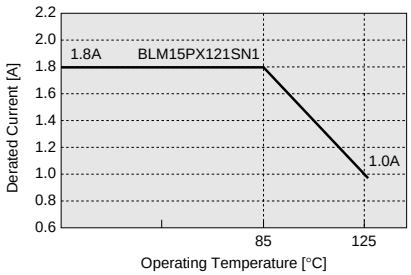
■ Impedance-Frequency Characteristics (Main Items)



■ Notice (Rating)

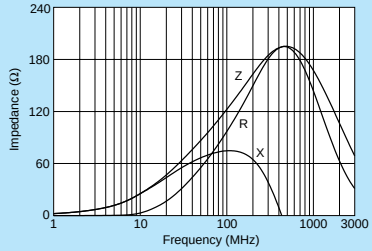
In operating temperature exceeding +85°C, derating of current is necessary for BLM15PX series.
Please apply the derating curve shown in chart according to the operating temperature.

Derating



■ Impedance-Frequency Characteristics

BLM15PX121SN1



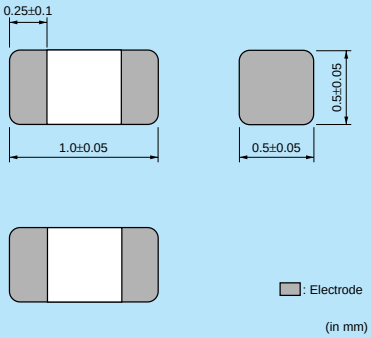
BLM15PG/BLM15PD Series (0402 Size)

Hi Power Reflow OK

0402 size for power lines.

*Please refer to the products which are designed for both power lines and signal lines.

■ Dimensions



■ Equivalent Circuit

(Resistance element becomes dominant at high frequencies.)

■ Packaging

Code	Packaging	Minimum Quantity
D	180mm Reel Paper Tape	10000
J	330mm Reel Paper Tape	50000
B	Bulk(Bag)	1000

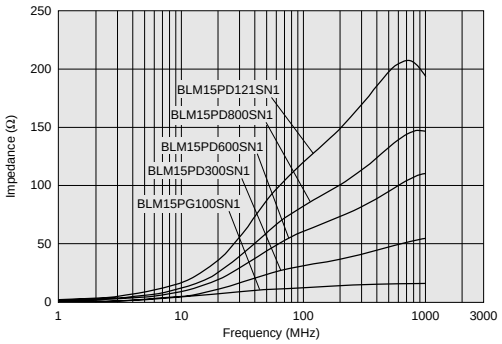
Refer to pages from p.91 to p.94 for mounting information.

■ Rated Value (☐: packaging code)

Part Number	Impedance (at 100MHz/20°C)	Rated Current	DC Resistance	Operating Temperature Range	
BLM15PG100SN1☐	10ohm(Typ.)	1000mA	0.05ohm max.	-55°C to +125°C	Kit ≧1A
BLM15PD300SN1☐	30ohm±25%	2200mA	0.035ohm max.	-55°C to +125°C	Kit ≧1A
BLM15PD600SN1☐	60ohm±25%	1700mA	0.06ohm max.	-55°C to +125°C	Kit ≧1A
BLM15PD800SN1☐	80ohm±25%	1500mA	0.07ohm max.	-55°C to +125°C	Kit ≧1A
BLM15PD121SN1☐	120ohm±25%	1300mA	0.09ohm max.	-55°C to +125°C	Kit ≧1A

Number of Circuits: 1

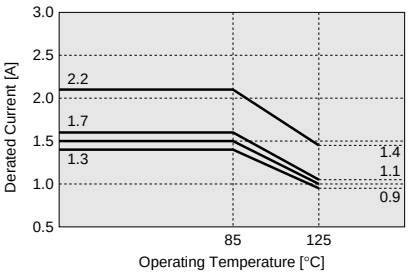
■ Impedance-Frequency Characteristics (Main Items)



■ Notice (Rating)

In operating temperature exceeding +85°C, derating of current is necessary for BLM15PD series.
Please apply the derating curve shown in chart according to the operating temperature.

Derating



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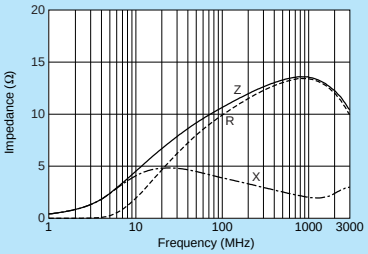
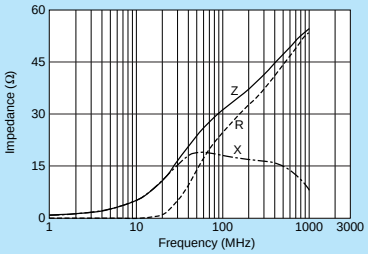
Impedance-Frequency Characteristics

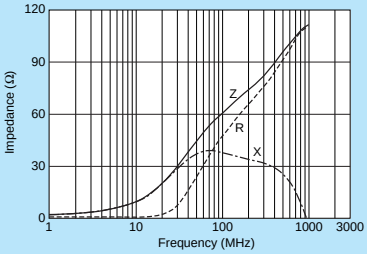
BLM15PG100SN1



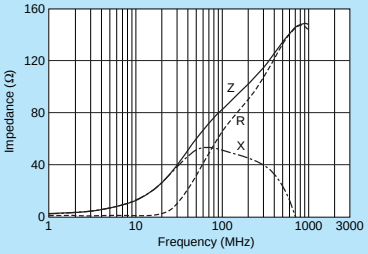
BLM15PD300SN1



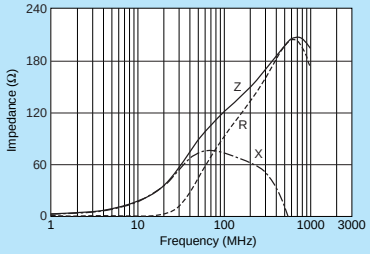
BLM15PD600SN1



BLM15PD800SN1



BLM15PD121SN1



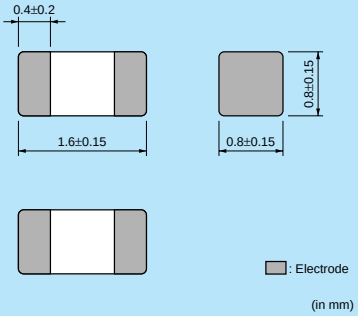
BLM18P Series (0603 Size)

Hi Power Flow OK Reflow OK

0603 size for power lines.

*Please refer to the products which are designed for both power lines and signal lines.

■ Dimensions



■ Equivalent Circuit

(Resistance element becomes dominant at high frequencies.)

■ Packaging

Code	Packaging	Minimum Quantity
D	180mm Reel Paper Tape	4000
J	330mm Reel Paper Tape	10000
B	Bulk(Bag)	1000

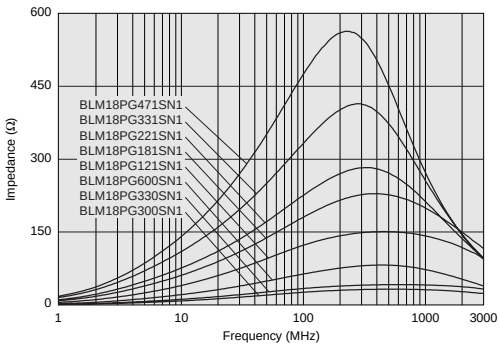
Refer to pages from p.91 to p.94 for mounting information.

■ Rated Value (☐: packaging code)

Part Number	Impedance (at 100MHz/20°C)	Rated Current	DC Resistance	Operating Temperature Range	
BLM18PG300SN1☐	30ohm(Typ.)	1000mA	0.05ohm max.	-55°C to +125°C	Kit ≧1A
BLM18PG330SN1☐	33ohm±25%	3000mA	0.025ohm max.	-55°C to +125°C	Kit ≧3A
BLM18PG600SN1☐	60ohm(Typ.)	500mA	0.10ohm max.	-55°C to +125°C	Kit
BLM18PG121SN1☐	120ohm±25%	2000mA	0.05ohm max.	-55°C to +125°C	Kit ≧1A
BLM18PG181SN1☐	180ohm±25%	1500mA	0.09ohm max.	-55°C to +125°C	Kit ≧1A
BLM18PG221SN1☐	220ohm±25%	1400mA	0.10ohm max.	-55°C to +125°C	Kit ≧1A
BLM18PG331SN1☐	330ohm±25%	1200mA	0.15ohm max.	-55°C to +125°C	Kit ≧1A
BLM18PG471SN1☐	470ohm±25%	1000mA	0.20ohm max.	-55°C to +125°C	Kit ≧1A

Number of Circuits: 1

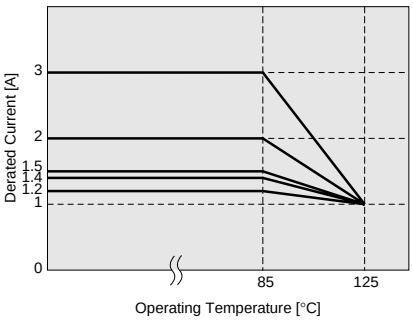
■ Impedance-Frequency Characteristics (Main Items)



■ Notice (Rating)

In operating temperature exceeding +85°C, derating of current is necessary for BLM18PG series.
Please apply the derating curve shown in chart according to the operating temperature.

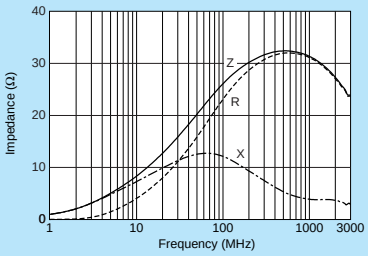
Derating



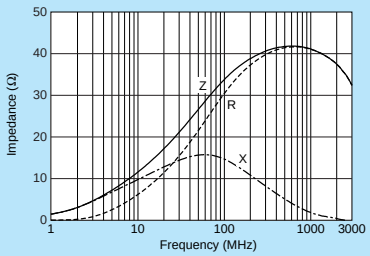
Continued on the following page.

Impedance-Frequency Characteristics

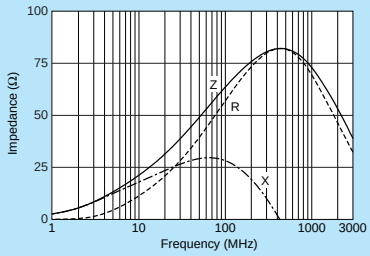
BLM18PG300SN1



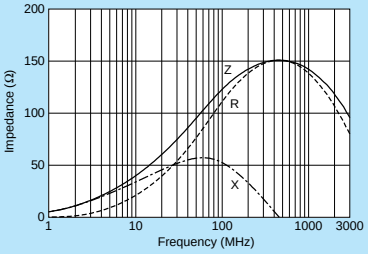
BLM18PG330SN1



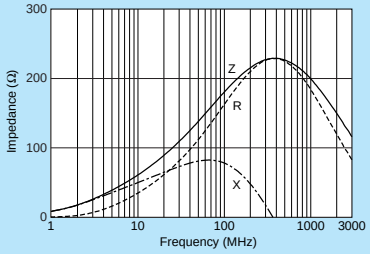
BLM18PG600SN1



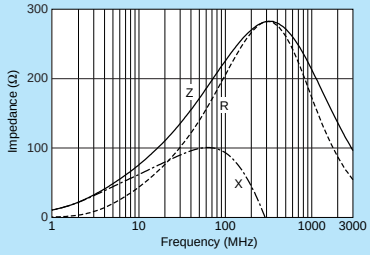
BLM18PG121SN1



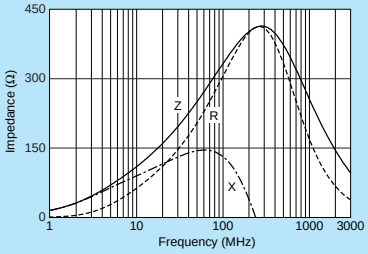
BLM18PG181SN1



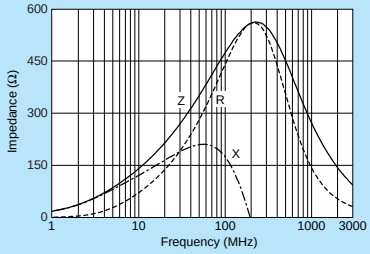
BLM18PG221SN1



BLM18PG331SN1



BLM18PG471SN1

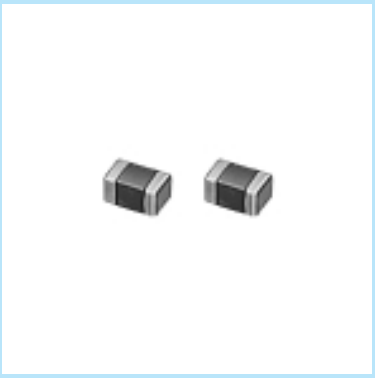


BLM21P Series (0805 Size)

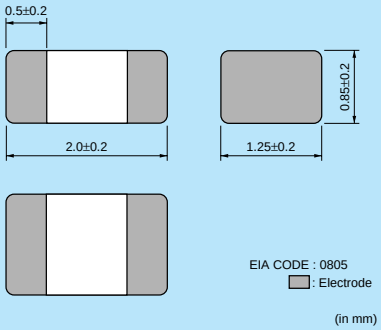
Hi Power Flow OK Reflow OK

0805 size for power lines.

*Please refer to the products which are designed for both power lines and signal lines. *Please refer to BLM18K for downsizing.



■ Dimensions



EIA CODE : 0805
: Electrode

(in mm)

■ Equivalent Circuit

(Resistance element becomes dominant at high frequencies.)

■ Packaging

Code	Packaging	Minimum Quantity
D	180mm Reel Paper Tape	4000
J	330mm Reel Paper Tape	10000
B	Bulk(Bag)	1000

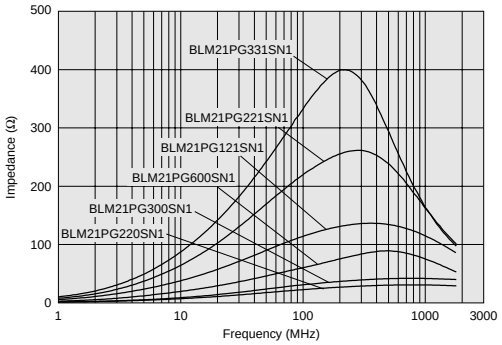
Refer to pages from p.91 to p.94 for mounting information.

■ Rated Value (☐: packaging code)

Part Number	Impedance (at 100MHz/20°C)	Rated Current	DC Resistance	Operating Temperature Range	
BLM21PG220SN1☐	22ohm±25%	6000mA	0.01ohm max.	-55°C to +125°C	Kit ≧3A
BLM21PG300SN1☐	30ohm(Typ.)	3000mA	0.015ohm max.	-55°C to +125°C	Kit ≧3A
BLM21PG600SN1☐	60ohm±25%	3000mA	0.025ohm max.	-55°C to +125°C	Kit ≧3A
BLM21PG121SN1☐	120ohm±25%	3000mA	0.03ohm max.	-55°C to +125°C	Kit ≧3A
BLM21PG221SN1☐	220ohm±25%	2000mA	0.050ohm max.	-55°C to +125°C	Kit ≧1A
BLM21PG331SN1☐	330ohm±25%	1500mA	0.09ohm max.	-55°C to +125°C	Kit ≧1A

Number of Circuits: 1

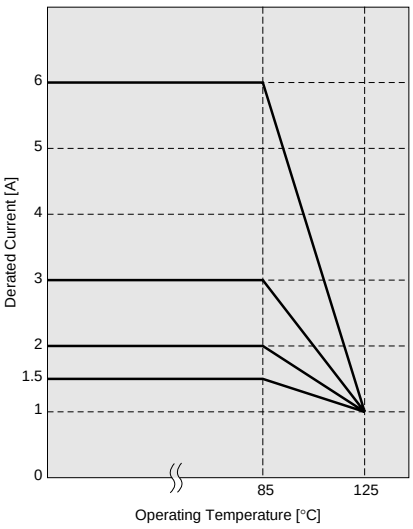
■ Impedance-Frequency Characteristics (Main Items)



■ Notice (Rating)

In operating temperature exceeding +85°C, derating of current is necessary for BLM21PG series.
Please apply the derating curve shown in chart according to the operating temperature.

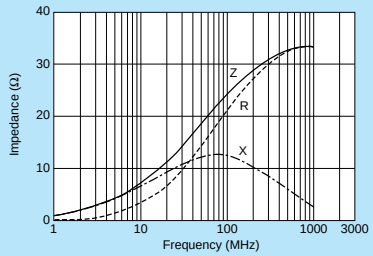
Derating



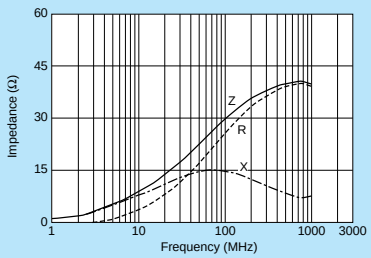
Continued on the following page.

Impedance-Frequency Characteristics

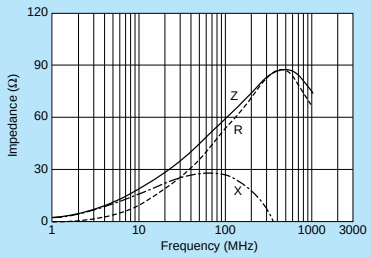
BLM21PG220SN1



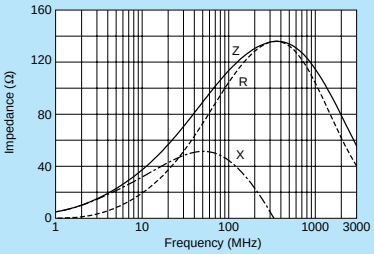
BLM21PG300SN1



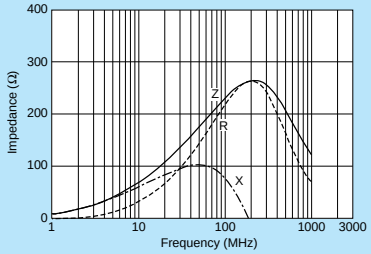
BLM21PG600SN1



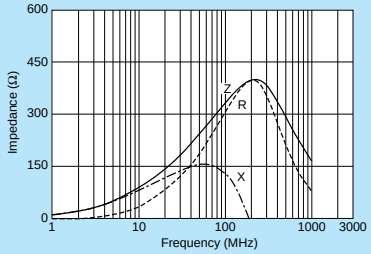
BLM21PG121SN1



BLM21PG221SN1



BLM21PG331SN1

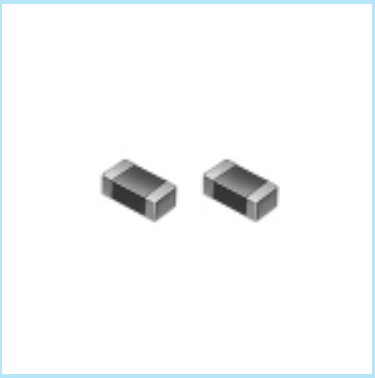


BLM31P Series (1206 Size)

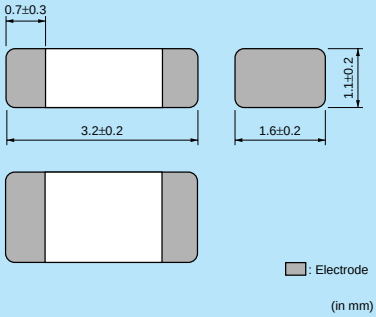
Hi Power | Flow OK | Reflow OK

1206 size for power lines.

*Please refer to the products which are designed for both power lines and signal lines.



■ Dimensions



■ Equivalent Circuit

(Resistance element becomes dominant at high frequencies.)

■ Packaging

Code	Packaging	Minimum Quantity
L	180mm Reel Embossed Tape	3000
K	330mm Reel Embossed Tape	10000
B	Bulk(Bag)	1000

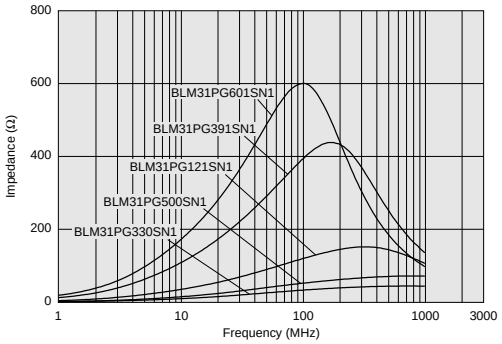
Refer to pages from p.91 to p.94 for mounting information.

■ Rated Value (☐: packaging code)

Part Number	Impedance (at 100MHz/20°C)	Rated Current	DC Resistance	Operating Temperature Range	
BLM31PG330SN1☐	33ohm±25%	6000mA	0.01ohm max.	-55°C to +125°C	Kit ≧3A
BLM31PG500SN1☐	50ohm(Typ.)	3000mA	0.025ohm max.	-55°C to +125°C	Kit ≧3A
BLM31PG121SN1☐	120ohm±25%	3000mA	0.025ohm max.	-55°C to +125°C	Kit ≧3A
BLM31PG391SN1☐	390ohm±25%	2000mA	0.05ohm max.	-55°C to +125°C	Kit ≧1A
BLM31PG601SN1☐	600ohm±25%	1500mA	0.09ohm max.	-55°C to +125°C	Kit ≧1A

Number of Circuits: 1

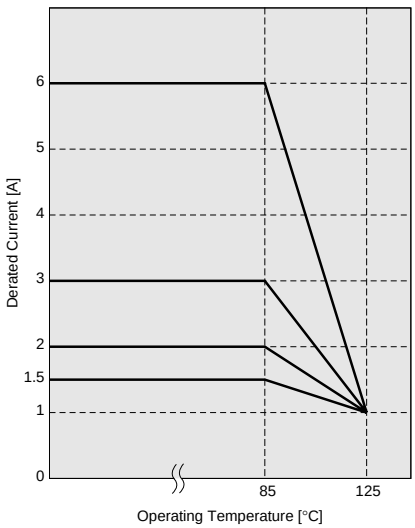
■ Impedance-Frequency Characteristics (Main Items)



■ Notice (Rating)

In operating temperature exceeding +85°C, derating of current is necessary for BLM31PG series.
Please apply the derating curve shown in chart according to the operating temperature.

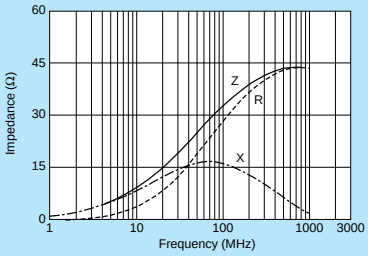
Derating



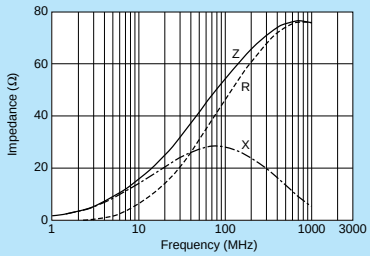
Continued on the following page.

Impedance-Frequency Characteristics

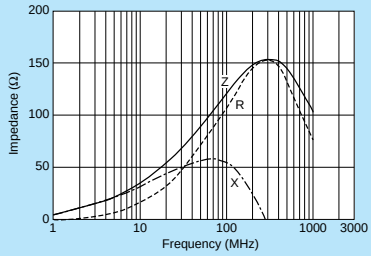
BLM31PG330SN1



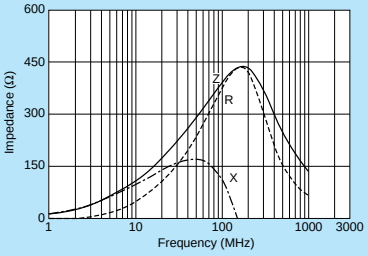
BLM31PG500SN1



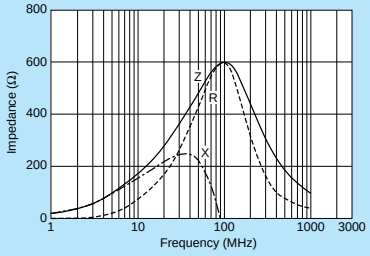
BLM31PG121SN1



BLM31PG391SN1



BLM31PG601SN1

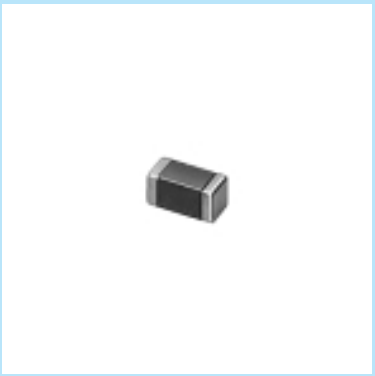


BLM41P Series (1806 Size)

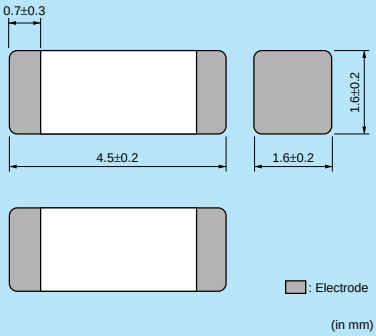
Hi Power | Flow OK | Reflow OK

1806 size for power lines.

*Please refer to the products which are designed for both power lines and signal lines.



■ Dimensions



■ Equivalent Circuit

(Resistance element becomes dominant at high frequencies.)

■ Packaging

Code	Packaging	Minimum Quantity
L	180mm Reel Embossed Tape	2500
K	330mm Reel Embossed Tape	8000
B	Bulk(Bag)	1000

Refer to pages from p.91 to p.94 for mounting information.

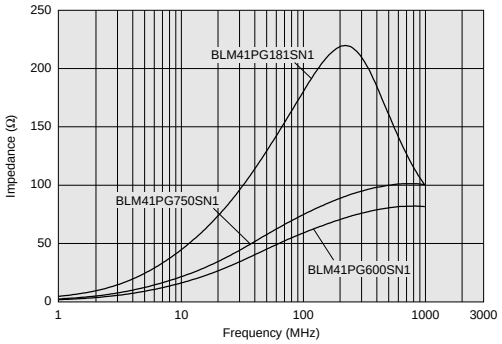
■ Rated Value (☐: packaging code)

Part Number	Impedance (at 100MHz/20°C)	Rated Current	DC Resistance	Operating Temperature Range	
BLM41PG600SN1☐	60ohm(Typ.)	6000mA	0.01ohm max.	-55°C to +125°C	Kit ≧3A
BLM41PG750SN1☐	75ohm(Typ.)	3000mA	0.025ohm max.	-55°C to +125°C	Kit ≧3A
BLM41PG181SN1☐	180ohm±25%	3000mA	0.025ohm max.	-55°C to +125°C	Kit ≧3A
BLM41PG471SN1☐	470ohm±25%	2000mA	0.05ohm max.	-55°C to +125°C	Kit ≧1A
BLM41PG102SN1☐	1000ohm±25%	1500mA	0.09ohm max.	-55°C to +125°C	Kit ≧1A

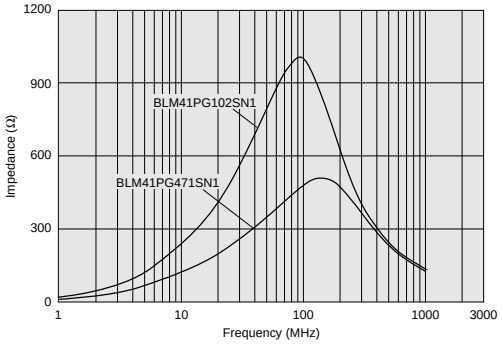
Number of Circuits: 1

■ Impedance-Frequency Characteristics (Main Items)

BLM41PG Series (60ohm to 180ohm)



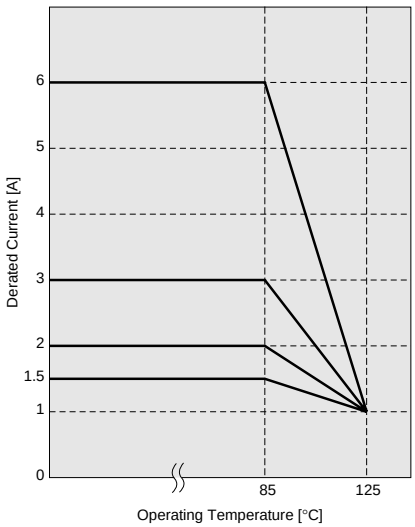
BLM41PG Series (470ohm to 1000ohm)



■ Notice (Rating)

In operating temperature exceeding +85°C, derating of current is necessary for BLM41PG series.
Please apply the derating curve shown in chart according to the operating temperature.

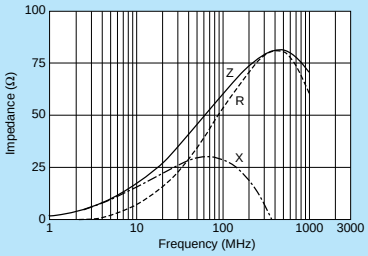
Derating



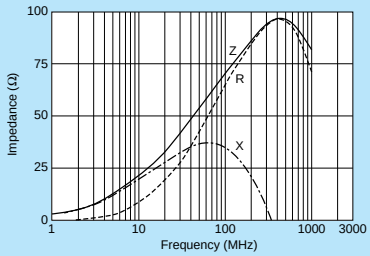
Continued on the following page.

Impedance-Frequency Characteristics

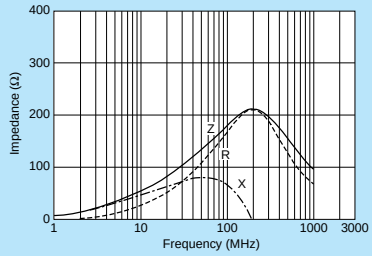
BLM41PG600SN1



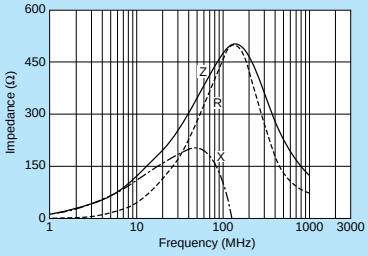
BLM41PG750SN1



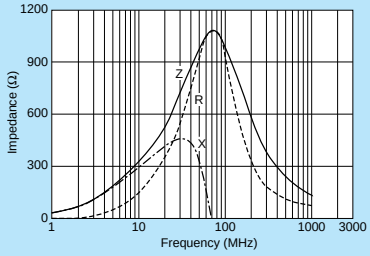
BLM41PG181SN1



BLM41PG471SN1



BLM41PG102SN1



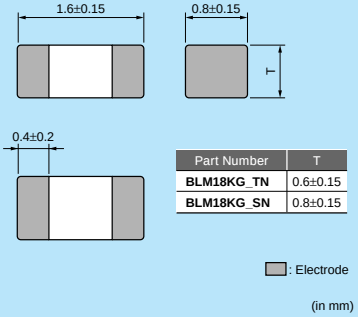
BLM18K Series (0603 Size)

Hi Power | Flow OK | Reflow OK

6A Max, high performance type for power lines up to 600ohm.

*Please refer to the products which are designed for both power lines and signal lines.

■ Dimensions



Part Number	T
BLM18KG_TN	0.6±0.15
BLM18KG_SN	0.8±0.15

: Electrode

(in mm)

■ Equivalent Circuit

(Resistance element becomes dominant at high frequencies.)

■ Packaging

Code	Packaging	Minimum Quantity
D	180mm Reel Paper Tape	4000
J	330mm Reel Paper Tape	10000
B	Bulk(Bag)	1000

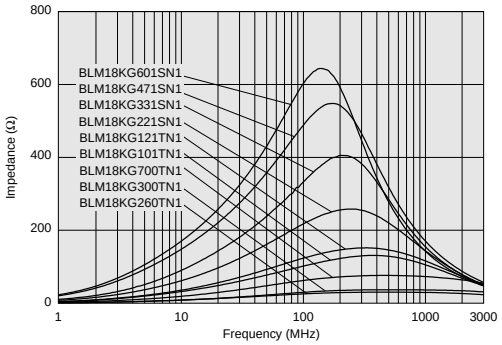
Refer to pages from p.91 to p.94 for mounting information.

■ Rated Value (☐: packaging code)

Part Number	Impedance (at 100MHz/20°C)	Rated Current	DC Resistance	Operating Temperature Range	
BLM18KG260TN1☐	26ohm±25%	6000mA	0.007ohm max.	-55°C to +125°C	Kit ≧3A
BLM18KG300TN1☐	30ohm±25%	5000mA	0.010ohm max.	-55°C to +125°C	Kit ≧3A
BLM18KG700TN1☐	70ohm±25%	3500mA	0.022ohm max.	-55°C to +125°C	Kit ≧3A
BLM18KG101TN1☐	100ohm±25%	3000mA	0.030ohm max.	-55°C to +125°C	Kit ≧3A
BLM18KG121TN1☐	120ohm±25%	3000mA	0.030ohm max.	-55°C to +125°C	Kit ≧3A
BLM18KG221SN1☐	220ohm±25%	2200mA	0.050ohm max.	-55°C to +125°C	Kit ≧1A
BLM18KG331SN1☐	330ohm±25%	1700mA	0.080ohm max.	-55°C to +125°C	Kit ≧1A
BLM18KG471SN1☐	470ohm±25%	1500mA	0.130ohm max.	-55°C to +125°C	Kit ≧1A
BLM18KG601SN1☐	600ohm±25%	1300mA	0.150ohm max.	-55°C to +125°C	Kit ≧1A

Number of Circuits: 1

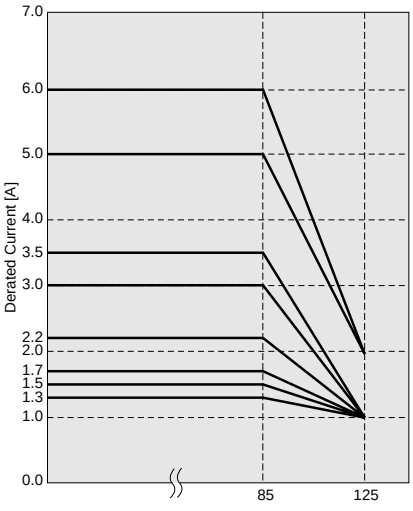
■ Impedance-Frequency Characteristics (Main Items)



■ Notice (Rating)

In operating temperature exceeding +85°C, derating of current is necessary for BLM18KG series.
Please apply the derating curve shown in chart according to the operating temperature.

Derating

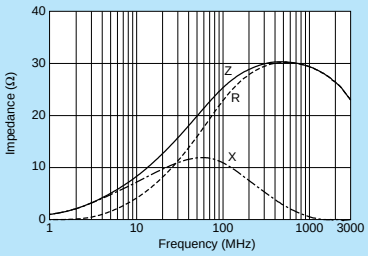


Continued on the following page.

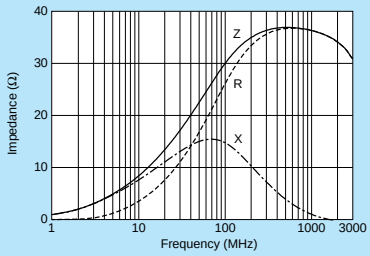
⚠Note • Please read rating and ⚠CAUTION (for storage, operating, rating, soldering, mounting and handling) in this catalog to prevent smoking and/or burning, etc.
• This catalog has only typical specifications because there is no space for detailed specifications. Therefore, please review our product specifications or consult the approval sheet for product specifications before ordering.

Impedance-Frequency Characteristics

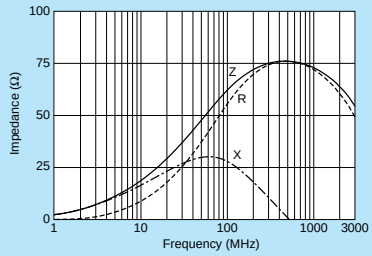
BLM18KG260TN1



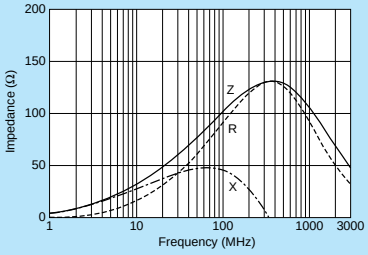
BLM18KG300TN1



BLM18KG700TN1



BLM18KG101TN1



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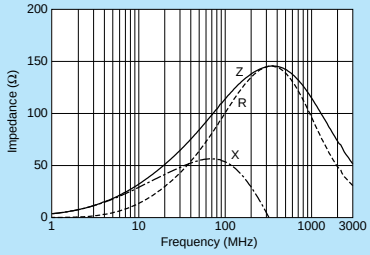
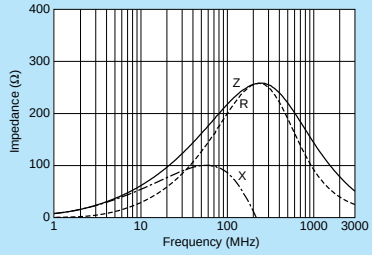
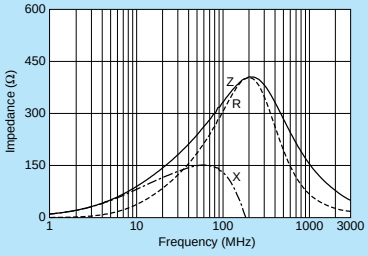


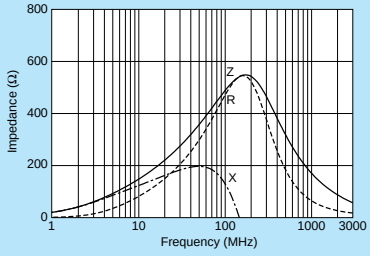
BLM18KG221SN1



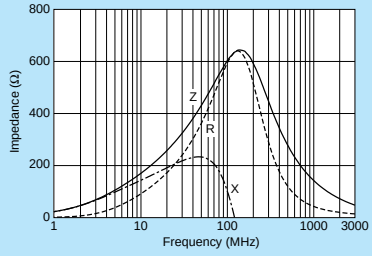
BLM18KG331SN1



BLM18KG471SN1



BLM18KG601SN1

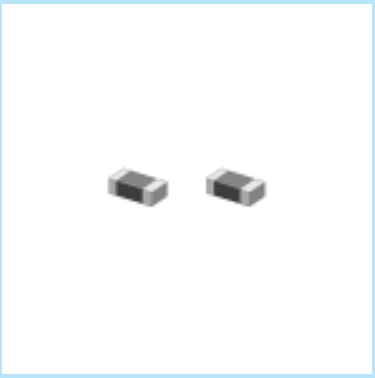


BLM18S Series (0603 Size)

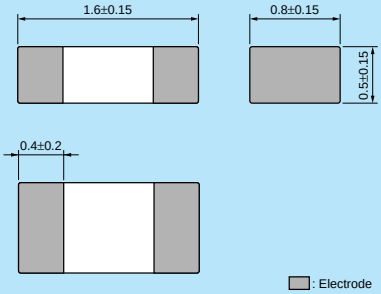
Hi Power Flow OK Reflow OK

6A Max, high performance type for power lines.

*Please refer to the products which are designed for both power lines and signal lines.



■ Dimensions



■ Equivalent Circuit

(Resistance element becomes dominant at high frequencies.)

■ Packaging

Code	Packaging	Minimum Quantity
D	180mm Reel Paper Tape	10000
J	330mm Reel Paper Tape	30000
B	Bulk(Bag)	1000

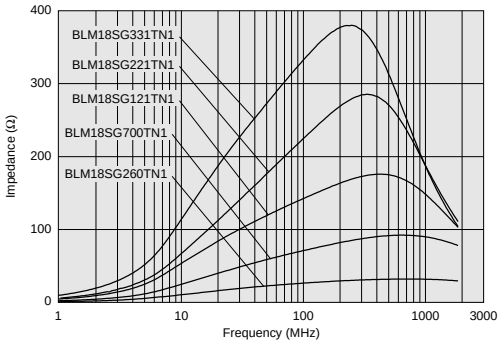
Refer to pages from p.91 to p.94 for mounting information.

■ Rated Value (☐: packaging code)

Part Number	Impedance (at 100MHz/20°C)	Rated Current	DC Resistance	Operating Temperature Range	
BLM18SG260TN1☐	26ohm±25%	6000mA	0.007ohm max.	-55°C to +125°C	Kit ≧3A
BLM18SG700TN1☐	70ohm±25%	4000mA	0.020ohm max.	-55°C to +125°C	Kit ≧3A
BLM18SG121TN1☐	120ohm±25%	3000mA	0.025ohm max.	-55°C to +125°C	Kit ≧3A
BLM18SG221TN1☐	220ohm±25%	2500mA	0.040ohm max.	-55°C to +125°C	Kit ≧1A
BLM18SG331TN1☐	330ohm±25%	1500mA	0.070ohm max.	-55°C to +125°C	Kit ≧1A

Number of Circuits: 1

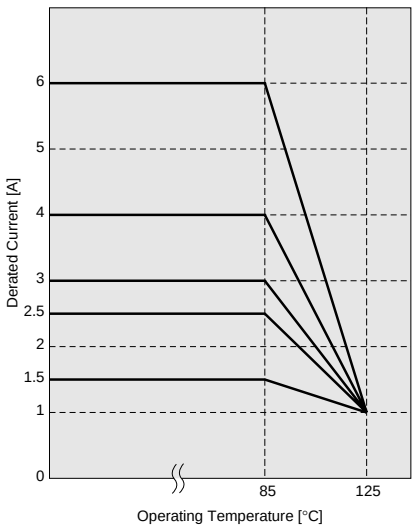
■ Impedance-Frequency Characteristics (Main Items)



■ Notice (Rating)

In operating temperature exceeding +85°C, derating of current is necessary for BLM18SG series.
Please apply the derating curve shown in chart according to the operating temperature.

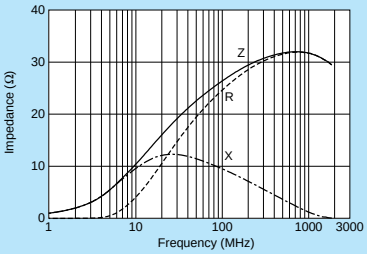
Derating



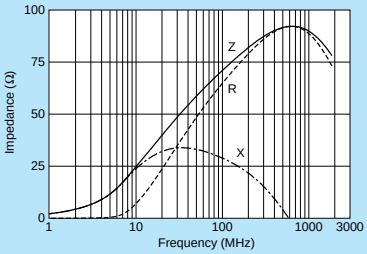
Continued on the following page.

Impedance-Frequency Characteristics

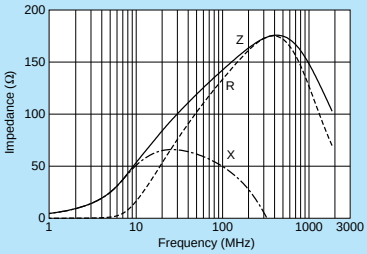
BLM18SG260TN1



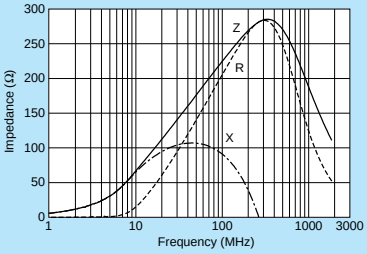
BLM18SG700TN1



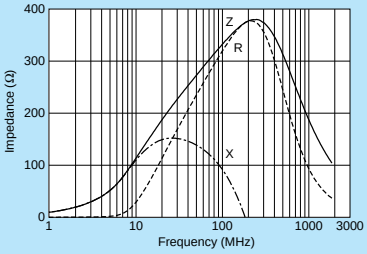
BLM18SG121TN1



BLM18SG221TN1



BLM18SG331TN1

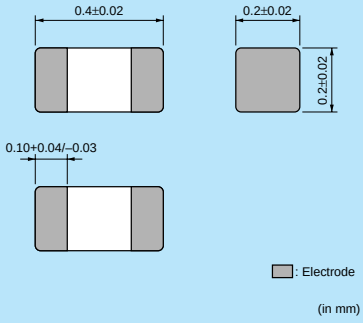


BLM02A Series (01005 Size)

Reflow OK

Ultra small 01005 size for general signal lines.

■ Dimensions



■ Equivalent Circuit

(Resistance element becomes dominant at high frequencies.)

■ Packaging

Code	Packaging	Minimum Quantity
D	180mm Reel Paper Tape	20000
B	Bulk(Bag)	1000

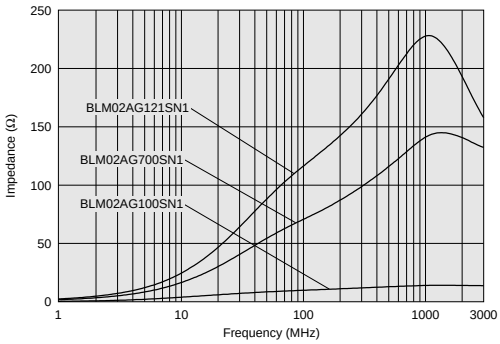
Refer to pages from p.91 to p.94 for mounting information.

■ Rated Value (☐: packaging code)

Part Number	Impedance (at 100MHz/20°C)	Rated Current	DC Resistance	Operating Temperature Range	
BLM02AG100SN1☐	10ohm(Typ.)	500mA	0.1ohm max.	-55°C to +125°C	Kit
BLM02AG700SN1☐	70ohm±25%	250mA	0.5ohm max.	-55°C to +125°C	Kit
BLM02AG121SN1☐	120ohm±25%	200mA	0.8ohm max.	-55°C to +125°C	Kit

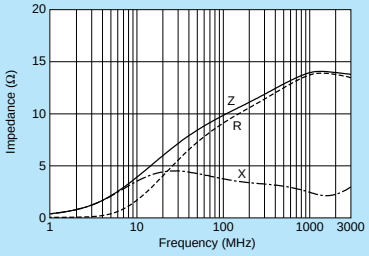
Number of Circuits: 1

■ Impedance-Frequency Characteristics (Main Items)

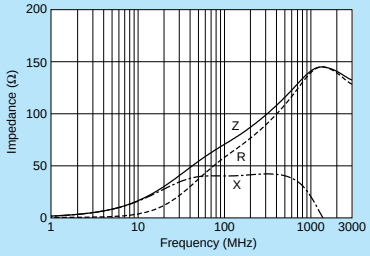


■ Impedance-Frequency Characteristics

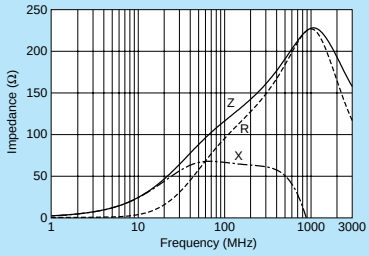
BLM02AG100SN1



BLM02AG700SN1



BLM02AG121SN1



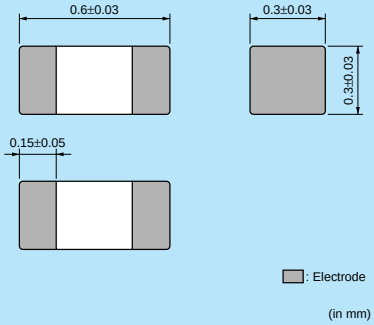
⚠Note • Please read rating and ⚠CAUTION (for storage, operating, rating, soldering, mounting and handling) in this catalog to prevent smoking and/or burning, etc.
• This catalog has only typical specifications because there is no space for detailed specifications. Therefore, please review our product specifications or consult the approval sheet for product specifications before ordering.

BLM03AG Series (0201 Size)

Reflow OK

0201 size for general signal lines.

■ Dimensions



■ Equivalent Circuit

(Resistance element becomes dominant at high frequencies.)

■ Packaging

Code	Packaging	Minimum Quantity
D	180mm Reel Paper Tape	15000
J	330mm Reel Paper Tape	50000
B	Bulk(Bag)	1000

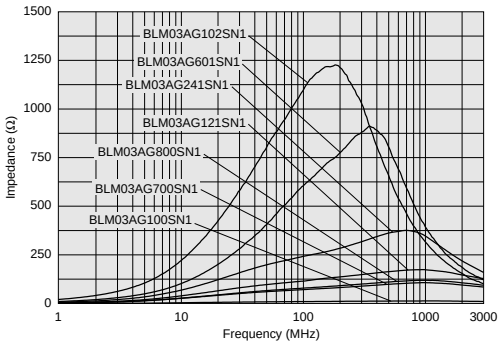
Refer to pages from p.91 to p.94 for mounting information.

■ Rated Value (☐: packaging code)

Part Number	Impedance (at 100MHz/20°C)	Rated Current	DC Resistance	Operating Temperature Range	
BLM03AG100SN1☐	10ohm(Typ.)	500mA	0.1ohm max.	-55°C to +125°C	Kit
BLM03AG700SN1☐	70ohm(Typ.)	200mA	0.4ohm max.	-55°C to +125°C	Kit
BLM03AG800SN1☐	80ohm±25%	200mA	0.4ohm max.	-55°C to +125°C	Kit
BLM03AG121SN1☐	120ohm±25%	200mA	0.5ohm max.	-55°C to +125°C	Kit
BLM03AG241SN1☐	240ohm±25%	200mA	0.8ohm max.	-55°C to +125°C	Kit
BLM03AG601SN1☐	600ohm±25%	100mA	1.5ohm max.	-55°C to +125°C	Kit
BLM03AG102SN1☐	1000ohm±25%	100mA	2.5ohm max.	-55°C to +125°C	Kit

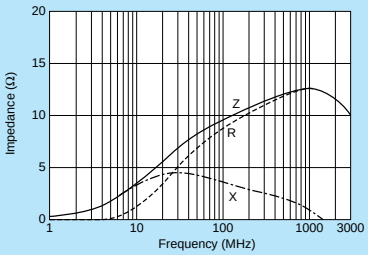
Number of Circuits: 1

■ Impedance-Frequency Characteristics (Main Items)

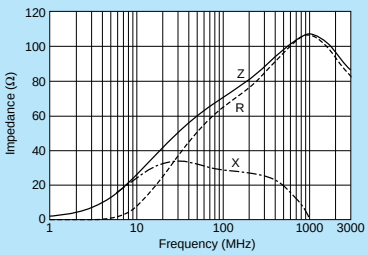


■ Impedance-Frequency Characteristics

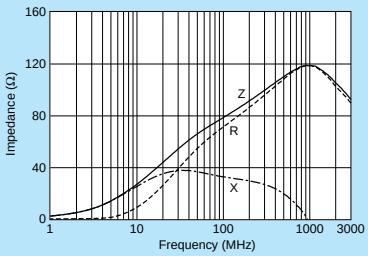
BLM03AG100SN1



BLM03AG700SN1



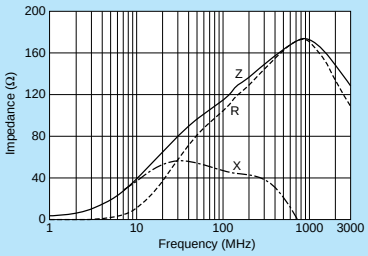
BLM03AG800SN1



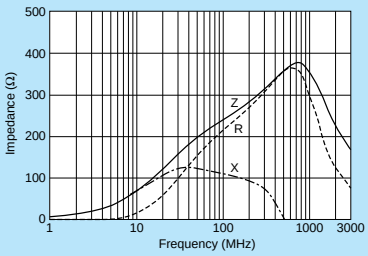
Continued on the following page.

■ Impedance-Frequency Characteristics

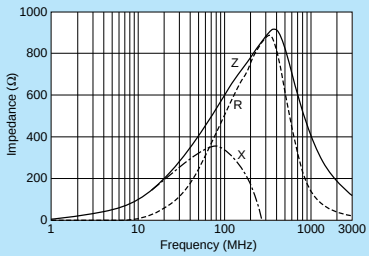
BLM03AG121SN1



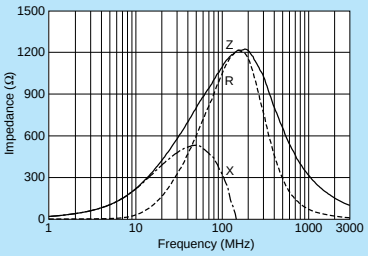
BLM03AG241SN1



BLM03AG601SN1



BLM03AG102SN1

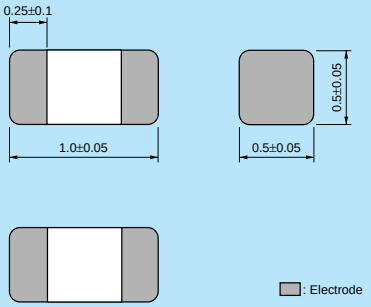


BLM15AG_SN Series (0402 Size)

Reflow OK

0402 size for general signal lines.

■ Dimensions



■ Equivalent Circuit

(Resistance element becomes dominant at high frequencies.)

■ Packaging

Code	Packaging	Minimum Quantity
D	180mm Reel Paper Tape	10000
J	330mm Reel Paper Tape	50000
B	Bulk(Bag)	1000

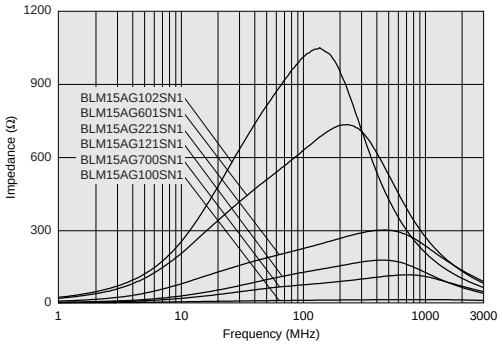
Refer to pages from p.91 to p.94 for mounting information.

■ Rated Value (☐: packaging code)

Part Number	Impedance (at 100MHz/20°C)	Rated Current	DC Resistance	Operating Temperature Range	
BLM15AG100SN1☐	10ohm(Typ.)	1000mA	0.05ohm max.	-55°C to +125°C	Kit ≧1A
BLM15AG700SN1☐	70ohm(Typ.)	500mA	0.15ohm max.	-55°C to +125°C	Kit
BLM15AG121SN1☐	120ohm±25%	500mA	0.25ohm max.	-55°C to +125°C	Kit
BLM15AG221SN1☐	220ohm±25%	300mA	0.35ohm max.	-55°C to +125°C	Kit
BLM15AG601SN1☐	600ohm±25%	300mA	0.6ohm max.	-55°C to +125°C	Kit
BLM15AG102SN1☐	1000ohm±25%	200mA	1.0ohm max.	-55°C to +125°C	Kit

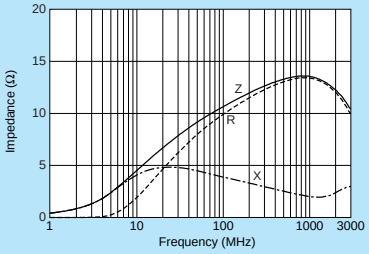
Number of Circuits: 1

■ Impedance-Frequency Characteristics (Main Items)

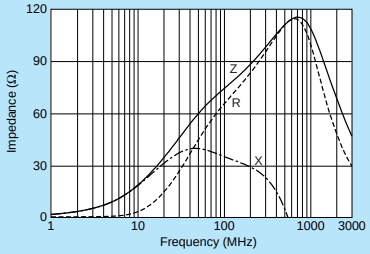


■ Impedance-Frequency Characteristics

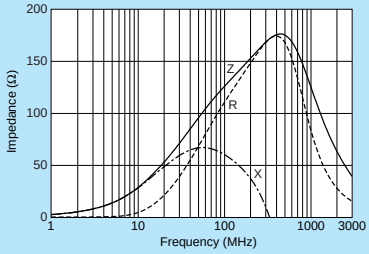
BLM15AG100SN1



BLM15AG700SN1



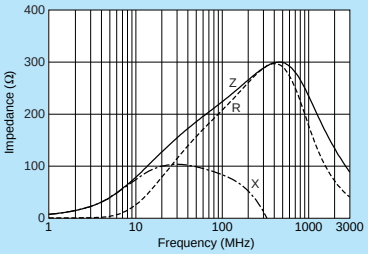
BLM15AG121SN1



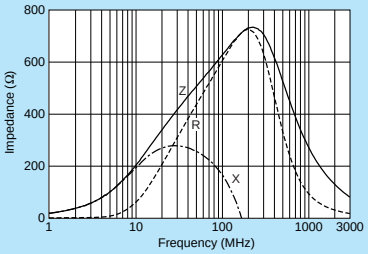
Continued on the following page.

■ Impedance-Frequency Characteristics

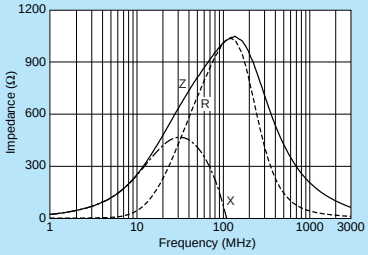
BLM15AG221SN1



BLM15AG601SN1



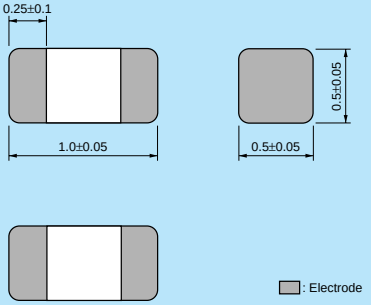
BLM15AG102SN1



BLM15AG_AN Series Gold Plating (0402 Size)

Au plating electrode for wire bonding mount.

■ Dimensions



■ Equivalent Circuit

(Resistance element becomes dominant at high frequencies.)

■ Packaging

Code	Packaging	Minimum Quantity
D	180mm Reel Paper Tape	10000
J	330mm Reel Paper Tape	50000
B	Bulk(Bag)	1000

Refer to pages from p.91 to p.94 for mounting information.

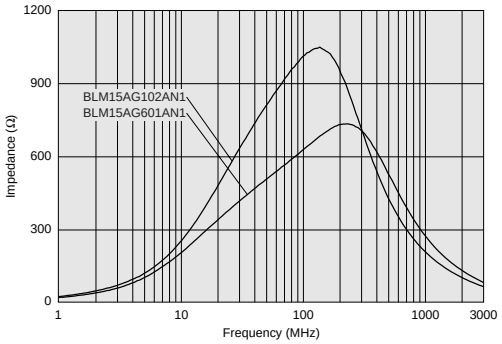
■ Rated Value (☐: packaging code)

Part Number	Impedance (at 100MHz/20°C)	Rated Current	DC Resistance	Operating Temperature Range
BLM15AG601AN1☐	600ohm±25%	300mA	0.6ohm max.	-55°C to +125°C
BLM15AG102AN1☐	1000ohm±25%	200mA	1.0ohm max.	-55°C to +125°C

Number of Circuits: 1

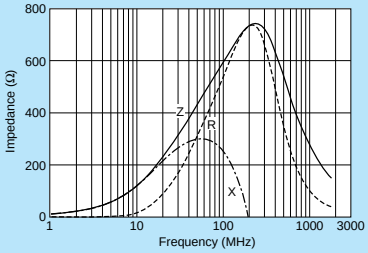
This product is Au plating version designed for wire bonding mount. Be sure that this product is not designed for solder mounting.

■ Impedance-Frequency Characteristics (Main Items)

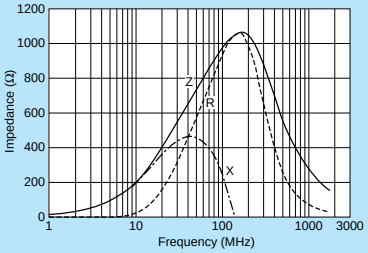


■ Impedance-Frequency Characteristics

BLM15AG601AN1



BLM15AG102AN1



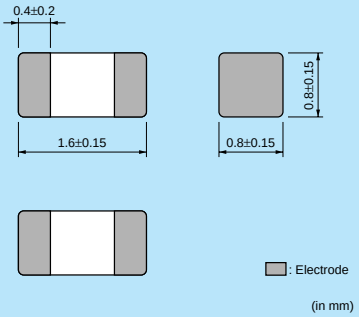
BLM18A Series (0603 Size)

Flow OK Reflow OK

0603 size for general signal lines.

*Please refer to BLM15A for downsizing.

■ Dimensions



■ Equivalent Circuit

(Resistance element becomes dominant at high frequencies.)

■ Packaging

Code	Packaging	Minimum Quantity
D	180mm Reel Paper Tape	4000
J	330mm Reel Paper Tape	10000
B	Bulk(Bag)	1000

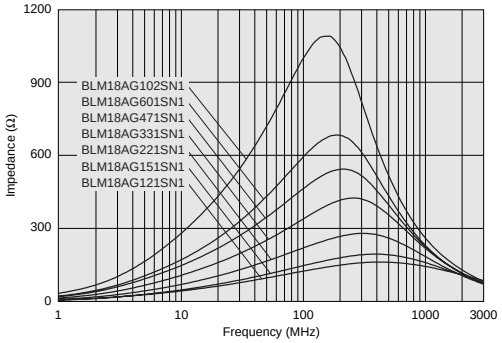
Refer to pages from p.91 to p.94 for mounting information.

■ Rated Value (☐: packaging code)

Part Number	Impedance (at 100MHz/20°C)	Rated Current	DC Resistance	Operating Temperature Range	
BLM18AG121SN1☐	120ohm±25%	500mA	0.18ohm max.	-55°C to +125°C	Kit
BLM18AG151SN1☐	150ohm±25%	500mA	0.25ohm max.	-55°C to +125°C	Kit
BLM18AG221SN1☐	220ohm±25%	500mA	0.25ohm max.	-55°C to +125°C	Kit
BLM18AG331SN1☐	330ohm±25%	500mA	0.30ohm max.	-55°C to +125°C	Kit
BLM18AG471SN1☐	470ohm±25%	500mA	0.35ohm max.	-55°C to +125°C	Kit
BLM18AG601SN1☐	600ohm±25%	500mA	0.38ohm max.	-55°C to +125°C	Kit
BLM18AG102SN1☐	1000ohm±25%	400mA	0.50ohm max.	-55°C to +125°C	Kit

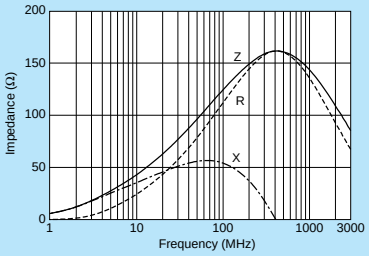
Number of Circuits: 1

■ Impedance-Frequency Characteristics (Main Items)

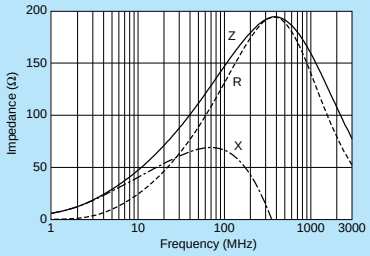


■ Impedance-Frequency Characteristics

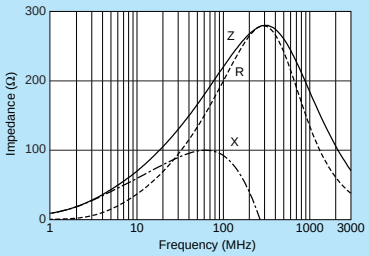
BLM18AG121SN1



BLM18AG151SN1



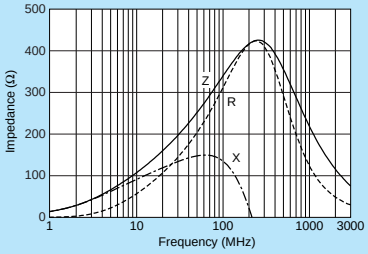
BLM18AG221SN1



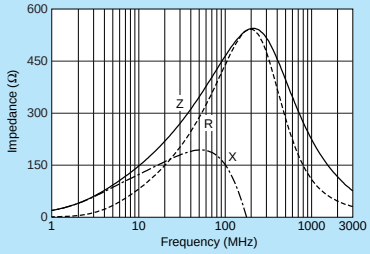
Continued on the following page.

■ Impedance-Frequency Characteristics

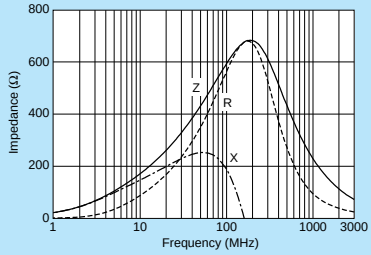
BLM18AG331SN1



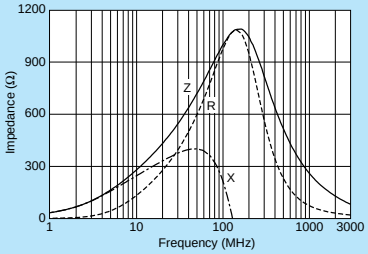
BLM18AG471SN1



BLM18AG601SN1



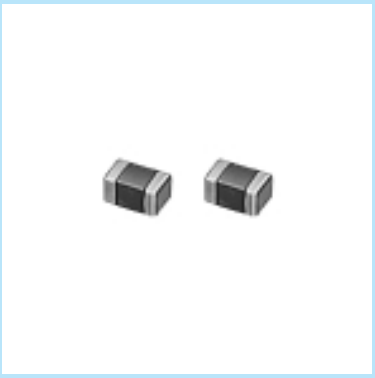
BLM18AG102SN1



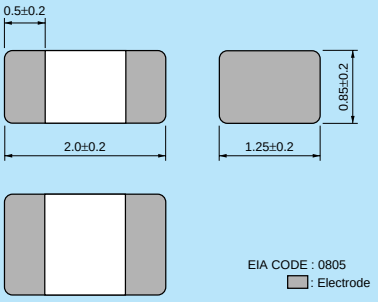
BLM21A Series (0805 Size)

Flow OK Reflow OK

0805 size for general signal lines.



■ Dimensions



■ Equivalent Circuit

(Resistance element becomes dominant at high frequencies.)

■ Packaging

Code	Packaging	Minimum Quantity
D	180mm Reel Paper Tape	4000
J	330mm Reel Paper Tape	10000
B	Bulk(Bag)	1000

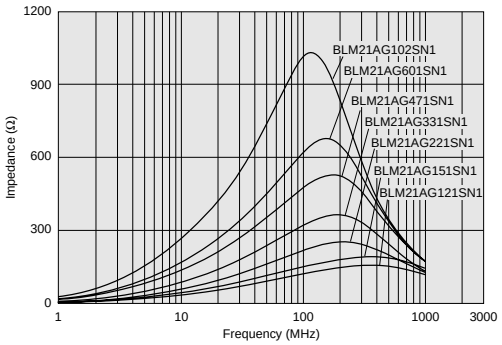
Refer to pages from p.91 to p.94 for mounting information.

■ Rated Value (☐: packaging code)

Part Number	Impedance (at 100MHz/20°C)	Rated Current	DC Resistance	Operating Temperature Range	
BLM21AG121SN1☐	120ohm±25%	200mA	0.15ohm max.	-55°C to +125°C	Kit
BLM21AG151SN1☐	150ohm±25%	200mA	0.15ohm max.	-55°C to +125°C	Kit
BLM21AG221SN1☐	220ohm±25%	200mA	0.20ohm max.	-55°C to +125°C	Kit
BLM21AG331SN1☐	330ohm±25%	200mA	0.25ohm max.	-55°C to +125°C	Kit
BLM21AG471SN1☐	470ohm±25%	200mA	0.25ohm max.	-55°C to +125°C	Kit
BLM21AG601SN1☐	600ohm±25%	200mA	0.30ohm max.	-55°C to +125°C	Kit
BLM21AG102SN1☐	1000ohm±25%	200mA	0.45ohm max.	-55°C to +125°C	Kit

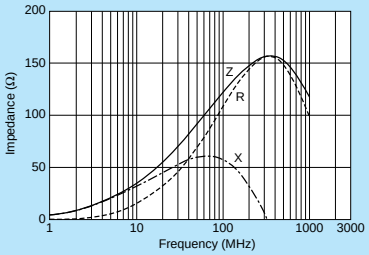
Number of Circuits: 1

■ Impedance-Frequency Characteristics (Main Items)

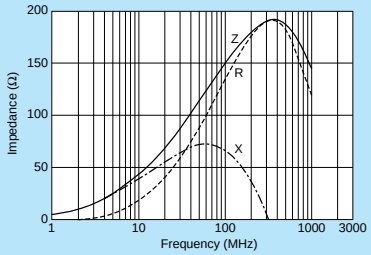


■ Impedance-Frequency Characteristics

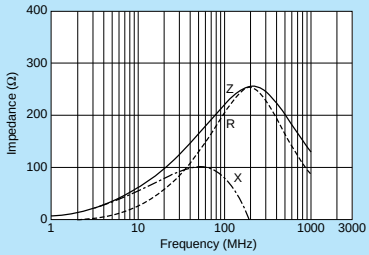
BLM21AG121SN1



BLM21AG151SN1



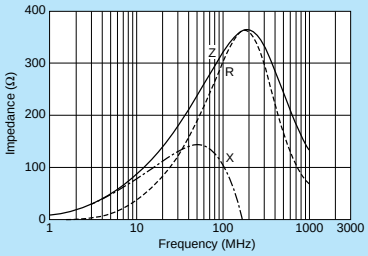
BLM21AG221SN1



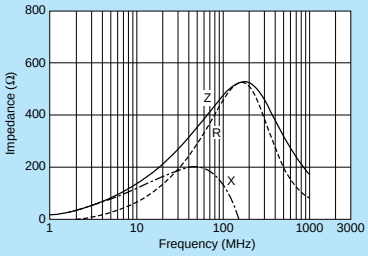
Continued on the following page.

■ Impedance-Frequency Characteristics

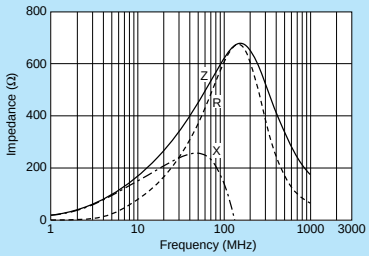
BLM21AG331SN1



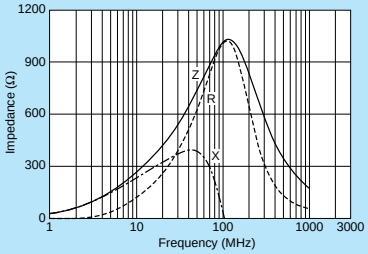
BLM21AG471SN1



BLM21AG601SN1



BLM21AG102SN1

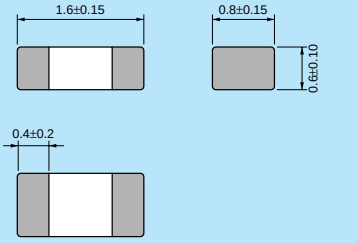


BLM18T Series (0603 Size)

Flow OK Reflow OK

Thin 0603 size for general signal lines.

■ Dimensions



■ Equivalent Circuit

(Resistance element becomes dominant at high frequencies.)

■ Packaging

Code	Packaging	Minimum Quantity
D	180mm Reel Paper Tape	10000
B	Bulk(Bag)	1000

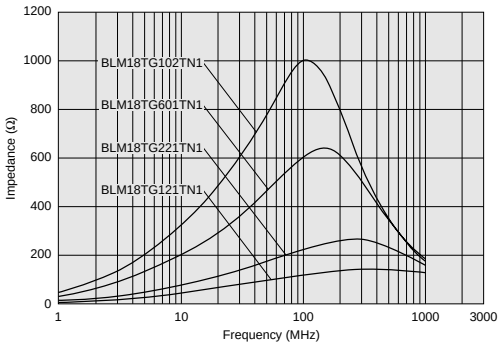
Refer to pages from p.91 to p.94 for mounting information.

■ Rated Value (☐: packaging code)

Part Number	Impedance (at 100MHz/20°C)	Rated Current	DC Resistance	Operating Temperature Range
BLM18TG121TN1☐	120ohm±25%	200mA	0.25ohm max.	-55°C to +125°C
BLM18TG221TN1☐	220ohm±25%	200mA	0.30ohm max.	-55°C to +125°C
BLM18TG601TN1☐	600ohm±25%	200mA	0.45ohm max.	-55°C to +125°C
BLM18TG102TN1☐	1000ohm±25%	100mA	0.60ohm max.	-55°C to +125°C

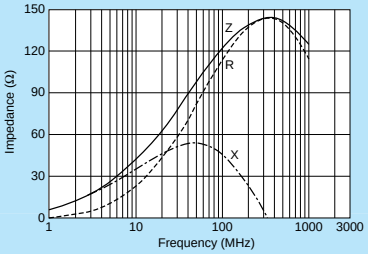
Number of Circuits: 1

■ Impedance-Frequency Characteristics (Main Items)

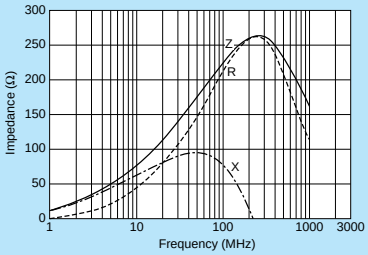


■ Impedance-Frequency Characteristics

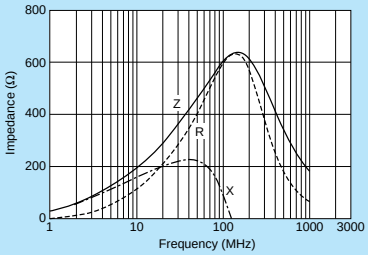
BLM18TG121TN1



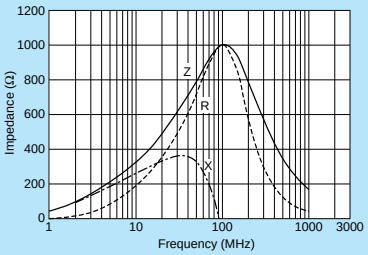
BLM18TG221TN1



BLM18TG601TN1



BLM18TG102TN1



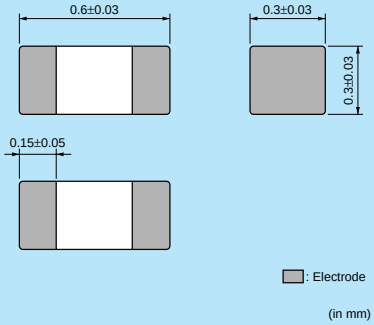
⚠Note • Please read rating and ⚠CAUTION (for storage, operating, rating, soldering, mounting and handling) in this catalog to prevent smoking and/or burning, etc.
• This catalog has only typical specifications because there is no space for detailed specifications. Therefore, please review our product specifications or consult the approval sheet for product specifications before ordering.

BLM03B Series (0201 Size)

Reflow OK

0201 size for high speed signal lines.

■ Dimensions



■ Equivalent Circuit

(Resistance element becomes dominant at high frequencies.)

■ Packaging

Code	Packaging	Minimum Quantity
D	180mm Reel Paper Tape	15000
J	330mm Reel Paper Tape	50000
B	Bulk(Bag)	1000

Refer to pages from p.91 to p.94 for mounting information.

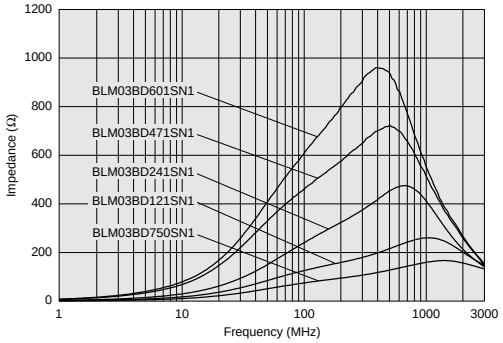
■ Rated Value (☐: packaging code)

Part Number	Impedance (at 100MHz/20°C)	Rated Current	DC Resistance	Operating Temperature Range	
BLM03BD750SN1☐	75ohm±25%	300mA	0.4ohm max.	-55°C to +125°C	Kit
BLM03BD121SN1☐	120ohm±25%	250mA	0.5ohm max.	-55°C to +125°C	Kit
BLM03BD241SN1☐	240ohm±25%	200mA	0.8ohm max.	-55°C to +125°C	Kit
BLM03BD471SN1☐	470ohm±25%	215mA	1.5ohm max.	-55°C to +125°C	Kit
BLM03BD601SN1☐	600ohm±25%	200mA	1.7ohm max.	-55°C to +125°C	Kit
BLM03BB100SN1☐	10ohm±25%	300mA	0.4ohm max.	-55°C to +125°C	Kit
BLM03BB220SN1☐	22ohm±25%	200mA	0.5ohm max.	-55°C to +125°C	Kit
BLM03BB470SN1☐	47ohm±25%	200mA	0.7ohm max.	-55°C to +125°C	Kit
BLM03BB750SN1☐	75ohm±25%	200mA	1.0ohm max.	-55°C to +125°C	Kit
BLM03BB121SN1☐	120ohm±25%	100mA	1.5ohm max.	-55°C to +125°C	Kit
BLM03BC330SN1☐	33ohm±25%	150mA	0.85ohm max.	-55°C to +125°C	New Kit
BLM03BC560SN1☐	56ohm±25%	100mA	1.05ohm max.	-55°C to +125°C	New Kit
BLM03BC800SN1☐	80ohm±25%	100mA	1.40ohm max.	-55°C to +125°C	New Kit

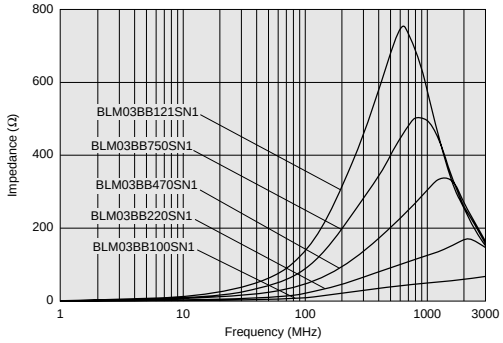
Number of Circuits: 1

■ Impedance-Frequency Characteristics (Main Items)

BLM03BD Series



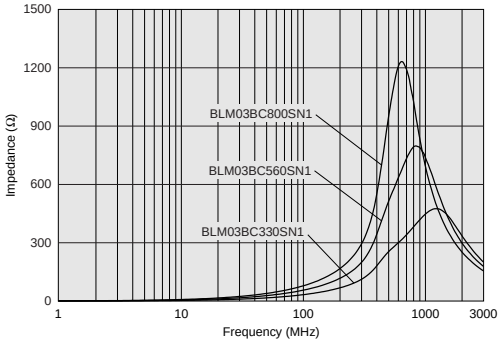
BLM03BB Series



Continued on the following page.

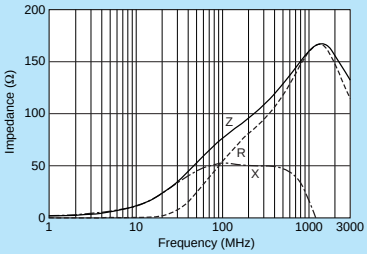
■ Impedance-Frequency Characteristics (Main Items)

BLM03BC Series

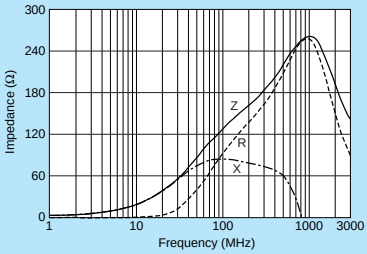


■ Impedance-Frequency Characteristics

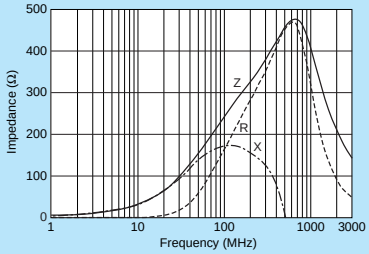
BLM03BD750SN1



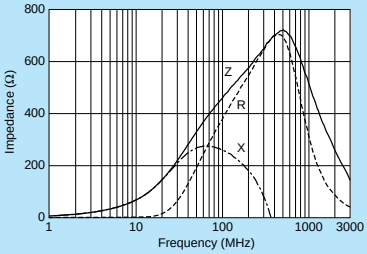
BLM03BD121SN1



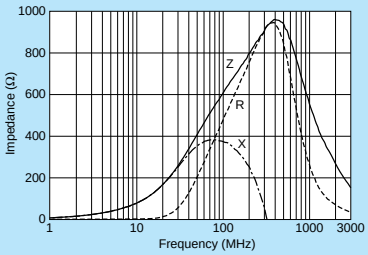
BLM03BD241SN1



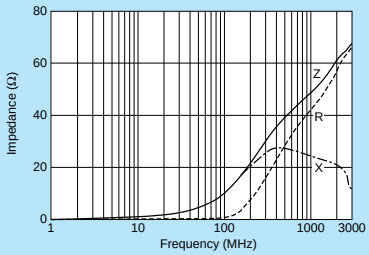
BLM03BD471SN1



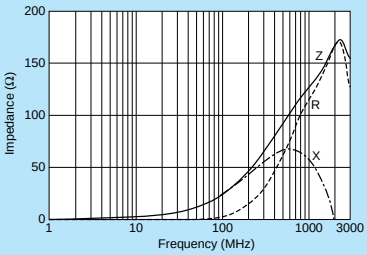
BLM03BD601SN1



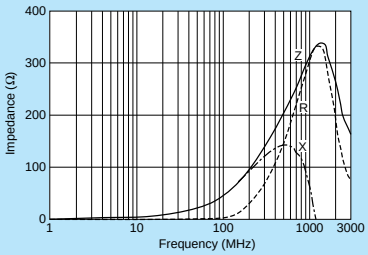
BLM03BB100SN1



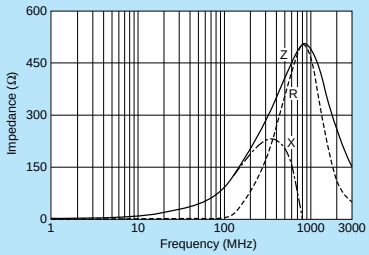
BLM03BB220SN1



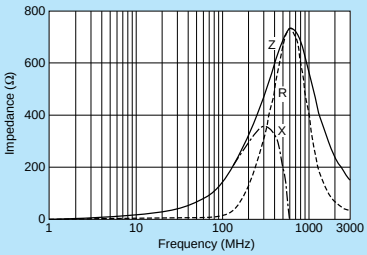
BLM03BB470SN1



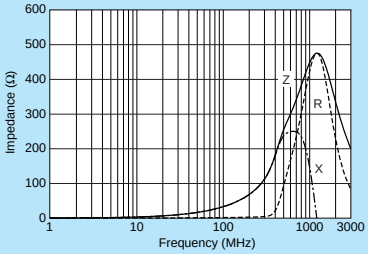
BLM03BB750SN1



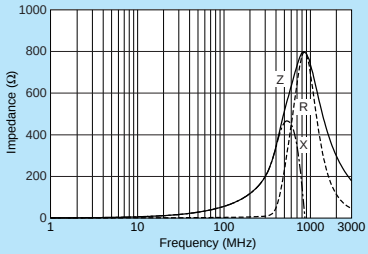
BLM03BB121SN1



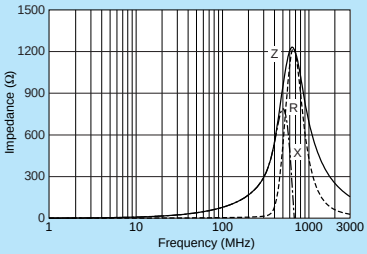
BLM03BC330SN1



BLM03BC560SN1



BLM03BC800SN1

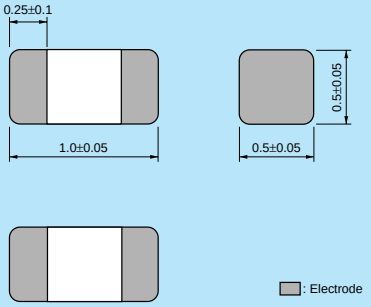


BLM15B Series (0402 Size)

Reflow OK

0402 size for high speed signal lines.

■ Dimensions



■ Equivalent Circuit

(Resistance element becomes dominant at high frequencies.)

■ Packaging

Code	Packaging	Minimum Quantity
D	180mm Reel Paper Tape	10000
J	330mm Reel Paper Tape	50000
B	Bulk(Bag)	1000

Refer to pages from p.91 to p.94 for mounting information.

■ Rated Value (☐: packaging code)

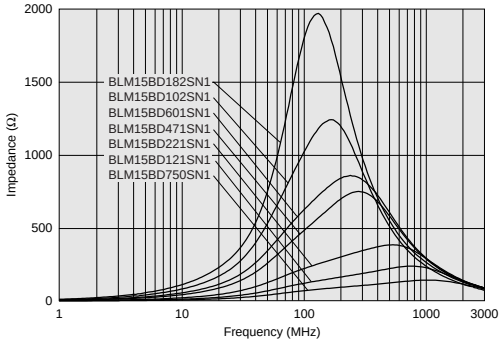
Part Number	Impedance (at 100MHz/20°C)	Rated Current	DC Resistance	Operating Temperature Range	
BLM15BD750SN1☐	75ohm±25%	300mA	0.20ohm max.	-55°C to +125°C	Kit
BLM15BD121SN1☐	120ohm±25%	300mA	0.30ohm max.	-55°C to +125°C	Kit
BLM15BD221SN1☐	220ohm±25%	300mA	0.40ohm max.	-55°C to +125°C	Kit
BLM15BD471SN1☐	470ohm±25%	200mA	0.60ohm max.	-55°C to +125°C	Kit
BLM15BD601SN1☐	600ohm±25%	200mA	0.65ohm max.	-55°C to +125°C	Kit
BLM15BD102SN1☐	1000ohm±25%	200mA	0.90ohm max.	-55°C to +125°C	Kit
BLM15BD182SN1☐	1800ohm±25%	100mA	1.40ohm max.	-55°C to +125°C	Kit
BLM15BB050SN1☐	5ohm±25%	500mA	0.08ohm max.	-55°C to +125°C	Kit
BLM15BB100SN1☐	10ohm±25%	300mA	0.10ohm max.	-55°C to +125°C	Kit
BLM15BB220SN1☐	22ohm±25%	300mA	0.20ohm max.	-55°C to +125°C	Kit
BLM15BB470SN1☐	47ohm±25%	300mA	0.35ohm max.	-55°C to +125°C	Kit
BLM15BB750SN1☐	75ohm±25%	300mA	0.40ohm max.	-55°C to +125°C	Kit
BLM15BB121SN1☐	120ohm±25%	300mA	0.55ohm max.	-55°C to +125°C	Kit
BLM15BB221SN1☐	220ohm±25%	200mA	0.80ohm max.	-55°C to +125°C	Kit
BLM15BC121SN1☐	120ohm±25%	350mA	0.45ohm max.	-55°C to +125°C	Kit
BLM15BC241SN1☐	240ohm±25%	250mA	0.70ohm max.	-55°C to +125°C	Kit
BLM15BA050SN1☐	5ohm±25%	300mA	0.10ohm max.	-55°C to +125°C	Kit
BLM15BA100SN1☐	10ohm±25%	300mA	0.20ohm max.	-55°C to +125°C	Kit
BLM15BA220SN1☐	22ohm±25%	300mA	0.30ohm max.	-55°C to +125°C	Kit
BLM15BA330SN1☐	33ohm±25%	300mA	0.40ohm max.	-55°C to +125°C	Kit
BLM15BA470SN1☐	47ohm±25%	200mA	0.60ohm max.	-55°C to +125°C	Kit
BLM15BA750SN1☐	75ohm±25%	200mA	0.80ohm max.	-55°C to +125°C	Kit

Number of Circuits: 1

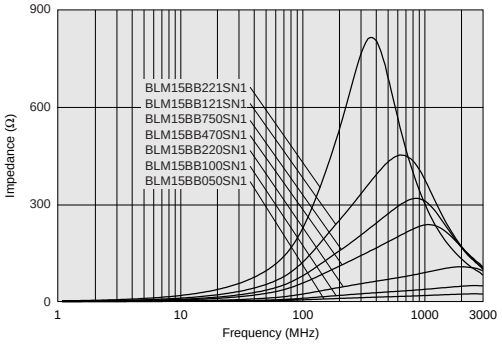
Continued on the following page.

■ Impedance-Frequency Characteristics (Main Items)

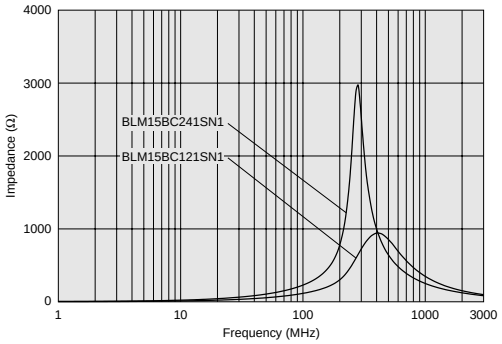
BLM15BD Series



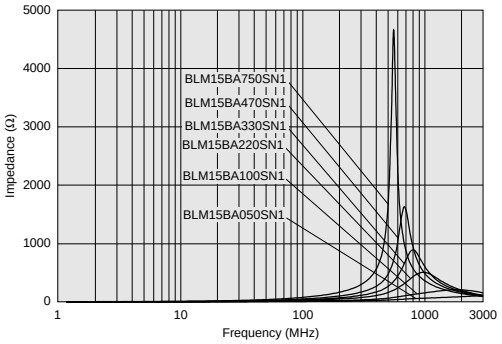
BLM15BB Series



BLM15BC Series



BLM15BA Series



■ Impedance-Frequency Characteristics

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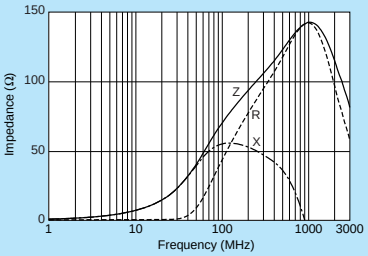

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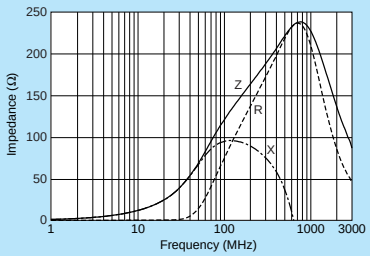

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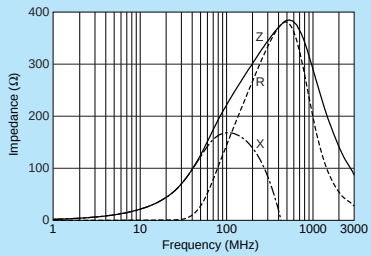

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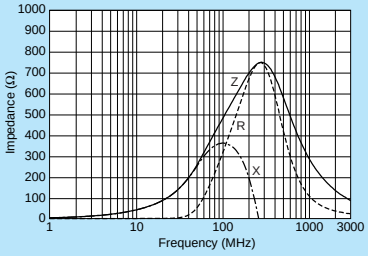

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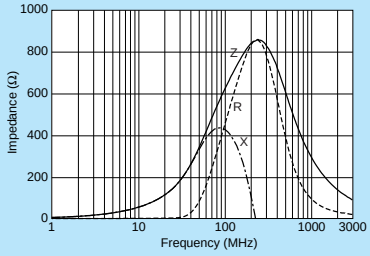

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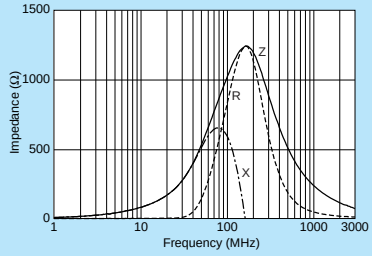
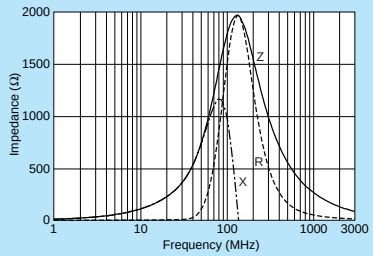


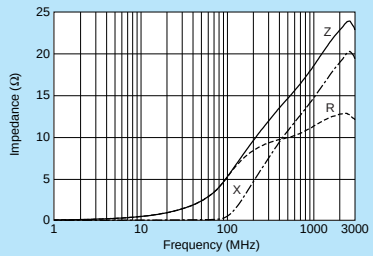
Continued on the following page.

■ Impedance-Frequency Characteristics

BLM15BD182SN1



BLM15BB050SN1



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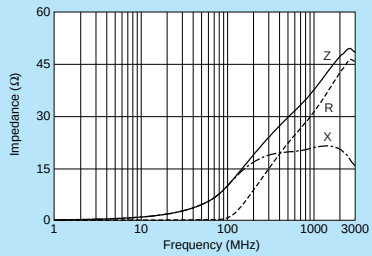

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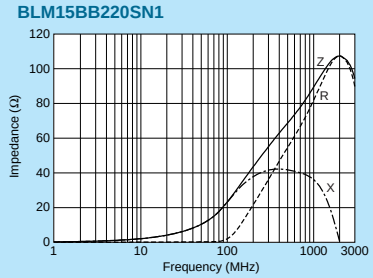

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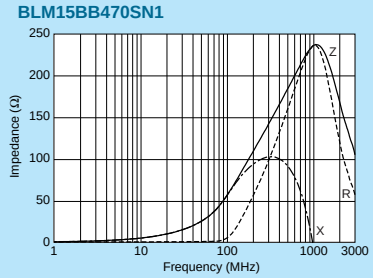

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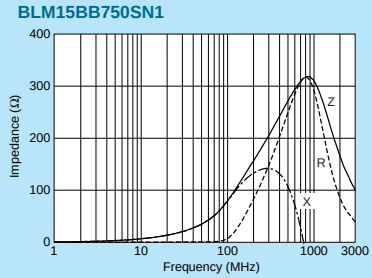

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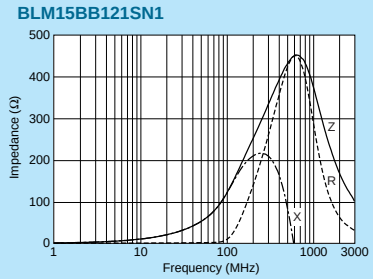

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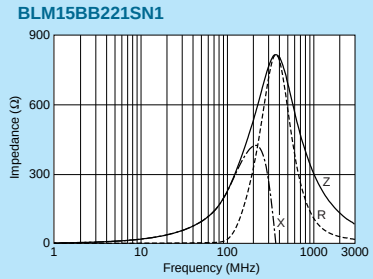

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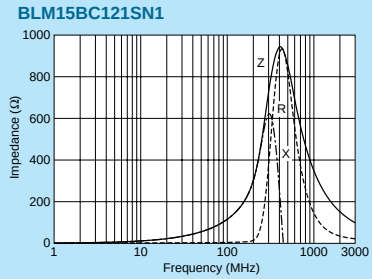

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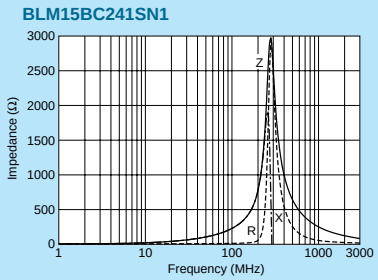

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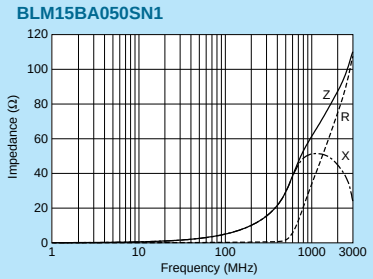
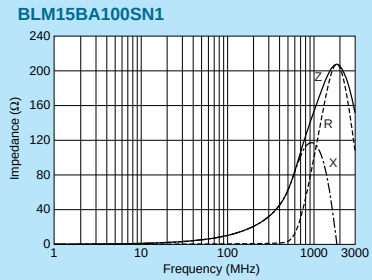
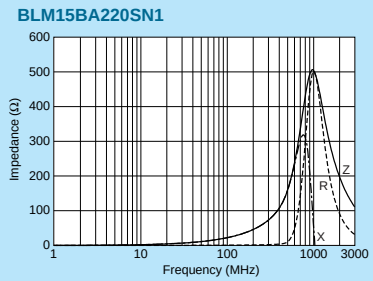


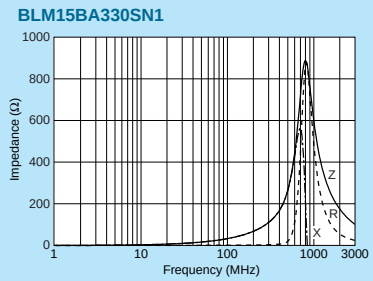
BLM15BA100SN1



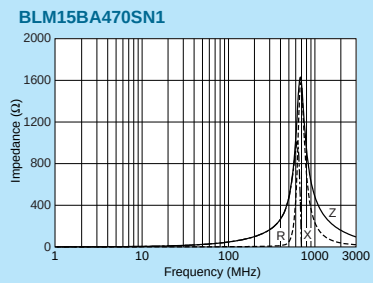
BLM15BA220SN1



BLM15BA330SN1



BLM15BA470SN1



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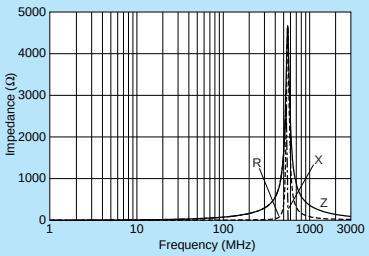
■ Impedance-Frequency Characteristics

BLM15BA750SN1



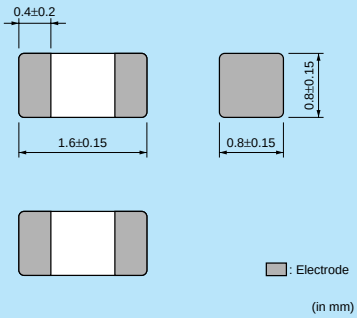
BLM18B Series (0603 Size)

Flow OK Reflow OK

0603 size for high speed signal lines.

*Please refer to BLM15B for downsizing.

■ Dimensions



■ Equivalent Circuit

(Resistance element becomes dominant at high frequencies.)

■ Packaging

Code	Packaging	Minimum Quantity
D	180mm Reel Paper Tape	4000
J	330mm Reel Paper Tape	10000
B	Bulk(Bag)	1000

Refer to pages from p.91 to p.94 for mounting information.

■ Rated Value (☐: packaging code)

Part Number	Impedance (at 100MHz/20°C)	Rated Current	DC Resistance	Operating Temperature Range	
BLM18BD470SN1☐	47ohm±25%	500mA	0.30ohm max.	-55°C to +125°C	Kit
BLM18BD121SN1☐	120ohm±25%	200mA	0.40ohm max.	-55°C to +125°C	Kit
BLM18BD151SN1☐	150ohm±25%	200mA	0.40ohm max.	-55°C to +125°C	Kit
BLM18BD221SN1☐	220ohm±25%	200mA	0.45ohm max.	-55°C to +125°C	Kit
BLM18BD331SN1☐	330ohm±25%	200mA	0.50ohm max.	-55°C to +125°C	Kit
BLM18BD421SN1☐	420ohm±25%	200mA	0.55ohm max.	-55°C to +125°C	Kit
BLM18BD471SN1☐	470ohm±25%	200mA	0.55ohm max.	-55°C to +125°C	Kit
BLM18BD601SN1☐	600ohm±25%	200mA	0.65ohm max.	-55°C to +125°C	Kit
BLM18BD102SN1☐	1000ohm±25%	100mA	0.85ohm max.	-55°C to +125°C	Kit
BLM18BD152SN1☐	1500ohm±25%	50mA	1.20ohm max.	-55°C to +125°C	Kit
BLM18BD182SN1☐	1800ohm±25%	50mA	1.50ohm max.	-55°C to +125°C	Kit
BLM18BD222SN1☐	2200ohm±25%	50mA	1.50ohm max.	-55°C to +125°C	Kit
BLM18BD252SN1☐	2500ohm±25%	50mA	1.50ohm max.	-55°C to +125°C	Kit
BLM18BB050SN1☐	5ohm±25%	700mA	0.05ohm max.	-55°C to +125°C	Kit
BLM18BB100SN1☐	10ohm±25%	700mA	0.10ohm max.	-55°C to +125°C	Kit
BLM18BB220SN1☐	22ohm±25%	600mA	0.20ohm max.	-55°C to +125°C	Kit
BLM18BB470SN1☐	47ohm±25%	550mA	0.25ohm max.	-55°C to +125°C	Kit
BLM18BB600SN1☐	60ohm±25%	550mA	0.25ohm max.	-55°C to +125°C	Kit
BLM18BB750SN1☐	75ohm±25%	500mA	0.30ohm max.	-55°C to +125°C	Kit
BLM18BB121SN1☐	120ohm±25%	500mA	0.30ohm max.	-55°C to +125°C	Kit
BLM18BB141SN1☐	140ohm±25%	450mA	0.35ohm max.	-55°C to +125°C	
BLM18BB151SN1☐	150ohm±25%	450mA	0.37ohm max.	-55°C to +125°C	Kit
BLM18BB221SN1☐	220ohm±25%	450mA	0.45ohm max.	-55°C to +125°C	Kit
BLM18BB331SN1☐	330ohm±25%	400mA	0.58ohm max.	-55°C to +125°C	Kit
BLM18BB471SN1☐	470ohm±25%	300mA	0.85ohm max.	-55°C to +125°C	Kit
BLM18BA050SN1☐	5ohm±25%	500mA	0.20ohm max.	-55°C to +125°C	Kit
BLM18BA100SN1☐	10ohm±25%	500mA	0.25ohm max.	-55°C to +125°C	Kit
BLM18BA220SN1☐	22ohm±25%	500mA	0.35ohm max.	-55°C to +125°C	
BLM18BA470SN1☐	47ohm±25%	300mA	0.55ohm max.	-55°C to +125°C	Kit
BLM18BA750SN1☐	75ohm±25%	300mA	0.70ohm max.	-55°C to +125°C	Kit
BLM18BA121SN1☐	120ohm±25%	200mA	0.90ohm max.	-55°C to +125°C	Kit

Number of Circuits: 1

Continued on the following page.

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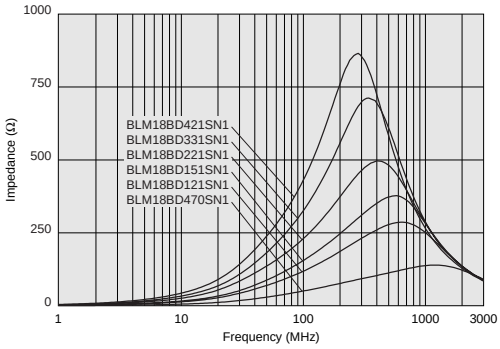
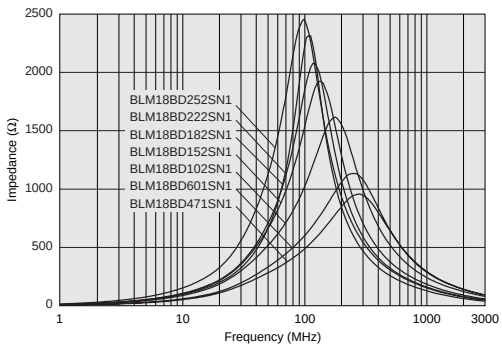
■ Impedance-Frequency Characteristics (Main Items)

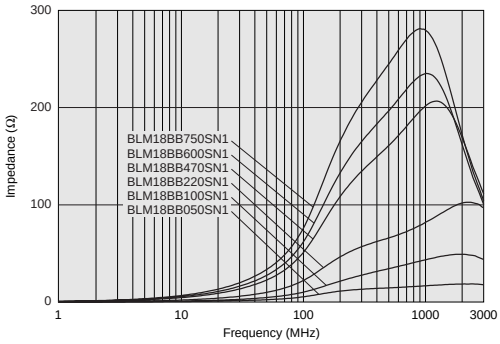
BLM18BD Series (47ohm to 420ohm)



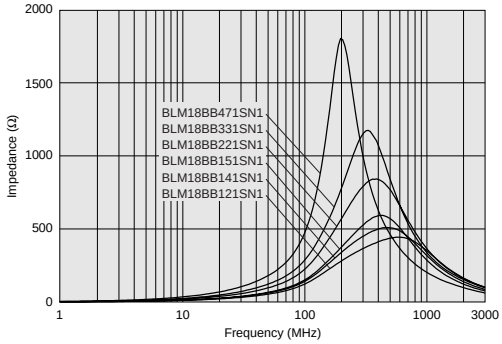
BLM18BD Series (470ohm to 2500ohm)



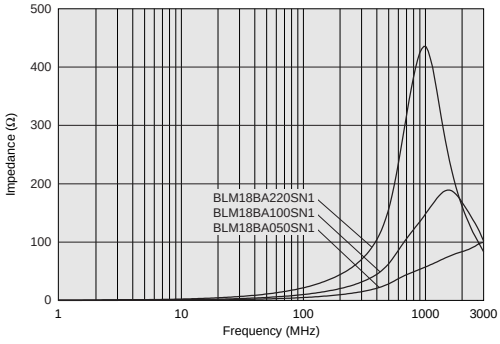
BLM18BB Series (5ohm to 75ohm)



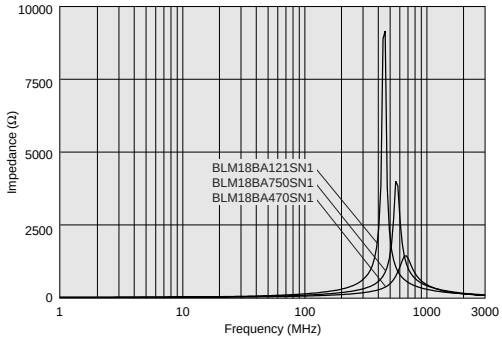
BLM18BB Series (120ohm to 470ohm)



BLM18BA Series (5ohm to 22ohm)

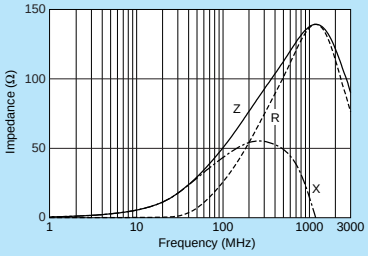


BLM18BA Series (47ohm to 120ohm)

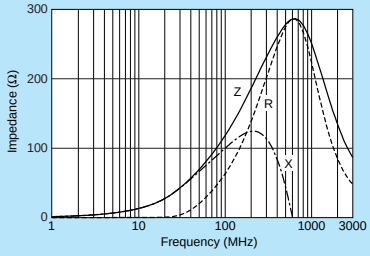


■ Impedance-Frequency Characteristics

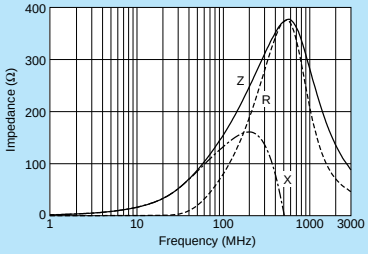
BLM18BD470SN1



BLM18BD121SN1



BLM18BD151SN1



Continued on the following page.

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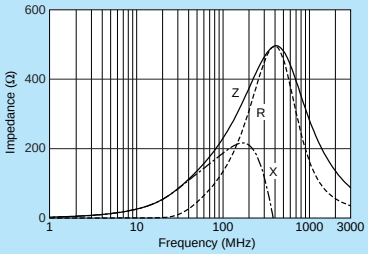
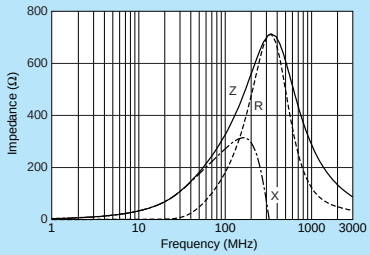
■ Impedance-Frequency Characteristics

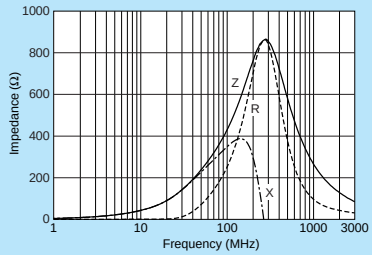
BLM18BD221SN1



BLM18BD331SN1



BLM18BD421SN1



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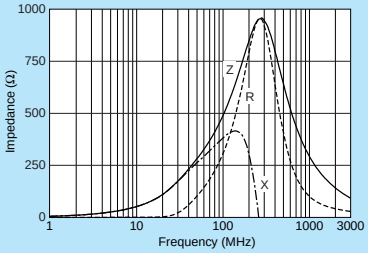

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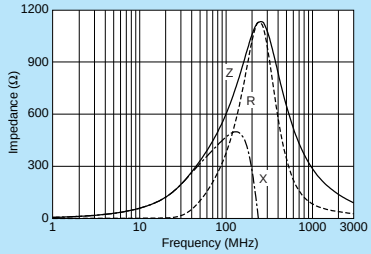

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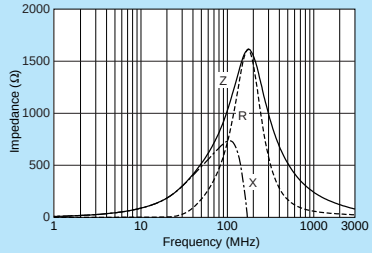

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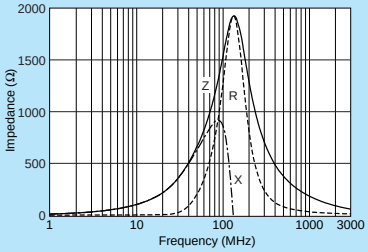

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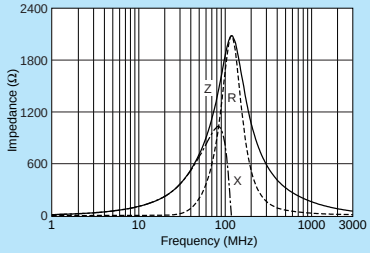

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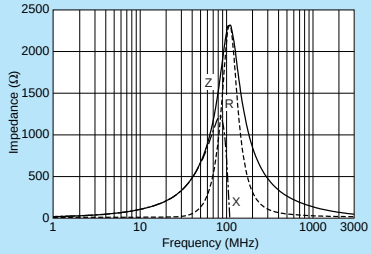

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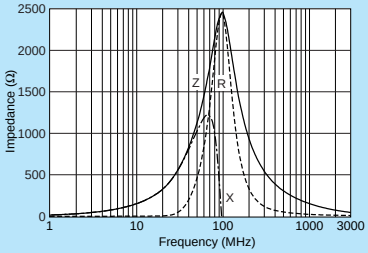

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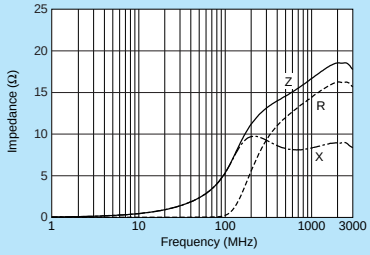

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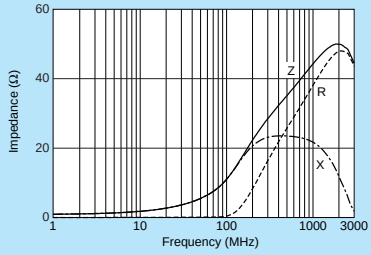

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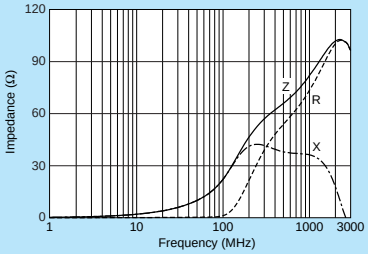

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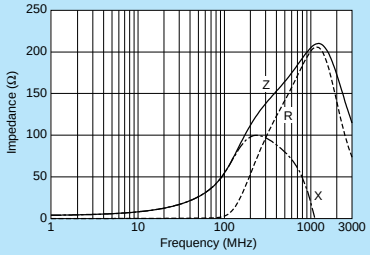

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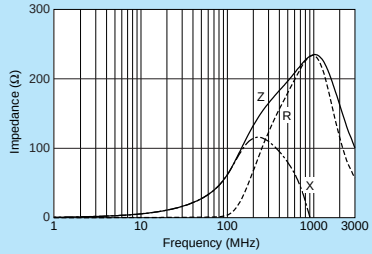

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■ Impedance-Frequency Characteristics

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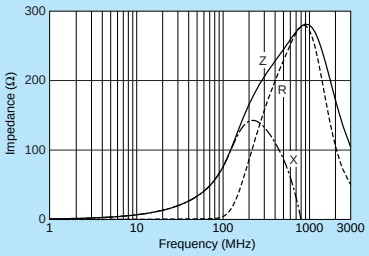

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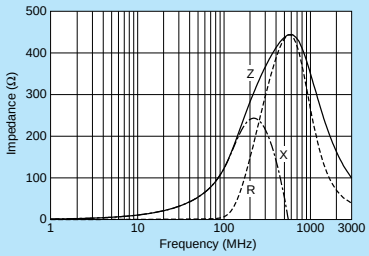

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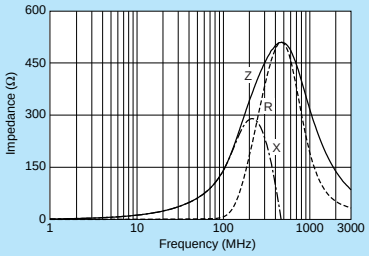

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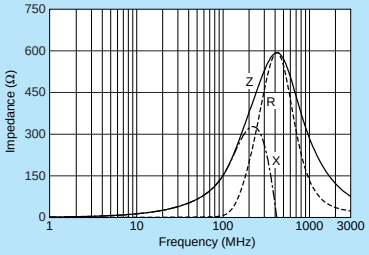

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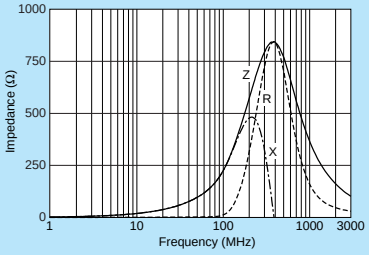

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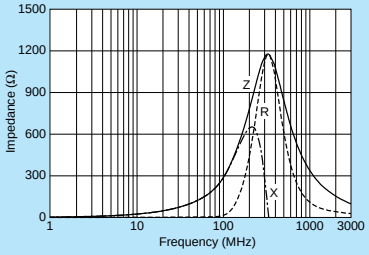

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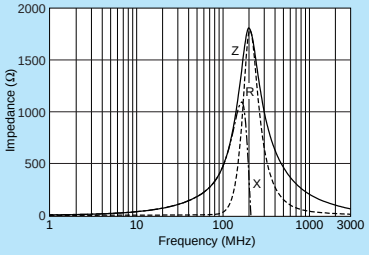

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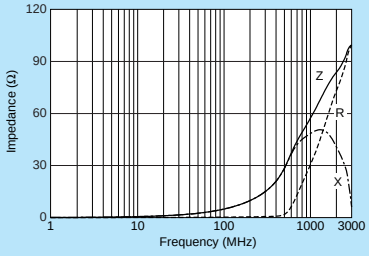

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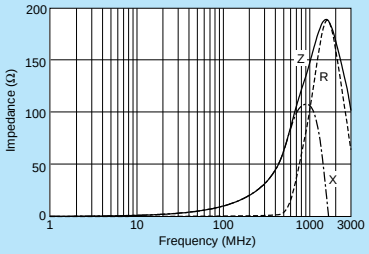

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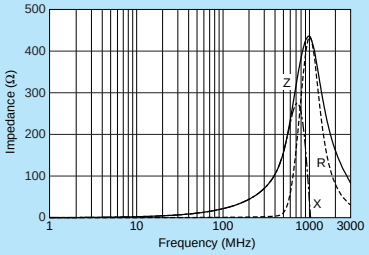

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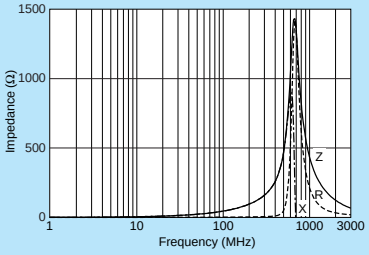

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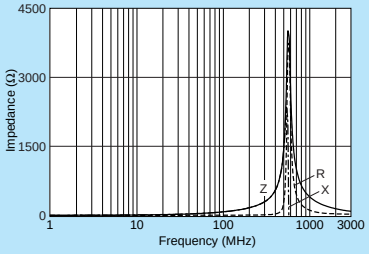

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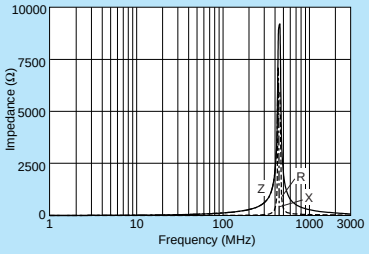
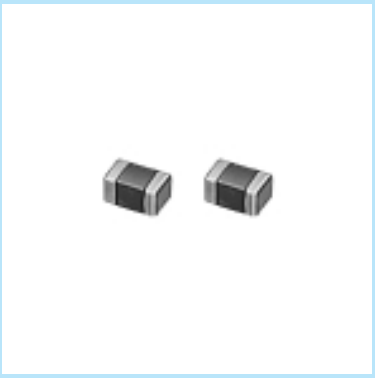


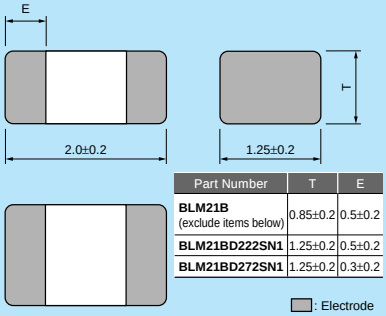
BLM21B Series (0805 Size)

Flow OK Reflow OK

0805 size for high speed signal lines.



■ Dimensions



Part Number	T	E
BLM21B (exclude items below)	0.85±0.2	0.5±0.2
BLM21BD222SN1	1.25±0.2	0.5±0.2
BLM21BD272SN1	1.25±0.2	0.3±0.2

: Electrode

(in mm)

■ Equivalent Circuit

(Resistance element becomes dominant at high frequencies.)

■ Packaging

• All except **BLM21BD222SN1/21BD272SN1**

Code	Packaging	Minimum Quantity
D	180mm Reel Paper Tape	4000
J	330mm Reel Paper Tape	10000
B	Bulk(Bag)	1000

• **BLM21BD222SN1/21BD272SN1** only

Code	Packaging	Minimum Quantity
L	180mm Reel Plastic Tape	3000
K	330mm Reel Plastic Tape	10000
B	Bulk(Bag)	1000

Refer to pages from p.91 to p.94 for mounting information.

■ Rated Value (☐: packaging code)

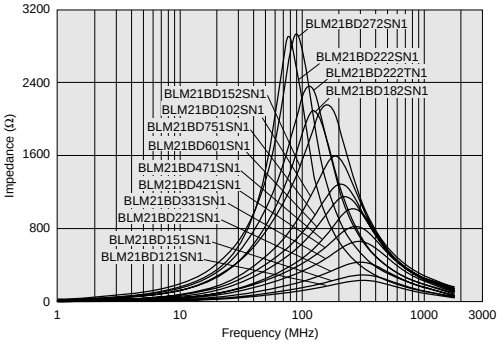
Part Number	Impedance (at 100MHz/20°C)	Rated Current	DC Resistance	Operating Temperature Range	
BLM21BD121SN1☐	120ohm±25%	200mA	0.25ohm max.	-55°C to +125°C	Kit
BLM21BD151SN1☐	150ohm±25%	200mA	0.25ohm max.	-55°C to +125°C	
BLM21BD221SN1☐	220ohm±25%	200mA	0.25ohm max.	-55°C to +125°C	Kit
BLM21BD331SN1☐	330ohm±25%	200mA	0.30ohm max.	-55°C to +125°C	
BLM21BD421SN1☐	420ohm±25%	200mA	0.30ohm max.	-55°C to +125°C	Kit
BLM21BD471SN1☐	470ohm±25%	200mA	0.35ohm max.	-55°C to +125°C	Kit
BLM21BD601SN1☐	600ohm±25%	200mA	0.35ohm max.	-55°C to +125°C	Kit
BLM21BD751SN1☐	750ohm±25%	200mA	0.40ohm max.	-55°C to +125°C	
BLM21BD102SN1☐	1000ohm±25%	200mA	0.40ohm max.	-55°C to +125°C	Kit
BLM21BD152SN1☐	1500ohm±25%	200mA	0.45ohm max.	-55°C to +125°C	Kit
BLM21BD182SN1☐	1800ohm±25%	200mA	0.50ohm max.	-55°C to +125°C	Kit
BLM21BD222TN1☐	2200ohm±25%	200mA	0.60ohm max.	-55°C to +125°C	Kit
BLM21BD222SN1☐	2250ohm(Typ.)	200mA	0.60ohm max.	-55°C to +125°C	Kit
BLM21BD272SN1☐	2700ohm±25%	200mA	0.80ohm max.	-55°C to +125°C	Kit
BLM21BB050SN1☐	5ohm±25%	500mA	0.07ohm max.	-55°C to +125°C	Kit
BLM21BB600SN1☐	60ohm±25%	200mA	0.20ohm max.	-55°C to +125°C	Kit
BLM21BB750SN1☐	75ohm±25%	200mA	0.25ohm max.	-55°C to +125°C	Kit
BLM21BB121SN1☐	120ohm±25%	200mA	0.25ohm max.	-55°C to +125°C	Kit
BLM21BB151SN1☐	150ohm±25%	200mA	0.25ohm max.	-55°C to +125°C	
BLM21BB201SN1☐	200ohm±25%	200mA	0.35ohm max.	-55°C to +125°C	
BLM21BB221SN1☐	220ohm±25%	200mA	0.35ohm max.	-55°C to +125°C	Kit
BLM21BB331SN1☐	330ohm±25%	200mA	0.40ohm max.	-55°C to +125°C	Kit
BLM21BB471SN1☐	470ohm±25%	200mA	0.45ohm max.	-55°C to +125°C	Kit

Number of Circuits: 1

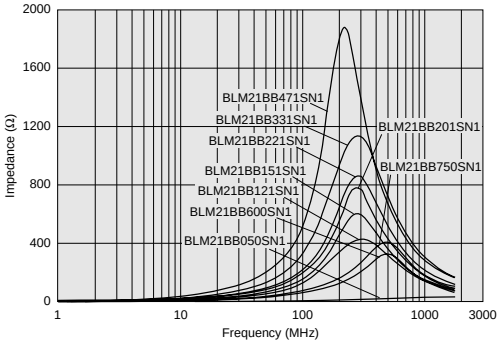
Continued on the following page.

■ Impedance-Frequency Characteristics (Main Items)

BLM21BD Series



BLM21BB Series



■ Impedance-Frequency Characteristics

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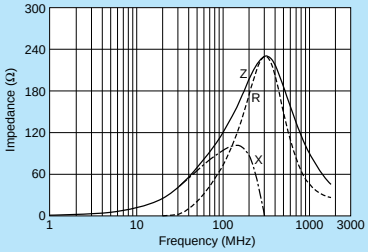

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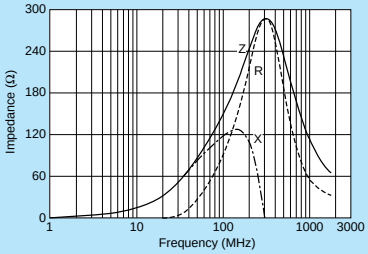

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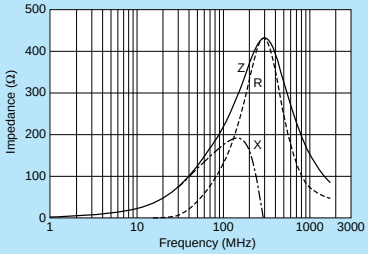

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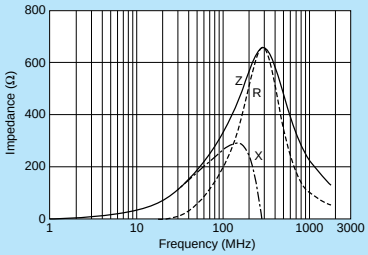

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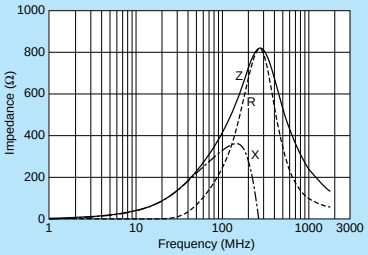

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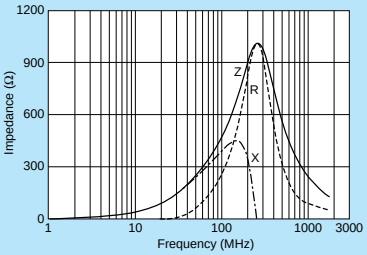

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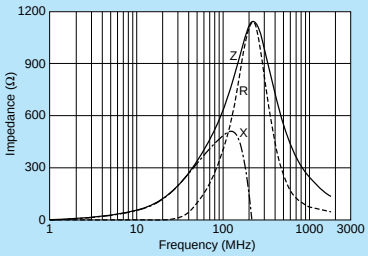

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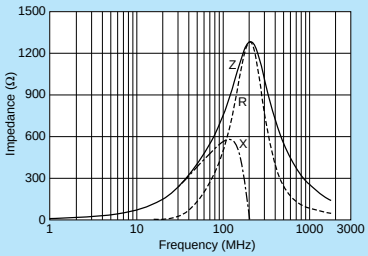

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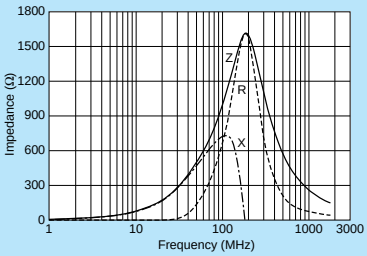

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■ Impedance-Frequency Characteristics

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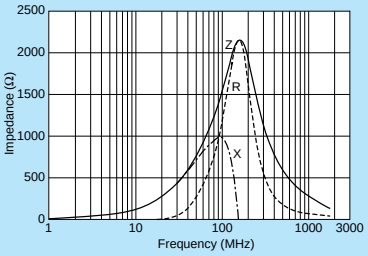

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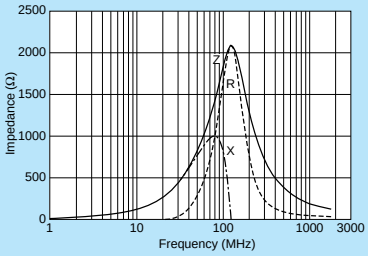

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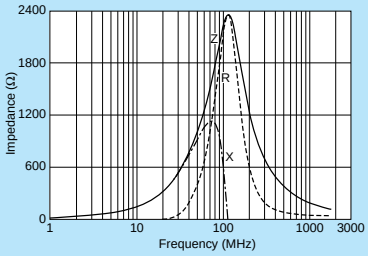

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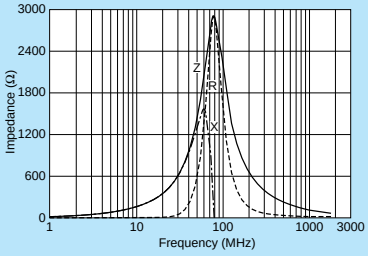

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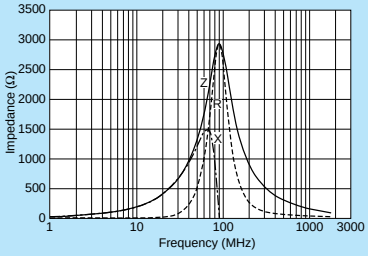

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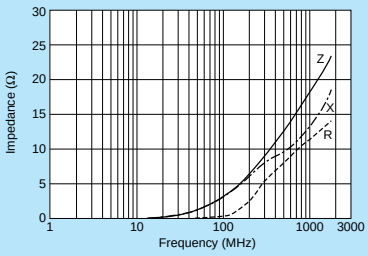

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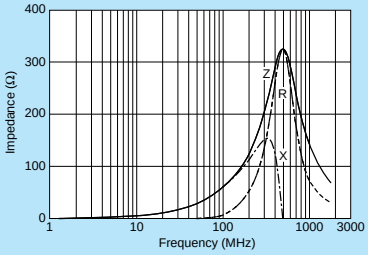

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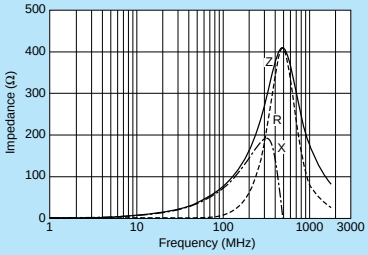
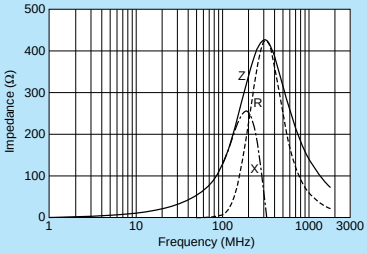
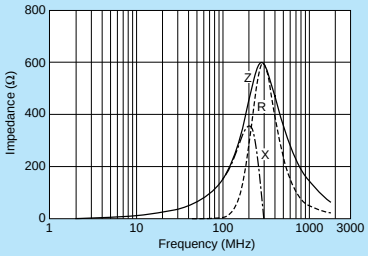


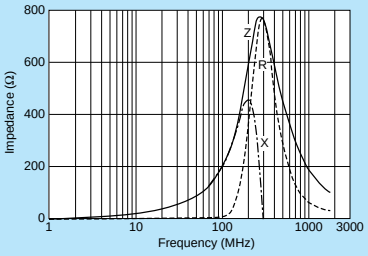
BLM21BB121SN1



BLM21BB151SN1



BLM21BB201SN1



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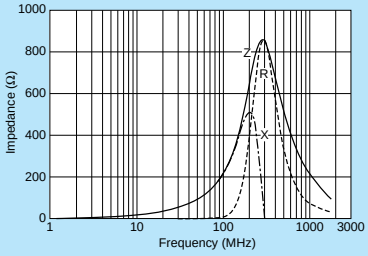

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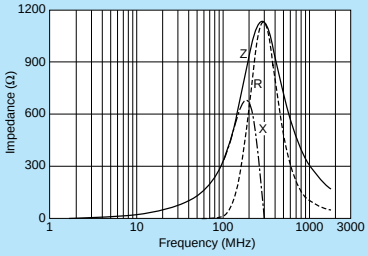
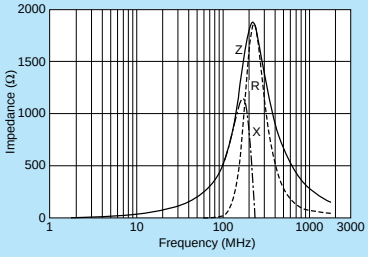


BLM21BB471SN1

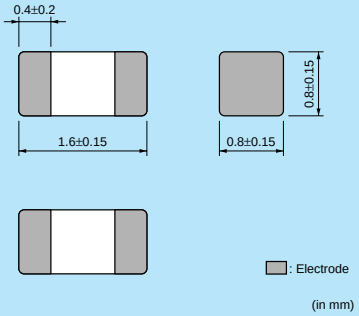


BLM18R Series (0603 Size)

Flow OK Reflow OK

For digital I/F. Reduce the distortion of waveform created by resonance.

■ Dimensions



■ Equivalent Circuit

(Resistance element becomes dominant at high frequencies.)

■ Packaging

Code	Packaging	Minimum Quantity
D	180mm Reel Paper Tape	4000
J	330mm Reel Paper Tape	10000
B	Bulk(Bag)	1000

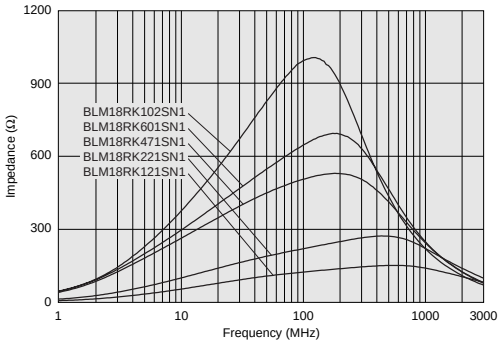
Refer to pages from p.91 to p.94 for mounting information.

■ Rated Value (☐: packaging code)

Part Number	Impedance (at 100MHz/20°C)	Rated Current	DC Resistance	Operating Temperature Range	
BLM18RK121SN1☐	120ohm±25%	200mA	0.25ohm max.	-55°C to +125°C	Kit
BLM18RK221SN1☐	220ohm±25%	200mA	0.30ohm max.	-55°C to +125°C	
BLM18RK471SN1☐	470ohm±25%	200mA	0.50ohm max.	-55°C to +125°C	Kit
BLM18RK601SN1☐	600ohm±25%	200mA	0.60ohm max.	-55°C to +125°C	Kit
BLM18RK102SN1☐	1000ohm±25%	200mA	0.80ohm max.	-55°C to +125°C	Kit

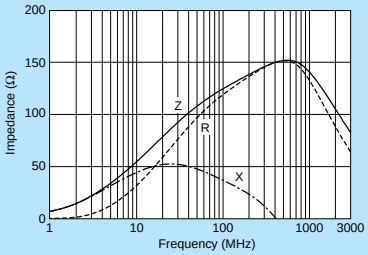
Number of Circuits: 1

■ Impedance-Frequency Characteristics (Main Items)

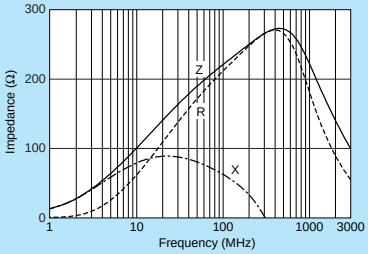


■ Impedance-Frequency Characteristics

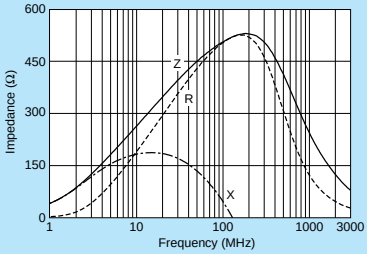
BLM18RK121SN1



BLM18RK221SN1



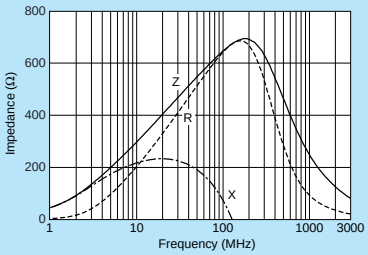
BLM18RK471SN1



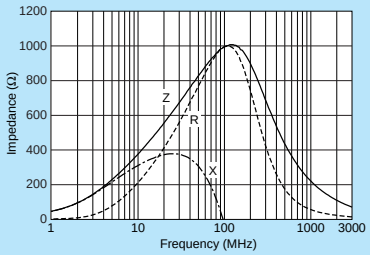
Continued on the following page.

Impedance-Frequency Characteristics

BLM18RK601SN1



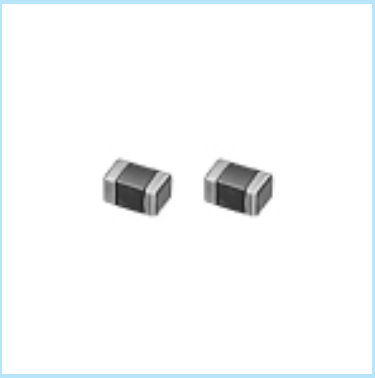
BLM18RK102SN1



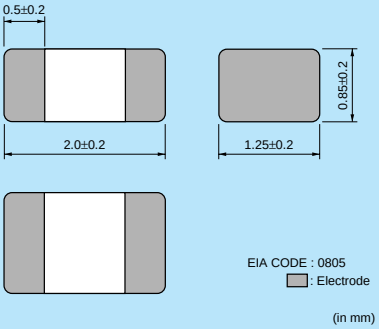
BLM21R Series (0805 Size)

Flow OK Reflow OK

For digital I/F. Reduce the distortion of waveform created by resonance.



■ Dimensions



■ Equivalent Circuit

(Resistance element becomes dominant at high frequencies.)

■ Packaging

Code	Packaging	Minimum Quantity
D	180mm Reel Paper Tape	4000
J	330mm Reel Paper Tape	10000
B	Bulk(Bag)	1000

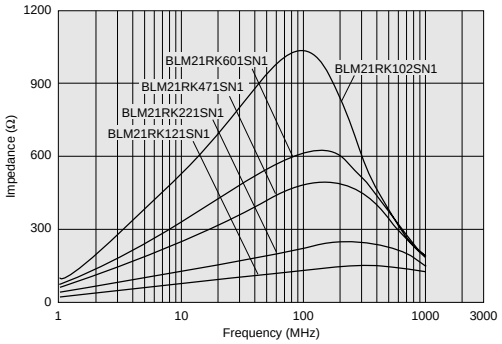
Refer to pages from p.91 to p.94 for mounting information.

■ Rated Value (☐: packaging code)

Part Number	Impedance (at 100MHz/20°C)	Rated Current	DC Resistance	Operating Temperature Range
BLM21RK121SN1☐	120ohm±25%	200mA	0.15ohm max.	-55°C to +125°C
BLM21RK221SN1☐	220ohm±25%	200mA	0.20ohm max.	-55°C to +125°C
BLM21RK471SN1☐	470ohm±25%	200mA	0.25ohm max.	-55°C to +125°C
BLM21RK601SN1☐	600ohm±25%	200mA	0.30ohm max.	-55°C to +125°C
BLM21RK102SN1☐	1000ohm±25%	200mA	0.50ohm max.	-55°C to +125°C

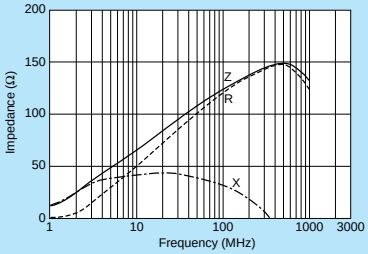
Number of Circuits: 1

■ Impedance-Frequency Characteristics (Main Items)

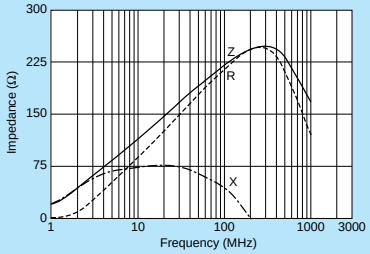


■ Impedance-Frequency Characteristics

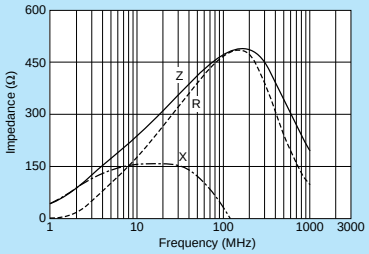
BLM21RK121SN1



BLM21RK221SN1



BLM21RK471SN1



Continued on the following page.

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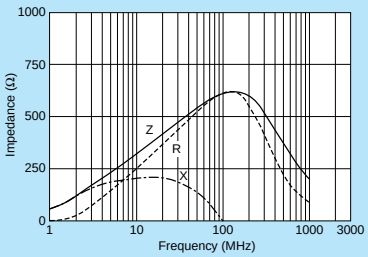
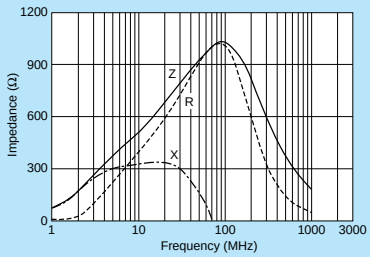
• This catalog has only typical specifications because there is no space for detailed specifications. Therefore, please review our product specifications or consult the approval sheet for product specifications before ordering.

■ Impedance-Frequency Characteristics

BLM21RK601SN1

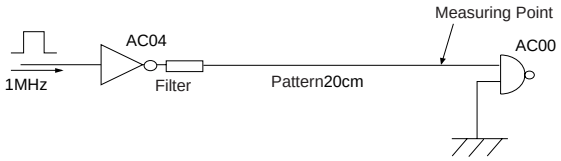


BLM21RK102SN1



Waveform Distortion Suppressing Performance of BLM□□R Series

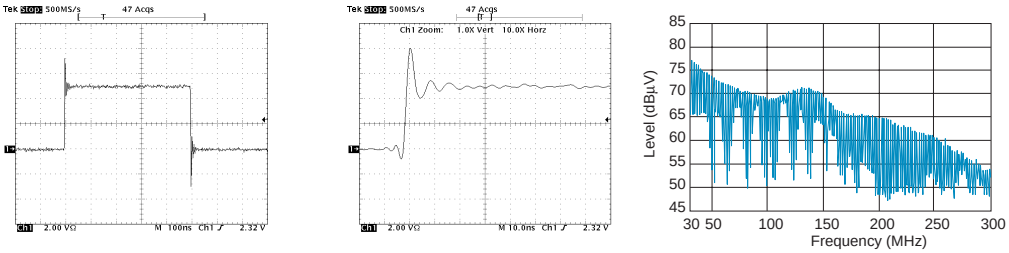
Measuring Circuits



Type of Filter	EMI Suppression Effect / Description

Initial (No filter)

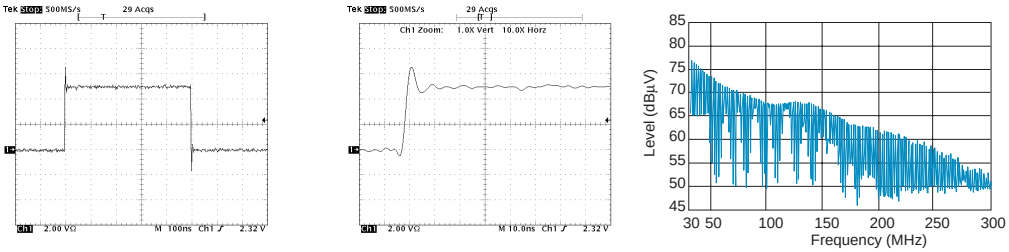
Signal waveform (100nsec/div, 2V/div) | Expand (10nsec/div, 2V/div) | Spectrum



Ringing is caused on the signal waveform.
Such ringing contains several hundred MHz harmonic components and generates noise.

Resister (47Ω) is used

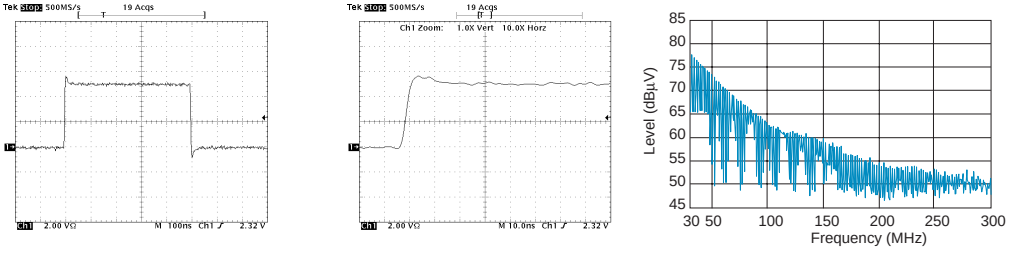
Signal waveform (100nsec/div, 2V/div) | Expand (10nsec/div, 2V/div) | Spectrum



Comparing initial waveform, ringing is suppressed a little.
However there still remains high level waveform distortion.

BLM18RK221SN1 (220Ω at 100MHz) is used

Signal waveform (100nsec/div, 2V/div) | Expand (10nsec/div, 2V/div) | Spectrum



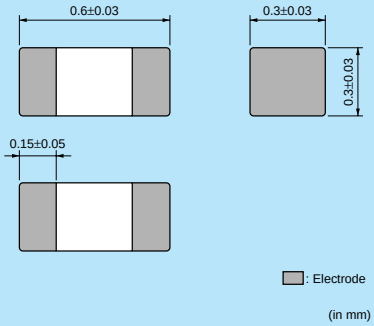
BLM18R has excellent performance for noise suppression and waveform distortion suppression.
BLM18R suppresses drastically not only spectrum level in more than 100MHz range but waveform distortion.

BLM03H Series (0201 Size)

GHz Reflow OK

0201 size for GHz band noise.

■ Dimensions



■ Equivalent Circuit

(Resistance element becomes dominant at high frequencies.)

■ Packaging

Code	Packaging	Minimum Quantity
D	180mm Reel Paper Tape	15000
J	330mm Reel Paper Tape	50000
B	Bulk(Bag)	1000

Refer to pages from p.91 to p.94 for mounting information.

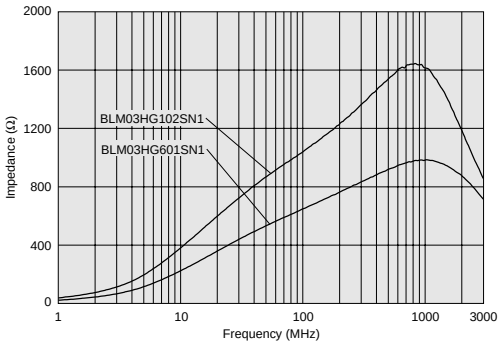
■ Rated Value (☐: packaging code)

Part Number	Impedance (at 100MHz/20°C)	Impedance (at 1GHz/20°C)	Rated Current	DC Resistance	Operating Temperature Range	
BLM03HG601SN1☐	600ohm±25%	1000ohm±40%	150mA	1.6ohm max.	-55°C to +125°C	Kit
BLM03HG102SN1☐	1000ohm±25%	1800ohm±40%	125mA	2.6ohm max.	-55°C to +125°C	Kit
BLM03HD331SN1☐	330ohm±25%	750ohm±40%	200mA	1.0ohm max.	-55°C to +125°C	New Kit
BLM03HD471SN1☐	470ohm±25%	1000ohm±40%	175mA	1.3ohm max.	-55°C to +125°C	New Kit
BLM03HD601SN1☐	600ohm±25%	1500ohm±40%	150mA	1.7ohm max.	-55°C to +125°C	New Kit
BLM03HD102SN1☐	1000ohm±25%	2300ohm±40%	120mA	2.9ohm max.	-55°C to +125°C	New Kit

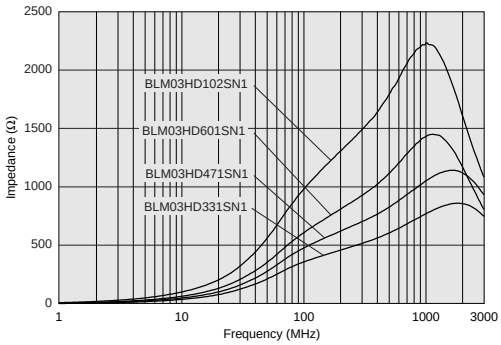
Number of Circuits: 1

■ Impedance-Frequency Characteristics (Main Items)

BLM03HG Series

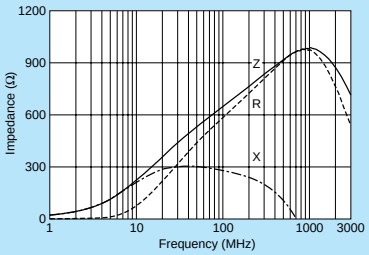


BLM03HD Series

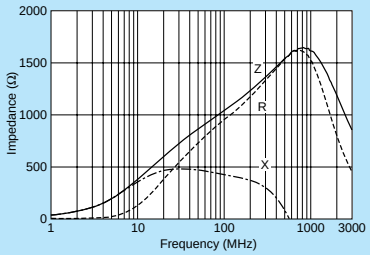


■ Impedance-Frequency Characteristics

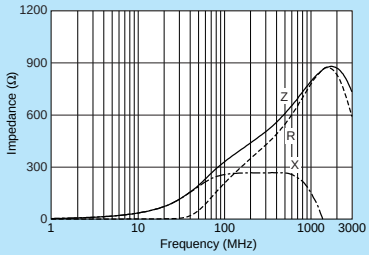
BLM03HG601SN1



BLM03HG102SN1



BLM03HD331SN1



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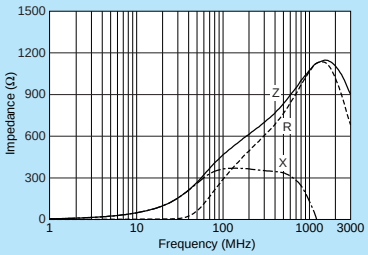
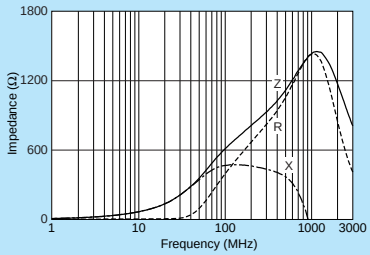
■ Impedance-Frequency Characteristics

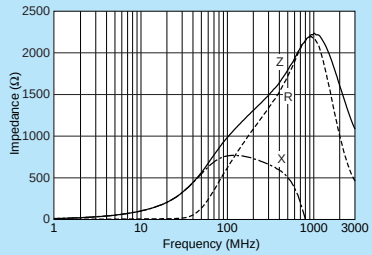
BLM03HD471SN1



BLM03HD601SN1



BLM03HD102SN1

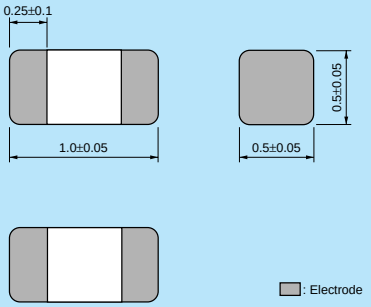


BLM15H Series (0402 Size)

GHz Reflow OK

0402 size for GHz band noise.

■ Dimensions



■ Equivalent Circuit

(Resistance element becomes dominant at high frequencies.)

■ Packaging

Code	Packaging	Minimum Quantity
D	180mm Reel Paper Tape	10000
J	330mm Reel Paper Tape	50000
B	Bulk(Bag)	1000

Refer to pages from p.91 to p.94 for mounting information.

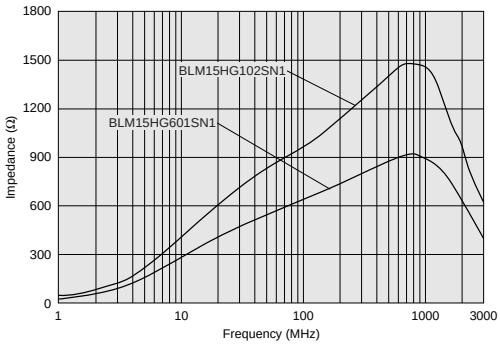
■ Rated Value (☐: packaging code)

Part Number	Impedance (at 100MHz/20°C)	Impedance (at 1GHz/20°C)	Rated Current	DC Resistance	Operating Temperature Range	
BLM15HG601SN1☐	600ohm±25%	1000ohm±40%	300mA	0.7ohm max.	-55°C to +125°C	Kit
BLM15HG102SN1☐	1000ohm±25%	1400ohm±40%	250mA	1.1ohm max.	-55°C to +125°C	Kit
BLM15HD601SN1☐	600ohm±25%	1400ohm±40%	300mA	0.85ohm max.	-55°C to +125°C	Kit
BLM15HD102SN1☐	1000ohm±25%	2000ohm±40%	250mA	1.25ohm max.	-55°C to +125°C	Kit
BLM15HD182SN1☐	1800ohm±25%	2700ohm±40%	200mA	2.2ohm max.	-55°C to +125°C	Kit
BLM15HB121SN1☐	120ohm±25%	500ohm±40%	300mA	0.7ohm max.	-55°C to +125°C	Kit
BLM15HB221SN1☐	220ohm±25%	900ohm±40%	250mA	1.0ohm max.	-55°C to +125°C	Kit

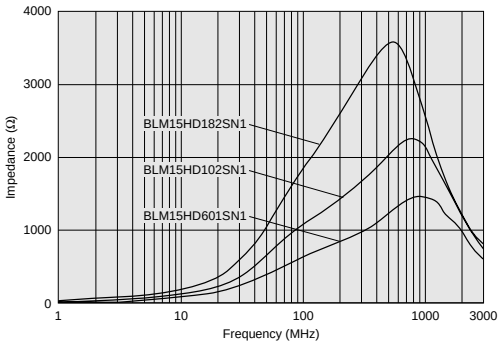
Number of Circuits: 1

■ Impedance-Frequency Characteristics (Main Items)

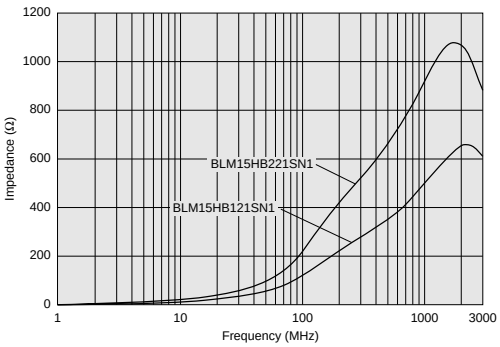
BLM15HG Series (For General Signal Lines)



BLM15HD Series (For High Speed Signal Lines)



BLM15HB Series (For High Speed Signal Lines)



Continued on the following page.

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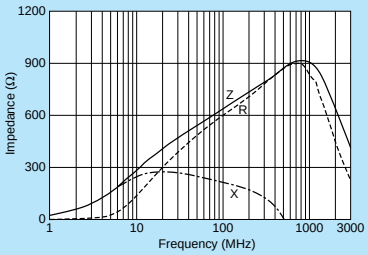
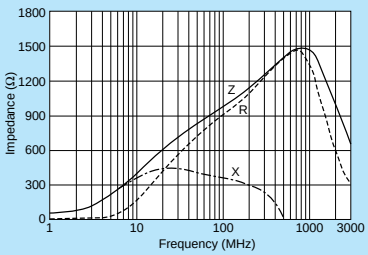
■ Impedance-Frequency Characteristics

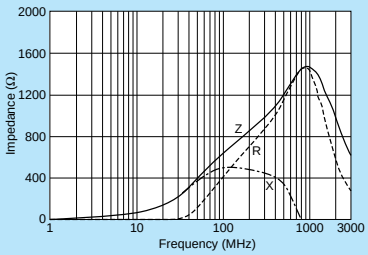
BLM15HG601SN1



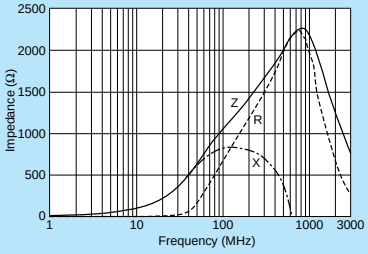
BLM15HG102SN1



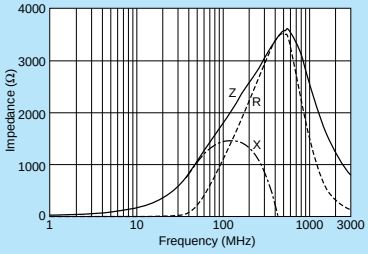
BLM15HD601SN1



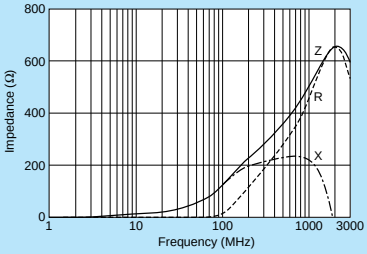
BLM15HD102SN1



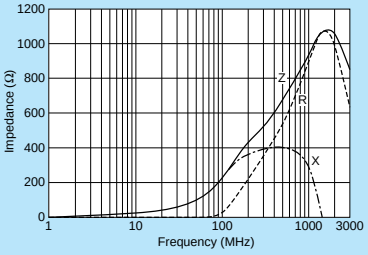
BLM15HD182SN1



BLM15HB121SN1



BLM15HB221SN1



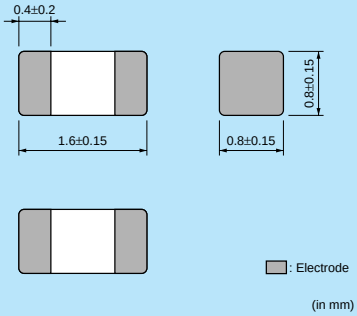
BLM18H Series (0603 Size)

GHz Flow OK Reflow OK

0603 size for GHz band noise.

*Please refer to BLM15H for downsizing.

■ Dimensions



■ Equivalent Circuit

(Resistance element becomes dominant at high frequencies.)

■ Packaging

Code	Packaging	Minimum Quantity
D	180mm Reel Paper Tape	4000
J	330mm Reel Paper Tape	10000
B	Bulk(Bag)	1000

Refer to pages from p.91 to p.94 for mounting information.

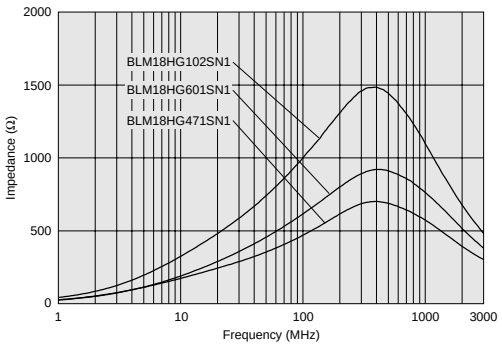
■ Rated Value (☐: packaging code)

Part Number	Impedance (at 100MHz/20°C)	Impedance (at 1GHz/20°C)	Rated Current	DC Resistance	Operating Temperature Range	
BLM18HG471SN1☐	470ohm±25%	600ohm(Typ.)	200mA	0.85ohm max.	-55°C to +125°C	Kit
BLM18HG601SN1☐	600ohm±25%	700ohm(Typ.)	200mA	1.00ohm max.	-55°C to +125°C	Kit
BLM18HG102SN1☐	1000ohm±25%	1000ohm(Typ.)	100mA	1.60ohm max.	-55°C to +125°C	Kit
BLM18HE601SN1☐	600ohm±25%	600ohm(Typ.)	800mA	0.25ohm max.	-55°C to +125°C	Kit
BLM18HE102SN1☐	1000ohm±25%	1000ohm(Typ.)	600mA	0.35ohm max.	-55°C to +125°C	Kit
BLM18HE152SN1☐	1500ohm±25%	1500ohm(Typ.)	500mA	0.50ohm max.	-55°C to +125°C	Kit
BLM18HD471SN1☐	470ohm±25%	1000ohm(Typ.)	100mA	1.20ohm max.	-55°C to +125°C	Kit
BLM18HD601SN1☐	600ohm±25%	1200ohm(Typ.)	100mA	1.50ohm max.	-55°C to +125°C	Kit
BLM18HD102SN1☐	1000ohm±25%	1700ohm(Typ.)	50mA	1.80ohm max.	-55°C to +125°C	Kit
BLM18HB121SN1☐	120ohm±25%	500ohm±40%	200mA	0.50ohm max.	-55°C to +125°C	Kit
BLM18HB221SN1☐	220ohm±25%	1100ohm±40%	100mA	0.80ohm max.	-55°C to +125°C	Kit
BLM18HB331SN1☐	330ohm±25%	1600ohm±40%	50mA	1.20ohm max.	-55°C to +125°C	Kit
BLM18HK331SN1☐	330ohm±25%	400ohm±40%	200mA	0.50ohm max.	-55°C to +125°C	Kit
BLM18HK471SN1☐	470ohm±25%	600ohm±40%	200mA	0.70ohm max.	-55°C to +125°C	Kit
BLM18HK601SN1☐	600ohm±25%	700ohm±40%	100mA	0.90ohm max.	-55°C to +125°C	Kit
BLM18HK102SN1☐	1000ohm±25%	1200ohm±40%	50mA	1.50ohm max.	-55°C to +125°C	Kit

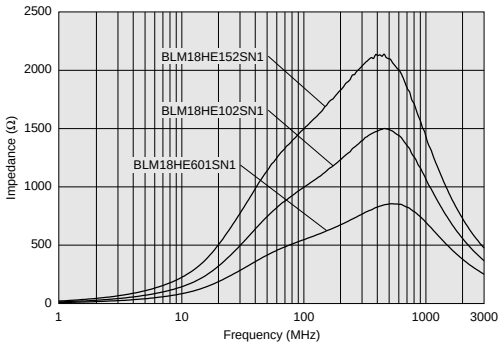
Number of Circuits: 1

■ Impedance-Frequency Characteristics (Main Items)

BLM18HG Series (For General Signal Lines)



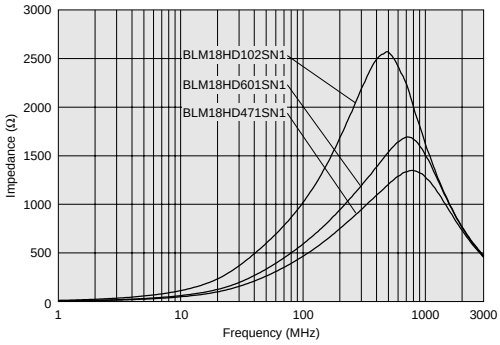
BLM18HE Series (For High Speed Signal Lines)



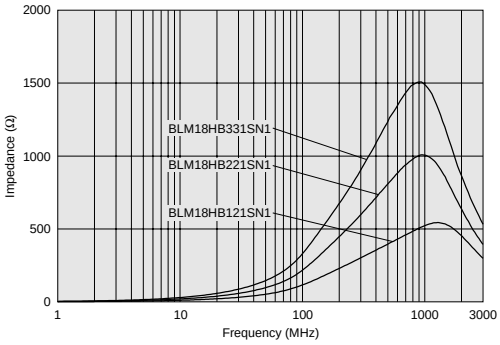
Continued on the following page.

■ Impedance-Frequency Characteristics (Main Items)

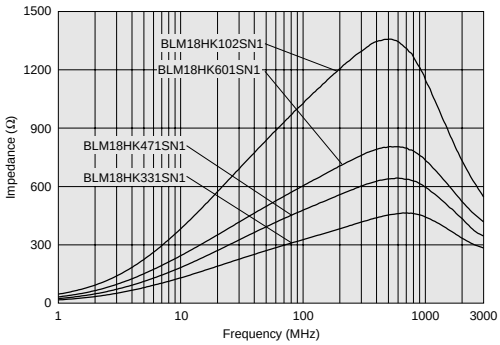
BLM18HD Series (For High Speed Signal Lines)



BLM18HB Series (For High Speed Signal Lines)



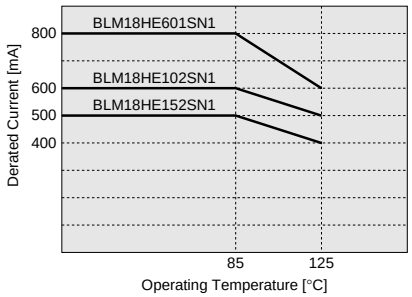
BLM18HK Series (For Digital Interface Lines)



■ Notice (Rating)

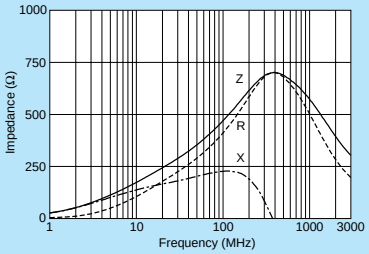
In operating temperature exceeding +85°C, derating of current is necessary for BLM18HE series.
Please apply the derating curve shown in chart according to the operating temperature.

Derating

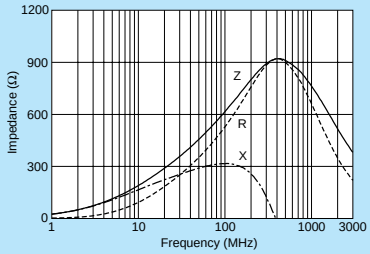


■ Impedance-Frequency Characteristics

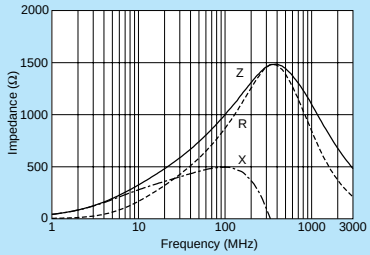
BLM18HG471SN1



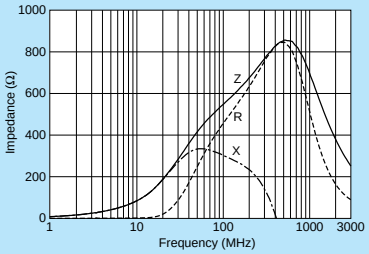
BLM18HG601SN1



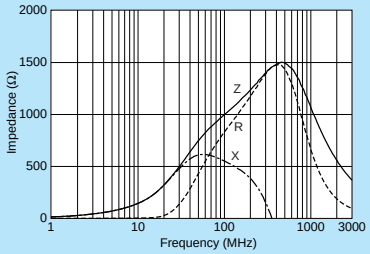
BLM18HG102SN1



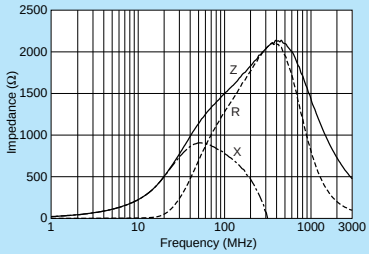
BLM18HE601SN1



BLM18HE102SN1



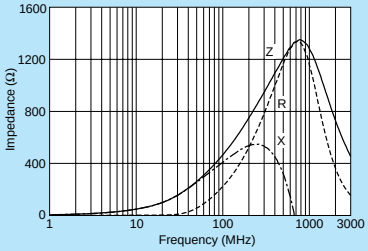
BLM18HE152SN1



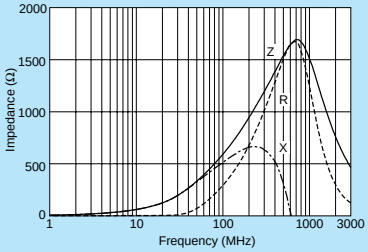
Continued on the following page.

■ Impedance-Frequency Characteristics

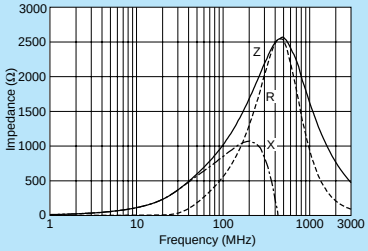
BLM18HD471SN1



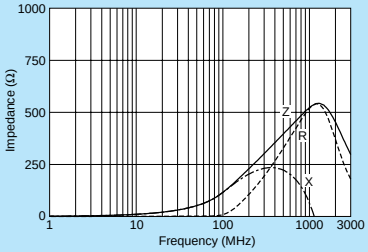
BLM18HD601SN1



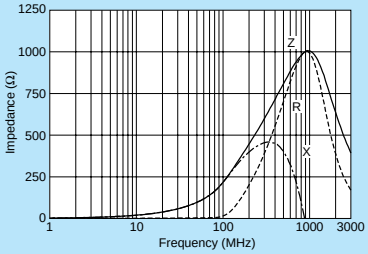
BLM18HD102SN1



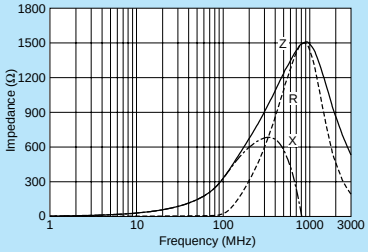
BLM18HB121SN1



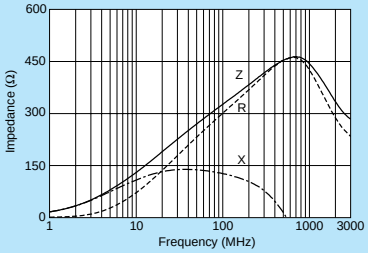
BLM18HB221SN1



BLM18HB331SN1



BLM18HK331SN1



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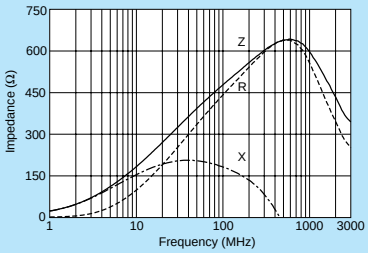
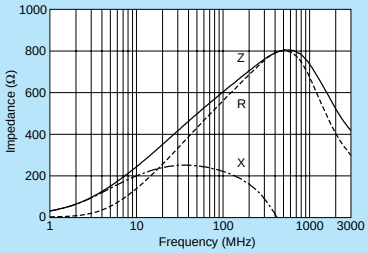
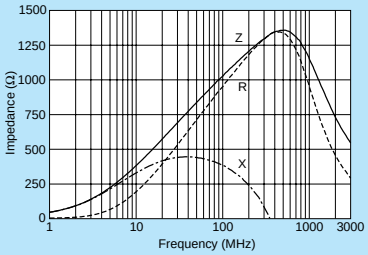


BLM18HK601SN1

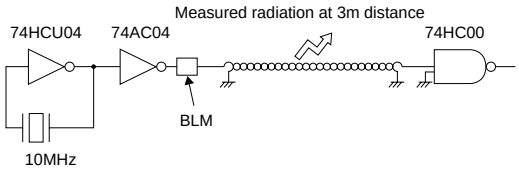


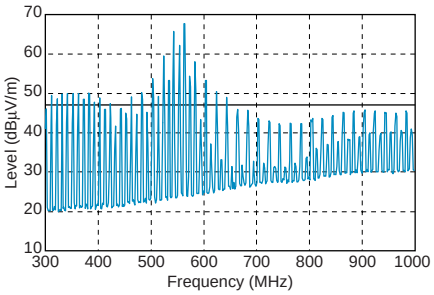
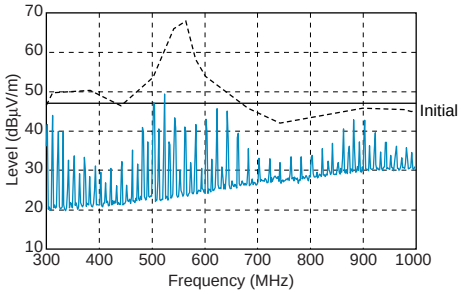
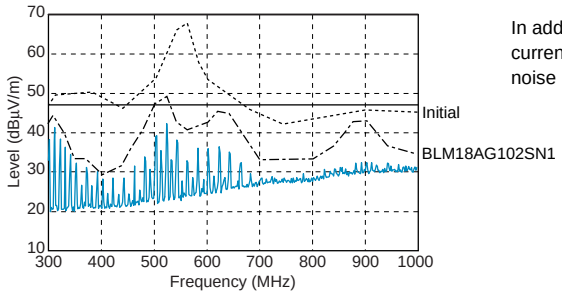
BLM18HK102SN1



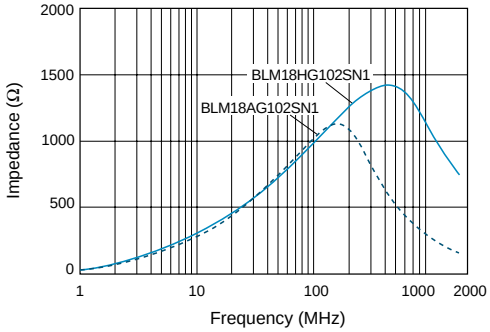
Noise Suppression of BLM18H in UHF Range

Testing Circuit



Type of Filter	EMI Suppression Effect / Description
Initial (No filter)	
Conventional Type **BLM18AG102SN1** (1000Ω at 100MHz)	 Current BLM18AG are effective in suppressing noise in the range between 300MHz and 700MHz.
for GHz Noise Suppression **BLM18HG102SN1** (1000Ω at 100MHz)	 In addition to the effectiveness of current BLM, BLM18HG suppresses noise in the range beyond 700MHz.

Comparison between BLM18HG102SN1 and BLM18AG102SN1 (Current Item)



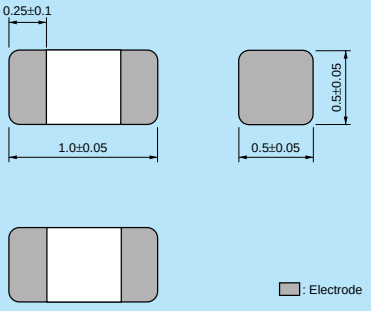
⚠Note • Please read rating and ⚠CAUTION (for storage, operating, rating, soldering, mounting and handling) in this catalog to prevent smoking and/or burning, etc.
• This catalog has only typical specifications because there is no space for detailed specifications. Therefore, please review our product specifications or consult the approval sheet for product specifications before ordering.

BLM15G Series (0402 Size)

Hi-GHz Reflow OK

Available up to high-GHz band noise.

■ Dimensions



■ Equivalent Circuit

(Resistance element becomes dominant at high frequencies.)

■ Packaging

Code	Packaging	Minimum Quantity
D	180mm Reel Paper Tape	10000
J	330mm Reel Paper Tape	50000
B	Bulk(Bag)	1000

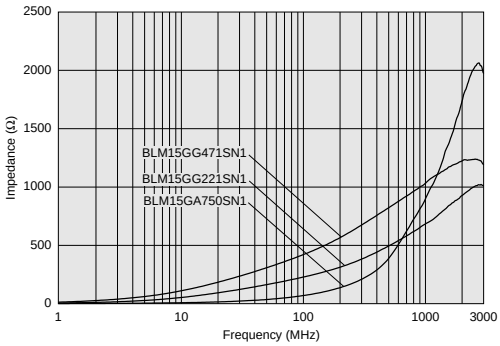
Refer to pages from p.91 to p.94 for mounting information.

■ Rated Value (☐: packaging code)

Part Number	Impedance (at 100MHz/20°C)	Impedance (at 1GHz/20°C)	Rated Current	DC Resistance	Operating Temperature Range	
BLM15GG221SN1☐	220ohm±25%	600ohm±40%	300mA	0.7ohm max.	-55°C to +125°C	Kit
BLM15GG471SN1☐	470ohm±25%	1200ohm±40%	200mA	1.3ohm max.	-55°C to +125°C	Kit
BLM15GA750SN1☐	75ohm±25%	1000ohm±40%	200mA	1.3ohm max.	-55°C to +125°C	Kit

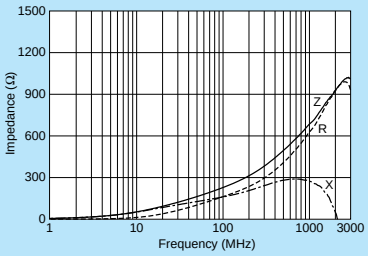
Number of Circuits: 1

■ Impedance-Frequency Characteristics (Main Items)

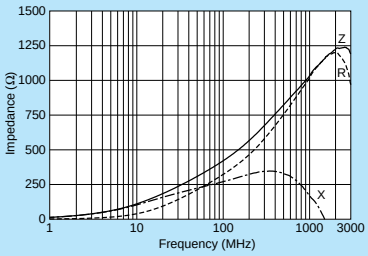


■ Impedance-Frequency Characteristics

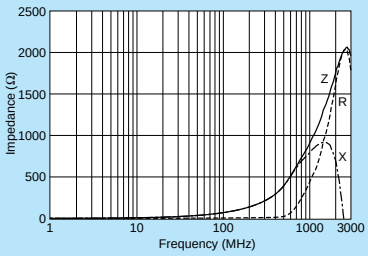
BLM15GG221SN1



BLM15GG471SN1



BLM15GA750SN1



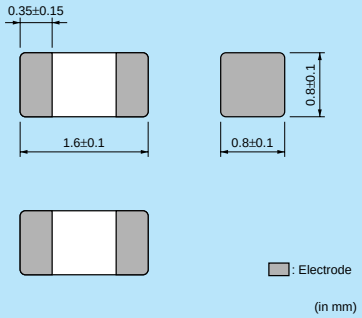
⚠Note • Please read rating and ⚠CAUTION (for storage, operating, rating, soldering, mounting and handling) in this catalog to prevent smoking and/or burning, etc.
• This catalog has only typical specifications because there is no space for detailed specifications. Therefore, please review our product specifications or consult the approval sheet for product specifications before ordering.

BLM18G Series (0603 Size)

Hi-GHz Reflow OK

Available up to high-GHz band noise.

■ Dimensions



■ Equivalent Circuit

(Resistance element becomes dominant at high frequencies.)

■ Packaging

Code	Packaging	Minimum Quantity
D	180mm Reel Paper Tape	4000
J	330mm Reel Paper Tape	10000
B	Bulk(Bag)	1000

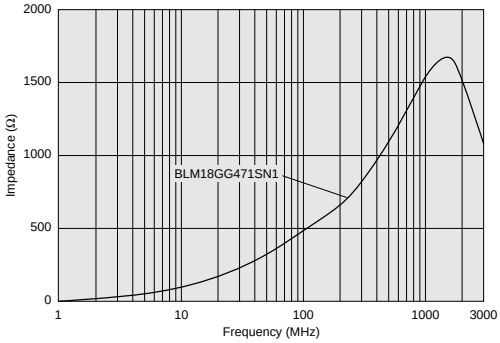
Refer to pages from p.91 to p.94 for mounting information.

■ Rated Value (☐: packaging code)

Part Number	Impedance (at 100MHz/20°C)	Impedance (at 1GHz/20°C)	Rated Current	DC Resistance	Operating Temperature Range	
BLM18GG471SN1☐	470ohm±25%	1800ohm±30%	200mA	1.0ohm ±0.3ohm	-55°C to +125°C	Kit

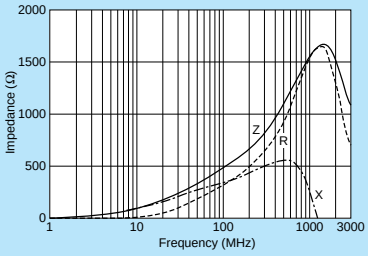
Number of Circuits: 1

■ Impedance-Frequency Characteristics (Main Items)



■ Impedance-Frequency Characteristics

BLM18GG471SN1

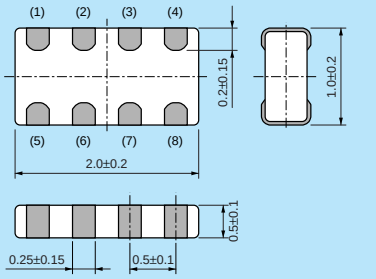


BLA2AA/BLA2AB Series (0804 Size)

Reflow OK

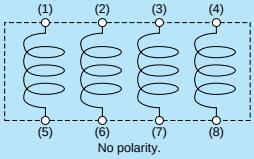
4-lines array, 0804 size.

■ Dimensions



(in mm)

■ Equivalent Circuit



No polarity.

■ Packaging

Code	Packaging	Minimum Quantity
D	180mm Reel Paper Tape	10000
J	330mm Reel Paper Tape	50000
B	Bulk(Bag)	1000

Refer to pages from p.91 to p.94 for mounting information.

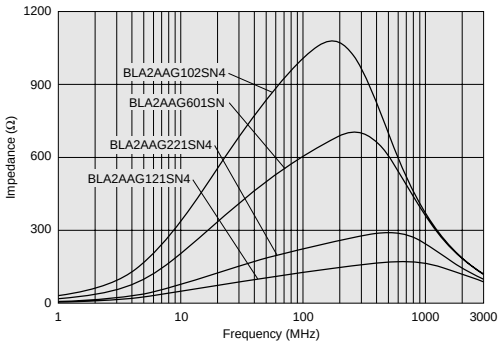
■ Rated Value (☐: packaging code)

Part Number	Impedance (at 100MHz/20°C)	Rated Current	DC Resistance	Operating Temperature Range
BLA2AAG121SN4☐	120ohm±25%	100mA	0.50ohm max.	-55°C to +125°C
BLA2AAG221SN4☐	220ohm±25%	50mA	0.70ohm max.	-55°C to +125°C
BLA2AAG601SN4☐	600ohm±25%	50mA	1.10ohm max.	-55°C to +125°C
BLA2AAG102SN4☐	1000ohm±25%	50mA	1.30ohm max.	-55°C to +125°C
BLA2ABD750SN4☐	75ohm±25%	200mA	0.20ohm max.	-55°C to +125°C
BLA2ABD121SN4☐	120ohm±25%	200mA	0.35ohm max.	-55°C to +125°C
BLA2ABD221SN4☐	220ohm±25%	100mA	0.40ohm max.	-55°C to +125°C
BLA2ABD471SN4☐	470ohm±25%	100mA	0.65ohm max.	-55°C to +125°C
BLA2ABD601SN4☐	600ohm±25%	100mA	0.80ohm max.	-55°C to +125°C
BLA2ABD102SN4☐	1000ohm±25%	50mA	1.00ohm max.	-55°C to +125°C
BLA2ABB100SN4☐	10ohm±25%	200mA	0.1ohm max.	-55°C to +125°C
BLA2ABB220SN4☐	22ohm±25%	200mA	0.2ohm max.	-55°C to +125°C
BLA2ABB470SN4☐	47ohm±25%	200mA	0.35ohm max.	-55°C to +125°C
BLA2ABB121SN4☐	120ohm±25%	50mA	0.60ohm max.	-55°C to +125°C
BLA2ABB221SN4☐	220ohm±25%	50mA	0.90ohm max.	-55°C to +125°C

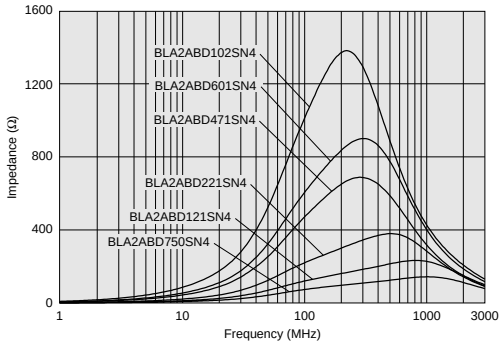
Number of Circuits: 4

■ Impedance-Frequency Characteristics (Main Items)

BLA2AAG Series



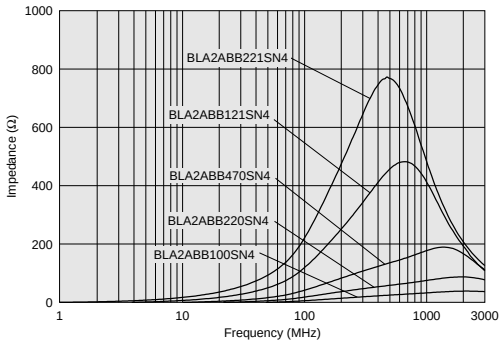
BLA2ABD Series



Continued on the following page.

■ Impedance-Frequency Characteristics (Main Items)

BLA2ABB Series



■ Impedance-Frequency Characteristics

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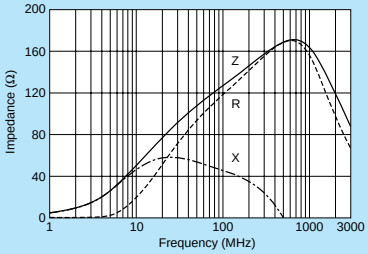
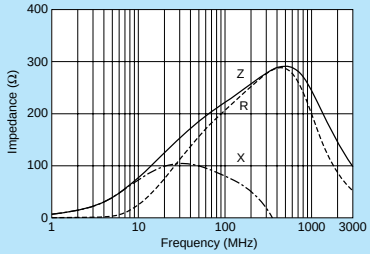
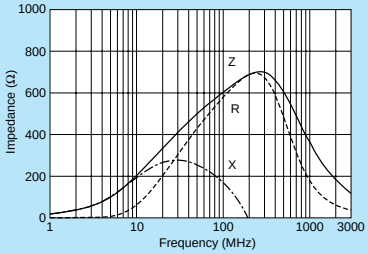


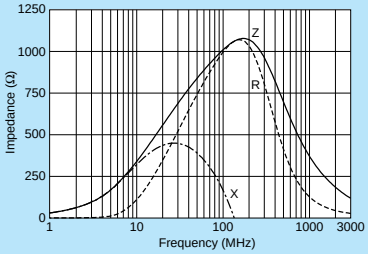
BLA2AAG221SN4



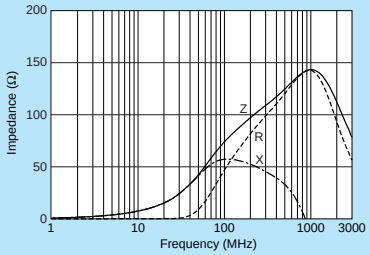
BLA2AAG601SN4



BLA2AAG102SN4



BLA2ABD750SN4



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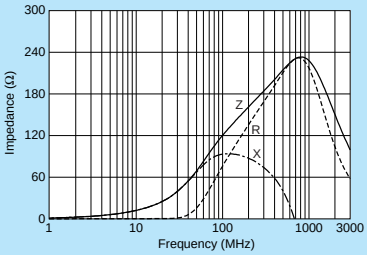

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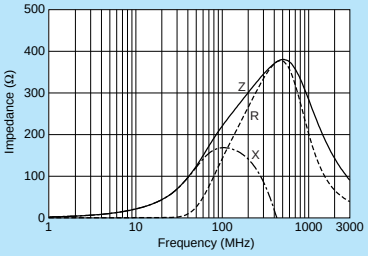
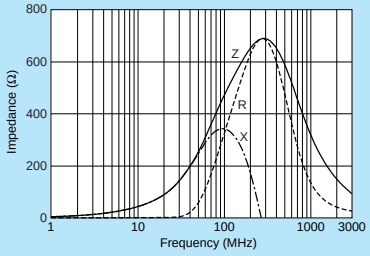
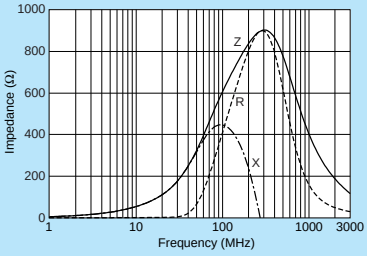


BLA2ABD471SN4



BLA2ABD601SN4

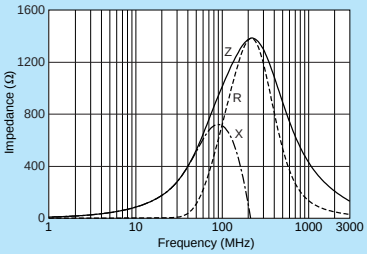


Continued on the following page.

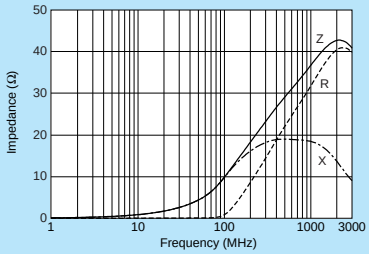
⚠Note • Please read rating and ⚠CAUTION (for storage, operating, rating, soldering, mounting and handling) in this catalog to prevent smoking and/or burning, etc.
• This catalog has only typical specifications because there is no space for detailed specifications. Therefore, please review our product specifications or consult the approval sheet for product specifications before ordering.

■ Impedance-Frequency Characteristics

BLA2ABD102SN4



BLA2ABB100SN4



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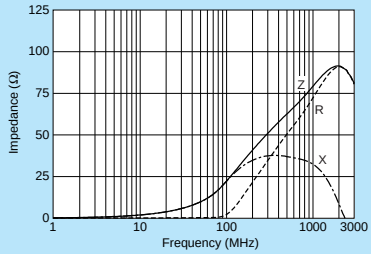
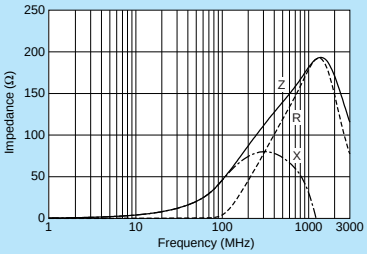


BLA2ABB470SN4



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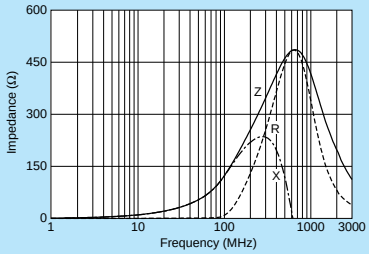

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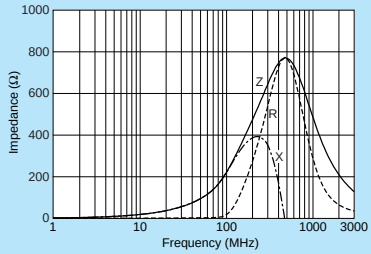
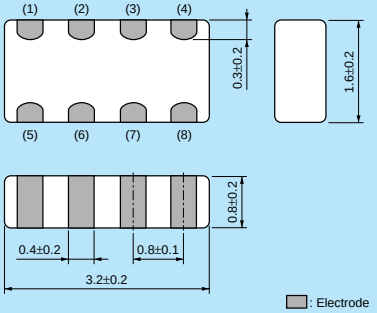


BLA31A/BLA31B Series (1206 Size)

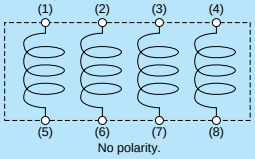
Flow OK Reflow OK

4-lines array, 1206 size.

■ Dimensions



■ Equivalent Circuit



■ Packaging

Code	Packaging	Minimum Quantity
D	180mm Reel Paper Tape	4000
J	330mm Reel Paper Tape	10000
B	Bulk(Bag)	1000

Refer to pages from p.91 to p.94 for mounting information.

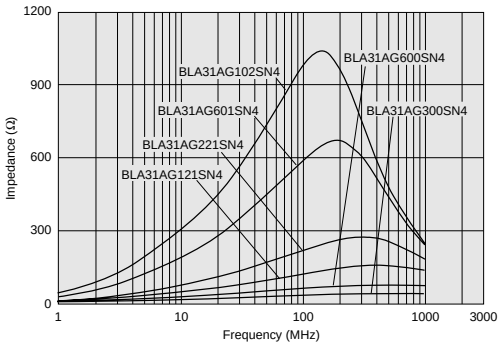
■ Rated Value (☐: packaging code)

Part Number	Impedance (at 100MHz/20°C)	Rated Current	DC Resistance	Operating Temperature Range
BLA31AG300SN4☐	30ohm±25%	200mA	0.10ohm max.	-55°C to +125°C
BLA31AG600SN4☐	60ohm±25%	200mA	0.15ohm max.	-55°C to +125°C
BLA31AG121SN4☐	120ohm±25%	150mA	0.20ohm max.	-55°C to +125°C
BLA31AG221SN4☐	220ohm±25%	150mA	0.25ohm max.	-55°C to +125°C
BLA31AG601SN4☐	600ohm±25%	100mA	0.35ohm max.	-55°C to +125°C
BLA31AG102SN4☐	1000ohm±25%	50mA	0.45ohm max.	-55°C to +125°C
BLA31BD121SN4☐	120ohm±25%	150mA	0.30ohm max.	-55°C to +125°C
BLA31BD221SN4☐	220ohm±25%	150mA	0.35ohm max.	-55°C to +125°C
BLA31BD471SN4☐	470ohm±25%	100mA	0.40ohm max.	-55°C to +125°C
BLA31BD601SN4☐	600ohm±25%	100mA	0.45ohm max.	-55°C to +125°C
BLA31BD102SN4☐	1000ohm±25%	50mA	0.55ohm max.	-55°C to +125°C

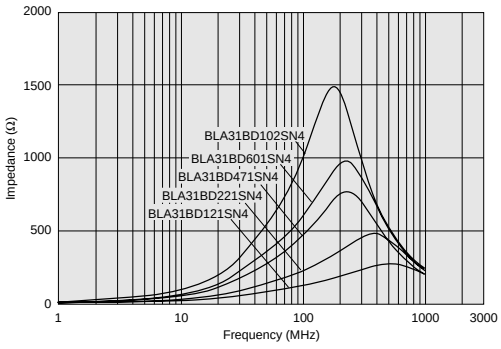
Number of Circuits: 4

■ Impedance-Frequency Characteristics (Main Items)

BLA31AG Series



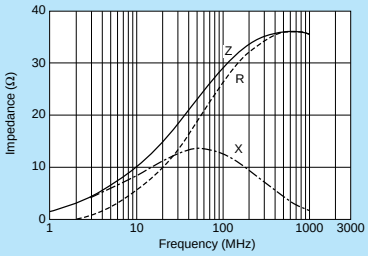
BLA31BD Series



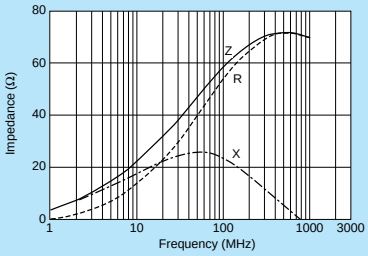
Continued on the following page.

Impedance-Frequency Characteristics

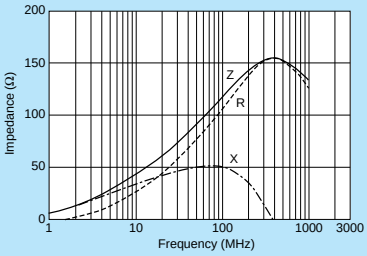
BLA31AG300SN4



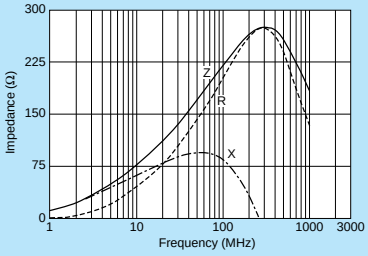
BLA31AG600SN4



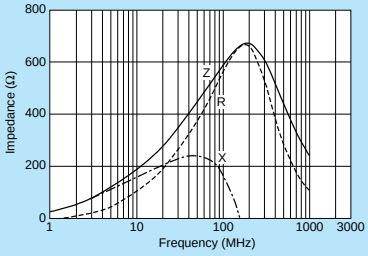
BLA31AG121SN4



BLA31AG221SN4



BLA31AG601SN4



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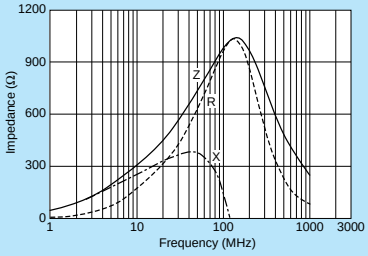

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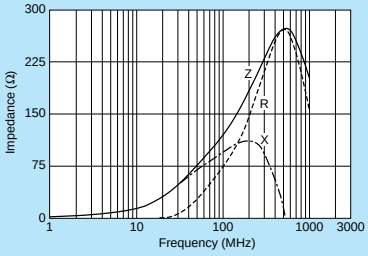

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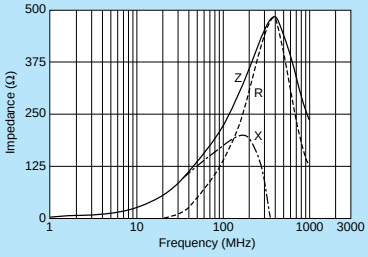
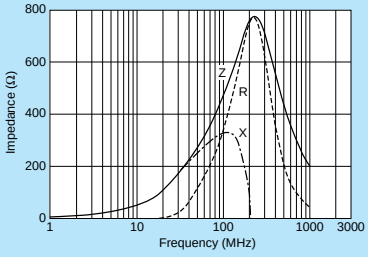


BLA31BD471SN4



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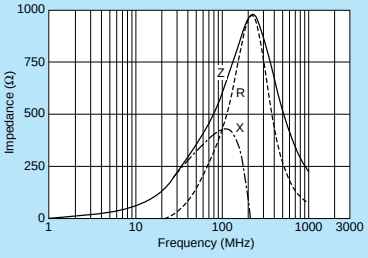

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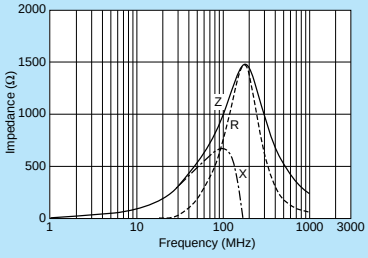


⚠Caution

● Rating

1. About the Rated Current
   Do not use products beyond the rated current as this may create excessive heat and deteriorate the insulation resistance.
2. About the Excessive Surge Current
   Excessive surge current (pulse current or rush current) than specified rated current applied to the product may cause a critical failure, such as an open circuit, burnout caused by excessive temperature rise. Please contact us in advance in case of applying the surge current.

● Soldering and Mounting

• Self-heating
Please provide special attention when mounting chip ferrite beads BLM_AX/P/K/S series in close proximity to other products that radiate heat.
The heat generated by other products may deteriorate the insulation resistance and cause excessive heat in this component.

Notice

● Storage and Operating Conditions

<Operating Environment>
Do not use products in a chemical atmosphere such as chlorine gas, acid or sulfide gas.
Do not use products in the environment close to the organic solvent.
<Storage and Handling Requirements>
1. Storage Period
   BLM15E/15H/15G series should be used within 12 months, the other series should be used within 6 months.
   Solderability should be checked if this period is exceeded.
2. Storage Conditions
   (1) Storage temperature: -10 to +40˚C
   Relative humidity: 15 to 85%
   Avoid sudden changes in temperature and humidity.
   (2) Do not store products in a chemical atmosphere such as chlorine gas, acid or sulfide gas.

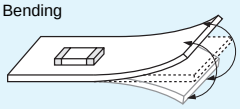
● Notice (Soldering and Mounting)

1. Cleaning
   Failure and degradation of a product are caused by the cleaning method. When you clean in conditions that are not in mounting information, please contact Murata engineering.
2. Soldering
   Reliability decreases with improper soldering methods. Please solder by the standard soldering conditions shown in mounting information.
3. Other
   Noise suppression levels resulting from Murata's EMI suppression filters EMIFIL® may vary, depending on the circuits and ICs used, type of noise, mounting pattern, mounting location, and other operating conditions. Be sure to check and confirm in advance the noise suppression effect of each filter, in actual circuits, etc. before applying the filter in a commercial-purpose equipment design.

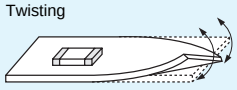
● Handling

1. Resin Coating
   Using resin for coating/molding products may affect the products performance.
   So please pay careful attention in selecting resin.
   Prior to use, please make the reliability evaluation with the product mounted in your application set.
2. Handling of a Substrate
   After mounting products on a substrate, do not apply any stress to the product caused by bending or twisting to the substrate when cropping the substrate, inserting and removing a connector from the substrate or tightening screw to the substrate.
   Excessive mechanical stress may cause cracking in the Product.

Bending



Twisting

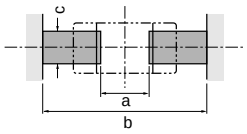


1. Standard Land Pattern Dimensions

Land Pattern + Solder Resist
Land Pattern Solder Resist
(in mm)

BLM02
BLM03
BLM15
(Except **BLM 15_AN1** series)
BLM18
BLM21
BLM31
BLM41

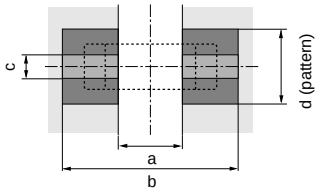
●Reflow and Flow
BLM Series



Type	Soldering	a	b	c
BLM02	Reflow	0.16-0.2	0.4-0.56	0.2-0.23
BLM03	Reflow	0.2-0.3	0.6-0.9	0.3
BLM15	Reflow	0.4	1.2-1.4	0.5
BLM18	Flow (except 18G)	0.7	2.2-2.6	0.7
	Reflow		1.8-2.0	
BLM21	Flow/ Reflow	1.2	3.0-4.0	1.0

• Except BLM03PG/15AX·PD·PG/18PG·KG·SG/21PG. And BLM02/03/15/18G is specially adapted for reflow soldering.

BLM□□AX/P/K/S



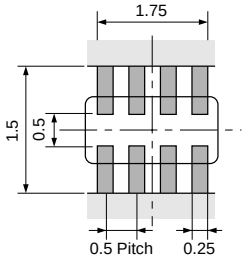
Type	Rated Current (A)	Soldering	a	b	c	Land Pad Thickness and Dimension d 18µm	35µm	70µm
BLM03AX **BLM03PG**	1max.	Reflow	0.2-0.3	0.6-0.9	0.3	0.3	0.3	0.3
BLM15AX	1.5max.	Reflow	0.4	1.2-1.4	0.5	0.5	0.5	0.5
BLM15P□	2.2max.					1.2	0.7	0.5
BLM18PG	0.5-1.5	Flow/ Reflow	0.7	Flow 2.2-2.6 Reflow 1.8-2.0	0.7	0.7	0.7	0.7
BLM18PG **BLM18KG**	1.7-2.5					1.2	0.7	0.7
BLM18KG **BLM18SG**	3-4					2.4	1.2	0.7
	6					6.4	3.3	1.65
BLM21PG	1.5		1.2	3.0-4.0	1.0	1.0	1.0	1.0
	2					1.2	1.0	1.0
	3					2.4	1.2	1.0
	6					6.4	3.3	1.65
BLM31PG	1.5/2		2.0	4.2-5.2	1.2	1.2	1.2	1.2
	3					2.4	1.2	1.2
	6					6.4	3.3	1.65
BLM41PG	1.5/2		3.0	5.5-6.5		1.2	1.2	1.2
	3					2.4	1.2	1.2
	6					6.4	3.3	1.65

• Do not apply narrower pattern than listed above to BLM□□AX/P/K/S.
Narrow pattern can cause excessive heat or open circuit.

BLA2A
BLA31

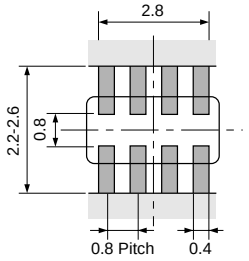
●Reflow Soldering

BLA2A



●Reflow and Flow

BLA31

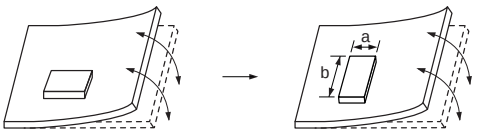


• If there are high amounts of self-heating on pattern, the contact points of PCB and part may become damaged.

● PCB Warping

PCB should be designed so that products are not subjected to the mechanical stress caused by warping the board.

Products should be located in the sideways direction (Length: a<b) to the mechanical stress.

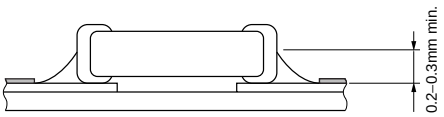
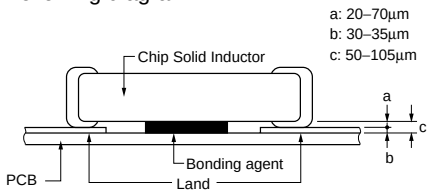
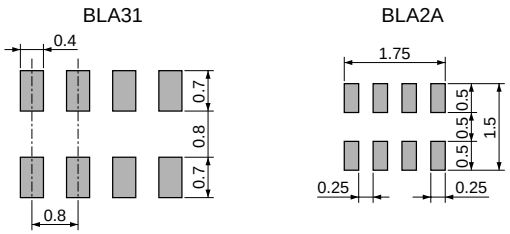
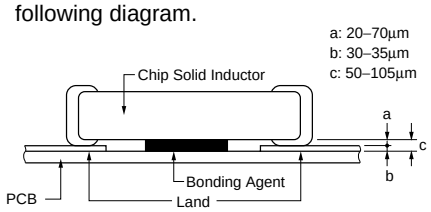


2. Solder Paste Printing and Adhesive Application

When reflow soldering the chip ferrite beads, the printing must be conducted in accordance with the following cream solder printing conditions.
If too much solder is applied, the chip will be prone to damage by mechanical and thermal stress from the PCB and may crack.
Standard land dimensions should be used for resist and copper foil patterns.

When flow soldering the chip ferrite beads, apply the adhesive in accordance with the following conditions.
If too much adhesive is applied, then it may overflow into the land or termination areas and yield poor solderability.
In contrast, if insufficient adhesive is applied, or if the adhesive is not sufficiently hardened, then the chip may become detached during flow soldering process.

(in mm)

Series	Solder Paste Printing	Adhesive Application
BLM (Except **BLM 15_AN1** series)	●Ensure that solder is applied smoothly to a minimum height of 0.2mm to 0.3mm at the end surface of the part. ●Guideline of solder paste thickness: 50-80µm: BLM02 100-150µm: BLM03 100-200µm: BLM15/18/21/31/41 	■ BLM18/21/31/41 Series (Except BLM18G Series) Coating amount is illustrated in the following diagram. 
BLA	●Guideline of solder paste thickness: 100-150µm: BLA2A 150-200µm: BLA31 	■ BLA31 Series Coating amount is illustrated in the following diagram. 

3. Standard Soldering Conditions

(1) Soldering Methods

Use flow and reflow soldering methods only.
Use standard soldering conditions when soldering chip ferrite beads.
In cases where several different parts are soldered, each having different soldering conditions, use those conditions requiring the least heat and minimum time.

Solder: Use Sn-3.0Ag-0.5Cu solder. Use of Sn-Zn based solder will deteriorate performance of products. If using BLA series with Sn-Zn based solder, please contact Murata in advance.

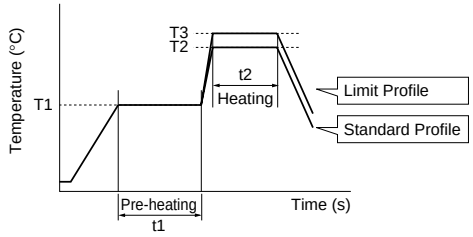
Flux:

- Use Rosin-based flux.
  In case of using RA type solder, products should be cleaned completely with no residual flux.
- Do not use strong acidic flux (with chlorine content exceeding 0.20wt%)
- Do not use water-soluble flux.

For additional mounting methods, please contact Murata.

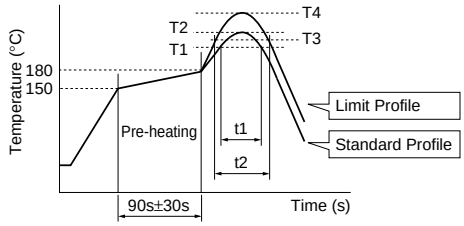
(2) Soldering Profile

●Flow Soldering profile
(Sn-3.0Ag-0.5Cu Solder)



Series	Pre-heating		Standard Profile			Limit Profile		
			Heating		Cycle of Flow	Heating		Cycle of Flow
	Temp. (T1)	Time. (t1)	Temp. (T2)	Time. (t2)		Temp. (T3)	Time. (t2)	
BLM (Except **BLM02/03/15/18G**) **BLA31**	150°C	60s min.	250°C	4 to 6s	2 times max.	265±3°C	5s max.	2 times max.

●Reflow Soldering Profile
(Sn-3.0Ag-0.5Cu Solder)



Series	Standard Profile				Limit Profile			
	Heating		Peak Temperature (T2)	Cycle of Reflow	Heating		Peak Temperature (T4)	Cycle of Reflow
	Temp. (T1)	Time. (t1)			Temp. (T3)	Time. (t2)		
BLM **BLA**	220°C min.	30 to 60s	245±3°C	2 times max.	230°C min.	60s max.	260°C/10s	2 times max.

(3) Reworking with Solder Iron

The following conditions must be strictly followed when using a soldering iron.(Except BLM02 Series)
Pre-heating: 150°C 60s min.
Soldering iron power output / Tip diameter:
80W max. / ø3mm max.
Temperature of soldering iron tip / Soldering time / Times:
350°C max. / 3-4s / 2 times
Do not allow the tip of the soldering iron to directly contact the chip.
For additional methods of reworking with a soldering iron, please contact Murata engineering.

4. Cleaning

Following conditions should be observed when cleaning chip ferrite beads.

(1) Cleaning Temperature: 60°C max. (40°C max. for alcohol type cleaner)

(2) Ultrasonic
Output: 20W/liter max.
Duration: 5 minutes max.
Frequency: 28 to 40kHz

(3) Cleaning Agent
The following list of cleaning agents have been tested on the individual components. Evaluation of final assembly should be completed prior to production.

(a) Alcohol cleaning agent
Isopropyl alcohol (IPA)

(b) Aqueous cleaning agent
Pine Alpha ST-100S

(4) Ensure that flux residue is completely removed.
Component should be thoroughly dried after aqueous agent has been removed with deionized water.

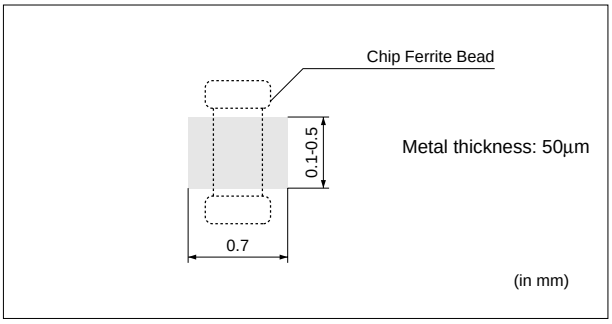
(5) BLM_G type is processed with resin. On rinsing the product, using water for ultrasonic cleaning may affect the resin quality used for the product by water element. In case of set cleaning conditions, please make sure the reliability according to the cleaning conditions.

5. Mounting of BLM15_AN1 Series

BLM15_AN1 is series for wire bonding mounting.

(1) Die Bonding Mounting

(a) Dimension of Standard Metal Mask



(b) Die Bonding Agent

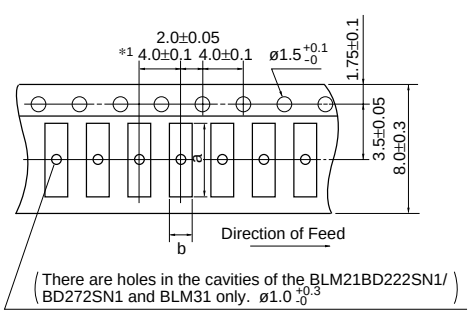
● Use adhesive for die bonding for which the curing temperature is 200°C or less.

(c) Notice

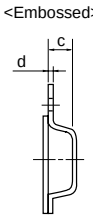
● Use a flat surface of substrate for bonding mounting. Slant mounting of product may affect the wire bonding.

● Adhesive for die bonding may affect the mounting reliability in wire bonding. Make sure of the mounting reliability with the adhesive to be used in advance.

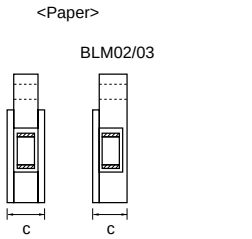
■ Minimum Quantity and Dimensions of 8mm Width Paper / Embossed Tape



*1 BLM02/03/15/18S/18T: 2.0±0.05
BLA2A: 2.0±0.1



c: Depth of Cavity (Embossed Tape)



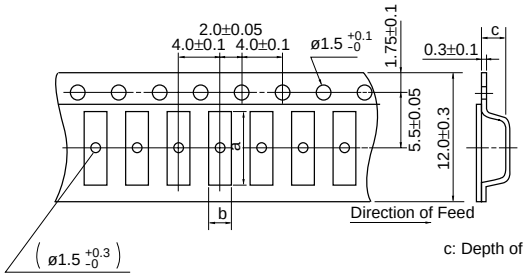
c: Total Thickness of Tape (Paper Tape)

Dimension of the cavity of embossed tape is measured at the bottom side.

Part Number	Cavity Size (mm)				Minimum Qty. (pcs.)				
					ø180mm Reel		ø330mm Reel		Bulk
	a	b	c	d	Paper Tape	Embossed Tape	Paper Tape	Embossed Tape	
BLM02	0.45	0.25	0.40 max.	-	20000	-	-	-	1000
BLM03	0.70	0.40	0.55 max.	-	15000	-	50000	-	1000
BLM15	1.15	0.65	0.8 max.	-	10000	-	50000	-	1000
BLM18	1.85	1.05	1.1 max.	-	4000	-	10000	-	1000
BLM18EG/KG_TN	1.85	1.05	0.85 max.	-	4000	-	10000	-	1000
BLM18EG/KG_SN			1.1 max.						
BLM18S	1.85	1.05	0.90 max.	-	10000	-	30000	-	1000
BLM18T	1.85	1.05	0.90 max.	-	10000	-	-	-	1000
BLM21	2.25	1.45	1.1 max.	-	4000	-	10000	-	1000
BLM31	3.5	1.9	1.3	0.2	-	3000	-	10000	1000
BLM21BD222SN1/272SN1	2.25	1.45	1.3	0.2	-	3000	-	10000	1000
BLA2A	2.2	1.2	0.8 max.	-	10000	-	50000	-	1000
BLA31	3.4	1.8	1.1 max.	-	4000	-	10000	-	1000

(in mm)

■ Minimum Quantity and Dimensions of 12mm Width Embossed Tape



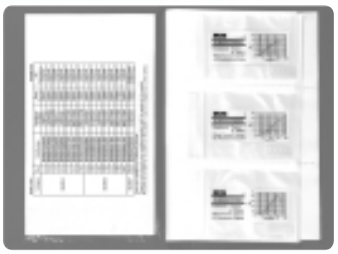
c: Depth of Cavity

Dimension of the cavity is measured at the bottom side.

Part Number	Cavity Size			Minimum Qty. (pcs.)		
	a	b	c	ø180mm Reel	ø330mm Reel	Bulk
BLM41	4.8	1.9	1.75	2500	8000	1000

(in mm)

"Minimum Quantity" means the number of units of each delivery or order. The quantity should be an integral multiple of the "Minimum Quantity".



●EKEMBL03G (Chip Ferrite Beads 01005 Size / 0201 Size)

No.	Part Number	Quantity (pcs.)	Impedance typ. (at 100MHz, 20 degrees C)	Rated Current (mA)	DC Resistance (Ω) max.
1	**BLM02AG100SN1**	10	10Ω (Typ.)	500	0.1
2	**BLM02AG700SN1**	10	70Ω±25%	250	0.5
3	**BLM02AG121SN1**	10	120Ω±25%	200	0.8
4	**BLM03AG100SN1**	10	10Ω (Typ.)	500	0.1
5	**BLM03AG700SN1**	10	70Ω (Typ.)	200	0.4
6	**BLM03AG800SN1**	10	80Ω±25%	200	0.4
7	**BLM03AG121SN1**	10	120Ω±25%	200	0.5
8	**BLM03AG241SN1**	10	240Ω±25%	200	0.8
9	**BLM03AG601SN1**	10	600Ω±25%	100	1.5
10	**BLM03AG102SN1**	10	1000Ω±25%	100	2.5
11	**BLM03AX100SN1**	10	10Ω (Typ.)	1000	0.05
12	**BLM03AX800SN1**	10	80Ω±25%	500	0.18
13	**BLM03AX121SN1**	10	120Ω±25%	450	0.23
14	**BLM03AX241SN1**	10	240Ω±25%	350	0.38
15	**BLM03AX601SN1**	10	600Ω±25%	250	0.85
16	**BLM03AX102SN1**	10	1000Ω±25%	200	1.25
17	**BLM03BB100SN1**	10	10Ω±25%	300	0.4
18	**BLM03BB220SN1**	10	22Ω±25%	200	0.5
19	**BLM03BB470SN1**	10	47Ω±25%	200	0.7
20	**BLM03BB750SN1**	10	75Ω±25%	200	1.0
21	**BLM03BB121SN1**	10	120Ω±25%	100	1.5
22	**BLM03BD750SN1**	10	75Ω±25%	300	0.4
23	**BLM03BD121SN1**	10	120Ω±25%	250	0.5
24	**BLM03BD241SN1**	10	240Ω±25%	200	0.8
25	**BLM03BD471SN1**	10	470Ω±25%	215	1.5
26	**BLM03BD601SN1**	10	600Ω±25%	200	1.7
27	**BLM03BC330SN1**	10	33Ω±25%	150	0.85
28	**BLM03BC560SN1**	10	56Ω±25%	100	1.05
29	**BLM03BC800SN1**	10	80Ω±25%	100	1.40
30	**BLM03HG601SN1**	10	600Ω±25%	150	1.6
31	**BLM03HG102SN1**	10	1000Ω±25%	125	2.6
32	**BLM03HD331SN1**	10	330Ω±25%	200	1.0
33	**BLM03HD471SN1**	10	470Ω±25%	175	1.3
34	**BLM03HD601SN1**	10	600Ω±25%	150	1.7
35	**BLM03HD102SN1**	10	1000Ω±25%	120	2.9
36	**BLM03PG220SN1**	10	22Ω±25%	900	0.065
37	**BLM03PG330SN1**	10	33Ω±25%	750	0.090

●EKEMBL15N (Chip Ferrite Beads 0402 Size)

No.	Part Number	Quantity (pcs.)	Impedance typ. (at 100MHz, 20 degrees C)	Rated Current (mA)	DC Resistance (Ω) max.
1	**BLM15AG100SN1**	10	10Ω (Typ.)	1000	0.05
2	**BLM15AG700SN1**	10	70Ω (Typ.)	500	0.15
3	**BLM15AG121SN1**	10	120Ω±25%	500	0.25
4	**BLM15AG221SN1**	10	220Ω±25%	300	0.35
5	**BLM15AG601SN1**	10	600Ω±25%	300	0.60
6	**BLM15AG102SN1**	10	1000Ω±25%	200	1.00
7	**BLM15AX100SN1**	10	10Ω (Typ.)	1740	0.015
8	**BLM15AX300SN1**	10	30Ω±25%	1100	0.06
9	**BLM15AX700SN1**	10	70Ω±25%	780	0.10
10	**BLM15AX121SN1**	10	120Ω±25%	680	0.13
11	**BLM15AX221SN1**	10	220Ω±25%	580	0.18
12	**BLM15AX601SN1**	10	600Ω±25%	420	0.34
13	**BLM15AX102SN1**	10	1000Ω±25%	350	0.49
14	**BLM15BA050SN1**	10	5Ω±25%	300	0.10

Continued on the following page.

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Continued from the preceding page.

No.	Part Number	Quantity (pcs.)	Impedance typ. (at 100MHz, 20 degrees C)	Rated Current (mA)	DC Resistance (Ω) max.
15	**BLM15BA100SN1**	10	10Ω±25%	300	0.20
16	**BLM15BA220SN1**	10	22Ω±25%	300	0.30
17	**BLM15BA330SN1**	10	33Ω±25%	300	0.40
18	**BLM15BA470SN1**	10	47Ω±25%	200	0.60
19	**BLM15BA750SN1**	10	75Ω±25%	200	0.80
20	**BLM15BB050SN1**	10	5Ω±25%	500	0.08
21	**BLM15BB100SN1**	10	10Ω±25%	300	0.10
22	**BLM15BB220SN1**	10	22Ω±25%	300	0.20
23	**BLM15BB470SN1**	10	47Ω±25%	300	0.35
24	**BLM15BB750SN1**	10	75Ω±25%	300	0.40
25	**BLM15BB121SN1**	10	120Ω±25%	300	0.55
26	**BLM15BB221SN1**	10	220Ω±25%	200	0.80
27	**BLM15BC121SN1**	10	120Ω±25%	350	0.45
28	**BLM15BC241SN1**	10	240Ω±25%	250	0.70
29	**BLM15BD750SN1**	10	75Ω±25%	300	0.20
30	**BLM15BD121SN1**	10	120Ω±25%	300	0.30
31	**BLM15BD221SN1**	10	220Ω±25%	300	0.40
32	**BLM15BD471SN1**	10	470Ω±25%	200	0.60
33	**BLM15BD601SN1**	10	600Ω±25%	200	0.65
34	**BLM15BD102SN1**	10	1000Ω±25%	200	0.90
35	**BLM15BD182SN1**	10	1800Ω±25%	100	1.40
36	**BLM15HD601SN1**	10	600Ω±25%	300	0.85
37	**BLM15HD102SN1**	10	1000Ω±25%	250	1.25
38	**BLM15HD182SN1**	10	1800Ω±25%	200	2.20
39	**BLM15HG601SN1**	10	600Ω±25%	300	0.70
40	**BLM15HG102SN1**	10	1000Ω±25%	250	1.10
41	**BLM15HB121SN1**	10	120Ω±25%	300	0.70
42	**BLM15HB221SN1**	10	220Ω±25%	250	1.00
43	**BLM15EG121SN1**	10	120Ω±25%	1500	0.095
44	**BLM15EG221SN1**	10	220Ω±25%	700	0.28
45	**BLM15GG221SN1**	10	220Ω±25%	300	0.70
46	**BLM15GG471SN1**	10	470Ω±25%	200	1.30
47	**BLM15GA750SN1**	10	75Ω±25%	200	1.30
48	**BLM15PG100SN1**	10	10Ω (Typ.)	1000	0.05
49	**BLM15PD300SN1**	10	30Ω±25%	2200	0.035
50	**BLM15PD600SN1**	10	60Ω±25%	1700	0.06
51	**BLM15PD800SN1**	10	80Ω±25%	1500	0.07
52	**BLM15PD121SN1**	10	120Ω±25%	1300	0.09
53	**BLM15PX121SN1**	10	120Ω±25%	1800	0.06

●EKEMBL18H (Chip Ferrite Beads 0603 Size)

No.	Part Number	Quantity (pcs.)	Impedance typ. (at 100MHz, 20 degrees C)	Rated Current (mA)	DC Resistance (Ω) max.
1	**BLM18AG121SN1**	10	120Ω±25%	500	0.18
2	**BLM18AG151SN1**	10	150Ω±25%	500	0.25
3	**BLM18AG221SN1**	10	220Ω±25%	500	0.25
4	**BLM18AG331SN1**	10	330Ω±25%	500	0.30
5	**BLM18AG471SN1**	10	470Ω±25%	500	0.35
6	**BLM18AG601SN1**	10	600Ω±25%	500	0.38
7	**BLM18AG102SN1**	10	1000Ω±25%	400	0.50
8	**BLM18BA050SN1**	10	5Ω±25%	500	0.20
9	**BLM18BA100SN1**	10	10Ω±25%	500	0.25
10	**BLM18BA470SN1**	10	47Ω±25%	300	0.55
11	**BLM18BA750SN1**	10	75Ω±25%	300	0.70
12	**BLM18BA121SN1**	10	120Ω±25%	200	0.90
13	**BLM18BB050SN1**	10	5Ω±25%	700	0.05
14	**BLM18BB100SN1**	10	10Ω±25%	700	0.10
15	**BLM18BB220SN1**	10	22Ω±25%	600	0.20
16	**BLM18BB470SN1**	10	47Ω±25%	550	0.25
17	**BLM18BB600SN1**	10	60Ω±25%	550	0.25
18	**BLM18BB750SN1**	10	75Ω±25%	500	0.30
19	**BLM18BB121SN1**	10	120Ω±25%	500	0.30
20	**BLM18BB151SN1**	10	150Ω±25%	450	0.37
21	**BLM18BB221SN1**	10	220Ω±25%	450	0.45
22	**BLM18BB331SN1**	10	330Ω±25%	400	0.58

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Chip Ferrite Bead
Design Kits
Chip EMIFIL®
Chip Common Mode Choke Coil
Block Type EMIFIL®

Continued from the preceding page.

No.	Part Number	Quantity (pcs.)	Impedance typ. (at 100MHz, 20 degrees C)	Rated Current (mA)	DC Resistance (Ω) max.
23	BLM18BB471SN1	10	470Ω±25%	300	0.85
24	BLM18BD470SN1	10	47Ω±25%	200	0.30
25	BLM18BD121SN1	10	120Ω±25%	200	0.40
26	BLM18BD151SN1	10	150Ω±25%	200	0.40
27	BLM18BD221SN1	10	220Ω±25%	200	0.45
28	BLM18BD331SN1	10	330Ω±25%	200	0.50
29	BLM18BD421SN1	10	420Ω±25%	200	0.55
30	BLM18BD471SN1	10	470Ω±25%	200	0.55
31	BLM18BD601SN1	10	600Ω±25%	200	0.65
32	BLM18BD102SN1	10	1000Ω±25%	100	0.85
33	BLM18BD152SN1	10	1500Ω±25%	50	1.20
34	BLM18BD182SN1	10	1800Ω±25%	50	1.50
35	BLM18BD222SN1	10	2200Ω±25%	50	1.50
36	BLM18BD252SN1	10	2500Ω±25%	50	1.50
37	BLM18PG300SN1	10	30Ω (Typ.)	1000	0.05
38	BLM18PG330SN1	10	33Ω±25%	3000	0.025
39	BLM18PG600SN1	10	60Ω (Typ.)	500	0.10
40	BLM18PG121SN1	10	120Ω±25%	2000	0.05
41	BLM18PG181SN1	10	180Ω±25%	1500	0.09
42	BLM18PG221SN1	10	220Ω±25%	1400	0.10
43	BLM18PG331SN1	10	330Ω±25%	1200	0.15
44	BLM18PG471SN1	10	470Ω±25%	1000	0.20
45	BLM18KG260TN1	10	26Ω±25%	6000	0.007
46	BLM18KG300TN1	10	30Ω±25%	5000	0.010
47	BLM18KG700TN1	10	70Ω±25%	3500	0.022
48	BLM18KG101TN1	10	100Ω±25%	3000	0.030
49	BLM18KG121TN1	10	120Ω±25%	3000	0.030
50	BLM18KG221SN1	10	220Ω±25%	2200	0.050
51	BLM18KG331SN1	10	330Ω±25%	1700	0.080
52	BLM18KG471SN1	10	470Ω±25%	1500	0.130
53	BLM18KG601SN1	10	600Ω±25%	1300	0.150
54	BLM18SG260TN1	10	26Ω±25%	6000	0.007
55	BLM18SG700TN1	10	70Ω±25%	4000	0.020
56	BLM18SG121TN1	10	120Ω±25%	3000	0.025
57	BLM18SG221TN1	10	220Ω±25%	2500	0.040
58	BLM18SG331TN1	10	330Ω±25%	1500	0.070

●EKEMBL8GA (Chip Ferrite Beads 0603 Size / for High Frequency Type)

No.	Part Number	Quantity (pcs.)	Impedance (at 100MHz, 20 degrees C)	Impedance (at 1GHz, 20 degrees C)	Rated Current (mA)	DC Resistance (Ω) max.
1	BLM18HG471SN1	10	470Ω±25%	600Ω (Typ.)	200	0.85
2	BLM18HG601SN1	10	600Ω±25%	700Ω (Typ.)	200	1.00
3	BLM18HG102SN1	10	1000Ω±25%	1000Ω (Typ.)	100	1.60
4	BLM18HB121SN1	10	120Ω±25%	500Ω±40%	200	0.50
5	BLM18HB221SN1	10	220Ω±25%	1100Ω±40%	100	0.80
6	BLM18HB331SN1	10	330Ω±25%	1600Ω±40%	50	1.20
7	BLM18HD471SN1	10	470Ω±25%	1000Ω (Typ.)	100	1.20
8	BLM18HD601SN1	10	600Ω±25%	1200Ω (Typ.)	100	1.50
9	BLM18HD102SN1	10	1000Ω±25%	1700Ω (Typ.)	50	1.80
10	BLM18HE601SN1	10	600Ω±25%	600Ω (Typ.)	800	0.25
11	BLM18HE102SN1	10	1000Ω±25%	1000Ω (Typ.)	600	0.35
12	BLM18HE152SN1	10	1500Ω±25%	1500Ω (Typ.)	500	0.50
13	BLM18HK331SN1	10	330Ω±25%	400Ω (Typ.)	200	0.50
14	BLM18HK471SN1	10	470Ω±25%	600Ω (Typ.)	200	0.70
15	BLM18HK601SN1	10	600Ω±25%	700Ω (Typ.)	100	0.90
16	BLM18HK102SN1	10	1000Ω±25%	1200Ω (Typ.)	50	1.50
17	BLM18EG101TN1	10	100Ω±25%	140Ω (Typ.)	2000	0.045
18	BLM18EG121SN1	10	120Ω±25%	145Ω (Typ.)	2000	0.04
19	BLM18EG221TN1	10	220Ω±25%	300Ω (Typ.)	1000	0.15
20	BLM18EG221SN1	10	220Ω±25%	260Ω (Typ.)	2000	0.05
21	BLM18EG331TN1	10	330Ω±25%	450Ω (Typ.)	500	0.21
22	BLM18EG391TN1	10	390Ω±25%	520Ω (Typ.)	500	0.30
23	BLM18EG471SN1	10	470Ω±25%	550Ω (Typ.)	500	0.21
24	BLM18EG601SN1	10	600Ω±25%	700Ω (Typ.)	500	0.35
25	BLM18GG471SN1	10	470Ω±25%	1800Ω±30%	200	1.30

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●EKEMBL21E (Chip Ferrite Beads 0805 Size / for Large-current P Type)

No.	Part Number	Quantity (pcs.)	Impedance typ. (at 100MHz, 20 degrees C)	Rated Current (mA)	DC Resistance (Ω) max.
1	**BLM21AG121SN1**	10	120Ω±25%	200	0.15
2	**BLM21AG151SN1**	10	150Ω±25%	200	0.15
3	**BLM21AG221SN1**	10	220Ω±25%	200	0.20
4	**BLM21AG331SN1**	10	330Ω±25%	200	0.25
5	**BLM21AG471SN1**	10	470Ω±25%	200	0.25
6	**BLM21AG601SN1**	10	600Ω±25%	200	0.30
7	**BLM21AG102SN1**	10	1000Ω±25%	200	0.45
8	**BLM21BB050SN1**	10	5Ω±25%	500	0.07
9	**BLM21BB600SN1**	10	60Ω±25%	200	0.20
10	**BLM21BB750SN1**	10	75Ω±25%	200	0.25
11	**BLM21BB121SN1**	10	120Ω±25%	200	0.25
12	**BLM21BB221SN1**	10	220Ω±25%	200	0.35
13	**BLM21BB331SN1**	10	330Ω±25%	200	0.40
14	**BLM21BB471SN1**	10	470Ω±25%	200	0.45
15	**BLM21BD121SN1**	10	120Ω±25%	200	0.25
16	**BLM21BD221SN1**	10	220Ω±25%	200	0.25
17	**BLM21BD421SN1**	10	420Ω±25%	200	0.30
18	**BLM21BD471SN1**	10	470Ω±25%	200	0.35
19	**BLM21BD601SN1**	10	600Ω±25%	200	0.35
20	**BLM21BD102SN1**	10	1000Ω±25%	200	0.40
21	**BLM21BD152SN1**	10	1500Ω±25%	200	0.45
22	**BLM21BD182SN1**	10	1800Ω±25%	200	0.50
23	**BLM21BD222SN1**	10	2250Ω (Typ.)	200	0.60
24	**BLM21BD222TN1**	10	2200Ω±25%	200	0.60
25	**BLM21BD272SN1**	10	2700Ω±25%	200	0.80
26	**BLM21PG220SN1**	10	22Ω±25%	6000	0.01
27	**BLM21PG300SN1**	10	30Ω (Typ.)	3000	0.015
28	**BLM21PG600SN1**	10	60Ω±25%	3000	0.025
29	**BLM21PG121SN1**	10	120Ω±25%	3000	0.03
30	**BLM21PG221SN1**	10	220Ω±25%	2000	0.050
31	**BLM21PG331SN1**	10	330Ω±25%	1500	0.09
32	**BLM31PG330SN1**	10	33Ω±25%	6000	0.01
33	**BLM31PG500SN1**	10	50Ω (Typ.)	3000	0.025
34	**BLM31PG121SN1**	10	120Ω±25%	3000	0.025
35	**BLM31PG391SN1**	10	390Ω (Typ.)	2000	0.05
36	**BLM31PG601SN1**	10	600Ω (Typ.)	1500	0.09
37	**BLM41PG600SN1**	10	60Ω (Typ.)	6000	0.01
38	**BLM41PG750SN1**	10	75Ω (Typ.)	3000	0.025
39	**BLM41PG181SN1**	10	180Ω (Typ.)	3000	0.025
40	**BLM41PG471SN1**	10	470Ω (Typ.)	2000	0.05
41	**BLM41PG102SN1**	10	1000Ω (Typ.)	1500	0.09

Memo

NF□

Chip EMIFIL®

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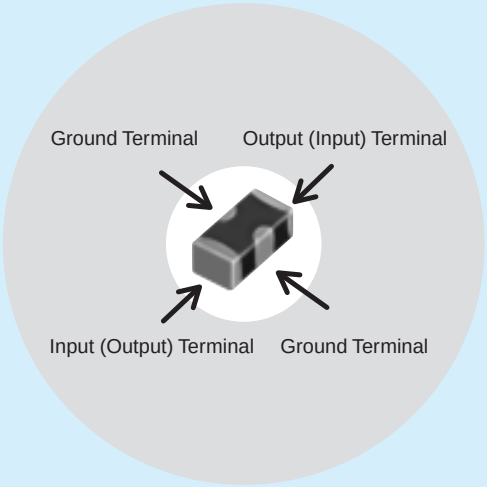
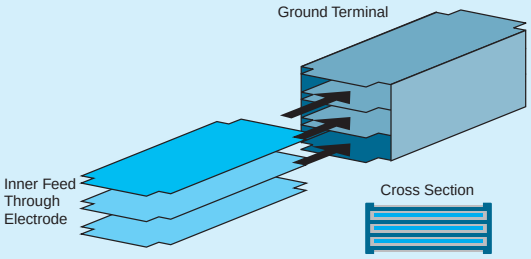
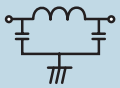
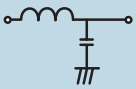
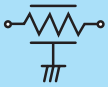
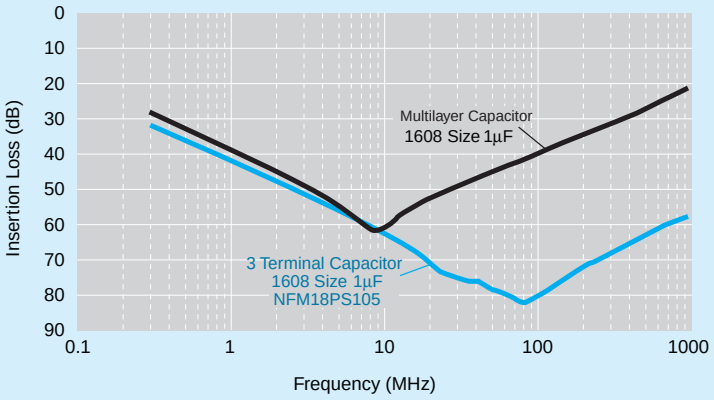


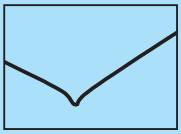
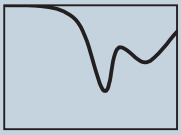
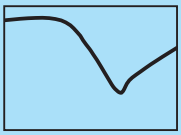
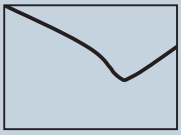
Example of 3 Terminal Capacitor Structure

Chip 3 terminal capacitor is chip shaped 3 terminal capacitor designed for noise suppression. Its inner structure like feed through capacitor makes its ground impedance quite low. Owing to this structure, 3 terminal capacitor has good noise suppression effect at high frequency range up to several hundred MHz.



Series	Equivalent Circuit	Part Number
NFM Series (3 terminal capacitor)		**NFM18CC** **NFM21CC** **NFM18PC** **NFM18PS** **NFM21PC**
NFL / NFW Series (LC filter)		**NFL18ST**
		**NFL18SP** **NFL21SP** **NFW31SP**
		**NFA21S** **NFA18S**
NFR Series (RC filter)		**NFR21GD** **NFA31GD**
NFE Series (Feed through capacitor with ferrite cores)		**NFE31PT** **NFE61PT**



Insertion Loss Sample	Features	Classification		Applications	Example
	Standard of 3 terminal capacitor	**NFM_CC**	Standard type with varied capacitance	Noise suppression in low speed signal lines	· Low speed interface lines, · sensor
		NFM_PC	Meet large current, high capacitance available, for power lines	Noise suppression in power lines	· Individual IC power lines
	Sharp insertion loss curve enables low damage to signal waveform	**NFL_ST**	T-type filter, effective in low impedance circuits	Noise suppression in high speed signal lines	· High speed interface lines · Bus lines LCD lines Camera I/Fs · High speed analog lines RGB / D terminal
		NFL_SP	π-type filter, effective in high impedance circuits		
		NFW_SP	π-type filter, designed for low impedance circuits		
		NFA_SL	4-line array, suitable for bus lines or flat cables		
	Limit noise using resistor, also loop back to ground			Noise suppression in signal line with unstable ground	· Interface lines · Clock lines
	Meet large current, good high frequency performance because of its feed through structure			Noise suppression in power lines / low impedance lines	· Various power lines · sensor

Capacitor

(Part Number) NF ❶ | M ❷ | 3D ❸ | CC ❹ | 102 ❺ | R ❻ | 1H ❼ | 3 ❽ | L ❾

❶Product ID

Product ID	
NF	Chip EMIFIL®

❷Structure

Code	Structure
M	Capacitor Type
A	Capacitor Array Type

❸Dimensions (L×W)

Code	Dimensions (L×W)	EIA
18	1.6×0.8mm	0603
21	2.0×1.25mm	0805
3D	3.2×1.25mm	1205
31	3.2×1.6mm	1206
41	4.5×1.6mm	1806
55	5.7×5.0mm	2220

❹Features

Code	Features
CC	Capacitor Type for Signal Lines
PC	Capacitor Type for Large Current
PS	High Loss Type for Large Current

❺Capacitance

Expressed by three figures. The unit is in pico-farad (pF). The first and second figures are significant digits, and the third figure expresses the number of zeros which follow the two figures.

❻Characteristics

Code	Capacitance Change (Temperature Characteristics)
B	±10%, ±12.5%, +10/-13%
F	+30/-80%, +30/-84%
R	±15%, +15/-18%
U	-750 ±120ppm/°C
S	+350 to -1000ppm/°C

❼Rated Voltage

Code	Rated Voltage
0J	6.3V
1A	10V
1C	16V
1E	25V
1H	50V
2A	100V

❽Electrode/Others (**NFM** Series)

Code	Electrode	Series
3	Sn Plating	**NFM** (Except **NFM55**)
4	Solder Coating	**NFM55**

❽Number of Circuits (**NFA□□CC** Series)

Code	Number of Circuits
4	4 Circuits

❾Packaging

Code	Packaging	Series
L	Embossed Taping (ø180mm Reel)	**NFM3D/NFM31/NFM41/NFM55**
B	Bulk	All series
D	Paper Taping (ø180mm Reel)	**NFM18/NFM21/NFA□□CC**

LC Combined (1)

(Part Number) NF L 18 ST 107 X 1C 3 L

❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽ ❾

❶Product ID

Product ID	
NF	Chip EMIFIL®

❷Structure

Code	Structure
L	Maltilayer, LC Combined Type
W	Wire Wound, LC Combined Type
E	Block, LC Combined Type

❸Dimensions (L×W)

Code	Dimensions (L×W)	EIA
18	1.6×0.8mm	0603
21	2.0×1.25mm	0805
31	3.2×1.6mm	1206
61	6.8×1.6mm	2606

❹Features

Code	Features
SP	π Circuit for Signal Lines
ST	T Circuit for Signal Lines
PT	T Circuit for Large Current

❺Cut-off Frequency (**NFL/NFW** Series)

Expressed by three figures. The unit is in hertz (Hz). The first and second figures are significant digits, and the third figure expresses the number of zeros which follow the two figures.

❺Capacitance (**NFE** Series)

Expressed by three figures. The unit is in pico-farad (pF). The first and second figures are significant digits, and the third figure expresses the number of zeros which follow the two figures.

❻Characteristics (**NFL/NFW** Series)

Code	Characteristics
X	Cut-off Frequency

❻Characteristics (**NFE** Series)

Code	Capacitance Change (Temperature Characteristics)
B	±10%
C	±20%, ±22%
D	+20/-30%, +22/-33%
E	+20/-55%, +22/-56%
F	+30/-80%, +22/-82%
R	±15%
U	-750 ±120ppm/ ˚C
Z	Other

❼Rated Voltage

Code	Rated Voltage
1A	10V
1C	16V
1E	25V
1H	50V
2A	100V

❽Electrode

Code	Electrode	Series
3/7	Sn Plating	**NFL**
4	Lead Free Solder Coating	**NFW**
9	Others	**NFE**

❾Packaging

Code	Packaging	Series
K	Embossed Taping (ø330mm Reel)	**NFW31/NFE**
L	Embossed Taping (ø180mm Reel)	**NFW31/NFE**
B	Bulk	**NFL18/NFL21/NFE**
D	Paper Taping (ø180mm Reel)	**NFL18/NFL21**

LC Combined (2)

(Part Number)

NF	A	21	SL	207	X	1A	4	5	L
❶	❷	❸	❹	❺	❻	❼	❽	❾	❿

❶Product ID

Product ID	
NF	Chip EMIFIL®

❷Structure

Code	Structure
A	Array Type

❸Dimensions (L×W)

Code	Dimensions (L×W)	EIA
18	1.6×0.8mm	0603
21	2.0×1.25mm	0805

❹Features (1)

Code	Features
SL	L Circuit for Signal Lines
SD	L Circuit for Differential Signal

❺Cut-off Frequency

Expressed by three figures. The unit is in hertz (Hz). The first and second figures are significant digits, and the third figure expresses the number of zeros which follow the two figures.

❻Features (2)

Code	Features
X	Expressed by a letter
V	

❼Rated Voltage

Code	Rated Voltage
1A	10V

❽Number of Circuits

Code	Number of Circuits
4	4 Circuits

❾Dimensions (T)

Code	Dimensions (T)
5	Low Profile
8	Standard

❿Packaging

Code	Packaging
B	Bulk
L	Embossed Taping (ø180mm Reel)

RC Combined

(Part Number)

NF	R	21	GD	470	470	2	L
❶	❷	❸	❹	❺	❻	❼	❽

❶Product ID

Product ID	
NF	Chip EMIFIL®

❷Structure

Code	Structure
R	RC Combined Type
A	RC Combined Array Type

❸Dimensions (L×W)

Code	Dimensions (L×W)	EIA
21	2.0×1.25mm	0805
31	3.2×1.6mm	1206

❹Features

Code	Features
GD	RC Combined Type for Signal Lines

❺Capacitance

Expressed by three figures. The unit is in pico-farad (pF). The first and second figures are significant digits, and the third figure expresses the number of zeros which follow the two figures.

❻Resistance

Expressed by three-digit alphanumerics. The unit is in ohm (Ω). The first and second figures are significant digits, and the third figure expresses the number of zeros which follow the two figures. If there is a decimal point, it is expressed by the capital letter "**R**". In this case, all figures are significant digits.

❼Electrode/Others (**NFR** Series)

Code	Electrode
2	Sn Plating

❼Number of Circuits (**NFA□□GD** Series)

Code	Number of Circuits
4	4 Circuits

❽Packaging

Code	Packaging	Series
L	Embossed Taping (ø180mm Reel)	**NFR**
B	Bulk	All Series
D	Paper Taping (ø180mm Reel)	**NFA□□GD**

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Type	Size Code (Inch)	Thickness (mm)	Part Number	Rated Voltage	Capacitance	Nominal Cut-off Frequency	Rated Current	New / Kit / ≧1A / ≧3A / DTV / Flow / ReFlow
Capacitor Type for Signal Lines	p120 0603	0.6	NFM18CC220U1C3	16Vdc	22pF+20%-20%	-	400mA	Kit ReFlow
		0.6	NFM18CC470U1C3	16Vdc	47pF+20%-20%	-	400mA	Kit ReFlow
		0.6	NFM18CC101R1C3	16Vdc	100pF+20%-20%	-	500mA	Kit ReFlow
		0.6	NFM18CC221R1C3	16Vdc	220pF+20%-20%	-	500mA	Kit ReFlow
		0.6	NFM18CC471R1C3	16Vdc	470pF+20%-20%	-	500mA	Kit ReFlow
		0.6	NFM18CC102R1C3	16Vdc	1000pF+20%-20%	-	600mA	Kit ReFlow
		0.6	NFM18CC222R1C3	16Vdc	2200pF+20%-20%	-	700mA	Kit ReFlow
		0.6	NFM18CC223R1C3	16Vdc	22000pF+20%-20%	-	1000mA	Kit ≧1A ReFlow
	p121 0805	0.85	NFM21CC220U1H3	50Vdc	22pF+20%-20%	-	700mA	Kit ReFlow
		0.85	NFM21CC470U1H3	50Vdc	47pF+20%-20%	-	700mA	Kit ReFlow
		0.85	NFM21CC101U1H3	50Vdc	100pF+20%-20%	-	700mA	Kit ReFlow
		0.85	NFM21CC221R1H3	50Vdc	220pF+20%-20%	-	700mA	Kit ReFlow
		0.85	NFM21CC471R1H3	50Vdc	470pF+20%-20%	-	1000mA	Kit ≧1A ReFlow
		0.85	NFM21CC102R1H3	50Vdc	1000pF+20%-20%	-	1000mA	Kit ≧1A ReFlow
		0.85	NFM21CC222R1H3	50Vdc	2200pF+20%-20%	-	1000mA	Kit ≧1A ReFlow
		0.85	NFM21CC223R1H3	50Vdc	22000pF+20%-20%	-	2000mA	Kit ≧1A ReFlow
	p122 1205	0.7	NFM3DCC220U1H3	50Vdc	22pF+50%-20%	-	300mA	Flow ReFlow
		0.7	NFM3DCC470U1H3	50Vdc	47pF+50%-20%	-	300mA	Flow ReFlow
		0.7	NFM3DCC101U1H3	50Vdc	100pF+50%-20%	-	300mA	Flow ReFlow
		0.7	NFM3DCC221R1H3	50Vdc	220pF+50%-20%	-	300mA	Flow ReFlow
		0.7	NFM3DCC471R1H3	50Vdc	470pF+50%-20%	-	300mA	Flow ReFlow
		0.7	NFM3DCC102R1H3	50Vdc	1000pF+50%-20%	-	300mA	Flow ReFlow
		0.7	NFM3DCC222R1H3	50Vdc	2200pF+50%-20%	-	300mA	Flow ReFlow
		0.7	NFM3DCC223R1H3	50Vdc	22000pF+50%-20%	-	300mA	Flow ReFlow
	p123 1806	1.0	NFM41CC220U2A3	100Vdc	22pF+50%-20%	-	300mA	Flow ReFlow
		1.0	NFM41CC470U2A3	100Vdc	47pF+50%-20%	-	300mA	Flow ReFlow
		1.0	NFM41CC101U2A3	100Vdc	100pF+50%-20%	-	300mA	Flow ReFlow
		1.0	NFM41CC221U2A3	100Vdc	220pF+50%-20%	-	300mA	Flow ReFlow
		1.0	NFM41CC471R2A3	100Vdc	470pF+50%-20%	-	300mA	Flow ReFlow
		1.0	NFM41CC102R2A3	100Vdc	1000pF+50%-20%	-	300mA	Flow ReFlow
		1.0	NFM41CC222R2A3	100Vdc	2200pF+50%-20%	-	300mA	Flow ReFlow
		1.0	NFM41CC223R2A3	100Vdc	22000pF+50%-20%	-	300mA	Flow ReFlow
Capacitor Array Type for Signal Lines	p124 1206	0.8	NFA31CC220S1E4	25Vdc	22pF+20%-20%	-	200mA	Kit ReFlow
		0.8	NFA31CC470S1E4	25Vdc	47pF+20%-20%	-	200mA	Kit ReFlow
		0.8	NFA31CC101S1E4	25Vdc	100pF+20%-20%	-	200mA	Kit ReFlow
		0.8	NFA31CC221S1E4	25Vdc	220pF+20%-20%	-	200mA	Kit ReFlow
		0.8	NFA31CC471R1E4	25Vdc	470pF+20%-20%	-	200mA	Kit ReFlow
		0.8	NFA31CC102R1E4	25Vdc	1000pF+20%-20%	-	200mA	Kit ReFlow
		0.8	NFA31CC222R1E4	25Vdc	2200pF+20%-20%	-	200mA	Kit ReFlow
		0.8	NFA31CC223R1C4	16Vdc	22000pF+20%-20%	-	200mA	Kit ReFlow
Capacitor Type for Power Lines	p112 0603	0.6	NFM18PS474R0J3	6.3Vdc	0.47µF+20%-20%	-	2A	Kit ≧1A ReFlow
		0.6	NFM18PS105R0J3	6.3Vdc	1.0µF+20%-20%	-	2A	Kit ≧1A ReFlow
	p113	0.6	NFM18PC104R1C3	16Vdc	0.1µF+20%-20%	-	2A	Kit ≧1A ReFlow
		0.6	NFM18PC224R0J3	6.3Vdc	0.22µF+20%-20%	-	2A	Kit ≧1A ReFlow
		0.6	NFM18PC474R0J3	6.3Vdc	0.47µF+20%-20%	-	2A	Kit ≧1A ReFlow
		0.8	NFM18PC105R0J3	6.3Vdc	1.0µF+20%-20%	-	4A	Kit ≧1A ReFlow
		0.6	NFM18PC225B0J3	6.3Vdc	2.2µF+20%-20%	-	2A	Kit ≧1A ReFlow
		0.8	NFM18PC225B1A3	10Vdc	2.2µF+20%-20%	-	4A	Kit ≧3A ReFlow
	p115 0805	0.85	NFM21PC104R1E3	25Vdc	0.1µF+20%-20%	-	2A	Kit ≧1A ReFlow
		0.85	NFM21PC224R1C3	16Vdc	0.22µF+20%-20%	-	2A	Kit ≧1A ReFlow
		0.85	NFM21PC474R1C3	16Vdc	0.47µF+20%-20%	-	2A	Kit ≧1A ReFlow
		0.85	NFM21PC105B1A3	10Vdc	1.0µF+20%-20%	-	4A	Kit ≧3A ReFlow
		0.85	NFM21PC105B1C3	16Vdc	1.0µF+20%-20%	-	4A	Kit ≧3A ReFlow
		0.85	NFM21PC225B0J3	6.3Vdc	2.2µF+20%-20%	-	4A	Kit ≧3A ReFlow
		0.85	NFM21PC475B1A3	10Vdc	4.7µF+20%-20%	-	6A	Kit ≧3A ReFlow
	1205 p116	0.7	NFM3DPC223R1H3	50Vdc	0.022µF+20%-20%	-	2A	≧1A Flow ReFlow
	1206 p117	1.3	NFM31PC276B0J3	6.3Vdc	27µF+20%-20%	-	6A	Kit ≧3A Flow ReFlow
	p118 1806	1.0	NFM41PC204F1H3	50Vdc	0.2µF+80%-20%	-	2A	Kit ≧1A Flow ReFlow
		1.0	NFM41PC155B1E3	25Vdc	1.5µF+20%-20%	-	6A	Kit ≧3A Flow ReFlow
	2220 p119	2.2	NFM55PC155F1H4	50Vdc	1.5µF+80%-20%	-	6A	≧3A ReFlow

Continued on the following page.

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Type	Size Code (Inch)	Thickness (mm)	Part Number	Rated Voltage	Capacitance	Nominal Cut-off Frequency	Rated Current	New	Kit	≧1A ≧3A	DTV	Flow	ReFlow
LC Combined Type for Power Lines and Signal Lines	p110 1206	1.6	NFE31PT220R1E9	25Vdc	22pF+30%-30%	-	6A			≧3A			ReFlow
		1.6	NFE31PT470C1E9	25Vdc	47pF+50%-20%	-	6A			≧3A			ReFlow
		1.6	NFE31PT101C1E9	25Vdc	100pF+80%-20%	-	6A			≧3A			ReFlow
		1.6	NFE31PT221D1E9	25Vdc	220pF+50%-20%	-	6A			≧3A			ReFlow
		1.6	NFE31PT471F1E9	25Vdc	470pF+50%-20%	-	6A			≧3A			ReFlow
		1.6	NFE31PT152Z1E9	25Vdc	1500pF+50%-20%	-	6A		Kit	≧3A			ReFlow
		1.6	NFE31PT222Z1E9	25Vdc	2200pF+50%-50%	-	6A		Kit	≧3A			ReFlow
	p111 2706	1.6	NFE61PT330B1H9	50Vdc	33pF+30%-30%	-	2A			≧1A		Flow	ReFlow
		1.6	NFE61PT680B1H9	50Vdc	68pF+30%-30%	-	2A			≧1A		Flow	ReFlow
		1.6	NFE61PT101Z1H9	50Vdc	100pF+30%-30%	-	2A			≧1A		Flow	ReFlow
		1.6	NFE61PT181B1H9	50Vdc	180pF+30%-30%	-	2A			≧1A		Flow	ReFlow
		1.6	NFE61PT361B1H9	50Vdc	360pF+20%-20%	-	2A			≧1A		Flow	ReFlow
		1.6	NFE61PT681B1H9	50Vdc	680pF+30%-30%	-	2A			≧1A		Flow	ReFlow
		1.6	NFE61PT102E1H9	50Vdc	1000pF+80%-20%	-	2A		Kit	≧1A		Flow	ReFlow
		1.6	NFE61PT472C1H9	50Vdc	4700pF+80%-20%	-	2A		Kit	≧1A		Flow	ReFlow
LC Combined Multilayer Type for Signal Lines	p125 0603	0.6	NFL18ST506H1A3	10Vdc	110pF (Typ.)	50MHz	75mA	New	Kit		DTV		ReFlow
		0.6	NFL18ST706H1A3	10Vdc	70pF (Typ.)	70MHz	75mA	New	Kit		DTV		ReFlow
		0.6	NFL18ST107H1A3	10Vdc	50pF (Typ.)	100MHz	75mA	New	Kit		DTV		ReFlow
	p126	0.8	NFL18ST207X1C3	16Vdc	25pF+20%-20%	200MHz	150mA		Kit				ReFlow
		0.8	NFL18ST307X1C3	16Vdc	18pF+20%-20%	300MHz	200mA		Kit				ReFlow
		0.8	NFL18ST507X1C3	16Vdc	10pF+20%-20%	500MHz	200mA		Kit				ReFlow
	p127	0.6	NFL18SP157X1A3	10Vdc	34pF+20%-20%	150MHz	100mA		Kit				ReFlow
		0.6	NFL18SP207X1A3	10Vdc	24pF+20%-20%	200MHz	100mA		Kit				ReFlow
		0.6	NFL18SP307X1A3	10Vdc	19pF+20%-20%	300MHz	100mA		Kit				ReFlow
		0.6	NFL18SP507X1A3	10Vdc	11pF+20%-20%	500MHz	100mA		Kit				ReFlow
	p128 0805	0.85	NFL21SP106X1C3	16Vdc	670pF+20%-20%	10MHz	100mA		Kit				ReFlow
		0.85	NFL21SP206X1C7	16Vdc	240pF+20%-20%	20MHz	100mA		Kit				ReFlow
		0.85	NFL21SP506X1C3	16Vdc	84pF+20%-20%	50MHz	150mA		Kit				ReFlow
		0.85	NFL21SP706X1C3	16Vdc	76pF+20%-20%	70MHz	150mA		Kit				ReFlow
		0.85	NFL21SP107X1C3	16Vdc	44pF+20%-20%	100MHz	200mA		Kit				ReFlow
		0.85	NFL21SP157X1C3	16Vdc	28pF+20%-20%	150MHz	200mA		Kit				ReFlow
		0.85	NFL21SP207X1C3	16Vdc	22pF+20%-20%	200MHz	250mA		Kit				ReFlow
		0.85	NFL21SP307X1C3	16Vdc	19pF+10%-10%	300MHz	300mA		Kit				ReFlow
		0.85	NFL21SP407X1C3	16Vdc	16pF+10%-10%	400MHz	300mA		Kit				ReFlow
		0.85	NFL21SP507X1C3	16Vdc	12pF+10%-10%	500MHz	300mA		Kit				ReFlow
LC Combined Array Type for Signal Lines	p129 0603	0.6	NFA18SL137V1A45	10Vdc	-	130MHz	50mA		Kit		DTV		ReFlow
		0.6	NFA18SL187V1A45	10Vdc	-	180MHz	50mA		Kit		DTV		ReFlow
		0.6	NFA18SL207V1A45	10Vdc	-	200MHz	50mA		Kit		DTV		ReFlow
		0.6	NFA18SL227V1A45	10Vdc	-	220MHz	25mA		Kit		DTV		ReFlow
		0.5	NFA18SL307V1A45	10Vdc	-	300MHz	100mA		Kit				ReFlow
		0.5	NFA18SL357V1A45	10Vdc	-	350MHz	35mA	New	Kit				ReFlow
		0.5	NFA18SL407V1A45	10Vdc	-	400MHz	100mA		Kit				ReFlow
		0.5	NFA18SL487V1A45	10Vdc	-	480MHz	100mA		Kit				ReFlow
	p130	0.6	NFA18SL506X1A45	10Vdc	-	50MHz	25mA		Kit				ReFlow
	p131	0.6	NFA18SD187X1A45	10Vdc	-	180MHz	25mA		Kit		DTV		ReFlow
		0.6	NFA18SD207X1A45	10Vdc	-	200MHz	25mA		Kit		DTV		ReFlow
	p132 0805	0.5	NFA21SL287V1A45	10Vdc	-	280MHz	100mA		Kit				ReFlow
		0.5	NFA21SL317V1A45	10Vdc	-	310MHz	100mA		Kit				ReFlow
		0.5	NFA21SL337V1A45	10Vdc	-	330MHz	100mA		Kit				ReFlow
		0.85	NFA21SL287V1A48	10Vdc	-	280MHz	100mA		Kit				ReFlow
		0.85	NFA21SL317V1A48	10Vdc	-	310MHz	100mA		Kit				ReFlow
		0.85	NFA21SL337V1A48	10Vdc	-	330MHz	100mA		Kit				ReFlow
	p133	0.5	NFA21SL207X1A45	10Vdc	-	200MHz	100mA		Kit				ReFlow
		0.5	NFA21SL307X1A45	10Vdc	-	300MHz	100mA		Kit				ReFlow
		0.85	NFA21SL506X1A48	10Vdc	-	50MHz	20mA		Kit				ReFlow
		0.85	NFA21SL806X1A48	10Vdc	-	80MHz	20mA		Kit				ReFlow
		0.85	NFA21SL207X1A48	10Vdc	-	200MHz	100mA		Kit				ReFlow
		0.85	NFA21SL307X1A48	10Vdc	-	300MHz	100mA		Kit				ReFlow

Continued on the following page.

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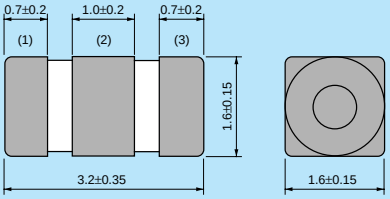
Type	Size Code (Inch)	Thickness (mm)	Part Number	Rated Voltage	Capacitance	Nominal Cut-off Frequency	Rated Current	New / Kit / ≧1A ≧3A / DTV / Flow / ReFlow
LC Combined Wire Wound Type for Signal Lines	p134 1206	1.8	NFW31SP106X1E4	-	-	10MHz	-	Kit Flow ReFlow
		1.8	NFW31SP206X1E4	-	-	20MHz	-	Kit Flow ReFlow
		1.8	NFW31SP506X1E4	-	-	50MHz	-	Kit Flow ReFlow
		1.8	NFW31SP107X1E4	-	-	100MHz	-	Kit Flow ReFlow
		1.8	NFW31SP157X1E4	-	-	150MHz	-	Kit Flow ReFlow
		1.8	NFW31SP207X1E4	-	-	200MHz	-	Kit Flow ReFlow
		1.8	NFW31SP307X1E4	-	-	300MHz	-	Kit Flow ReFlow
		1.8	NFW31SP407X1E4	-	-	400MHz	-	Kit Flow ReFlow
		1.8	NFW31SP507X1E4	-	-	500MHz	-	Kit Flow ReFlow
RC Combined Type for Signal Lines	p136 0805	0.5	NFR21GD1002202	50Vdc	10pF+20%-20%	-	50mA	ReFlow
		0.5	NFR21GD1004702	50Vdc	10pF+20%-20%	-	35mA	ReFlow
		0.5	NFR21GD4702202	50Vdc	47pF+20%-20%	-	50mA	ReFlow
		0.5	NFR21GD4704702	50Vdc	47pF+20%-20%	-	35mA	ReFlow
		0.5	NFR21GD4706802	50Vdc	47pF+20%-20%	-	30mA	ReFlow
		0.5	NFR21GD4701012	50Vdc	47pF+20%-20%	-	25mA	ReFlow
		0.5	NFR21GD1012202	50Vdc	100pF+20%-20%	-	50mA	ReFlow
		0.5	NFR21GD1014702	50Vdc	100pF+20%-20%	-	35mA	ReFlow
		0.5	NFR21GD1016802	50Vdc	100pF+20%-20%	-	30mA	ReFlow
		0.5	NFR21GD1011012	50Vdc	100pF+20%-20%	-	25mA	ReFlow
RC Combined Array Type for Signal Lines	p137 1206	0.8	NFA31GD1006R84	6Vdc	10pF+20%-20%	-	50mA	ReFlow
		0.8	NFA31GD1004704	6Vdc	10pF+20%-20%	-	20mA	ReFlow
		0.8	NFA31GD1001014	6Vdc	10pF+20%-20%	-	15mA	ReFlow
		0.8	NFA31GD4706R84	6Vdc	47pF+20%-20%	-	50mA	ReFlow
		0.8	NFA31GD4703304	6Vdc	47pF+20%-20%	-	20mA	ReFlow
		0.8	NFA31GD4704704	6Vdc	47pF+20%-20%	-	20mA	ReFlow
		0.8	NFA31GD4701014	6Vdc	47pF+20%-20%	-	15mA	ReFlow
		0.8	NFA31GD1016R84	6Vdc	100pF+20%-20%	-	50mA	ReFlow
		0.8	NFA31GD1014704	6Vdc	100pF+20%-20%	-	20mA	ReFlow
		0.8	NFA31GD1011014	6Vdc	100pF+20%-20%	-	15mA	ReFlow

NFE31P Series (1206 Size)

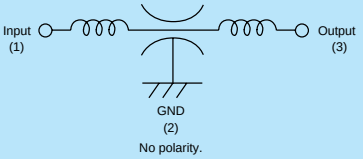
Hi Power Reflow OK

Meet 6A, T-type filter with built-in ferrite bead.

■ Dimensions



■ Equivalent Circuit



■ Packaging

Code	Packaging	Minimum Quantity
L	180mm Reel Embossed Tape	2000
K	330mm Reel Embossed Tape	8000
B	Bulk(Bag)	500

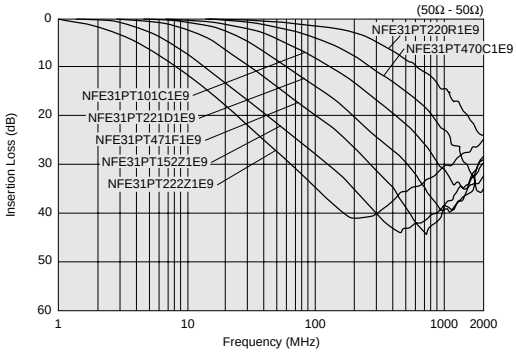
Refer to pages from p.139 to p.144 for mounting information.

■ Rated Value (☐: packaging code)

Part Number	Capacitance	Rated Current	Rated Voltage	Insulation Resistance (min.)	Operating Temperature Range	
NFE31PT220R1E9☐	22pF+30%-30%	6A	25Vdc	1000M ohm	-40°C to +85°C	≧3A
NFE31PT470C1E9☐	47pF+50%-20%	6A	25Vdc	1000M ohm	-40°C to +85°C	≧3A
NFE31PT101C1E9☐	100pF+80%-20%	6A	25Vdc	1000M ohm	-40°C to +85°C	≧3A
NFE31PT221D1E9☐	220pF+50%-20%	6A	25Vdc	1000M ohm	-40°C to +85°C	≧3A
NFE31PT471F1E9☐	470pF+50%-20%	6A	25Vdc	1000M ohm	-40°C to +85°C	≧3A
NFE31PT152Z1E9☐	1500pF+50%-20%	6A	25Vdc	1000M ohm	-40°C to +85°C	Kit ≧3A
NFE31PT222Z1E9☐	2200pF+50%-50%	6A	25Vdc	1000M ohm	-40°C to +85°C	Kit ≧3A

Number of Circuit: 1

■ Insertion Loss Characteristics (Main Items)



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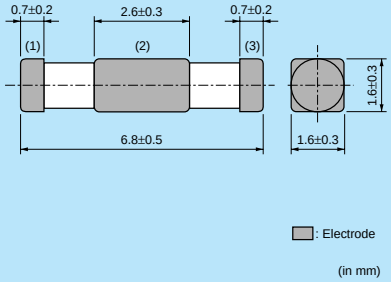
NFE61P Series (2706 Size)

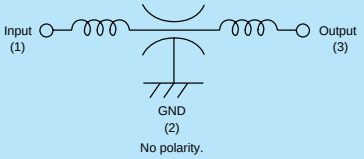
Hi Power Flow OK Reflow OK

T-type filter with built-in ferrite bead.

■ Dimensions



■ Equivalent Circuit



■ Packaging

Code	Packaging	Minimum Quantity
L	180mm Reel Embossed Tape	2500
K	330mm Reel Embossed Tape	8000
B	Bulk(Bag)	500

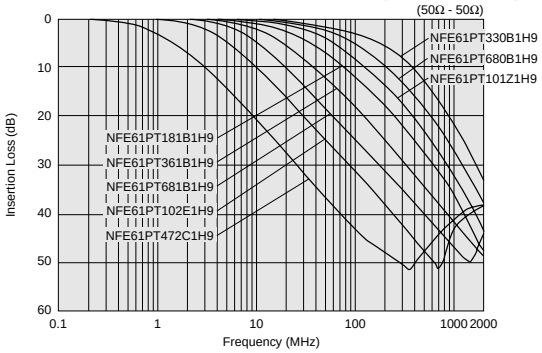
Refer to pages from p.139 to p.144 for mounting information.

■ Rated Value (☐: packaging code)

Part Number	Capacitance	Rated Current	Rated Voltage	Insulation Resistance (min.)	Operating Temperature Range	
NFE61PT330B1H9☐	33pF+30%-30%	2A	50Vdc	1000M ohm	-25°C to +85°C	≧1A
NFE61PT680B1H9☐	68pF+30%-30%	2A	50Vdc	1000M ohm	-25°C to +85°C	≧1A
NFE61PT101Z1H9☐	100pF+30%-30%	2A	50Vdc	1000M ohm	-25°C to +85°C	≧1A
NFE61PT181B1H9☐	180pF+30%-30%	2A	50Vdc	1000M ohm	-25°C to +85°C	≧1A
NFE61PT361B1H9☐	360pF+20%-20%	2A	50Vdc	1000M ohm	-25°C to +85°C	≧1A
NFE61PT681B1H9☐	680pF+30%-30%	2A	50Vdc	1000M ohm	-25°C to +85°C	≧1A
NFE61PT102E1H9☐	1000pF+80%-20%	2A	50Vdc	1000M ohm	-25°C to +85°C	Kit ≧1A
NFE61PT472C1H9☐	4700pF+80%-20%	2A	50Vdc	1000M ohm	-25°C to +85°C	Kit ≧1A

Number of Circuit: 1

■ Insertion Loss Characteristics (Main Items)



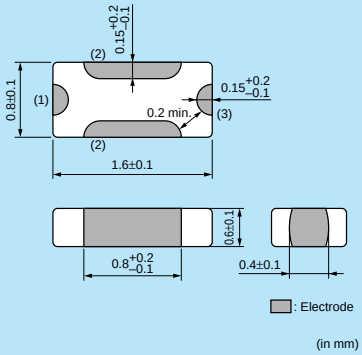
NFM18PS Series (0603 Size)

Hi Power Reflow OK

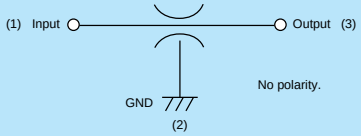
3-terminal capacitor for power lines whose ground impedance has reduced.

*Please refer to the products which are designed for both power lines and signal lines.

■ Dimensions



■ Equivalent Circuit



■ Packaging

Code	Packaging	Minimum Quantity
D	180mm Reel Paper Tape	4000
B	Bulk(Bag)	500

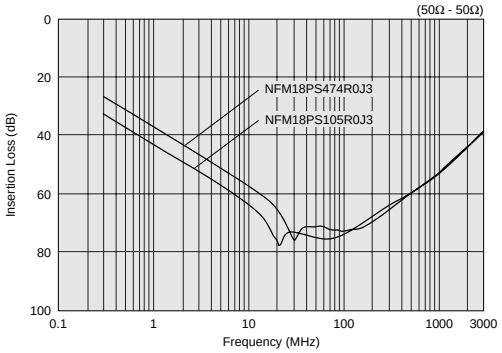
Refer to pages from p.139 to p.144 for mounting information.

■ Rated Value (☐: packaging code)

Part Number	Capacitance	Rated Current	Rated Voltage	Insulation Resistance (min.)	Operating Temperature Range	
NFM18PS474R0J3☐	0.47µF+20%-20%	2A	6.3Vdc	1000M ohm	-55°C to +125°C	Kit ≧1A
NFM18PS105R0J3☐	1.0µF+20%-20%	2A	6.3Vdc	500M ohm	-55°C to +105°C	Kit ≧1A

Number of Circuit: 1

■ Insertion Loss Characteristics (Main Items)



NFM18PC Series (0603 Size)

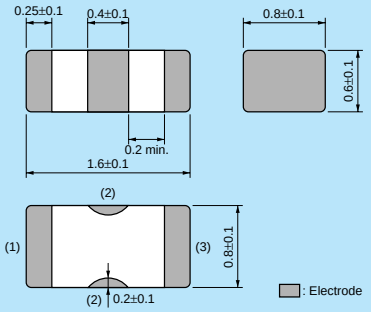
Hi Power Reflow OK

4A max, 0603 size chip 3-terminal capacitor for power lines.

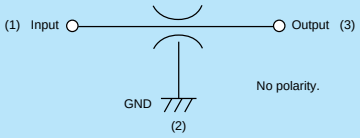
*Please refer to the products which are designed for both power lines and signal lines.

NFM18PC (0.1 to 0.47µF, 2.2µF-6.3V)

■ Dimensions



■ Equivalent Circuit

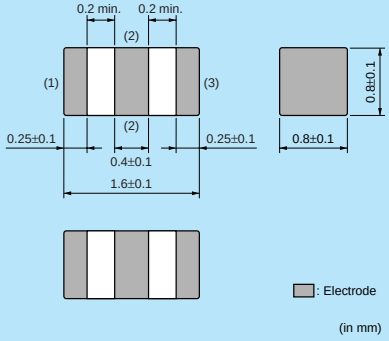


■ Packaging

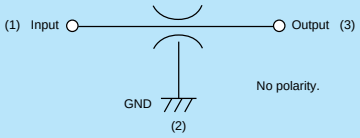
Code	Packaging	Minimum Quantity
D	180mm Reel Paper Tape	4000
B	Bulk(Bag)	500

NFM18PC (1µF, 2.2µF-10V)

■ Dimensions



■ Equivalent Circuit



■ Packaging

Code	Packaging	Minimum Quantity
D	180mm Reel Paper Tape	4000
B	Bulk(Bag)	500

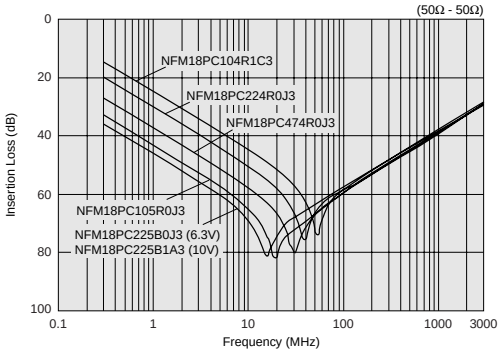
Refer to pages from p.139 to p.144 for mounting information.

■ Rated Value (☐: packaging code)

Part Number	Capacitance	Rated Current	Rated Voltage	Insulation Resistance (min.)	Operating Temperature Range	
NFM18PC104R1C3☐	0.1µF±20%	2A	16Vdc	1000M ohm	-55°C to +125°C	Kit ≧1A
NFM18PC224R0J3☐	0.22µF±20%	2A	6.3Vdc	1000M ohm	-55°C to +125°C	Kit ≧1A
NFM18PC474R0J3☐	0.47µF±20%	2A	6.3Vdc	1000M ohm	-55°C to +125°C	Kit ≧1A
NFM18PC105R0J3☐	1.0µF±20%	4A	6.3Vdc	500M ohm	-55°C to +105°C	Kit ≧1A
NFM18PC225B0J3☐	2.2µF±20%	2A	6.3Vdc	200M ohm	-40°C to +85°C	Kit ≧1A
NFM18PC225B1A3☐	2.2µF±20%	4A	10Vdc	200M ohm	-40°C to +85°C	Kit ≧3A

Number of Circuit: 1

■ Insertion Loss Characteristics (Main Items)



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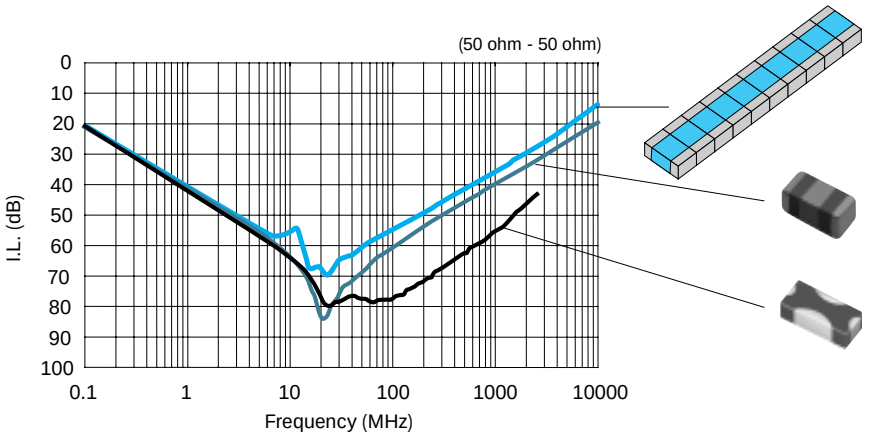
• High frequency performance of NFM18PS series



Chip 3 terminal capacitor

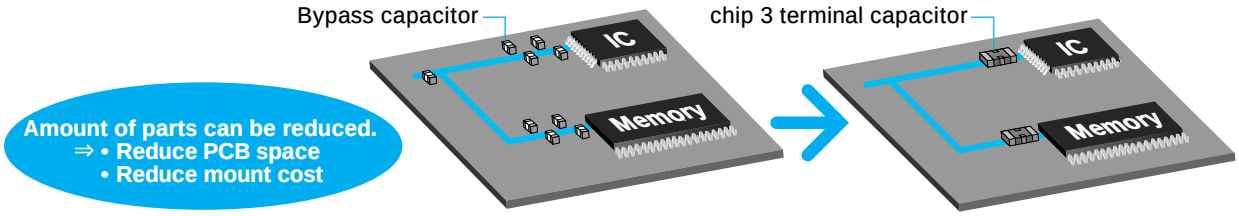
2 terminal MLCC: 2012 size
(0.1µFx10pcs parallel)

NFM18PC105R0J3 1pc
: 1608 size (1.0µF)

NFM18PS105R0J3 1pc
: 1608 size (1.0µF)

NFM18PS series has better high frequency performance compared to normal chip 3 terminal capacitors.

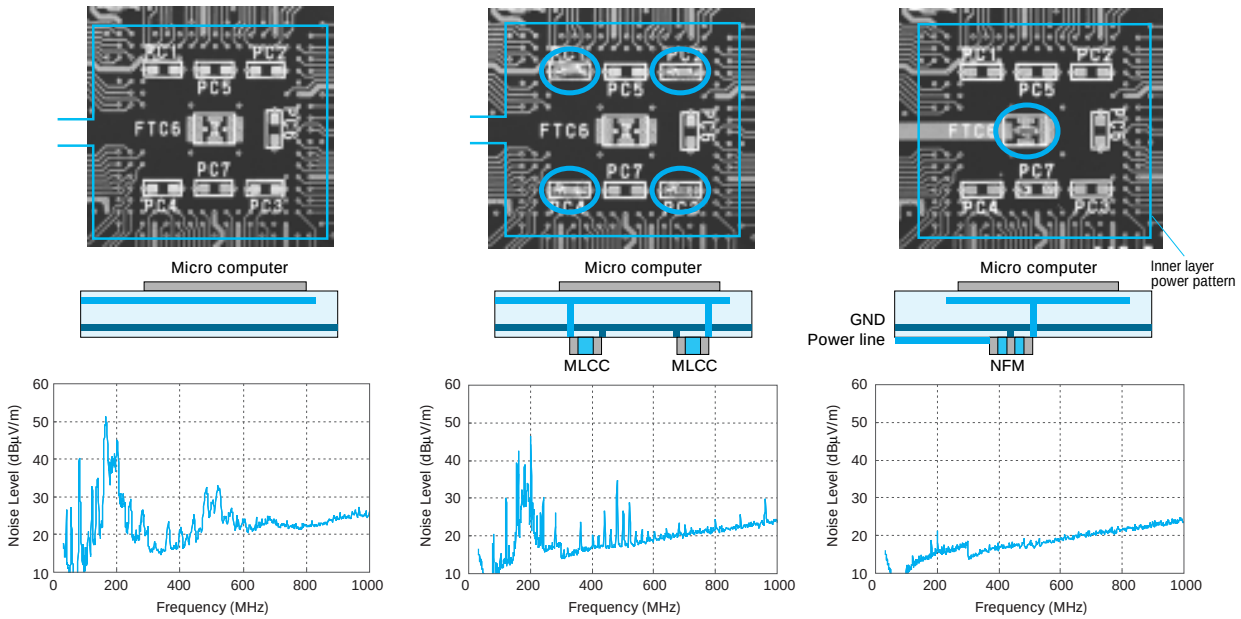
• Optimize of bypass capacitors using chip 3 terminal capacitor



Amount of parts can be reduced.
⇒ • Reduce PCB space
• Reduce mount cost

Comparison of performance as bypass capacitor

Without capacitor | **With MLCC 0.22µFx4** | **With chip 3 terminal capacitor (NFM) 1µFx1**



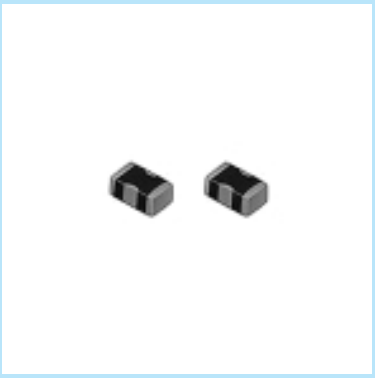
Noise suppression effect of NFM series is better than MLCCs. (1 NFM is better than 4 MLCCs)

NFM21P Series (0805 Size)

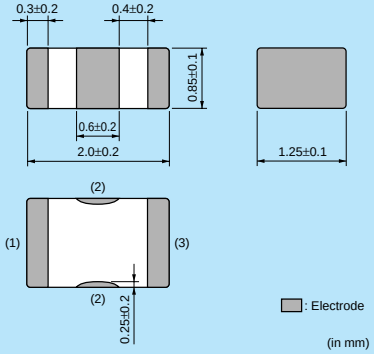
Hi Power Reflow OK

6A max, 0805 size chip 3-terminal capacitor for power lines.

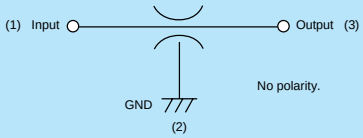
*Please refer to the products which are designed for both power lines and signal lines.



■ Dimensions



■ Equivalent Circuit



■ Packaging

Code	Packaging	Minimum Quantity
D	180mm Reel Paper Tape	4000
B	Bulk(Bag)	500

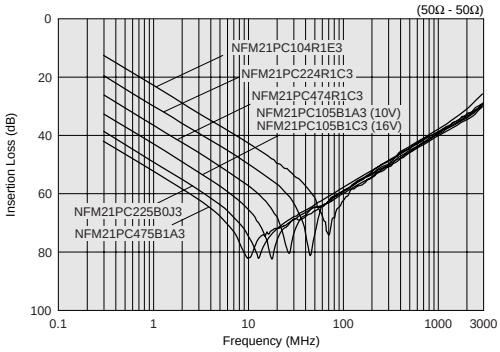
Refer to pages from p.139 to p.144 for mounting information.

■ Rated Value (☐: packaging code)

Part Number	Capacitance	Rated Current	Rated Voltage	Insulation Resistance (min.)	Operating Temperature Range	
NFM21PC104R1E3☐	0.1µF+20%-20%	2A	25Vdc	1000M ohm	-55°C to +125°C	Kit ≧1A
NFM21PC224R1C3☐	0.22µF+20%-20%	2A	16Vdc	1000M ohm	-55°C to +125°C	Kit ≧1A
NFM21PC474R1C3☐	0.47µF+20%-20%	2A	16Vdc	1000M ohm	-55°C to +125°C	Kit ≧1A
NFM21PC105B1A3☐	1.0µF+20%-20%	4A	10Vdc	500M ohm	-40°C to +85°C	Kit ≧3A
NFM21PC105B1C3☐	1.0µF+20%-20%	4A	16Vdc	500M ohm	-40°C to +85°C	Kit ≧3A
NFM21PC225B0J3☐	2.2µF+20%-20%	4A	6.3Vdc	200M ohm	-40°C to +85°C	Kit ≧3A
NFM21PC475B1A3☐	4.7µF+20%-20%	6A	10Vdc	100M ohm	-40°C to +85°C	Kit ≧3A

Number of Circuit: 1

■ Insertion Loss Characteristics (Main Items)



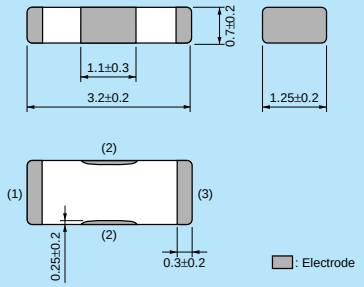
NFM3DP Series (1205 Size)

Hi Power | Flow OK | Reflow OK

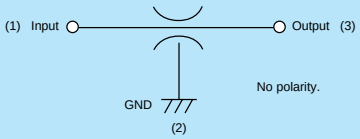
1205 size 3-terminal capacitor for power lines.

*Please refer to the products which are designed for both power lines and signal lines.

■ Dimensions



■ Equivalent Circuit



■ Packaging

Code	Packaging	Minimum Quantity
L	180mm Reel Embossed Tape	4000
B	Bulk(Bag)	500

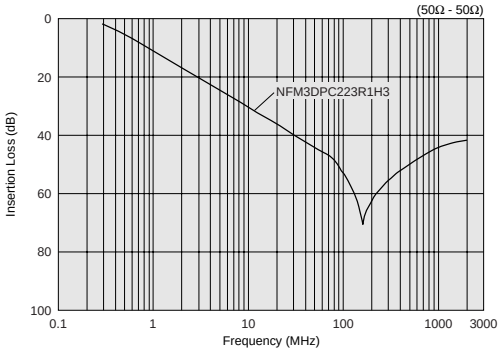
Refer to pages from p.139 to p.144 for mounting information.

■ Rated Value (☐: packaging code)

Part Number	Capacitance	Rated Current	Rated Voltage	Insulation Resistance (min.)	Operating Temperature Range	
NFM3DPC223R1H3☐	0.022µF+20%-20%	2A	50Vdc	1000M ohm	-55°C to +125°C	≧1A

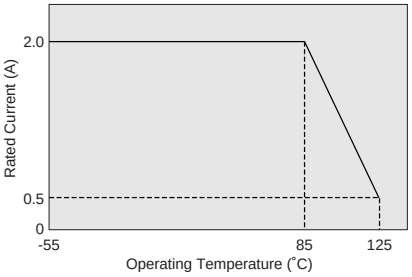
Number of Circuit: 1

■ Insertion Loss Characteristics (Main Items)



■ Notice (Rating)

When NFM3DP series is used in operating temperatures exceeding +85°C, derating of current is necessary.
Please apply the derating curve shown in chart according to the operating temperature.



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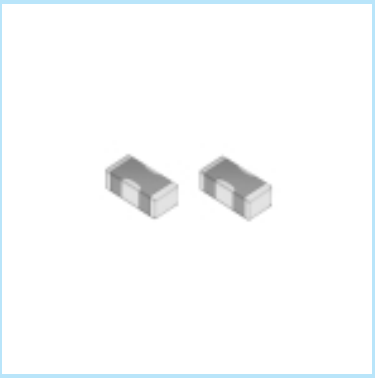
NFM31P Series (1206 Size)

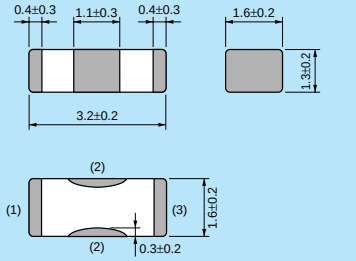
Hi Power Flow OK Reflow OK

6A/27microF, 1206 size chip 3-terminal capacitor for power lines.

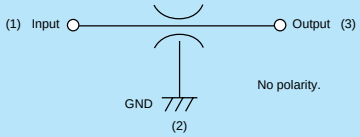
*Please refer to the products which are designed for both power lines and signal lines.



■ Dimensions



■ Equivalent Circuit



■ Packaging

Code	Packaging	Minimum Quantity
L	180mm Reel Embossed Tape	3000
B	Bulk(Bag)	500

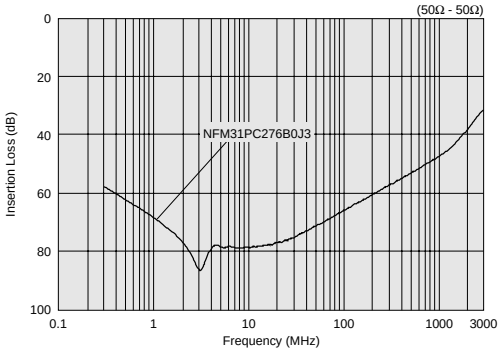
Refer to pages from p.139 to p.144 for mounting information.

■ Rated Value (☐: packaging code)

Part Number	Capacitance	Rated Current	Rated Voltage	Insulation Resistance (min.)	Operating Temperature Range	
NFM31PC276B0J3☐	27µF+20%-20%	6A	6.3Vdc	20M ohm	-40°C to +85°C	Kit ≧3A

Number of Circuit: 1

■ Insertion Loss Characteristics (Main Items)



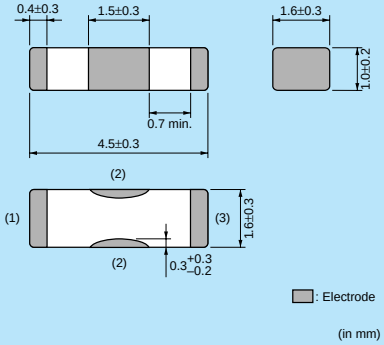
NFM41P Series (1806 Size)

Hi Power | Flow OK | Reflow OK

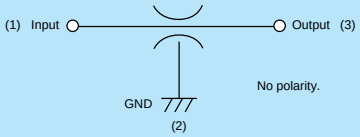
6A max, 1806 size chip 3-terminal capacitor for power lines.

*Please refer to the products which are designed for both power lines and signal lines.

■ Dimensions



■ Equivalent Circuit



■ Packaging

Code	Packaging	Minimum Quantity
L	180mm Reel Embossed Tape	4000
B	Bulk(Bag)	500

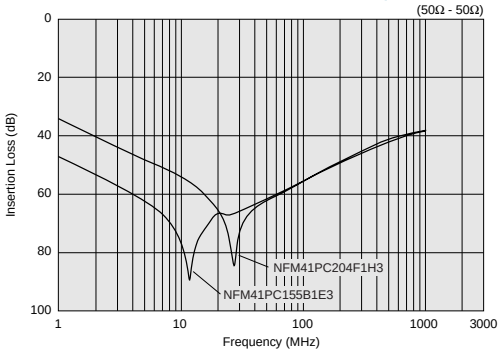
Refer to pages from p.139 to p.144 for mounting information.

■ Rated Value (☐: packaging code)

Part Number	Capacitance	Rated Current	Rated Voltage	Insulation Resistance (min.)	Operating Temperature Range	
NFM41PC204F1H3☐	0.2µF+80%-20%	2A	50Vdc	1000M ohm	-55°C to +85°C	Kit ≧1A
NFM41PC155B1E3☐	1.5µF+20%-20%	6A	25Vdc	300M ohm	-55°C to +85°C	Kit ≧3A

Number of Circuit: 1

■ Insertion Loss Characteristics (Main Items)



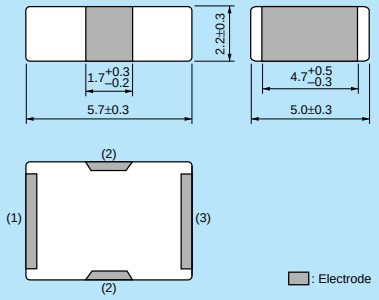
NFM55P Series (2220 Size)

Hi Power Reflow OK

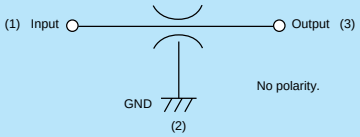
50V/6A/1.5microF, large capacitance chip 3-terminal capacitor.

*Please refer to the products which are designed for both power lines and signal lines.

■ Dimensions



■ Equivalent Circuit



■ Packaging

Code	Packaging	Minimum Quantity
L	180mm Reel Embossed Tape	500
B	Bulk(Bag)	100

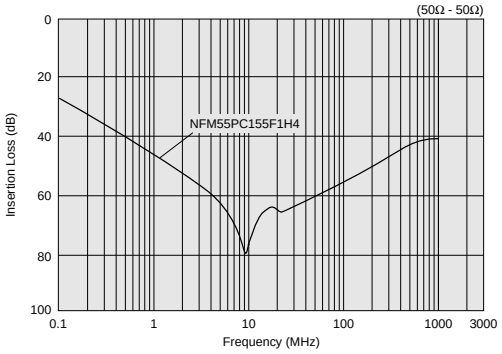
Refer to pages from p.139 to p.144 for mounting information.

■ Rated Value (☐: packaging code)

Part Number	Capacitance	Rated Current	Rated Voltage	Insulation Resistance (min.)	Operating Temperature Range	
NFM55PC155F1H4☐	1.5µF+80%-20%	6A	50Vdc	100M ohm	-55°C to +85°C	≧3A

Number of Circuit: 1

■ Insertion Loss Characteristics (Main Items)

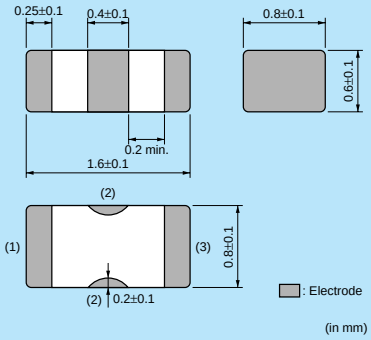


NFM18C Series (0603 Size)

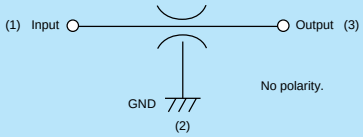
Reflow OK

0603 size general 3-terminal capacitor.

■ Dimensions



■ Equivalent Circuit



■ Packaging

Code	Packaging	Minimum Quantity
D	180mm Reel Paper Tape	4000
B	Bulk(Bag)	500

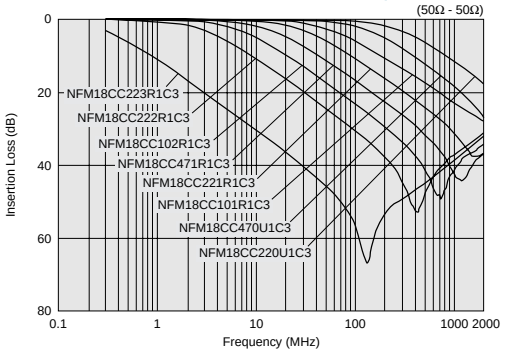
Refer to pages from p.139 to p.144 for mounting information.

■ Rated Value (☐: packaging code)

Part Number	Capacitance	Rated Current	Rated Voltage	Insulation Resistance (min.)	Operating Temperature Range	
NFM18CC220U1C3☐	22pF+20%-20%	400mA	16Vdc	1000M ohm	-55°C to +125°C	Kit
NFM18CC470U1C3☐	47pF+20%-20%	400mA	16Vdc	1000M ohm	-55°C to +125°C	Kit
NFM18CC101R1C3☐	100pF+20%-20%	500mA	16Vdc	1000M ohm	-55°C to +125°C	Kit
NFM18CC221R1C3☐	220pF+20%-20%	500mA	16Vdc	1000M ohm	-55°C to +125°C	Kit
NFM18CC471R1C3☐	470pF+20%-20%	500mA	16Vdc	1000M ohm	-55°C to +125°C	Kit
NFM18CC102R1C3☐	1000pF+20%-20%	600mA	16Vdc	1000M ohm	-55°C to +125°C	Kit
NFM18CC222R1C3☐	2200pF+20%-20%	700mA	16Vdc	1000M ohm	-55°C to +125°C	Kit
NFM18CC223R1C3☐	22000pF+20%-20%	1000mA	16Vdc	1000M ohm	-55°C to +125°C	Kit ≧1A

Number of Circuit: 1

■ Insertion Loss Characteristics (Main Items)



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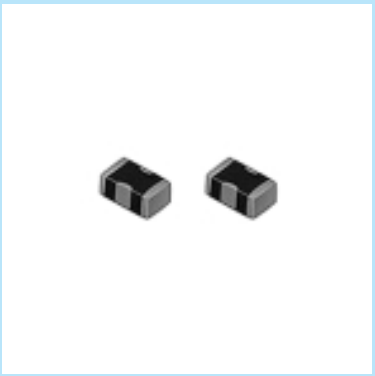
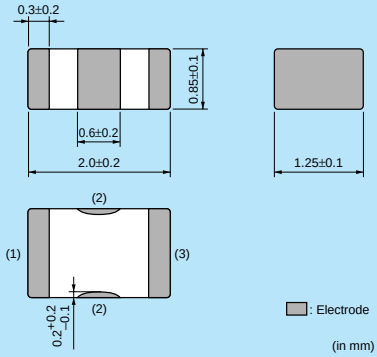
NFM21C Series (0805 Size)

Reflow OK

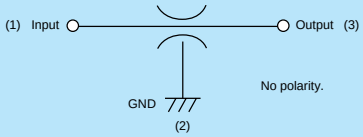
0805 size general 3-terminal capacitor.



■ Dimensions



■ Equivalent Circuit



■ Packaging

Code	Packaging	Minimum Quantity
D	180mm Reel Paper Tape	4000
B	Bulk(Bag)	500

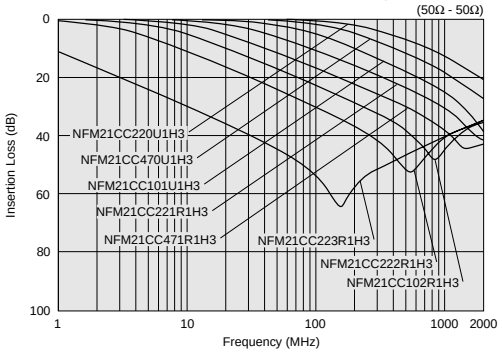
Refer to pages from p.139 to p.144 for mounting information.

■ Rated Value (☐: packaging code)

Part Number	Capacitance	Rated Current	Rated Voltage	Insulation Resistance (min.)	Operating Temperature Range	
NFM21CC220U1H3☐	22pF+20%-20%	700mA	50Vdc	1000M ohm	-55°C to +125°C	Kit
NFM21CC470U1H3☐	47pF+20%-20%	700mA	50Vdc	1000M ohm	-55°C to +125°C	Kit
NFM21CC101U1H3☐	100pF+20%-20%	700mA	50Vdc	1000M ohm	-55°C to +125°C	Kit
NFM21CC221R1H3☐	220pF+20%-20%	700mA	50Vdc	1000M ohm	-55°C to +125°C	Kit
NFM21CC471R1H3☐	470pF+20%-20%	1000mA	50Vdc	1000M ohm	-55°C to +125°C	Kit ≧1A
NFM21CC102R1H3☐	1000pF+20%-20%	1000mA	50Vdc	1000M ohm	-55°C to +125°C	Kit ≧1A
NFM21CC222R1H3☐	2200pF+20%-20%	1000mA	50Vdc	1000M ohm	-55°C to +125°C	Kit ≧1A
NFM21CC223R1H3☐	22000pF+20%-20%	2000mA	50Vdc	1000M ohm	-55°C to +125°C	Kit ≧1A

Number of Circuit: 1

■ Insertion Loss Characteristics (Main Items)

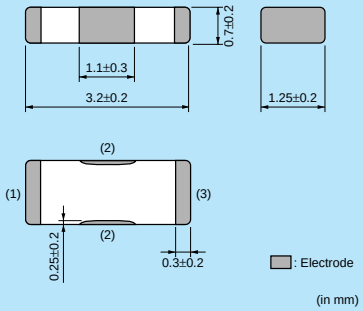


NFM3DC Series (1205 Size)

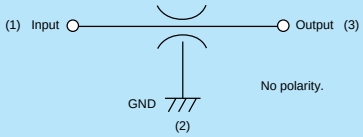
Flow OK Reflow OK

1205 size general 3-terminal capacitor.

■ Dimensions



■ Equivalent Circuit



■ Packaging

Code	Packaging	Minimum Quantity
L	180mm Reel Embossed Tape	4000
B	Bulk(Bag)	500

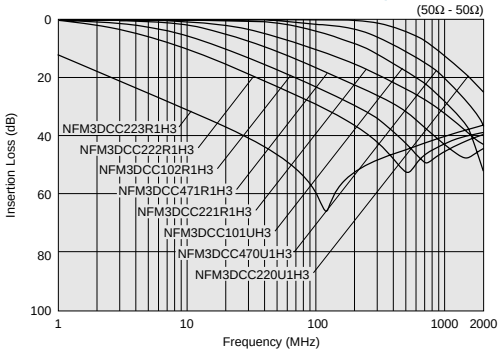
Refer to pages from p.139 to p.144 for mounting information.

■ Rated Value (☐: packaging code)

Part Number	Capacitance	Rated Current	Rated Voltage	Insulation Resistance (min.)	Operating Temperature Range
NFM3DCC220U1H3☐	22pF+50%-20%	300mA	50Vdc	1000M ohm	-55°C to +125°C
NFM3DCC470U1H3☐	47pF+50%-20%	300mA	50Vdc	1000M ohm	-55°C to +125°C
NFM3DCC101U1H3☐	100pF+50%-20%	300mA	50Vdc	1000M ohm	-55°C to +125°C
NFM3DCC221R1H3☐	220pF+50%-20%	300mA	50Vdc	1000M ohm	-55°C to +125°C
NFM3DCC471R1H3☐	470pF+50%-20%	300mA	50Vdc	1000M ohm	-55°C to +125°C
NFM3DCC102R1H3☐	1000pF+50%-20%	300mA	50Vdc	1000M ohm	-55°C to +125°C
NFM3DCC222R1H3☐	2200pF+50%-20%	300mA	50Vdc	1000M ohm	-55°C to +125°C
NFM3DCC223R1H3☐	22000pF+50%-20%	300mA	50Vdc	1000M ohm	-55°C to +125°C

Number of Circuit: 1

■ Insertion Loss Characteristics (Main Items)



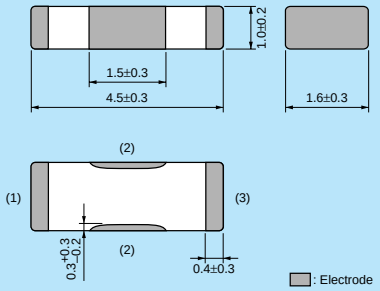
⚠Note • Please read rating and ⚠CAUTION (for storage, operating, rating, soldering, mounting and handling) in this catalog to prevent smoking and/or burning, etc.
• This catalog has only typical specifications because there is no space for detailed specifications. Therefore, please review our product specifications or consult the approval sheet for product specifications before ordering.

NFM41C Series (1806 Size)

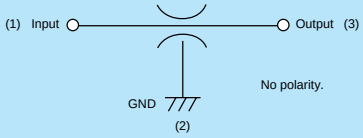
Flow OK Reflow OK

1806 size general 3-terminal capacitor.

■ Dimensions



■ Equivalent Circuit



■ Packaging

Code	Packaging	Minimum Quantity
L	180mm Reel Embossed Tape	4000
B	Bulk(Bag)	500

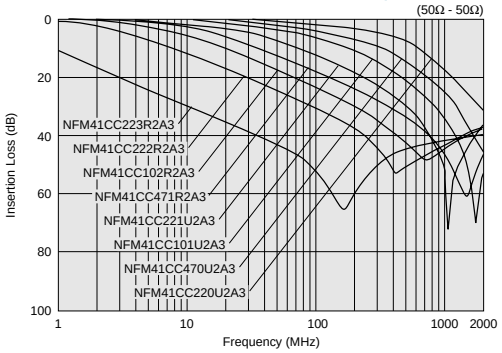
Refer to pages from p.139 to p.144 for mounting information.

■ Rated Value (☐: packaging code)

Part Number	Capacitance	Rated Current	Rated Voltage	Insulation Resistance (min.)	Operating Temperature Range
NFM41CC220U2A3☐	22pF+50%-20%	300mA	100Vdc	10000M ohm	-55°C to +125°C
NFM41CC470U2A3☐	47pF+50%-20%	300mA	100Vdc	10000M ohm	-55°C to +125°C
NFM41CC101U2A3☐	100pF+50%-20%	300mA	100Vdc	10000M ohm	-55°C to +125°C
NFM41CC221U2A3☐	220pF+50%-20%	300mA	100Vdc	10000M ohm	-55°C to +125°C
NFM41CC471R2A3☐	470pF+50%-20%	300mA	100Vdc	10000M ohm	-55°C to +125°C
NFM41CC102R2A3☐	1000pF+50%-20%	300mA	100Vdc	10000M ohm	-55°C to +125°C
NFM41CC222R2A3☐	2200pF+50%-20%	300mA	100Vdc	10000M ohm	-55°C to +125°C
NFM41CC223R2A3☐	22000pF+50%-20%	300mA	100Vdc	10000M ohm	-55°C to +125°C

Number of Circuit: 1

■ Insertion Loss Characteristics (Main Items)

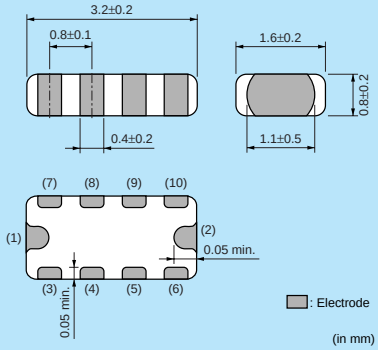


NFA31C Series (1206 Size)

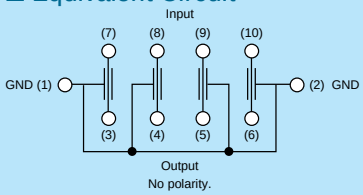
Reflow OK

4-lines chip 3-terminal capacitor array, 1206 size.

■ Dimensions



■ Equivalent Circuit



■ Packaging

Code	Packaging	Minimum Quantity
D	180mm Reel Paper Tape	4000
B	Bulk(Bag)	100

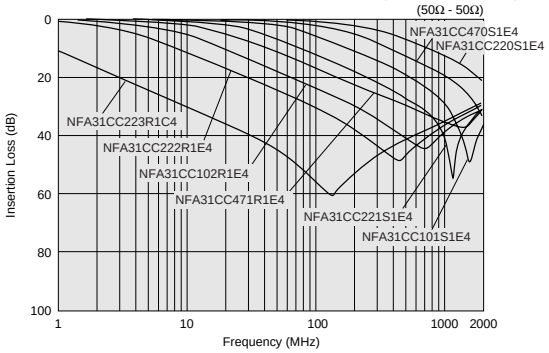
Refer to pages from p.139 to p.144 for mounting information.

■ Rated Value (☐: packaging code)

Part Number	Capacitance	Rated Current	Rated Voltage	Insulation Resistance (min.)	Operating Temperature Range	
NFA31CC220S1E4☐	22pF+20%-20%	200mA	25Vdc	1000M ohm	-40°C to +85°C	Kit
NFA31CC470S1E4☐	47pF+20%-20%	200mA	25Vdc	1000M ohm	-40°C to +85°C	Kit
NFA31CC101S1E4☐	100pF+20%-20%	200mA	25Vdc	1000M ohm	-40°C to +85°C	Kit
NFA31CC221S1E4☐	220pF+20%-20%	200mA	25Vdc	1000M ohm	-40°C to +85°C	Kit
NFA31CC471R1E4☐	470pF+20%-20%	200mA	25Vdc	1000M ohm	-40°C to +85°C	Kit
NFA31CC102R1E4☐	1000pF+20%-20%	200mA	25Vdc	1000M ohm	-40°C to +85°C	Kit
NFA31CC222R1E4☐	2200pF+20%-20%	200mA	25Vdc	1000M ohm	-40°C to +85°C	Kit
NFA31CC223R1C4☐	22000pF+20%-20%	200mA	16Vdc	1000M ohm	-40°C to +85°C	Kit

Number of Circuit: 4

■ Insertion Loss Characteristics (Main Items)



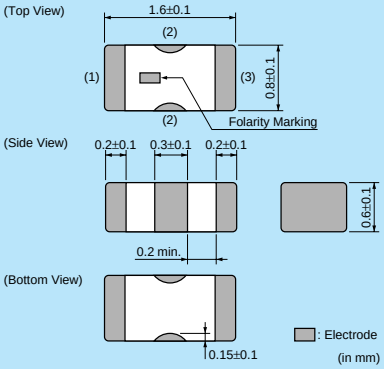
NFL18ST Series (0603 Size)

Reflow OK

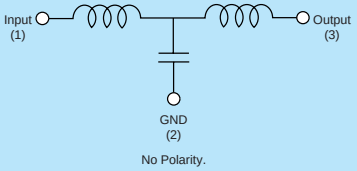
T-type LC filter. Reduce waveform distortion of high speed signal.

NFL18ST_H

■ Dimensions



■ Equivalent Circuit

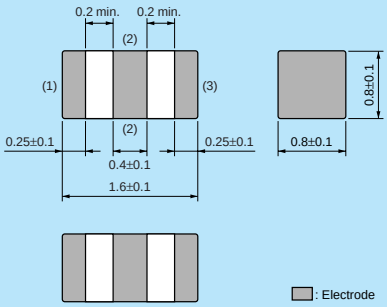


■ Packaging

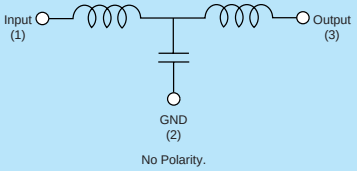
Code	Packaging	Minimum Quantity
D	180mm Reel Paper Tape	4000
B	Bulk(Bag)	1000

NFL18ST_X

■ Dimensions



■ Equivalent Circuit



■ Packaging

Code	Packaging	Minimum Quantity
D	180mm Reel Paper Tape	4000
B	Bulk(Bag)	1000

Refer to pages from p.139 to p.144 for mounting information.

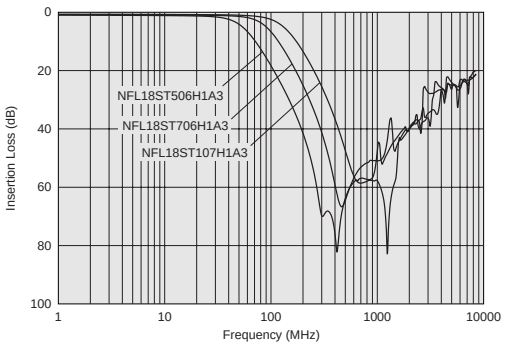
■ Rated Value (☐: packaging code)

Part Number	Nominal Cut-off Frequency	Capacitance	Inductance	Insertion Loss (Cut-off Frequency)	Insertion Loss (200MHz) (min.)	Insertion Loss (300MHz) (min.)	Insertion Loss (400MHz) (min.)	Rated Current	Rated Voltage	
NFL18ST506H1A3☐	50MHz	110pF (Typ.)	350nH (Typ.)	6dB max.	30dB	30dB	30dB	75mA	10Vdc	New Kit DTV
NFL18ST706H1A3☐	70MHz	70pF (Typ.)	230nH (Typ.)	6dB max.	-	30dB	30dB	75mA	10Vdc	New Kit DTV
NFL18ST107H1A3☐	100MHz	50pF (Typ.)	150nH (Typ.)	6dB max.	-	-	30dB	75mA	10Vdc	New Kit DTV

Insulation Resistance (min.): 1000M ohm Withstand Voltage: 30Vdc Operating Temperature Range: -55°C to +125°C Number of Circuits: 1

■ Insertion Loss Characteristics (Main Items)

NFL18ST_H Series



Continued on the following page.

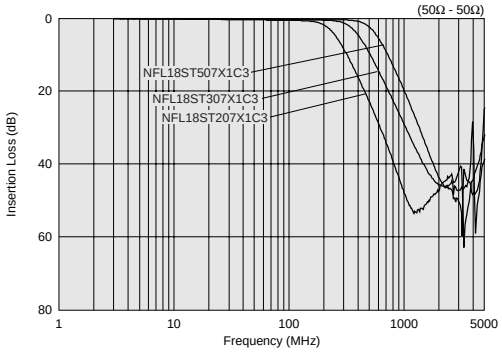
■ Rated Value (☐: packaging code)

Part Number	Nominal Cut-off Frequency	Capacitance	Inductance	Rated Current	Rated Voltage	Insulation Resistance (min.)	Withstand Voltage	Operating Temperature Range	
NFL18ST207X1C3☐	200MHz	25pF±20%	110nH±20%	150mA	16Vdc	1000M ohm	50Vdc	-55°C to +125°C	Kit
NFL18ST307X1C3☐	300MHz	18pF±20%	62nH±20%	200mA	16Vdc	1000M ohm	50Vdc	-55°C to +125°C	Kit
NFL18ST507X1C3☐	500MHz	10pF±20%	43nH±20%	200mA	16Vdc	1000M ohm	50Vdc	-55°C to +125°C	Kit

Number of Circuits: 1

■ Insertion Loss Characteristics (Main Items)

NFL18ST_X Series

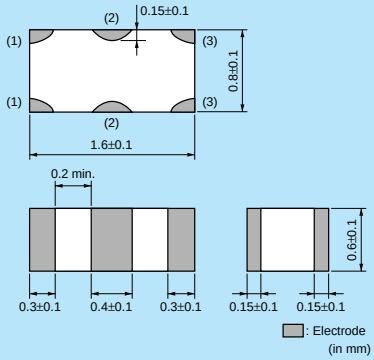


NFL18SP Series (0603 Size)

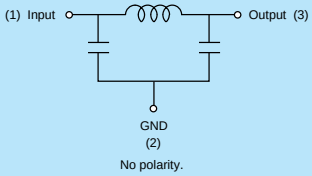
Reflow OK

PI-type LC filter. Reduce waveform distortion of high speed signal.

■ Dimensions



■ Equivalent Circuit



■ Packaging

Code	Packaging	Minimum Quantity
D	180mm Reel Paper Tape	4000
B	Bulk(Bag)	1000

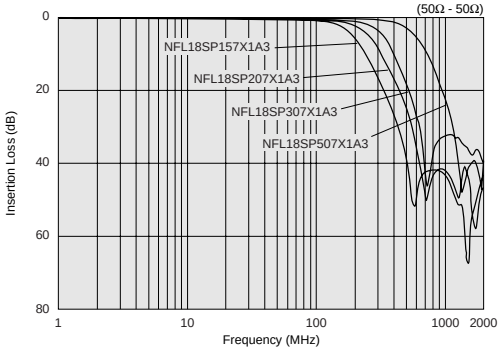
Refer to pages from p.139 to p.144 for mounting information.

■ Rated Value (☐: packaging code)

Part Number	Nominal Cut-off Frequency	Capacitance	Inductance	Rated Current	Rated Voltage	Insulation Resistance (min.)	Withstand Voltage	Operating Temperature Range	
NFL18SP157X1A3☐	150MHz	34pF±20%	100nH±20%	100mA	10Vdc	1000M ohm	30Vdc	-55°C to +125°C	Kit
NFL18SP207X1A3☐	200MHz	24pF±20%	80nH±20%	100mA	10Vdc	1000M ohm	30Vdc	-55°C to +125°C	Kit
NFL18SP307X1A3☐	300MHz	19pF±20%	60nH±20%	100mA	10Vdc	1000M ohm	30Vdc	-55°C to +125°C	Kit
NFL18SP507X1A3☐	500MHz	11pF±20%	38nH±20%	100mA	10Vdc	1000M ohm	30Vdc	-55°C to +125°C	Kit

Number of Circuits: 1

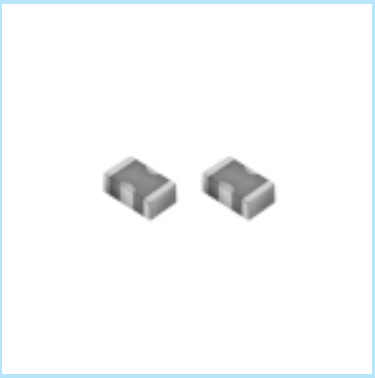
■ Insertion Loss Characteristics (Main Items)



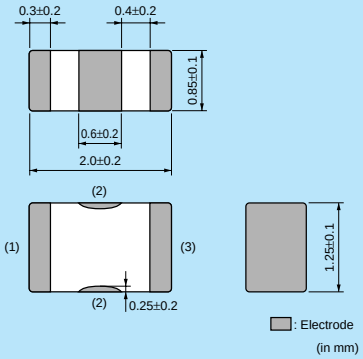
NFL21SP Series (0805 Size)

Reflow OK

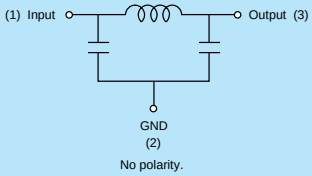
PI-type LC filter. Reduce waveform distortion of high speed signal.



■ Dimensions



■ Equivalent Circuit



■ Packaging

Code	Packaging	Minimum Quantity
D	180mm Reel Paper Tape	4000
B	Bulk(Bag)	1000

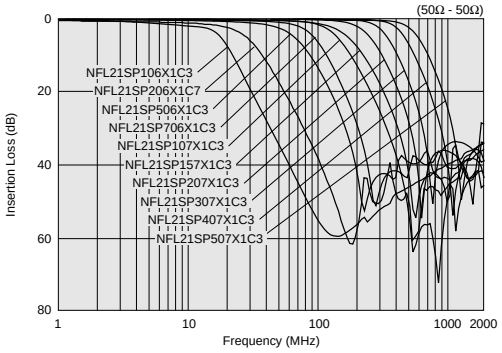
Refer to pages from p.139 to p.144 for mounting information.

■ Rated Value (☐: packaging code)

Part Number	Nominal Cut-off Frequency	Capacitance	Inductance	Rated Current	Rated Voltage	Insulation Resistance (min.)	Withstand Voltage	Operating Temperature Range	
NFL21SP106X1C3☐	10MHz	670pF±20%	680nH±20%	100mA	16Vdc	1000M ohm	50Vdc	-55°C to +125°C	Kit
NFL21SP206X1C7☐	20MHz	240pF±20%	700nH±20%	100mA	16Vdc	1000M ohm	50Vdc	-55°C to +125°C	Kit
NFL21SP506X1C3☐	50MHz	84pF±20%	305nH±20%	150mA	16Vdc	1000M ohm	50Vdc	-55°C to +125°C	Kit
NFL21SP706X1C3☐	70MHz	76pF±20%	185nH±20%	150mA	16Vdc	1000M ohm	50Vdc	-55°C to +125°C	Kit
NFL21SP107X1C3☐	100MHz	44pF±20%	135nH±20%	200mA	16Vdc	1000M ohm	50Vdc	-55°C to +125°C	Kit
NFL21SP157X1C3☐	150MHz	28pF±20%	128nH±20%	200mA	16Vdc	1000M ohm	50Vdc	-55°C to +125°C	Kit
NFL21SP207X1C3☐	200MHz	22pF±20%	72nH±20%	250mA	16Vdc	1000M ohm	50Vdc	-55°C to +125°C	Kit
NFL21SP307X1C3☐	300MHz	19pF±10%	45nH±10%	300mA	16Vdc	1000M ohm	50Vdc	-55°C to +125°C	Kit
NFL21SP407X1C3☐	400MHz	16pF±10%	34nH±10%	300mA	16Vdc	1000M ohm	50Vdc	-55°C to +125°C	Kit
NFL21SP507X1C3☐	500MHz	12pF±10%	31nH±10%	300mA	16Vdc	1000M ohm	50Vdc	-55°C to +125°C	Kit

Number of Circuits: 1

■ Insertion Loss Characteristics (Main Items)



⚠Note • Please read rating and ⚠CAUTION (for storage, operating, rating, soldering, mounting and handling) in this catalog to prevent smoking and/or burning, etc.
• This catalog has only typical specifications because there is no space for detailed specifications. Therefore, please review our product specifications or consult the approval sheet for product specifications before ordering.

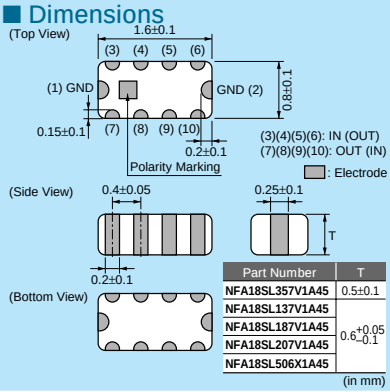
NFA18SL Series (0603 Size)

Reflow OK

LC filter 4-lines array for mobile phones.

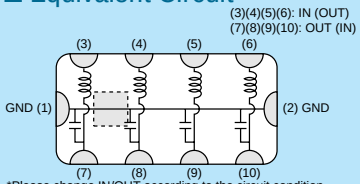
NFA18SL 137/187/207/357 V1A45
NFA18SL506X1A45

■ Dimensions



Part Number	T
NFA18SL357V1A45	0.5±0.1
NFA18SL137V1A45	0.6 +0.05 −0.1
NFA18SL187V1A45	
NFA18SL207V1A45	
NFA18SL506X1A45	

■ Equivalent Circuit



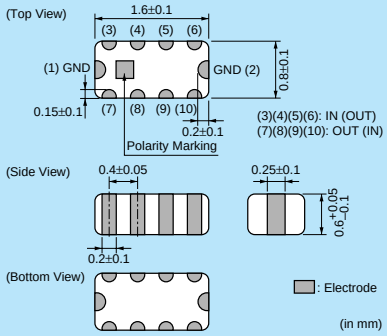
*Please change IN/OUT according to the circuit condition.

■ Packaging

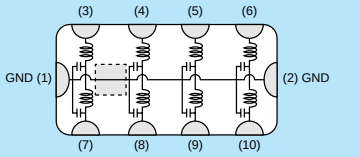
Code	Packaging	Minimum Quantity
L	180mm Reel Embossed Tape	4000
B	Bulk(Bag)	1000

NFA18SL227V1A45

■ Dimensions



■ Equivalent Circuit

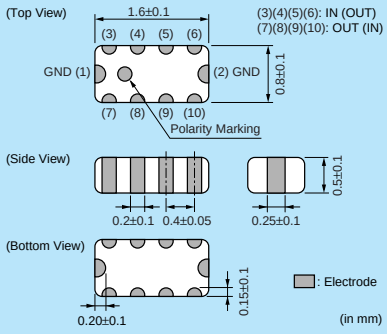


■ Packaging

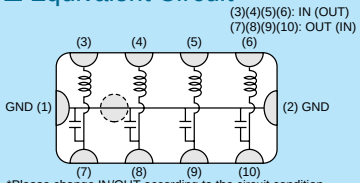
Code	Packaging	Minimum Quantity
L	180mm Reel Embossed Tape	4000
B	Bulk(Bag)	1000

NFA18SL 307/407/487 V1A45

■ Dimensions



■ Equivalent Circuit



*Please change IN/OUT according to the circuit condition.

■ Packaging

Code	Packaging	Minimum Quantity
L	180mm Reel Embossed Tape	4000
B	Bulk(Bag)	1000

Refer to pages from p.139 to p.144 for mounting information.

■ Rated Value (☐: packaging code)

Part Number	Nominal Cut-off Frequency	Insertion Loss (Cut-off Frequency)	Insertion Loss (470MHz) (min.)	Insertion Loss (800MHz) (min.)	Insertion Loss (900MHz) (min.)	Insertion Loss (2000MHz) (min.)	Rated Current	Rated Voltage	Insulation Resistance (min.)	Withstand Voltage	
NFA18SL137V1A45☐	130MHz	6dBmax	25dB	-	25dB	-	50mA	10Vdc	1000M ohm	30Vdc	Kit DTV
NFA18SL187V1A45☐	180MHz	6dBmax	20dB	-	20dB	-	50mA	10Vdc	1000M ohm	30Vdc	Kit DTV
NFA18SL207V1A45☐	200MHz	6dBmax	15dB	-	15dB	-	50mA	10Vdc	1000M ohm	30Vdc	Kit DTV
NFA18SL227V1A45☐	220MHz	6dBmax	-	-	30dB	30dB	25mA	10Vdc	1000M ohm	30Vdc	Kit DTV
NFA18SL307V1A45☐	300MHz	6dBmax	-	20dB	20dB	-	100mA	10Vdc	1000M ohm	30Vdc	Kit
NFA18SL357V1A45☐	350MHz	6dBmax	-	-	15dB	13dB	35mA	10Vdc	1000M ohm	30Vdc	New Kit
NFA18SL407V1A45☐	400MHz	6dBmax	-	18dB	18dB	-	100mA	10Vdc	1000M ohm	30Vdc	Kit
NFA18SL487V1A45☐	480MHz	6dBmax	-	15dB	15dB	-	100mA	10Vdc	1000M ohm	30Vdc	Kit

Operating Temperature Range: -40°C to +85°C (NFA18SL 137/187/207/227/357 V1A45), -55°C to +125°C (NFA18SL 307/407/487 V1A45) Number of Circuits: 4

Continued on the following page.

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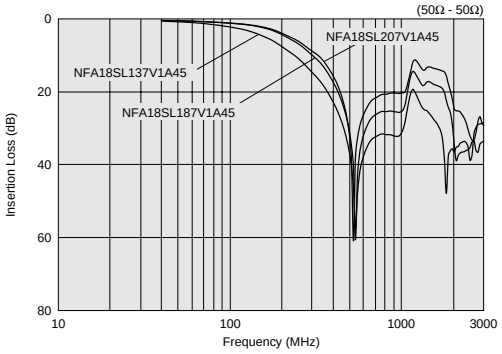
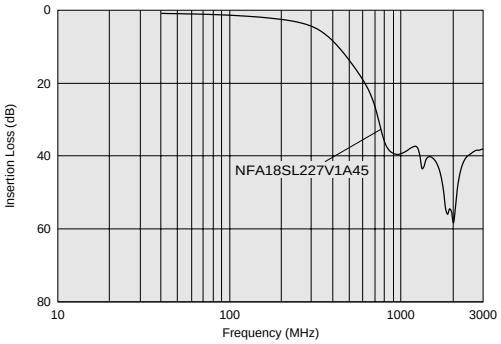
■ Insertion Loss Characteristics (Main Items)

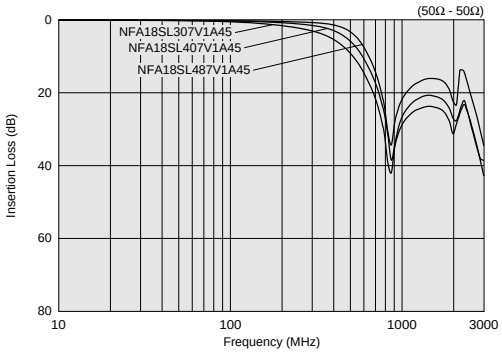
NFA18SL 137/187/207 V1A45



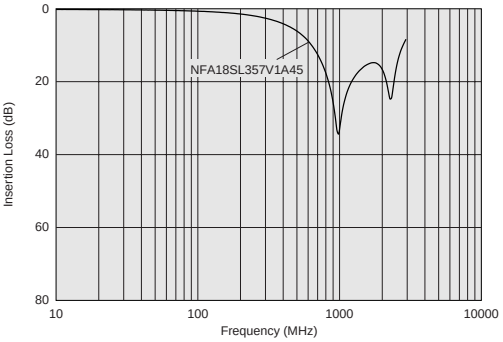
NFA18SL227V1A45



NFA18SL 307/407/487 V1A45



NFA18SL357V1A45



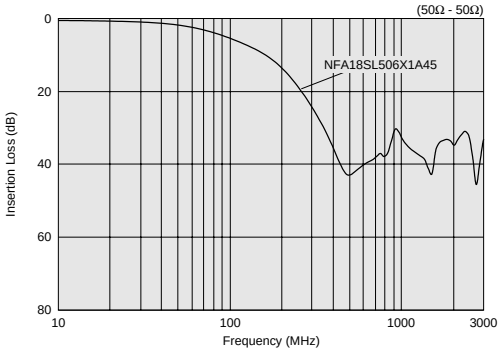
■ Rated Value (☐: packaging code)

Part Number	Nominal Cut-off Frequency	Insertion Loss (Cut-off Frequency)	Insertion Loss at 500MHz (min.)	Insertion Loss at 1000MHz (min.)	Rated Voltage	Rated Current	Insulation Resistance (min.)	Withstand Voltage	
NFA18SL506X1A45☐	50MHz	6dBmax	30dB	25dB	10Vdc	25mA	1000M ohm	30Vdc	Kit

Operating Temperature Range: -40°C to +85°C Number of Circuits: 4

■ Insertion Loss Characteristics (Main Items)

NFA18SL_X



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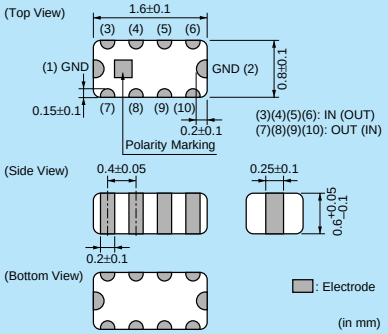
NFA18SD Series (0603 Size)

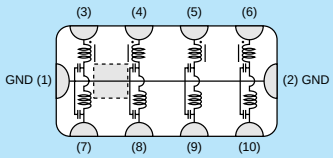
Reflow OK

For differential signal I/F of LCD or camera in mobile phones.

■ Dimensions



■ Equivalent Circuit



■ Packaging

Code	Packaging	Minimum Quantity
L	180mm Reel Embossed Tape	4000
B	Bulk(Bag)	1000

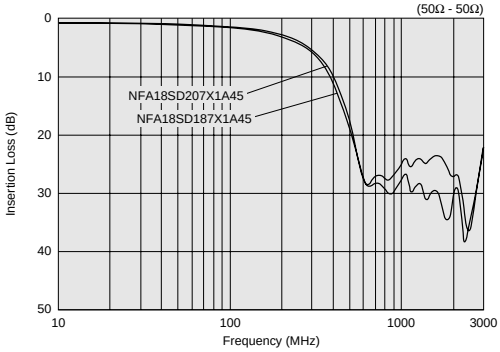
Refer to pages from p.139 to p.144 for mounting information.

■ Rated Value (☐: packaging code)

Part Number	Nominal Cut-off Frequency	Insertion Loss (Cut-off Frequency)	Insertion Loss (500MHz) (min.)	Insertion Loss (900MHz) (min.)	Insertion Loss (1500MHz) (min.)	Insertion Loss (2000MHz) (min.)	Rated Voltage	Rated Current	Insulation Resistance (min.)	Withstand Voltage	
NFA18SD187X1A45☐	180MHz	6dBmax	15dB	20dB	20dB	20dB	10Vdc	25mA	1000M ohm	30Vdc	Kit DTV
NFA18SD207X1A45☐	200MHz	6dBmax	13dB	20dB	20dB	20dB	10Vdc	25mA	1000M ohm	30Vdc	Kit DTV

Operating Temperature Range: -40°C to +85°C Number of Circuits: 4

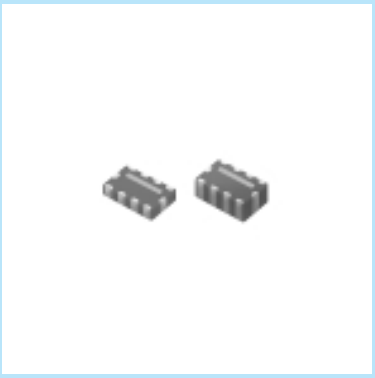
■ Insertion Loss Characteristics (Main Items)



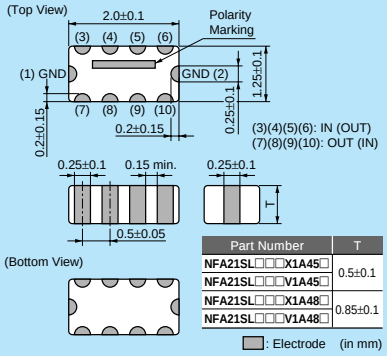
NFA21SL Series (0805 Size)

Reflow OK

L-type LC filter 4-lines array for mobile phones.



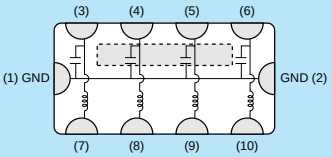
■ Dimensions



Part Number	T
NFA21SL□□□X1A45□	0.5±0.1
NFA21SL□□□V1A45□	
NFA21SL□□□X1A48□	0.85±0.1
NFA21SL□□□V1A48□	

: Electrode (in mm)

■ Equivalent Circuit



■ Packaging

Code	Packaging	Minimum Quantity
L	180mm Reel Embossed Tape	4000
B	Bulk(Bag)	1000

Refer to pages from p.139 to p.144 for mounting information.

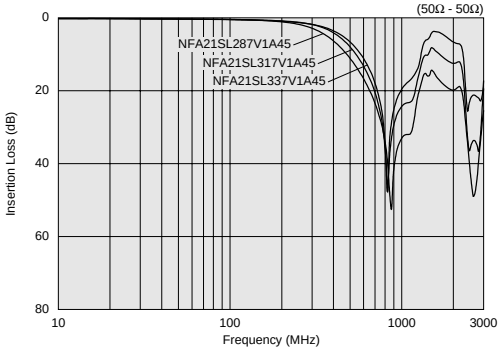
■ Rated Value (□: packaging code)

Part Number	Nominal Cut-off Frequency	Insertion Loss (Cut-off Frequency)	Insertion Loss at 800MHz (min.)	Insertion Loss at 900MHz (min.)	Rated Voltage	Rated Current	Insulation Resistance (min.)	Withstand Voltage	
NFA21SL287V1A45□	280MHz	6dBmax	25dB	25dB	10Vdc	100mA	1000M ohm	30Vdc	Kit
NFA21SL317V1A45□	310MHz	6dBmax	20dB	20dB	10Vdc	100mA	1000M ohm	30Vdc	Kit
NFA21SL337V1A45□	330MHz	6dBmax	15dB	15dB	10Vdc	100mA	1000M ohm	30Vdc	Kit
NFA21SL287V1A48□	280MHz	6dBmax	25dB	25dB	10Vdc	100mA	1000M ohm	30Vdc	Kit
NFA21SL317V1A48□	310MHz	6dBmax	20dB	20dB	10Vdc	100mA	1000M ohm	30Vdc	Kit
NFA21SL337V1A48□	330MHz	6dBmax	20dB	20dB	10Vdc	100mA	1000M ohm	30Vdc	Kit

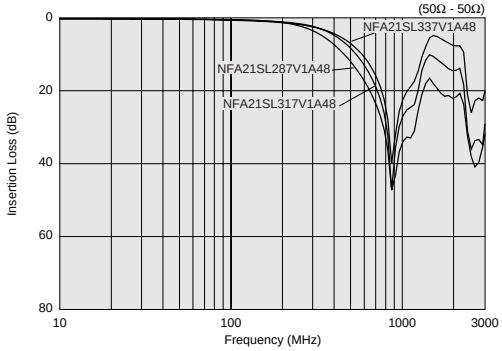
Operating Temperature Range: -55°C to +125°C Number of Circuits: 4

■ Insertion Loss Characteristics (Main Items)

NFA21SL_V1A45



NFA21SL_V1A48



Continued on the following page.

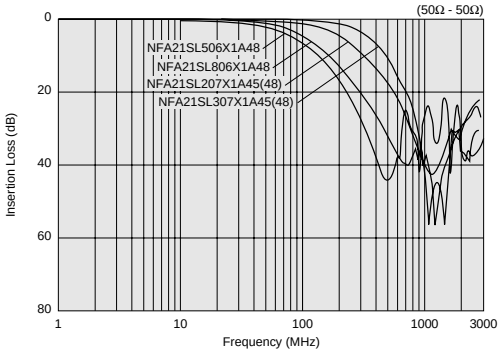
■ Rated Value (☐: packaging code)

Part Number	Nominal Cut-off Frequency	Insertion Loss (Cut-off Frequency)	Insertion Loss at 500MHz (min.)	Insertion Loss at 800MHz (min.)	Insertion Loss at 1000MHz (min.)	Rated Voltage	Rated Current	Insulation Resistance (min.)	Withstand Voltage	
NFA21SL207X1A45☐	200MHz	2 to 7	13dB	25dB	25dB	10Vdc	100mA	1000M ohm	30Vdc	Kit
NFA21SL307X1A45☐	300MHz	2 to 7	7dB	20dB	25dB	10Vdc	100mA	1000M ohm	30Vdc	Kit
NFA21SL506X1A48☐	50MHz	0 to 6	30dB	-	20dB	10Vdc	20mA	1000M ohm	30Vdc	Kit
NFA21SL806X1A48☐	80MHz	2 to 7	25dB	-	25dB	10Vdc	20mA	1000M ohm	30Vdc	Kit
NFA21SL207X1A48☐	200MHz	2 to 7	13dB	25dB	25dB	10Vdc	100mA	1000M ohm	30Vdc	Kit
NFA21SL307X1A48☐	300MHz	2 to 7	7dB	20dB	25dB	10Vdc	100mA	1000M ohm	30Vdc	Kit

Operating Temperature Range: -55°C to +125°C Number of Circuits: 4

■ Insertion Loss Characteristics (Main Items)

NFA21SL_X

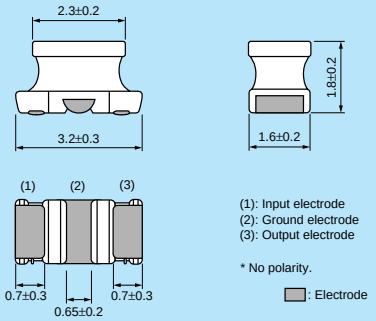


NFW31S Series (1206 Size)

Flow OK Reflow OK

Wire-wound PI-type LC filter.

■ Dimensions



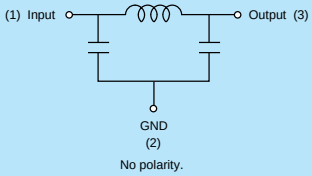
(1): Input electrode
(2): Ground electrode
(3): Output electrode

* No polarity.

: Electrode

(in mm)

■ Equivalent Circuit



No polarity.

■ Packaging

Code	Packaging	Minimum Quantity
L	180mm Reel Embossed Tape	2000
K	330mm Reel Embossed Tape	7500

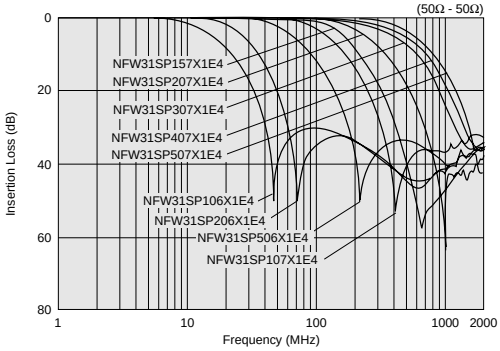
Refer to pages from p.139 to p.144 for mounting information.

■ Rated Value (☐: packaging code)

Part Number	Nominal Cut-off Frequency	Insertion Loss at 10MHz	Insertion Loss at 20MHz	Insertion Loss at 50MHz	Insertion Loss at 100MHz	Insertion Loss at 150MHz	Insertion Loss at 200MHz	Insertion Loss at 300MHz	Insertion Loss at 400MHz	Insertion Loss at 500MHz	Insertion Loss at 1000MHz	
NFW31SP106X1E4☐	10MHz	6dBmax.	5dBmin.	25dBmin.	25dBmin.	-	25dBmin.	-	-	30dBmin.	30dBmin.	Kit
NFW31SP206X1E4☐	20MHz	-	6dBmax.	5dBmin.	25dBmin.	-	25dBmin.	-	-	30dBmin.	30dBmin.	Kit
NFW31SP506X1E4☐	50MHz	-	-	6dBmax.	10dBmin.	-	30dBmin.	-	-	30dBmin.	30dBmin.	Kit
NFW31SP107X1E4☐	100MHz	-	-	-	6dBmax.	-	5dBmin.	-	-	20dBmin.	30dBmin.	Kit
NFW31SP157X1E4☐	150MHz	-	-	-	-	6dBmax.	-	10dBmin.	20dBmin	30dBmin.	30dBmin.	Kit
NFW31SP207X1E4☐	200MHz	-	-	-	-	-	6dBmax.	-	-	10dBmin.	30dBmin.	Kit
NFW31SP307X1E4☐	300MHz	-	-	-	-	-	-	6dBmax.	-	5dBmin.	15dBmin.	Kit
NFW31SP407X1E4☐	400MHz	-	-	-	-	-	-	-	6dBmax.	-	10dBmin.	Kit
NFW31SP507X1E4☐	500MHz	-	-	-	-	-	-	-	-	6dBmax.	10dBmin.	Kit

Rated Current: 200mA Rated Voltage: 25Vdc Operating Temperature Range: -40°C to +85°C Number of Circuit: 1

■ Insertion Loss Characteristics (Main Items)



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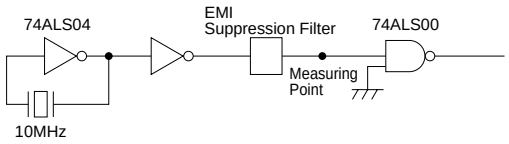
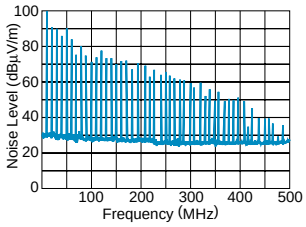
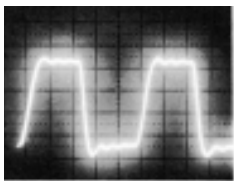
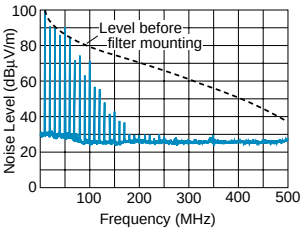
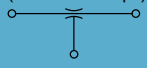
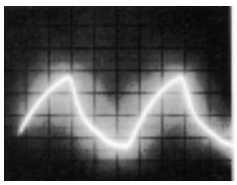
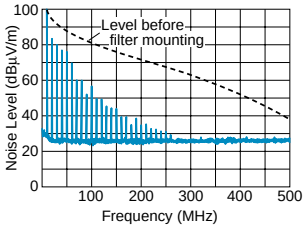
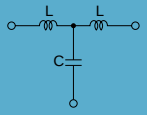
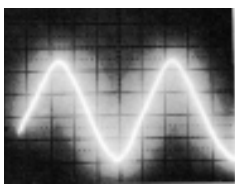
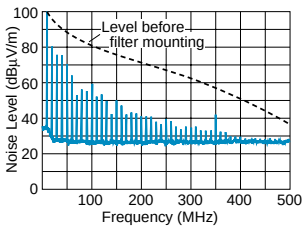
Example of EMI Suppression in an Actual Circuit

Measuring Circuit



Type of Filter	Signal Wave Form (20ns/div, 1V/div) / EMI Suppression Effect / Description
Signal Waveform and Noise Spectrum before Filter Mounting	 Signal Waveform (20ns/div, 1V/div)  Noise Spectrum (10:1 Active Probe)
NFW31S Series (Cut-off frequency 50MHz)	  NFW31S's steep attenuation characteristic means excellent EMI suppression without waveform cornering.
Conventional Chip Solid Type EMI Filter (**NFM41CC** 470pF) 	  3-terminal capacitors suppress signal frequencies as EMI frequencies so the signal waveform is distorted.
Filter Combined with Conventional LCs  L: Chip Inductor C: Chip Capacitor (270pF)	  Combinations of inductors and capacitors can yield a steep attenuation characteristic, but they require a great deal more mounting space. Moreover, at high frequencies the EMI suppression is less than that obtained by NFW31S.

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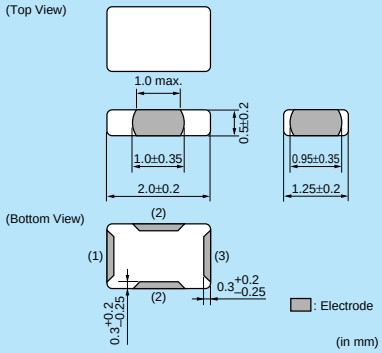
NFR21G Series (0805 Size)

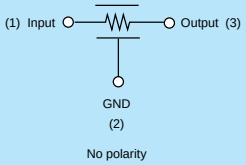
Reflow OK

3-terminal RC filter, damp the noise current and return back to ground.

■ Dimensions



■ Equivalent Circuit



■ Packaging

Code	Packaging	Minimum Quantity
L	180mm Reel Embossed Tape	4000
B	Bulk(Bag)	500

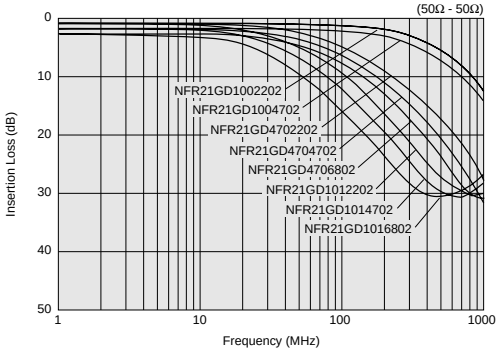
Refer to pages from p.139 to p.144 for mounting information.

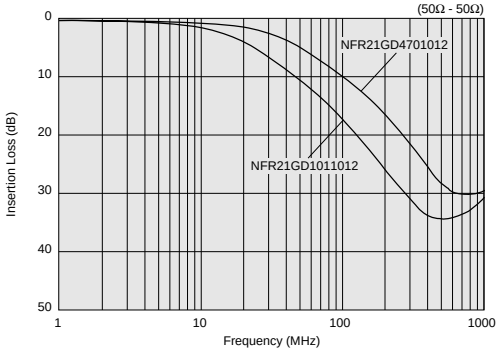
■ Rated Value (☐: packaging code)

Part Number	Capacitance	DC Resistance	Rated Current	Rated Voltage	Insulation Resistance (min.)	Operating Temperature Range
NFR21GD1002202☐	10pF±20%	22ohm±30%	50mA	50Vdc	1000M ohm	-40°C to +85°C
NFR21GD1004702☐	10pF±20%	47ohm±30%	35mA	50Vdc	1000M ohm	-40°C to +85°C
NFR21GD4702202☐	47pF±20%	22ohm±30%	50mA	50Vdc	1000M ohm	-40°C to +85°C
NFR21GD4704702☐	47pF±20%	47ohm±30%	35mA	50Vdc	1000M ohm	-40°C to +85°C
NFR21GD4706802☐	47pF±20%	68ohm±30%	30mA	50Vdc	1000M ohm	-40°C to +85°C
NFR21GD4701012☐	47pF±20%	100ohm±30%	25mA	50Vdc	1000M ohm	-40°C to +85°C
NFR21GD1012202☐	100pF±20%	22ohm±30%	50mA	50Vdc	1000M ohm	-40°C to +85°C
NFR21GD1014702☐	100pF±20%	47ohm±30%	35mA	50Vdc	1000M ohm	-40°C to +85°C
NFR21GD1016802☐	100pF±20%	68ohm±30%	30mA	50Vdc	1000M ohm	-40°C to +85°C
NFR21GD1011012☐	100pF±20%	100ohm±30%	25mA	50Vdc	1000M ohm	-40°C to +85°C

Number of Circuit: 1

■ Insertion Loss Characteristics (Main Items)





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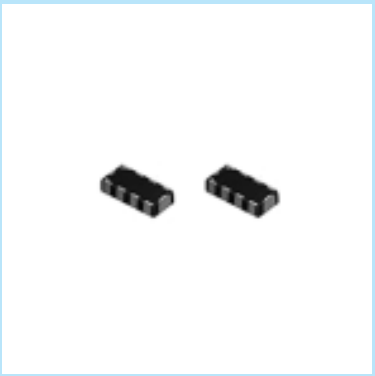
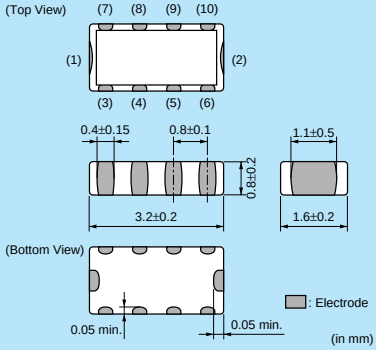
NFA31G Series (1206 Size)

Reflow OK

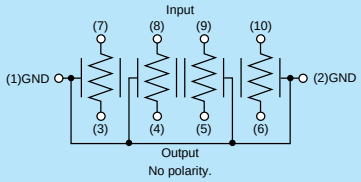
3-terminal RC filter array.



■ Dimensions



■ Equivalent Circuit



■ Packaging

Code	Packaging	Minimum Quantity
D	180mm Reel Paper Tape	4000
B	Bulk(Bag)	100

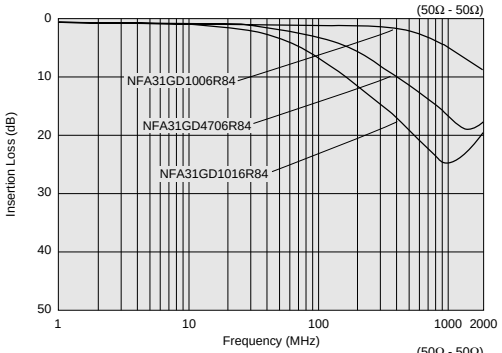
Refer to pages from p.139 to p.144 for mounting information.

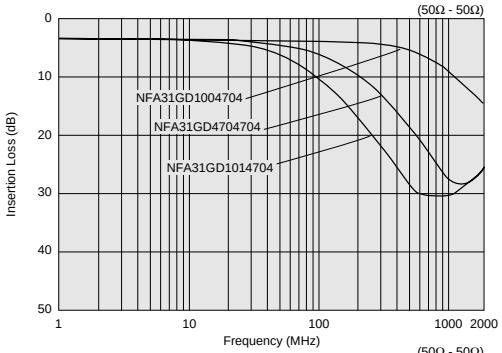
■ Rated Value (☐: packaging code)

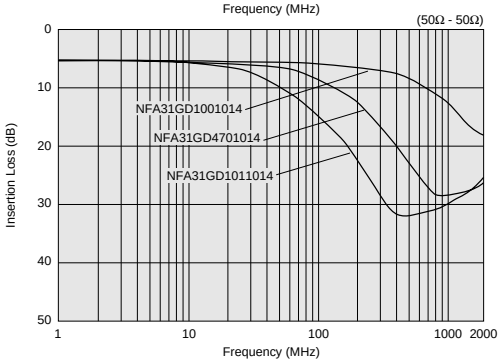
Part Number	Capacitance	DC Resistance	Rated Current	Rated Voltage	Insulation Resistance (min.)	Operating Temperature Range
NFA31GD1006R84☐	10pF±20%	6.8ohm±40%	50mA	6Vdc	1000M ohm	-40°C to +85°C
NFA31GD1004704☐	10pF±20%	47ohm±30%	20mA	6Vdc	1000M ohm	-40°C to +85°C
NFA31GD1001014☐	10pF±20%	100ohm±30%	15mA	6Vdc	1000M ohm	-40°C to +85°C
NFA31GD4706R84☐	47pF±20%	6.8ohm±40%	50mA	6Vdc	1000M ohm	-40°C to +85°C
NFA31GD4703304☐	47pF±20%	33ohm±30%	20mA	6Vdc	1000M ohm	-40°C to +85°C
NFA31GD4704704☐	47pF±20%	47ohm±30%	20mA	6Vdc	1000M ohm	-40°C to +85°C
NFA31GD4701014☐	47pF±20%	100ohm±30%	15mA	6Vdc	1000M ohm	-40°C to +85°C
NFA31GD1016R84☐	100pF±20%	6.8ohm±40%	50mA	6Vdc	1000M ohm	-40°C to +85°C
NFA31GD1014704☐	100pF±20%	47ohm±30%	20mA	6Vdc	1000M ohm	-40°C to +85°C
NFA31GD1011014☐	100pF±20%	100ohm±30%	15mA	6Vdc	1000M ohm	-40°C to +85°C

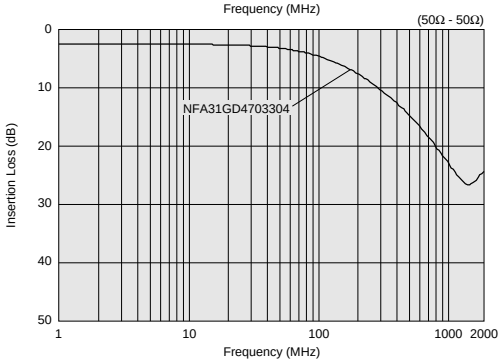
Number of Circuit: 4

■ Insertion Loss Characteristics (Main Items)









⚠Note • Please read rating and ⚠CAUTION (for storage, operating, rating, soldering, mounting and handling) in this catalog to prevent smoking and/or burning, etc.
• This catalog has only typical specifications because there is no space for detailed specifications. Therefore, please review our product specifications or consult the approval sheet for product specifications before ordering.

⚠Caution

● Rating

Do not use products beyond the rated current and rated voltage as this may create excessive heat and deteriorate the insulation resistance.

● Soldering and Mounting

• Self-heating

Please provide special attention when mounting chip EMIFIL® NFM_P series in close proximity to other products that radiate heat.
The heat generated by other products may deteriorate the insulation resistance and cause excessive heat in this component.

Notice

● Storage and Operating Conditions

<Operating Environment>
Do not use products in a chemical atmosphere such as chlorine gas, acid or sulfide gas.
Do not use products in the environment close to the organic solvent.
<Storage and Handling Requirements>

1. Storage Period
   NFM55P series should be used within 6 months, the other series should be used within 12 months. Solderability should be checked if this period is exceeded.
2. Storage Conditions
   (1) Storage temperature: -10 to +40˚C
   Relative humidity: 15 to 85%
   Avoid sudden changes in temperature and humidity.
   (2) Do not store products in a chemical atmosphere such as chlorine gas, acid or sulfide gas.

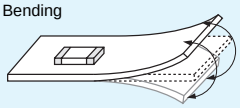
● Notice (Soldering and Mounting)

1. Cleaning
   Failure and degradation of a product are caused by the cleaning method. When you clean in conditions that are not in mounting information, please contact Murata engineering.
2. Soldering
   Reliability decreases with improper soldering methods. Please solder by the standard soldering conditions shown in mounting information.
3. Other
   Noise suppression levels resulting from Murata's EMI suppression filters EMIFIL® may vary, depending on the circuits and ICs used, type of noise, mounting pattern, mounting location, and other operating conditions. Be sure to check and confirm in advance the noise suppression effect of each filter, in actual circuits, etc. before applying the filter in a commercial-purpose equipment design.

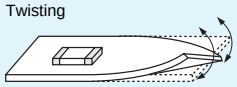
● Handling

1. Resin Coating
   Using resin for coating/molding products may affect the products performance.
   So please pay careful attention in selecting resin.
   Prior to use, please make the reliability evaluation with the product mounted in your application set.
2. Caution for Use (NFW Series)
   When you hold products with a tweezer, please hold by the sides. Sharp materials, such as a pair of tweezers or other material such as bristles of cleaning brush, should not touch the winding portion of this product to prevent breaking the wire. Mechanical shock should not be applied to the products mounted on the board to prevent breaking the core.
3. Handling of a Substrate
   After mounting products on a substrate, do not apply any stress to the product caused by bending or twisting to the substrate when cropping the substrate, inserting and removing a connector from the substrate or tightening screw to the substrate.
   Excessive mechanical stress may cause cracking in the Product.

Bending



Twisting



1. Standard Land Pattern Dimensions

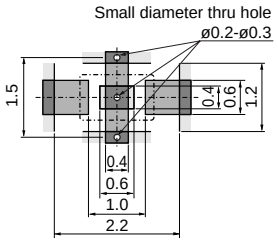
NF□ series suppress noise by conducting the high-frequency noise element to ground. Therefore, to obtain maximum performance from these filters, the ground pattern should be made as large as possible during the PCB design stage. As shown below, one side of the PCB is used for chip mounting, and the other is used for grounding.
Small diameter feedthrough holes are then used to connect the grounds on each side of the PCB. This reduces the high-frequency impedance of the grounding and maximizes the filter's performance.

Land Pattern + Solder Resist
Land Pattern Solder Resist
(in mm)

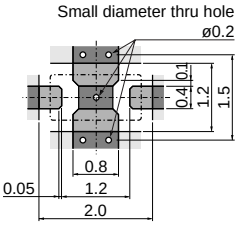
NFM18
NFL18
NFM55P

Reflow Soldering

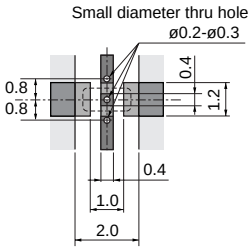
NFM18C/NFM18PC/NFL18ST



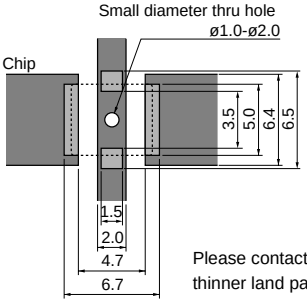
NFM18PS



NFL18SP



NFM55P



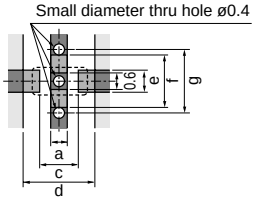
Please contact us if using thinner land pad than 18µm.

• NF□18, NFM55P are specially adapted for reflow soldering.

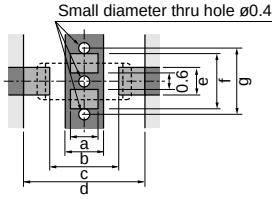
NFM21C
NFM21P
NFM3D
NFM31P
NFM41
NFR21G
NFL21S

● Reflow Soldering Chip mounting side

NFM21C/NFR21G
NFM21PC/NFL21S



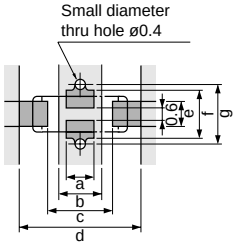
NFM3DC/NFM3DP/
NFM31P
NFM41C/NFM41P



Part Number	Size (mm)						
	a	b	c	d	e	f	g
NFM21C/NFR21G NFM21P/NFL21S	0.6	-	1.4	2.6	0.8	1.9	2.3
NFM3DC/NFM3DP	1.0	1.4	2.5	4.4	1.0	2.0	2.4
NFM31P	1.0	1.4	2.5	4.4	1.2	2.6	3.0
NFM41C/NFM41P	1.5	2.0	3.5	6.0	1.2	2.6	3.0

• NF□21 is specially adapted for reflow soldering.

● Flow Soldering
Chip mounting side



Part Number	Size (mm)						
	a	b	c	d	e	f	g
NFM3DC NFM3DP	1.0	1.4	2.5	4.4	1.0	2.0	2.4
NFM31P	1.0	1.4	2.5	4.4	1.2	2.6	3.0
NFM41C NFM41P	1.5	2.0	3.5	6.0	1.2	2.6	3.0

Continued on the following page.

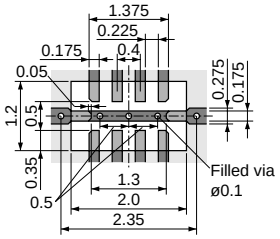
Land Pattern + Solder Resist
Land Pattern
Solder Resist

(in mm)

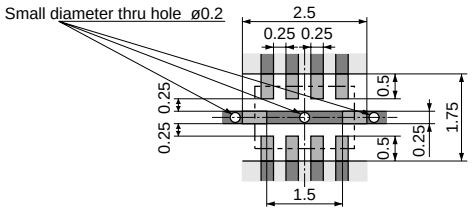
NFA18S
NFA21S

Reflow Soldering

NFA18S

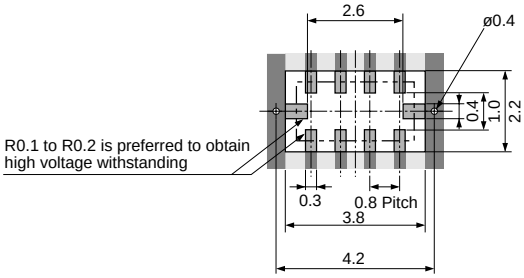


NFA21S

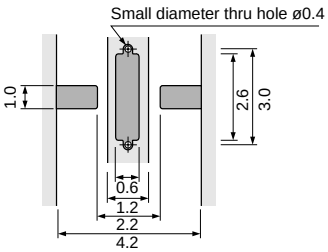


NFA31G
NFA31C
NFW31S
NFE31P

● Reflow Soldering NFA31G/31C

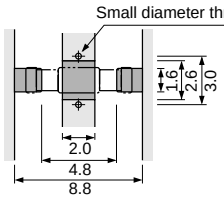


● Reflow and Flow NFW31S
● Reflow Soldering NFE31P

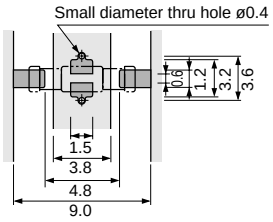


NFE61P

● Reflow Soldering



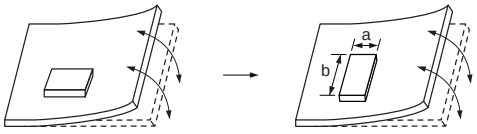
● Flow Soldering



● PCB Warping

PCB should be designed so that products are not subjected to the mechanical stress caused by warping the board.

Products should be located in the sideways direction (Length: a<b) to the mechanical stress.



2. Solder Paste Printing and Adhesive Application

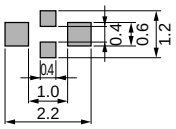
When reflow soldering the chip EMI suppression filter, the printing must be conducted in accordance with the following cream solder printing conditions.
If too much solder is applied, the chip will be prone to damage by mechanical and thermal stress from the PCB and may crack.
Standard land dimensions should be used for resist and copper foil patterns.

When flow soldering the EMI suppression filter, apply the adhesive in accordance with the following conditions.
If too much adhesive is applied, then it may overflow into the land or termination areas and yield poor solderability.
In contrast, if insufficient adhesive is applied, or if the adhesive is not sufficiently hardened, then the chip may become detached during flow soldering process.

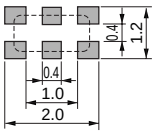
(in mm)

Series	Solder Paste Printing	Adhesive Application
NFM **NFR** **NFL**	●Guideline of solder paste thickness: 100-150µm: NFM18/21/3D/31P, NFR, NFL 150-200µm: NFM55P 100-200µm: NFM41	■ NFM3D/31P/41 Series Apply 0.1mg for NFM41C/41 and 0.06mg for NFM3D/NFM31P of bonding agent at each chip. Do not cover electrodes.

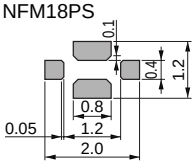
NFM18C/18PC
NFL18ST



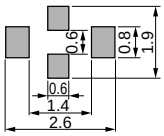
NFL18SP



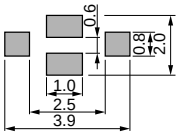
NFM18PS



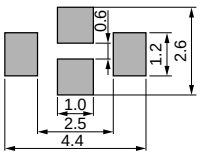
NFM21C/21PC
NFR21G/NFL21S



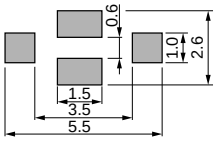
NFM3DC/3DP



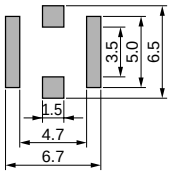
NFM31P

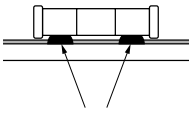


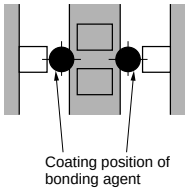
NFM41C/41P



NFM55P

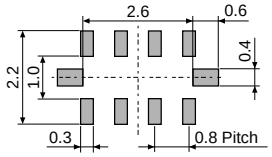
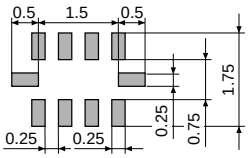
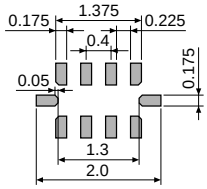
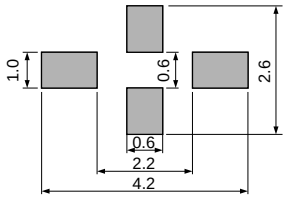
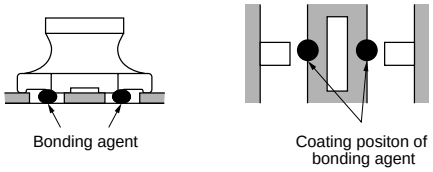
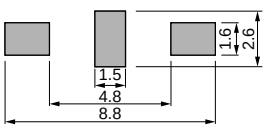
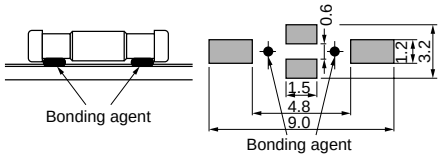






Continued on the following page.

(in mm)

Series	Solder Paste Printing	Adhesive Application
NFA	●Guideline of solder paste thickness: 100-200µm: NFA31G/31C 100-150µm: NFA18S/21S NFA31G/31C  NFA21S  NFA18S  	
NFW31S **NFE31P**	●Guideline of solder paste thickness: 150-200µm  	■ NFW31S Series Apply 0.2mg of bonding agent at each chip. 
NFE61P	●Guideline of solder paste thickness: 150-200µm  	Apply 1.0mg of bonding agent at each chip. 

3. Standard Soldering Conditions

(1) Soldering Methods

Use flow and reflow soldering methods only.
Use standard soldering conditions when soldering chip EMI suppression filters.
In cases where several different parts are soldered, each having different soldering conditions, use those conditions requiring the least heat and minimum time.

Solder: Use Sn-3.0Ag-0.5Cu solder. Use of Sn-Zn based solder will deteriorate performance of products.
If using NFM series with Sn-Zn based solder, please contact Murata in advance.

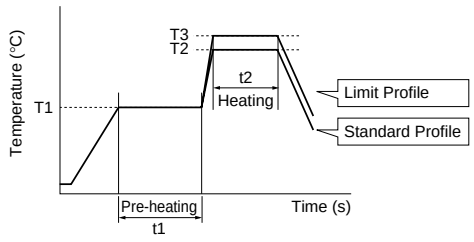
Flux:

- Use Rosin-based flux.
  In case of using RA type solder, products should be cleaned completely with no residual flux.
- Do not use strong acidic flux (with chlorine content exceeding 0.20wt%)
- Do not use water-soluble flux.

For additional mounting methods, please contact Murata.

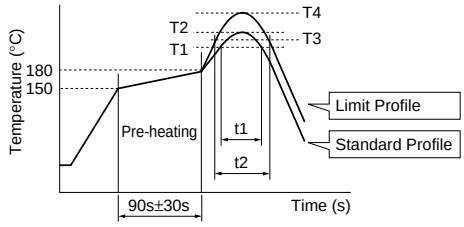
(2) Soldering Profile

●Flow Soldering Profile
(Sn-3.0Ag-0.5Cu Solder)



Series	Pre-heating		Standard Profile			Limit Profile		
			Heating		Cycle of Flow	Heating		Cycle of Flow
	Temp. (T1)	Time. (t1)	Temp. (T2)	Time. (t2)		Temp. (T3)	Time. (t2)	
NFM3DC/3DP/31PC NFM41C/41P NFE61P	150°C	60s min.	250°C	4 to 6s	2 times max.	265±3°C	5s max.	2 times max.
NFW31S	150°C	60s min.	250°C	4 to 6s	2 times max.	265±3°C	5s max.	1 time

●Reflow Soldering Profile
(Sn-3.0Ag-0.5Cu Solder)



Series	Standard Profile				Limit Profile			
	Heating		Peak Temperature (T2)	Cycle of Reflow	Heating		Peak Temperature (T4)	Cycle of Reflow
	Temp. (T1)	Time. (t1)			Temp. (T3)	Time. (t2)		
NFA, NFE NFL, NFM (Except NFM55P) NFR	220°C min.	30 to 60s	245±3°C	2 times max.	230°C min.	60s max.	260°C/10s	2 times max.
NFW31S, NFM55P	220°C min.	30 to 60s	245±3°C	2 times max.	230°C min.	60s max.	260°C/10s	1 time

(3) Reworking with Solder Iron

The following conditions must be strictly followed when using a soldering iron.

Pre-heating: 150°C 60s min.*1

*1 NFM55P: 100°C/60s+200°C/60s

Soldering iron power output / Tip diameter:

30W max. / ø3mm max.

Temperature of soldering iron tip / Soldering time / Times:

350°C max. / 3-4s / 2 times*2

*2 NFE31PT152Z1E9: 280°C max. / 10s max. / 2 times

Do not allow the tip of the soldering iron to directly contact the chip.

For additional methods of reworking with a soldering iron, please contact Murata engineering.

4. Cleaning

Following conditions should be observed when cleaning chip EMI filter.

(1) Cleaning Temperature: 60°C max. (40°C max. for alcohol type cleaner)

(2) Ultrasonic

Output: 20W/liter max.

Duration: 5 minutes max.

Frequency: 28 to 40kHz

(3) Cleaning Agent

The following list of cleaning agents have been tested on the individual components. Evaluation of final assembly should be completed prior to production.

(a) Alcohol cleaning agent

Isopropyl alcohol (IPA)

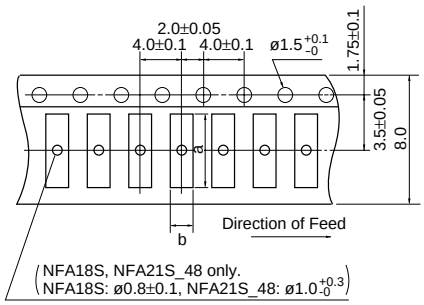
(b) Aqueous cleaning agent

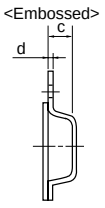
Pine Alpha ST-100S

(4) Ensure that flux residue is completely removed.

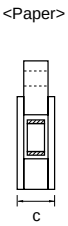
Component should be thoroughly dried after aqueous agent has been removed with deionized water.

■ Minimum Quantity and Dimensions of 8mm Width Paper / Embossed Tape





c: Depth of Cavity (Embossed Tape)



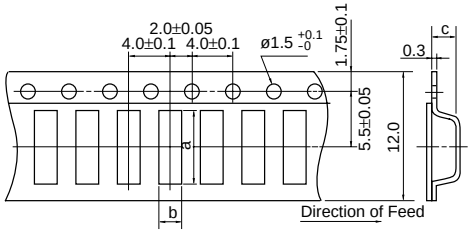
c: Total Thickness of Tape (Paper Tape)

Dimension of the cavity of embossed tape is measured at the bottom side.

Part Number	Cavity Size				Minimum Qty. (pcs.)				
					ø180mm Reel		ø330mm Reel		Bulk
	a	b	c	d	Paper Tape	Embossed Tape	Paper Tape	Embossed Tape	
NFM18C/ NFM18PC (Except 105R/225B1A)/ NFM18PS	1.85	1.05	0.9 max.	-	4000	-	-	-	500
NFM18PC105R/225B1A			1.1 max.	-	4000	-	-	-	500
NFL18SP	1.85	1.05	0.9 max.	-	4000	-	-	-	1000
NFL18ST			1.1 max.						
NFL21SP	2.3	1.55	1.1 max.						
NFM21	2.3	1.55	1.1 max.	-	4000	-	-	-	500
NFM3DC/3DP	3.4	1.4	0.85	0.2	-	4000	-	-	500
NFM31P	3.5	1.9	1.5	0.25	-	3000	-	-	500
NFA18S	1.8	1.0	0.7	0.25	-	4000	-	-	1000
NFA21S_45	2.30	1.55	0.7	0.25	-	4000	-	-	1000
NFA21S_48	2.25	1.45	1.05	0.25	-	4000	-	-	1000
NFA31G/31C	3.5	2.0	1.1 max.	-	4000	-	-	-	100
NFE31P	3.6	1.8	1.85	0.2	-	2000	-	8000	500
NFR21G	2.3	1.55	0.7	0.25	-	4000	-	-	500
NFW31S	3.6	1.9	2.0	0.2	-	2000	-	7500	-

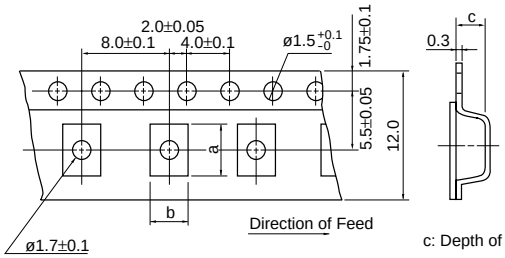
(in mm)

■ Minimum Quantity and Dimensions of 12mm Width Embossed Tape



c: Depth of Cavity

Part Number	Cavity Size			Minimum Qty. (pcs.)		
	a	b	c	ø180mm Reel	ø330mm Reel	Bulk
NFM41	4.8	1.8	1.1	4000	-	500
NFE61	7.2	1.9	1.75	2500	8000	500



c: Depth of Cavity

Part Number	Cavity Size			Minimum Qty. (pcs.)		
	a	b	c	ø180mm Reel	ø330mm Reel	Bulk
NFM55P	6.0	5.3	2.5	500	-	100

Dimension of the cavity is measured at the bottom side.

(in mm)

"Minimum Quantity" means the number of units of each delivery or order. The quantity should be an integral multiple of the "Minimum Quantity".

●EKEMNFMCB (Chip EMIFIL® Capacitor Type for Signal Lines)

No.	Part Number	Quantity (pcs.)	Capacitance	Rated Voltage (Vdc)	Rated Current (mA)
1	NFM18CC220U1C3	10	22pF±20%	16	400
2	NFM18CC470U1C3	10	47pF±20%	16	400
3	NFM18CC101R1C3	10	47pF±20%	16	500
4	NFM18CC221R1C3	10	100pF±20%	16	500
5	NFM18CC471R1C3	10	220pF±20%	16	500
6	NFM18CC102R1C3	10	470pF±20%	16	600
7	NFM18CC222R1C3	10	1000pF±20%	16	700
8	NFM18CC223R1C3	10	2200pF±20%	16	1000
9	NFM21CC220U1H3	10	22000pF±20%	50	700
10	NFM21CC470U1H3	10	22pF±20%	50	700
11	NFM21CC101U1H3	10	100pF±20%	50	700
12	NFM21CC221R1H3	10	220pF±20%	50	700
13	NFM21CC471R1H3	10	470pF±20%	50	1000
14	NFM21CC102R1H3	10	1000pF±20%	50	1000
15	NFM21CC222R1H3	10	2200pF±20%	50	1000
16	NFM21CC223R1H3	10	22000pF±20%	50	2000

●EKEMFA31E (Chip EMIFIL® Capacitor Array Type/ RC Combined Array Type)

No.	Part Number	Quantity (pcs.)	Capacitance	Rated Voltage (Vdc)	Rated Current (mA)
1	NFA31CC220S1E4	10	22pF±20%	25	200
2	NFA31CC470S1E4	10	47pF±20%	25	200
3	NFA31CC101S1E4	10	100pF±20%	25	200
4	NFA31CC221S1E4	10	220pF±20%	25	200
5	NFA31CC471R1E4	10	470pF±20%	25	200
6	NFA31CC102R1E4	10	1000pF±20%	25	200
7	NFA31CC222R1E4	10	2200pF±20%	25	200
8	NFA31CC223R1C4	10	22000pF±20%	16	200

●EKEMFL18F (Chip EMIFIL® LC Combined Type)

No.	Part Number	Quantity (pcs.)	Cut-off Frequency	Rated Voltage (Vdc)	Rated Current (mA)	DC Resistance (Ω) max.
1	NFL18ST506H1A3	10	50MHz	10	75	-
2	NFL18ST706H1A3	10	70MHz	10	75	-
3	NFL18ST107H1A3	10	100MHz	10	75	-
4	NFL18ST207X1C3	10	200MHz	16	150	3.5
5	NFL18ST307X1C3	10	300MHz	16	200	1.8
6	NFL18ST507X1C3	10	500MHz	16	200	1.5
7	NFL18SP157X1A3	10	150MHz	10	100	3.0
8	NFL18SP207X1A3	10	200MHz	10	100	3.0
9	NFL18SP307X1A3	10	300MHz	10	100	3.0
10	NFL18SP507X1A3	10	500MHz	10	100	2.0
11	NFL21SP106X1C3	10	10MHz	16	100	8.5
12	NFL21SP206X1C7	10	20MHz	16	100	8.5
13	NFL21SP506X1C3	10	50MHz	16	150	3.5
14	NFL21SP706X1C3	10	70MHz	16	150	3.0
15	NFL21SP107X1C3	10	100MHz	16	200	2.0
16	NFL21SP157X1C3	10	150MHz	16	200	2.0
17	NFL21SP207X1C3	10	200MHz	16	250	1.5
18	NFL21SP307X1C3	10	300MHz	16	300	1.2
19	NFL21SP407X1C3	10	400MHz	16	300	1.2
20	NFL21SP507X1C3	10	500MHz	16	300	1.2

Continued on the following page.

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No.	Part Number	Quantity (pcs.)	Cut-off Frequency	Attenuation (dB min.)										Rated Current	Rated Voltage
				10MHz	20MHz	50MHz	100MHz	150MHz	200MHz	300MHz	400MHz	500MHz	1GHz		
21	**NFW31SP106X1E4**	10	10MHz	6dB max.	5	25	25	-	25	-	-	30	30	200mA	25V
22	**NFW31SP206X1E4**	10	20MHz	-	6dB max.	5	25	-	25	-	-	30	30	200mA	25V
23	**NFW31SP506X1E4**	10	50MHz	-	-	6dB max.	10	-	30	-	-	30	30	200mA	25V
24	**NFW31SP107X1E4**	10	100MHz	-	-	-	6dB max.	-	5	-	-	20	30	200mA	25V
25	**NFW31SP157X1E4**	10	150MHz	-	-	-	-	6dB max.	-	10	20	30	30	200mA	25V
26	**NFW31SP207X1E4**	10	200MHz	-	-	-	-	-	6dB max.	-	-	10	30	200mA	25V
27	**NFW31SP307X1E4**	10	300MHz	-	-	-	-	-	-	6dB max.	-	5	15	200mA	25V
28	**NFW31SP407X1E4**	10	400MHz	-	-	-	-	-	-	-	6dB max.	-	10	200mA	25V
29	**NFW31SP507X1E4**	10	500MHz	-	-	-	-	-	-	-	-	6dB max.	10	200mA	25V

●EKEMFA20H (Chip EMIFIL® LC Combined Array Type)

No.	Part Number	Quantity (pcs.)	Cut-off Frequency	Rated Voltage (Vdc)	Rated Current (mA)
1	**NFA18SL506X1A45**	10	50MHz	10	25
2	**NFA18SL137V1A45**	10	130MHz	10	50
3	**NFA18SL187V1A45**	10	180MHz	10	50
4	**NFA18SL207V1A45**	10	200MHz	10	50
5	**NFA18SL227V1A45**	10	220MHz	10	25
6	**NFA18SL307V1A45**	10	300MHz	10	100
7	**NFA18SL357V1A45**	10	350MHz	10	35
8	**NFA18SL407V1A45**	10	400MHz	10	100
9	**NFA18SL487V1A45**	10	480MHz	10	100
10	**NFA18SD187X1A45**	10	180MHz	10	25
11	**NFA18SD207X1A45**	10	200MHz	10	25
12	**NFA21SL506X1A48**	10	200MHz	10	25
13	**NFA21SL806X1A48**	10	80MHz	10	20
14	**NFA21SL207X1A45**	10	200MHz	10	100
15	**NFA21SL207X1A48**	10	200MHz	10	100
16	**NFA21SL307X1A45**	10	300MHz	10	100
17	**NFA21SL307X1A48**	10	300MHz	10	100
18	**NFA21SL287V1A45**	10	280MHz	10	100
19	**NFA21SL287V1A48**	10	280MHz	10	100
20	**NFA21SL317V1A45**	10	310MHz	10	100
21	**NFA21SL317V1A48**	10	310MHz	10	100
22	**NFA21SL337V1A45**	10	330MHz	10	100
23	**NFA21SL337V1A48**	10	330MHz	10	100

●EKEMNFMPH (Chip EMIFIL® for Large Current)

No.	Part Number	Quantity (pcs.)	Capacitance	Rated Voltage (Vdc)	Rated Current (A)
1	**NFM18PC104R1C3**	10	0.1µF±20%	16	2
2	**NFM18PC224R0J3**	10	0.22µF±20%	6.3	2
3	**NFM18PC474R0J3**	10	0.47µF±20%	6.3	2
4	**NFM18PC105R0J3**	10	1µF±20%	6.3	4
5	**NFM18PC225B0J3**	10	2.2µF±20%	6.3	2
6	**NFM18PC225B1A3**	10	2.2µF±20%	10	4
7	**NFM18PS474R0J3**	10	0.47µF±20%	6.3	2
8	**NFM18PS105R0J3**	10	1µF±20%	6.3	2
9	**NFM21PC104R1E3**	10	0.1µF±20%	25	2
10	**NFM21PC224R1C3**	10	0.22µF±20%	16	2
11	**NFM21PC474R1C3**	10	0.47µF±20%	16	2
12	**NFM21PC105B1A3**	10	1µF±20%	10	4
13	**NFM21PC105B1C3**	10	1µF±20%	16	4
14	**NFM21PC225B0J3**	10	2.2µF±20%	6.3	4
15	**NFM21PC475B1A3**	10	4.7µF±20%	10	6
16	**NFM31PC276B0J3**	10	27µF±20%	6.3	6
17	**NFM41PC204F1H3**	10	0.2µF +80/-20%	50	2
18	**NFM41PC155B1E3**	10	1.5µF±20%	25	6
19	**NFE31PT152Z1E9**	10	1500pF +50/-20%	25	6
20	**NFE31PT222Z1E9**	10	2200pF±50%	25	6
21	**NFE61PT102E1H9**	10	1000pF +80/-20%	50	2
22	**NFE61PT472C1H9**	10	4700pF +80/-20%	50	2

Memo

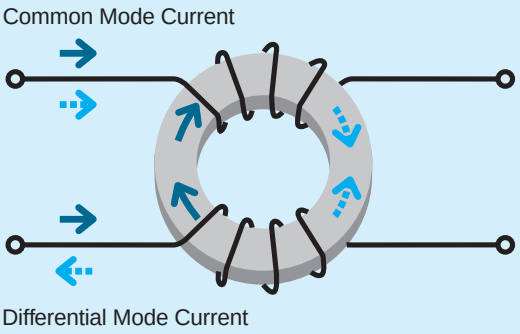
DL□/PL□

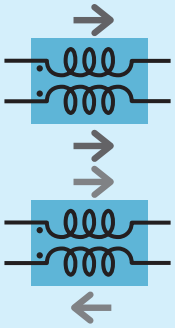
Chip Common Mode Choke Coil

Large Current Common Mode Choke Coil for Automotive Available

⚠Note • Please read rating and ⚠CAUTION (for storage, operating, rating, soldering, mounting and handling) in this catalog to prevent smoking and/or burning, etc.
• This catalog has only typical specifications because there is no space for detailed specifications. Therefore, please review our product specifications or consult the approval sheet for product specifications before ordering.

DL□ Series Introduction





Magnetic flux by common mode current is added each other and works as an inductor

Magnetic flux by differential mode current is canceled each other and do not works as an inductor

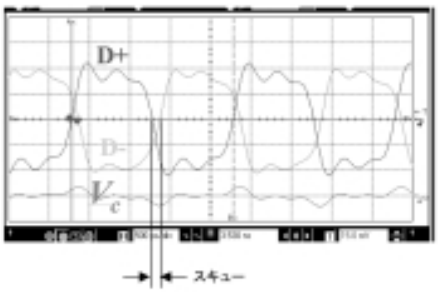
Category	Features, Classification	Structure	Part Number	Comments
High cut-off frequency High Coupling (For high speed differential signal lines)	Ultra high cut-off frequency for high speed differential signal lines	Film type	DLP11SA	· Low profile, small size, suitable for mobile equipments. · Tight terminal pitch enables high density layout. · Ultra high cut-off frequency and its matching to line impedance enables good transmission of high speed signal.
		Wound type	DLW21SN_HQ2	· Ultra high self resonance frequency enables high cut-off frequency. · Its matching to line impedance enables good transmission of high speed signal.
	High cut-off frequency for high speed differential signal lines	Film type	DLP0NS DLP11SN DLP2AD	· Low profile, small size, suitable for mobile equipments. · Tight terminal pitch enables high density layout. · High cut-off frequency enables good transmission of high speed signal.
		Wound type	DLW21SN_SQ2 DLW31S DLW21H	· Ultra high self resonance frequency enables high cut-off frequency. · DLW21H is designed as low profile.
	for general differential signal lines	Film type	DLP31S DLP31D	· Low profile,small size, suitable for mobile equipments. · Tight terminal pitch enables high density layout.
Large current High coupling (For power lines)		Wound type	DLW5AH DLW5BS DLW5BT	· Large current (6A max.), suitable for input connector from an AC adaptor. · DLW5BT is designed as low profile.
Relative high differential mode impedance Low coupling (For audio lines)		Multilayer type	DLM11G DLM2HG	· Modified its differential mode impedance higher than other common mode choke coils, this feature makes possible to suppress both common mode and differential mode noise. · DLM11GN601SD2 is ideal to keep low distortion audio signal. · DLM2HG can meet stereo 3 lines which contain a ground line.
Large current Automotive Available (For power lines)	Available up to 10A	Winding type Cased structure	PLT10HH	· Large current, high reliability, suitable for mortors in automobile.

Skew Improve Effect of Common Mode Choke Coil

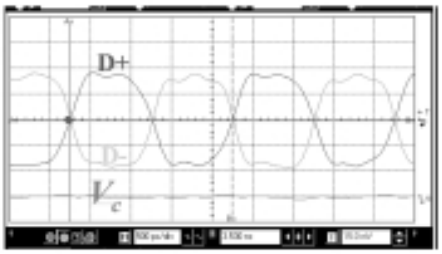
Example of Skew Improvement by Common Mode Choke Coil
(Test using pulse generator waveform)

Waveform is equivalent to 1000Mbps signal

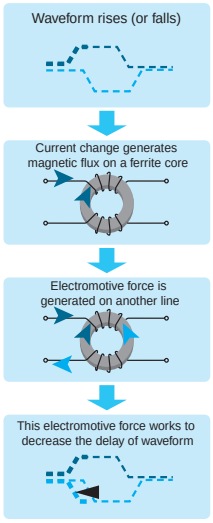
Waveform with intentionally made skew (skew: 100ps)



Skew is improved by common mode choke coil

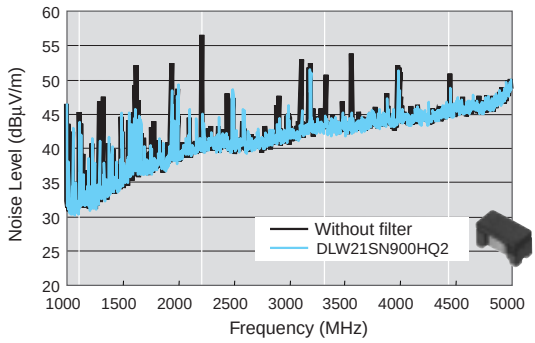


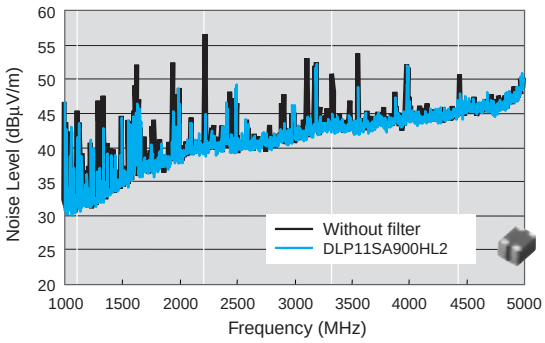
Mechanism of Skew Improvement



Noise Suppression of Common Mode Choke Coil in HDMI Line

Device under test / Transmitter : game machine Receiver : projector
Cable / HDMI categoly2 3m cable
Test resolution / 1080p Deep color 12bit (Data 1.11GHz) DVD play mode

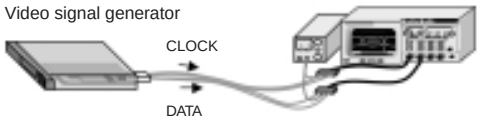


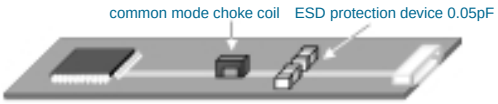


Test Example of HDMI1.3 Waveform Transmission

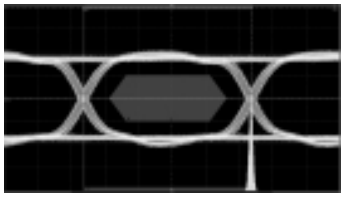
~Using ESD protection device 0.05pF~

Signal frequency : 1.11GHz (Deep color 12bit)

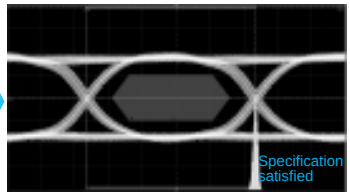




ESD protection device only



Film Type DLP11SN900HL2
(Cut-off frequency is most low in the table below)



	Wound Type DLW21SN900HQ2	Film Type DLP11SA900HL2	Film Type Array DLP2ADN900HL4
Cut-off Frequency	Over 10GHz	Around 6GHz	Around 4GHz
Judge	Specification satisfied	Specification satisfied	Specification satisfied
Transition Time	Rise time: 83.4ps Fall time: 77.4ps	Rise time: 90.4ps Fall time: 85.5ps	Rise time: 100ps Fall time: 97.4ps

Each of common mode choke coil can keep waveform, satisfy the specification.

Part Numbering

(Part Number)

DL	W	21	S	N	371	S	Q	2	L
❶	❷	❸	❹	❺	❻	❼	❽	❾	❿

❶Product ID

Product ID	
DL	Chip Common Mode Choke Coils

❷Structure

Code	Structure
W	Wire Wound Type
M	Multilayer Type
P	Film Type

❸Dimensions (L×W)

Code	Dimensions (L×W)	EIA
0N	0.85×0.65mm	03025
11	1.25×1.0mm	0504
1N	1.5×0.65mm	05025
21	2.0×1.2mm	0805
31	3.2×1.6mm	1206
2A	2.0×1.0mm	0804
2H	2.5×2.0mm	1008
5A	5.0×3.6mm	2014
5B	5.0×5.0mm	2020

❹Features (1)

Code	Type
S	Magnetically Shielded One Circuit Type
D	Magnetically Shielded Two Circuit Type
H	Open Magnetic One Circuit Type
G	Magnetically Monolithic Type (sectional winding)
T	Magnetically Shielded One Circuit Low Profile Type

❺Category

Code	Category
A	Expressed by a letter.
B	
C	
N	
R	

❻Impedance

Typical impedance at 100MHz is expressed by three figures. The unit is in ohm (Ω). The first and second figures are significant digits, and the third figure expresses the number of zeros which follow the two figures.

❼Circuit

Code	Circuit
S	Expressed by a letter.
M	
H	
U	

❽Features (2)

Code	Features
D	Expressed by a letter.
L	
Q	
Z	

❾Number of Signal Lines

Code	Number of Signal Lines
2	Two Lines
3	Three Lines
4	Four Lines

❿Packaging

Code	Packaging	Series
K	Embossed Taping (ø330mm Reel)	**DLW5AH/DLW5BS/DLW5BT**
L	Embossed Taping (ø180mm Reel)	All Series
B	Bulk	All Series

Part Numbering

(Part Number)

PL	T	10H	H	102	6R0	P	N	B
❶	❷	❸	❹	❺	❻	❼	❽	❾

❶Product ID

Product ID	
PL	Common Mode Choke Coils

❷Type

Code	Type
T	DC Type

❸Applications

Code	Applications
10H	for DC Line High-frequency Type

❹Features

Code	Features
H	for Automotive

❺Impedance

Expressed by three figures. The unit is ohm (Ω). The first and second figures are significant digits, and the third figure expresses the number of zeros which follow the two figures.

❻Rated Current

Expressed by three figures. The unit is ampere (A). The first and second figures are significant digits, and the third figure expresses the number of zeros which follow the two figures.
A decimal point is expressed by the capital letter "R". In this case, all figures are significant digits.

❼Winding Mode

Code	Winding Mode
P	Aligned Winding Type

❽Lead Dimensions

Code	Lead Dimensions
N	No Lead Terminal (SMD)

❾Packaging

Code	Packaging	Series
B	Bulk	**PLT10H**
L	Embossed Taping (ø178mm/ø180mm Reel)	**PLT10H**
K	Embossed Taping (ø330mm Reel)	**PLT10H**

Type	Size Code (Inch)	Thickness (mm)	Part Number	Common Mode Impedance (at 100MHz/20°C)	Rated Current	New	Kit	≧1A ≧3A	HD	UD	Zmatch	Flow	ReFlow
Multilayer Type for Audio Lines	0504 p158	0.5	DLM11GN601SD2	600ohm±25%	100mA								ReFlow
	1008 p159	1.2	DLM2HGN601SZ3	600ohm±25%	100mA							Flow	ReFlow
Film Type for Differential Signal Lines	03025 p160	0.45	DLP0NSN670HL2	67ohm±20%	110mA		Kit		HD		Zmatch		ReFlow
		0.45	DLP0NSN900HL2	90ohm±20%	100mA		Kit		HD		Zmatch		ReFlow
		0.45	DLP0NSN121HL2	120ohm±20%	90mA		Kit		HD		Zmatch		ReFlow
		0.45	DLP0NSA150HL2	15ohm±5ohm	100mA	New	Kit			UD	Zmatch		ReFlow
		0.45	DLP0NSC280HL2	28ohm±20%	100mA		Kit			UD	Zmatch		ReFlow
	0504 p162	0.82	DLP11SN670SL2	67ohm±20%	180mA		Kit		HD				ReFlow
		0.82	DLP11SN121SL2	120ohm±20%	140mA		Kit		HD				ReFlow
		0.82	DLP11SN161SL2	160ohm±20%	120mA		Kit		HD				ReFlow
		0.82	DLP11SN900HL2	90ohm±20%	150mA		Kit		HD		Zmatch		ReFlow
		0.82	DLP11SN201HL2	200ohm±20%	110mA		Kit		HD		Zmatch		ReFlow
		0.82	DLP11SN241HL2	240ohm±20%	100mA		Kit		HD		Zmatch		ReFlow
		0.82	DLP11SN281HL2	280ohm±20%	90mA		Kit		HD		Zmatch		ReFlow
		0.82	DLP11SN331HL2	330ohm±20%	80mA		Kit		HD		Zmatch		ReFlow
		0.82	DLP11SA350HL2	35ohm±20%	170mA		Kit			UD	Zmatch		ReFlow
		0.82	DLP11SA670HL2	67ohm±20%	150mA		Kit			UD	Zmatch		ReFlow
		0.82	DLP11SA900HL2	90ohm±20%	150mA		Kit			UD	Zmatch		ReFlow
	p163	0.3	DLP11TB800UL2	80ohm±25%	100mA	New	Kit			UD	Zmatch		ReFlow
	1206 p164	1.15	DLP31SN121ML2	120ohm±20%	100mA				HD				ReFlow
		1.15	DLP31SN221ML2	220ohm±20%	100mA				HD				ReFlow
		1.15	DLP31SN551ML2	550ohm±20%	100mA				HD				ReFlow
Film Array Type for Differential Signal Lines	05025 p165	0.45	DLP1NDN350HL4	35ohm±20%	100mA	New	Kit			UD	Zmatch		ReFlow
		0.45	DLP1NDN670HL4	67ohm±20%	80mA	New	Kit			UD	Zmatch		ReFlow
		0.45	DLP1NDN900HL4	90ohm±20%	60mA	New	Kit			UD	Zmatch		ReFlow
	0804 p166	0.82	DLP2ADA350HL4	35ohm±20%	150mA		Kit			UD	Zmatch		ReFlow
		0.82	DLP2ADA670HL4	67ohm±20%	130mA		Kit			UD	Zmatch		ReFlow
		0.82	DLP2ADA900HL4	90ohm±20%	120mA		Kit			UD	Zmatch		ReFlow
		0.82	DLP2ADN670HL4	67ohm±20%	140mA		Kit		HD		Zmatch		ReFlow
		0.82	DLP2ADN900HL4	90ohm±20%	130mA		Kit		HD		Zmatch		ReFlow
		0.82	DLP2ADN121HL4	120ohm±20%	120mA		Kit		HD		Zmatch		ReFlow
		0.82	DLP2ADN161HL4	160ohm±20%	100mA		Kit		HD		Zmatch		ReFlow
		0.82	DLP2ADN201HL4	200ohm±20%	90mA		Kit		HD		Zmatch		ReFlow
		0.82	DLP2ADN241HL4	240ohm±20%	80mA		Kit		HD		Zmatch		ReFlow
		0.82	DLP2ADN281HL4	280ohm±20%	80mA		Kit		HD		Zmatch		ReFlow
	1206 p168	1.15	DLP31DN900ML4	90ohm±20%	160mA				HD				ReFlow
		1.15	DLP31DN131ML4	130ohm±20%	120mA				HD				ReFlow
		1.15	DLP31DN201ML4	200ohm±20%	100mA				HD				ReFlow
		1.15	DLP31DN321ML4	320ohm±20%	80mA				HD				ReFlow
		1.15	DLP31DN441ML4	440ohm±20%	70mA				HD				ReFlow
Wire Wound Type for Differential Signal Lines	0805 p169	1.2	DLW21SN670SQ2	67ohm±25%	400mA		Kit		HD				ReFlow
		1.2	DLW21SN900SQ2	90ohm±25%	330mA		Kit		HD				ReFlow
		1.2	DLW21SN121SQ2	120ohm±25%	370mA		Kit		HD				ReFlow
		1.2	DLW21SN181SQ2	180ohm±25%	330mA		Kit		HD				ReFlow
		1.2	DLW21SN261SQ2	260ohm±25%	300mA		Kit		HD				ReFlow
		1.2	DLW21SN371SQ2	370ohm±25%	280mA		Kit		HD				ReFlow
		1.2	DLW21SN670HQ2	67ohm±25%	320mA		Kit			UD	Zmatch		ReFlow
		1.2	DLW21SN900HQ2	90ohm±25%	280mA		Kit			UD	Zmatch		ReFlow
		1.2	DLW21SN121HQ2	120ohm±25%	280mA		Kit			UD	Zmatch		ReFlow
		1.2	DLW21SR670HQ2	67ohm±25%	400mA		Kit			UD	Zmatch		ReFlow
	p171	0.9	DLW21HN670SQ2	67ohm±25%	330mA		Kit		HD				ReFlow
		0.9	DLW21HN900SQ2	90ohm±25%	330mA		Kit		HD				ReFlow
		0.9	DLW21HN121SQ2	120ohm±25%	280mA		Kit		HD				ReFlow
		0.9	DLW21HN181SQ2	180ohm±25%	250mA		Kit		HD				ReFlow
	1206 p172	1.9	DLW31SN900SQ2	90ohm±25%	370mA				HD				ReFlow
		1.9	DLW31SN161SQ2	160ohm±25%	340mA				HD				ReFlow
		1.9	DLW31SN261SQ2	260ohm±25%	310mA				HD				ReFlow
		1.9	DLW31SN601SQ2	600ohm±25%	260mA				HD				ReFlow
		1.9	DLW31SN102SQ2	1000ohm±25%	230mA				HD				ReFlow
		1.9	DLW31SN222SQ2	2200ohm±25%	200mA				HD				ReFlow

Continued on the following page.

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• This catalog has only typical specifications because there is no space for detailed specifications. Therefore, please review our product specifications or consult the approval sheet for product specifications before ordering.

Type	Size Code (Inch)	Thickness (mm)	Part Number	Common Mode Impedance (at 100MHz/20°C)	Rated Current	New / Kit / ≧1A ≧3A / HD UD / Zmatch / Flow / ReFlow
Wire Wound Type for Power Lines and Signal Lines	2014 p156	4.3	**DLW5AHN402SQ2**	4000ohm(Typ.)	200mA	Kit ReFlow
	2020 p156 p157	4.5	**DLW5BSN191SQ2**	190ohm(Typ.)	5000mA	Kit ≧3A ReFlow
		4.5	**DLW5BSN351SQ2**	350ohm(Typ.)	2000mA	Kit ≧1A ReFlow
		4.5	**DLW5BSN102SQ2**	1000ohm(Typ.)	1500mA	Kit ≧1A ReFlow
		4.5	**DLW5BSN152SQ2**	1500ohm(Typ.)	1000mA	Kit ≧1A ReFlow
		4.5	**DLW5BSN302SQ2**	3000ohm(Typ.)	500mA	Kit ReFlow
		2.5	**DLW5BTN101SQ2**	100ohm(Typ.)	6000mA	Kit ≧3A ReFlow
		2.5	**DLW5BTN251SQ2**	250ohm(Typ.)	5000mA	Kit ≧3A ReFlow
		2.5	**DLW5BTN501SQ2**	500ohm(Typ.)	4000mA	Kit ≧3A ReFlow
		2.5	**DLW5BTN102SQ2**	1000ohm(Typ.)	2000mA	Kit ≧1A ReFlow
		2.5	**DLW5BTN142SQ2**	1400ohm(Typ.)	1500mA	Kit ≧1A ReFlow

PL□ Large Current Common Mode Choke Coil for Automotive Available Series Line Up

Type	Size	Thickness (mm)	Part Number	Common Mode Impedance (at 10MHz/20°C)	Rated Current	New / Kit / ≧3A ≧10A / HD UD / Zmatch / Flow / ReFlow
Large Current Common Mode Choke Coil for Automotive Available	12.9x6.6 (mm) p173	9.4	**PLT10HH401100PN**	400ohm	10A	New Kit ≧10A ReFlow
		9.4	**PLT10HH501100PN**	500ohm	10A	New Kit ≧10A ReFlow
		9.4	**PLT10HH9016R0PN**	900ohm	6A	New Kit ≧3A ReFlow
		9.4	**PLT10HH1026R0PN**	1000ohm	6A	New Kit ≧3A ReFlow

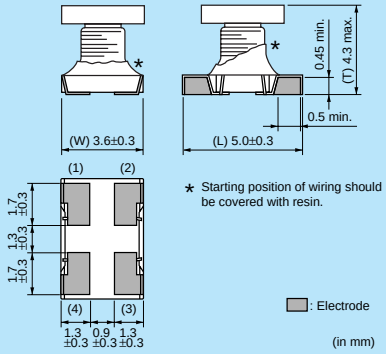
DLW5AH/DLW5BS Series (2014/2020 Size)

Hi Power Reflow OK

5A max, common mode choke coil for power lines.

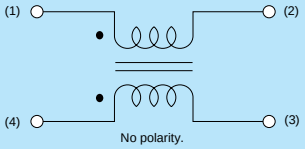
DLW5AH

■ Dimensions



* Starting position of wiring should be covered with resin.

■ Equivalent Circuit

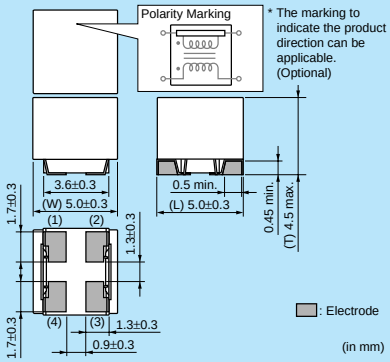


■ Packaging

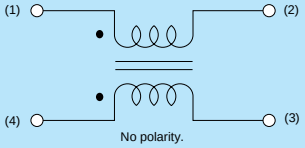
Code	Packaging	Minimum Quantity
L	180mm Reel Embossed Tape	400
K	330mm Reel Embossed Tape	1500
B	Bulk(Bag)	100

DLW5BS

■ Dimensions



■ Equivalent Circuit



■ Packaging

Code	Packaging	Minimum Quantity
L	180mm Reel Embossed Tape	400
K	330mm Reel Embossed Tape	1500
B	Bulk(Bag)	100

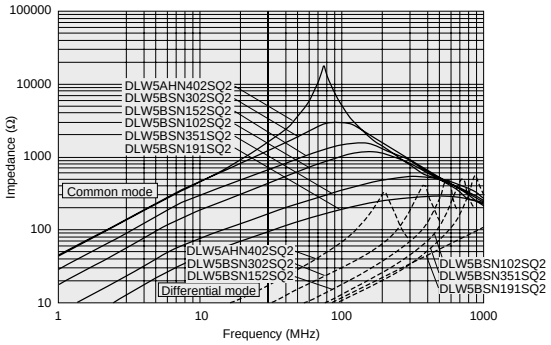
Refer to pages from p.176 to p.179 for mounting information.

■ Rated Value (☐: packaging code)

Part Number	Common Mode Impedance (at 100MHz/20°C)	Rated Current	Rated Voltage	Insulation Resistance (min.)	Withstand Voltage	DC Resistance	
DLW5AHN402SQ2☐	4000ohm(Typ.)	200mA	50Vdc	10M ohm	125Vdc	3.0ohm max.	Kit
DLW5BSN191SQ2☐	190ohm(Typ.)	5000mA	50Vdc	10M ohm	125Vdc	0.02ohm max.	Kit ≧3A
DLW5BSN351SQ2☐	350ohm(Typ.)	2000mA	50Vdc	10M ohm	125Vdc	0.04ohm max.	Kit ≧1A
DLW5BSN102SQ2☐	1000ohm(Typ.)	1500mA	50Vdc	10M ohm	125Vdc	0.06ohm max.	Kit ≧1A
DLW5BSN152SQ2☐	1500ohm(Typ.)	1000mA	50Vdc	10M ohm	125Vdc	0.1ohm max.	Kit ≧1A
DLW5BSN302SQ2☐	3000ohm(Typ.)	500mA	50Vdc	10M ohm	125Vdc	0.3ohm max.	Kit

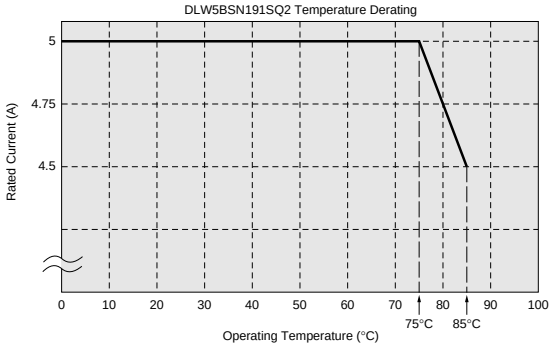
Operating Temperature Range: -25°C to +85°C (DLW5AH), -40°C to +85°C (DLW5BS) Number of Circuit: 1

■ Impedance-Frequency Characteristics (Main Items)



■ Derating of Rated Current

DLW5BSN191



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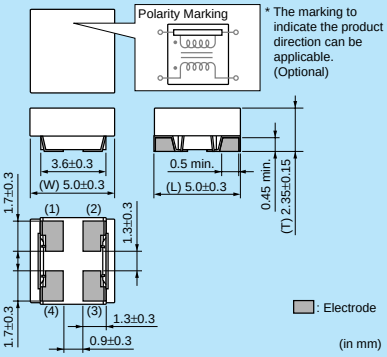
DLW5BT Series (2020 Size)

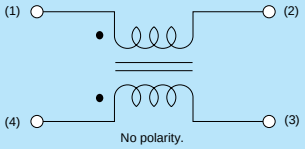
Hi Power Reflow OK

Low profile wire-wound common choke coil for power lines.

■ Dimensions



■ Equivalent Circuit



■ Packaging

Code	Packaging	Minimum Quantity
L	180mm Reel Embossed Tape	700
K	330mm Reel Embossed Tape	2500
B	Bulk(Bag)	100

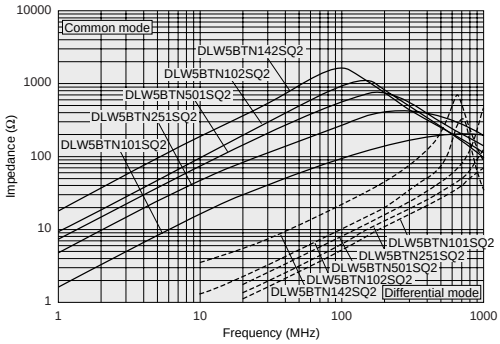
Refer to pages from p.176 to p.179 for mounting information.

■ Rated Value (☐: packaging code)

Part Number	Common Mode Impedance (at 100MHz/20°C)	Rated Current	Rated Voltage	Insulation Resistance (min.)	Withstand Voltage	DC Resistance	
DLW5BTN101SQ2☐	100ohm(Typ.)	6000mA	50Vdc	10M ohm	125Vdc	0.009ohm±40%	Kit ≧3A
DLW5BTN251SQ2☐	250ohm(Typ.)	5000mA	50Vdc	10M ohm	125Vdc	0.014ohm±40%	Kit ≧3A
DLW5BTN501SQ2☐	500ohm(Typ.)	4000mA	50Vdc	10M ohm	125Vdc	0.019ohm±40%	Kit ≧3A
DLW5BTN102SQ2☐	1000ohm(Typ.)	2000mA	50Vdc	10M ohm	125Vdc	0.024ohm±40%	Kit ≧1A
DLW5BTN142SQ2☐	1400ohm(Typ.)	1500mA	50Vdc	10M ohm	125Vdc	0.040ohm±40%	Kit ≧1A

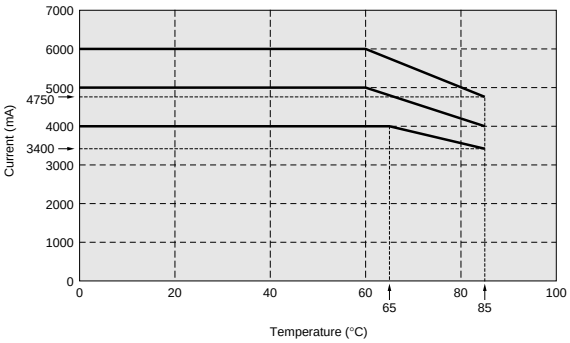
Operating Temperature Range: -40°C to +85°C Number of Circuit: 1

■ Impedance-Frequency Characteristics (Main Items)



■ Derating of Rated Current

DLW5BTN101/251/501

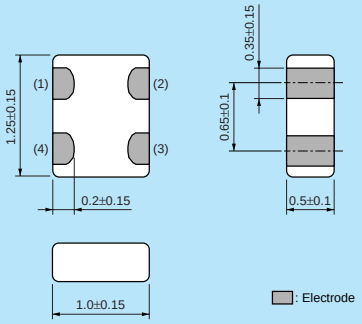


DLM11G Series (0504 Size)

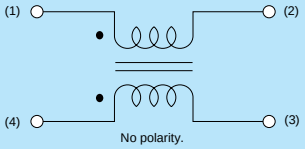
Reflow OK

Audio line common choke also effective to differential mode.

■ Dimensions



■ Equivalent Circuit



■ Packaging

Code	Packaging	Minimum Quantity
D	180mm Reel Paper Tape	10000
B	Bulk(Bag)	1000

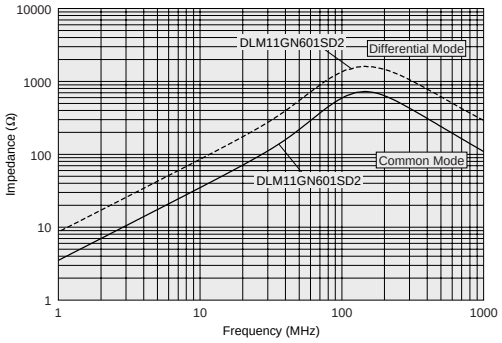
Refer to pages from p.176 to p.179 for mounting information.

■ Rated Value (☐: packaging code)

Part Number	Common Mode Impedance (at 100MHz/20°C)	Rated Current	Rated Voltage	Insulation Resistance (min.)	Withstand Voltage	DC Resistance
DLM11GN601SD2☐	600ohm±25%	100mA	5Vdc	100M ohm	25Vdc	0.8ohm max.

Operating Temperature Range: -40°C to +85°C Number of Circuit: 1

■ Impedance-Frequency Characteristics (Main Items)

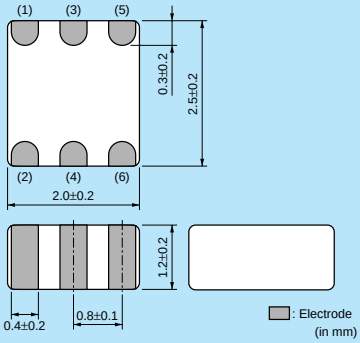


DLM2HG Series (1008 Size)

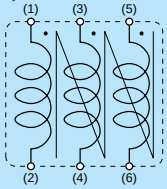
Flow OK Reflow OK

3 line audio common mode choke coil.

■ Dimensions



■ Equivalent Circuit



No polarity.

■ Packaging

Code	Packaging	Minimum Quantity
L	180mm Reel Embossed Tape	3000
B	Bulk(Bag)	1000

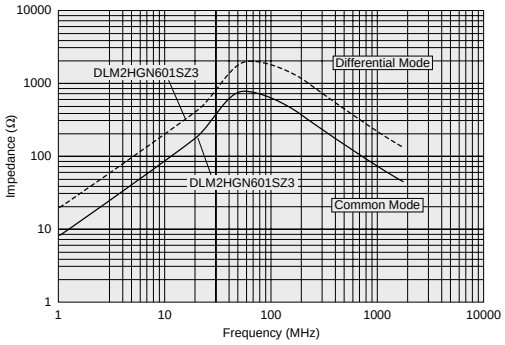
Refer to pages from p.176 to p.179 for mounting information.

■ Rated Value (☐: packaging code)

Part Number	Common Mode Impedance (at 100MHz/20°C)	Rated Current	Rated Voltage	Insulation Resistance (min.)	Withstand Voltage	DC Resistance
DLM2HGN601SZ3☐	600ohm±25%	100mA	16Vdc	100M ohm	100Vdc	0.40ohm max.

Operating Temperature Range: -55°C to +85°C Number of Circuit: 1

■ Impedance-Frequency Characteristics (Main Items)

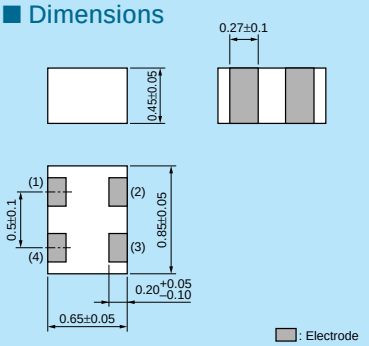


DLP0NS Series (03025 Size)

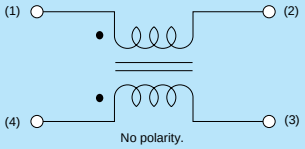
Reflow OK

03025 size, very small chip common mode choke coil, Cut-off frequency 3GHz max.

■ Dimensions



■ Equivalent Circuit



■ Packaging

Code	Packaging	Minimum Quantity
L	180mm Reel Embossed Tape	5000
B	Bulk(Bag)	500

Refer to pages from p.176 to p.179 for mounting information.

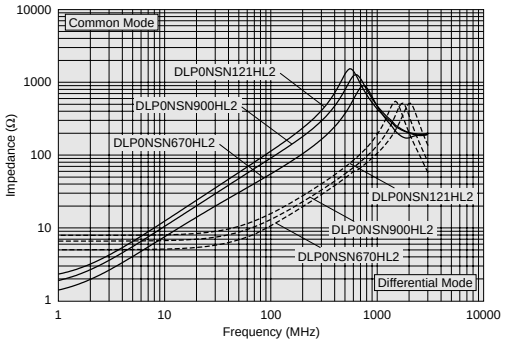
■ Rated Value (☐: packaging code)

Part Number	Common Mode Impedance (at 100MHz/20°C)	Rated Current	Rated Voltage	Insulation Resistance (min.)	Withstand Voltage	DC Resistance	
DLP0NSN670HL2☐	67ohm±20%	110mA	5Vdc	100M ohm	12.5Vdc	2.4ohm±25%	Kit HD Imp Match
DLP0NSN900HL2☐	90ohm±20%	100mA	5Vdc	100M ohm	12.5Vdc	3.0ohm±25%	Kit HD Imp Match
DLP0NSN121HL2☐	120ohm±20%	90mA	5Vdc	100M ohm	12.5Vdc	3.8ohm±25%	Kit HD Imp Match
DLP0NSA150HL2☐	15ohm±5ohm	100mA	5Vdc	100M ohm	12.5Vdc	0.95ohm±25%	New Kit UD Imp Match
DLP0NSC280HL2☐	28ohm±20%	100mA	5Vdc	100M ohm	12.5Vdc	1.3ohm±25%	Kit UD Imp Match

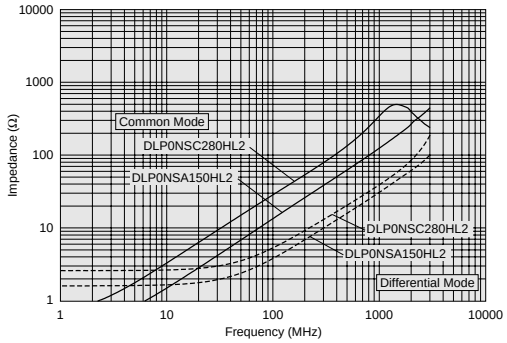
Operating Temperature Range: -40°C to +85°C Number of Circuit: 1 HD: for high speed differential signal lines UD: for ultra high speed differential signal lines

■ Impedance-Frequency Characteristics (Main Items)

DLP0NSN 670/900/121 HL2

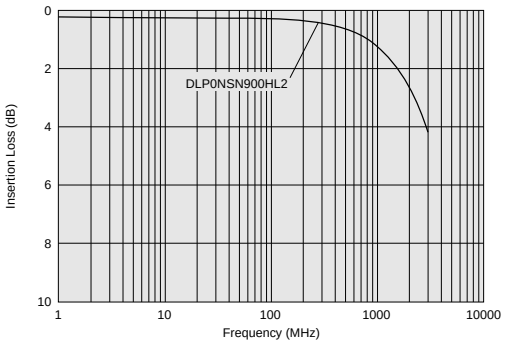


DLP0NSA150HL2/DLP0NSC280HL2

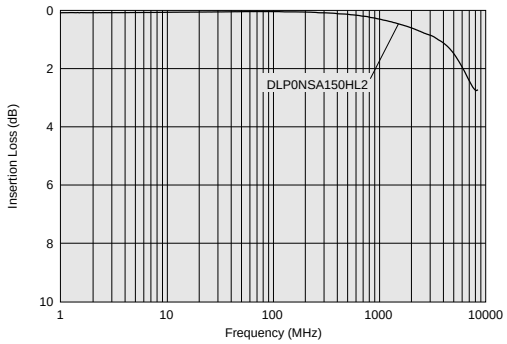


■ Differential Mode Transmission Characteristics (Typ.)

DLP0NSN900HL2



DLP0NSA150HL2



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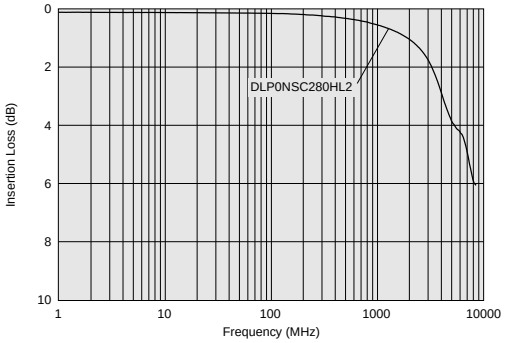
■ Differential Mode Transmission Characteristics (Typ.)

DLP0NSC280HL2

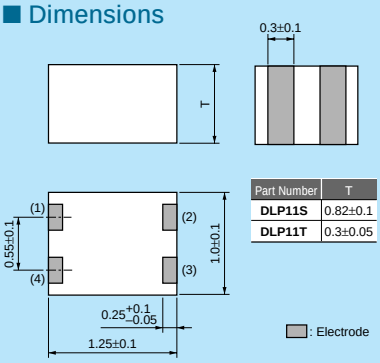


DLP11S/DLP11T Series (0504 Size)

Reflow OK

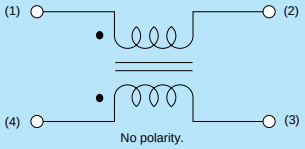
6GHz cut-off frequency (for HDMI) is available.

■ Dimensions



Part Number	T
DLP11S	0.82±0.1
DLP11T	0.3±0.05

■ Equivalent Circuit



■ Packaging

Code	Packaging	Minimum Quantity
L	180mm Reel Embossed Tape	3000 (DLP11S) 5000 (DLP11T)
B	Bulk(Bag)	500

Refer to pages from p.176 to p.179 for mounting information.

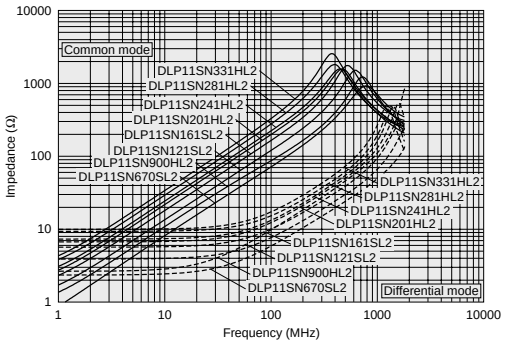
■ Rated Value (☐: packaging code)

Part Number	Common Mode Impedance (at 100MHz/20°C)	Rated Current	Rated Voltage	Insulation Resistance (min.)	Withstand Voltage	DC Resistance	
DLP11SN670SL2☐	67ohm±20%	180mA	5Vdc	100M ohm	12.5Vdc	1.3ohm±25%	Kit HD
DLP11SN121SL2☐	120ohm±20%	140mA	5Vdc	100M ohm	12.5Vdc	2.0ohm±25%	Kit HD
DLP11SN161SL2☐	160ohm±20%	120mA	5Vdc	100M ohm	12.5Vdc	2.7ohm±25%	Kit HD
DLP11SN900HL2☐	90ohm±20%	150mA	5Vdc	100M ohm	12.5Vdc	1.5ohm±25%	Kit HD Imp Match
DLP11SN201HL2☐	200ohm±20%	110mA	5Vdc	100M ohm	12.5Vdc	3.1ohm±25%	Kit HD Imp Match
DLP11SN241HL2☐	240ohm±20%	100mA	5Vdc	100M ohm	12.5Vdc	3.5ohm±25%	Kit HD Imp Match
DLP11SN281HL2☐	280ohm±20%	90mA	5Vdc	100M ohm	12.5Vdc	4.2ohm±25%	Kit HD Imp Match
DLP11SN331HL2☐	330ohm±20%	80mA	5Vdc	100M ohm	12.5Vdc	4.9ohm±25%	Kit HD Imp Match
DLP11SA350HL2☐	35ohm±20%	170mA	5Vdc	100M ohm	12.5Vdc	0.9ohm±25%	Kit UD Imp Match
DLP11SA670HL2☐	67ohm±20%	150mA	5Vdc	100M ohm	12.5Vdc	1.2ohm±25%	Kit UD Imp Match
DLP11SA900HL2☐	90ohm±20%	150mA	5Vdc	100M ohm	12.5Vdc	1.4ohm±25%	Kit UD Imp Match

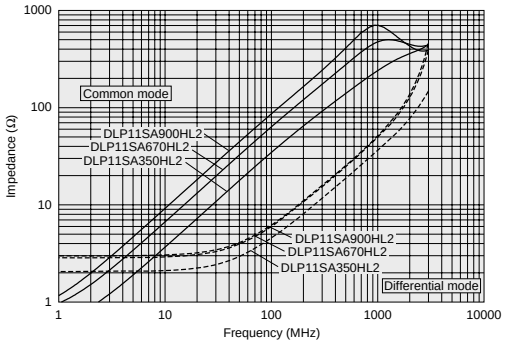
Operating Temperature Range: -40°C to +85°C Number of Circuit: 1 HD: for high speed differential signal lines UD: for ultra high speed differential signal lines

■ Impedance-Frequency Characteristics

DLP11SN Series



DLP11SA Series



Continued on the following page.

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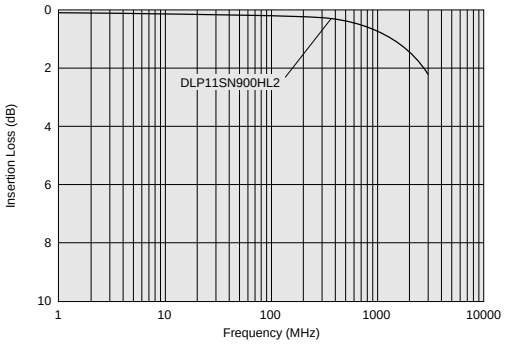
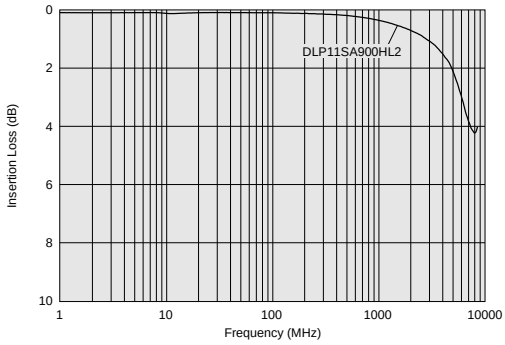
■ Differential Mode Transmission Characteristics (Typ.)

DLP11SN Series



DLP11SA Series



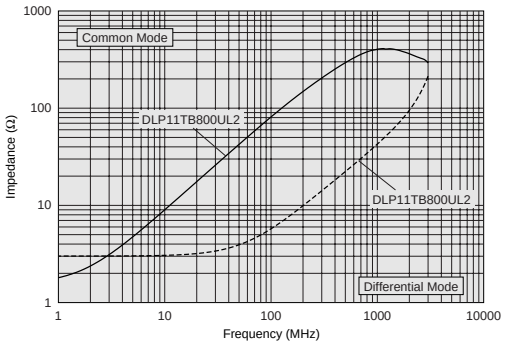
■ Rated Value (☐: packaging code)

Part Number	Common Mode Impedance (at 100MHz/20°C)	Rated Current	Rated Voltage	Insulation Resistance (min.)	Withstand Voltage	DC Resistance	
DLP11TB800UL2☐	80ohm±25%	100mA	5Vdc	100M ohm	12.5Vdc	1.5ohm±25%	New Kit UD Imp Match

Operating Temperature Range: -40°C to +85°C Number of Circuit: 1 HD: for high speed differential signal lines UD: for ultra high speed differential signal lines
Differential mode to common mode conversion characteristic (Scd21) at 2.5GHz: -40dB (typ.)
Impedance Characteristics between signal lines Z0 (TDR at 50ps): 90ohm±15ohm

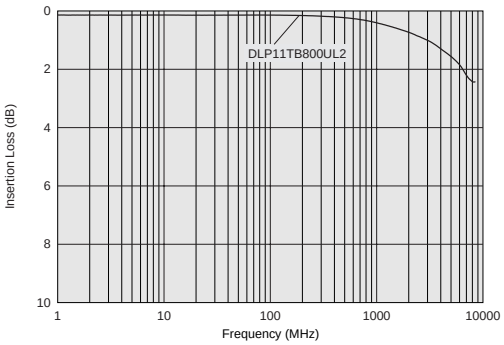
■ Impedance-Frequency Characteristics

DLP11TB Series



■ Differential Mode Transmission Characteristics

DLP11TB Series

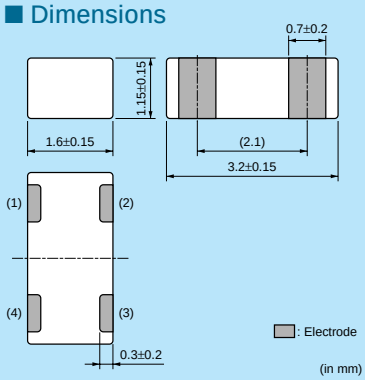


DLP31S Series (1206 Size)

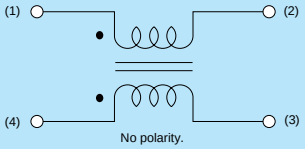
Reflow OK

1206 size film type chip common mode choke coil.

■ Dimensions



■ Equivalent Circuit



■ Packaging

Code	Packaging	Minimum Quantity
L	180mm Reel Embossed Tape	3000
B	Bulk(Bag)	500

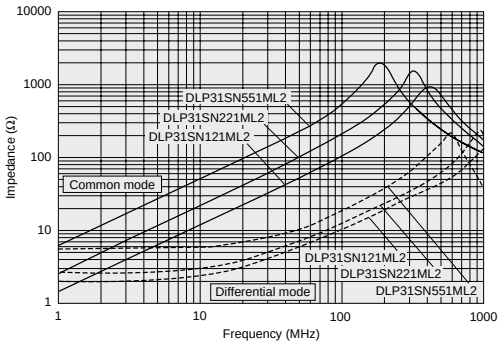
Refer to pages from p.176 to p.179 for mounting information.

■ Rated Value (☐: packaging code)

Part Number	Common Mode Impedance (at 100MHz/20°C)	Rated Current	Rated Voltage	Insulation Resistance (min.)	Withstand Voltage	DC Resistance	
DLP31SN121ML2☐	120ohm±20%	100mA	16Vdc	100M ohm	40Vdc	2.0ohm max.	HD
DLP31SN221ML2☐	220ohm±20%	100mA	16Vdc	100M ohm	40Vdc	2.5ohm max.	HD
DLP31SN551ML2☐	550ohm±20%	100mA	16Vdc	100M ohm	40Vdc	3.6ohm max.	HD

Operating Temperature Range: -40°C to +85°C Number of Circuit: 1 HD: for high speed differential signal lines UD: for ultra high speed differential signal lines

■ Impedance-Frequency Characteristics (Main Items)

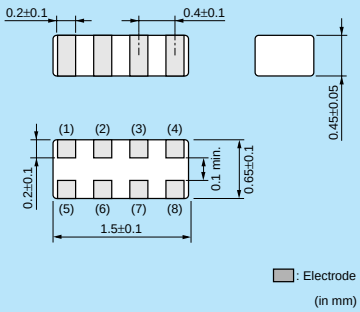


DLP1ND Series (0502 Size)

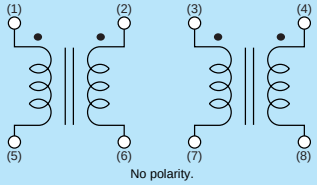
Reflow OK

2 circuits in 05025 size, adapt to HDMI line.

■ Dimensions



■ Equivalent Circuit



No polarity.

■ Packaging

Code	Packaging	Minimum Quantity
L	180mm Reel Embossed Tape	5000
B	Bulk(Bag)	500

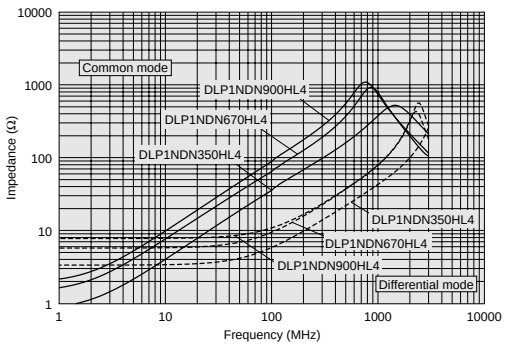
Refer to pages from p.176 to p.179 for mounting information.

■ Rated Value (☐: packaging code)

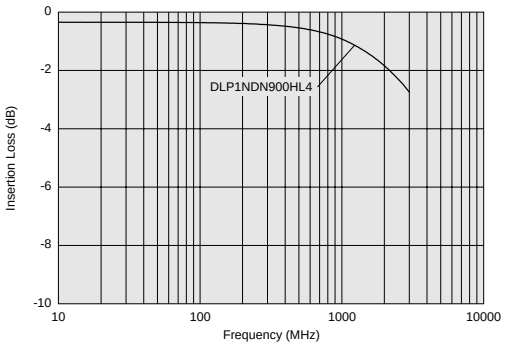
Part Number	Common Mode Impedance (at 100MHz/20°C)	Rated Current	Rated Voltage	Insulation Resistance (min.)	Withstand Voltage	DC Resistance	
DLP1NDN350HL4☐	35ohm±20%	100mA	5Vdc	100M ohm	12.5Vdc	1.8ohm±25%	New Kit UD Impedance Matching
DLP1NDN670HL4☐	67ohm±20%	80mA	5Vdc	100M ohm	12.5Vdc	2.9ohm±25%	New Kit UD Impedance Matching
DLP1NDN900HL4☐	90ohm±20%	60mA	5Vdc	100M ohm	12.5Vdc	3.7ohm±25%	New Kit UD Impedance Matching

Operating Temperature Range: -40°C to +85°C Number of Circuit: 2 HD: for high speed differential signal lines UD: for ultra high speed differential signal lines

■ Impedance-Frequency Characteristics



■ Differential Mode Transmission Characteristics

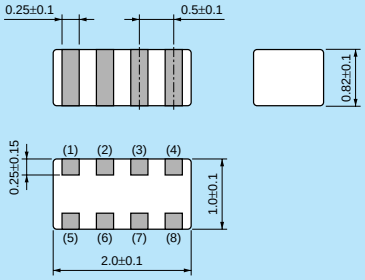


DLP2AD Series (0804 Size)

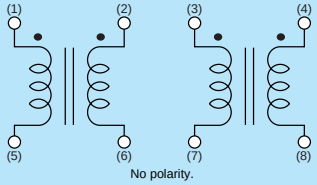
Reflow OK

2 circuit built-in, 0804 size, HDMI adapted type available, cut-off frequency 6GHz max.

■ Dimensions



■ Equivalent Circuit



No polarity.

■ Packaging

Code	Packaging	Minimum Quantity
L	180mm Reel Embossed Tape	3000
B	Bulk(Bag)	500

Refer to pages from p.176 to p.179 for mounting information.

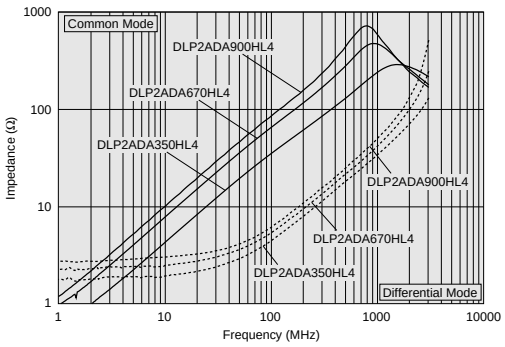
■ Rated Value (☐: packaging code)

Part Number	Common Mode Impedance (at 100MHz/20°C)	Rated Current	Rated Voltage	Insulation Resistance (min.)	Withstand Voltage	DC Resistance	
DLP2ADA350HL4☐	35ohm±20%	150mA	5Vdc	100M ohm	12.5Vdc	0.8ohm±25%	Kit UD Imp Match
DLP2ADA670HL4☐	67ohm±20%	130mA	5Vdc	100M ohm	12.5Vdc	1.0ohm±25%	Kit UD Imp Match
DLP2ADA900HL4☐	90ohm±20%	120mA	5Vdc	100M ohm	12.5Vdc	1.4ohm±25%	Kit UD Imp Match
DLP2ADN670HL4☐	67ohm±20%	140mA	5Vdc	100M ohm	12.5Vdc	1.3ohm±25%	Kit HD Imp Match
DLP2ADN900HL4☐	90ohm±20%	130mA	5Vdc	100M ohm	12.5Vdc	1.7ohm±25%	Kit HD Imp Match
DLP2ADN121HL4☐	120ohm±20%	120mA	5Vdc	100M ohm	12.5Vdc	2.0ohm±25%	Kit HD Imp Match
DLP2ADN161HL4☐	160ohm±20%	100mA	5Vdc	100M ohm	12.5Vdc	2.5ohm±25%	Kit HD Imp Match
DLP2ADN201HL4☐	200ohm±20%	90mA	5Vdc	100M ohm	12.5Vdc	3.2ohm±25%	Kit HD Imp Match
DLP2ADN241HL4☐	240ohm±20%	80mA	5Vdc	100M ohm	12.5Vdc	3.8ohm±25%	Kit HD Imp Match
DLP2ADN281HL4☐	280ohm±20%	80mA	5Vdc	100M ohm	12.5Vdc	4.6ohm±25%	Kit HD Imp Match

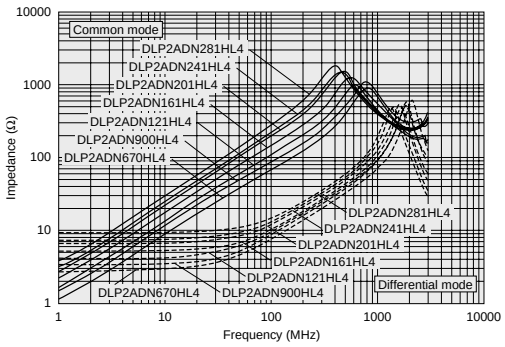
Operating Temperature Range: -40°C to +85°C Number of Circuit: 2 HD: for high speed differential signal lines UD: for ultra high speed differential signal lines

■ Impedance-Frequency Characteristics (Main Items)

DLP2ADA Series



DLP2ADN Series



Continued on the following page.

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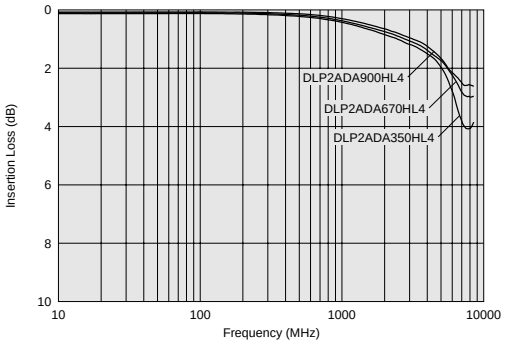
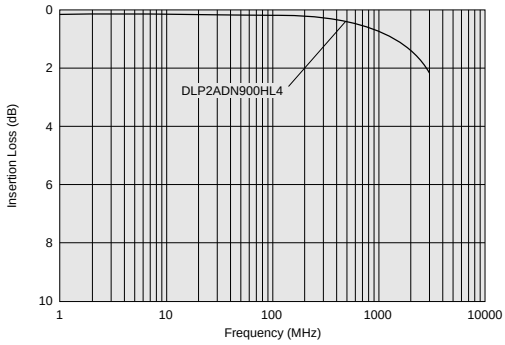
■ Differential Mode Transmission Characteristics (Typ.)

DLP2ADA Series



DLP2ADN Series

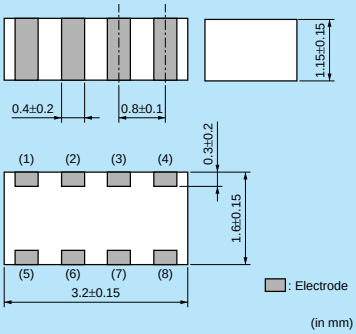


DLP31D Series (1206 Size)

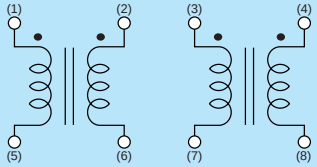
Reflow OK

2 circuit built-in, 1206 size, meet IEEE1394,USB,LVDS.

■ Dimensions



■ Equivalent Circuit



No polarity.

■ Packaging

Code	Packaging	Minimum Quantity
L	180mm Reel Embossed Tape	3000
B	Bulk(Bag)	500

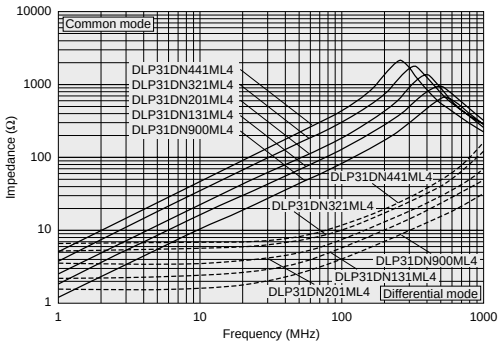
Refer to pages from p.176 to p.179 for mounting information.

■ Rated Value (☐: packaging code)

Part Number	Common Mode Impedance (at 100MHz/20°C)	Rated Current	Rated Voltage	Insulation Resistance (min.)	Withstand Voltage	DC Resistance	
DLP31DN900ML4☐	90ohm±20%	160mA	10Vdc	100M ohm	25Vdc	1.1ohm max.	HD
DLP31DN131ML4☐	130ohm±20%	120mA	10Vdc	100M ohm	25Vdc	1.1ohm max.	HD
DLP31DN201ML4☐	200ohm±20%	100mA	10Vdc	100M ohm	25Vdc	2.2ohm max.	HD
DLP31DN321ML4☐	320ohm±20%	80mA	10Vdc	100M ohm	25Vdc	3.5ohm max.	HD
DLP31DN441ML4☐	440ohm±20%	70mA	10Vdc	100M ohm	25Vdc	4.3ohm max.	HD

Operating Temperature Range: -40°C to +85°C Number of Circuit: 2 HD: for high speed differential signal lines UD: for ultra high speed differential signal lines

■ Impedance-Frequency Characteristics (Main Items)



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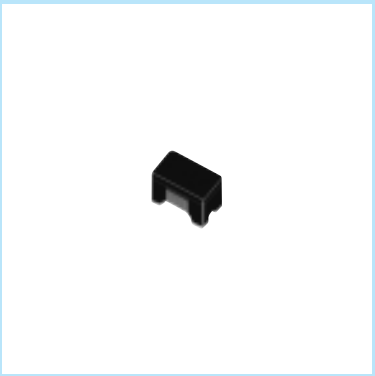
• This catalog has only typical specifications because there is no space for detailed specifications. Therefore, please review our product specifications or consult the approval sheet for product specifications before ordering.

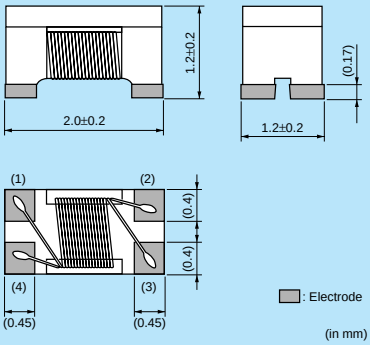
DLW21S Series (0805 Size)

Reflow OK

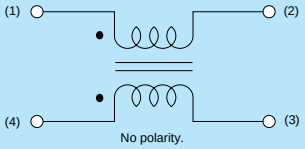
Wire-wound common choke, HDMI available type prepaird.



■ Dimensions



■ Equivalent Circuit



■ Packaging

Code	Packaging	Minimum Quantity
L	180mm Reel Embossed Tape	2000
B	Bulk(Bag)	500

Refer to pages from p.176 to p.179 for mounting information.

■ Rated Value (☐: packaging code)

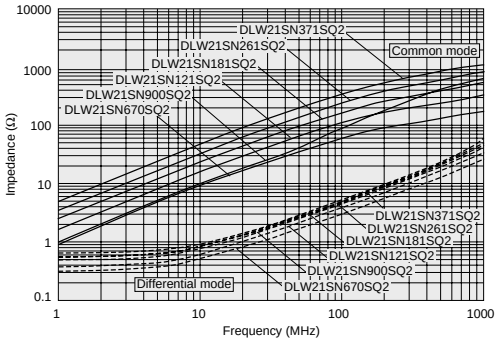
Part Number	Common Mode Impedance (at 100MHz/20°C)	Rated Current	Rated Voltage	Insulation Resistance (min.)	Withstand Voltage	DC Resistance	
DLW21SN670SQ2☐	67ohm±25%	400mA	50Vdc	10M ohm	125Vdc	0.25ohm max.	Kit HD
DLW21SN900SQ2☐	90ohm±25%	330mA	50Vdc	10M ohm	125Vdc	0.35ohm max.	Kit HD
DLW21SN121SQ2☐	120ohm±25%	370mA	50Vdc	10M ohm	125Vdc	0.45ohm max.	Kit HD
DLW21SN181SQ2☐	180ohm±25%	330mA	50Vdc	10M ohm	125Vdc	0.35ohm max.	Kit HD
DLW21SN261SQ2☐	260ohm±25%	300mA	50Vdc	10M ohm	125Vdc	0.40ohm max.	Kit HD
DLW21SN371SQ2☐	370ohm±25%	280mA	50Vdc	10M ohm	125Vdc	0.45ohm max.	Kit HD
DLW21SN670HQ2☐	67ohm±25%	320mA	20Vdc	10M ohm	50Vdc	0.31ohm max.	Kit UD Imp Match
DLW21SN900HQ2☐	90ohm±25%	280mA	20Vdc	10M ohm	50Vdc	0.41ohm max.	Kit UD Imp Match
DLW21SN121HQ2☐	120ohm±25%	280mA	20Vdc	10M ohm	50Vdc	0.41ohm max.	Kit UD Imp Match
DLW21SR670HQ2☐	67ohm±25%	400mA	20Vdc	10M ohm	50Vdc	0.25ohm max.	Kit UD Imp Match

Operating Temperature Range: -40°C to +85°C Number of Circuit: 1 HD: for high speed differential signal lines UD: for ultra high speed differential signal lines

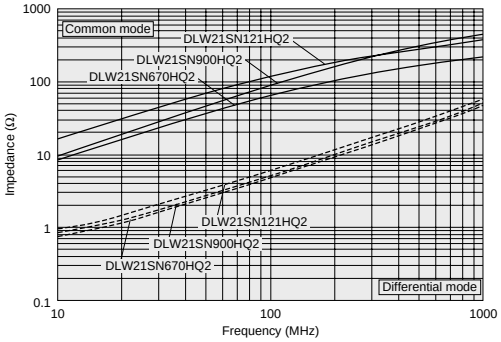
DLW21SR670HQ2 is designed to correct line impedance when ESD protection device is also used.

■ Impedance-Frequency Characteristics (Main Items)

DLW21SN_SQ2 Series



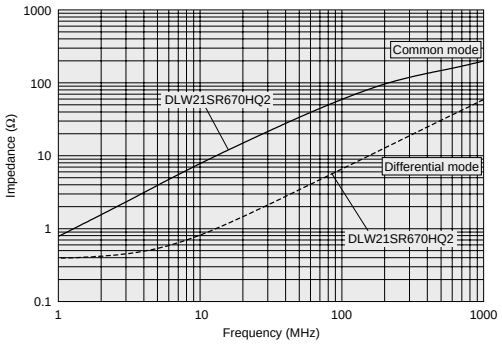
DLW21SN_HQ2 Series



Continued on the following page.

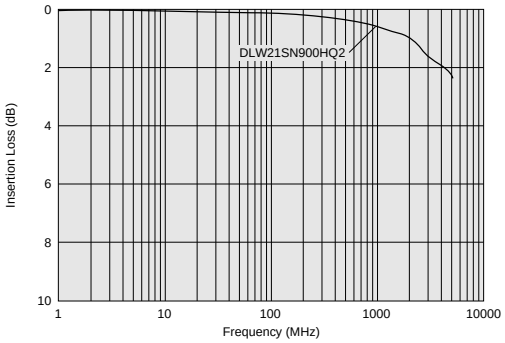
■ Impedance-Frequency Characteristics (Main Items)

DLW21SR_HQ2 Series



■ Differential Mode Transmission Characteristics (Typ.)

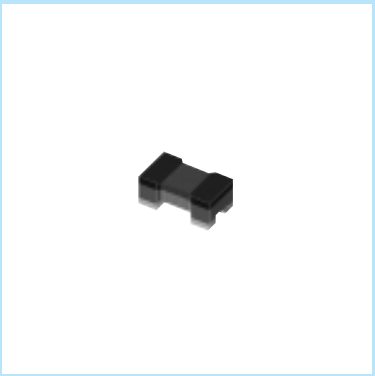
DLW21SN_HQ2 Series



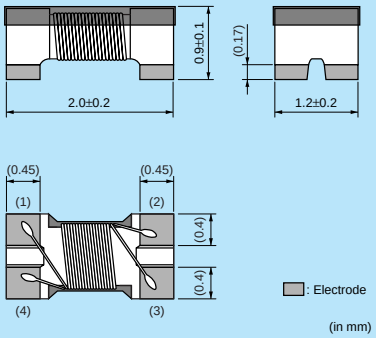
DLW21H Series (0805 Size)

Reflow OK

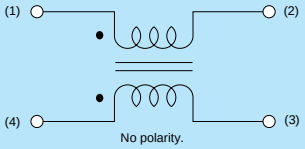
Low profile wire-wound common choke coil.



■ Dimensions



■ Equivalent Circuit



■ Packaging

Code	Packaging	Minimum Quantity
L	180mm Reel Embossed Tape	3000
B	Bulk(Bag)	500

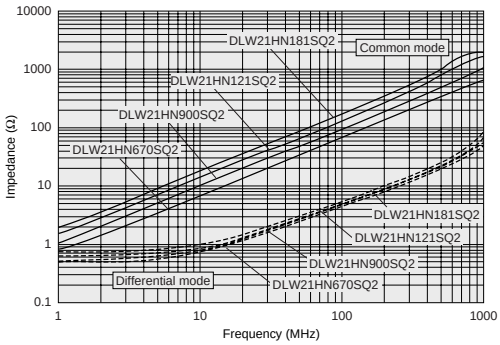
Refer to pages from p.176 to p.179 for mounting information.

■ Rated Value (☐: packaging code)

Part Number	Common Mode Impedance (at 100MHz/20°C)	Rated Current	Rated Voltage	Insulation Resistance (min.)	Withstand Voltage	DC Resistance	
DLW21HN670SQ2☐	67ohm±25%	330mA	50Vdc	10M ohm	125Vdc	0.35ohm max.	Kit HD
DLW21HN900SQ2☐	90ohm±25%	330mA	50Vdc	10M ohm	125Vdc	0.35ohm max.	Kit HD
DLW21HN121SQ2☐	120ohm±25%	280mA	50Vdc	10M ohm	125Vdc	0.45ohm max.	Kit HD
DLW21HN181SQ2☐	180ohm±25%	250mA	50Vdc	10M ohm	125Vdc	0.50ohm max.	Kit HD

Operating Temperature Range: -40°C to +85°C Number of Circuit: 1 HD: for high speed differential signal lines UD: for ultra high speed differential signal lines

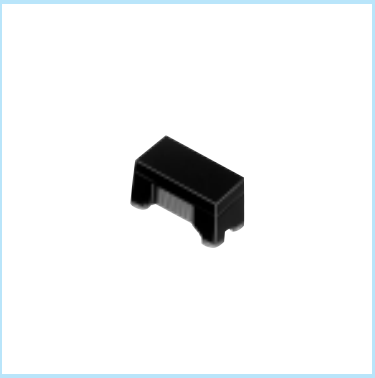
■ Impedance-Frequency Characteristics (Main Items)



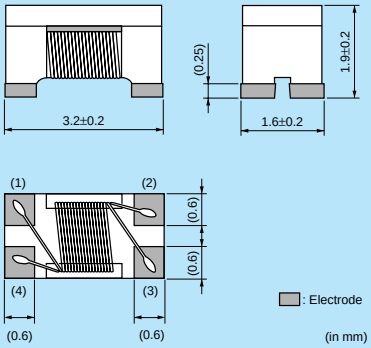
DLW31S Series (1206 Size)

Reflow OK

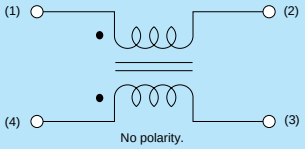
1206 size wire-wound common mode choke coil.



■ Dimensions



■ Equivalent Circuit



■ Packaging

Code	Packaging	Minimum Quantity
L	180mm Reel Embossed Tape	2000
B	Bulk(Bag)	500

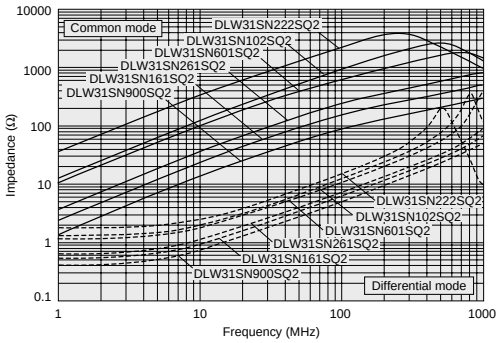
Refer to pages from p.176 to p.179 for mounting information.

■ Rated Value (☐: packaging code)

Part Number	Common Mode Impedance (at 100MHz/20°C)	Rated Current	Rated Voltage	Insulation Resistance (min.)	Withstand Voltage	DC Resistance	
DLW31SN900SQ2☐	90ohm±25%	370mA	50Vdc	10M ohm	125Vdc	0.3ohm max.	HD
DLW31SN161SQ2☐	160ohm±25%	340mA	50Vdc	10M ohm	125Vdc	0.4ohm max.	HD
DLW31SN261SQ2☐	260ohm±25%	310mA	50Vdc	10M ohm	125Vdc	0.5ohm max.	HD
DLW31SN601SQ2☐	600ohm±25%	260mA	50Vdc	10M ohm	125Vdc	0.8ohm max.	HD
DLW31SN102SQ2☐	1000ohm±25%	230mA	50Vdc	10M ohm	125Vdc	1.0ohm max.	HD
DLW31SN222SQ2☐	2200ohm±25%	200mA	50Vdc	10M ohm	125Vdc	1.2ohm max.	HD

Operating Temperature Range: -40°C to +85°C Number of Circuit: 1 HD: for high speed differential signal lines UD: for ultra high speed differential signal lines

■ Impedance-Frequency Characteristics



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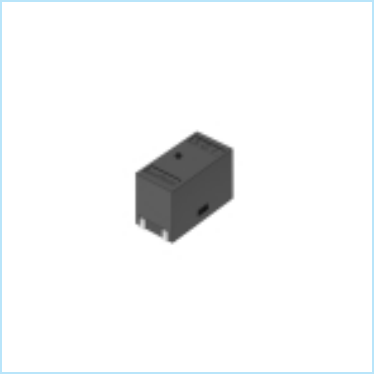
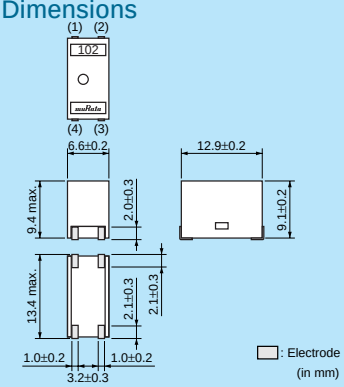
PLT10H Series (12.9x6.6 mm)

Hi Power Reflow OK

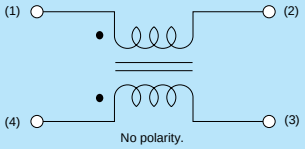
Automotive available, up to 10A.



■ Dimensions



■ Equivalent Circuit



■ Packaging

Code	Packaging	Minimum Quantity
L	180mm Reel Embossed Tape	125
K	330mm Reel Embossed Tape	500
B	Bulk(Bag)	50

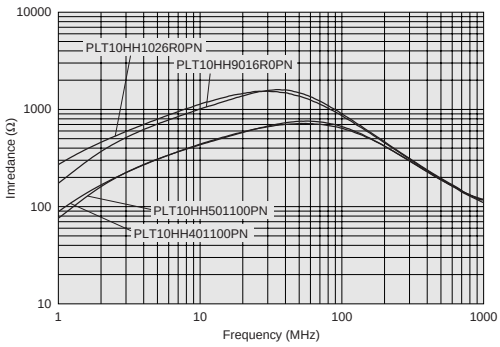
Refer to pages from p.180 to p.181 for mounting information.

■ Rated Value (☐: packaging code)

Part Number	Common Mode Impedance (at 10MHz/20°C)	Rated Current	Rated Voltage	Insulation Resistance (min.)	Withstand Voltage	DC Resistance	Common Mode Inductance	
PLT10HH401100PN☐	400ohm	10A	100Vdc	10M ohm	250Vdc	3.6m ohm±0.5m ohm	6μH min.	New Kit ≧10A
PLT10HH501100PN☐	500ohm	10A	100Vdc	10M ohm	250Vdc	3.6m ohm±0.5m ohm	9μH min.	New Kit ≧10A
PLT10HH9016R0PN☐	900ohm	6A	100Vdc	10M ohm	250Vdc	8.0m ohm±0.5m ohm	14μH min.	New Kit ≧3A
PLT10HH1026R0PN☐	1000ohm	6A	100Vdc	10M ohm	250Vdc	8.0m ohm±0.5m ohm	20μH min.	New Kit ≧3A

Operating Temperature Range (Self-temperature rise is included): -55°C to +105°C (PLT10HH 1026R0/501100 PN), -55°C to +105°C (PLT10HH 401100/9016R0 PN) Number of Circuit: 1

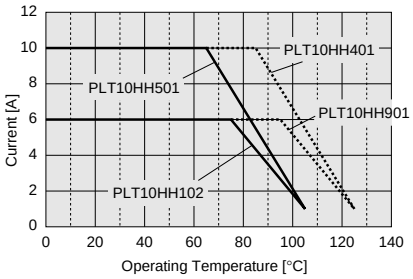
■ Impedance-Frequency Characteristics



■ Notice (Rating)

In operating temperature exceeding +65°C, derating of current is necessary for PLT10H Series.
Please apply the derating curve shown in chart according to the operating temperature.

Derating



⚠Caution

● Rating

Do not use products beyond the rated current and rated voltage as this may create excessive heat and deteriorate the insulation resistance.

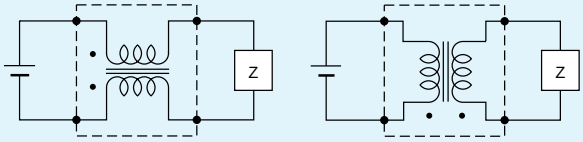
● Soldering and Mounting

1. Self-heating

Please provide special attention when mounting chip common mode choke coils DLW5 series in close proximity to other products that radiate heat.
The heat generated by other products may deteriorate the insulation resistance and cause excessive heat in this component.

2. Mounting Direction

Mount Chip Common Mode Choke Coils in right direction. Wrong direction, which is 90 degrees rotated from right direction, causes not only open or short circuit but also flames or other serious trouble.



right direction　　wrong direction

Notice

● Storage and Operating Conditions

<Operating Environment>
Do not use products in a chemical atmosphere such as chlorine gas, acid or sulfide gas.
Do not use products in the environment close to the organic solvent.
<Storage and Handling Requirements>
1. Storage Period
DLW11G/DLM2HG series should be used within 6 months, the other series should be used within 12 months.
Solderability should be checked if this period is exceeded.
2. Storage Conditions
(1) Storage temperature: -10 to +40˚C
Relative humidity: 15 to 85%
Avoid sudden changes in temperature and humidity.
(2) Do not store products in a chemical atmosphere such as chlorine gas, acid or sulfide gas.

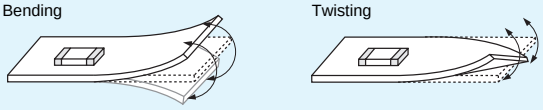
● Notice (Soldering and Mounting)

1. Cleaning
Failure and degradation of a product are caused by the cleaning method. When you clean in conditions that are not in mounting information, please contact Murata engineering.
2. Soldering
Reliability decreases with improper soldering methods. Please solder by the standard soldering conditions shown in mounting information.
3. Other
Noise suppression levels resulting from Murata's EMI suppression filters EMIFIL® may vary, depending on the circuits and ICs used, type of noise, mounting pattern, mounting location, and other operating conditions. Be sure to check and confirm in advance the noise suppression effect of each filter, in actual circuits, etc. before applying the filter in a commercial-purpose equipment design.

● Handling

1. Resin Coating (Except DLW Series.)
Using resin for coating/molding products may affect the products performance.
So please pay careful attention in selecting resin.
Prior to use, please make the reliability evaluation with the product mounted in your application set.
2. Resin Coating (DLW Series)
The impedance value may change due to high cure-stress of resin to be used for coating/molding products. An open circuit issue may occur by mechanical stress caused by the resin, amount/cured shape of resin, or operating condition etc. Some resin contains some impurities or chloride possible to generate chlorine by hydrolysis under some operating condition may cause corrosion of wire of coil, leading to open circuit.
So, please pay your careful attention in selecting resin in case of coating/molding the products with the resin.
Prior to use the coating resin, please make sure no reliability issue is observed by evaluating products mounted on your board.
3. Caution for Use (DLW Series)
When you hold products with a tweezer, please hold by the sides. Sharp materials, such as a pair of tweezers, should not touch the winding portion to prevent breaking the wire. Mechanical shock should not be applied to the products mounted on the board to prevent breaking the core.
4. Brushing
When you clean the neighborhood of products such as connector pins, bristles of cleaning brush shall not be touched to the winding portion of this product to prevent the breaking of wire.
5. Handling of a Substrate
After mounting products on a substrate, do not apply any stress to the product caused by bending or twisting to the substrate when cropping the substrate, inserting and removing a connector from the substrate or tightening screw to the substrate. Excessive mechanical stress may cause cracking in the Product.

Bending　　Twisting



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• This catalog has only typical specifications because there is no space for detailed specifications. Therefore, please review our product specifications or consult the approval sheet for product specifications before ordering.

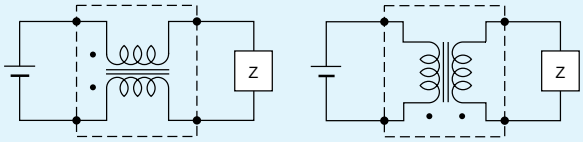
⚠Caution

● Rating

1. Do not use products beyond the rated current and rated voltage as this may create excessive heat and deteriorate the insulation resistance.
2. Be sure to provide an appropriate fail-safe function on your product to prevent a second damage that may be caused by the abnormal function or the failure our product.

● Soldering and Mounting

1. Self-heating
   Please provide special attention when mounting chip common mode choke coils in close proximity to other products that radiate heat.
   The heat generated by other products may deteriorate the insulation resistance and cause excessive heat in this component.
2. Mounting Direction
   Mount Chip Common Mode Choke Coils in right direction. Wrong direction, which is 90 degrees rotated from right direction, causes not only open or short circuit but also flames or other serious trouble.



right direction　　wrong direction

Notice

● Storage and Operating Conditions

<Operating Environment>
Do not use products in a chemical atmosphere such as chlorine gas, acid or sulfide gas.
Do not use products in the environment close to the organic solvent.
<Storage and Handling Requirements>
1. Storage Period
   PLT10H series should be used within 12 months. Solderability should be checked if this period is exceeded.
2. Storage Conditions
   (1) Storage temperature: -10 to +40˚C
   Relative humidity: 15 to 85%
   Avoid sudden changes in temperature and humidity.
   (2) Do not store products in a chemical atmosphere such as chlorine gas, acid or sulfide gas.

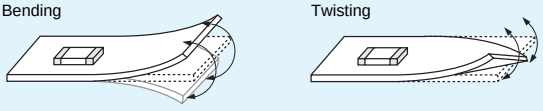
● Notice (Soldering and Mounting)

1. Cleaning
   Failure and degradation of a product are caused by the cleaning method. When you clean in conditions that are not in mounting information, please contact Murata engineering.
2. Soldering
   Reliability decreases with improper soldering methods. Please solder by the standard soldering conditions shown in mounting information.
3. Other
   Noise suppression levels resulting from Murata's EMI suppression filters EMIFIL® may vary, depending on the circuits and ICs used, type of noise, mounting pattern, mounting location, and other operating conditions. Be sure to check and confirm in advance the noise suppression effect of each filter, in actual circuits, etc. before applying the filter in a commercial-purpose equipment design.

● Handling

1. Handling of a Substrate
   After mounting products on a substrate, do not apply any stress to the product caused by bending or twisting to the substrate when cropping the substrate, inserting and removing a connector from the substrate or tightening screw to the substrate.
   Excessive mechanical stress may cause cracking in the Product.

Bending　　Twisting



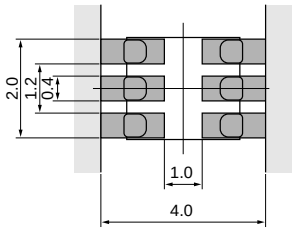
1. Standard Land Pattern Dimensions

Land Pattern + Solder Resist
Land Pattern Solder Resist
(in mm)

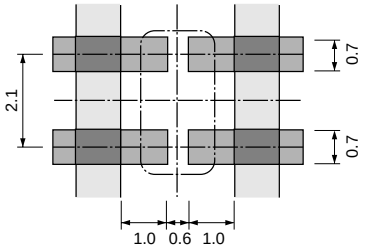
DLM11G
DLM2HG
DLP0NS
DLP11S
DLP11T
DLP1ND
DLP2AD
DLP31S
DLP31D
DLW21S
DLW21H
DLW31SN
DLW5AH
DLW5B

●Reflow and Flow

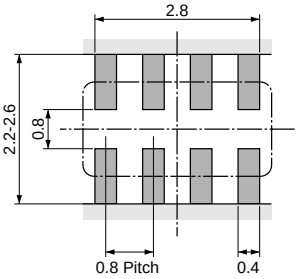
DLM2HG



DLP31S

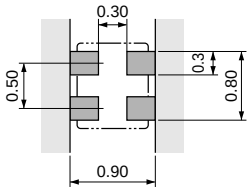


DLP31D

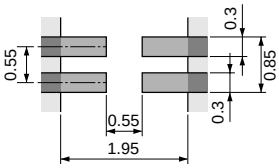


●Reflow Soldering

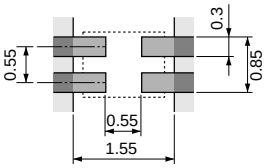
DLP0NS



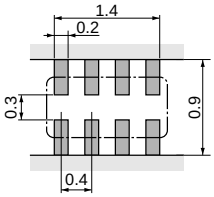
DLP11S



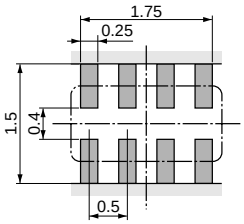
DLP11T



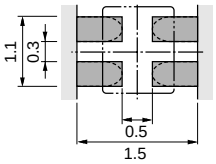
DLP1ND



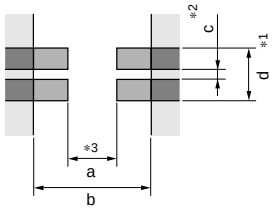
DLP2AD



DLM11G



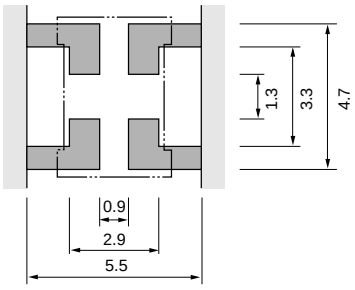
DLW21S/21H/31SN



Series	a	b	c	d
DLW21S/H	0.8	2.6	0.4	1.2
DLW31SN	1.6	3.7	0.4	1.6

*1: If the pattern is made with wider than 1.2mm (DLW21) / 1.6mm (DLW31S) it may result in components turning around, because melting speed is different. In the worst case, short circuit between lines may occur.
*2: If the pattern is made with less than 0.4mm, in the worst case, short circuit between lines may occur due to spread of soldering paste or mount placing accuracy.
*3: If the pattern is made with wider than 0.8mm (DLW21) / 1.6mm (DLW31SN), the bending strength will be reduced.
Do not use gild pattern; excess soldering heat may dissolve metal of a copper wire.

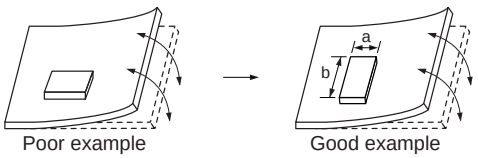
DLW5AH/5B



● PCB Warping

PCB should be designed so that products are not subjected to the mechanical stress caused by warping the board.

Products should be located in the sideways direction (Length: a<b) to the mechanical stress.



2. Solder Paste Printing and Adhesive Application

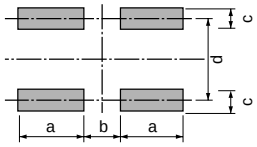
When reflow soldering the chip common mode choke coils, the printing must be conducted in accordance with the following cream solder printing conditions.
If too much solder is applied, the chip will be prone to damage by mechanical and thermal stress from the PCB and may crack.
Standard land dimensions should be used for resist and copper foil patterns.

When flow soldering the chip common mode choke coils, apply the adhesive in accordance with the following conditions.
If too much adhesive is applied, then it may overflow into the land or termination areas and yield poor solderability. In contrast, if insufficient adhesive is applied, or if the adhesive is not sufficiently hardened, then the chip may become detached during flow soldering process.

(in mm)

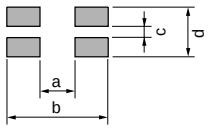
Series	Solder Paste Printing	Adhesive Application
DLP **DLW** **DLM**	●Guideline of solder paste thickness: 100-150µm: DLW21S/21H/31S, DLP0NS/11S/11T/1ND/2AD/DLM11G 150-200µm: DLP31D/31S, DLM2HG, DLW5AH/5BS/5BT *Solderability is subject to reflow conditions and thermal conductivity. Please make sure that your product has been evaluated in view of your specifications with our product being mounted to your product.	■DLP31S/DLM2HG/DLP31D Apply 0.3mg of bonding agent at each chip.

DLP0NS/11S/11T/31S/DLM11G



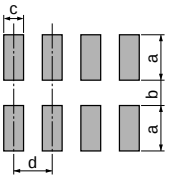
Series	a	b	c	d
DLP0NS	0.3	0.3	0.3	0.5
DLP11S	0.7	0.55	0.3	0.55
DLP11T	0.5	0.55	0.3	0.55
DLP31S	1.0	0.6	0.7	2.1
DLM11G	0.5	0.5	0.4	0.7

DLW21S/21H/31S



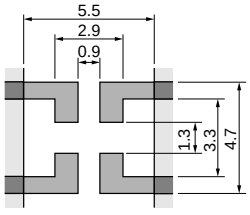
Series	a	b	c	d
DLW21S/H	0.8	2.6	0.5	1.2
DLW31S	1.6	3.7	0.4	1.6

DLP2AD/31D

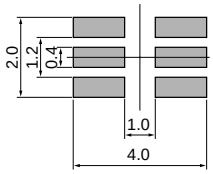


Series	a	b	c	d
DLP1ND	0.3	0.3	0.2	0.4
DLP2AD	0.55	0.4	0.25	0.5
DLP31D	1.0	0.8	0.4	0.8

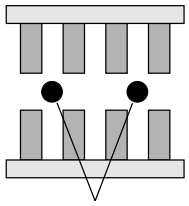
DLW5AH/5BS/5BT



DLM2HG

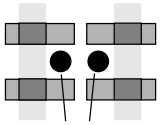


DLP31D



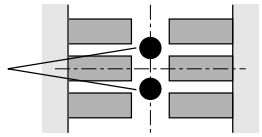
Coating Position of Bonding Agent

DLP31S



Coating Position of Bonding Agent

DLM2HG



Coating Position of Bonding Agent

3. Standard Soldering Conditions

(1) Soldering Methods

Use flow and reflow soldering methods only.
Use standard soldering conditions when soldering chip common mode choke coils.
In cases where several different parts are soldered, each having different soldering conditions, use those conditions requiring the least heat and minimum time.

Solder: Use Sn-3.0Ag-0.5Cu solder. Use of Sn-Zn based solder will deteriorate performance of products.
If using DLP/DLM series with Sn-Zn based solder, please contact Murata in advance.

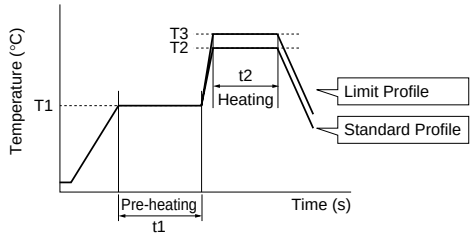
Flux:

- Use Rosin-based flux.
  In case of DLW21/31 series, use Rosin-based flux with converting chlorine content of 0.06 to 0.1wt%.
  In case of using RA type solder, products should be cleaned completely with no residual flux.
- Do not use strong acidic flux (with chlorine content exceeding 0.20wt%)
- Do not use water-soluble flux.

For additional mounting methods, please contact Murata.

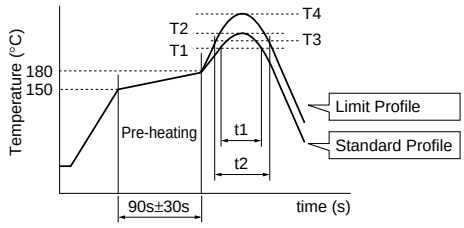
(2) Soldering Profile

●Flow Soldering Profile
(Sn-3.0Ag-0.5Cu Solder)



Series	Pre-heating		Standard Profile			Limit Profile		
			Heating		Cycle of Flow	Heating		Cycle of Flow
	Temp. (T1)	Time. (t1)	Temp. (T2)	Time. (t2)		Temp. (T3)	Time. (t2)	
DLM2HG DLP31D/31S	150°C	60s min.	250°C	4 to 6s	2 times max.	265±3°C	5s max.	2 times max.

●Reflow Soldering Profile
(Sn-3.0Ag-0.5Cu Solder)



Series	Standard Profile				Limit Profile			
	Heating		Peak Temperature (T2)	Cycle of Reflow	Heating		Peak Temperature (T4)	Cycle of Reflow
	Temp. (T1)	Time. (t1)			Temp. (T3)	Time. (t2)		
DLM/DLP DLW21/31	220°C min.	30 to 60s	245±3°C	2 times max.	230°C min.	60s max.	260°C/10s	2 times max.
DLW5A/5B	220°C min.	30 to 60s	250±3°C	2 times max.	230°C min.	60s max.	260°C/10s	2 times max.

(3) Reworking with Solder Iron

The following conditions must be strictly followed when using a soldering iron.

Pre-heating: 150°C 60s min.

Soldering iron power output / Tip diameter:

30W max. / ø3mm max.

Temperature of soldering iron tip / Soldering time / Times:

350°C max. / 3-4s / 2 times*1

*1 DLP0NS, DLP11S, DLP11T, DLP1ND, DLP2AD:

380°C max. / 3-4s / 2 times

Do not allow the tip of the soldering iron to directly contact the chip.

For additional methods of reworking with a soldering iron, please contact Murata engineering.

4. Cleaning

Following conditions should be observed when cleaning chip EMI filter.

(1) Cleaning Temperature: 60°C max. (40°C max. for alcohol type cleaner)

(2) Ultrasonic

Output: 20W/liter max.

Duration: 5 minutes max.

Frequency: 28 to 40kHz

(3) Cleaning agent

The following list of cleaning agents have been tested on the individual components. Evaluation of final assembly should be completed prior to production.

Do not clean DLW (except DLW21H) series.

Before cleaning, please contact Murata engineering.

(a) Alcohol cleaning agent

Isopropyl alcohol (IPA)

(b) Aqueous cleaning agent

Pine Alpha ST-100S

(4) Ensure that flux residue is completely removed.

Component should be thoroughly dried after aqueous agent has been removed with deionized water.

1. Standard Land Pattern Dimensions

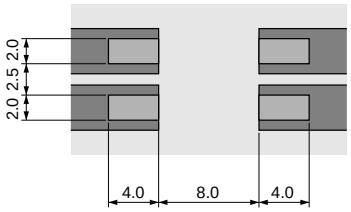
(in mm)

PLT10H

●Reflow Soldering

Copper Foil Pattern
Copper Foil Pattern + Resist
Resist

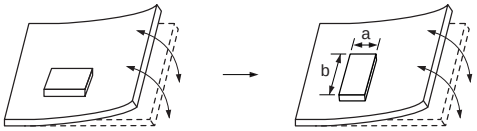
PLT10H



● PCB Warping

PCB should be designed so that products are not subjected to the mechanical stress caused by warping the board.

Products should be located in the sideways direction (Length: a<b) to the mechanical stress.



Poor example　　Good example

2. Solder Paste Printing and Adhesive Application

When reflow soldering the chip common mode choke coils, the printing must be conducted in accordance with the following cream solder printing conditions.
If too much solder is applied, the chip will be prone to damage by mechanical and thermal stress from the PCB and may crack.
Standard land dimensions should be used for resist and copper foil patterns.

When flow soldering the chip common mode choke coils, apply the adhesive in accordance with the following conditions.
If too much adhesive is applied, then it may overflow into the land or termination areas and yield poor solderability. In contrast, if insufficient adhesive is applied, or if the adhesive is not sufficiently hardened, then the chip may become detached during flow soldering process.

Series	Solder Paste Printing
PLT10H	●Guideline of solder paste thickness: 150-200μm: PLT10H For the solder paste printing pattern, use standard land dimensions. *Solderability is subject to reflow conditions and thermal conductivity. Please make sure that your product has been evaluated in view of your specifications with our product being mounted to your product.

3. Standard Soldering Conditions

(1) Soldering Methods

Use reflow soldering methods only.

Use standard soldering conditions when soldering chip common mode choke coils.

In cases where several different parts are soldered, each having different soldering conditions, use those conditions requiring the least heat and minimum time.

Solder: Use Sn-3.0Ag-0.5Cu solder. Use of Sn-Zn based solder will deteriorate performance of products.

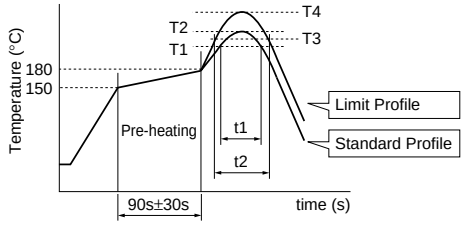
Flux:

- Use Rosin-based flux.
  use Rosin-based flux.
- Do not use strong acidic flux (with chlorine content exceeding 0.20wt%)
- Do not use water-soluble flux.

For additional mounting methods, please contact Murata.

(2) Soldering Profile

●Reflow Soldering Profile
(Sn-3.0Ag-0.5Cu Solder)



Series	Standard Profile				Limit Profile			
	Heating		Peak Temperature (T2)	Cycle of Reflow	Heating		Peak Temperature (T4)	Cycle of Reflow
	Temp. (T1)	Time. (t1)			Temp. (T3)	Time. (t2)		
PLT10H	220°C min.	30 to 60s	250±3°C	2 times max.	230°C min.	60s max.	260°C/10s	2 times max.

(3) Reworking with Solder Iron

The following conditions must be strictly followed when using a soldering iron.

Pre-heating: 150°C 60s min.

Soldering iron power output / Tip diameter:

80W max. / ø3mm max.

Temperature of soldering iron tip / Soldering time / Times:

400°C max. / 5s / 2 times

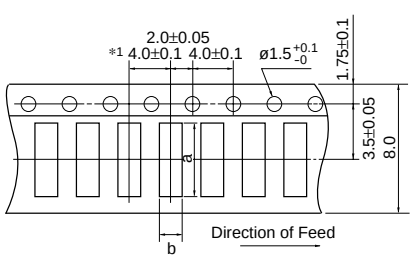
Do not allow the tip of the soldering iron to directly contact the chip.

For additional methods of reworking with a soldering iron, please contact Murata engineering.

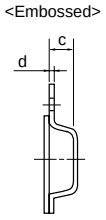
4. Cleaning

Do not clean after soldering. If cleaning, please contact us.

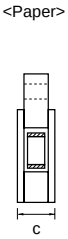
■ Minimum Quantity and Dimensions of 8mm Width Paper / Embossed Tape



*1 DLM11G: 2.0±0.05



c: Depth of Cavity (Embossed Tape)



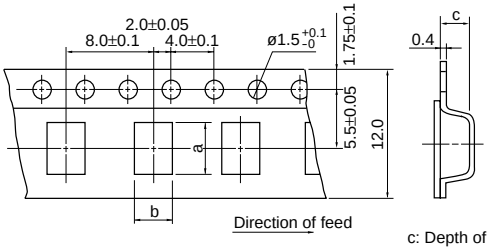
c: Total Thickness of Tape (Paper Tape)

Dimension of the cavity of embossed tape is measured at the bottom side.

Part Number	Cavity Size				Minimum Qty. (pcs.)				
					ø180mm Reel		ø330mm Reel		Bulk
	a	b	c	d	Paper Tape	Embossed Tape	Paper Tape	Embossed Tape	
DLM11G	1.45	1.2	0.8 max.	-	10000	-	-	-	1000
DLM2HG	2.75	2.25	1.3	0.25	-	3000	-	-	1000
DLP0NS	0.95	0.75	0.55	0.25	-	5000	-	-	500
DLP11S	1.4	1.2	0.98	0.25	-	3000	-	-	500
DLP11T	1.35	1.1	0.45	0.25	-	5000	-	-	500
DLP1ND	1.7	0.84	0.57	0.25	-	5000	-	-	500
DLP2AD	2.2	1.2	0.98	0.25	-	3000	-	-	500
DLP31D/31S	3.5	1.9	1.3	0.25	-	3000	-	-	500
DLW21S	2.25	1.45	1.4	0.3	-	2000	-	-	500
DLW21H	2.3	1.55	1.1	0.25	-	3000	-	-	500
DLW31S	3.6	2.0	2.1	0.3	-	2000	-	-	500

(in mm)

■ Minimum Quantity and Dimensions of 12mm Width Embossed Tape



c: Depth of Cavity

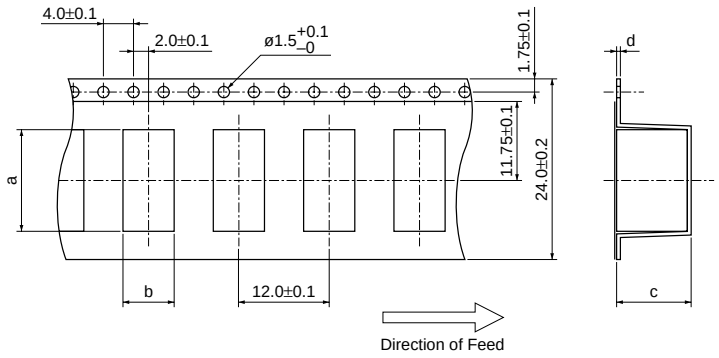
Dimension of the cavity is measured at the bottom side.

Part Number	Cavity Size			Minimum Qty. (pcs.)		
	a	b	c	ø180mm Reel	ø330mm Reel	Bulk
DLW5AH	5.4	4.1	4.4	400	1500	100
DLW5BS	5.5	5.4	4.7	400	1500	100
DLW5BT	5.5	5.4	2.7	700	2500	100

(in mm)

"Minimum Quantity" means the number of units of each delivery or order. The quantity should be an integral multiple of the "Minimum Quantity".

■ Minimum Quantity and Dimensions of 24mm Width Embossed Tape



Dimension of the cavity is measured at the bottom side.

(in mm)

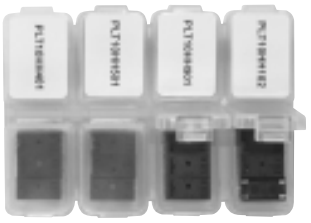
Part Number	Cavity Size (mm)				Minimum Qty. (pcs.)		
	a	b	c	d	ø178mm Reel	ø330mm Reel	Bulk
PLT10H	13.5	6.5	9.4	0.5	125	500	50

●EKEMDL21L (Chip Common Mode Choke Coils)

No.	Part Number	Quantity (pcs.)	Common Mode Impedance (at 100MHz, 20 degrees C)	Rated Voltage (Vdc)	Rated Current (mA)
1	**DLW21HN670SQ2**	10	67Ω±25%	50	330
2	**DLW21HN900SQ2**	10	90Ω±25%	50	330
3	**DLW21HN121SQ2**	10	120Ω±25%	50	280
4	**DLW21HN181SQ2**	10	180Ω±25%	50	250
5	**DLW21SN670SQ2**	10	67Ω±25%	50	400
6	**DLW21SN900SQ2**	10	90Ω±25%	50	330
7	**DLW21SN121SQ2**	10	120Ω±25%	50	370
8	**DLW21SN181SQ2**	10	180Ω±25%	50	330
9	**DLW21SN261SQ2**	10	260Ω±25%	50	300
10	**DLW21SN371SQ2**	10	370Ω±25%	50	280
11	**DLW21SN670HQ2**	10	67Ω±25%	20	320
12	**DLW21SN900HQ2**	10	90Ω±25%	20	280
13	**DLW21SN121HQ2**	10	120Ω±25%	20	280
14	**DLW21SR670HQ2**	10	67Ω±25%	20	400
15	**DLP0NSA150HL2**	10	15Ω±5Ω	5	100
16	**DLP0NSC280HL2**	10	28Ω±20%	5	100
17	**DLP0NSN670HL2**	10	67Ω±20%	5	110
18	**DLP0NSN900HL2**	10	90Ω±20%	5	100
19	**DLP0NSN121HL2**	10	120Ω±20%	5	90
20	**DLP1NDN350HL4**	10	35Ω±20%	5	100
21	**DLP1NDN670HL4**	10	67Ω±20%	5	80
22	**DLP1NDN900HL4**	10	90Ω±20%	5	60
23	**DLP11SA350HL2**	10	35Ω±20%	5	170
24	**DLP11SA670HL2**	10	67Ω±20%	5	150
25	**DLP11SA900HL2**	10	90Ω±20%	5	150
26	**DLP11SN670SL2**	10	67Ω±20%	5	180
27	**DLP11SN121SL2**	10	120Ω±20%	5	140
28	**DLP11SN161SL2**	10	160Ω±20%	5	120
29	**DLP11SN900HL2**	10	90Ω±20%	5	150
30	**DLP11SN201HL2**	10	200Ω±20%	5	110
31	**DLP11SN241HL2**	10	240Ω±20%	5	100
32	**DLP11SN281HL2**	10	280Ω±20%	5	90
33	**DLP11SN331HL2**	10	330Ω±20%	5	80
34	**DLP11TB800UL2**	10	80Ω±25%	5	100
35	**DLP2ADA350HL4**	10	35Ω±20%	5	150
36	**DLP2ADA670HL4**	10	67Ω±20%	5	130
37	**DLP2ADA900HL4**	10	90Ω±20%	5	120
38	**DLP2ADN670HL4**	10	67Ω±20%	5	140
39	**DLP2ADN900HL4**	10	90Ω±20%	5	130
40	**DLP2ADN121HL4**	10	120Ω±20%	5	120
41	**DLP2ADN161HL4**	10	160Ω±20%	5	100
42	**DLP2ADN201HL4**	10	200Ω±20%	5	90
43	**DLP2ADN241HL4**	10	240Ω±20%	5	80
44	**DLP2ADN281HL4**	10	280Ω±20%	5	80

●EKEMDCC5C (Chip Common Mode Choke Coils for DC Power Line / SMD Block type EMIFIL® for Power Line)

No.	Part Number	Quantity (pcs.)	Common Mode Impedance (at 100MHz, 20 degrees C)	Rated Voltage (Vdc)	Rated Current (mA)
1	**DLW5AHN402SQ2**	5	4000Ω (Typ.)	50	200
2	**DLW5BSN191SQ2**	5	190Ω (Typ.)	50	5000
3	**DLW5BSN351SQ2**	5	350Ω (Typ.)	50	2000
4	**DLW5BSN102SQ2**	5	1000Ω (Typ.)	50	1500
5	**DLW5BSN152SQ2**	5	1500Ω (Typ.)	50	1000
6	**DLW5BSN302SQ2**	5	3000Ω (Typ.)	50	500
7	**DLW5BTN101SQ2**	5	100Ω (Typ.)	50	6000
8	**DLW5BTN251SQ2**	5	250Ω (Typ.)	50	5000
9	**DLW5BTN501SQ2**	5	500Ω (Typ.)	50	4000
10	**DLW5BTN102SQ2**	5	1000Ω (Typ.)	50	2000
11	**DLW5BTN142SQ2**	5	1400Ω (Typ.)	50	1500



●EKEPPL10B (Common Mode Choke Coil)

No.	Part Number	Quantity (pcs.)	Common Mode Impedance (at 10MHz, 20 degrees C)	Rated Voltage (Vdc)	Rated Current (A)
1	**PLT10HH401100PN**	6	400Ω (Typ.)	100	10
2	**PLT10HH501100PN**	6	500Ω (Typ.)	100	10
3	**PLT10HH9016R0PN**	6	900Ω (Typ.)	100	6
4	**PLT10HH1026R0PN**	6	1000Ω (Typ.)	100	6

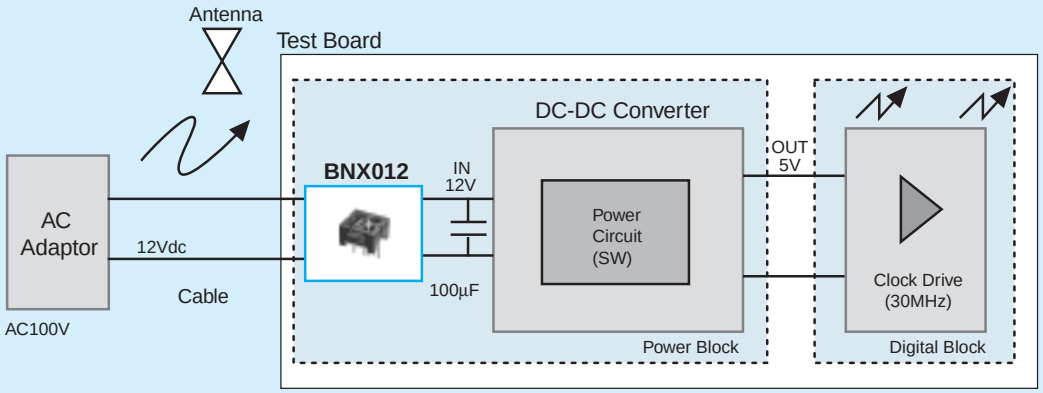
BNX

Block Type EMIFIL®

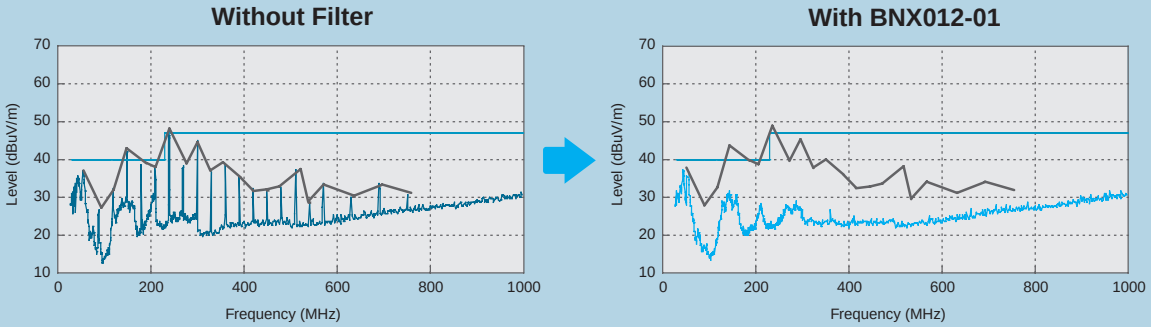
⚠Note • Please read rating and ⚠CAUTION (for storage, operating, rating, soldering, mounting and handling) in this catalog to prevent smoking and/or burning, etc.
• This catalog has only typical specifications because there is no space for detailed specifications. Therefore, please review our product specifications or consult the approval sheet for product specifications before ordering.

Type	Part Number	Thickness (mm)	Rated Voltage	Effective Frequency Range	Rated Current	Kit ≧3A Flow ReFlow
SMD Type for Power Lines p191	**BNX022-01**	3.1	50Vdc	1MHz to 1GHz:35dB min.	10A	Kit ≧3A ReFlow
	BNX023-01	3.1	100Vdc	1MHz to 1GHz:35dB min.	15A	Kit ≧3A ReFlow
	BNX024H01	3.5	50Vdc	100kHz to 1GHz:35dB min.	15A	Kit ≧3A ReFlow
	BNX025H01	3.5	25Vdc	50kHz to 1GHz:35dB min.	15A	Kit ≧3A ReFlow
Lead Type for Power Lines p193	**BNX002-01**	18.0	50Vdc	1MHz to 1GHz:40dB min.	10A	Kit ≧3A Flow
	BNX003-01	18.0	150Vdc	5MHz to 1GHz:40dB min.	10A	Kit ≧3A Flow
	BNX005-01	18.5	50Vdc	1MHz to 1GHz:40dB min.	15A	Kit ≧3A Flow
Lead Type Low Profile for Power Lines p194	**BNX012-01**	8.0	50Vdc	1MHz to 1GHz:40dB min.	15A	Kit ≧3A Flow
	BNX016-01	8.0	25Vdc	100kHz to 1GHz:40dB min.	15A	Kit ≧3A Flow

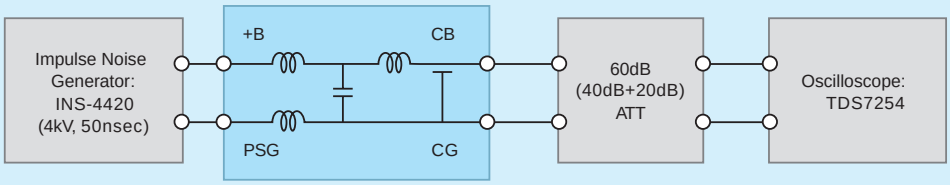
Noise Suppression of Radiation Noise from Power Line Cable



■Test Result

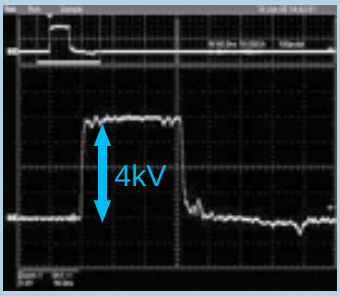


Impulse Noise Countermeasure



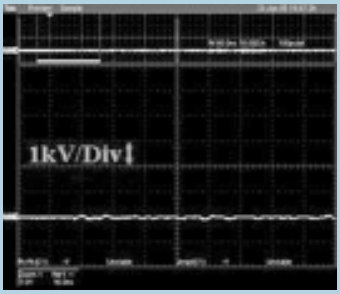
BNX

■Without Filter

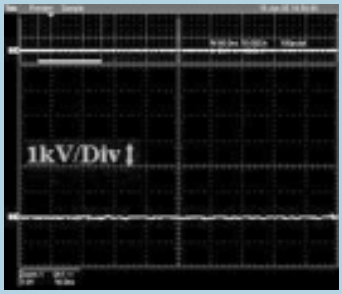


Applied Impulse Voltage: 4kV/50nS
Y-AXIS: 1kV/div

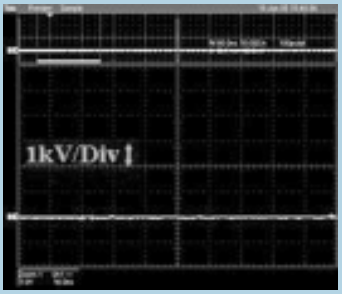
■With Filter



BNX002-01

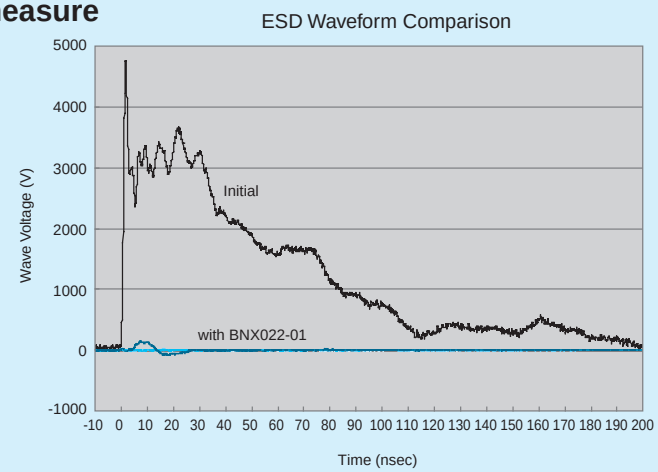


BNX012-01



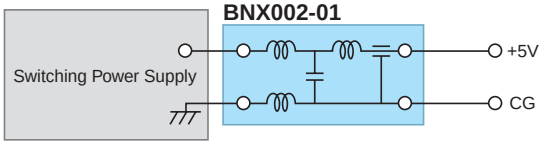
BNX022-01

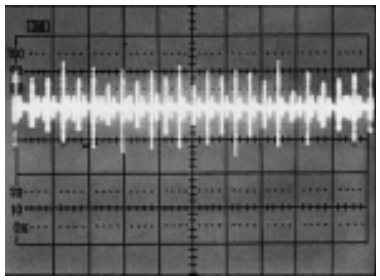
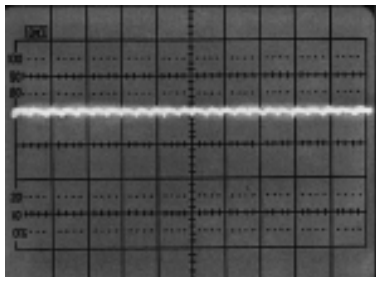
ESD Countermeasure



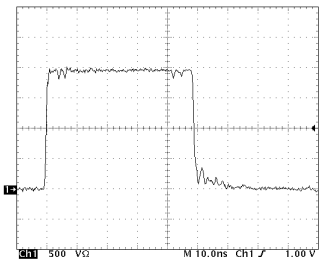
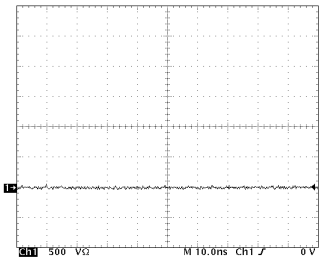
Suppression of Ripple Noise of DC Side in the Switching Power Supply

Test Circuit



Type of Filter	EMI Suppression Effect / Description
Without Filter	+5.0V→ 50µs/div 0.2V/div  There is high frequency noise of 0.5V maximum.
When **BNX002-01** is used	+5.0V→ 50µs/div 0.2V/div  BNX002-01 can suppress most of noise.

Example of Impulse Noise Suppression

Type of Filter	EMI Suppression Effect
Without Filter	 Impulse Noise 2000V/50ns Y-axis: 500V/div X-axis: 10ns/sec
When **BNX002** is used	 Y-axis: 500V/div X-axis: 10ns/sec

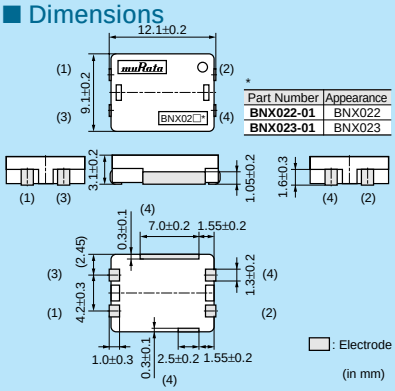
BNX02□ Series

Hi Power Reflow OK

SMD package of block type EMIFIL®.

BNX022/BNX023

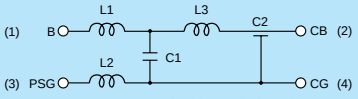
■ Dimensions



*

Part Number	Appearance
BNX022-01	BNX022
BNX023-01	BNX023

■ Equivalent Circuit



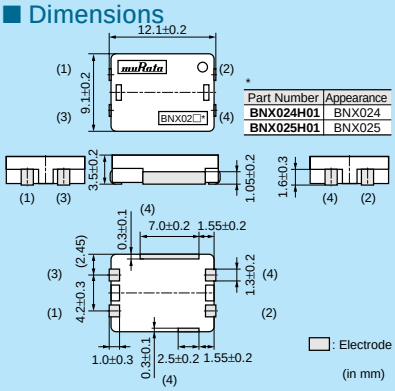
(1)-(4): Terminal Number
PSG: Power Supply Ground
CG: Circuit Ground
CB: Circuit+B

■ Packaging

Code	Packaging	Minimum Quantity
L	180mm Reel Embossed Tape	400
K	330mm Reel Embossed Tape	1500
B	Bulk(Bag)	100

BNX024H/BNX025H

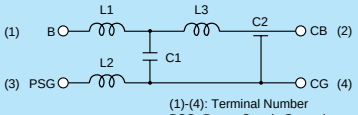
■ Dimensions



*

Part Number	Appearance
BNX024H01	BNX024
BNX025H01	BNX025

■ Equivalent Circuit



(1)-(4): Terminal Number
PSG: Power Supply Ground
CG: Circuit Ground
CB: Circuit+B

■ Packaging

Code	Packaging	Minimum Quantity
L	180mm Reel Embossed Tape	400
K	330mm Reel Embossed Tape	1500
B	Bulk(Bag)	100

Refer to pages from p.197 to p.200 for mounting information.

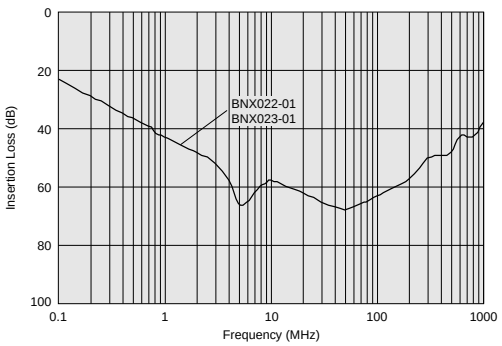
■ Rated Value (□: packaging code)

Part Number	Rated Voltage	Withstand Voltage	Rated Current	Insulation Resistance (min.)	Insertion Loss (20 to 25 degrees C line impedance=50 ohm)	
BNX022-01□	50Vdc	125Vdc	10A	500M ohm	1MHz to 1GHz:35dB min.	Kit ≧3A
BNX023-01□	100Vdc	250Vdc	15A	500M ohm	1MHz to 1GHz:35dB min.	Kit ≧3A
BNX024H01□	50Vdc	125Vdc	15A	100M ohm	100kHz to 1GHz:35dB min.	Kit ≧3A
BNX025H01□	25Vdc	62.5Vdc	15A	50M ohm	50kHz to 1GHz:35dB min.	Kit ≧3A

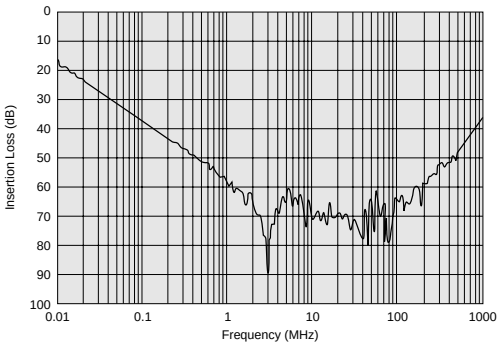
Operating Temperature Range: -40°C to +125°C (BNX022/BNX023), -55°C to +125°C (BNX024H/BNX025H)

■ Insertion Loss Characteristics

BNX022/023



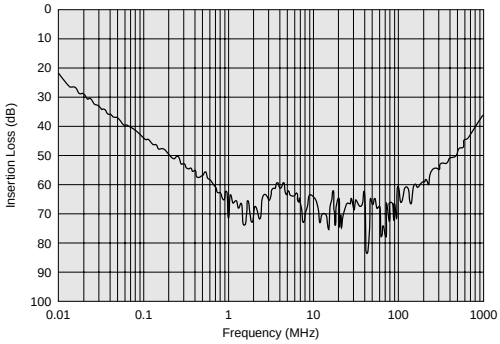
BNX024H01



Continued on the following page.

■ Insertion Loss Characteristics

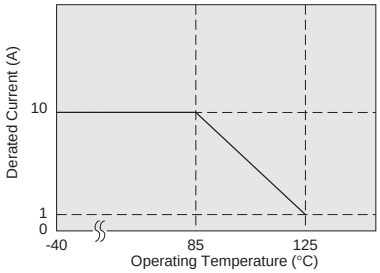
BNX025H01



■ Notice (Rating)

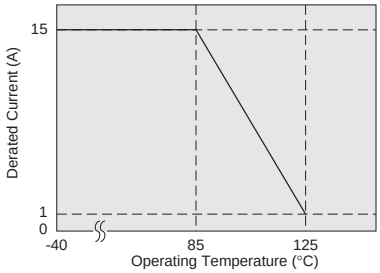
In operating temperatures exceeding +85°C, derating of current is necessary for BNX022 series. Please apply the derating curve shown in chart according to the operating temperature.

Derating



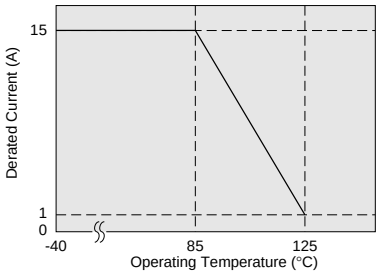
In operating temperatures exceeding +85°C, derating of current is necessary for BNX023 series. Please apply the derating curve shown in chart according to the operating temperature.

Derating



In operating temperatures exceeding +85°C, derating of current is necessary for BNX024H/025H series. Please apply the derating curve shown in chart according to the operating temperature.

Derating



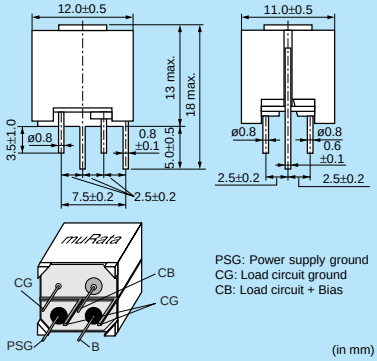
BNX00□ Series

Hi Power Flow OK

Large insertion loss from several hundred kHz to several GHz.

BNX002/BNX003

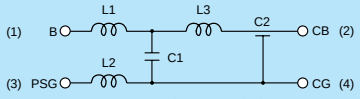
■ Dimensions



PSG: Power supply ground
CG: Load circuit ground
CB: Load circuit + Bias

(in mm)

■ Equivalent Circuit



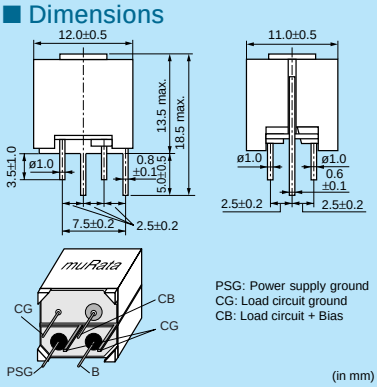
(1)-(4): Terminal Number
PSG: Power Supply Ground
CG: Circuit Ground
CB: Circuit+B

■ Packaging

Code	Packaging	Minimum Quantity
-	Box	100

BNX005

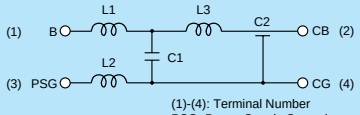
■ Dimensions



PSG: Power supply ground
CG: Load circuit ground
CB: Load circuit + Bias

(in mm)

■ Equivalent Circuit



(1)-(4): Terminal Number
PSG: Power Supply Ground
CG: Circuit Ground
CB: Circuit+B

■ Packaging

Code	Packaging	Minimum Quantity
-	Box	100

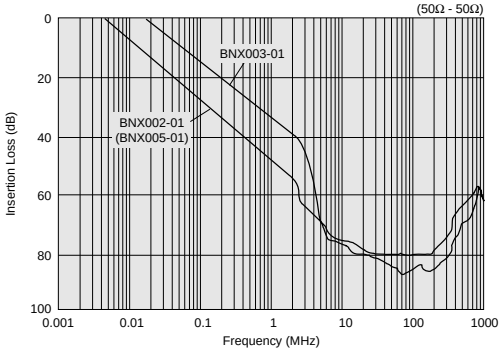
Refer to pages from p.197 to p.200 for mounting information.

■ Rated Value

Part Number	Rated Voltage	Withstand Voltage	Rated Current	Insulation Resistance (min.)	Insertion Loss (20 to 25 degrees C line impedance=50 ohm)	
BNX002-01	50Vdc	125Vdc	10A	100M ohm	1MHz to 1GHz:40dB min.	Kit ≧3A
BNX003-01	150Vdc	375Vdc	10A	100M ohm	5MHz to 1GHz:40dB min.	Kit ≧3A
BNX005-01	50Vdc	125Vdc	15A	100M ohm	1MHz to 1GHz:40dB min.	Kit ≧3A

Operating Temperature Range: -30°C to +85°C

■ Insertion Loss Characteristics



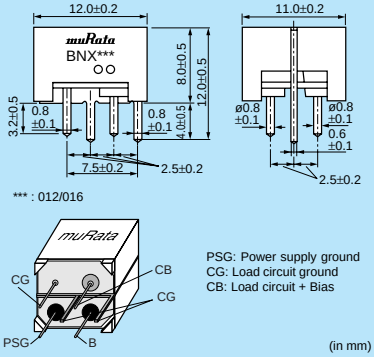
⚠Note • Please read rating and ⚠CAUTION (for storage, operating, rating, soldering, mounting and handling) in this catalog to prevent smoking and/or burning, etc.
• This catalog has only typical specifications because there is no space for detailed specifications. Therefore, please review our product specifications or consult the approval sheet for product specifications before ordering.

BNX01□ Series

Hi Power Flow OK

Low profile version of BNX series.

■ Dimensions

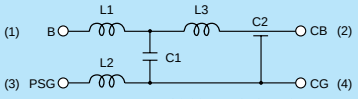


*** : 012/016

PSG: Power supply ground
CG: Load circuit ground
CB: Load circuit + Bias

(in mm)

■ Equivalent Circuit



(1)-(4): Terminal Number
PSG: Power Supply Ground
CG: Circuit Ground
CB: Circuit+B

■ Packaging

Code	Packaging	Minimum Quantity
-	Box	150

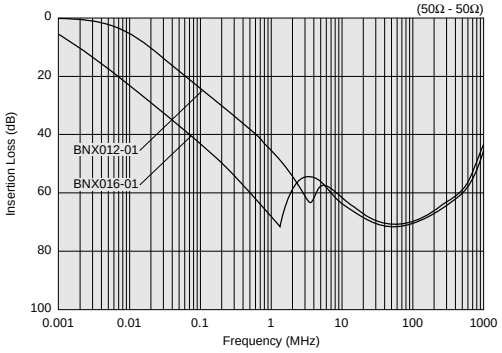
Refer to pages from p.197 to p.200 for mounting information.

■ Rated Value

Part Number	Rated Voltage	Withstand Voltage	Rated Current	Insulation Resistance (min.)	Insertion Loss (20 to 25 degrees C line impedance=50 ohm)	
BNX012-01	50Vdc	125Vdc	15A	500M ohm	1MHz to 1GHz:40dB min.	Kit ≧3A
BNX016-01	25Vdc	62.5Vdc	15A	50M ohm	100kHz to 1GHz:40dB min.	Kit ≧3A

Operating Temperature Range: -40°C to +125°C

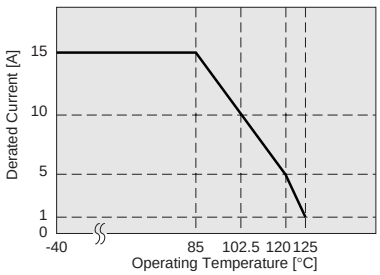
■ Insertion Loss Characteristics



■ Notice (Rating)

In operating temperatures exceeding +85°C, derating of current is necessary for BNX01□ series. Please apply the derating curve shown in chart according to the operating temperature.

Derating



● Connecting ± power line

In case of using ± power line, please connect to each terminal as shown.

Power Supply (BNX Input)	BNX		Circuit (BNX Output)
Power Supply +Bias	B	CB	Load Circuit +Bias
Power Supply Ground	PSG	CG	Load Circuit Ground
Power Supply -Bias	B	CB	Load Circuit -Bias
Power Supply Ground	PSG	CG	Load Circuit Ground

⚠Caution

● Rating

Do not use products beyond the rated current and rated voltage as this may create excessive heat and deteriorate the insulation resistance.

Notice

● Storage and Operating Conditions

<Operating Environment>
Do not use products in a chemical atmosphere such as chlorine gas, acid or sulfide gas.
Do not use products in the environment close to the organic solvent.
<Storage and Handling Requirements>
1. Storage Period
   BNX series should be used within 12 months. Solderability should be checked if this period is exceeded.
2. Storage Conditions
   (1) Storage temperature: -10 to +40˚C
   Relative humidity: 15 to 85%
   Avoid sudden changes in temperature and humidity.
   (2) Do not store products in a chemical atmosphere such as chlorine gas, acid or sulfide gas.

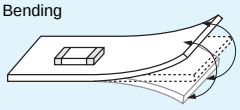
● Notice (Soldering and Mounting)

1. Cleaning
   Do not clean BNX series (SMD Type).
   Before cleaning, please contact Murata engineering.
2. Soldering
   Reliability decreases with improper soldering methods. Please solder by the standard soldering conditions shown in mounting information.
3. Other
   Noise suppression levels resulting from Murata's EMI suppression filters EMIFIL® may vary, depending on the circuits and ICs used, type of noise, mounting pattern, mounting location, and other operating conditions. Be sure to check and confirm in advance the noise suppression effect of each filter, in actual circuits, etc. before applying the filter in a commercial-purpose equipment design.

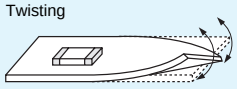
● Handling

1. Resin Coating
   Using resin for coating/molding products may affect the products performance.
   So please pay careful attention in selecting resin.
   Prior to use, please make the reliability evaluation with the product mounted in your application set.
2. Handling of a Substrate (for BNX02□)
   After mounting products on a substrate, do not apply any stress to the product caused by bending or twisting to the substrate when cropping the substrate, inserting and removing a connector from the substrate or tightening screw to the substrate.
   Excessive mechanical stress may cause cracking in the Product.

Bending



Twisting



⚠Caution

● Rating

Do not use products beyond the rated current and rated voltage as this may create excessive heat and deteriorate the insulation resistance.

Notice

● Storage and Operating Conditions

<Operating Environment>

1. Do not use products in a chemical atmosphere such as chlorine gas, acid or sulfide gas.
2. Do not use products near water, oil or organic solvents.

<Storage and Handling Requirements>

1. Storage Period
   BNX Series should be used within 12 months. Solderability should be checked if this period is exceeded.
2. Storage Conditions
   (1) Storage temperature: -10 to +40˚C
   Relative humidity: 15 to 85%
   Avoid sudden changes in temperature and humidity.
   (2) Do not store products in a chemical atmosphere such as chlorine gas, acid or sulfide gas.

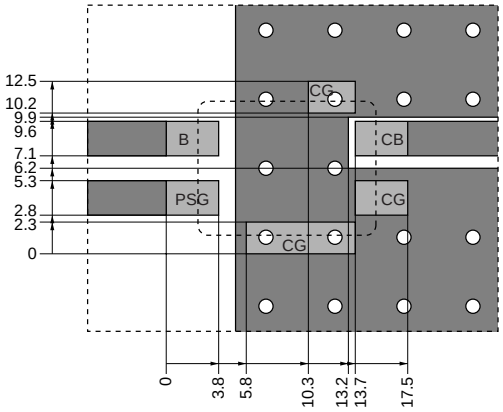
● Notice (Soldering and Mounting)

1. Cleaning
   Failure and degradation of a product are caused by the cleaning method. When you clean in conditions that are not in mounting information, please contact Murata engineering.
2. Soldering
   Reliability decreases with improper soldering methods. Please solder by the standard soldering conditions shown in mounting information.
3. Other
   Noise suppression levels resulting from Murata's EMI suppression filters "EMIFIL" may vary, depending on the circuits and ICs used, type of noise, mounting pattern, lead wire length, mounting location, and other operating conditions. Be sure to check and confirm in advance the noise suppression effect of each filter, in actual circuits, etc. before applying the filter in a commercial-purpose equipment design.

1. Standard Land Pattern Dimensions

Land Pattern + Solder Resist
Land Pattern Solder Resist
(in mm)

BNX022
BNX023
BNX024
BNX025

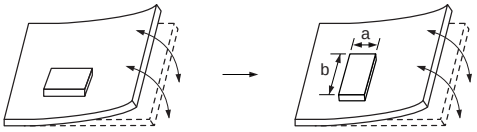


(1) A double-sided print board (or multilayer board) as shown in the left figure is designed, and please apply a soldering Cu electrode with a product electrode to a "Land Pattern", apply resist to a "Land Pattern + Solder Resist" at Cu electrode.
(2) This product has large rated current of 10A/15A. Please consider real current and make Cu electrode thick enough. (Please design line resistance suitable for real current)
(3) Please drop CG on a ground electrode on the back layer (the same also in a multilayer case) by the through hole. And a surface grand electrode layer may also take a large area as much as possible.
(4) It is recommended to use a double-sided printed circuit board with BNX mounting on one side and the ground pattern on the other in order to maximize filtering performance, multiple feed through holes are required to maximize the BNX's connection to ground.
(5) The ground pattern should be designed to be as large as possible to achieve maximum filtering performance.

● PCB Warping (for BNX02☐)

PCB should be designed so that products are not subjected to the mechanical stress caused by warping the board.

Products should be located in the sideways direction (Length: a<b) to the mechanical stress.

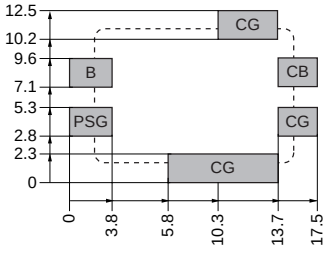


Poor example　　Good example

2. Solder Paste Printing and Adhesive Application

When reflow soldering the block type EMIFIL®, the printing must be conducted in accordance with the following cream solder printing conditions.
If too much solder is applied, the chip will be prone to damage by mechanical and thermal stress from the PCB and may crack.
Standard land dimensions should be used for resist and copper foil patterns.

Series	Solder Paste Printing	Adhesive Application
BNX022 **BNX023** **BNX024** **BNX025**	●Guideline of solder paste thickness: 150-200µm	



3. Standard Soldering Conditions

(1) Soldering Methods

Use reflow soldering methods only.

Use standard soldering conditions when soldering block type EMIFIL® SMD type.

In cases where several different parts are soldered, each having different soldering conditions, use those conditions requiring the least heat and minimum time.

Solder: Use Sn-3.0Ag-0.5Cu solder. Use of Sn-Zn based solder will deteriorate performance of products.

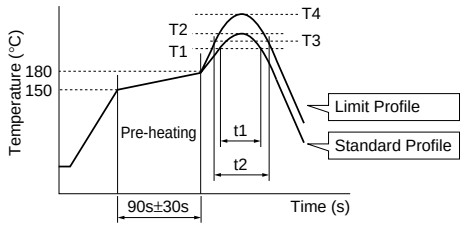
Flux:

- Use Rosin-based flux.
  In case of using RA type solder, products should be cleaned completely with no residual flux.
- Do not use strong acidic flux (with chlorine content exceeding 0.20wt%)
- Do not use water-soluble flux.

For additional mounting methods, please contact Murata.

(2) Soldering Profile

●Reflow Soldering Profile
(Sn-3.0Ag-0.5Cu solder)



Series	Standard Profile				Limit Profile			
	Heating		Peak Temperature (T2)	Cycle of Reflow	Heating		Peak Temperature (T4)	Cycle of Reflow
	Temp. (T1)	Time. (t1)			Temp. (T3)	Time. (t2)		
BNX022/023/024/025	220°C min.	30 to 60s	250±3°C	2 times max.	230°C min.	60s max.	260°C/10s	2 times max.

(3) Reworking with Solder Iron

The following conditions must be strictly followed when using a soldering iron.

Pre-heating: 150°C 60s min.

Soldering iron power output: 100W max.

Temperature of soldering iron tip / Soldering time / Times:
450°C max. / 5s max. / 1 time

Do not allow the tip of the soldering iron to directly contact the chip.

For additional methods of reworking with a soldering iron, please contact Murata engineering.

4. Cleaning

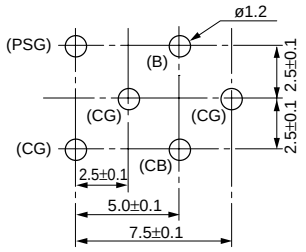
Do not clean BNX022/023/024/025 series. In case of cleaning, please contact Murata engineering.

1. Mounting Hole

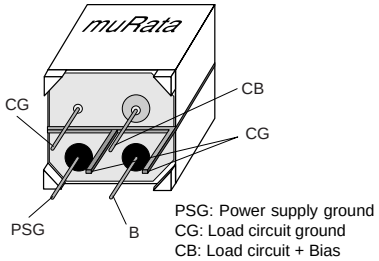
■ Mounting holes should be designed as specified below.

BNX00□/01□

Component Side



Terminal Layout (Bottom figure)



PSG: Power supply ground
CG: Load circuit ground
CB: Load circuit + Bias

2. Using the Block Type EMIFIL® (Lead Type) Effectively

(1) How to use effectively

This product effectively prevents undesired radiation and external noise from going out / entering the circuit by grounding the high frequency components which cause noise problems. Therefore, grounding conditions may affect the performance of the filter and attention should be paid to the following for effective use.

(a) Design maximized grounding area in the P.C. board, and grounding pattern for all the grounding terminals of the product to be connected. (Please follow the specified recommendations.)

(b) Minimize the distance between ground of the P.C. board and the ground plate of the product. (Recommend unsing the through hole connection between grounding area both of component side and bottom side.)

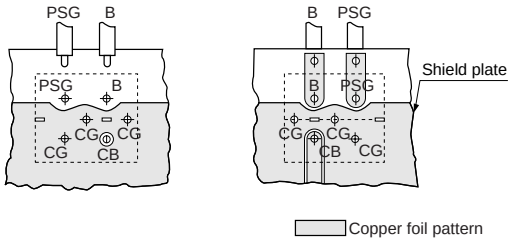
(c) Insert the terminals into the holes on P.C. board completely.

(d) Don't connect PSG terminal with CG terminal directly. (See the item 1. Terminal Layout)

P. C. Board Patterns

Use a bilateral P.C. board. Insert the BNX into the P.C.board until the root of the terminal is secured, then solder.

(1) Component Side View (2) Bottom View



(2) Self-heating

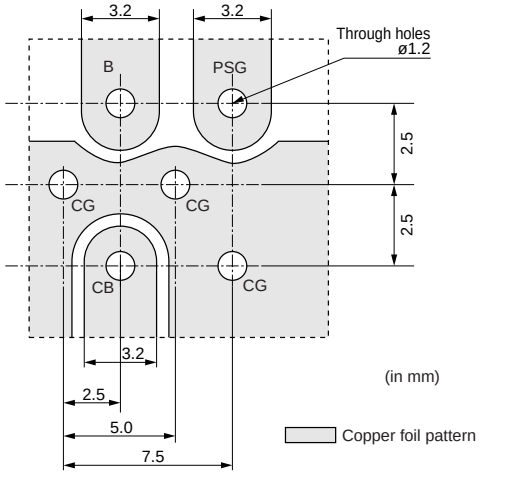
Though this product has a large rated current, localized selfheating may be caused depending on soldering conditions. To avoid this, attention should be paid to the following:

(a) Use P.C. board with our recommendation on hole diameter / land pattern dimensions, mentioned in the right hand drawing, especially for 4 terminals which pass current.

(b) Solder the terminals to the P.C. board with soldercover area at least 90%. Otherwise, excess self-heating at connection between terminals and P.C. board may lead to smoke and / or fire of the product even when operating at rated current.

(c) After installing this product in your product, please make sure the self-heating is within the rated current recommended.

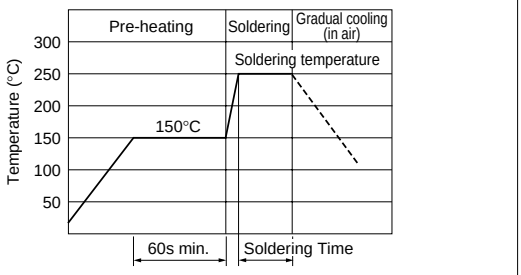
Recommended Land Pattern



⚠Note • Please read rating and ⚠CAUTION (for storage, operating, rating, soldering, mounting and handling) in this catalog to prevent smoking and/or burning, etc.
• This catalog has only typical specifications because there is no space for detailed specifications. Therefore, please review our product specifications or consult the approval sheet for product specifications before ordering.

3. Soldering

(1) Use Sn-3.0Ag-0.5Cu solder.
(2) Use Rosin-based flux. Do not use strong acidic flux with halide content exceeding 0.2wt% (chlorine conversion value).
(3) Products and the leads should not be subjected to any mechanical stress during the soldering process, or while subjected to the equivalent high temperatures.
(4) Standard flow soldering profile

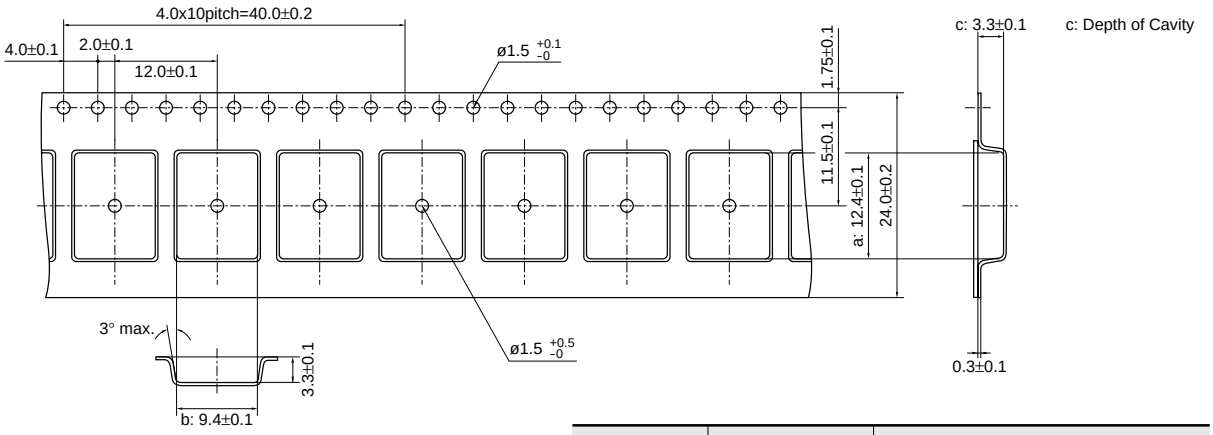


Solder	Soldering Temperature	Soldering Time
Sn-3.0Ag-0.5Cu solder	250 to 260°C	4 to 6s

4. Cleaning

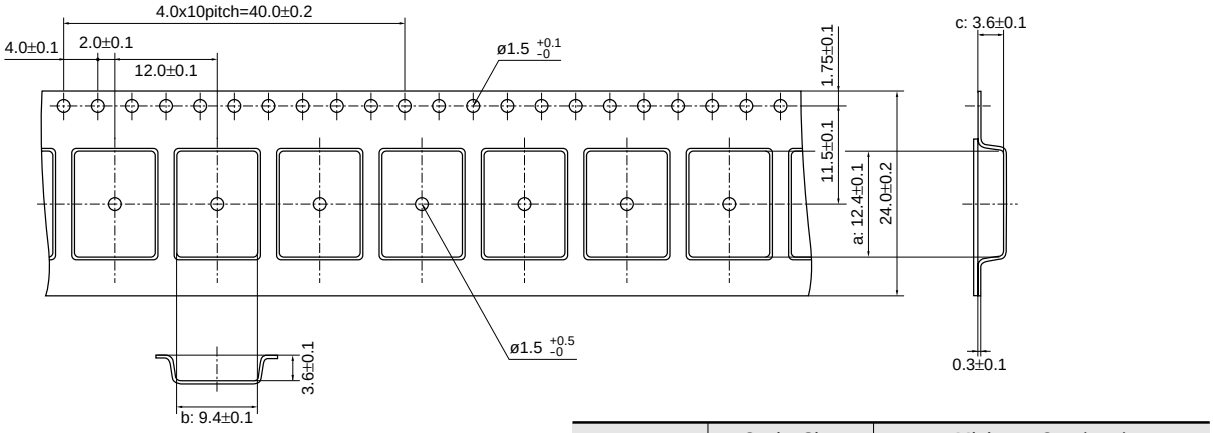
Clean the block Type EMIFIL®(Lead Type) in the following conditions.
(1) Cleaning temperature should be limited to 60°C max. (40°C max for alcohol type cleaner).
(2) Ultrasonic cleaning should comply with the following conditions, avoiding the resonance phenomenon at the mounted products and P.C.B.
Power: 20W/liter max.
Frequency: 28 to 40kHz
Time: 5 min. max.
(3) Cleaner
(a) Alcohol type cleaner
Isopropyl alcohol (IPA)
(b) Aqueous agent
Pine Alpha ST-100S
(4) There should be no residual flux or residual cleaner left after cleaning.
In the case of using aqueous agent, products should be dried completely after rinsing with de-ionized water in order to remove the cleaner.
(5) The surface of products may become dirty after cleaning, but there is no deterioration on mechanical, electrical characteristics and reliability.
(6) Other cleaning: Please contact us.

■ Minimum Quantity and Dimensions of 24mm Width Embossed Tape



Dimension of the cavity is measured at the bottom side.

Part Number	Cavity Size			Minimum Qty. (pcs.)		
	a	b	c	ø180mm Reel	ø330mm Reel	Bulk
BNX022/023	12.4	9.4	3.3	400	1500	100



Dimension of the cavity is measured at the bottom side.

Part Number	Cavity Size			Minimum Qty. (pcs.)		
	a	b	c	ø180mm reel	ø330mm reel	Bulk
BNX024/025	12.4	9.4	3.6	400	1500	100

(in mm)

"Minimum Quantity" means the number of units of each delivery or order. The quantity should be an integral multiple of the "Minimum Quantity".

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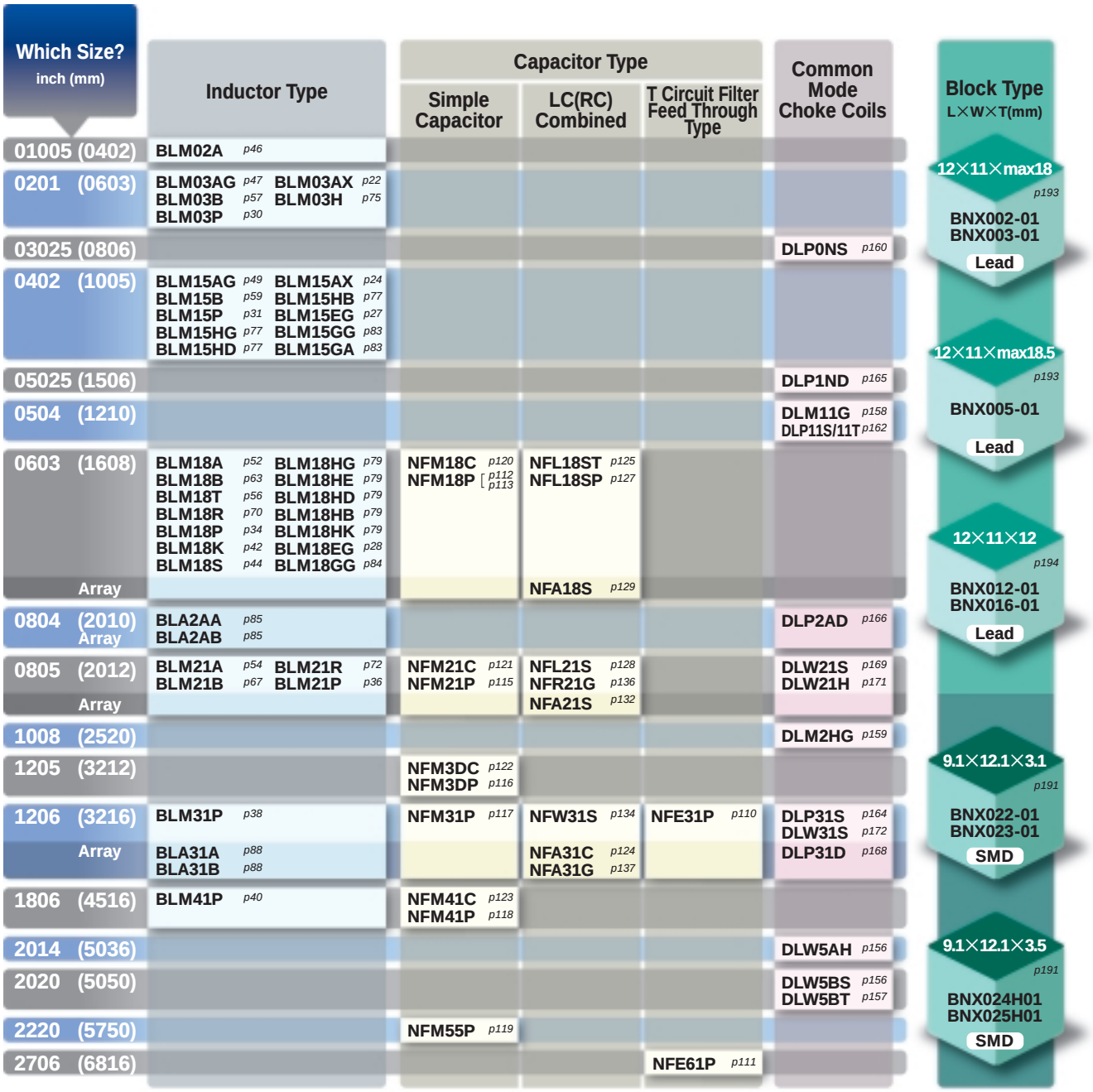
●EKEPBNX0A

No.	Part Number	Quantity (pcs.)	Insertion Loss	Rated Voltage (Vdc)	Rated Current (A)
1	**BNX002-01**	1	1MHz to 1GHz : 40dB min.	50	10
2	**BNX012-01**	1	1MHz to 1GHz : 40dB min.	50	15
3	**BNX016-01**	1	100kHz to 1GHz : 40dB min.	25	15
4	**BNX012H01**	1	1MHz to 1GHz : 40dB min.	50	15
5	**BNX022-01**	3	1MHz to 1GHz : 35dB min.	50	10
6	**BNX023-01**	3	1MHz to 1GHz : 35dB min.	100	15
7	**BNX024H01**	3	100kHz to 1GHz : 35dB min.	50	15
8	**BNX025H01**	3	50kHz to 1GHz : 35dB min.	25	15

●EKEPBLCKA

No.	Part Number	Quantity (pcs.)	Insertion Loss	Rated Voltage (Vdc)	Rated Current (A)
1	**BNX002-01**	1	1MHz to 1GHz : 40dB min.	50	10
2	**BNX003-01**	1	5MHz to 1GHz : 40dB min.	150	10
3	**BNX005-01**	1	1MHz to 1GHz : 40dB min.	50	15
4	**BNX012-01**	1	1MHz to 1GHz : 40dB min.	50	15
5	**BNX016-01**	1	100kHz to 1GHz : 40dB min.	25	15
6	**BNX012H01**	1	1MHz to 1GHz : 40dB min.	50	15
7	**BNP002-02**	1	20MHz to 500MHz : 40dB min.	50	10
8	**BNX022-01**	3	1MHz to 1GHz : 35dB min.	50	10
9	**BNX023-01**	3	1MHz to 1GHz : 35dB min.	100	15
10	**BNX024H01**	3	100kHz to 1GHz : 35dB min.	50	15
11	**BNX025H01**	3	50kHz to 1GHz : 35dB min.	25	15

Product Guide by Size



Part Number Quick Reference

Alphabetic Product Name Index

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Please refer to catalogs below for ferrite cores, Microwave Absorber and leaded EMIFIL®.

Ferrite Core, Microwave Absorber

Ferrite Core for EMI Suppression Microwave Absorber

Contents
- Thin Type Sandwich Core <FSSA>
- Core for Flat Cables <FSRC>
- Plate Core <FSSA>
- Beads Core <FSRH>
- Ring Core <FSRB>
- Multi Hole Core <FSMA/FSSA>
- Microwave Absorber <EA>

Lead Type EMIFIL®

EMI Suppression Filters (Lead Type EMIFIL®)

Contents
- Ferrite Beads Inductors <BL01/02/03>
- Disc Type EMIFIL®<DS□6/DS□9>
- EMIGUARD®(EMIFIL® with Varistor Function) <VF□3/VF□6/VF□9>
- Common Mode Choke Coils <PLT>

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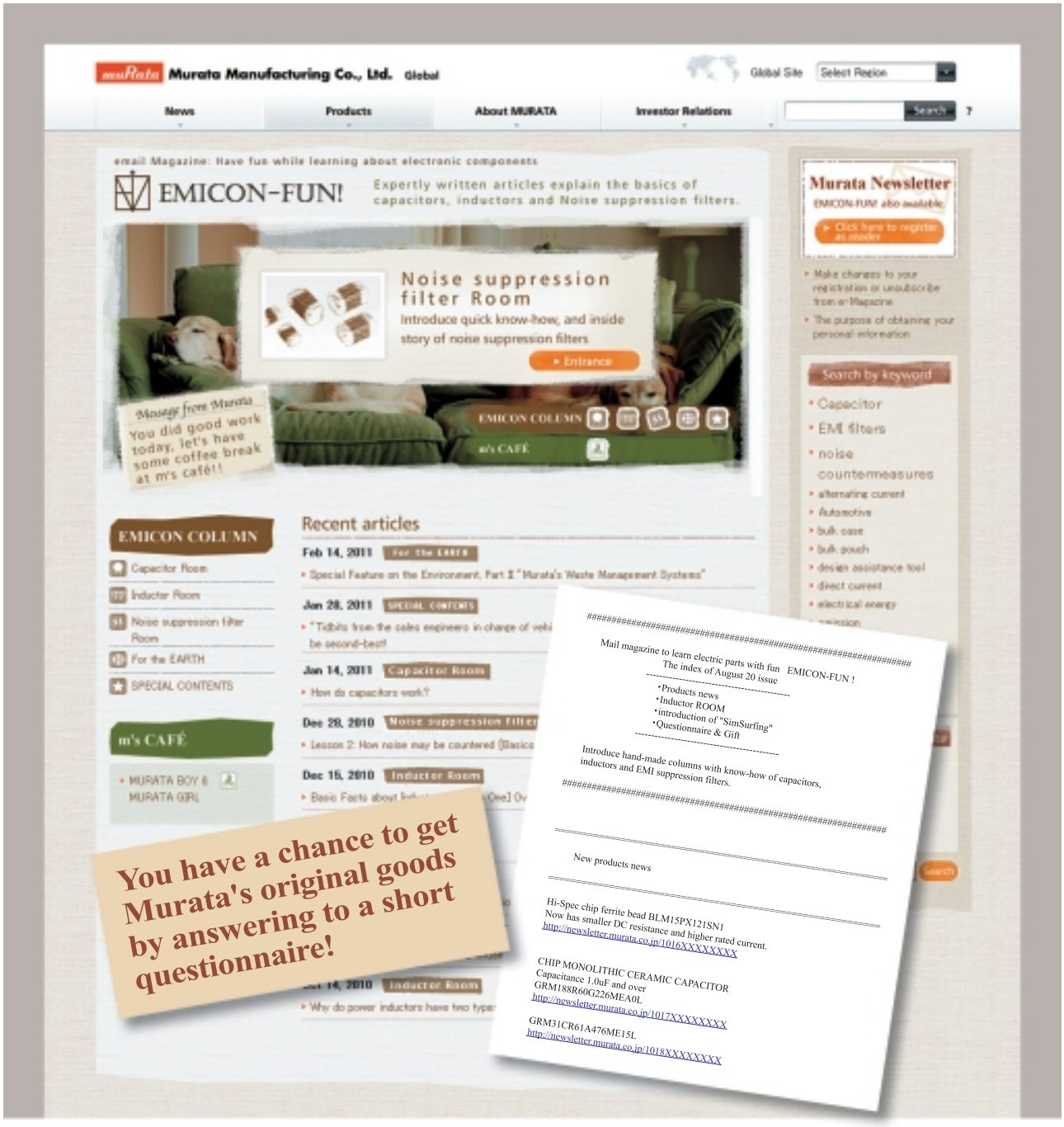

⚠Note:

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   For products which are controlled items subject to the "Foreign Exchange and Foreign Trade Law" of Japan, the export license specified by the law is required for export.
2. Please contact our sales representatives or product engineers before using the products in this catalog for the applications listed below, which require especially high reliability for the prevention of defects which might directly damage a third party's life, body or property, or when one of our products is intended for use in applications other than those specified in this catalog.
   ① Aircraft equipment ② Aerospace equipment
   ③ Undersea equipment ④ Power plant equipment
   ⑤ Medical equipment ⑥ Transportation equipment (vehicles, trains, ships, etc.)
   ⑦ Traffic signal equipment ⑧ Disaster prevention / crime prevention equipment
   ⑨ Data-processing equipment ⑩ Application of similar complexity and/or reliability requirements to the applications listed above
3. Product specifications in this catalog are as of March 2011. They are subject to change or our products in it may be discontinued without advance notice. Please check with our sales representatives or product engineers before ordering. If there are any questions, please contact our sales representatives or product engineers.
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5. This catalog has only typical specifications because there is no space for detailed specifications. Therefore, please review our product specifications or consult the approval sheet for product specifications before ordering.
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http://www.murata.com/

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