Type MRF

Fast Acting Radial Lead Micro Fuse Series

HF Pb MRF Series — RoHS 6 Compliant

Description

Sub-miniature, fast-acting type, 250V rated fuses designed, approved and complied with IEC 60127-3, standard sheet 3.

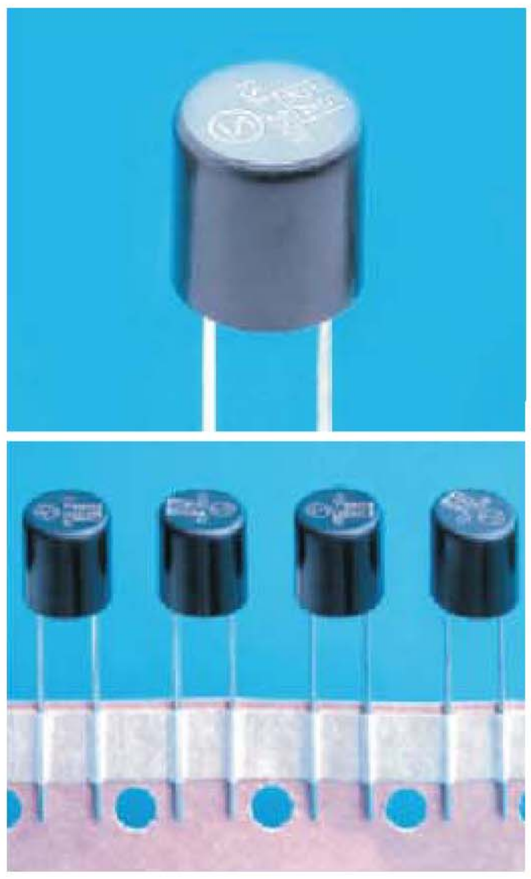
Features

- Fast Acting (250V AC@50A)
- Meet IEC standard 60127-3, sheet 3
- Wide operating temperature range
- Bulk and Tape & Reel packing available
- RoHS 6 compliant
- Halogen Free
- Leadfree

Applications

Provide individual protection for components or internal circuits.
- Power supplies
- Battery chargers
- Consumer Electronics
- Adapter
- Industrial Controllers

LEAD FREE = Pb
HALOGEN FREE = HF



Physical Specifications

Materials	Base and Cover : Black thermoplastic, UL 94-V0
	Pins : 100% Matte Tin Plated Copper
Marking	On Fuse :
	"bel", "F", "Current Rating", "250V" & " Appropriate Safety Logos"
	On Label :
	"bel", "MRF", "Current Rating", "Voltage Rating", "Interrupting Rating", " Appropriate Safety Logos" and " ", " "(China RoHS compliant).

Electrical Characteristics(IEC-127-3 STANDARD SHEET 3)

Rated Current	1.5 In	2.1 In	2.75 In		4 In		10 IN
	MIN	MAX	MIN	MAX	MIN	MAX	MAX
50mA to 6.3A inclusive	1 hr.	30 min.	10 ms	3 sec	3 ms	300 ms	20 ms

In clause 9.2, the test voltage for MRF ratings from 80mA to 6.3A is 64VDC.

Safety Agency Approvals

SAFETY AGENCY	SAFETY AGENCY CERTIFICATE NUMBER	VOLTAGE RATING (V)	AMPERE RANGE / VOLT @ I.R. ABILITY*
	1026142;1026141 1026139;1111865	50mA - 6.3A / 250V AC	50mA - 5A / 250V AC @ 35A or 10 In whichever is greater
	40017420		
	40028500		6.3A / 250V ac @ 63A
	LR39772		50mA - 6.3A / 250V AC @ 50A
	E20624		50mA - 6.3A / 350V AC @ 100A
	JET 1037-31007-1001		1A - 5A / 250V AC @ 100A

* I.R. = INTERRUPTING RATING = SHORT CIRCUIT RATING (AMPS)

Specifications subject to change without notice

bel POWER SOLUTIONS & PROTECTION
a bel group

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Environmental Specifications

Shock Resistance	MIL-STD-202G, Method 213B, Test Condition 1 (100 G's peak for 6 milliseconds; Sawtooth waveform)
Vibration Resistance	MIL-STD-202G, Method 201A(10-55 Hz X 3 axis / no load).
Salt Spray Resistance	MIL-STD-202G, Method 101E, Test Condition B(48 hrs).
Solderability	MIL-STD-202G, Method 208H
Resistance to solder Heat	MIL-STD-202G, Method 210F, Test Condition C. Top Side.(260 °C,20 sec)
Moisture Resistance	MIL-STD-202G, Method 202G, Method 106G
Operating Temperature	-55 °C to +125 °C

Electrical Specifications

Catalog Number	Ampere Rating	Typical Cold Resistance (ohm)	Volt-drop @100% In (Volt) max.	Voltage and Interrupting Ratings	Melting I²T <10 mSec (A² Sec)	Melting I²T @10 In (A² Sec)	Maximum Power Dissipation (W)	Agency Approvals					
								cULus	CSA			VDE	
MRF 50	50mA	11.9	0.73	See Table of Safety Approvals on Page 1 for Voltage and associated Interrupting Ratings	0.001	0.001	0.09	Y	Y	Y	Y		
MRF 63	63mA	8.5	0.66		0.001	0.001	0.10	Y	Y	Y	Y		
MRF 80	80mA	6.3	0.64		0.002	0.002	0.11	Y	Y	Y	Y		
MRF 100	100mA	4.0	0.49		0.003	0.003	0.11	Y	Y	Y	Y		
MRF 125	125mA	3.1	0.50		0.007	0.007	0.13	Y	Y	Y	Y		
MRF 160	160mA	2.3	0.46		0.016	0.016	0.21	Y	Y	Y	Y		
MRF 200	200mA	1.7	0.41		0.027	0.027	0.19	Y	Y	Y	Y		
MRF 250	250mA	0.42	0.17		0.023	0.023	0.23	Y	Y	Y	Y		
MRF 315	315mA	0.29	0.15		0.044	0.044	0.22	Y	Y	Y	Y		
MRF 400	400mA	0.21	0.14		0.073	0.072	0.28	Y	Y	Y	Y		
MRF 500	500mA	0.17	0.15		0.20	0.18	0.42	Y	Y	Y	Y		
MRF 630	630mA	0.10	0.08		0.15	0.14	0.16	Y	Y	Y	Y		
MRF 800	800mA	0.071	0.08		0.4	0.4	0.20	Y	Y	Y	Y		
MRF 1	1A	0.057	0.08		0.7	0.6	0.38	Y	Y	Y	Y		Y
MRF 1.25	1.25A	0.047	0.081		1.3	1.2	0.69	Y	Y	Y	Y		Y
MRF 1.6	1.6A	0.035	0.077		1.4	1.3	0.62	Y	Y	Y	Y		Y
MRF 2	2A	0.028	0.075		2.1	2.0	0.72	Y	Y	Y	Y		Y
MRF 2.5	2.5A	0.022	0.071		4	3	0.92	Y	Y	Y	Y		Y
MRF 3.15	3.15A	0.016	0.064		6	4	0.82	Y	Y	Y	Y		Y
MRF 4	4A	0.011	0.059		8	6	0.65	Y	Y	Y	Y		Y
MRF 5	5A	0.010	0.056		15	11.8	0.91	Y	Y	Y	Y		Y
MRF 6.3	6.3A	0.008	0.054		25	19.8	1.05	Y	Y			Y	

Consult manufacturer for other ratings

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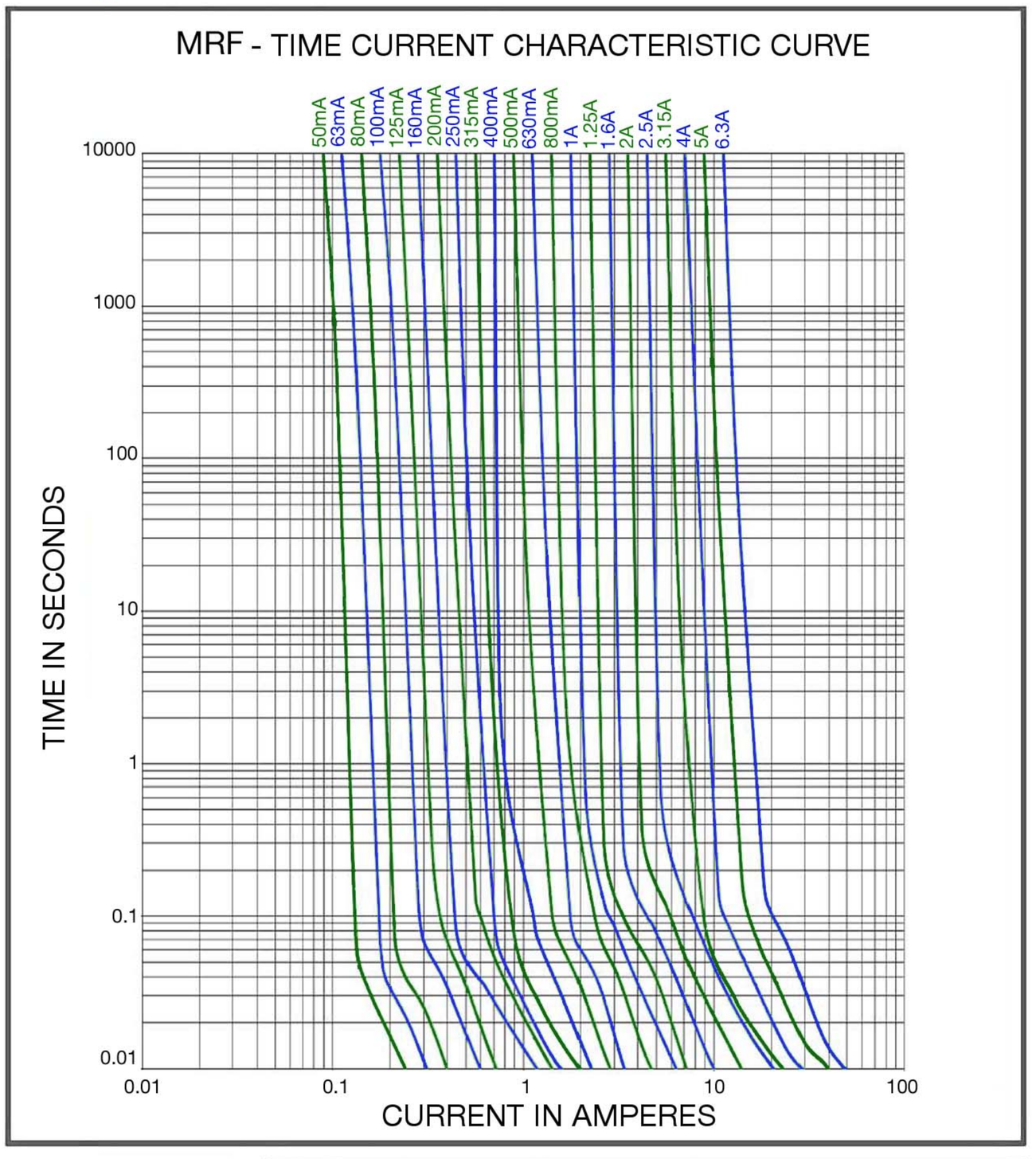
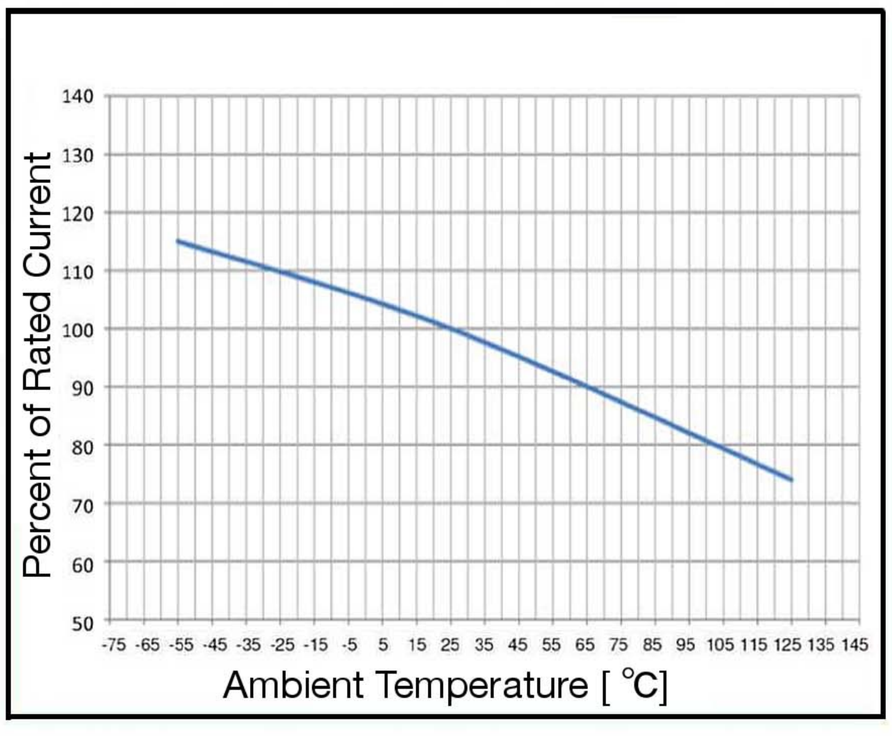
Average Time Current Curve

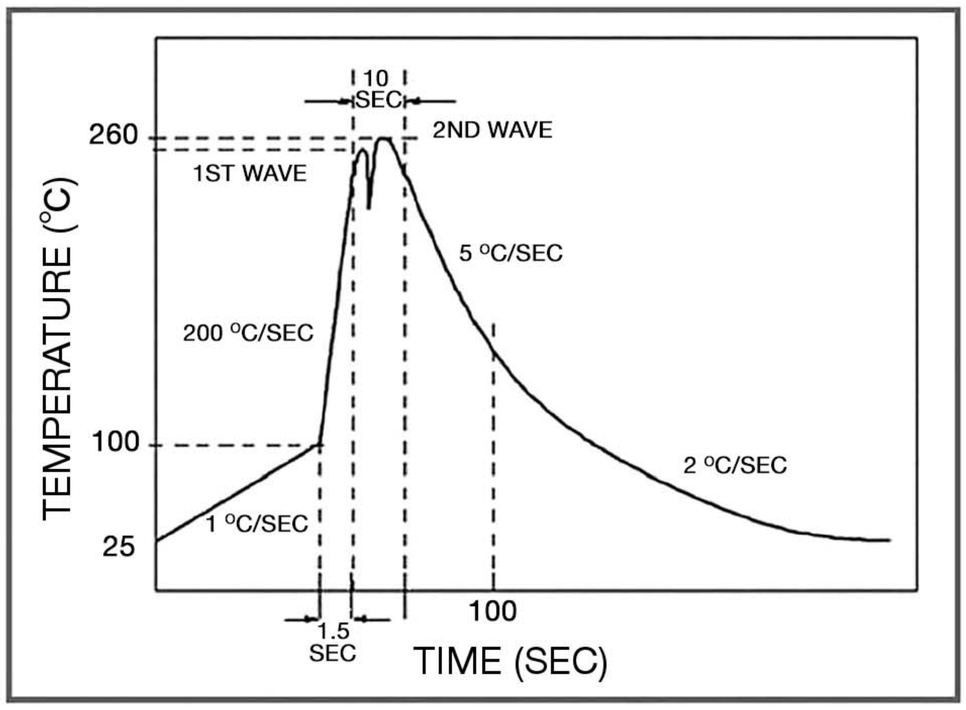


Temperature Derating Curve



Soldering Parameters

Lead-free Wave Soldering Profile	
Wave Soldering Parameter	
Average ramp-up rate	200 °C / second
Heating rate during preheat	typical 1 - 2 °C / second Max 4 °C / second
Final preheat temperature	within 125 °C of soldering temperature
Peak temperature Tp	260 °C
Time within +0 °C / -5 °C of actual peak temperature	10 seconds
Ramp-down rate	5 °C / second max.



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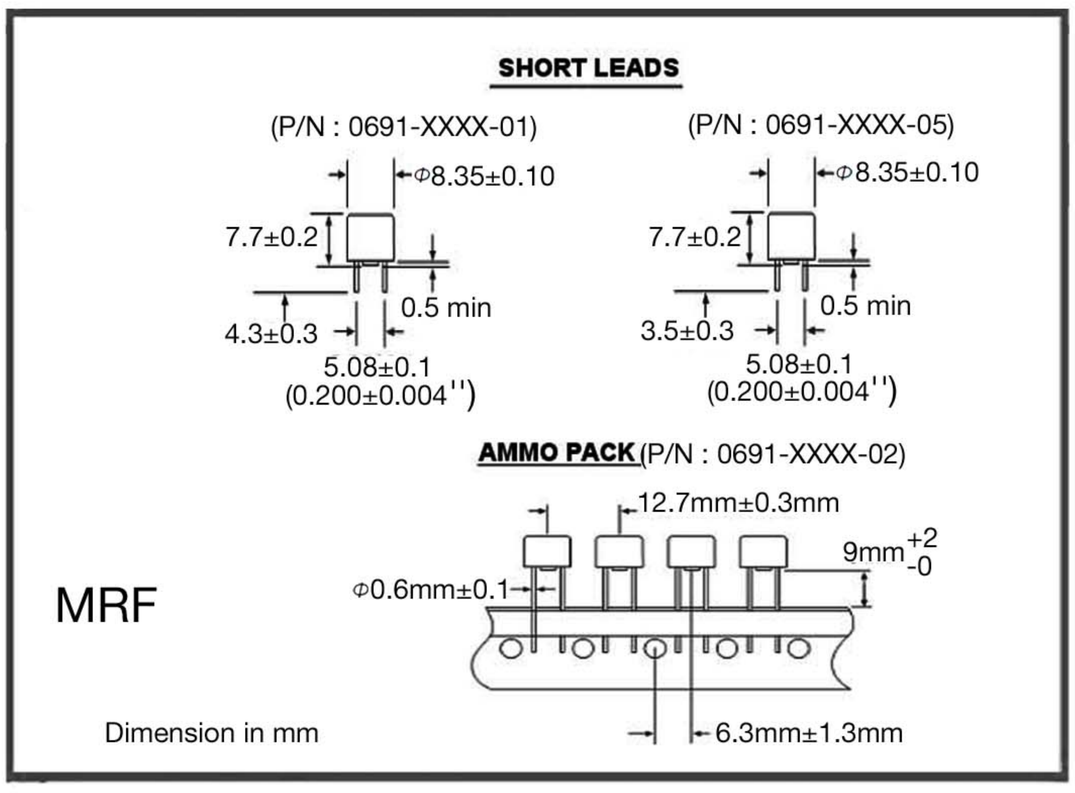
Fuse FGNO Explanation
06XX X [XXXX] X XX, [XXXX]=Ampere Rating

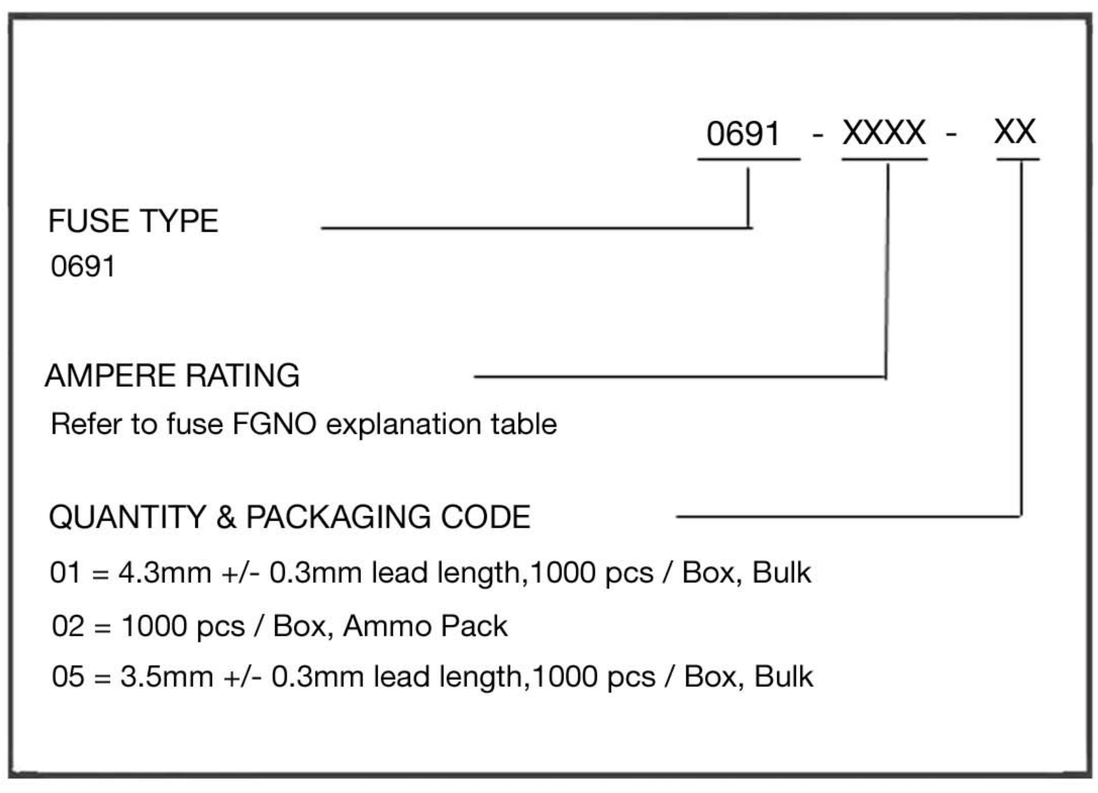
Fraction	Decimal	Milliamps	Bel FGNO[XXXX]
1/32	0.032	32	0032
1/25	.040	40	0040
1/20	.050	50	0050
1/16	.063	63	0063
8/100	.080	80	0080
1/10	.100	100	0100
1/8	.125	125	0125
15/100	.150	150	0150
	.160	160	0160
2/10	.200	200	0200
1/4	.250	250	0250
3/10	.300	300	0300
	.315	315	0315
3/8	.375	375	0375
4/10	.400	400	0400
1/2	.500	500	0500
6/10	.600	600	0600
	.630	630	0630
7/10	.700	700	0700
3/4	.750	750	0750
8/10	.800	800	0800

Fraction	Decimal	Amps	Bel FGNO[XXXX]
	1.0	1	1000
1-1/4	1.25	1.25	1250
1-1/2	1.50	1.5	1500
	1.60	1.6	1600
	2.0	2	2000
2-1/4	2.25	2.25	2250
2-1/2	2.5	2.5	2500
	3.0	3	3000
	3.15	3.15	3150
3-1/2	3.5	3.5	3500
	4.0	4	4000
	5.0	5	5000
	6.0	6	6000
	6.3	6.3	6300
	7.0	7	7000
7-1/2	7.5	7.5	7500
	8.0	8	8000
		10	9100
		12	9120
		15	9150
		20	9200
		25	9250
		30	9300

Mechanical Dimensions



Ordering Information



Packaging

Packaging Option	Packaging Specification	Quantity	Packaging Code
Bulk / bag, 1000 / box	N/A	1000	01 , 05
12.7 mm pitch, On Tape / box	IEC-286-2	1000	02

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