

## Snubber MKP Capacitors for Pulse Applications with Double-Sided Metallized Electrodes and Internal Series Connection. Capacitances from 0.047 $\mu\text{F}$ to 8.0 $\mu\text{F}$ . 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

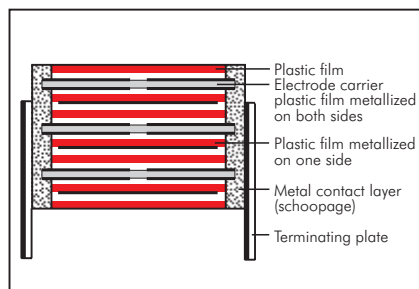
#### Dielectric:

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.

### Electrical Data

**Capacitance range:** 0.047  $\mu\text{F}$  to 8.0  $\mu\text{F}$

**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:

$-55^\circ\text{C}$  to  $+100^\circ\text{C}$

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

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

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

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	$\leq 15 \times 10^{-4}$	–	–

\* other box sizes see page 11.

#### Maximum pulse rise time:

Capacitance $\mu\text{F}$	max. pulse rise time V/ $\mu\text{sec}$ 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

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

Dims. in mm.

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

Versions and dimensional drawings see page 111.

#### Part number completion:

Version codes see page 113.

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	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 $\mu\text{F}$									11	21	31.5	SNMPU026806B_
									11	22	41.5	SNMPU026807B_
0.1 $\mu\text{F}$					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 $\mu\text{F}$	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:  $f \leq 1000 \text{ Hz}$ ;  $1.4 \times U_{\text{rms}} + \text{UDC} \leq U_r$

Dims. in mm.

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

Versions and dimensional drawings see page 111.

#### Part number completion:

Version codes see page 113.

Tolerance: 20 % = M

10 % = K

5 % = J

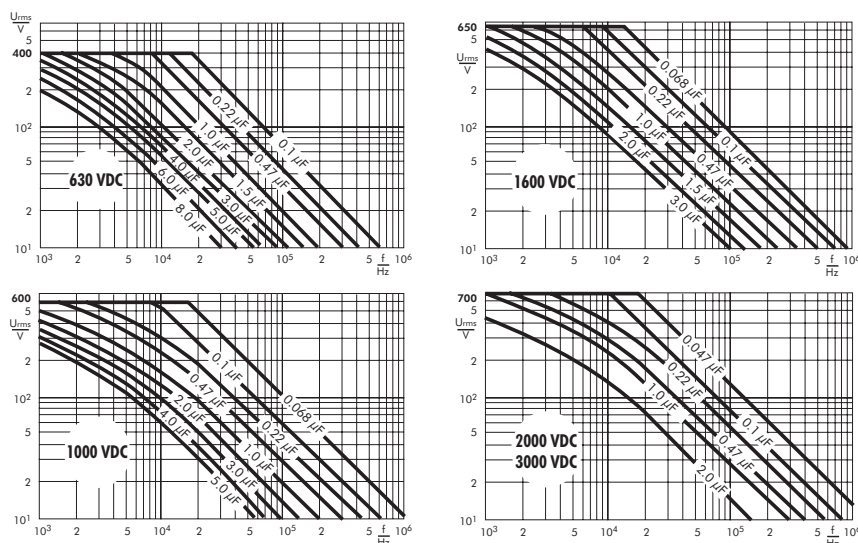
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Pin length: 6-2 = SD

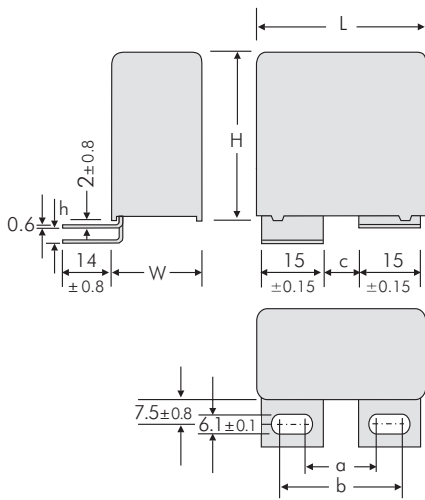
none = 00 (for plate versions)

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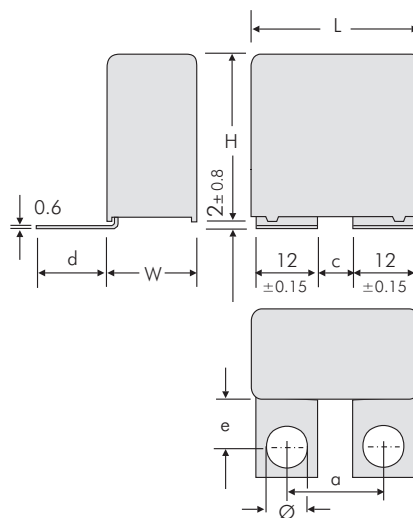
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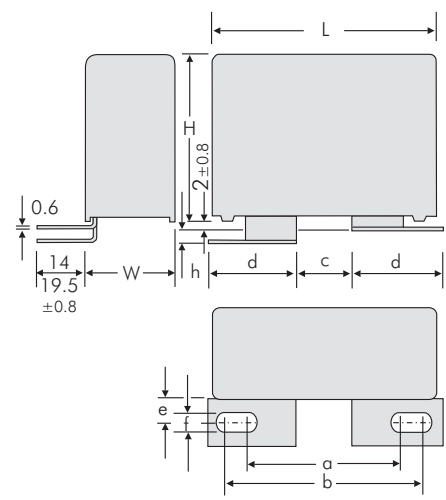
## Versions of WIMA Snubber- and DC-LINK MKP 4- Capacitors



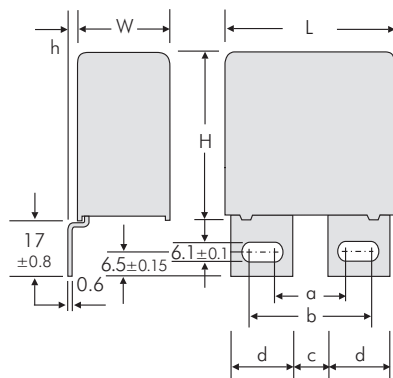
Version	L	a ±0.5	b ±0.5	c ±0.5	h ±0.8
<b>A1</b>	41.5	17.5	28	7.5	0
<b>A1.5</b>	41.5	17.5	28	7.5	3.5
<b>A1</b>	56	20	30	10	0
<b>A1.1.1</b>	56	28	38	18	0
<b>A1.4.1</b>	56	28	38	18	3.5



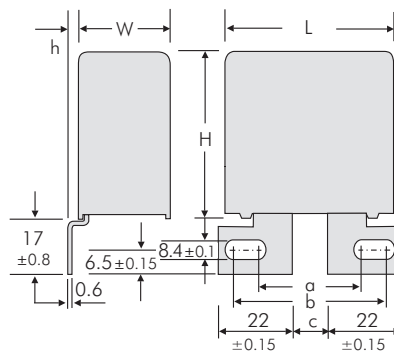
Version	L	a ±0.5	c ±0.5	d ±0.8	e ±0.8	Ø ±0.1
<b>A1.6</b>	41.5	18	6	21.5	16	7
<b>A1.6.1</b>	41.5	22	10	18.5	13	7
<b>A1.6.2</b>	41.5	23	10	18.5	13	8
<b>A1.6</b>	56	29	17	21.5	16	7



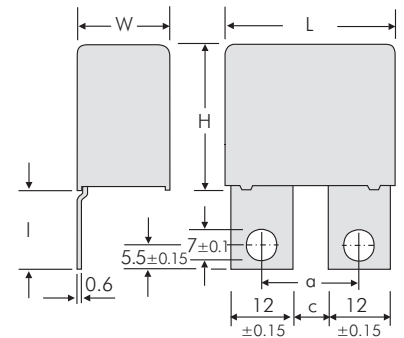
Version	L	a ±0.5	b ±0.5	c ±0.5	d ±0.15	e ±0.8	f ±0.1	h ±0.8
<b>A2</b>	41.5	36	46.5	14.5	22	7.5	8.4	0
<b>A2.4.1</b>	41.5	33.5	39.5	7.5	22	13	8.4	0
<b>A2.6.1</b>	41.5	31.5	41.5	14	22	13	6.1	3.5
<b>A2.6.2</b>	41.5	31.5	41.5	14	22	13	6.1	0
<b>A2.8</b>	41.5	36	46.5	14.5	22	7.5	8.4	3.5
<b>A2.1</b>	56	39.5	45.5	13.5	22	7.5	8.4	0
<b>A2.1.2</b>	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
<b>A3</b>	41.5	17.5	27.5	7.5	15	0
<b>A3.5</b>	41.5	17.5	27.5	7.5	15	3
<b>A3.12</b>	41.5	17.5	30	7.5	16.5	0
<b>A3</b>	56	20	30	10	15	0
<b>A3.1</b>	56	28	38	18	15	0
<b>A3.5</b>	56	20	30	10	15	3
<b>A3.10</b>	56	28	38	18	15	3

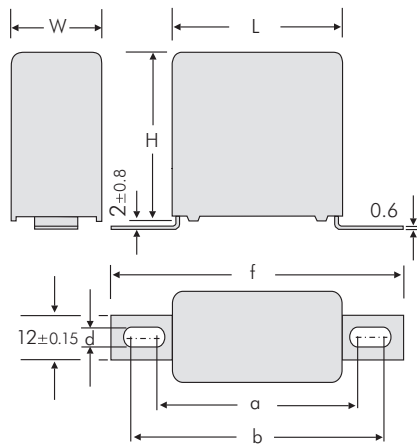


Version	L	a ±0.5	b ±0.5	c ±0.5	h ±0.8
<b>A3.9</b>	41.5	36	46.5	14.5	0
<b>A3.11</b>	41.5	36	46.5	14.5	3
<b>A3.2</b>	56	36	46.5	14.5	0
<b>A3.3</b>	56	36	46.5	14.5	3

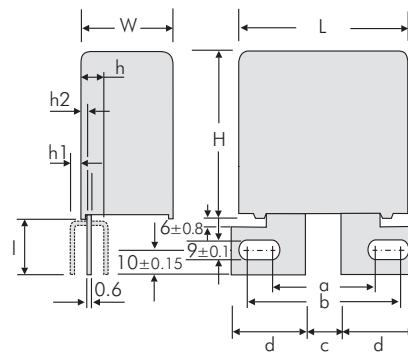


Version	L	a ±0.5	c ±0.5	l ±0.8
<b>A3.8</b>	41.5 W ≥ 17	18	6	23
<b>A3.8.1</b>	41.5 W ≥ 17	22	10	17.5
<b>A3.8.2</b>	41.5 W ≥ 17	22	10	23

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

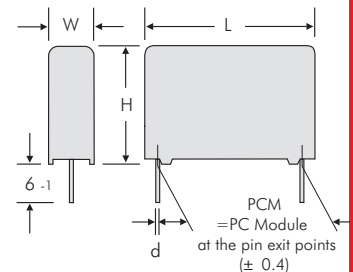


Version	L	a ±0.8	b ±0.8	f ±0.8	d ±0.1
<b>A4.9</b>	31.5 W ≥ 15	44	47	57	4.5
<b>A4.10</b>	31.5 W ≥ 15	43	59	69	6.1
<b>A4.2</b>	41.5 W ≥ 15	54	57	67	4.5
<b>A4</b>	41.5 W ≥ 15	53	69	79	6.1
<b>A4.7</b>	56	65	68	78	4.5
<b>A4</b>	56	64	80	90	6.1



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
<b>A6</b>	≥ 23	41.5	45.5	155	24.15	7	-	-	26
<b>A6.3</b>	≥ 19	35	39	18	19	-	5	3	25
<b>A6.4</b>	≥ 23	42.8	44.8	21	21.5	-	-	6.4	26

**2-pin  
version**

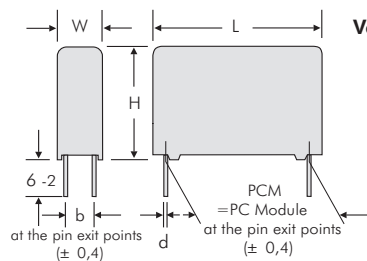


PCM	d
28.5*	0.8
38.5*	1.2
49.5*	1.2

\*apply only to Snubber

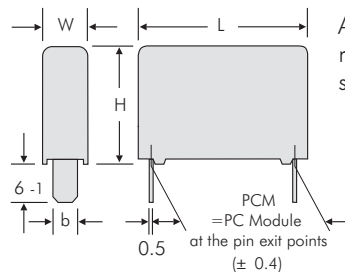
Dims. in mm

**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.

## 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.

## 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:  $T < 260^{\circ}\text{C}$

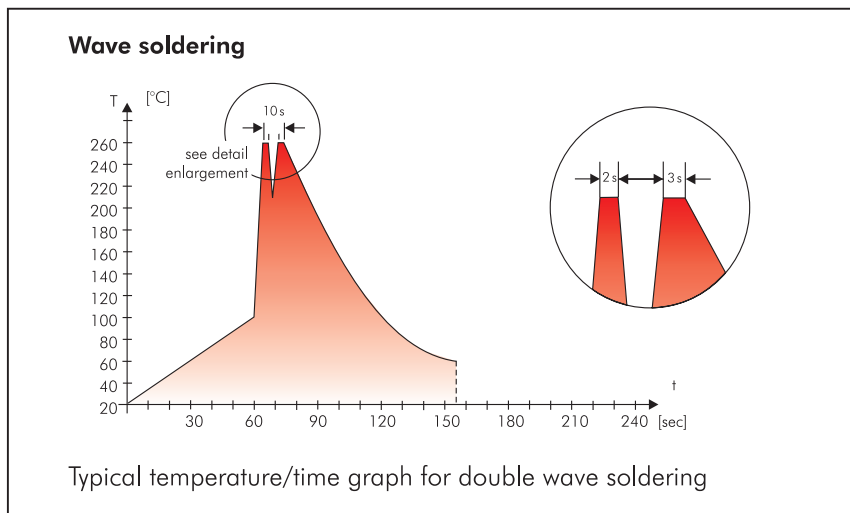
Dwell time:  $t < 5\text{ sec}$

#### 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 9001:2015 Certification

ISO 9001:2015 is an international basic standard of quality assurance systems for all branches of industry. The approval according to ISO 9001:2015 of our factories by the infaz (Institut für Auditierung und Zertifizierung) 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 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
- PCB
- CFC
- Hydrocarbon chloride
- Chromium 6+
- PBB/PBDE
- Arsenic
- Cadmium
- Mercury
- 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:

- adhesive tapes made of plastic
- metal clips

### RoHS Compliance

According to the RoHS Directive 2011/65/EU as amended from time to time 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

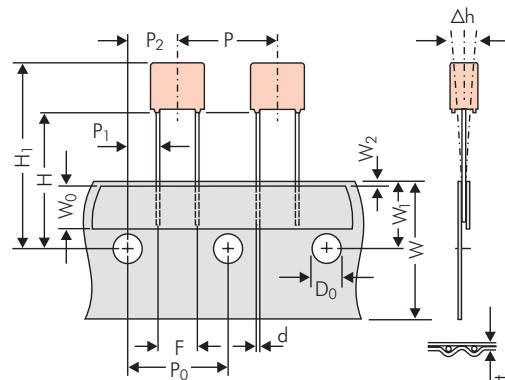


Diagram 1:  
PCM 2.5/5/7.5mm

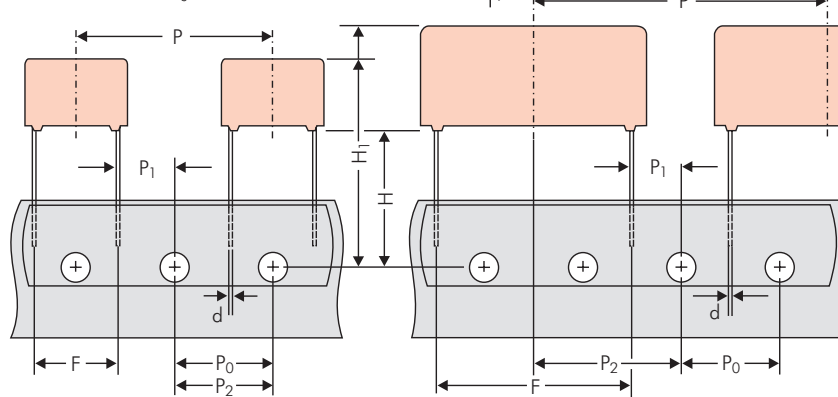


Diagram 2: PCM 10/15 mm

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 <sub>0</sub>	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 <sub>1</sub>	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 <sub>2</sub>	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 <sub>0</sub>	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 <sub>0</sub>	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 <sub>1</sub>	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 <sub>2</sub>	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 <sub>1</sub>	H+H <sub>component</sub> < H <sub>1</sub> 32.25 max.	H+H <sub>component</sub> < H <sub>1</sub> 32.25 max.	H+H <sub>component</sub> < H <sub>1</sub> 24.5 to 31.5	H+H <sub>component</sub> < H <sub>1</sub> 25.0 to 31.5	H+H <sub>component</sub> < H <sub>1</sub> 26.0 to 37.0	H+H <sub>component</sub> < H <sub>1</sub> 30.0 to 43.0	H+H <sub>component</sub> < H <sub>1</sub> 35.0 to 45.0
Pin spacing at upper edge of carrier tape	F	2.5 ±0.5	5.0 <sup>+0.8</sup> <sub>-0.2</sub>	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 <sup>+0.06</sup> <sub>-0.05</sub>	0.5 ±0.05 or 0.6 <sup>+0.06</sup> <sub>-0.05</sub>	0.8 <sup>+0.08</sup> <sub>-0.05</sub>	0.8 <sup>+0.08</sup> <sub>-0.05</sub>	0.8 <sup>+0.08</sup> <sub>-0.05</sub>
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	0.6 ±0.2	0.6 ±0.2	0.6 ±0.2	0.6 ±0.2	0.6 ±0.2	0.6 ±0.2	0.6 ±0.2
Package (see also page 150)		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	52 ±2 58 ±2 or 66 ±2	REEL Ø 500 max. Ø 25 ±1	54 ±2 60 ±2 or 68 ±2 } depending on PCM and component dimensions
Unit		see details page 151.						

Dims in mm.

\* Diameter of pins see General Data.

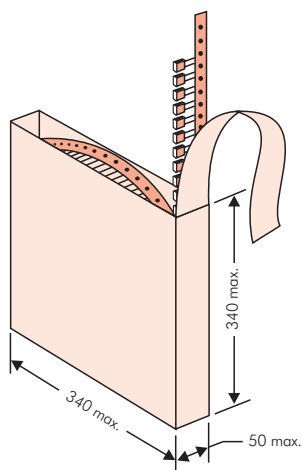
\* PCM 10 and PCM 15 can be crimped to PCM 7.5.

Position of components according to PCM 7.5 (sketch 11). P<sub>0</sub> = 12.7 or 15.0 is possible

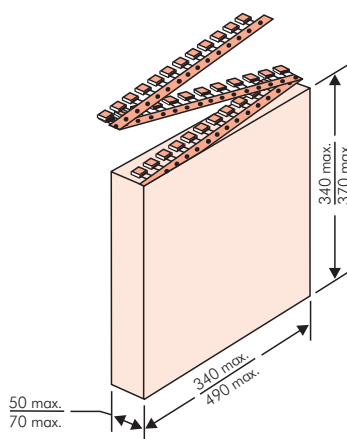
Please clarify customer-specific deviations with the manufacturer.

## Types of Tape Packaging of Capacitors for Automatic Radial Insertion

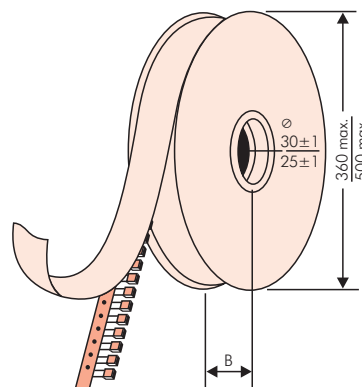
### ■ ROLL Packaging



### ■ 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.

<b>WIMA</b> Best Capacitors Made in Germany		Werk Unna	
Supplier-ID: 123456789	<b>RoHS</b> 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:	<b>MKS 2</b>	<b>QTY: 5.000</b>	<b>COO: DE</b>
	MKS 2 0.47 µF 63 VDC 3.5x8.5x7.2 RM5		
	Standard 10% Loss - Standard Drills 6-2		
<b>1000067326</b>	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		REEL				AMMO			
						H16.5	H18.5	ø 360		ø 500		340 x 340		490 x 370	
	W	H	L	Codes				H16.5	H18.5	H16.5	H18.5	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		–		640		–	
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	
15 mm	8	12	13	3I	2000		–	400		800		–		740	
	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	
22.5 mm	10	18	19	FG	500		–	300		650		–		590	
	11	14	18	4M	1000		–	300		600		–		540	
	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	ROLL		pcs. per packing unit				AMMO			
								REEL							
	W	H	L	Codes		H16.5	H18.5	ø 360	ø 500	340 x 340	490 x 370				
					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](http://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	
<b>Type description:</b>				<b>Rated voltage:</b>		<b>Capacitance:</b>				<b>Size:</b>		<b>Tolerance:</b>		<b>Packing:</b>			
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						<b>Version code:</b>		<b>Pin length (untaped)</b>			
DC-LINK MKP 4S = DCP5				440 VAC = 4V		1500 µF = 7150						Standard = 00		3.5 ±0.5 = C9			
DC-LINK MKP 5 = DCP5				500 VAC = 5V		...						Version A1 = 1A		6 -2 = SD			
DC-LINK MKP 6 = DCP6				...								Version A1.1.1 = 1B		16 ±1 = P1			
DC-LINK HC = DCHC												Version A2 = 2A		...			
DC-LINK HY = DCHY												...		<b>Pin length (taped)</b>			
														none = 00			

The data on this page is not complete and serves only to explain the part number system. Part number information is listed on the pages of the respective WIMA range.