

Snubber MKP Capacitors for Pulse Applications with Double-Sided Metallized Electrodes and Internal Series Connection. Capacitances from 0.047 μF to 8.0 μF . Rated Voltages from 700 VDC to 3000 VDC.

Special Features

- Pulse duty construction
- Self-healing
- Particularly reliable contact-configurations: 4-pin versions and screwable plate connections
- Internal series connection
- Very low dissipation factor
- Negative capacitance change versus temperature
- According to RoHS 2011/65/EU

Typical Applications

For high pulse and high frequency applications requiring extremely reliable contacts e.g.

- IGBT-applications

Construction

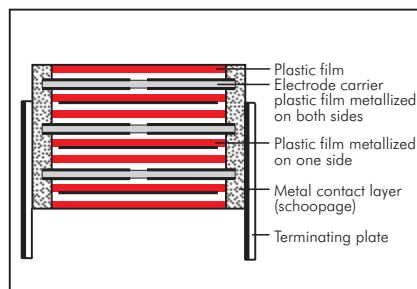
Dielectric:

Polypropylene (PP) film

Capacitor electrodes:

Double-sided metallized plastic film

Internal construction:



Encapsulation:

Solvent-resistant, flame-retardant plastic case with epoxy resin seal, UL 94 V-0

Terminations:

Tinned wire or plates.

Marking:

Colour: Red. Marking: Black.
Epoxy resin seal: Red

Electrical Data

Capacitance range: 0.047 μF to 8.0 μF

Rated voltages: 700 VDC, 850 VDC, 1000 VDC, 1250 VDC, 1700 VDC, 2000 VDC, 2500 VDC, 3000 VDC

Capacitance tolerances:

$\pm 20\%$, $\pm 10\%$, $\pm 5\%$ (other tolerances are available subject to special enquiry)

Operating temperature range:

-55°C to $+100^\circ\text{C}$

Insulation resistance at $+20^\circ\text{C}$:

$C \leq 0.33 \mu\text{F}$: $\geq 1 \times 10^5 \text{ M}\Omega$

(mean value: $5 \times 10^5 \text{ M}\Omega$)

$C > 0.33 \mu\text{F}$: $\geq 30\,000 \text{ sec (M}\Omega \times \mu\text{F)}$

(mean value: 100 000 sec)

Measuring voltage: 100 V/1 min.

Test voltage: 2 sec

L	$\leq 2000 \text{ VDC}$	2500 VDC	$\geq 3000 \text{ VDC}$
< 41.5	$1.6 U_r$	$1.4 U_r$	$1.2 U_r$
41.5	$1.4 U_r$	$1.4 U_r$	$1.2 U_r$
56	$1.2 U_r$	$1.2 U_r$	$1.2 U_r$

Dissipation factors at $+20^\circ\text{C}$: $\tan \delta$

at f	$C \leq 0.1 \mu\text{F}$	$0.1 \mu\text{F} < C \leq 1.0 \mu\text{F}$	$C > 1.0 \mu\text{F}$
1 kHz	$\leq 6 \times 10^{-4}$	$\leq 6 \times 10^{-4}$	$\leq 6 \times 10^{-4}$
10 kHz	$\leq 6 \times 10^{-4}$	$\leq 6 \times 10^{-4}$	–
100 kHz	$\leq 15 \times 10^{-4}$	–	–

Maximum pulse rise time:

Capacitance μF	max. pulse rise time V/ μsec at $T_A < 40^\circ\text{C}$							
	700 VDC	850 VDC	1000 VDC	1250 VDC	1700 VDC	2000 VDC	2500 VDC	3000 VDC
0.047 ... 0.22	1150	1150	1800	1800	1800	1800	1800	1800
0.33 ... 0.68	900	900	1150	1150	1150	1150	1150	1150
1.0 ... 2.2	500	500	500	500	650	650	650	650
2.5 ... 6.8	190	190	390	390	500	–	–	–
7.0 ... 8.0	90	90	–	–	–	–	–	–

for pulses equal to the rated voltage

Mounting Recommendation

Excessive mechanical strain, e.g. pressure or shock onto the capacitor body, is to be avoided during mounting and usage of the capacitors. When fixing the plates the screw torque is to be limited to max. 5 Nm.

For further details and graphs please refer to Technical Information.

Climatic test category:

55/100/56 in accordance with IEC

Voltage derating:

A voltage derating factor of 1.35 % per K must be applied from $+85^\circ\text{C}$ for DC voltages and from $+75^\circ\text{C}$ for AC voltages

Reliability:

Operational life $> 300\,000$ hours

Failure rate $< 1 \text{ fit } (0.5 \times U_r \text{ and } 40^\circ\text{C})$

Specific dissipation:

Box size* WxHxL in mm	Specific dissipation in Watts per K above the ambient temperature
19x31x56	0.068
23x34x56	0.079
27x37.5x56	0.092
33x48x56	0.122
37x54x56	0.142

* other box sizes see page 11.

Packing

Packing units at the end of the catalogue.

Packing quantities may vary depending on the plate version.

Continuation

General Data

Capacitance	700 VDC/420 VAC*				850 VDC/450 VAC*				1000 VDC/600 VAC*			
	W	H	L	Part number	W	H	L	Part number	W	H	L	Part number
0.22 "									11	21	31.5	SNMPO132206B_____
									11	22	41.5	SNMPO132207B_____
0.33 "					15	26	31.5	SNMPM033306F_____	15	26	31.5	SNMPO133306F_____
					13	24	41.5	SNMPM033307C_____	13	24	41.5	SNMPO133307C_____
0.47 "	11	21	31.5	SNMPK034706B_____	17	29	31.5	SNMPM034706G_____	17	29	31.5	SNMPO134706G_____
	11	22	41.5	SNMPK034707B_____	15	26	41.5	SNMPM034707D_____	15	26	41.5	SNMPO134707D_____
0.68 "	15	26	31.5	SNMPK036806F_____	17	29	41.5	SNMPM036807E_____	17	29	41.5	SNMPO136807E_____
	13	24	41.5	SNMPK036807C_____								
1.0 µF	17	29	31.5	SNMPK041006G_____	19	32	41.5	SNMPM041007F_____	20	39.5	41.5	SNMPO141007G_____
	15	26	41.5	SNMPK041007D_____					23	34	56	SNMPO141008E_____
1.5 "	19	32	41.5	SNMPK041507F_____	20	39.5	41.5	SNMPM041507G_____	24	45.5	41.5	SNMPO141507H_____
					23	34	56	SNMPM041508E_____	23	34	56	SNMPO141508E_____
2.0 "	20	39.5	41.5	SNMPK042007G_____	24	45.5	41.5	SNMPM042007H_____	31	46	41.5	SNMPO142007I_____
					23	34	56	SNMPM042008E_____	27	37.5	56	SNMPO142008H_____
2.2 "	20	39.5	41.5	SNMPK042207G_____	24	45.5	41.5	SNMPM042207H_____	31	46	41.5	SNMPO142207I_____
					23	34	56	SNMPM042208E_____	27	37.5	56	SNMPO142208H_____
2.5 "	24	45.5	41.5	SNMPK042507H_____	31	46	41.5	SNMPM042507I_____	35	50	41.5	SNMPO142507J_____
					27	37.5	56	SNMPM042508H_____	33	48	56	SNMPO142508J_____
3.0 "	24	45.5	41.5	SNMPK043007H_____	31	46	41.5	SNMPM043007I_____	40	55	41.5	SNMPO143007K_____
					27	37.5	56	SNMPM043008H_____	33	48	56	SNMPO143008J_____
3.3 "	24	45.5	41.5	SNMPK043307H_____	35	50	41.5	SNMPM043307J_____	40	55	41.5	SNMPO143307K_____
					33	48	56	SNMPM043308J_____	33	48	56	SNMPO143308J_____
4.0 "	31	46	41.5	SNMPK044007I_____	35	50	41.5	SNMPM044007J_____	37	54	56	SNMPO144008L_____
					33	48	56	SNMPM044008J_____				
4.7 "	31	46	41.5	SNMPK044707I_____	33	48	56	SNMPM044708J_____	37	54	56	SNMPO144708L_____
5.0 "	31	46	41.5	SNMPK045007I_____	33	48	56	SNMPM045008J_____	37	54	56	SNMPO145008L_____
6.0 "	35	50	41.5	SNMPK046007J_____	37	54	56	SNMPM046008L_____	37	54	56	SNMPO146008L_____
	33	48	56	SNMPK046008J_____								
7.0 "	40	55	41.5	SNMPK047007K_____	37	54	56	SNMPM047008L_____				
	33	48	56	SNMPK047008J_____								
8.0 "	37	54	56	SNMPK048008L_____								

* AC voltages: $f \leq 1000 \text{ Hz}$; $1.4 \times U_{\text{rms}} + \text{UDC} \leq U_r$

New range and values

Dims. in mm.

Ionisation inception level in isolated cases may be lower than admissible rated AC voltage.

Versions and dimensional drawings see page 108.

Part number completion:

Version codes see page 110.

Tolerance: 20 % = M

10 % = K

5 % = J

Packing: bulk = S

Pin length: 6-2 = SD

none = 00 (for plate versions)

Rights reserved to amend design data without prior notification.

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Continuation

General Data

Capacitance	1250 VDC/600 VAC*				1700 VDC/650 VAC*				2000 VDC/700 VAC*			
	W	H	L	Part number	W	H	L	Part number	W	H	L	Part number
0.068 μF									11	21	31.5	SNMPU026806B
									11	22	41.5	SNMPU026807B
0.1 μF					11	21	31.5	SNMPTA31006B	13	24	31.5	SNMPU031006D
					11	22	41.5	SNMPTA31007B	11	22	41.5	SNMPU031007B
0.15 "					13	24	31.5	SNMPTA31506D	15	26	31.5	SNMPU031506F
					11	22	41.5	SNMPTA31507B	13	24	41.5	SNMPU031507C
0.22 "	11	21	31.5	SNMPRO32206B	15	26	31.5	SNMPTA32206F	15	26	41.5	SNMPU032207D
	11	22	41.5	SNMPRO32207B	13	24	41.5	SNMPTA32207C				
0.33 "	15	26	31.5	SNMPRO33306F	17	34.5	31.5	SNMPTA33306I	19	32	41.5	SNMPU033307F
	13	24	41.5	SNMPRO33307C	15	26	41.5	SNMPTA33307D				
0.47 "	17	29	31.5	SNMPRO34706G	19	32	41.5	SNMPTA34707F	20	39.5	41.5	SNMPU034707G
	15	26	41.5	SNMPRO34707D					23	34	56	SNMPU034708E
0.68 "	17	29	41.5	SNMPRO36807E	20	39.5	41.5	SNMPTA36807G	24	45.5	41.5	SNMPU036807H
					23	34	56	SNMPTA36808E	27	37.5	56	SNMPU036808H
1.0 μF	20	39.5	41.5	SNMPRO41007G	24	45.5	41.5	SNMPTA41007H	35	50	41.5	SNMPU041007J
	23	34	56	SNMPRO41008E	27	37.5	56	SNMPTA41008H	33	48	56	SNMPU041008J
1.5 "	24	45.5	41.5	SNMPRO41507H	31	46	41.5	SNMPTA41507I	40	55	41.5	SNMPU041507K
	23	34	56	SNMPRO41508E	27	37.5	56	SNMPTA41508H	33	48	56	SNMPU041508J
2.0 "	31	46	41.5	SNMPRO42007I	40	55	41.5	SNMPTA42007K	37	54	56	SNMPU042008L
	27	37.5	56	SNMPRO42008H	33	48	56	SNMPTA42008J				
2.2 "	31	46	41.5	SNMPRO42207I	40	55	41.5	SNMPTA42207K	37	54	56	SNMPU042008L
	27	37.5	56	SNMPRO42208H	33	48	56	SNMPTA42208J				
2.5 "	35	50	41.5	SNMPRO42507J	37	54	56	SNMPTA42508L				
	33	48	56	SNMPRO42508J								
3.0 "	40	55	41.5	SNMPRO43007K	37	54	56	SNMPTA43008L				
	33	48	56	SNMPRO43008J								
3.3 "	40	55	41.5	SNMPRO43307K								
	33	48	56	SNMPRO43308J								
4.0 "	37	54	56	SNMPRO44008L								
4.7 "	37	54	56	SNMPRO44708L								
5.0 "	37	54	56	SNMPRO45008L								
6.0 "	37	54	56	SNMPRO46008L								

* AC voltages: $f \leq 1000 \text{ Hz}$; $1.4 \times U_{\text{rms}} + U_{\text{DC}} \leq U_r$

New range, box sizes and values

Dims. in mm.

Ionisation inception level in isolated cases may be lower than admissible rated AC voltage.

Versions and dimensional drawings see page 108.

Part number completion:

Version codes see page 110.

Tolerance: 20 % = M

10 % = K

5 % = J

Packing: bulk = S

Pin length: 6-2 = SD

none = 00 (for plate versions)

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Continuation

General Data

Capacitance	2500 VDC/700 VAC*				3000 VDC/700 VAC*			
	W	H	L	Part number	W	H	L	Part number
0.047 μF	11	21	31.5	SNMPV024706B	11	21	31.5	SNMPW024706B
0.068 "	11	22	41.5	SNMPV024707B	11	22	41.5	SNMPW024707B
	13	24	31.5	SNMPV026806D	13	24	31.5	SNMPW026806D
	11	22	41.5	SNMPV026807B	11	22	41.5	SNMPW026807B
0.1 μF	15	26	31.5	SNMPV031006F	15	26	31.5	SNMPW031006F
0.15 "	13	24	41.5	SNMPV031007C	13	24	41.5	SNMPW031007C
	15	26	41.5	SNMPV031507D	15	26	41.5	SNMPW031507D
0.22 "	19	32	41.5	SNMPV032207F	19	32	41.5	SNMPW032207F
0.33 "	24	45.5	41.5	SNMPV033307H	24	45.5	41.5	SNMPW033307H
0.47 "	31	46	41.5	SNMPV034707I	31	46	41.5	SNMPW034707I
0.68 "	27	37.5	56	SNMPV034708H	27	37.5	56	SNMPW034708H
	35	50	41.5	SNMPV036807J	35	50	41.5	SNMPW036807J
	33	48	56	SNMPV036808J	33	48	56	SNMPW036808J
1.0 μF	40	55	41.5	SNMPV041007K	40	55	41.5	SNMPW041007K
1.5 "	33	48	56	SNMPV041008J	33	48	56	SNMPW041008J
	37	54	56	SNMPV041508L	37	54	56	SNMPW041508L

* AC voltages: $f \leq 1000 \text{ Hz}$; $1.4 \times U_{\text{rms}} + \text{UDC} \leq U_r$

New range and values

Dims. in mm.

Ionisation inception level in isolated cases may be lower than admissible rated AC voltage.

Versions and dimensional drawings see page 108.

Part number completion:

Version codes see page 110.

Tolerance: 20 % = M

10 % = K

5 % = J

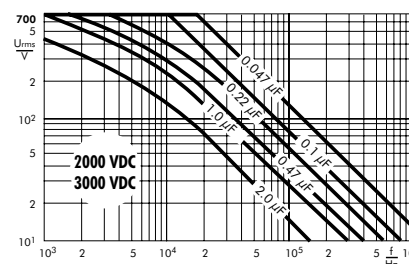
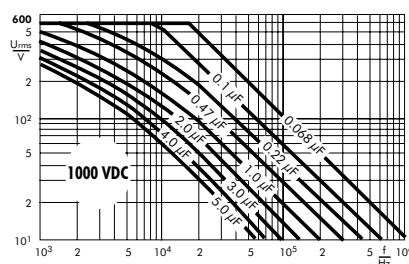
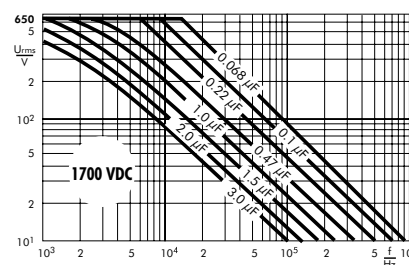
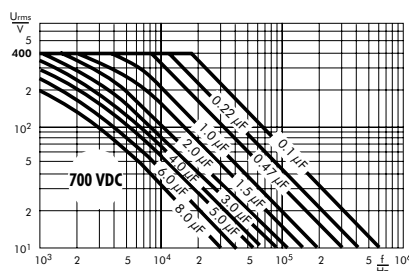
Packing: bulk = S

Pin length: 6-2 = SD

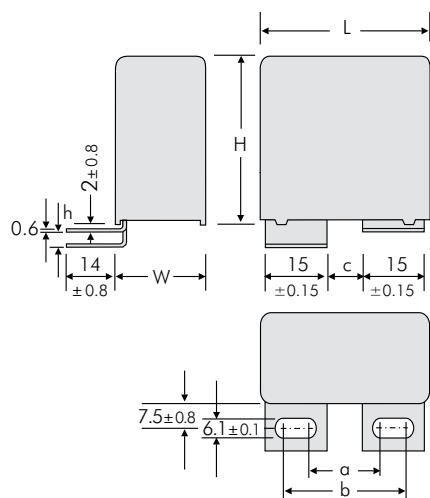
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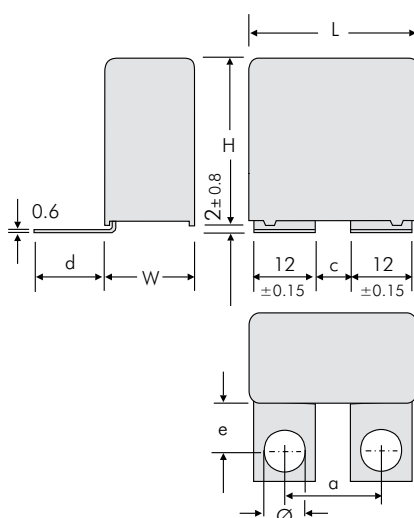
Permissible AC voltage in relation to frequency at 10° C internal temperature rise (general guide).



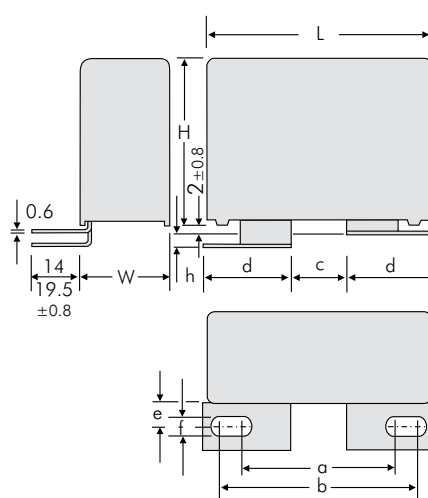
Versions of WIMA Snubber- and DC-LINK MKP 4- Capacitors



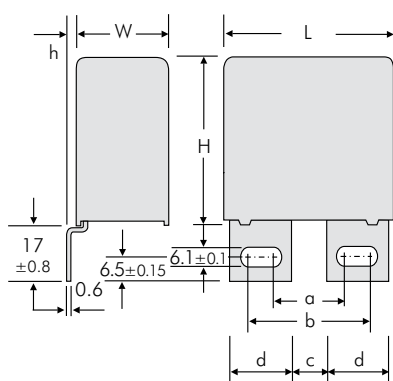
Version	L	a ±0.5	b ±0.5	c ±0.5	h ±0.8
A1	41.5	17.5	28	7.5	0
A1.5	41.5	17.5	28	7.5	3.5
A1	56	20	30	10	0
A1.1.1	56	28	38	18	0
A1.4.1	56	28	38	18	3.5



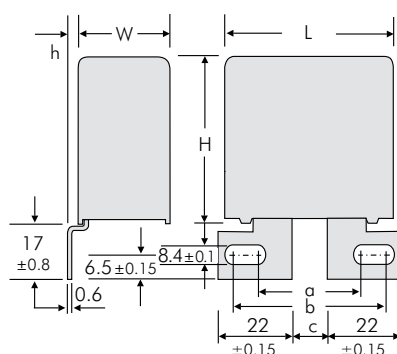
Version	L	a ±0.5	c ±0.5	d ±0.8	e ±0.8	Ø ±0.1
A1.6	41.5	18	6	21.5	16	7
A1.6.1	41.5	22	10	18.5	13	7
A1.6.2	41.5	23	10	18.5	13	8
A1.6	56	29	17	21.5	16	7



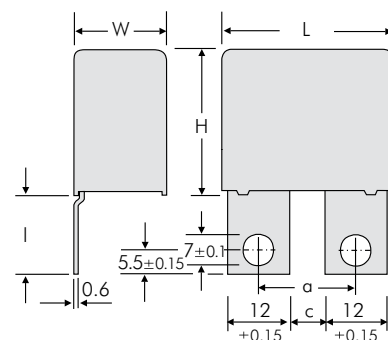
Version	L	a ±0.5	b ±0.5	c ±0.5	d ±0.15	e ±0.8	f ±0.1	h ±0.8
A2	41.5	36	46.5	14.5	22	7.5	8.4	0
A2.4.1	41.5	33.5	39.5	7.5	22	13	8.4	0
A2.6.1	41.5	31.5	41.5	14	22	13	6.1	3.5
A2.6.2	41.5	31.5	41.5	14	22	13	6.1	0
A2.8	41.5	36	46.5	14.5	22	7.5	8.4	3.5
A2.1	56	39.5	45.5	13.5	22	7.5	8.4	0
A2.1.2	56	36	45.5	14.5	21.5	7.5	8.4	0



Version	L	a ±0.5	b ±0.5	c ±0.5	d ±0.15	h ±0.8
A3	41.5	17.5	27.5	7.5	15	0
A3.5	41.5	17.5	27.5	7.5	15	3
A3.12	41.5	17.5	30	7.5	16.5	0
A3	56	20	30	10	15	0
A3.1	56	28	38	18	15	0
A3.5	56	20	30	10	15	3
A3.10	56	28	38	18	15	3

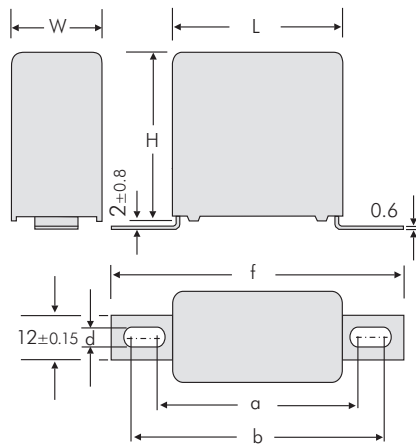


Version	L	a ±0.5	b ±0.5	c ±0.5	h ±0.8
A3.9	41.5	36	46.5	14.5	0
A3.11	41.5	36	46.5	14.5	3
A3.2	56	36	46.5	14.5	0
A3.3	56	36	46.5	14.5	3

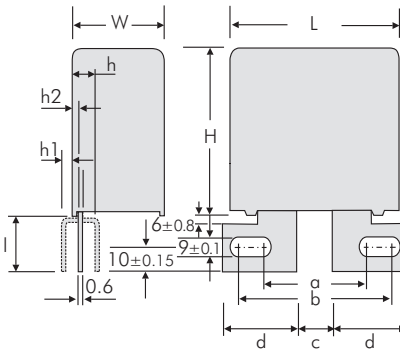


Version	L	a ±0.5	c ±0.5	l ±0.8
A3.8	41.5W ≥ 17	18	6	23
A3.8.1	41.5W ≥ 17	22	10	17.5
A3.8.2	41.5W ≥ 17	22	10	23

Versions of WIMA Snubber- and DC-LINK MKP 4- Capacitors

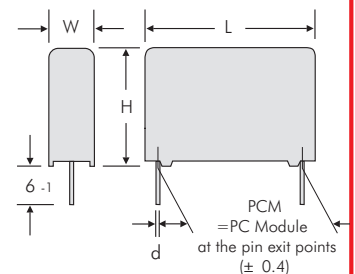


Version	L	a ±0.8	b ±0.8	f ±0.8	d ±0.1
A4.9	31.5 W ≥ 15	44	47	57	4.5
A4.10	31.5 W ≥ 15	43	59	69	6.1
A4.2	41.5 W ≥ 15	54	57	67	4.5
A4	41.5 W ≥ 15	53	69	79	6.1
A4.7	56	65	68	78	4.5
A4	56	64	80	90	6.1



Version	W	a ±0.5	b ±0.5	c ±0.5	d ±0.15	h ±0.8	h1 ±0.8	h2 ±0.8	l ±0.8
A6	≥ 23	41.5	45.5	15.5	24.15	7	-	-	26
A6.3	≥ 19	35	39	18	19	-	5	3	25
A6.4	≥ 23	42.8	44.8	21	21.5	-	-	6.4	26

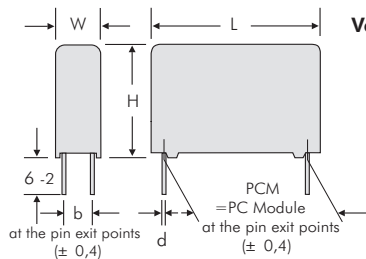
2-pin
version



PCM	d
28.5	0.8
38.5	1.2
49.5	1.2

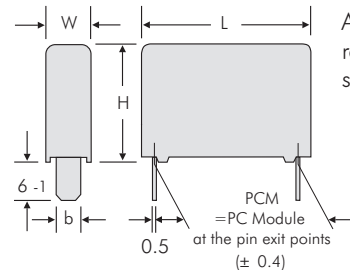
Dims. in mm

4-pin
version



W	H	L	PCM	b	d
11	21	31.5	27.5	5	0.8
13	24	31.5	27.5	7.5	0.8
15	26	31.5	27.5	7.5	0.8
17	29	31.5	27.5	10	0.8
19	30	31.5	27.5	10	0.8
17	34.5	31.5	27.5	10	0.8
20	39.5	31.5	27.5	12.5	0.8
22	43.5	31.5	27.5	12.5	0.8
11	22	41.5	37.5	5	1
13	24	41.5	37.5	7.5	1
15	26	41.5	37.5	7.5	1
17	29	41.5	37.5	10	1
19	32	41.5	37.5	10	1
20	39.5	41.5	37.5	12.5	1
24	45.5	41.5	37.5	12.5	1
31	46	41.5	37.5	20	1
35	50	41.5	37.5	20	1
40	55	41.5	37.5	20	1
19	31	56	48.5	12.5	1
23	34	56	48.5	15	1
27	37.5	56	48.5	15	1
33	48	56	48.5	20	1
37	54	56	48.5	20	1

Version B*



L	PCM	b ±0.15
31.5	28.5	8
41.5	38.5	8
56	49.5	8

Additional special versions can be realized. Please contact us with your specific needs.

* Processing notification:
Processing should be done within
3 month after manufacturing.

Versions of WIMA Snubber- and DC-LINK MKP 4- Capacitors

Version code		D2	D4	B8*	1A	1B	1G	1H	1I	1J	1S	2A	2B	2Q	2F	2J	2K	2M	3A	3C	3D	3E	3G	3K	3L	3M	3N	3O	3P	3Q	4A	4C	4J	4L	4M	6A	6B	6C	
W x H x L	Size code	2-pin	4-pin	B8	A1	A1.1	A1.4.1	A1.5	A1.6	A1.6.1	A1.6.2	A2	A2.1	A2.1.2	A2.4.1	A2.6.1	A2.6.2	A2.8	A3	A3.1	A3.2	A3.3	A3.5	A3.8	A3.8.1	A3.8.2	A3.9	A3.10	A3.11	A3.12	A4	A4.2	A4.7	A4.9	A4.10	A6	A6.3	A6.4	
11 x 21 x 31.5	6B																																						
13 x 24 x 31.5	6D																																						
15 x 26 x 31.5	6F																																						
17 x 29 x 31.5	6G																																						
17 x 34.5 x 31.5	6I																																						
11 x 22 x 41.5	7B																																						
13 x 24 x 41.5	7C																																						
15 x 26 x 41.5	7D																																						
17 x 29 x 41.5	7E																																						
19 x 32 x 41.5	7F																																						
20 x 39.5 x 41.5	7G																																						
24 x 45.5 x 41.5	7H																																						
31 x 46 x 41.5	7I																																						
35 x 50 x 41.5	7J																																						
40 x 55 x 41.5	7K																																						
19 x 31 x 56	8D																																						
23 x 34 x 56	8E																																						
27 x 37.5 x 56	8H																																						
33 x 48 x 56	8J																																						
37 x 54 x 56	8L																																						

Possible connecting respective plate
versions - depending on box size.

■ 4-pin versions on request.

* Processing notification:
Processing should be done within
3 month after manufacturing.

Recommendation for Processing and Application of Through-Hole Capacitors

Soldering Process

Internal temperature of the capacitor must be kept as follows:

Polyester: preheating: $T_{\max.} \leq 125^{\circ}\text{C}$
soldering: $T_{\max.} \leq 135^{\circ}\text{C}$

Polypropylene: preheating: $T_{\max.} \leq 100^{\circ}\text{C}$
soldering: $T_{\max.} \leq 110^{\circ}\text{C}$

Single wave soldering

Soldering bath temperature: $T < 260^{\circ}\text{C}$

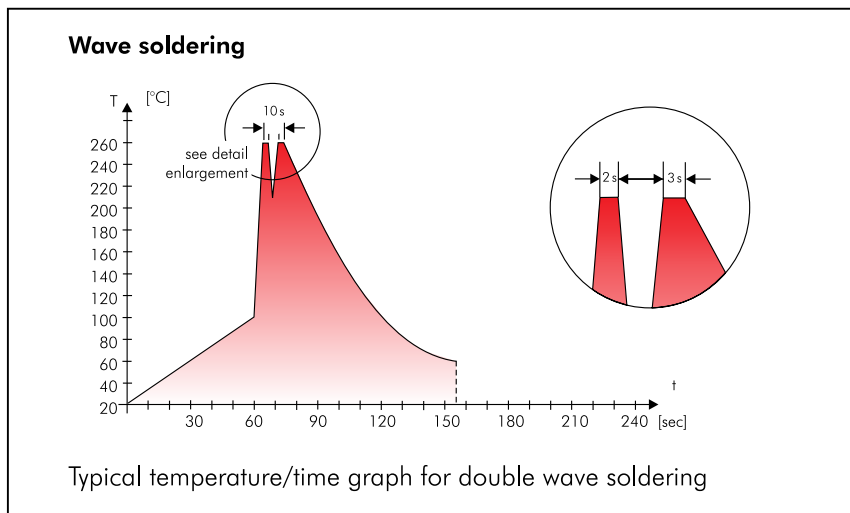
Dwell time: $t < 5\text{ sec}$

Double wave soldering

Soldering bath temperature: $T < 260^{\circ}\text{C}$

Dwell time: $\Sigma t < 5\text{ sec}$

Due to different soldering processes and heat requirements the graphs are to be regarded as a recommendation only.



WIMA Quality and Environmental Philosophy

ISO 9001:2008 Certification

ISO 9001:2008 is an international basic standard of quality assurance systems for all branches of industry. The approval according to ISO 9001:2008 of our factories by the VDE inspectorate certifies that organisation, equipment and monitoring of quality assurance in our factories correspond to internationally recognized standards.

WIMA WPCS

The WIMA Process Control System (WPCS) is a quality surveillance and optimization system developed by WIMA. WPCS is a major part of the quality-oriented WIMA production. Points of application of WPCS during production process:

- incoming material inspection
- metallization
- film inspection
- schoopage
- pre-healing
- pin attachment
- cast resin preparation/encapsulation
- 100% final inspection
- Testing as per customer requirements

WIMA Environmental Policy

All WIMA capacitors, irrespective of whether through-hole devices or SMD, are made of environmentally friendly materials. Neither during manufacture nor in the product itself any toxic substances are used, e.g.

- | | |
|------------------------|------------|
| – Lead | – PBB/PBDE |
| – PCB | – Arsenic |
| – CFC | – Cadmium |
| – Hydrocarbon chloride | – Mercury |
| – Chromium 6+ | – etc. |

We merely use pure, recyclable materials for packing our components, such as:

- carton
- cardboard
- adhesive tape made of paper
- polystyrene

We almost completely refrain from using packing materials such as:

- foamed polystyrene (Styropor®)
- adhesive tapes made of plastic
- metal clips

RoHS Compliance

According to the RoHS Directive 2011/65/EU certain hazardous substances like e.g. lead, cadmium, mercury must not be used any longer in electronic equipment as of July 1st, 2006. For the sake of the environment WIMA has refrained from using such substances since years already.



WIMA Kondensatoren sind bleifrei
konform RoHS 2011/65/EU

WIMA capacitors are lead free
in accordance with RoHS 2011/65/EU

Tape for lead-free WIMA capacitors

DIN EN ISO 14001:2004

WIMA's environmental management has been established in accordance with the guidelines of DIN EN ISO 14001:2004 to optimize the production processes with regard to energy and resources.

Typical Dimensions for Taping Configuration

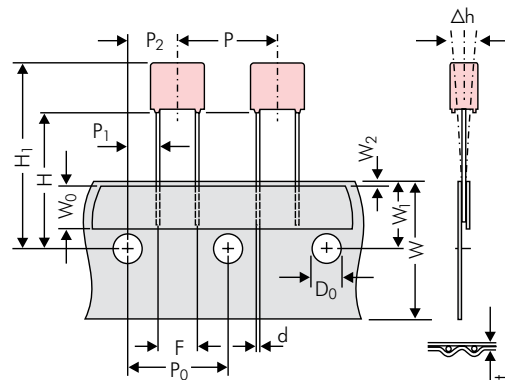


Diagram 1:
PCM 2.5/5/7.5mm

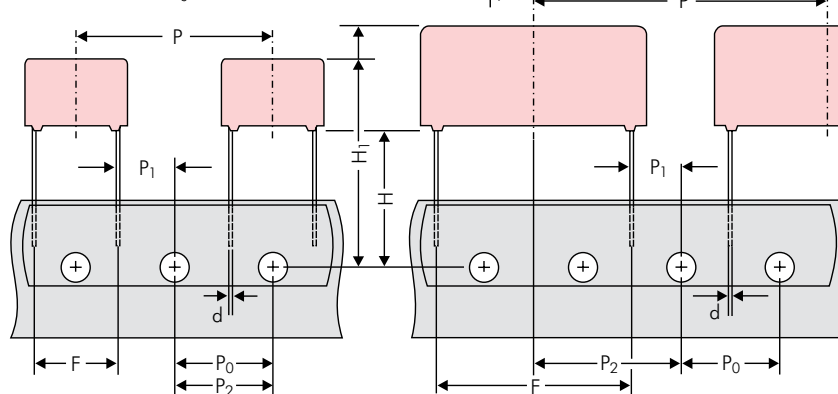


Diagram 2: PCM 10/15 mm

Diagram 3: PCM 22.5 and 27.5*mm

*PCM 27.5 taping possible with two feed holes between components

Designation	Symbol	Dimensions for Radial Taping						
		PCM 2.5 taping	PCM 5 taping	PCM 7.5 taping	PCM 10 taping*	PCM 15 taping*	PCM 22.5 taping	PCM 27.5 taping
Carrier tape width	W	18.0 ±0.5	18.0 ±0.5	18.0 ±0.5	18.0 ±0.5	18.0 ±0.5	18.0 ±0.5	18.0 ±0.5
Hold-down tape width	W ₀	6.0 for hot-sealing adhesive tape	6.0 for hot-sealing adhesive tape	12.0 for hot-sealing adhesive tape	12.0 for hot-sealing adhesive tape	12.0 for hot-sealing adhesive tape	12.0 for hot-sealing adhesive tape	12.0 for hot-sealing adhesive tape
Hole position	W ₁	9.0 ±0.5	9.0 ±0.5	9.0 ±0.5	9.0 ±0.5	9.0 ±0.5	9.0 ±0.5	9.0 ±0.5
Hold-down tape position	W ₂	0.5 to 3.0 max.	0.5 to 3.0 max.	0.5 to 3.0 max.	0.5 to 3.0 max.	0.5 to 3.0 max.	0.5 to 3.0 max.	0.5 to 3.0 max.
Feed hole diameter	D ₀	4.0 ±0.2	4.0 ±0.2	4.0 ±0.2	4.0 ±0.2	4.0 ±0.2	4.0 ±0.2	4.0 ±0.2
Pitch of component	P	12.7 ±1.0	12.7 ±1.0	12.7 ±1.0	25.4 ±1.0	25.4 ±1.0	38.1 ±1.5	38.1 ±1.5 or 50.8 ±1.5
Feed hole pitch	P ₀	12.7 ±0.3 cumulative pitch error max. 1.0 mm/20 pitch	12.7 ±0.3 cumulative pitch error max. 1.0 mm/20 pitch	12.7 ±0.3 cumulative pitch error max. 1.0 mm/20 pitch	12.7 ±0.3 cumulative pitch error max. 1.0 mm/20 pitch	12.7 ±0.3 cumulative pitch error max. 1.0 mm/20 pitch	12.7 ±0.3 cumulative pitch error max. 1.0 mm/20 pitch	12.7 ±0.3 cumulative pitch error max. 1.0 mm/20 pitch
Feed hole centre to pin	P ₁	5.1 ±0.5	3.85 ±0.7	2.6 ±0.7	7.7 ±0.7	5.2 ±0.7	7.8 ±0.7	5.3 ±0.7
Hole centre to component centre	P ₂	6.35 ±1.3	6.35 ±1.3	6.35 ±1.3	12.7 ±1.3	12.7 ±1.3	19.05 ±1.3	19.05 ±1.3
Feed hole centre to bottom edge of the component	H	16.5 ±0.3 18.5 ±0.5	16.5 ±0.3 18.5 ±0.5	16.5 ±0.5 18.5 ±0.5	16.5 ±0.5 18.5 ±0.5	16.5 ±0.5 18.5 ±0.5	16.5 ±0.5 18.5 ±0.5	16.5 ±0.5 18.5 ±0.5
Feed hole centre to top edge of the component	H ₁	H+H _{component} < H ₁ 32.25 max.	H+H _{component} < H ₁ 32.25 max.	H+H _{component} < H ₁ 24.5 to 31.5	H+H _{component} < H ₁ 25.0 to 31.5	H+H _{component} < H ₁ 26.0 to 37.0	H+H _{component} < H ₁ 30.0 to 43.0	H+H _{component} < H ₁ 35.0 to 45.0
Pin spacing at upper edge of carrier tape	F	2.5 ±0.5	5.0 ^{+0.8} _{-0.2}	7.5 ±0.8	10.0 ±0.8	15 ±0.8	22.5 ±0.8	27.5 ±0.8
Pin diameter	d	0.4 ±0.05	0.5 ±0.05	0.5 ±0.05 or 0.6 ^{+0.06} _{-0.05}	0.5 ±0.05 or 0.6 ^{+0.06} _{-0.05}	0.8 ^{+0.08} _{-0.05}	0.8 ^{+0.08} _{-0.05}	0.8 ^{+0.08} _{-0.05}
Component alignment	Δh	± 2.0 max.	± 2.0 max.	± 3.0 max.	± 3.0 max.	± 3.0 max.	± 3.0 max.	± 3.0 max.
Total tape thickness	t	0.7 ±0.2	0.7 ±0.2	0.7 ±0.2	0.7 ±0.2	0.7 ±0.2	0.7 ±0.2	0.7 ±0.2
Package (see also page 144)		ROLL/AMMO			AMMO			
		REEL ø 360 max. ø 30 ±1	B 52 ±2 58 ±2 } depending on comp. dimensions		REEL ø 360 max. ø 30 ±1	B 52 ±2 58 ±2 or 66 ±2	REEL ø 500 max. ø 25 ±1	B 54 ±2 60 ±2 or 68 ±2 } depending on PCM and component dimensions
Unit		see details page 145.						

Dims in mm.

* Diameter of pins see General Data.

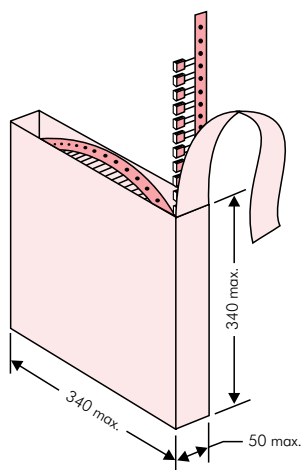
Please clarify customer-specific deviations with the manufacturer.

* PCM 10 and PCM 15 can be crimped to PCM 7.5.

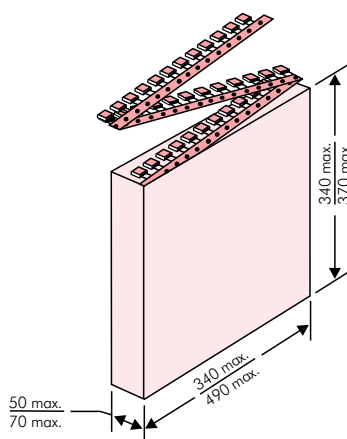
Position of components according to PCM 7.5 (sketch 11). P₀ = 12.7 or 15.0 is possible

Types of Tape Packaging of Capacitors for Automatic Radial Insertion

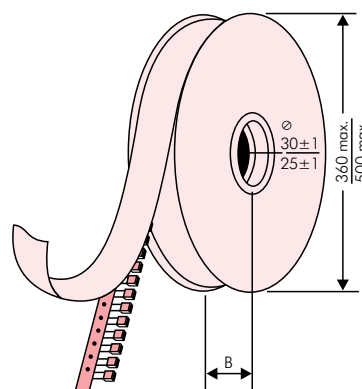
■ ROLL Packaging



■ AMMO Packaging



■ REEL Packaging



BAR CODE (Labelling)

Labelling of package units in plain text and with alphanumerical Bar Code

Scanner decoding of

- WIMA supplier number
- Customer's P/O number
- Customer's part number
- WIMA confirmation number
- WIMA part number
- Lot number
- Date code
- Quantity

In addition part description of

- article
- capacitance value
- rated voltage
- dimensions
- capacitance tolerance
- packing

as well as gross weight and customer's name are indicated in plain text.

WIMA Best Capacitors Made In Germany		Werk Unna	
Supplier-ID: 123456789	RoHS 2011/65/EU	Date Code: 08.10.10	
			
Purchase Order No. (P/O): Bestellung xyz		Quantity: 5.000	
			
Customer Part No.: KUNDETEILENUMMER		Customer No.: 0000100002	
		Gross Weight [g]: 1870	
WIMA Confirmation No.: 0001004053000100	WIMA Part No.: MKS2C034701C00K88D		
			
Handling Unit: 	MKS 2 MKS 2 0.47 µF 63 VDC 3.5x8.5x7.2 RM5	QTY: 5.000	COO: DE
1000067326	Standard 10% Loss - Standard Drift 6-2 Vorlage Debitor Inland	Week 03/2011	

BARCODE „Code 39“

Packing Quantities for Capacitors with Radial Pins in PCM 2.5 mm to 22.5 mm



PCM	Size				bulk	ROLL		pcs. per packing unit				AMMO			
								REEL							
	W	H	L	Codes		H16.5	H18.5	ø 360	ø 500	340 × 340	490 × 370	H16.5	H18.5	H16.5	H18.5
					S	N	O	F	I	H	J	A	C	B	D
2.5 mm	2.5	7	4.6	0B	5000	2200		2500		–		2800		–	
	3	7.5	4.6	0C	5000	2000		2300		–		2300		–	
	3.8	8.5	4.6	0D	5000	1500		1800		–		1800		–	
	4.6	9	4.6	0E	5000	1200		1500		–		1500		–	
	5.5	10	4.6	0F	5000	900		1200		–		1200		–	
5 mm	2.5	6.5	7.2	1A	5000	2200		2500		–		2800		–	
	3	7.5	7.2	1B	5000	2000		2300		–		2300		–	
	3.5	8.5	7.2	1C	5000	1600		2000		–		2000		–	
	4.5	6	7.2	1D	6000	1300		1500		–		1500		–	
	4.5	9.5	7.2	1E	4000	1300		1500		–		1500		–	
	5	10	7.2	1F	3500	1100		1400		–		1400		–	
	5.5	7	7.2	1G	4000	1000		1200		–		1200		–	
	5.5	11.5	7.2	1H	2500	1000		1200		–		1200		–	
	6.5	8	7.2	1I	2500	800		1000		–		1000		–	
	7.2	8.5	7.2	1J	2500	700		1000		–		1000		–	
	7.2	13	7.2	1K	2000	700		950		–		1000		–	
	8.5	10	7.2	1L	2000	600		800		–		800		–	
	8.5	14	7.2	1M	1500	600		800		–		800		–	
	11	16	7.2	1N	1000	500		600		–		400		–	
7.5 mm	2.5	7	10	2A	5000	–		2500		4400		2500		–	
	3	8.5	10	2B	5000	–		2200		4300		2300		4150	
	4	9	10	2C	4000	–		1700		3200		1700		3100	
	4.5	9.5	10.3	2D	3500	–		1500		2900		1400		2700	
	5	10.5	10.3	2E	3000	–		1300		2500		1300		–	
	5.7	12.5	10.3	2F	2000	–		1000		2200		1100		–	
	7.2	12.5	10.3	2G	1500	–		900		1800		1000		–	
10 mm	3	9	13	3A	3000	–		1100		2200		–		1900	
	4	8.5	13.5	FA	3000	–		900		1600		–		1450	
	4	9	13	3C	3000	–		900		1600		–		1450	
	4	9.5	13	3D	3000	–		900		1600		–		1400	
	5	10	13.5	FB	2000	–		700		1300		–		1200	
	5	11	13	3F	3000	–		700		1300		–		1200	
	6	12	13	3G	2400	–		550		1100		–		1000	
	6	12.5	13	3H	2400	–		550		1100		–		1000	
	8	12	13	3I	2000	–		400		800		–		740	
15 mm	5	11	18	4B	2400	–		600		1200		–		1150	
	5	13	19	FC	1000	–		600		1200		–		1200	
	6	12.5	18	4C	2000	–		500		1000		–		1000	
	6	14	19	FD	1000	–		500		1000		–		1000	
	7	14	18	4D	1600	–		450		900		–		850	
	7	15	19	FE	1000	–		450		900		–		850	
	8	15	18	4F	1200	–		400		800		–		740	
	8	17	19	FF	500	–		400		800		–		740	
	9	14	18	4H	1200	–		350		700		–		650	
	9	16	18	4J	900	–		350		700		–		650	
	10	18	19	FG	500	–		300		650		–		590	
	11	14	18	4M	1000	–		300		600		–		540	
22.5 mm	5	14	26.5	5A	1200	–		–		800		–		770	
	6	15	26.5	5B	1000	–		–		700		–		640	
	7	16.5	26.5	5D	760	–		–		600		–		550	
	8	20	28	FH	500	–		–		500		–		480	
	8.5	18.5	26.5	5F	500	–		–		480		–		450	
	10	22	28	FI	570*	–		–		420		–		380	
	10.5	19	26.5	5G	594*	–		–		400		–		360	
	10.5	20.5	26.5	5H	594*	–		–		400		–		360	
	11	21	26.5	5I	561*	–		–		380		–		350	
	12	24	28	FJ	480*	–		–		350		–		310	

* TPS (Tray-Packing-System). Plate versions may have different packing units.
Samples and pre-production needs on request.

■ Moulded versions.

Rights reserved to amend design data without prior notification.



Packing Quantities for Capacitors with Radial Pins in PCM 27.5 mm to 52.5 mm

PCM	Size				bulk	pcs. per packing unit									
						ROLL		REEL				AMMO			
	H16.5	H18.5	H16.5	H18.5		H16.5	H18.5	H16.5	H18.5	340 × 340	490 × 370				
	W	H	L	Codes	S	N	O	F	I	H	J	A	C	B	D
27.5 mm	9	19	31.5	6A	567*	—		—		460/340*		—		420	
	11	21	31.5	6B	459*	—		—		380/280*		—		350	
	13	24	31.5	6D	378*	—		—		300		—		290	
	13	25	33	FK	405*	—		—		—		—		—	
	15	26	31.5	6F	324*	—		—		270		—		250	
	15	26	33	FL	324*	—		—		—		—		—	
	17	29	31.5	6G	198*	—		—		—		—		—	
	17	34.5	31.5	6I	198*	—		—		—		—		—	
	20	32	33	FM	162*	—		—		—		—		—	
20	39.5	31.5	6J	162*	—		—		—		—		—		
37.5 mm	9	19	41.5	7A	441*	—		—		—		—		—	
	11	22	41.5	7B	357*	—		—		—		—		—	
	13	24	41.5	7C	294*	—		—		—		—		—	
	15	26	41.5	7D	252*	—		—		—		—		—	
	17	29	41.5	7E	154*	—		—		—		—		—	
	19	32	41.5	7F	140*	—		—		—		—		—	
	20	39.5	41.5	7G	126*	—		—		—		—		—	
	24	45.5	41.5	7H	112*	—		—		—		—		—	
	31	46	41.5	7I	84*	—		—		—		—		—	
	35	50	41.5	7J	35*	—		—		—		—		—	
	40	55	41.5	7K	28*	—		—		—		—		—	
48.5 mm	19	31	56	8D	120*	—		—		—		—		—	
	23	34	56	8E	80*	—		—		—		—		—	
	27	37.5	56	8H	84*	—		—		—		—		—	
	33	48	56	8J	25*	—		—		—		—		—	
	37	54	56	8L	25*	—		—		—		—		—	
52.5 mm	25	45	57	9D	70*	—		—		—		—		—	
	30	45	57	9E	60*	—		—		—		—		—	
	35	50	57	9F	25*	—		—		—		—		—	
	45	55	57	9H	20*	—		—		—		—		—	
	45	65	57	9J	20*	—		—		—		—		—	

* for 2-inch transport pitches.

* TPS (Tray-Packing-System). Plate versions may have different packing units.
Samples and pre-production needs on request.

■ Moulded versions.

Rights reserved to amend design data without prior notification.

Updated data on www.wima.com

A WIMA part number consists of 18 digits and is composed as follows:

- Field 1 - 4: Type description
- Field 5 - 6: Rated voltage
- Field 7 - 10: Capacitance
- Field 11 - 12: Size and PCM
- Field 13 - 14: Version code (e.g. Snubber versions)
- Field 15: Capacitance tolerance
- Field 16: Packing
- Field 17 - 18: Pin length (untaped)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
M	K	S	2	C	0	2	1	0	0	1	A	0	0	M	S	S	D
MKS 2				63 VDC		0.01 μF				2.5x6.5x7.2		-		20%	bulk	6 -2	
Type description:				Rated voltage:		Capacitance:				Size:		Tolerance:		Packing:			
SMD-PET = SMDT				50 VDC = B0		22 pF = 0022				4.8x3.3x3 Size 1812 = KA		±20% = M		AMMO H16.5 340x340 = A			
SMD-PEN = SMDN				63 VDC = C0		47 pF = 0047				4.8x3.3x4 Size 1812 = KB		±10% = K		AMMO H16.5 490x370 = B			
SMD-PPS = SMDI				100 VDC = D0		100 pF = 0100				5.7x5.1x3.5 Size 2220 = QA		±5% = J		AMMO H18.5 340x340 = C			
FKP 02 = FKPO				250 VDC = F0		150 pF = 0150				5.7x5.1x4.5 Size 2220 = QB		±2.5% = H		AMMO H18.5 490x370 = D			
MKS 02 = MKS0				400 VDC = G0		220 pF = 0220				7.2x6.1x3 Size 2824 = TA		±1% = E		REEL H16.5 360 = F			
FKS 2 = FKS2				450 VDC = H0		330 pF = 0330				7.2x6.1x5 Size 2824 = TB		...		REEL H16.5 500 = H			
FKP 2 = FKP2				520 VDC = H2		470 pF = 0470				10.2x7.6x5 Size 4030 = VA				REEL H18.5 360 = I			
FKS 3 = FKS3				600 VDC = I0		680 pF = 0680				12.7x10.2x6 Size 5040 = XA				REEL H18.5 500 = J			
FKP 3 = FKP 3				630 VDC = J0		1000 pF = 1100				15.3x13.7x7 Size 6054 = YA				ROLL H16.5 = N			
MKS 2 = MKS2				700 VDC = K0		1500 pF = 1150				2.5x7x4.6 PCM 2.5 = 0B				ROLL H18.5 = O			
MKP 2 = MKP2				800 VDC = L0		2200 pF = 1220				3x7.5x4.6 PCM 2.5 = 0C				BLISTER W12 180 = P			
MKS 4 = MKS4				850 VDC = M0		3300 pF = 1330				2.5x6.5x7.2 PCM 5 = 1A				BLISTER W12 330 = Q			
MKP 4C = MKPC				900 VDC = N0		4700 pF = 1470				3x7.5x7.2 PCM 5 = 1B				BLISTER W16 330 = R			
MKP 4 = MKP4				1000 VDC = O1		6800 pF = 1680				2.5x7x10 PCM 7.5 = 2A				BLISTER W24 330 = T			
MKP 10 = MKP1				1100 VDC = P0		0.01 μF = 2100				3x8.5x10 PCM 7.5 = 2B				Bulk/TPS Standard = S			
FKP 1 = FKP1				1200 VDC = Q0		0.022 μF = 2220				3x9x13 PCM 10 = 3A				...			
MKP-X2 = MKX2				1250 VDC = R0		0.047 μF = 2470				4x9x13 PCM 10 = 3C							
MKP-X1 R = MKX1				1500 VDC = S0		0.1 μF = 3100				5x11x18 PCM 15 = 4B							
MKP-Y2 = MKY2				1600 VDC = T0		0.22 μF = 3220				6x12.5x18 PCM 15 = 4C							
MP 3-X2 = MPX2				2000 VDC = U0		0.47 μF = 3470				5x14x26.5 PCM 22.5 = 5A							
MP 3-X1 = MPX1				2500 VDC = V0		1 μF = 4100				6x15x26.5 PCM 22.5 = 5B							
MP 3-Y2 = MPY2				3000 VDC = W0		2.2 μF = 4220				9x19x31.5 PCM 27.5 = 6A							
MP 3R-Y2 = MPRY				4000 VDC = X0		4.7 μF = 4470				11x21x31.5 PCM 27.5 = 6B							
MKP 4F = MKPF				6000 VDC = Y0		10 μF = 5100				9x19x41.5 PCM 37.5 = 7A							
Snubber MKP = SNMP				250 VAC = 0V		22 μF = 5220				11x22x41.5 PCM 37.5 = 7B							
Snubber FKP = SNFP				275 VAC = 1V		47 μF = 5470				19x31x56 PCM 48.5 = 8D							
GTO MKP = GTOM				300 VAC = 2V		100 μF = 6100				25x45x57 PCM 52.5 = 9D							
DC-LINK MKP 3 = DCP3				305 VAC = AV		220 μF = 6220				...							
DC-LINK MKP 4 = DCP4				350 VAC = BV		1000 μF = 7100											
DC-LINK MKP 4S = DCP5				440 VAC = 4V		1500 μF = 7150											
DC-LINK MKP 5 = DCP5				500 VAC = 5V		...											
DC-LINK MKP 6 = DCP6				...													
DC-LINK HC = DCHC																	
DC-LINK HY = DCHY																	

Mouser Electronics

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WIMA:

SNMPG032205DD2KY00	SNMPO142007I1JKS00	SNMPO144008LD4KSSD	SNMPJ041007D1AJS00
SNMPJ042207G1AJS00	SNMPO134707D1AJS00	SNMPO142207I1AJS00	SNMPT034707F1AJS00
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SNMPJ03680SHD2MY00	SNMPJ041507F1JKS00	SNMPO14150SMD2KY00	SNMPO14220SN1AJY00
SNMPW041508LB8KS00	SNMPT042208JD4KSSD	SNMPJ04100SI1AMY00	SNMPT043008LD4KSSD
SNMPJ043307HD2MSSD	SNMPO14100SL1AMY00	SNMPO141508E1AMS00	SNMPO141007G1AKS00
SNMPO141507HD2KSSD	SCMKP2.2/1KV/10A3.5	SNMPJ041007D1AMS00	SNMPJ04100SID2MY00
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