

Snubber FKP Capacitors for High Pulse Applications with Metal Foil Electrodes and Metallized Internal Series Connection. Capacitances from 0.01 μF to 3.3 μF . 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
- According to RoHS 2011/65/EU

Typical Applications

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

- IGBT-applications

Construction

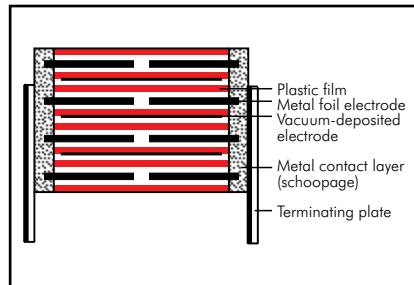
Dielectric:

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 μF to 3.3 μF

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°C to $+100^\circ\text{C}$

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

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

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

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

(mean value: 100 000 sec)

Measuring voltage: 100 V/1 min.

Test voltage: 2 sec

L	$\leq 2000 \text{ VDC}$	$\geq 3000 \text{ VDC}$
< 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	$\leq 6 \times 10^{-4}$	$\leq 6 \times 10^{-4}$	$\leq 6 \times 10^{-4}$
10 kHz	$\leq 6 \times 10^{-4}$	$\leq 6 \times 10^{-4}$	–
100 kHz	$\leq 15 \times 10^{-4}$	–	–

Maximum pulse rise time:

Capacitance μF	max. pulse rise time V/ μsec at $T_A < 40^\circ\text{C}$						
	630 VDC	1000 VDC	1250 VDC	1600 VDC	2000 VDC	3000 VDC	4000 VDC
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	–	–	–

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.

Continuation

General Data

Capacitance	630 VDC/400 VAC*				1000 VDC/600 VAC*			
	W	H	L	Part number	W	H	L	Part number
0.022 µF					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 µF	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 µF	20	39.5	41.5	SNFPJ041007G_____	31	46	41.5	SNFPO141007I_____
					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 µF					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 µF	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 µF	31	46	41.5	SNFPR041007I_____	33	48	56	SNFPT041008J_____
	27	37.5	56	SNFPR041008H_____				
1.5 "	33	48	56	SNFPR041508J_____				

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

■ New range, 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 108.

Rights reserved to amend design data without prior notification.

Part number completion:

Version codes see page 110.

Tolerance: 20 % = M

10 % = K

5 % = J

Packing: bulk = S

Pin length: 6-2 = SD

none = 00 (for plate versions)

Continuation page 107

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 μF	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 μF	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	SNFPU034707I	33	48	56	SNFPW034708J				
	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 108.

Part number completion:

Version codes see page 110.

Tolerance: 20 % = M

10 % = K

5 % = J

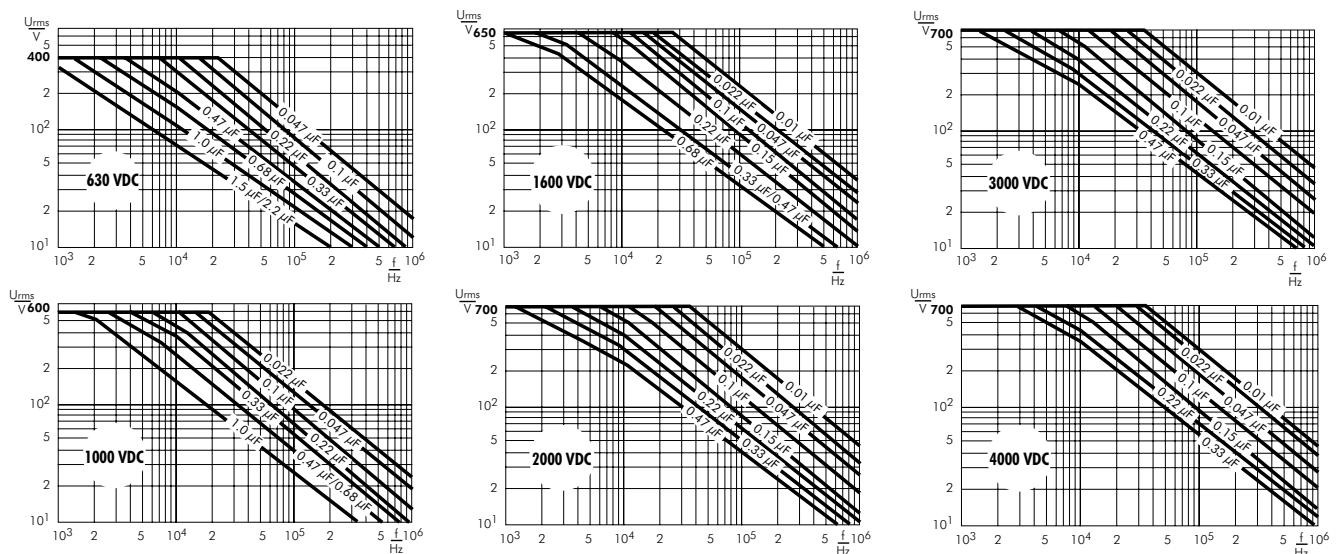
Packing: bulk = S

Pin length: 6-2 = SD

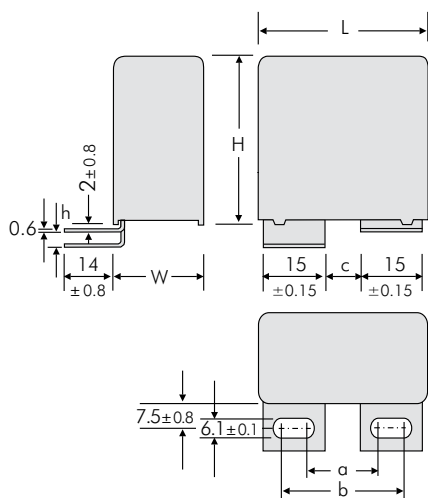
none = 00 (for plate versions)

Rights reserved to amend design data without prior notification.

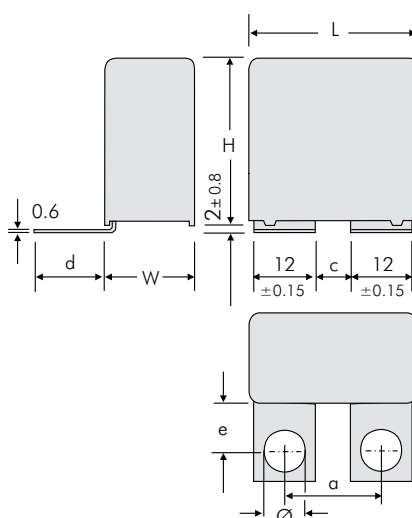
Permissible AC voltage in relation to frequency at 10° C internal temperature rise (general guide).



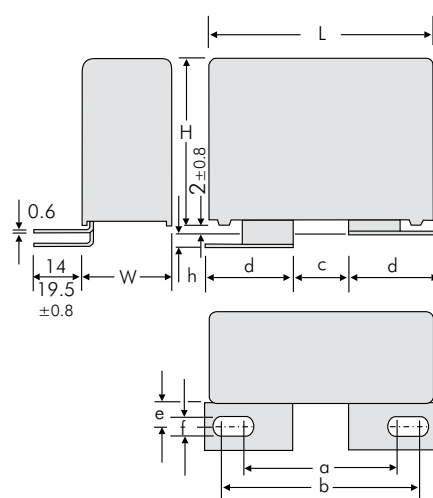
Versions of WIMA Snubber- and DC-LINK MKP 4- Capacitors



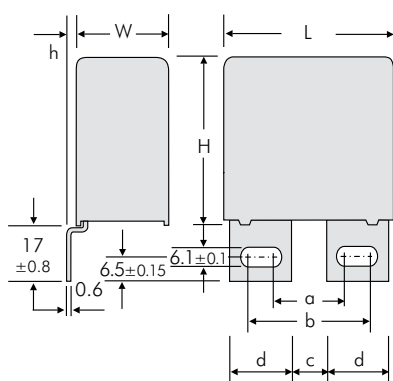
Version	L	a ±0.5	b ±0.5	c ±0.5	h ±0.8
A1	41.5	17.5	28	7.5	0
A1.5	41.5	17.5	28	7.5	3.5
A1	56	20	30	10	0
A1.1.1	56	28	38	18	0
A1.4.1	56	28	38	18	3.5



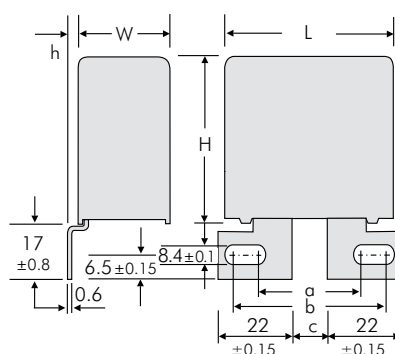
Version	L	a ±0.5	c ±0.5	d ±0.8	e ±0.8	Ø ±0.1
A1.6	41.5	18	6	21.5	16	7
A1.6.1	41.5	22	10	18.5	13	7
A1.6.2	41.5	23	10	18.5	13	8
A1.6	56	29	17	21.5	16	7



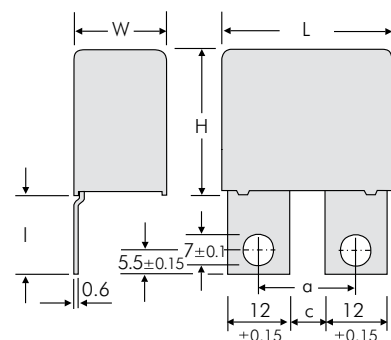
Version	L	a ±0.5	b ±0.5	c ±0.5	d ±0.15	e ±0.8	f ±0.1	h ±0.8
A2	41.5	36	46.5	14.5	22	7.5	8.4	0
A2.4.1	41.5	33.5	39.5	7.5	22	13	8.4	0
A2.6.1	41.5	31.5	41.5	14	22	13	6.1	3.5
A2.6.2	41.5	31.5	41.5	14	22	13	6.1	0
A2.8	41.5	36	46.5	14.5	22	7.5	8.4	3.5
A2.1	56	39.5	45.5	13.5	22	7.5	8.4	0
A2.1.2	56	36	45.5	14.5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



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

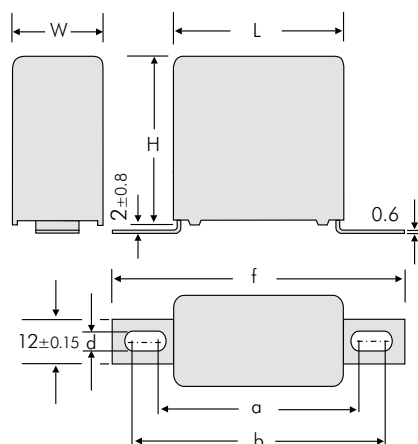


Version	L	a ±0.5	b ±0.5	c ±0.5	h ±0.8
A3.9	41.5	36	46.5	14.5	0
A3.11	41.5	36	46.5	14.5	3
A3.2	56	36	46.5	14.5	0
A3.3	56	36	46.5	14.5	3

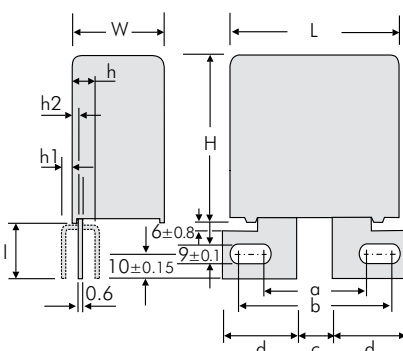


Version	L	a ±0.5	c ±0.5	l ±0.8
A3.8	41.5W ≥ 17	18	6	23
A3.8.1	41.5W ≥ 17	22	10	17.5
A3.8.2	41.5W ≥ 17	22	10	23

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

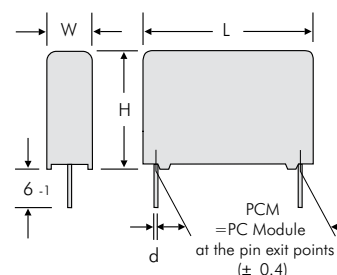


Version	L	a ±0.8	b ±0.8	f ±0.8	d ±0.1
A4.9	31.5 W ≥ 15	44	47	57	4.5
A4.10	31.5 W ≥ 15	43	59	69	6.1
A4.2	41.5 W ≥ 15	54	57	67	4.5
A4	41.5 W ≥ 15	53	69	79	6.1
A4.7	56	65	68	78	4.5
A4	56	64	80	90	6.1



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

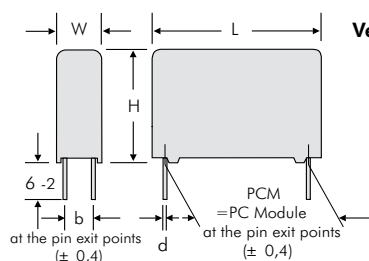
2-pin
version



PCM	d
28.5	0.8
38.5	1.2
49.5	1.2

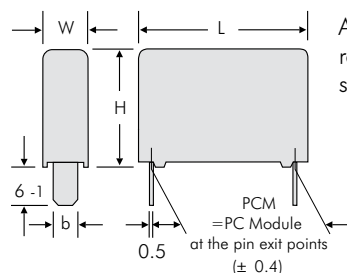
Dims. in mm

4-pin
version



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

Version B



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

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

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

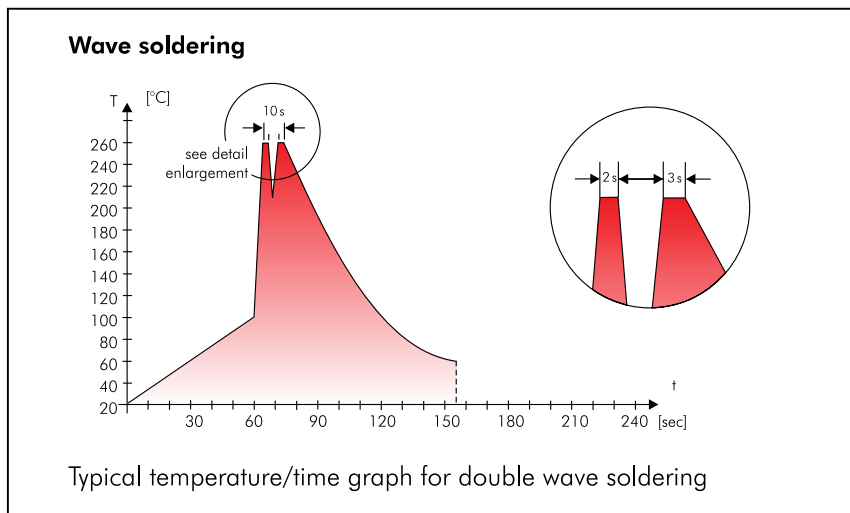
Dwell time: $t < 5\text{ sec}$

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 9001:2008 Certification

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

WIMA WPCS

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

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

WIMA Environmental Policy

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

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

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

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

We almost completely refrain from using packing materials such as:

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

RoHS Compliance

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



WIMA Kondensatoren sind bleifrei
konform RoHS 2011/65/EU

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

Tape for lead-free WIMA capacitors

DIN EN ISO 14001:2004

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

Typical Dimensions for Taping Configuration

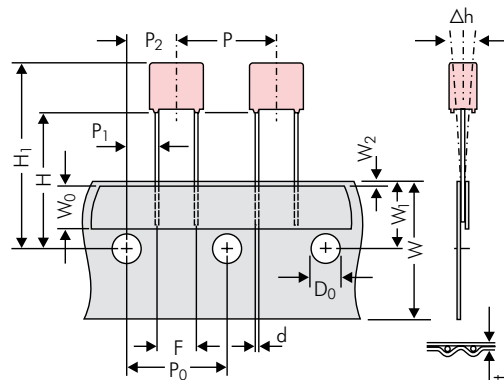


Diagram 1:
PCM 2.5/5/7.5mm

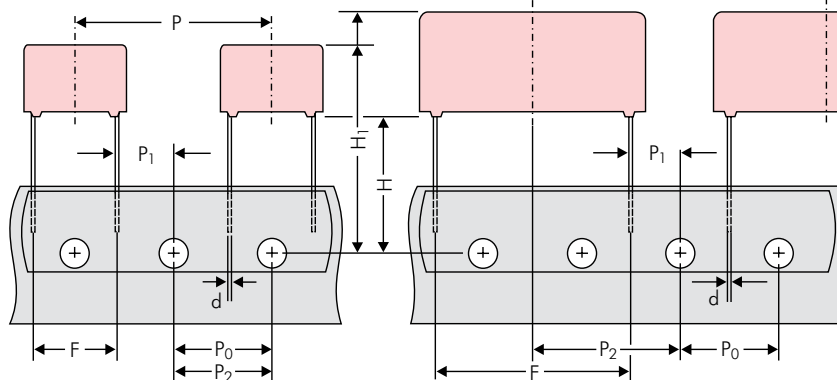


Diagram 2: PCM 10/15 mm

Diagram 3: PCM 22.5 and 27.5*mm

*PCM 27.5 taping possible with two feed holes between components

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

Dims in mm.

* Diameter of pins see General Data.

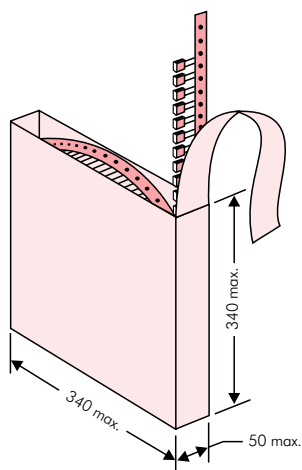
Please clarify customer-specific deviations with the manufacturer.

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

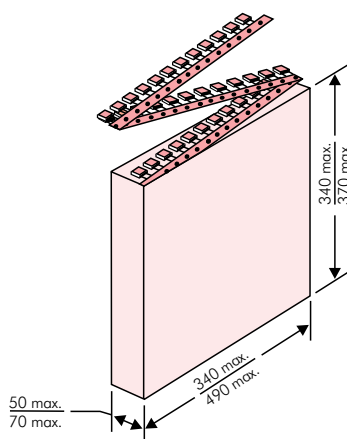
Position of components according to PCM 7.5 (sketch 11). P₀ = 12.7 or 15.0 is possible

Types of Tape Packaging of Capacitors for Automatic Radial Insertion

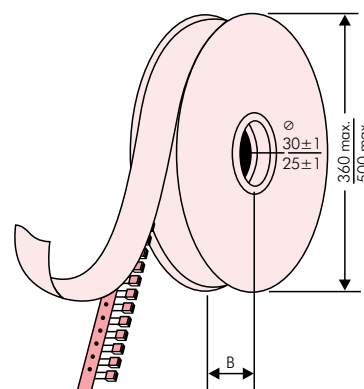
■ ROLL Packaging



■ AMMO Packaging



■ REEL Packaging



BAR CODE (Labelling)

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

Scanner decoding of

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

In addition part description of

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

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

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

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		2700	
	5	10.5	10.3	2E	3000	–		1300		2500		1300		–	
	5.7	12.5	10.3	2F	2000	–		1000		2200		1100		–	
	7.2	12.5	10.3	2G	1500	–		900		1800		1000		–	
10 mm	3	9	13	3A	3000	–		1100		2200		–		1900	
	4	8.5	13.5	FA	3000	–		900		1600		–		1450	
	4	9	13	3C	3000	–		900		1600		–		1450	
	4	9.5	13	3D	3000	–		900		1600		–		1400	
	5	10	13.5	FB	2000	–		700		1300		–		1200	
	5	11	13	3F	3000	–		700		1300		–		1200	
	6	12	13	3G	2400	–		550		1100		–		1000	
	6	12.5	13	3H	2400	–		550		1100		–		1000	
8	12	13	3I	2000	–		400		800		–		740		
15 mm	5	11	18	4B	2400	–		600		1200		–		1150	
	5	13	19	FC	1000	–		600		1200		–		1200	
	6	12.5	18	4C	2000	–		500		1000		–		1000	
	6	14	19	FD	1000	–		500		1000		–		1000	
	7	14	18	4D	1600	–		450		900		–		850	
	7	15	19	FE	1000	–		450		900		–		850	
	8	15	18	4F	1200	–		400		800		–		740	
	8	17	19	FF	500	–		400		800		–		740	
	9	14	18	4H	1200	–		350		700		–		650	
	9	16	18	4J	900	–		350		700		–		650	
	10	18	19	FG	500	–		300		650		–		590	
11	14	18	4M	1000	–		300		600		–		540		
22.5 mm	5	14	26.5	5A	1200	–		–		800		–		770	
	6	15	26.5	5B	1000	–		–		700		–		640	
	7	16.5	26.5	5D	760	–		–		600		–		550	
	8	20	28	FH	500	–		–		500		–		480	
	8.5	18.5	26.5	5F	500	–		–		480		–		450	
	10	22	28	FI	570*	–		–		420		–		380	
	10.5	19	26.5	5G	594*	–		–		400		–		360	
	10.5	20.5	26.5	5H	594*	–		–		400		–		360	
	11	21	26.5	5I	561*	–		–		380		–		350	
	12	24	28	FJ	480*	–		–		350		–		310	

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

■ Moulded versions.

Rights reserved to amend design data without prior notification.

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

PCM	Size				bulk	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

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

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

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
M	K	S	2	C	0	2	1	0	0	1	A	0	0	M	S	S	D
MKS 2				63 VDC		0.01 µF			2.5x6.5x7.2			-		20%	bulk	6 -2	
Type description:				Rated voltage:			Capacitance:			Size:			Tolerance:			Packing:	
SMD-PET = SMDT				50 VDC = B0			22 pF = 0022			4.8x3.3x3 Size 1812 = KA			±20% = M			AMMO H16.5 340x340 = A	
SMD-PEN = SMDN				63 VDC = C0			47 pF = 0047			4.8x3.3x4 Size 1812 = KB			±10% = K			AMMO H16.5 490x370 = B	
SMD-PPS = SMDI				100 VDC = D0			100 pF = 0100			5.7x5.1x3.5 Size 2220 = QA			±5% = J			AMMO H18.5 340x340 = C	
FKP 02 = FKPO				250 VDC = F0			150 pF = 0150			5.7x5.1x4.5 Size 2220 = QB			±2.5% = H			AMMO H18.5 490x370 = D	
MKS 02 = MKS0				400 VDC = G0			220 pF = 0220			7.2x6.1x3 Size 2824 = TA			±1% = E			REEL H16.5 360 = F	
FKS 2 = FKS2				450 VDC = H0			330 pF = 0330			7.2x6.1x5 Size 2824 = TB			...			REEL H16.5 500 = H	
FKP 2 = FKP2				520 VDC = H2			470 pF = 0470			10.2x7.6x5 Size 4030 = VA						REEL H18.5 360 = I	
FKS 3 = FKS3				600 VDC = I0			680 pF = 0680			12.7x10.2x6 Size 5040 = XA						REEL H18.5 500 = J	
FKP 3 = FK3P				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 = FK1P				1200 VDC = Q0			0.022 µF = 2220			3x9x13 PCM 10 = 3A						...	
MKP-X2 = MKX2				1250 VDC = R0			0.047 µF = 2470			4x9x13 PCM 10 = 3C							
MKP-X1 R = MKX1				1500 VDC = S0			0.1 µF = 3100			5x11x18 PCM 15 = 4B							
MKP-Y2 = MKY2				1600 VDC = T0			0.22 µF = 3220			6x12.5x18 PCM 15 = 4C							
MP 3-X2 = MPX2				2000 VDC = U0			0.47 µF = 3470			5x14x26.5 PCM 22.5 = 5A							
MP 3-X1 = MPX1				2500 VDC = V0			1 µF = 4100			6x15x26.5 PCM 22.5 = 5B							
MP 3-Y2 = MPY2				3000 VDC = W0			2.2 µF = 4220			9x19x31.5 PCM 27.5 = 6A							
MP 3R-Y2 = MPRY				4000 VDC = X0			4.7 µF = 4470			11x21x31.5 PCM 27.5 = 6B							
MKP 4F = MKPF				6000 VDC = Y0			10 µF = 5100			9x19x41.5 PCM 37.5 = 7A							
Snubber MKP = SNMP				250 VAC = 0V			22 µF = 5220			11x22x41.5 PCM 37.5 = 7B							
Snubber FKP = SNFP				275 VAC = 1V			47 µF = 5470			19x31x56 PCM 48.5 = 8D							
GTO MKP = GTOM				300 VAC = 2V			100 µF = 6100			25x45x57 PCM 52.5 = 9D							
DC-LINK MKP 3 = DCP3				305 VAC = AV			220 µF = 6220			...							
DC-LINK MKP 4 = DCP4				350 VAC = BV			1000 µF = 7100										
DC-LINK MKP 4S = DCP5				440 VAC = 4V			1500 µF = 7150										
DC-LINK MKP 5 = DCP5				500 VAC = 5V			...										
DC-LINK MKP 6 = DCP6				...													
DC-LINK HC = DCHC																	
DC-LINK HY = DCHY																	
													</				