

## Snubber FKP Capacitors for High Pulse Applications with Metal Foil Electrodes and Metallized Internal Series Connection. Capacitances from 0.01 $\mu\text{F}$ to 3.3 $\mu\text{F}$ . Rated Voltages from 630 VDC to 4000 VDC.

### Special Features

- High pulse duty
- 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
- AEC-Q200 qualified
- According to RoHS 2011/65/EU

### Typical Applications

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

- IGBT-applications

### Construction

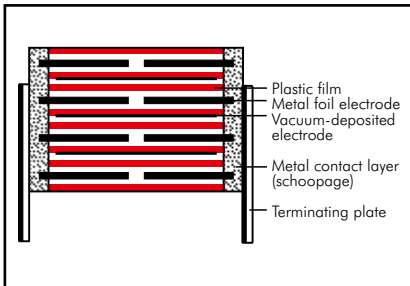
#### Dielectric:

Polypropylene (PP) film

#### Capacitor electrodes:

Aluminium foil and single-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:** 0.01  $\mu\text{F}$  to 3.3  $\mu\text{F}$

**Rated voltages:** 630 VDC, 1000 VDC, 1250 VDC, 1600 VDC, 2000 VDC, 3000 VDC, 4000 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  $+105^\circ\text{C}$

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

#### 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.

#### 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	$\leq 5 \times 10^{-4}$	$\leq 5 \times 10^{-4}$	$\leq 5 \times 10^{-4}$
10 kHz	$\leq 6 \times 10^{-4}$	$\leq 6 \times 10^{-4}$	-
100 kHz	$\leq 10 \times 10^{-4}$	-	-

#### Maximum pulse rise time:

Capacitance $\mu\text{F}$	max. pulse rise time V/ $\mu\text{sec}$ at $T_A < 40^\circ\text{C}$						
	630VDC	1000VDC	1250VDC	1600VDC	2000VDC	3000VDC	4000VDC
0.01 ... 0.022	-	11000	11000	11000	11000	11000	11000
0.033 ... 0.068	9000	9000	9000	9000	9000	9000	9000
0.1 ... 0.22	9000	9000	9000	9000	9000	9000	9000
0.33 ... 0.68	5000	5000	5000	5000	5000	5000	5000
1.0 ... 3.3	1600	2000	2000	2000	-	-	-

### 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.

### Packing

Packing units at the end of the catalogue.

Packing quantities may vary depending on the plate version.

## Continuation

### General Data

Capacitance	630 VDC/400 VAC*				1000 VDC/600 VAC*			
	W	H	L	Part number	W	H	L	Part number
0.022 $\mu$ F					11	22	41.5	SNFPO122207B_____
0.033 "					11	22	41.5	SNFPO123307B_____
0.047 "	11	22	41.5	SNFPJ024707B_____	11	22	41.5	SNFPO124707B_____
0.068 "	11	22	41.5	SNFPJ026807B_____	11	22	41.5	SNFPO126807B_____
0.1 $\mu$ F	11	22	41.5	SNFPJ031007B_____	11	22	41.5	SNFPO131007B_____
0.15 "	11	22	41.5	SNFPJ031507B_____	15	26	41.5	SNFPO131507D_____
0.22 "	13	24	41.5	SNFPJ032207C_____	17	29	41.5	SNFPO132207E_____
0.33 "	15	26	41.5	SNFPJ033307D_____	19	32	41.5	SNFPO133307F_____
0.47 "	17	29	41.5	SNFPJ034707E_____	20	39.5	41.5	SNFPO134707G_____
0.68 "	19	32	41.5	SNFPJ036807F_____	24	45.5	41.5	SNFPO136807H_____
					23	34	56	SNFPO136808E_____
1.0 $\mu$ F	20	39.5	41.5	SNFPJ041007G_____	31	46	41.5	SNFPO141007L_____
					27	37.5	56	SNFPO141008H_____
1.5 "	24	45.5	41.5	SNFPJ041507H_____	35	50	41.5	SNFPO141507J_____
					33	48	56	SNFPO141508J_____
2.2 "	31	46	41.5	SNFPJ042207I_____	37	54	56	SNFPO142208L_____
	27	37.5	56	SNFPJ042208H_____				
2.5 "	35	50	41.5	SNFPJ042507J_____				
	33	48	56	SNFPJ042508J_____				
3.0 "	37	54	56	SNFPJ043008L_____				
3.3 "	37	54	56	SNFPJ043308L_____				

Capacitance	1250 VDC/600 VAC*				1600 VDC/650 VAC*			
	W	H	L	Part number	W	H	L	Part number
0.01 $\mu$ F					11	22	41.5	SNFPT021007B_____
0.015 "					11	22	41.5	SNFPT021507B_____
0.022 "	11	22	41.5	SNFPR022207B_____	11	22	41.5	SNFPT022207B_____
0.033 "	11	22	41.5	SNFPR023307B_____	11	22	41.5	SNFPT023307B_____
0.047 "	11	22	41.5	SNFPR024707B_____	11	22	41.5	SNFPT024707B_____
0.068 "	11	22	41.5	SNFPR026807B_____	15	26	41.5	SNFPT026807D_____
0.1 $\mu$ F	11	22	41.5	SNFPR031007B_____	17	29	41.5	SNFPT031007E_____
0.15 "	15	26	41.5	SNFPR031507D_____	19	32	41.5	SNFPT031507F_____
0.22 "	17	29	41.5	SNFPR032207E_____	20	39.5	41.5	SNFPT032207G_____
0.33 "	19	32	41.5	SNFPR033307F_____	24	45.5	41.5	SNFPT033307H_____
0.47 "	20	39.5	41.5	SNFPR034707G_____	31	46	41.5	SNFPT034707I_____
					27	37.5	56	SNFPT034708H_____
0.68 "	24	45.5	41.5	SNFPR036807H_____	35	50	41.5	SNFPT036807J_____
	23	34	56	SNFPR036808E_____	27	37.5	56	SNFPT036808H_____
1.0 $\mu$ F	31	46	41.5	SNFPR041007I_____	33	48	56	SNFPT041008J_____
	27	37.5	56	SNFPR041008H_____				
1.5 "	33	48	56	SNFPR041508J_____	37	54	56	SNFPT041508L_____
2.2 "	37	54	56	SNFPR042208L_____				

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

■ New values and box sizes.

Dims. in mm.

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

Versions and dimensional drawings see page 124.

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Part number completion:

Version codes see page 126.

Tolerance: 20 % = M

10 % = K

5 % = J

Packing: bulk = S

Pin length: 6-2 = SD

none = 00 (for plate versions)

Continuation page 122

## Continuation

### General Data

Capacitance	2000 VDC/700 VAC*				3000 VDC/700 VAC*				4000 VDC/700 VAC*			
	W	H	L	Part number	W	H	L	Part number	W	H	L	Part number
0.01 $\mu\text{F}$	11	22	41.5	SNFPU021007B	11	22	41.5	SNFPW021007B	11	22	41.5	SNFPX021007B
0.015 "	11	22	41.5	SNFPU021507B	11	22	41.5	SNFPW021507B	11	22	41.5	SNFPX021507B
0.022 "	11	22	41.5	SNFPU022207B	11	22	41.5	SNFPW022207B	13	24	41.5	SNFPX022207C
0.033 "	13	24	41.5	SNFPU023307C	13	24	41.5	SNFPW023307C	15	26	41.5	SNFPX023307D
0.047 "	15	26	41.5	SNFPU024707D	15	26	41.5	SNFPW024707D	17	29	41.5	SNFPX024707E
0.068 "	17	29	41.5	SNFPU026807E	17	29	41.5	SNFPW026807E	19	32	41.5	SNFPX026807F
0.1 $\mu\text{F}$	17	29	41.5	SNFPU031007E	19	32	41.5	SNFPW031007F	20	39.5	41.5	SNFPX031007G
0.15 "	20	39.5	41.5	SNFPU031507G	20	39.5	41.5	SNFPW031507G	24	45.5	41.5	SNFPX031507H
0.22 "	24	45.5	41.5	SNFPU032207H	24	45.5	41.5	SNFPW032207H	31	46	41.5	SNFPX032207I
0.33 "	31	46	41.5	SNFPU033307I	31	46	41.5	SNFPW033307I	27	37.5	56	SNFPX032208H
	27	37.5	56	SNFPU033308H	27	37.5	56	SNFPW033308H	33	48	56	SNFPX033308J
0.47 "	31	46	41.5	SNFPU034707J	33	48	56	SNFPW034708J	37	54	56	SNFPX034708L
	27	37.5	56	SNFPU034708H								
0.68 "	33	48	56	SNFPU036808J								

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

New values and box sizes.

Dims. in mm.

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

Versions and dimensional drawings see page 124.

#### Part number completion:

Version codes see page 126.

Tolerance: 20 % = M

10 % = K

5 % = J

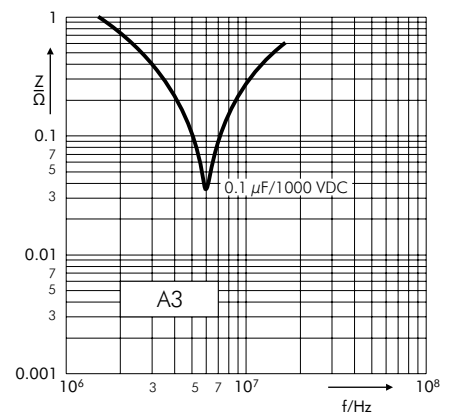
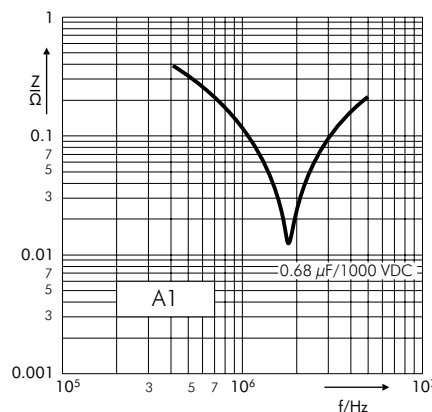
Packing: bulk = S

Pin length: 6-2 = SD

none = 00 (for plate versions)

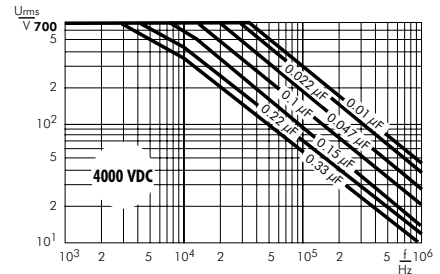
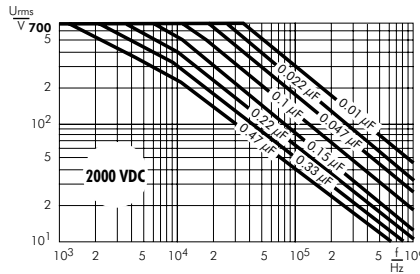
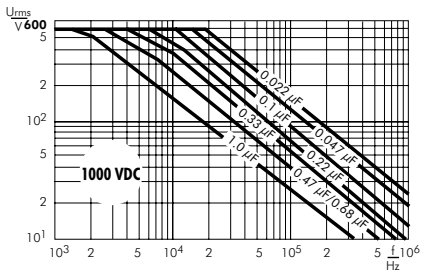
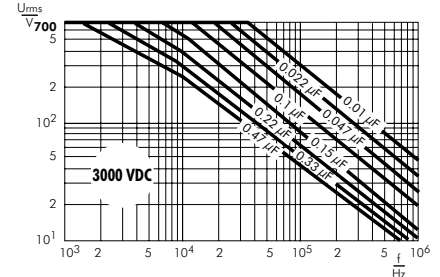
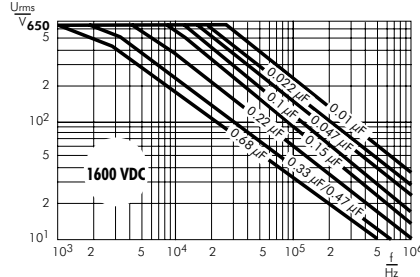
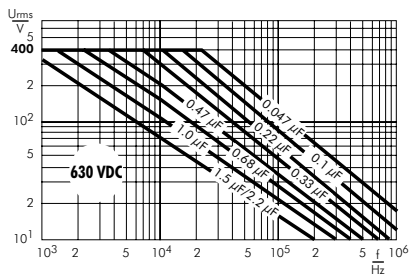
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Impedance change with frequency (general guide) (examples).

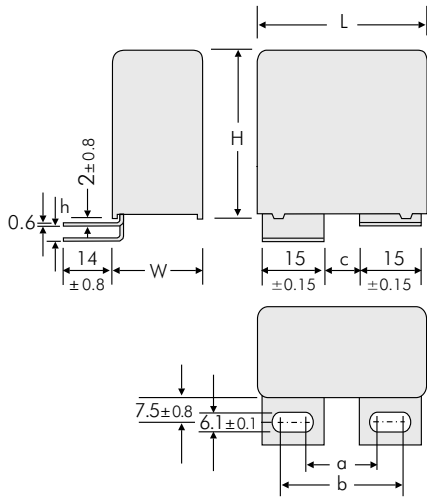


## Continuation

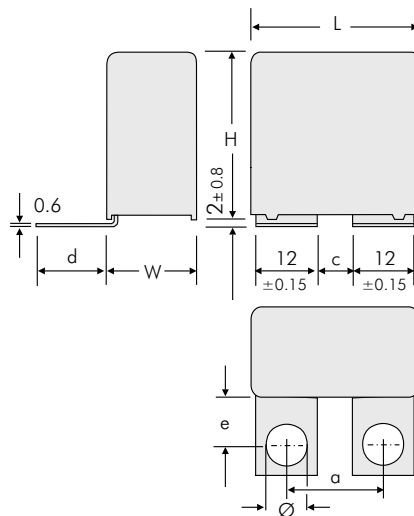
Permissible AC voltage in relation to frequency at 10° C internal temperature rise (general guide).



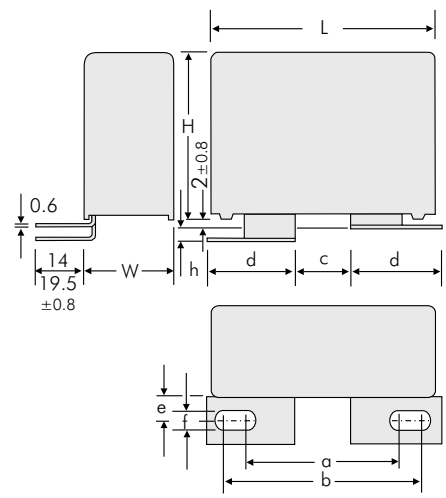
# Versions of WIMA Snubber-Capacitors



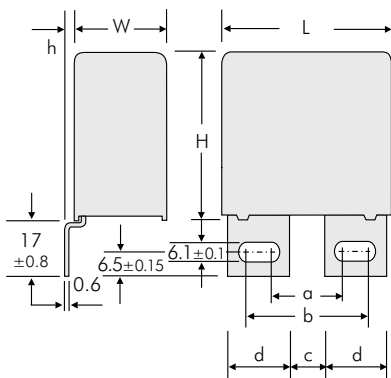
Version	L	a ±0.5	b ±0.5	c ±0.5	h ±0.8
<b>A1</b>	41.5	17.5	28	7.5	0
<b>A1.5</b>	41.5	17.5	28	7.5	3.5
<b>A1</b>	56	20	30	10	0
<b>A1.1.1</b>	56	28	38	18	0
<b>A1.4.1</b>	56	28	38	18	3.5



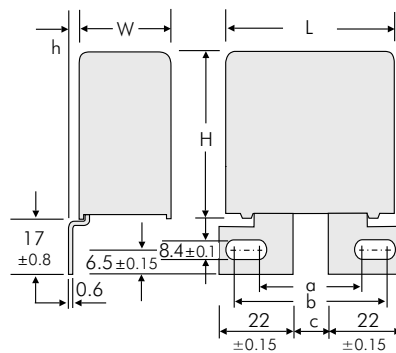
Version	L	a ±0.5	c ±0.5	d ±0.8	e ±0.8	Ø ±0.1
<b>A1.6</b>	41.5	18	6	21.5	16	7
<b>A1.6.1</b>	41.5	22	10	18.5	13	7
<b>A1.6.2</b>	41.5	23	10	18.5	13	8
<b>A1.6</b>	56	29	17	21.5	16	7



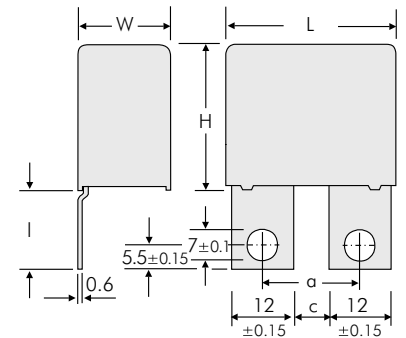
Version	L	a ±0.5	b ±0.5	c ±0.5	d ±0.15	e ±0.8	f ±0.1	h ±0.8
<b>A2</b>	41.5	36	46.5	14.5	22	7.5	8.4	0
<b>A2.4.1</b>	41.5	33.5	39.5	7.5	22	13	8.4	0
<b>A2.6.1</b>	41.5	31.5	41.5	14	22	13	6.1	3.5
<b>A2.6.2</b>	41.5	31.5	41.5	14	22	13	6.1	0
<b>A2.8</b>	41.5	36	46.5	14.5	22	7.5	8.4	3.5
<b>A2.1</b>	56	39.5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

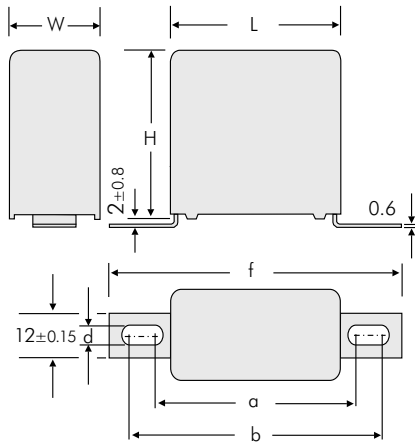


Version	L	a ±0.5	b ±0.5	c ±0.5	h ±0.8
<b>A3.9</b>	41.5	36	46.5	14.5	0
<b>A3.11</b>	41.5	36	46.5	14.5	3
<b>A3.2</b>	56	36	46.5	14.5	0
<b>A3.3</b>	56	36	46.5	14.5	3

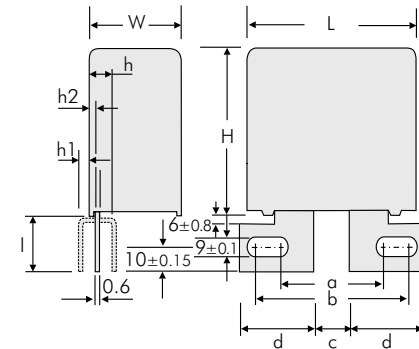


Version	L	a ±0.5	c ±0.5	l ±0.8
<b>A3.8</b>	41.5W ≥ 17	18	6	23
<b>A3.8.1</b>	41.5W ≥ 17	22	10	17.5
<b>A3.8.2</b>	41.5W ≥ 17	22	10	23

# Versions of WIMA Snubber-Capacitors

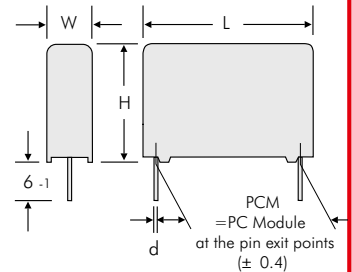


Version	L	a ±0.8	b ±0.8	f ±0.8	d ±0.1
<b>A4.9</b>	31.5 W ≥ 15	44	47	57	4.5
<b>A4.10</b>	31.5 W ≥ 15	43	59	69	6.1
<b>A4.2</b>	41.5 W ≥ 15	54	57	67	4.5
<b>A4</b>	41.5 W ≥ 15	53	69	79	6.1
<b>A4.7</b>	56	65	68	78	4.5
<b>A4</b>	56	64	80	90	6.1



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	15.5	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

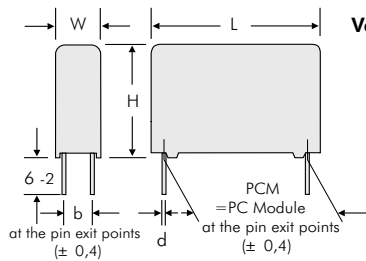
2-pin version



PCM	d
28.5	0.8
38.5	1.2
49.5	1.2

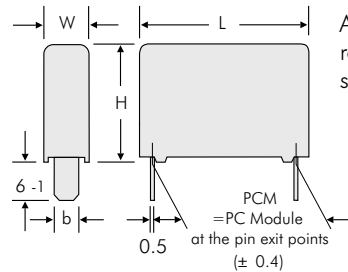
Dims. in mm

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-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	<b>6B</b>																																										
13 x 24 x 31.5	<b>6D</b>																																												
15 x 26 x 31.5	<b>6F</b>																																												
17 x 29 x 31.5	<b>6G</b>																																												
17 x 34.5 x 31.5	<b>6I</b>																																												
11 x 22 x 41.5	<b>7B</b>																																												
13 x 24 x 41.5	<b>7C</b>																																												
15 x 26 x 41.5	<b>7D</b>																																												
17 x 29 x 41.5	<b>7E</b>																																												
19 x 32 x 41.5	<b>7F</b>																																												
20 x 39.5 x 41.5	<b>7G</b>																																												
24 x 45.5 x 41.5	<b>7H</b>																																												
31 x 46 x 41.5	<b>7I</b>																																												
35 x 50 x 41.5	<b>7J</b>																																												
40 x 55 x 41.5	<b>7K</b>																																												
19 x 31 x 56	<b>8D</b>																																												
23 x 34 x 56	<b>8E</b>																																												
27 x 37.5 x 56	<b>8H</b>																																												
33 x 48 x 56	<b>8J</b>																																												
37 x 54 x 56	<b>8L</b>																																												

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

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

### Single wave soldering

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

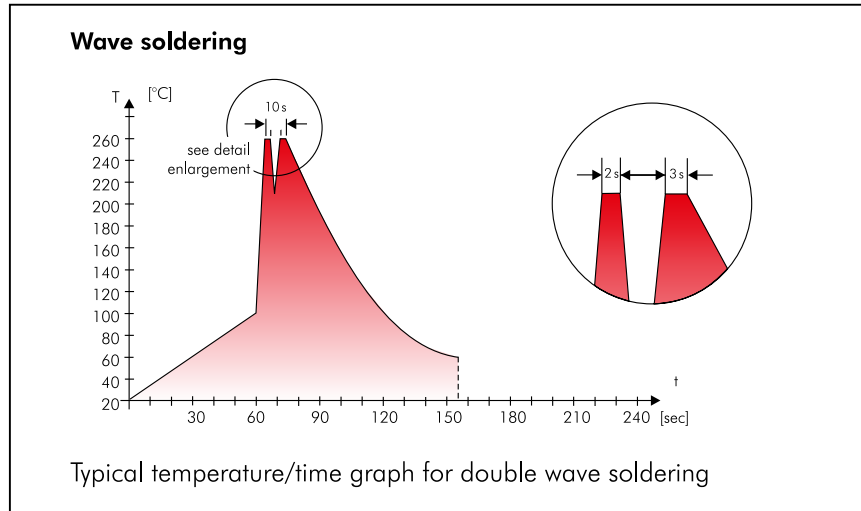
Dwell time:  $t < 5 \text{ sec}$

### Double wave soldering

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

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

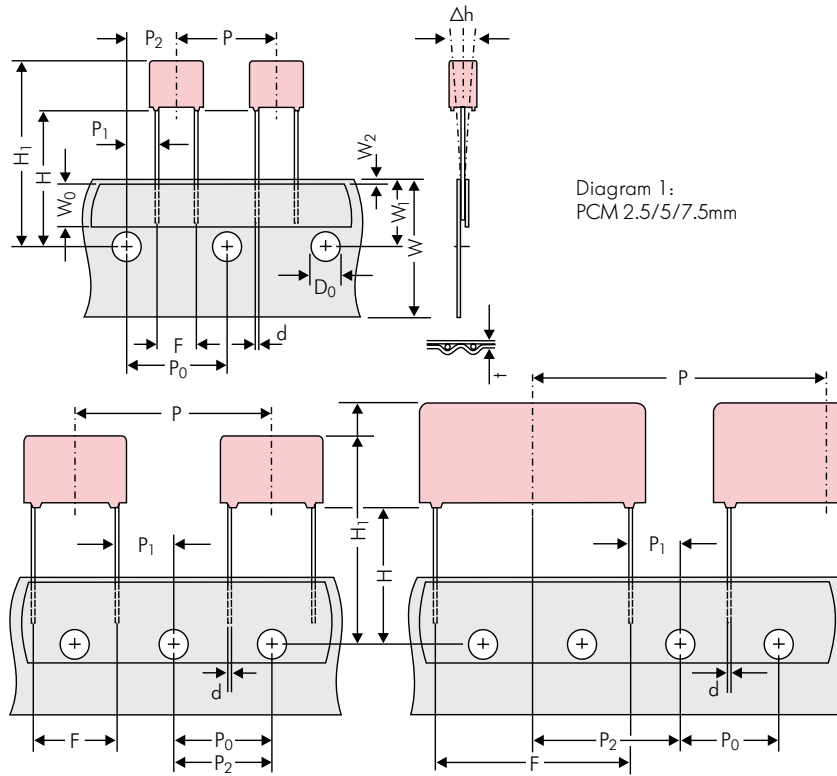


Diagram 1:  
PCM 2.5/5/7.5mm

Diagram 2: PCM 10/15 mm

Diagram 3: PCM 22.5 and 27.5\*mm

\*PCM 27.5 tapping possible with two feed holes between components

Designation	Symbol	Dimensions for Radial Taping							
		PCM 2.5 tapping	PCM 5 tapping	PCM 7.5 tapping	PCM 10 tapping*	PCM 15 tapping*	PCM 22.5 tapping	PCM 27.5 tapping	
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 162)	ROLL/AMMO				AMMO				
	REEL	φ 360 max. φ 30 ±1	B 52 ±2 58 ±2 } depending on comp. dimensions	REEL φ 360 max. φ 30 ±1				B 52 ±2 58 ±2 or 66 ±2 } depending on PCM and component dimensions	REEL φ 500 max. φ 25 ±1
Unit	see details page 163.								

Dims in mm.

\* Diameter of pins see General Data.

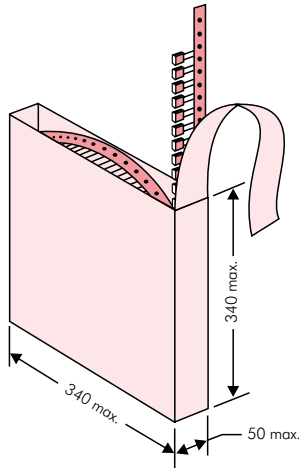
\* PCM 10 and PCM 15 can be crimped to PCM 7.5.

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

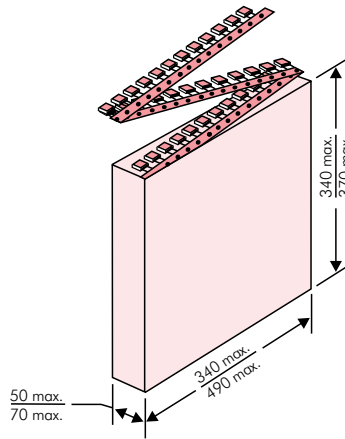
Please clarify customer-specific deviations with the manufacturer.

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

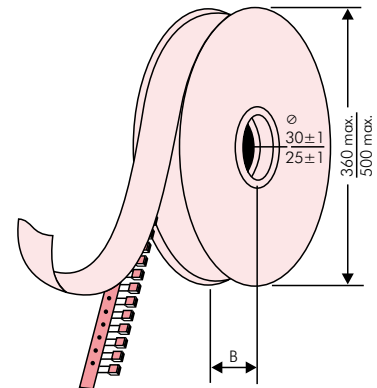
### ■ ROLL Packaging



### ■ AMMO Packaging



### ■ REEL Packaging



## BAR CODE (Labelling)

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

- WIMA supplier number
- Date code
- Customer's P/O number
- P/O line
- Customer's part number
- WIMA part number
- Quantity
- WIMA confirmation number
- Country of origin
- Customer name
- Handling unit number
- Week of delivery.

In addition part description of

- article
- capacitance value
- rated voltage
- dimensions
- technical note
- capacitance tolerance
- packing
- connecting information

BARCODE PDF417  
BARCODE 2D Datamatrix

<b>WIMA</b> Best Capacitors Made in Germany	
Werk Aurich	
Supplier-ID: LIEF.NR.	Date Code: 20210419
Purchase Order No. (P/O): Bestellung xyz	P/O line: 100
Customer Part No.: KUNDENTEILENUMMER	
WIMA Part No.: MKP1F041006B00KSSD	Quantity: 459
WIMA Confirmation No.: 0001105072000100	
Customer No.: 0000100002	RoHS 2011/65/EU
Gross Weight [g]: 4557	COO: DE
WIMA - MKP 10      WIMA Part No.: MKP1F041006B00KSSD	
MKP 10 1.0 µF 250 VDC 11x21x31.5 RM27.5	
Standard 10%    Lose - Standard    Drähte 6-2	
Vorlage Debitor Inland	
	0001105072000100
1002021443	QTY: 459    Week 19/2021

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



PCM	Size				bulk	pcs. per packing unit								
						ROLL		REEL				AMMO		
	W	H	L	Codes		S	H16.5	H18.5	ø 360	ø 500	340 x 340	490 x 370		
					N	O	F	I	H	J	A	C	B	D
<b>2.5 mm</b>	2.5	7	4.6	<b>0B</b>	5000		2200		2500			2800		
	3	7.5	4.6	<b>0C</b>	5000		2000		2300			2300		
	3.8	8.5	4.6	<b>0D</b>	5000		1500		1800			1800		
	4.6	9	4.6	<b>0E</b>	5000		1200		1500			1500		
	5.5	10	4.6	<b>0F</b>	5000		900		1200			1200		
<b>5 mm</b>	2.5	6.5	7.2	<b>1A</b>	5000		2200		2500			2800		
	3	7.5	7.2	<b>1B</b>	5000		2000		2300			2300		
	3.5	8.5	7.2	<b>1C</b>	5000		1600		2000			2000		
	4.5	6	7.2	<b>1D</b>	6000		1300		1500			1500		
	4.5	9.5	7.2	<b>1E</b>	4000		1300		1500			1500		
	5	10	7.2	<b>1F</b>	3500		1100		1400			1400		
	5.5	7	7.2	<b>1G</b>	4000		1000		1200			1200		
	5.5	11.5	7.2	<b>1H</b>	2500		1000		1200			1200		
	6.5	8	7.2	<b>1I</b>	2500		800		1000			1000		
	7.2	8.5	7.2	<b>1J</b>	2500		700		1000			1000		
	7.2	13	7.2	<b>1K</b>	2000		700		950			1000		
	8.5	10	7.2	<b>1L</b>	2000		600		800			800		
8.5	14	7.2	<b>1M</b>	1500		600		800			800			
11	16	7.2	<b>1N</b>	1000		500		600			640			
<b>7.5 mm</b>	2.5	7	10	<b>2A</b>	5000			2500	4400		2500			
	3	8.5	10	<b>2B</b>	5000			2200	4300		2300		4150	
	4	9	10	<b>2C</b>	4000			1700	3200		1700		3100	
	4.5	9.5	10.3	<b>2D</b>	3500			1500	2900		1400		2700	
	5	10.5	10.3	<b>2E</b>	3000			1300	2500		1300			
	5.7	12.5	10.3	<b>2F</b>	2000			1000	2200		1100			
	7.2	12.5	10.3	<b>2G</b>	1500			900	1800		1000			
<b>10 mm</b>	3	9	13	<b>3A</b>	3000			1100	2200				1900	
	4	8.5	13.5	<b>3A</b>	3000			900	1600				1450	
	4	9	13	<b>3C</b>	3000			900	1600				1450	
	4	9.5	13	<b>3D</b>	3000			900	1600				1400	
	5	10	13.5	<b>3B</b>	2000			700	1300				1200	
	5	11	13	<b>3F</b>	3000			700	1300				1200	
	6	12	13	<b>3G</b>	2400			550	1100				1000	
	6	12.5	13	<b>3H</b>	2400			550	1100				1000	
8	12	13	<b>3I</b>	2000			400	800				740		
<b>15 mm</b>	5	11	18	<b>4B</b>	2400			600	1200				1150	
	5	13	19	<b>4B</b>	1000			600	1200				1200	
	6	12.5	18	<b>4C</b>	2000			500	1000				1000	
	6	14	19	<b>4D</b>	1000			500	1000				1000	
	7	14	18	<b>4D</b>	1600			450	900				850	
	7	15	19	<b>4E</b>	1000			450	900				850	
	8	15	18	<b>4F</b>	1200			400	800				740	
	8	17	19	<b>4F</b>	500			400	800				740	
	9	14	18	<b>4H</b>	1200			350	700				650	
	9	16	18	<b>4J</b>	900			350	700				650	
10	18	19	<b>4G</b>	500			300	650				590		
11	14	18	<b>4M</b>	1000			300	600				540		
<b>22.5 mm</b>	5	14	26.5	<b>5A</b>	1200				800				770	
	6	15	26.5	<b>5B</b>	1000				700				640	
	7	16.5	26.5	<b>5D</b>	760				600				550	
	8	20	28	<b>5H</b>	500				500				480	
	8.5	18.5	26.5	<b>5F</b>	500				480				450	
	10	22	28	<b>5I</b>	570*				420				380	
	10.5	19	26.5	<b>5G</b>	594*				400				360	
	10.5	20.5	26.5	<b>5H</b>	594*				400				360	
	11	21	26.5	<b>5I</b>	561*				380				350	
	12	24	28	<b>5J</b>	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					
	W	H	L	Codes		S	N	O	ø 360		ø 500		340 x 340		490 x 370		
								H16.5	H18.5	H16.5	H18.5	H16.5	H18.5	H16.5	H18.5	H16.5	H18.5
								F	I	H	J	A	C	B	D		
<b>27.5 mm</b>	9	19	31.5	<b>6A</b>	567*	-	-	-	-	460/340*	-	-	-	-	-	-	-
	11	21	31.5	<b>6B</b>	459*	-	-	-	-	380/280*	-	-	-	-	-	-	-
	13	24	31.5	<b>6D</b>	378*	-	-	-	-	300	-	-	-	-	-	-	-
	13	25	33	<b>FK</b>	405*	-	-	-	-	-	-	-	-	-	-	-	-
	15	26	31.5	<b>6F</b>	324*	-	-	-	-	270	-	-	-	-	-	-	-
	15	26	33	<b>FL</b>	324*	-	-	-	-	-	-	-	-	-	-	-	-
	17	29	31.5	<b>6G</b>	198*	-	-	-	-	-	-	-	-	-	-	-	-
	17	34.5	31.5	<b>6I</b>	198*	-	-	-	-	-	-	-	-	-	-	-	-
	20	32	33	<b>FM</b>	162*	-	-	-	-	-	-	-	-	-	-	-	-
20	39.5	31.5	<b>6J</b>	162*	-	-	-	-	-	-	-	-	-	-	-	-	
<b>37.5 mm</b>	9	19	41.5	<b>7A</b>	441*	-	-	-	-	-	-	-	-	-	-	-	
	11	22	41.5	<b>7B</b>	357*	-	-	-	-	-	-	-	-	-	-	-	
	13	24	41.5	<b>7C</b>	294*	-	-	-	-	-	-	-	-	-	-	-	
	15	26	41.5	<b>7D</b>	252*	-	-	-	-	-	-	-	-	-	-	-	
	17	29	41.5	<b>7E</b>	154*	-	-	-	-	-	-	-	-	-	-	-	
	19	32	41.5	<b>7F</b>	140*	-	-	-	-	-	-	-	-	-	-	-	
	20	39.5	41.5	<b>7G</b>	126*	-	-	-	-	-	-	-	-	-	-	-	
	24	45.5	41.5	<b>7H</b>	112*	-	-	-	-	-	-	-	-	-	-	-	
	28	38	41.5	<b>7L</b>	84*	-	-	-	-	-	-	-	-	-	-	-	
	31	46	41.5	<b>7I</b>	84*	-	-	-	-	-	-	-	-	-	-	-	
	35	50	41.5	<b>7J</b>	35*	-	-	-	-	-	-	-	-	-	-	-	
40	55	41.5	<b>7K</b>	28*	-	-	-	-	-	-	-	-	-	-	-		
<b>48.5 mm</b>	19	31	56	<b>8D</b>	120*	-	-	-	-	-	-	-	-	-	-		
	23	34	56	<b>8E</b>	80*	-	-	-	-	-	-	-	-	-	-		
	27	37.5	56	<b>8H</b>	84*	-	-	-	-	-	-	-	-	-	-		
	33	48	56	<b>8J</b>	25*	-	-	-	-	-	-	-	-	-	-		
	37	54	56	<b>8L</b>	25*	-	-	-	-	-	-	-	-	-	-		
<b>52.5 mm</b>	25	45	57	<b>9D</b>	70*	-	-	-	-	-	-	-	-	-			
	30	45	57	<b>9E</b>	60*	-	-	-	-	-	-	-	-	-			
	35	50	57	<b>9F</b>	25*	-	-	-	-	-	-	-	-	-			
	45	55	57	<b>9H</b>	20*	-	-	-	-	-	-	-	-	-			
	45	65	57	<b>9J</b>	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
<b>M</b>	<b>K</b>	<b>S</b>	<b>2</b>	<b>C</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>A</b>	<b>0</b>	<b>0</b>	<b>M</b>	<b>S</b>	<b>S</b>	<b>D</b>
MKS 2				63 VDC		0.01 µF			2.5x6.5x7.2		-		20%	bulk	6 -2		

<p><b>Type description:</b></p> <p>SMD-PET = SMDT              SMD-PEN = SMDN              SMD-PPS = SMDI              FKP 02 = FKPO              MKS 02 = MKS0              FKS 2 = FKS2              FKP 2 = FKP2              FKS 3 = FKS3              FKP 3 = FKP 3              MKS 2 = MKS2              MKP 2 = MKP2              MKS 4 = MKS4              MKP 4 = MKP4              MKP 10 = MKP1              FKP 4 = FKP4              FKP 1 = FKP1              MKP-X2 = MKX2              MKP-X1 R = MKX1              MKP-Y2 = MKY2              MP 3-X2 = MPX2              MP 3-X1 = MPX1              MP 3-Y2 = MPY2              MP 3R-Y2 = MPRY              MKP 4F = MKPF              Snubber MKP = SNMP              Snubber FKP = SNFP              GTO MKP = GTOM              DC-LINK MKP 4 = DCP4              DC-LINK MKP 6 = DCP6              DC-LINK HC = DCHC</p>	<p><b>Rated voltage:</b></p> <p>50 VDC = B0              63 VDC = C0              100 VDC = D0              250 VDC = F0              400 VDC = G0              450 VDC = H0              520 VDC = H2              600 VDC = I0              630 VDC = J0              700 VDC = K0              800 VDC = L0              850 VDC = M0              900 VDC = N0              1000 VDC = O1              1100 VDC = P0              1200 VDC = Q0              1250 VDC = R0              1500 VDC = S0              1600 VDC = T0              1700 VDC = TA              2000 VDC = U0              2500 VDC = V0              3000 VDC = W0              4000 VDC = X0              6000 VDC = Y0              250 VAC = 0W              275 VAC = 1W              300 VAC = 2W              305 VAC = AW              350 VAC = BW              440 VAC = 4W              500 VAC = 5W              ...</p>	<p><b>Capacitance:</b></p> <p>22 pF = 0022              47 pF = 0047              100 pF = 0100              150 pF = 0150              220 pF = 0220              330 pF = 0330              470 pF = 0470              680 pF = 0680              1000 pF = 1100              1500 pF = 1150              2200 pF = 1220              3300 pF = 1330              4700 pF = 1470              6800 pF = 1680              0.01 µF = 2100              0.022 µF = 2220              0.047 µF = 2470              0.1 µF = 3100              0.22 µF = 3220              0.47 µF = 3470              1 µF = 4100              2.2 µF = 4220              4.7 µF = 4470              10 µF = 5100              22 µF = 5220              47 µF = 5470              100 µF = 6100              220 µF = 6220              1000 µF = 7100              1500 µF = 7150              ...</p>	<p><b>Size:</b></p> <p>4.8x3.3x3 Size 1812 = KA              4.8x3.3x4 Size 1812 = KB              5.7x5.1x3.5 Size 2220 = QA              5.7x5.1x4.5 Size 2220 = QB              7.2x6.1x3 Size 2824 = TA              7.2x6.1x5 Size 2824 = TB              10.2x7.6x5 Size 4030 = VA              12.7x10.2x6 Size 5040 = XA              15.3x13.7x7 Size 6054 = YA              2.5x7x4.6 PCM 2.5 = 0B              3x7.5x4.6 PCM 2.5 = 0C              2.5x6.5x7.2 PCM 5 = 1A              3x7.5x7.2 PCM 5 = 1B              2.5x7x10 PCM 7.5 = 2A              3x8.5x10 PCM 7.5 = 2B              3x9x13 PCM 10 = 3A              4x9x13 PCM 10 = 3C              5x11x18 PCM 15 = 4B              6x12.5x18 PCM 15 = 4C              5x14x26.5 PCM 22.5 = 5A              6x15x26.5 PCM 22.5 = 5B              9x19x31.5 PCM 27.5 = 6A              11x21x31.5 PCM 27.5 = 6B              9x19x41.5 PCM 37.5 = 7A              11x22x41.5 PCM 37.5 = 7B              19x31x56 PCM 48.5 = 8D              25x45x57 PCM 52.5 = 9D              ...</p> <p><b>Version code:</b></p> <p>Standard = 00              Version A1 = 1A              Version A1.1.1 = 1B              Version A2 = 2A              ...</p>	<p><b>Tolerance:</b></p> <p>±20% = M              ±10% = K              ±5% = J              ±2.5% = H              ±1% = E              ...</p> <p><b>Packing:</b></p> <p>AMMO H16.5 340x340 = A              AMMO H16.5 490x370 = B              AMMO H18.5 340x340 = C              AMMO H18.5 490x370 = D              REEL H16.5 360 = F              REEL H16.5 500 = H              REEL H18.5 360 = I              REEL H18.5 500 = J              ROLL H16.5 = N              ROLL H18.5 = O              BLISTER W12 180 = P              BLISTER W12 330 = Q              BLISTER W16 330 = R              BLISTER W24 330 = T              Bulk/TPS Standard = S              ...</p> <p><b>Pin length (untaped)</b></p> <p>3.5 ±0.5 = C9              6 -2 = SD              16 ±1 = P1              ...</p> <p><b>Pin length (taped)</b></p> <p>none = 00</p>
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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.