

Snubber FKP Capacitors for High Pulse Applications with Metal Foil Electrodes, Schoopage Contacts and Self-Healing Internal Series Connection

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
- According to RoHS 2011/65/EU

Typical Applications

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

- IGBT-applications

Construction

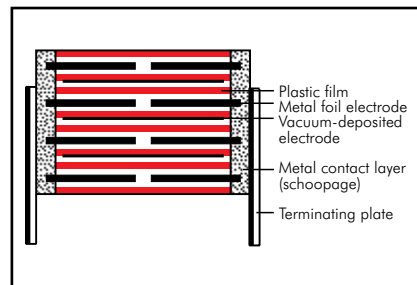
Dielectric:

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.

Epoxy resin seal: Red

Electrical Data

Capacitance range: 0.01 μ F to 2.2 μ F

Rated voltages:

630 VDC, 1000 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°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: $5 \times 10^5 \text{ M}\Omega$)

$C > 0.33 \mu\text{F}$: $\geq 30000 \text{ sec (M}\Omega \times \mu\text{F)}$

(mean value: 100 000 sec)

Measuring voltage: 100 V/1 min.

Test voltage: 2 sec

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

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	$\leq 3 \times 10^{-4}$	$\leq 3 \times 10^{-4}$	$\leq 3 \times 10^{-4}$
10 kHz	$\leq 4 \times 10^{-4}$	$\leq 6 \times 10^{-4}$	–
100 kHz	$\leq 15 \times 10^{-4}$	–	–

Maximum pulse rise time:

Capacitance μF	max. pulse rise time V/ μsec at $T_A < 40^{\circ}\text{C}$					
	630 VDC	1000 VDC	1600 VDC	2000 VDC	3000 VDC	4000 VDC
0.01 ... 0.022	–	11000	11000	11000	11000	11000
0.033 ... 0.068	9000	9000	9000	9000	9000	9000
0.1 ... 0.22	9000	9000	9000	9000	9000	9000
0.33 ... 0.68	5000	5000	5000	5000	5000	5000
1.0 ... 2.2	1600	2000	–	–	–	–

for pulses equal to the rated voltage

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.

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.

General Data

Capacitance	1600 VDC/650 VAC*				2000 VDC/700 VAC*			
	W	H	L	Part number	W	H	L	Part number
0.01 μF	7	16.5	26.5	SNFPT021005D_____	10.5	20.5	26.5	SNFPU021005H_____
0.015 „	8.5	18.5	26.5	SNFPT021505F_____	11	21	26.5	SNFPU021505I_____
0.022 „	10.5	20.5	26.5	SNFPT022205H_____	11	21	31.5	SNFPU022206B_____
					11	22	41.5	SNFPU022207B_____
0.033 „	11	21	31.5	SNFPT023306B_____	13	24	41.5	SNFPU023307C_____
0.047 „	11	22	41.5	SNFPT024707B_____	15	26	41.5	SNFPU024707D_____
0.068 „	15	26	41.5	SNFPT026807D_____	17	29	41.5	SNFPU026807E_____
0.1 μF	17	29	41.5	SNFPT031007E_____	17	29	41.5	SNFPU031007E_____
0.15 „	19	32	41.5	SNFPT031507F_____	20	39.5	41.5	SNFPU031507G_____
0.22 „	20	39.5	41.5	SNFPT032207G_____	24	45.5	41.5	SNFPU032207H_____
0.33 „	24	45.5	41.5	SNFPT033307H_____	31	46	41.5	SNFPU033307I_____
					27	37.5	56	SNFPU033308H_____
0.47 „	31	46	41.5	SNFPT034707I_____	27	37.5	56	SNFPU034708H_____
	27	37.5	56	SNFPT034708H_____				
0.68 „	27	37.5	56	SNFPT036808H_____				

Rights reserved to amend design data without prior notification.

Continuation

General Data

Capacitance	3000 VDC/700 VAC*				4000 VDC/700 VAC*			
	W	H	L	Part number	W	H	L	Part number
0.01 μF	11	21	26.5	SNFPW021005I_____	11	21	31.5	SNFPX021006B_____
0.015 "	11	21	31.5	SNFPW021506B_____	11	22	41.5	SNFPX021507B_____
0.022 "	13	24	31.5	SNFPW022206D_____	13	24	41.5	SNFPX022207C_____
0.033 "	13	24	41.5	SNFPW023307C_____	15	26	41.5	SNFPX023307D_____
0.047 "	15	26	41.5	SNFPW024707D_____	17	29	41.5	SNFPX024707E_____
0.068 "	17	29	41.5	SNFPW026807E_____	19	32	41.5	SNFPX026807F_____
0.1 μF	19	32	41.5	SNFPW031007F_____	20	39.5	41.5	SNFPX031007G_____
0.15 "	20	39.5	41.5	SNFPW031507G_____	24	45.5	41.5	SNFPX031507H_____
0.22 "	24	45.5	41.5	SNFPW032207H_____	31	46	41.5	SNFPX032207I_____
					27	37.5	56	SNFPX032208H_____
0.33 "	31	46	41.5	SNFPW033307I_____	33	48	56	SNFPX033308J_____
	27	37.5	56	SNFPW033308H_____				
0.47 "	33	48	56	SNFPW034708J_____				

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

Dims. in mm.

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

Versions and dimensional drawings see page 105.

Part number completion:

Version codes see page 108.

Tolerance: 20 % = M

10 % = K

5 % = J

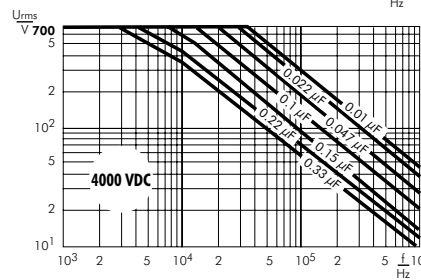
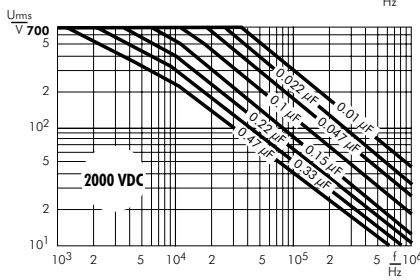
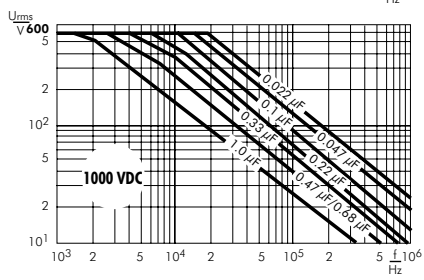
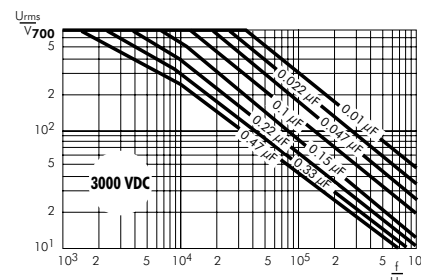
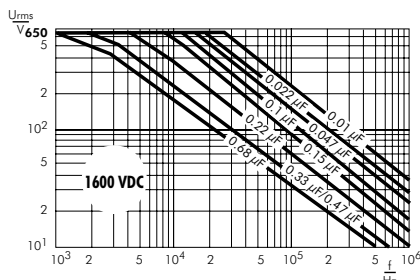
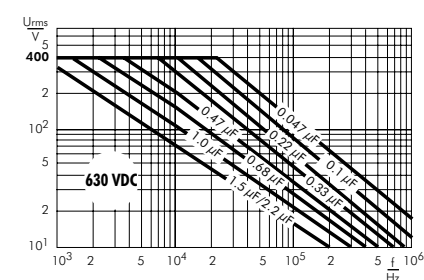
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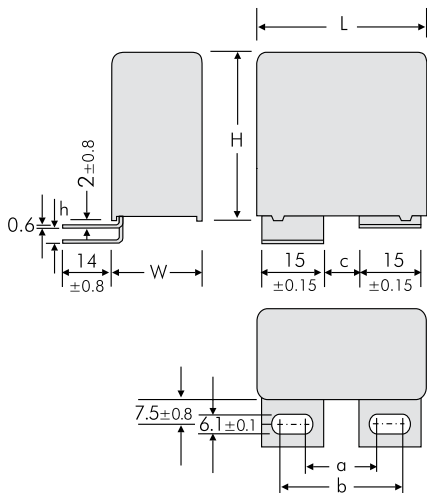
Pin length: 6-2 = SD

none = 00 (for plate versions)

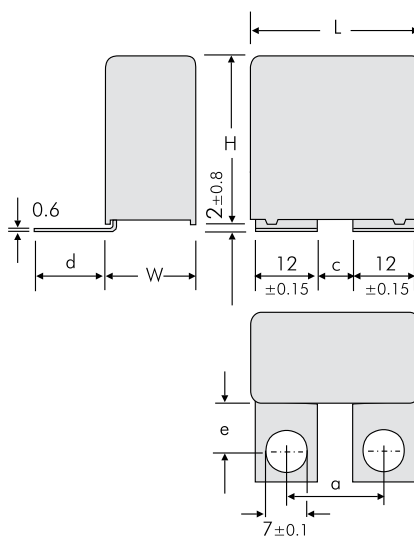
Rights reserved to amend design data without prior notification.

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

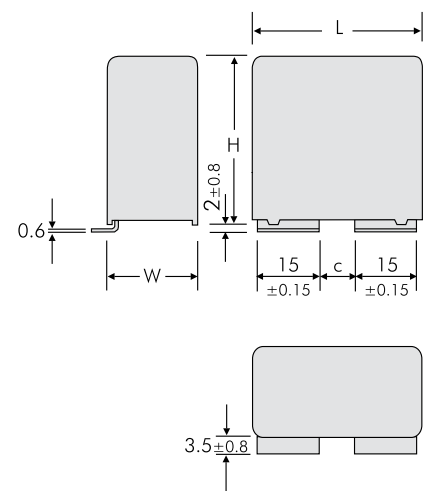




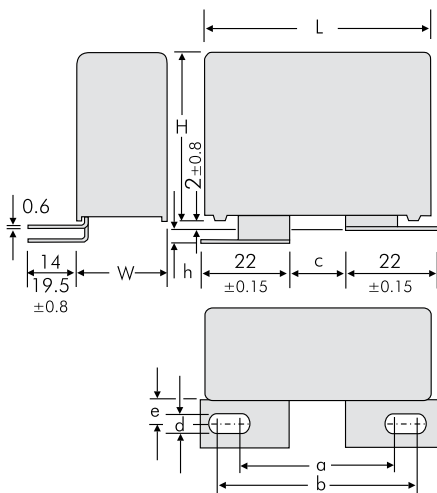
Version	L	a ±0.5	b ±0.5	c ±0.5	h ±0.8
A1	41.5	17.5	27.5	7.5	0
A1.5	41.5	17.5	27.5	7.5	3.5
A1	56	20	30	10	0
A1.1.1	56	28	38	18	0
A1.4	56	20	30	10	3.5
A1.4.1	56	28	38	18	3.5



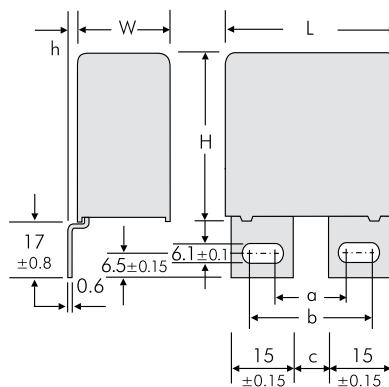
Version	L	a ±0.5	c ±0.5	d ±0.8	e ±0.8
A1.6	41.5	18	6	21.5	16
A1.6.1	41.5	22	10	18.5	13
A1.6	56	29	17	21.5	16



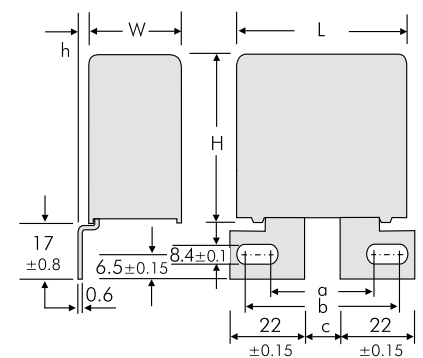
Version	L	c ±0.5
A1.7	41.5	7.5
A1.7	56	10
A1.7.1	56	18



Version	L	a ±0.5	b ±0.5	c ±0.5	d ±0.1	e ±0.8	h ±0.8
A2	41.5	40.5	46.5	14.5	8.4	7.5	0
A2.2	41.5	31	37	5	8.4	7.5	3.5
A2.3	41.5	31	37	5	8.4	13	3.5
A2.4	41.5	33.5	39.5	7.5	8.4	13	3.5
A2.4.1	41.5	33.5	39.5	7.5	8.4	13	0
A2.5	41.5	29.5	39.5	5.5	6.1	7.5	3.5
A2.6	41.5	31.5	41.5	7.5	6.1	13	3.5
A2.6.1	41.5	31.5	41.5	14	6.1	13	3.5
A2.6.2	41.5	31.5	41.5	14	6.1	13	0
A2.8	41.5	40.5	46.5	14.5	8.4	7.5	3.5
A2.1	56	39.5	45.5	13.5	8.4	7.5	0
A2.1.1	56	36	45.5	13.5	8.4	7.5	0
A2.7	56	39.5	45.5	13.5	8.4	7.5	3.5

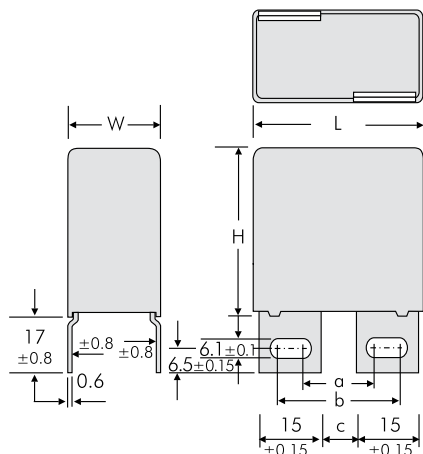


Version	L	a ±0.5	b ±0.5	c ±0.5	h ±0.8
A3	41.5	17.5	27.5	7.5	0
A3.5	41.5	17.5	27.5	7.5	3
A3	56	20	30	10	0
A3.1	56	28	38	18	0
A3.5	56	20	30	10	3
A3.10	56	28	38	18	3

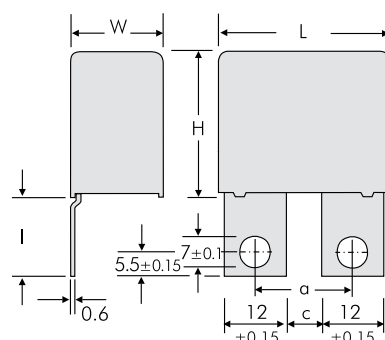


Version	L	a ±0.5	b ±0.5	c ±0.5	h ±0.8
A3.9	41.5	40.5	46.5	14.5	0
A3.11	41.5	40.5	46.5	14.5	3
A3.2	56	40.5	46.5	14.5	0
A3.3	56	40.5	46.5	14.5	3

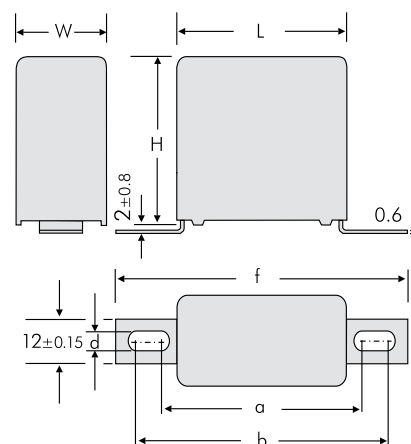
Versions of WIMA Snubber Capacitors



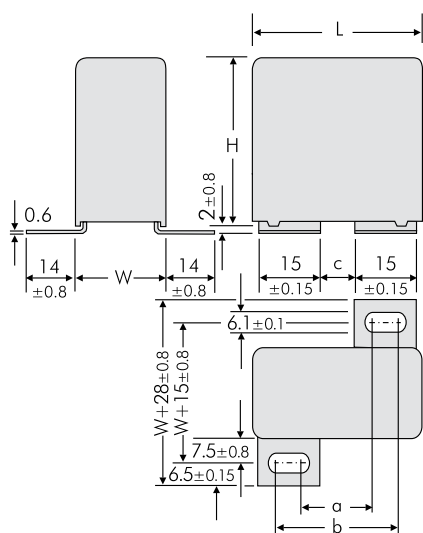
Version	L	a ±0.5	b ±0.5	c ±0.5
A3.6	41.5	17.5	27.5	7.5
A3.7	56	20	30	10



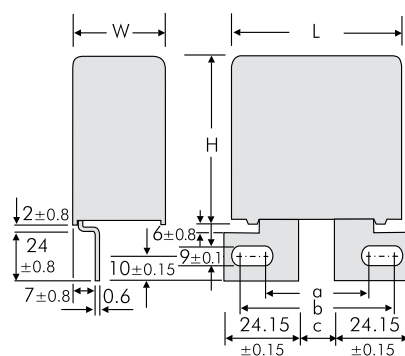
Version	L	a ±0.5	c ±0.5	l ±0.8
A3.8	41.5 W ≥ 17	18	6	23
A3.8.1	41.5 W ≥ 17	22	10	17.5



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

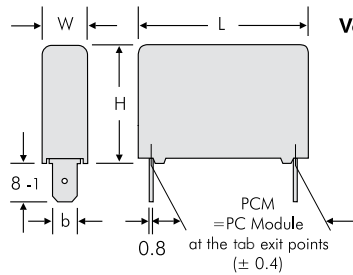


Version	L	a ±0.5	b ±0.5	c ±0.5
A5	41.5	17.5	27.5	7.5
A5	56	20	30	10



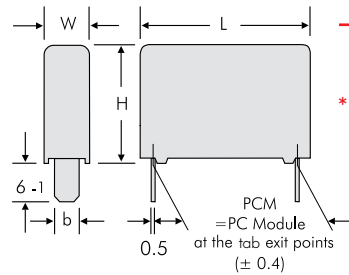
Version	L	a ±0.5	b ±0.5	c ±0.5
A6	56 W ≥ 23	41.5	45.5	15.5

Version FS 6.3
with slip-on
terminals
according to
DIN 46244



L	W	PCM	b ±0.15
26.5	≥ 11	23.5	6.3
31.5	≥ 11	28.5	6.3
41.5	≥ 11	38.5	6.3
56	≥ 11	49.5	6.3

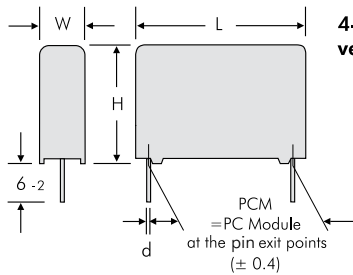
Version B*



L	PCM	b ±0.15
18	16	5
26.5	23.5	5
31.5	28.5	8
41.5	38.5	8
56	49.5	8

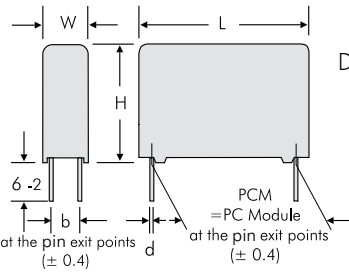
* Processing notification:
Processing should be done within
3 month after manufacturing.

**2-pin
version**



PCM	d
15	0.8
22.5	0.8
27.5	0.8
38.5	1.2
49.5	1.2

**4-pin
version**



W	H	L	PCM	b	d
10.5	19	26.5	22.5	5	0.8
10.5	20.5	26.5	22.5	5	0.8
11	21	26.5	22.5	5	0.8
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
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
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

Dims. in mm.

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



Versions of WIMA Snubber Capacitors

Version code		D2	D4	B5*	B8*	1A	1B	1F	1G	1H	1I	1J	1K	1L	2A	2B	2P	2C	2D	2E	2F	2H	2I	2J	2K	2L	2M	3A	3C	3D	3E	3G	3I	3J	3K	3L	3N	3O	3P	
W x H x L	Size code	2-pin	4-pin	B5	B8	A1	A1.1	A1.4	A1.4.1	A1.5	A1.6	A1.6.1	A1.7	A1.7.1	A2	A2.1	A2.1.1	A2.2	A2.3	A2.4	A2.4.1	A2.5	A2.6	A2.6.1	A2.6.2	A2.7	A2.8	A3	A3.1	A3.2	A3.3	A3.5	A3.6	A3.7	A3.8	A3.8.1	A3.9	A3.10	A3.11	
7 x 14 x 18	4D																																							
8 x 15 x 18	4F																																							
7 x 16.5 x 26.5	5D																																							
8.5 x 18.5 x 26.5	5F																																							
10.5 x 19 x 26.5	5G																																							
10.5 x 20.5 x 26.5	5H																																							
11 x 21 x 26.5	5I																																							
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																																							

Version code		4A	4C	4J	4L	4M	5A	6A	FS
W x H x L	Size code	A4	A4.2	A4.7	A4.9	A4.10	A5	A6	FS 6.3
11 x 21 x 26.5	5I								
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								
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.

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

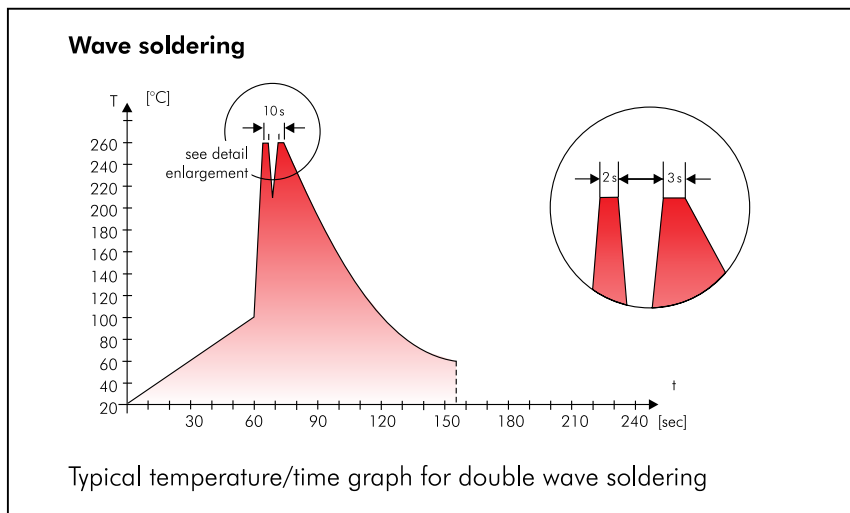
Dwell time: $t < 5\text{ sec}$

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

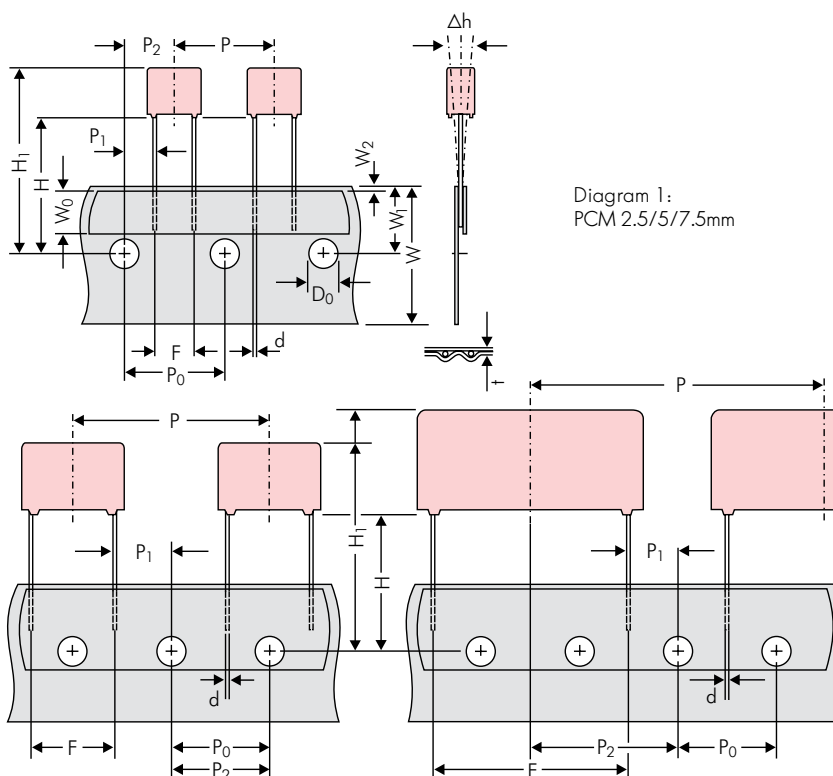


Diagram 2: PCM 10/15 mm

Diagram 3: PCM 22.5 and 27.5*mm

*PCM 27.5 tapping possible with two feed holes between components

Dimensions for Radial Taping								
Designation	Symbol	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	16.5 ±0.3	16.5 ±0.5	16.5 ±0.5	16.5 ±0.5	16.5 ±0.5	16.5 ±0.5
		18.5 ±0.5	18.5 ±0.5	18.5 ±0.5	18.5 ±0.5	18.5 ±0.5	18.5 ±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 141)		ROLL/AMMO			AMMO			
		REEL ø 360 max. ø 30 ±1	B 52 ±2 B 58 ±2 } depending on comp. dimensions	REEL ø 360 max. ø 30 ±1 B 58 ±2 or 66 ±2 REEL ø 500 max. ø 25 ±1 B 60 ±2 or 68 ±2 } depending on PCM and component dimensions				
Unit		see details page 142.						

Dims in mm.

* Diameter of pins see General Data.

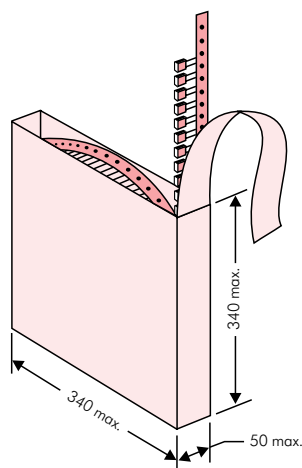
Please clarify customer-specific deviations with the manufacturer.

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

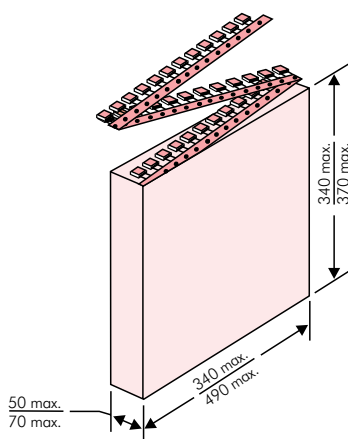
Position of components according to PCM 7.5 (sketch 11). P₀ = 12.7 or 15.0 is possible

Types of Tape Packaging of Capacitors for Automatic Radial Insertion

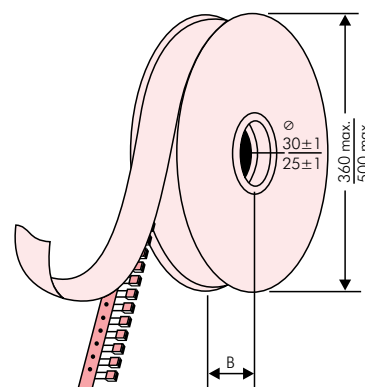
■ ROLL Packaging



■ 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	
WIMA Confirmation No.: 0001004063000100		Gross Weight [g]: 1870	
WIMA Part No.: MKS2C034701C00K88D			
Handling Unit:	MKS 2	QTY: 5.000	COO: DE
	MKS 2 0.47 μ F 63 VDC 3.5x8.5x7.2 RMS		
	Standard 10% Loss - Standard Drähte 6-2		
1000067326	Vorlage Debitur 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	pcs. per packing unit										
						ROLL		REEL				AMMO				
	W	H	L	Codes		S	H16.5	H18.5	ø 360	ø 500	340 × 340	490 × 370				
						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		2800
	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	540*			–		–		420		–		380
	10.5	19	26.5	5G	680*			–		–		400		–		360
	10.5	20.5	26.5	5H	680*			–		–		400		–		360
	11	21	26.5	5I	680*			–		–		380		–		350
	12	24	28	FJ	450*			–		–		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 × 340	490 × 370	H16.5	H18.5	H16.5	H18.5
					S	N	O	F	I	H	J	A	C	B	D
27.5 mm	9	19	31.5	6A	640*	–	–	–	–	460/340*	–	–	–	420	–
	11	21	31.5	6B	544*	–	–	–	–	380/280*	–	–	–	350	–
	13	24	31.5	6D	448*	–	–	–	–	300	–	–	–	290	–
	13	25	33	FK	336*	–	–	–	–	–	–	–	–	–	–
	15	26	31.5	6F	288*	–	–	–	–	270	–	–	–	250	–
	15	26	33	FL	288*	–	–	–	–	–	–	–	–	–	–
	17	29	31.5	6G	176*	–	–	–	–	–	–	–	–	–	–
	17	34.5	31.5	6I	176*	–	–	–	–	–	–	–	–	–	–
	20	32	33	FM	216*	–	–	–	–	–	–	–	–	–	–
	20	39.5	31.5	6J	144*	–	–	–	–	–	–	–	–	–	–
37.5 mm	9	19	41.5	7A	480*	–	–	–	–	–	–	–	–	–	–
	11	22	41.5	7B	408*	–	–	–	–	–	–	–	–	–	–
	13	24	41.5	7C	252*	–	–	–	–	–	–	–	–	–	–
	15	26	41.5	7D	144*	–	–	–	–	–	–	–	–	–	–
	17	29	41.5	7E	132*	–	–	–	–	–	–	–	–	–	–
	19	32	41.5	7F	108*	–	–	–	–	–	–	–	–	–	–
	20	39.5	41.5	7G	108*	–	–	–	–	–	–	–	–	–	–
	24	45.5	41.5	7H	84*	–	–	–	–	–	–	–	–	–	–
	27	15	41.5	7M	100*	–	–	–	–	–	–	–	–	–	–
	31	46	41.5	7I	72*	–	–	–	–	–	–	–	–	–	–
	35	50	41.5	7J	35*	–	–	–	–	–	–	–	–	–	–
	40	55	41.5	7K	28*	–	–	–	–	–	–	–	–	–	–
48.5 mm	19	31	56	8D	50*	–	–	–	–	–	–	–	–	–	–
	23	34	56	8E	72*	–	–	–	–	–	–	–	–	–	–
	27	37.5	56	8H	60*	–	–	–	–	–	–	–	–	–	–
	33	48	56	8J	48*	–	–	–	–	–	–	–	–	–	–
	37	54	56	8L	25*	–	–	–	–	–	–	–	–	–	–
52.5 mm	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

WIMA Part Number System

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 μ F				2.5x6.5x7.2		-		20%	bulk	6 -2	

Type description:				Rated voltage:				Capacitance:				Size:				Tolerance:	
SMD-PET	=	SMDT		50 VDC	=	B0		22 pF	=	0022		4.8x3.3x3 Size 1812	=	KA		$\pm 20\%$	= M
SMD-PEN	=	SMDN		63 VDC	=	C0		47 pF	=	0047		4.8x3.3x4 Size 1812	=	KB		$\pm 10\%$	= K
SMD-PPS	=	SMDI		100 VDC	=	D0		100 pF	=	0100		5.7x5.1x3.5 Size 2220	=	QA		$\pm 5\%$	= J
FKP 02	=	FKP0		250 VDC	=	F0		150 pF	=	0150		5.7x5.1x4.5 Size 2220	=	QB		$\pm 2.5\%$	= H
MKS 02	=	MKS0		400 VDC	=	G0		220 pF	=	0220		7.2x6.1x3 Size 2824	=	TA		$\pm 1\%$	= E
FKS 2	=	FKS2		450 VDC	=	H0		330 pF	=	0330		7.2x6.1x5 Size 2824	=	TB		...	
FKP 2	=	FKP2		600 VDC	=	I0		470 pF	=	0470		10.2x7.6x5 Size 4030	=	VA			
MKS 2	=	MKS2		630 VDC	=	J0		680 pF	=	0680		12.7x10.2x6 Size 5040	=	XA			
MKP 2	=	MKP2		700 VDC	=	K0		1000 pF	=	1100		15.3x13.7x7 Size 6054	=	YA			
FKS 3	=	FKS3		800 VDC	=	L0		1500 pF	=	1150		2.5x7x4.6 PCM 2.5	=	0B		Packing:	
FKP 3	=	FKP3		850 VDC	=	M0		2200 pF	=	1220		3x7.5x4.6 PCM 2.5	=	0C		AMMO H16.5 340x340	= A
MKS 4	=	MKS4		900 VDC	=	N0		3300 pF	=	1330		2.5x6.5x7.2 PCM 5	=	1A		AMMO H16.5 490x370	= B
MKP 4	=	MKP4		1000 VDC	=	O1		4700 pF	=	1470		3x7.5x7.2 PCM 5	=	1B		AMMO H18.5 340x340	= C
MKP 10	=	MKP1		1100 VDC	=	P0		6800 pF	=	1680		2.5x7x10 PCM 7.5	=	2A		AMMO H18.5 490x370	= D
FKP 4	=	FKP4		1200 VDC	=	Q0		0.01 μ F	=	2100		3x8.5x10 PCM 7.5	=	2B		REEL H16.5 360	= F
FKP 1	=	FKP1		1250 VDC	=	R0		0.022 μ F	=	2220		3x9x13 PCM 10	=	3A		REEL H16.5 500	= H
MKP-X2	=	MKX2		1500 VDC	=	S0		0.047 μ F	=	2470		4x9x13 PCM 10	=	3C		REEL H18.5 360	= I
MKP-X2 R	=	MKXR		1600 VDC	=	T0		0.1 μ F	=	3100		5x11x18 PCM 15	=	4B		REEL H18.5 500	= J
MKP-X1 R	=	MKX1		2000 VDC	=	U0		0.22 μ F	=	3220		6x12.5x18 PCM 15	=	4C		ROLL H16.5	= N
MKP-Y2	=	MKY2		2500 VDC	=	V0		0.47 μ F	=	3470		6x14x26.5 PCM 22.5	=	5A		ROLL H18.5	= O
MP 3-X2	=	MPX2		3000 VDC	=	W0		1 μ F	=	4100		6x15x26.5 PCM 22.5	=	5B		BLISTER W12 180	= P
MP 3-X1	=	MPX1		4000 VDC	=	X0		2.2 μ F	=	4220		9x19x31.5 PCM 27.5	=	6A		BLISTER W12 330	= Q
MP 3-Y2	=	MPY2		6000 VDC	=	Y0		4.7 μ F	=	4470		11x21x31.5 PCM 27.5	=	6B		BLISTER W16 330	= R
MP 3R-Y2	=	MPRY		250 VAC	=	0W		10 μ F	=	5100		9x19x41.5 PCM 37.5	=	7A		BLISTER W24 330	= T
Snubber MKP	=	SNMP		275 VAC	=	1W		22 μ F	=	5220		11x22x41.5 PCM 37.5	=	7B		Bulk/TPS Standard	= S
Snubber FKP	=	SNFP		300 VAC	=	2W		47 μ F	=	5470		19x31x56 PCM 48.5	=	8D		...	
GTO MKP	=	GTOM		305 VAC	=	AW		100 μ F	=	6100		35x50x57 PCM 52.5	=	9F			
DC-LINK MKP 3	=	DCP3		400 VAC	=	3W		220 μ F	=	6220		...					
DC-LINK MKP 4	=	DCP4		440 VAC	=	4W		1000 μ F	=	7100							
DC-LINK MKP 4S	=	DCPS		500 VAC	=	5W		1500 μ F	=	7150							
DC-LINK MKP 5	=	DCP5		...				...									
DC-LINK MKP 6	=	DCP6															
DC-LINK HC	=	DCHC															
DC-LINK HY	=	DCHY															
												Version code:				Pin length (untaped)	
												Standard				3.5 ± 0.5	
												Version A1				6 -2	
												Version A1.1.1				16 ± 1	
												Version A2				...	
												...				Pin length (taped)	
																none	

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.