

## Polypropylene (PP) Capacitors for Pulse Applications with Double-Sided Metallized Electrodes in PCM 7.5 mm to 52.5 mm. Capacitances from 1000 pF to 47 µF. Rated Voltages from 100 VDC to 3000 VDC.

### Special Features

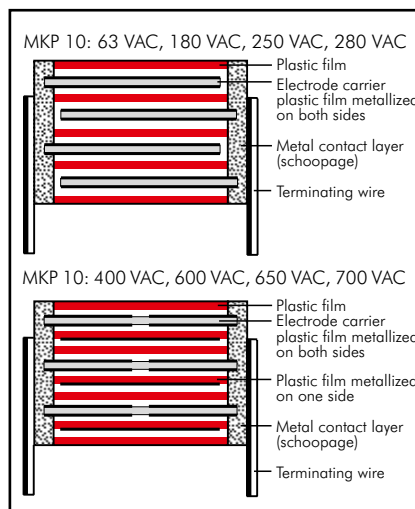
- Pulse duty construction
- Self-healing
- Very low dissipation factor
- Negative capacitance change versus temperature
- AEC-Q200 qualified
- According to RoHS 2011/65/EU

### Typical Applications

- For pulse applications e.g.
- Switch mode power supplies
  - TV and monitor sets
  - Lighting
  - Audio/video equipment

### Construction

**Dielectric:** Polypropylene (PP) film  
**Capacitor electrodes:** Double-sided metallized plastic film  
**Internal construction:**



### Encapsulation:

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

**Terminations:** Tinned wire.

**Marking:** Colour: Red.  
 Marking: Black.

### Electrical Data

#### Capacitance range:

1000 pF to 47 µF

**Rated voltages:** 100 VDC, 250 VDC, 400 VDC, 630 VDC, 850 VDC, 1000 VDC, 1600 VDC, 2000 VDC, 2500 VDC, 3000 VDC

#### Capacitance tolerances:

±20%, ±10%, ±5%

#### Operating temperature range:

-55° C to +105° C

#### Insulation resistance at +20° C:

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

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

Measuring voltage: 100 V/1 min.

**Test voltage:** 2 sec.

L	$\leq 2000 \text{ VDC}$	2500 VDC	$\geq 3000 \text{ VDC}$
< 41.5	1.6 $U_r$	1.4 $U_r$	1.2 $U_r$
41.5	1.4 $U_r$	1.4 $U_r$	1.2 $U_r$
57	1.2 $U_r$	1.2 $U_r$	1.2 $U_r$

#### Climatic test category:

55/100/56 in accordance with IEC

**Dielectric absorption:** 0.05 %

#### Voltage derating:

A voltage derating factor of 1.35 % per K must be applied from +85° C for DC voltages and from +75° C for AC voltages.

#### Reliability:

Operational life > 300 000 hours

Failure rate < 1 fit (0.5 x  $U_r$  and 40° C)

#### Specific dissipation:

Box size* W x H x L in mm	Specific dissipation in Watts per K above the ambient temperature
35 x 50 x 57	0.132
45 x 55 x 57	0.164
45 x 65 x 57	0.184

\* other box sizes see page 11.

#### Dissipation factors at +20° 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 pF/µF	max. pulse rise time V/µsec at $T_A < 40^\circ \text{C}$									
	100VDC	250VDC	400VDC	630VDC	850VDC	1000VDC	1600VDC	2000VDC	2500VDC	3000VDC
1000 ... 2200	1250	2300	2300	2300	3500	3500	7000	11500	11500	-
3300 ... 6800	1150	1500	1500	1500	3500	3500	7000	11500	11500	-
0.01 ... 0.022	900	1400	1500	1500	2700	2700	3800	4400	11500	-
0.033 ... 0.068	500	1000	1150	1400	2700	2700	2700	2700	2700	2700
0.1 ... 0.22	250	650	650	1150	1800	1800	1800	1800	1800	1800
0.33 ... 0.68	130	390	500	900	1150	1150	1150	1150	1150	1150
1.0 ... 2.2	90	250	250	500	500	500	650	650	650	500
3.3 ... 4.7	65	100	130	190	230	230	330	-	-	-
6.8 ... 15	45	65	90	160	-	-	-	-	-	-
22 ... 47	30	45	45	-	-	-	-	-	-	-

### Mechanical Tests

#### Pull test on pins:

$d \leq 0.8 \phi$ : 10 N in direction of pins

$d > 0.8 \phi$ : 20 N in direction of pins

according to IEC 60068-2-21

**Vibration:** 6 hours at 10 ... 2000 Hz and

0.75 mm displacement amplitude or 10 g

in accordance with IEC 60068-2-6

**Low air density:** 1kPa = 10 mbar in

accordance with IEC 60068-2-13

**Bump test:** 4000 bumps at 390 m/sec<sup>2</sup>

in accordance with IEC 60068-2-29

### Packing

Available taped and reeled up to and including case size 15 x 26 x 31.5 / PCM 27.5 mm.

Detailed taping information and graphs at the end of the catalogue.

For further details and graphs please refer to Technical Information.

## Continuation

### General Data

Capacitance	100 VDC/63 VAC*					250 VDC/180 VAC*				
	W	H	L	PCM**	Part number	W	H	L	PCM**	Part number
0.01 $\mu\text{F}$	4	9	10	7.5	MKP1D021002C	4	9	10	7.5	MKP1F021002C
						4	9	13	10	MKP1F021003C
0.015 "	4	9	10	7.5	MKP1D021502C	4	9	10	7.5	MKP1F021502C
						4	9	13	10	MKP1F021503C
0.022 "	4	9	10	7.5	MKP1D022202C	4	9	10	7.5	MKP1F022202C
						4	9	13	10	MKP1F022203C
0.033 "	5	10.5	10.3	7.5	MKP1D023302E	5	10.5	10.3	7.5	MKP1F023302E
	4	9	13	10	MKP1D023303C	4	9	13	10	MKP1F023303C
0.047 "	5	10.5	10.3	7.5	MKP1D024702E	5	10.5	10.3	7.5	MKP1F024702E
	4	9	13	10	MKP1D024703C	4	9	13	10	MKP1F024703C
0.068 "	5	11	13	10	MKP1D026803F	5	11	13	10	MKP1F026803F
						5	11	18	15	MKP1F026804B
0.1 $\mu\text{F}$	6	12	13	10	MKP1D031003G	6	12	13	10	MKP1F031003G
						5	11	18	15	MKP1F031004B
0.12 "	6	12.5	18	15	MKP1D031204C	6	12.5	18	15	MKP1F031204C
0.15 "	6	12.5	18	15	MKP1D031504C	6	12.5	18	15	MKP1F031504C
						6	15	26.5	22.5	MKP1F031505B
0.18 "	7	14	18	15	MKP1D031804D	7	14	18	15	MKP1F031804D
0.22 "	7	14	18	15	MKP1D032204D	7	14	18	15	MKP1F032204D
						6	15	26.5	22.5	MKP1F032205B
0.27 "	8	15	18	15	MKP1D032704F	8	15	18	15	MKP1F032704F
0.33 "	8	15	18	15	MKP1D033304F	8	15	18	15	MKP1F033304F
						6	15	26.5	22.5	MKP1F033305B
0.39 "	9	16	18	15	MKP1D033904J	9	16	18	15	MKP1F033904J
0.47 "	9	16	18	15	MKP1D034704J	9	16	18	15	MKP1F034704J
	7	16.5	26.5	22.5	MKP1D034705D	7	16.5	26.5	22.5	MKP1F034705D
0.56 "	8.5	18.5	26.5	22.5	MKP1D035605F	8.5	18.5	26.5	22.5	MKP1F035605F
0.68 "	8.5	18.5	26.5	22.5	MKP1D036805F	8.5	18.5	26.5	22.5	MKP1F036805F
						9	19	31.5	27.5	MKP1F036806A
0.82 "	10.5	19	26.5	22.5	MKP1D038205G	11	21	26.5	22.5	MKP1F038205I
1.0 $\mu\text{F}$	10.5	19	26.5	22.5	MKP1D041005G	11	21	26.5	22.5	MKP1F041005I
						11	21	31.5	27.5	MKP1F041006B
1.2 "	11	21	31.5	27.5	MKP1D041206B	13	24	31.5	27.5	MKP1F041206D
1.5 "	11	21	31.5	27.5	MKP1D041506B	13	24	31.5	27.5	MKP1F041506D
1.8 "	13	24	31.5	27.5	MKP1D041806D	15	26	31.5	27.5	MKP1F041806F
2.2 "	13	24	31.5	27.5	MKP1D042206D	15	26	31.5	27.5	MKP1F042206F
						13	24	41.5	37.5	MKP1F042207C
2.7 "	17	29	31.5	27.5	MKP1D042706G	17	34.5	31.5	27.5	MKP1F042706I
3.3 "	17	29	31.5	27.5	MKP1D043306G	17	34.5	31.5	27.5	MKP1F043306I
						17	29	41.5	37.5	MKP1F043307E
3.9 "	20	39.5	31.5	27.5	MKP1D043906J	20	39.5	31.5	27.5	MKP1F043906J
4.7 "	20	39.5	31.5	27.5	MKP1D044706J	20	39.5	31.5	27.5	MKP1F044706J
	17	29	41.5	37.5	MKP1D044707E	19	32	41.5	37.5	MKP1F044707F
5.6 "	19	32	41.5	37.5	MKP1D045607F	20	39.5	41.5	37.5	MKP1F045607G
6.8 "	19	32	41.5	37.5	MKP1D046807F	20	39.5	41.5	37.5	MKP1F046807G
8.2 "	20	39.5	41.5	37.5	MKP1D048207G	24	45.5	41.5	37.5	MKP1F048207H

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

■ New values and box sizes.

\*\* PCM = Printed circuit module = pin spacing

Dims. in mm.

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

#### Part number completion:

Version code: 2-pin = 00  
 4-pin = D4  
 Tolerance: 20 % = M  
 10 % = K  
 5 % = J  
 Packing: bulk = S  
 Pin length: 6-2 = SD

Taped version see page 161.

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## Continuation

### General Data

Capacitance	100 VDC/63 VAC*					250 VDC/180 VAC*				
	W	H	L	PCM**	Part number	W	H	L	PCM**	Part number
10 $\mu$ F	20	39.5	41.5	37.5	MKP1D051007G	24	45.5	41.5	37.5	MKP1F051007H
12 "	24	45.5	41.5	37.5	MKP1D051207H	28	38	41.5	37.5	MKP1F051007L
15 "	24	45.5	41.5	37.5	MKP1D051507H	35	50	41.5	37.5	MKP1F051207J
18 "	28	38	41.5	37.5	MKP1D051507L	35	50	57	52.5	MKP1F051507J
22 "	35	50	41.5	37.5	MKP1D051807J	35	50	57	52.5	MKP1F051509F
27 "	35	50	41.5	37.5	MKP1D052207J	35	50	57	52.5	MKP1F051809F
33 "	40	55	41.5	37.5	MKP1D052707K	35	50	57	52.5	MKP1F052209F
39 "	40	55	41.5	37.5	MKP1D053307K	45	65	57	52.5	MKP1F052709J
47 "	35	50	57	52.5	MKP1D053309F	45	65	57	52.5	MKP1F053309J
	45	65	57	52.5	MKP1D053909J					
	45	65	57	52.5	MKP1D054709J					

Capacitance	400 VDC/250 VAC*					630 VDC/400 VAC*				
	W	H	L	PCM**	Part number	W	H	L	PCM**	Part number
1000 pF	4	9	10	7.5	MKP1G011002C	4	9	10	7.5*	MKP1J011002C
1200 "	4	9	10	7.5	MKP1G011202C	4	9	10	7.5*	MKP1J011202C
1500 "	4	9	10	7.5	MKP1G011502C	4	9	10	7.5*	MKP1J011502C
1800 "	4	9	10	7.5	MKP1G011802C	4	9	10	7.5*	MKP1J011802C
2200 "	4	9	10	7.5	MKP1G012202C	4	9	10	7.5*	MKP1J012202C
2700 "	4	9	10	7.5	MKP1G012702C	4	9	10	7.5*	MKP1J012702C
3300 "	4	9	10	7.5	MKP1G013302C	4	9	10	7.5*	MKP1J013302C
3900 "	4	9	10	7.5	MKP1G013902C	4	9	10	7.5*	MKP1J013902C
4700 "	4	9	10	7.5	MKP1G014702C	4	9	10	7.5*	MKP1J014702C
5600 "	4	9	10	7.5	MKP1G015602C	4	9	10	7.5*	MKP1J015602C
6800 "	4	9	10	7.5	MKP1G016802C	4	9	10	7.5*	MKP1J016802C
8200 "	4	9	10	7.5	MKP1G018202C	4	9	13	10	MKP1J016803C
						5	10.5	10.3	7.5*	MKP1J018202E
0.01 $\mu$ F	4	9	10	7.5	MKP1G021002C	5	10.5	10.3	7.5*	MKP1J021002E
	4	9	13	10	MKP1G021003C	4	9	13	10	MKP1J021003C
0.012 "	5	10.5	10.3	7.5	MKP1G021202E	5	11	13	10	MKP1J021203F
0.015 "	5	10.5	10.3	7.5	MKP1G021502E	5	11	13	10	MKP1J021503F
	4	9	13	10	MKP1G021503C	5	11	18	15	MKP1J021504B
0.018 "	5	10.5	10.3	7.5	MKP1G021802E	5	11	13	10	MKP1J021803F
0.022 "	5	10.5	10.3	7.5	MKP1G022202E	5	11	13	10	MKP1J022203F
	4	9	13	10	MKP1G022203C	5	11	18	15	MKP1J022204B
0.027 "	5.7	12.5	10.3	7.5	MKP1G022702F	6	12	13	10	MKP1J022703G
0.033 "	5.7	12.5	10.3	7.5	MKP1G023302F	6	12	13	10	MKP1J023303G
	5	11	13	10	MKP1G023303F	5	11	18	15	MKP1J023304B
0.039 "	6	12	13	10	MKP1G023903G	6	12.5	18	15	MKP1J023904C
0.047 "	6	12	13	10	MKP1G024703G	6	12.5	18	15	MKP1J024704C
	5	11	18	15	MKP1G024704B	6	15	26.5	22.5	MKP1J024705B
0.056 "	6	12.5	18	15	MKP1G025604C	7	14	18	15	MKP1J025604D
0.068 "	6	12.5	18	15	MKP1G026804C	7	14	18	15	MKP1J026804D
	6	15	26.5	22.5	MKP1G026805B	6	15	26.5	22.5	MKP1J026805B
0.082 "	7	14	18	15	MKP1G028204D	9	16	18	15	MKP1J028204J

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

■ New values and box sizes.

\*\* PCM = Printed circuit module = pin spacing

\* Admissible AC voltage 280 VAC.

Dims. in mm.

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

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Part number completion:

Version code: 2-pin = 00

4-pin = D4

Tolerance: 20 % = M

10 % = K

5 % = J

Packing: bulk = S

Pin length: 6-2 = SD

Taped version see page 161.

## Continuation

### General Data

Capacitance	400 VDC/250 VAC*					630 VDC/400 VAC*				
	W	H	L	PCM**	Part number	W	H	L	PCM**	Part number
0.1 $\mu$ F	7	14	18	15	MKP1G031004D	9	16	18	15	MKP1J031004J
	6	15	26.5	22.5	MKP1G031005B	7	16.5	26.5	22.5	MKP1J031005D
0.12 "	8	15	18	15	MKP1G031204F	8.5	18.5	26.5	22.5	MKP1J031205F
0.15 "	8	15	18	15	MKP1G031504F	8.5	18.5	26.5	22.5	MKP1J031505F
	6	15	26.5	22.5	MKP1G031505B	9	19	31.5	27.5	MKP1J031506A
0.18 "	9	16	18	15	MKP1G031804J	8.5	18.5	26.5	22.5	MKP1J031805F
0.22 "	9	16	18	15	MKP1G032204J	8.5	18.5	26.5	22.5	MKP1J032205F
	7	16.5	26.5	22.5	MKP1G032205D	9	19	31.5	27.5	MKP1J032206A
0.27 "	8.5	18.5	26.5	22.5	MKP1G032705F	11	21	26.5	22.5	MKP1J032705I
0.33 "	8.5	18.5	26.5	22.5	MKP1G033305F	11	21	26.5	22.5	MKP1J033305I
	9	19	31.5	27.5	MKP1G033306A	11	21	31.5	27.5	MKP1J033306B
0.39 "	10.5	19	26.5	22.5	MKP1G033905G	11	21	31.5	27.5	MKP1J033906B
0.47 "	10.5	19	26.5	22.5	MKP1G034705G	11	21	31.5	27.5	MKP1J034706B
	9	19	31.5	27.5	MKP1G034706A					
0.56 "	11	21	26.5	22.5	MKP1G035605I	15	26	31.5	27.5	MKP1J035606F
0.68 "	11	21	26.5	22.5	MKP1G036805I	15	26	31.5	27.5	MKP1J036806F
	11	21	31.5	27.5	MKP1G036806B	13	24	41.5	37.5	MKP1J036807C
0.82 "	13	24	31.5	27.5	MKP1G038206D	17	29	31.5	27.5	MKP1J038206G
1.0 $\mu$ F	13	24	31.5	27.5	MKP1G041006D	17	29	31.5	27.5	MKP1J041006G
						15	26	41.5	37.5	MKP1J041007D
1.2 "	17	29	31.5	27.5	MKP1G041206G	20	39.5	31.5	27.5	MKP1J041206J
1.5 "	17	29	31.5	27.5	MKP1G041506G	20	39.5	31.5	27.5	MKP1J041506J
	13	24	41.5	37.5	MKP1G041507C	19	32	41.5	37.5	MKP1J041507F
1.8 "	20	39.5	31.5	27.5	MKP1G041806J	20	39.5	41.5	37.5	MKP1J041807G
2.2 "	20	39.5	31.5	27.5	MKP1G042206J	20	39.5	41.5	37.5	MKP1J042207G
	17	29	41.5	37.5	MKP1G042207E					
2.7 "	20	39.5	41.5	37.5	MKP1G042707G	24	45.5	41.5	37.5	MKP1J042707H
3.3 "	20	39.5	41.5	37.5	MKP1G043307G	24	45.5	41.5	37.5	MKP1J043307H
						28	38	41.5	37.5	MKP1J043307L
3.9 "	20	39.5	41.5	37.5	MKP1G043907G	35	50	41.5	37.5	MKP1J043907J
4.7 "	20	39.5	41.5	37.5	MKP1G044707G	35	50	41.5	37.5	MKP1J044707J
5.6 "	24	45.5	41.5	37.5	MKP1G045607H	40	55	41.5	37.5	MKP1J045607K
6.8 "	24	45.5	41.5	37.5	MKP1G046807H	40	55	41.5	37.5	MKP1J046807K
	28	38	41.5	37.5	MKP1G046807L	35	50	57	52.5	MKP1J046809F
8.2 "	35	50	41.5	37.5	MKP1G048207J	45	55	57	52.5	MKP1J048209H
10 $\mu$ F	35	50	41.5	37.5	MKP1G051007J	45	55	57	52.5	MKP1J051009H
	35	50	57	52.5	MKP1G051009F					
12 "	40	55	41.5	37.5	MKP1G051207K					
15 "	40	55	41.5	37.5	MKP1G051507K					
	35	50	57	52.5	MKP1G051509F					
18 "	45	65	57	52.5	MKP1G051809J					
22 "	45	65	57	52.5	MKP1G052209J					

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

■ New values and box sizes.

\*\* PCM = Printed circuit module = pin spacing

Dims. in mm.

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

Part number completion:

Version code:	2-pin	= 00
	4-pin	= D4
Tolerance:	20 %	= M
	10 %	= K
	5 %	= J
Packing:	bulk	= S
Pin length:	6-2	= SD
Taped version see page 161.		

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Continuation page 68



## Continuation

### General Data

Capacitance	850 VDC/450 VAC*					1000 VDC/600 VAC*				
	W	H	L	PCM**	Part number	W	H	L	PCM**	Part number
1000 pF	4	9	10	7.5	MKP1M011002C	4	9	10	7.5	MKP1O111002C
	4	9	13	10	MKP1M011003C	4	9	13	10	MKP1O111003C
1200 "	4	9	10	7.5	MKP1M011202C	4	9	10	7.5	MKP1O111202C
1500 "	4	9	10	7.5	MKP1M011502C	4	9	10	7.5	MKP1O111502C
	4	9	13	10	MKP1M011503C	4	9	13	10	MKP1O111503C
1800 "	4	9	10	7.5	MKP1M011802C	4	9	10	7.5	MKP1O111802C
2200 "	4	9	10	7.5	MKP1M012202C	4	9	10	7.5	MKP1O112202C
	4	9	13	10	MKP1M012203C	4	9	13	10	MKP1O112203C
2700 "	4	9	10	7.5	MKP1M012702C	4	9	10	7.5	MKP1O112702C
3300 "	4	9	10	7.5	MKP1M013302C	4	9	10	7.5	MKP1O113302C
	4	9	13	10	MKP1M013303C	4	9	13	10	MKP1O113303C
3900 "	4.5	9.5	10.3	7.5	MKP1M013902D	4.5	9.5	10.3	7.5	MKP1O113902D
4700 "	4.5	9.5	10.3	7.5	MKP1M014702D	4.5	9.5	10.3	7.5	MKP1O114702D
	4	9	13	10	MKP1M014703C	4	9	13	10	MKP1O114703C
5600 "	5.7	12.5	10.3	7.5	MKP1M015602F	5.7	12.5	10.3	7.5	MKP1O115602F
6800 "	5.7	12.5	10.3	7.5	MKP1M016802F	5.7	12.5	10.3	7.5	MKP1O116802F
	5	11	13	10	MKP1M016803F	5	11	13	10	MKP1O116803F
8200 "	5	11	13	10	MKP1M018203F	5	11	13	10	MKP1O118203F
0.01 µF	5	11	13	10	MKP1M021003F	5	11	13	10	MKP1O121003F
	5	11	18	15	MKP1M021004B	5	11	18	15	MKP1O121004B
0.012 "	6	12	13	10	MKP1M021203G	6	12	13	10	MKP1O121203G
0.015 "	6	12	13	10	MKP1M021503G	6	12	13	10	MKP1O121503G
	5	11	18	15	MKP1M021504B	5	11	18	15	MKP1O121504B
0.018 "	6	12.5	18	15	MKP1M021804C	6	12.5	18	15	MKP1O121804C
0.022 "	6	12.5	18	15	MKP1M022204C	6	12.5	18	15	MKP1O122204C
	6	15	26.5	22.5	MKP1M022205B	6	15	26.5	22.5	MKP1O122205B
0.027 "	7	14	18	15	MKP1M022704D	7	14	18	15	MKP1O122704D
0.033 "	7	14	18	15	MKP1M023304D	7	14	18	15	MKP1O123304D
	6	15	26.5	22.5	MKP1M023305B	6	15	26.5	22.5	MKP1O123305B
0.039 "	8	15	18	15	MKP1M023904F	8	15	18	15	MKP1O123904F
0.047 "	8	15	18	15	MKP1M024704F	8	15	18	15	MKP1O124704F
	6	15	26.5	22.5	MKP1M024705B	6	15	26.5	22.5	MKP1O124705B
0.056 "	7	16.5	26.5	22.5	MKP1M025605D	7	16.5	26.5	22.5	MKP1O125605D
0.068 "	7	16.5	26.5	22.5	MKP1M026805D	7	16.5	26.5	22.5	MKP1O126805D
0.082 "	7	16.5	26.5	22.5	MKP1M028205D	8.5	18.5	26.5	22.5	MKP1O128205F
0.1 µF	7	16.5	26.5	22.5	MKP1M031005D	8.5	18.5	26.5	22.5	MKP1O131005F
	11	21	31.5	27.5	MKP1M031006B	11	21	31.5	27.5	MKP1O131006B
0.12 "	8.5	18.5	26.5	22.5	MKP1M031205F	11	21	26.5	22.5	MKP1O131205I
0.15 "	8.5	18.5	26.5	22.5	MKP1M031505F	11	21	26.5	22.5	MKP1O131505I
	11	21	31.5	27.5	MKP1M031506B	11	21	31.5	27.5	MKP1O131506B
0.18 "	11	21	26.5	22.5	MKP1M031805I	11	21	31.5	27.5	MKP1O131806B
0.22 "	11	21	26.5	22.5	MKP1M032205I	11	21	31.5	27.5	MKP1O132206B
	11	21	31.5	27.5	MKP1M032206B					
0.27 "	11	21	31.5	27.5	MKP1M033306B	15	26	31.5	27.5	MKP1O132706F
0.33 "	15	26	31.5	27.5	MKP1M033306F	15	26	31.5	27.5	MKP1O133306F
	13	24	41.5	37.5	MKP1M033307C	13	24	41.5	37.5	MKP1O133307C
0.39 "	17	29	31.5	27.5	MKP1M033906G	17	29	31.5	27.5	MKP1O133906G
0.47 "	17	29	31.5	27.5	MKP1M034706G	17	29	31.5	27.5	MKP1O134706G
	13	24	41.5	37.5	MKP1M034707C	13	24	41.5	37.5	MKP1O134707C
0.56 "	17	29	41.5	37.5	MKP1M035607E	20	39.5	31.5	27.5	MKP1O135606J
0.68 "	20	39.5	31.5	27.5	MKP1M036806J	20	39.5	31.5	27.5	MKP1O136806J
	17	29	41.5	37.5	MKP1M036807E	17	29	41.5	37.5	MKP1O136807E
0.82 "	19	32	41.5	37.5	MKP1M038207F	20	39.5	41.5	37.5	MKP1O138207G

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

Dims. in mm.

■ New values and box sizes.

\*\* PCM = Printed circuit module = pin spacing

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

Rights reserved to amend design data without prior notification.

## Continuation

### General Data

Capacitance	850 VDC/450 VAC*					1000 VDC/600 VAC*				
	W	H	L	PCM**	Part number	W	H	L	PCM**	Part number
1.0 $\mu\text{F}$	19	32	41.5	37.5	MKP1M041007F	20	39.5	41.5	37.5	MKP1O141007G
1.2 "	20	39.5	41.5	37.5	MKP1M041207G	24	45.5	41.5	37.5	MKP1O141207H
1.5 "	20	39.5	41.5	37.5	MKP1M041507G	24	45.5	41.5	37.5	MKP1O141507H
						28	38	41.5	37.5	MKP1O141507L
1.8 "	24	45.5	41.5	37.5	MKP1M041807H	31	46	41.5	37.5	MKP1O141807I
2.2 "	24	45.5	41.5	37.5	MKP1M042207H	31	46	41.5	37.5	MKP1O142207I
	28	38	41.5	37.5	MKP1M042207L					
2.7 "	35	50	41.5	37.5	MKP1M042707J	40	55	41.5	37.5	MKP1O142707K
3.3 "	35	50	41.5	37.5	MKP1M043307J	40	55	41.5	37.5	MKP1O143307K
	35	50	57	52.5	MKP1M043309F	35	50	57	52.5	MKP1O143309F
3.9 "	35	50	57	37.5	MKP1M043909F	45	55	57	52.5	MKP1O143909H
4.7 "	45	55	57	52.5	MKP1M044709H	45	55	57	52.5	MKP1O144709H
5.6 "	45	65	57	52.5	MKP1M045609J					

Capacitance	1600 VDC/650 VAC*					2000 VDC/700 VDC*				
	W	H	L	PCM**	Part number	W	H	L	PCM**	Part number
1000 pF	4	9	13	10	MKP1T011003C	4	9	13	10	MKP1U011003C
1200 "	4	9	13	10	MKP1T011203C	4	9	13	10	MKP1U011203C
1500 "	4	9	13	10	MKP1T011503C	4	9	13	10	MKP1U011503C
1800 "	4	9	13	10	MKP1T011803C	5	11	13	10	MKP1U011803F
2200 "	4	9	13	10	MKP1T012203C	5	11	13	10	MKP1U012203F
						5	11	18	15	MKP1U012204B
2700 "	4	9	13	10	MKP1T012703C	5	11	18	15	MKP1U012704B
3300 "	4	9	13	10	MKP1T013303C	5	11	18	15	MKP1U013304B
3900 "	5	11	13	10	MKP1T013903F	5	11	18	15	MKP1U013904B
4700 "	5	11	13	10	MKP1T014703F	5	11	18	15	MKP1U014704B
						6	15	26.5	22.5	MKP1U014705B
5600 "	6	12	13	10	MKP1T015603G	6	12.5	18	15	MKP1U015604C
6800 "	6	12	13	10	MKP1T016803G	6	12.5	18	15	MKP1U016804C
	5	11	18	15	MKP1T016804B	6	15	26.5	22.5	MKP1U016805B
6800 "	5	11	18	15	MKP1T018204B	7	14	18	15	MKP1U018204D
0.01 $\mu\text{F}$	5	11	18	15	MKP1T021004B	7	14	18	15	MKP1U021004D
						6	15	26.5	22.5	MKP1U021005B
0.012 "	6	12.5	18	15	MKP1T021204C	8	15	18	15	MKP1U021204F
0.015 "	6	12.5	18	15	MKP1T021504C	8	15	18	15	MKP1U021504F
	6	15	26.5	22.5	MKP1T021505B	6	15	26.5	22.5	MKP1U021505B
0.018 "	7	14	18	15	MKP1T022184D	9	16	18	15	MKP1U021804J
0.022 "	7	14	18	15	MKP1T022204D	9	16	18	15	MKP1U022204J
	6	15	26.5	22.5	MKP1T022205B	7	16.5	26.5	22.5	MKP1U022205D
0.027 "	8	15	18	15	MKP1T022704F	8.5	18.5	26.5	22.5	MKP1U022705F
0.033 "	8	15	18	15	MKP1T023304F	8.5	18.5	26.5	22.5	MKP1U023305F
	6	15	26.5	22.5	MKP1T023305B	9	19	31.5	27.5	MKP1U023306A
0.039 "	7	16.5	26.5	22.5	MKP1T023905D	10.5	19	26.5	22.5	MKP1U023905G
0.047 "	7	16.5	26.5	22.5	MKP1T024705D	10.5	19	26.5	22.5	MKP1U024705G
	9	19	31.5	27.5	MKP1T024706A	11	21	31.5	27.5	MKP1U024706B
0.056 "	10.5	19	26.5	22.5	MKP1T025605G	11	21	26.5	22.5	MKP1U025605I
0.068 "	10.5	19	26.5	22.5	MKP1T026805G	11	21	26.5	22.5	MKP1U026805I
	9	19	31.5	27.5	MKP1T026806A	11	21	31.5	27.5	MKP1U026806B
0.082 "	11	21	26.5	22.5	MKP1T028205I	13	24	31.5	27.5	MKP1U028206D

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

■ New values and box sizes.

\*\* PCM = Printed circuit module = pin spacing

Dims. in mm.

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

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## Continuation

### General Data

Capacitance	1600 VDC/650 VAC*					2000 VDC/700 VAC*				
	W	H	L	PCM**	Part number	W	H	L	PCM**	Part number
0.1 $\mu$ F	11	21	26.5	22.5	MKP1T031005I	13	24	31.5	27.5	MKP1U031006D
	11	21	31.5	27.5	MKP1T031006B					
0.12 "	13	24	31.5	27.5	MKP1T031206D	15	26	31.5	27.5	MKP1U031206F
0.15 "	13	24	31.5	27.5	MKP1T031506D	15	26	31.5	27.5	MKP1U031506F
						13	24	41.5	37.5	MKP1U031507C
0.18 "	15	26	31.5	27.5	MKP1T031806F	17	34.5	31.5	27.5	MKP1U031806I
						15	26	31.5	27.5	MKP1T032206F
0.22 "	13	24	41.5	37.5	MKP1T032207C	17	29	41.5	37.5	MKP1U032207E
						17	34.5	31.5	27.5	MKP1T032706I
0.27 "	17	34.5	31.5	27.5	MKP1T032706I	19	32	41.5	37.5	MKP1U032707F
0.33 "	17	34.5	31.5	27.5	MKP1T033306I	19	32	41.5	37.5	MKP1U033307F
0.39 "	20	39.5	31.5	27.5	MKP1T033906J	20	39.5	41.5	37.5	MKP1U033907G
0.47 "	19	32	41.5	37.5	MKP1T034707F	24	45.5	41.5	37.5	MKP1U035607H
0.56 "	20	39.5	41.5	37.5	MKP1T035607G	24	45.5	41.5	37.5	MKP1U036807L
0.68 "	20	39.5	41.5	37.5	MKP1T036807G	28	38	41.5	37.5	MKP1U036807L
0.82 "	24	45.5	41.5	37.5	MKP1T038207H	35	50	41.5	37.5	MKP1U038207J
1.0 $\mu$ F	24	45.5	41.5	37.5	MKP1T041007H	35	50	41.5	37.5	MKP1U041007J
1.2 "	31	46	41.5	37.5	MKP1T041207I	40	55	41.5	37.5	MKP1U041207K
1.5 "	31	46	41.5	37.5	MKP1T041507I	40	55	41.5	37.5	MKP1U041507K
						35	50	57	52.5	MKP1U041509F
1.8 "	40	55	41.5	37.5	MKP1T041807K	45	55	57	52.5	MKP1U041809H
						40	55	41.5	37.5	MKP1T042207K
2.2 "	35	50	57	52.5	MKP1T042209F	45	55	57	52.5	MKP1U042209H
2.7 "	45	65	57	52.5	MKP1T042709J					
3.3 "	45	65	57	52.5	MKP1T043309J					

Capacitance	2500 VDC/700 VAC*				
	W	H	L	PCM**	Part number
1000 pF	5	11	18	15	MKP1V011004B
	6	15	26.5	22.5	MKP1V011005B
1200 "	5	11	18	15	MKP1V011204B
1500 "	5	11	18	15	MKP1V011504B
1800 "	5	11	18	15	MKP1V011804B
2200 "	5	11	18	15	MKP1V012204B
2700 "	5	11	18	15	MKP1V012704B
3300 "	5	11	18	15	MKP1V013304B
3900 "	6	12.5	18	15	MKP1V013904C
4700 "	6	12.5	18	15	MKP1V014704C
5600 "	7	14	18	15	MKP1V015604D
6800 "	7	14	18	15	MKP1V016804D
8200 "	8.5	18.5	26.5	22.5	MKP1V018205F

New values and box sizes.

\*\* PCM = Printed circuit module = pin spacing

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

Part number completion:	
Version code:	2-pin = 00 4-pin = D4
Tolerance:	20 % = M 10 % = K 5 % = J
Packing:	bulk = S
Pin length:	6-2 = SD
Taped version see page 161.	

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

Dims. in mm.

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## Continuation

### General Data

Capacitance	2500 VDC/700 VAC*					3000 VDC/700 VAC*				
	W	H	L	PCM**	Part number	W	H	L	PCM**	Part number
0.01 µF	8.5	18.5	26.5	22.5	MKP1V021005F	8.5	18.5	26.5	22.5	MKP1W021005F
0.012 "	10.5	19	26.5	22.5	MKP1V021205G	10.5	19	26.5	22.5	MKP1W021205G
0.015 "	10.5	19	26.5	22.5	MKP1V021505G	10.5	19	26.5	22.5	MKP1W021505G
0.018 "	11	21	26.5	22.5	MKP1V021805I	11	21	26.5	22.5	MKP1W021805I
0.022 "	11	21	26.5	22.5	MKP1V022205I	11	21	26.5	22.5	MKP1W022205I
0.027 "	11	21	26.5	22.5	MKP1V022705I	11	21	26.5	22.5	MKP1W022705I
0.033 "	11	21	26.5	22.5	MKP1V023305I	11	21	26.5	22.5	MKP1W023305I
	9	19	31.5	27.5	MKP1V023306A	9	19	31.5	27.5	MKP1W023306A
0.039 "	11	21	31.5	27.5	MKP1V023906B	11	21	31.5	27.5	MKP1W023906B
0.047 "	11	21	31.5	27.5	MKP1V024706B	11	21	31.5	27.5	MKP1W024706B
0.056 "	13	24	31.5	27.5	MKP1V025606D	13	24	31.5	27.5	MKP1W025606D
0.068 "	13	24	31.5	27.5	MKP1V026806D	13	24	31.5	27.5	MKP1W026806D
0.082 "	15	26	31.5	27.5	MKP1V028206F	15	26	31.5	27.5	MKP1W028206F
0.1 µF	15	26	31.5	27.5	MKP1V031006F	15	26	31.5	27.5	MKP1W031006F
	13	24	41.5	37.5	MKP1V031007C	13	24	41.5	37.5	MKP1W031007C
0.12 "	17	34.5	31.5	27.5	MKP1V031206I	17	34.5	31.5	27.5	MKP1W031206I
0.15 "	17	34.5	31.5	27.5	MKP1V031506I	17	34.5	31.5	27.5	MKP1W031506I
	15	26	41.5	37.5	MKP1V031507D	15	26	41.5	37.5	MKP1W031507D
0.18 "	19	32	41.5	37.5	MKP1V031807F	19	32	41.5	37.5	MKP1W031807F
0.22 "	19	32	41.5	37.5	MKP1V032207F	19	32	41.5	37.5	MKP1W032207F
0.27 "	24	45.5	41.5	37.5	MKP1V032707H	24	45.5	41.5	37.5	MKP1W032707H
0.33 "	24	45.5	41.5	37.5	MKP1V033307H	24	45.5	41.5	37.5	MKP1W033307H
	28	38	41.5	37.5	MKP1V033307L	28	38	41.5	37.5	MKP1W033307L
0.39 "	31	46	41.5	37.5	MKP1V033907I	31	46	41.5	37.5	MKP1W033907I
0.47 "	31	46	41.5	37.5	MKP1V034707I	31	46	41.5	37.5	MKP1W034707I
0.56 "	35	50	41.5	37.5	MKP1V035607J	35	50	41.5	37.5	MKP1W035607J
0.68 "	35	50	41.5	37.5	MKP1V036807J	35	50	41.5	37.5	MKP1W036807J
0.82 "	40	55	41.5	37.5	MKP1V038207K	40	55	41.5	37.5	MKP1W038207K
1.0 µF	40	55	41.5	37.5	MKP1V041007K	40	55	41.5	37.5	MKP1W041007K
	35	50	57	52.5	MKP1V041009F	35	50	57	52.5	MKP1W041009F
1.2 "	45	55	57	52.5	MKP1V041209H	45	55	57	52.5	MKP1W041209H
1.5 "	45	55	57	52.5	MKP1V041509H	45	55	57	52.5	MKP1W041509H

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

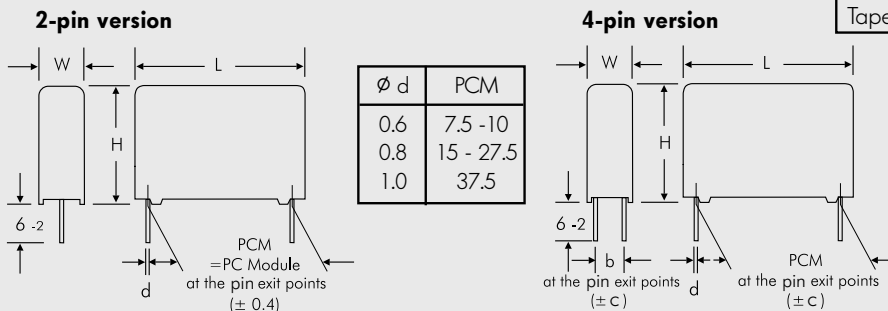
■ New values and box sizes.

\*\* PCM = Printed circuit module = pin spacing

Dims. in mm.

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

Part number completion:	
Version code:	2-pin = 00 4-pin = D4
Tolerance:	20 % = M 10 % = K 5 % = J
Packing:	bulk = S
Pin length:	6-2 = SD
Taped version see page 161.	



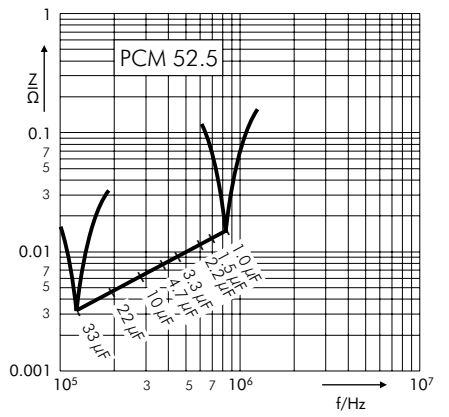
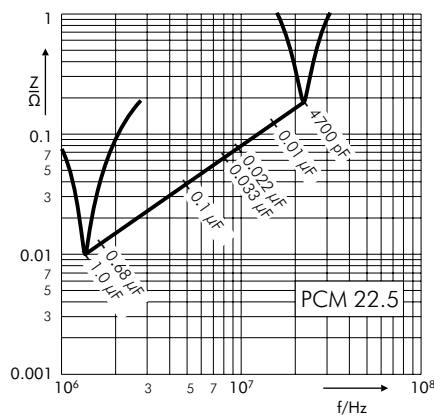
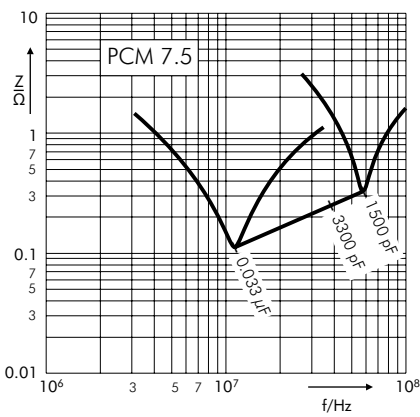
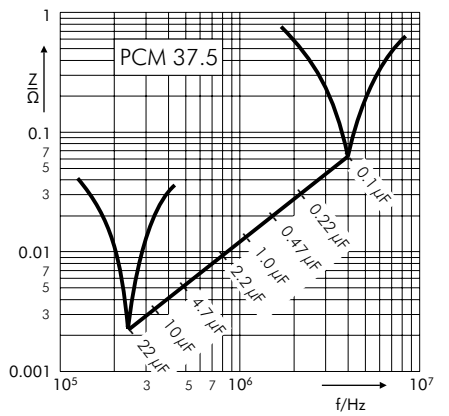
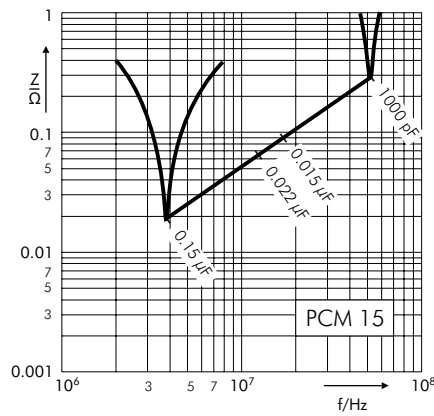
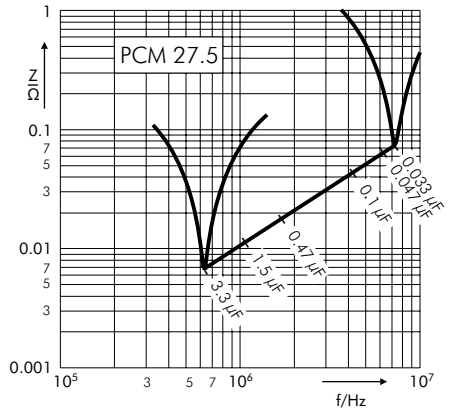
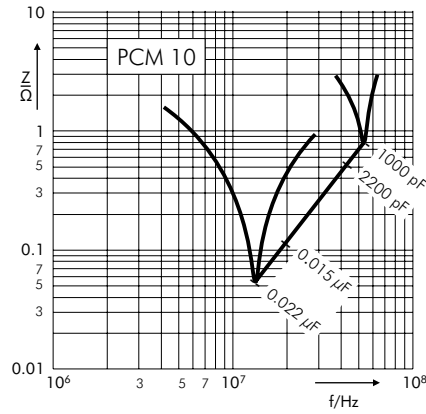
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Continuation page 72



## Continuation

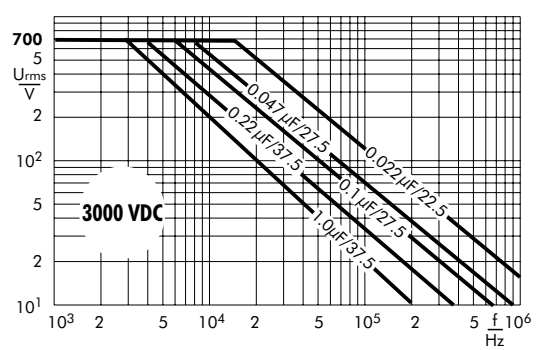
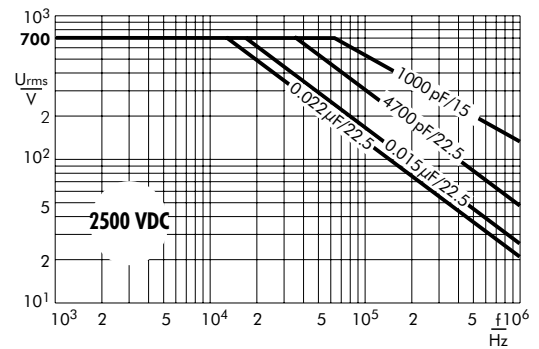
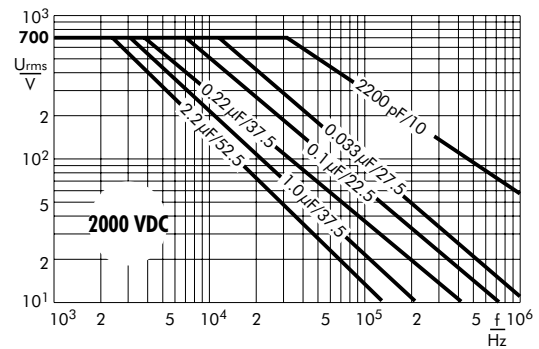
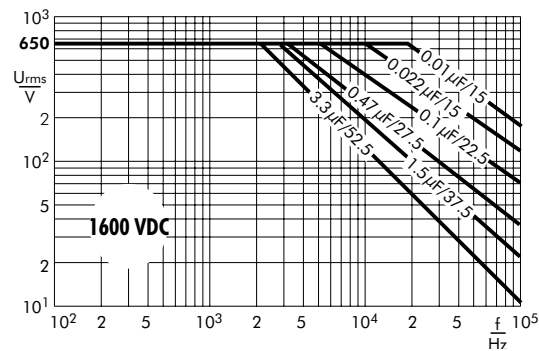
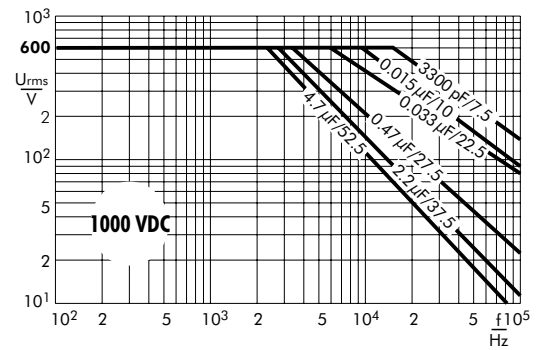
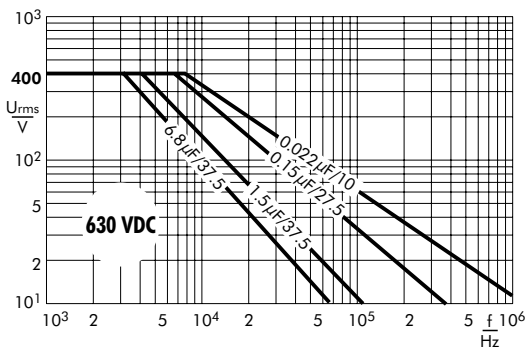
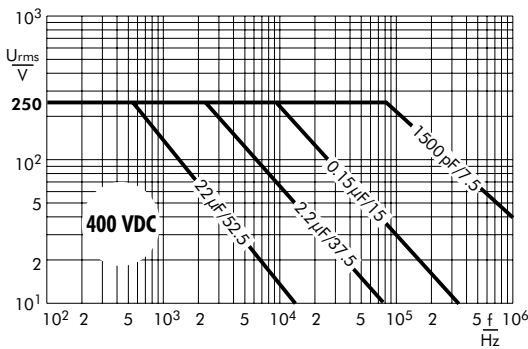
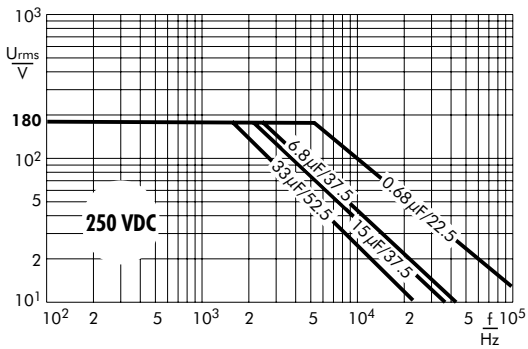
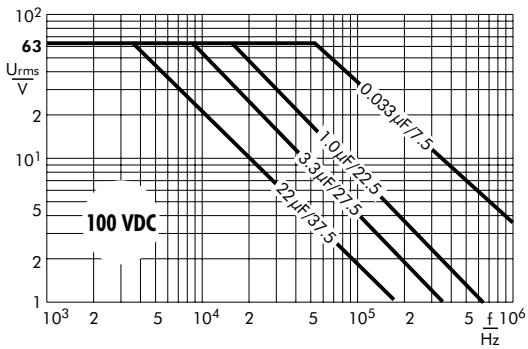
Impedance change with frequency  
(general guide).



## Continuation

Permissible AC voltage in relation to frequency till 15° C internal temperature rise (general guide).

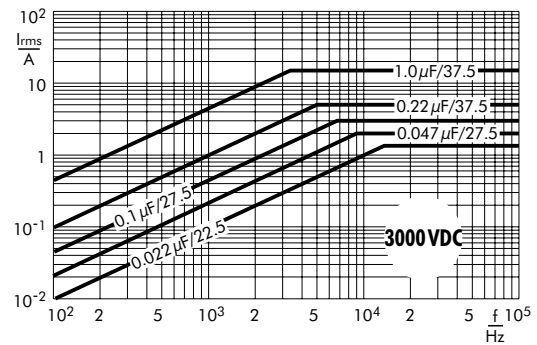
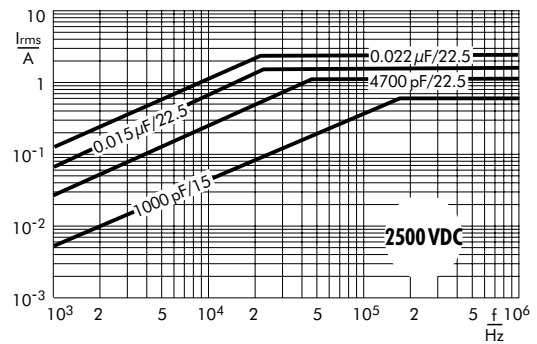
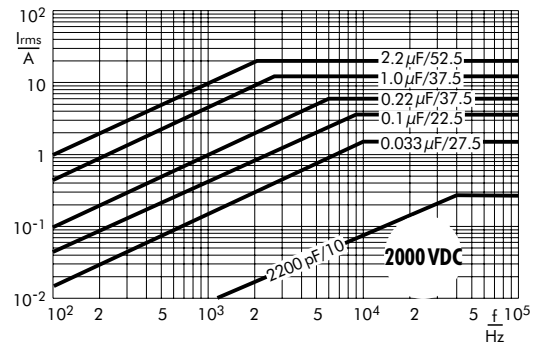
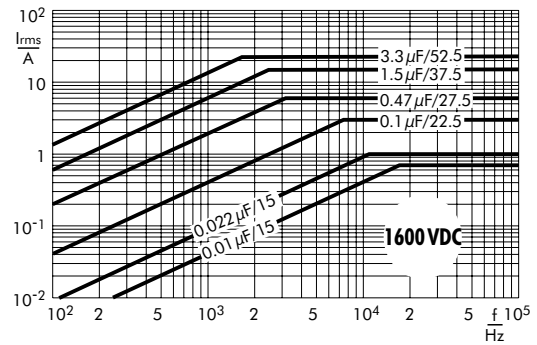
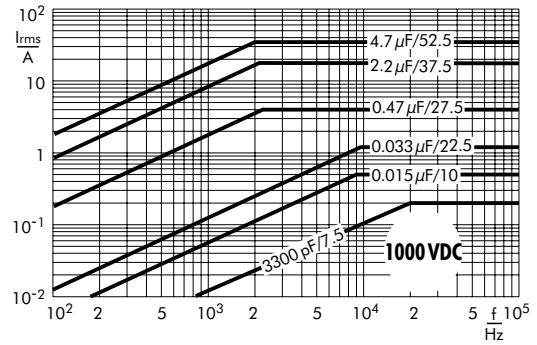
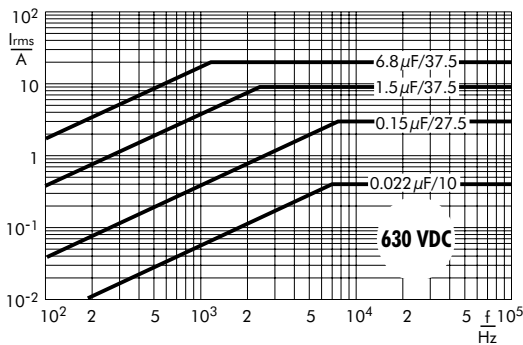
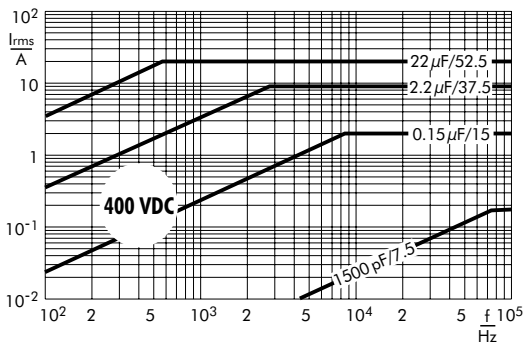
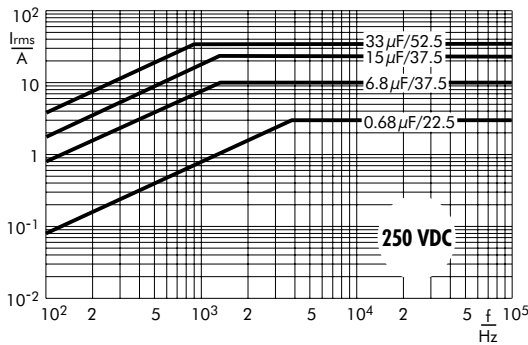
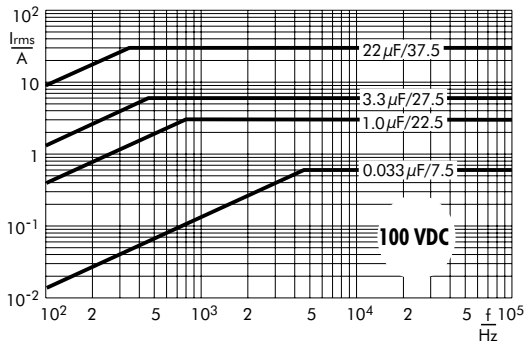
The information behind the cross bar denote the PCM of the measured value.



## Continuation

Permissible AC current in relation to frequency till 15° C internal temperature rise (general guide).

The information behind the cross bar denote the PCM of the measured value.



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

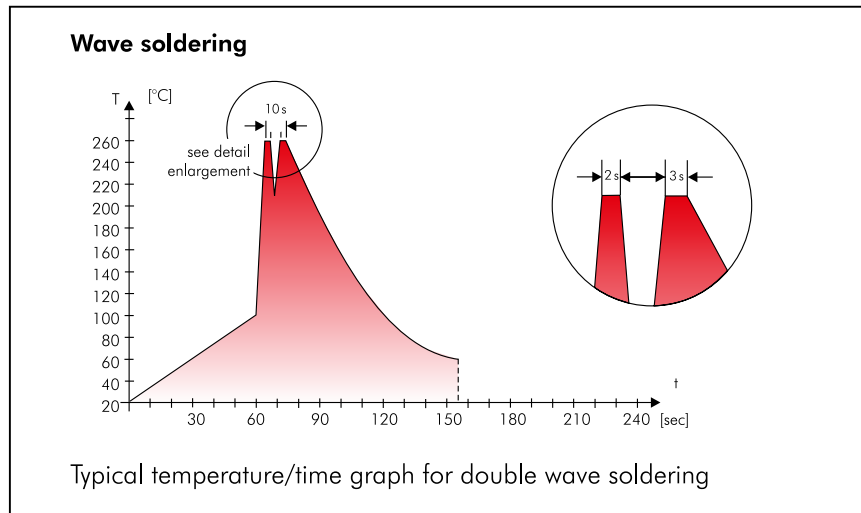
Dwell time:  $t < 5 \text{ sec}$

#### 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

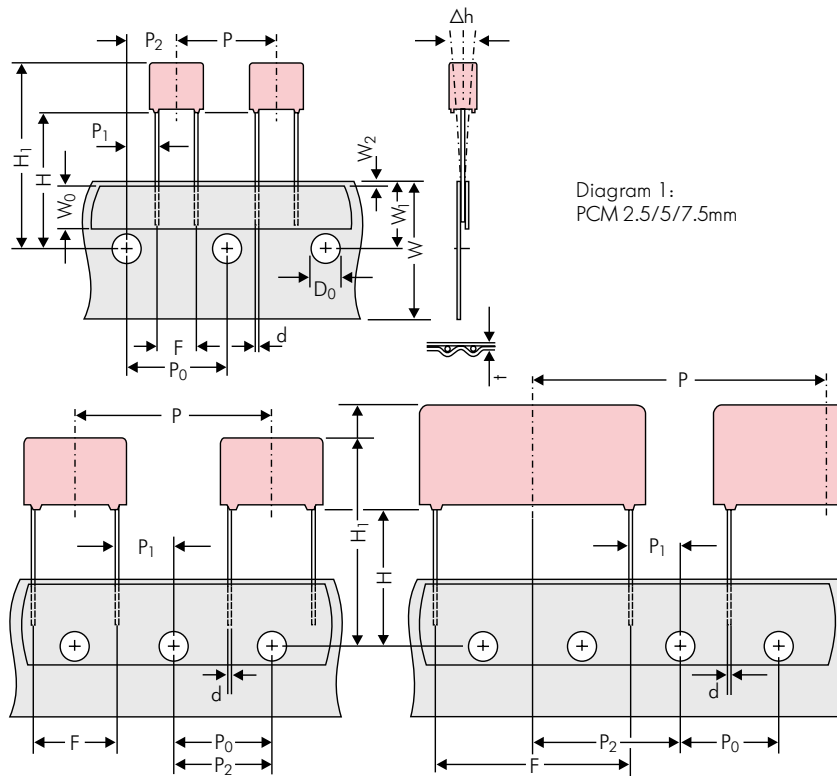


Diagram 1:  
PCM 2.5/5/7.5mm

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.

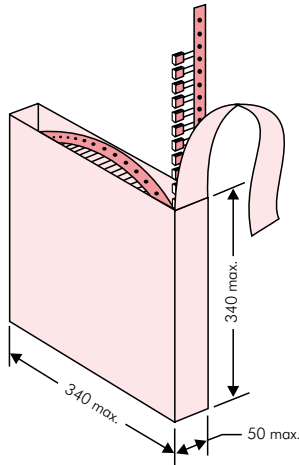
\* PCM 10 and PCM 15 can be crimped to PCM 7.5.

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

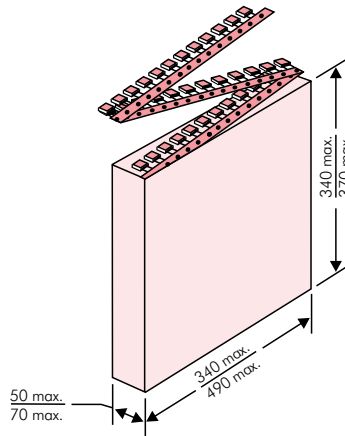
Please clarify customer-specific deviations with the manufacturer.

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

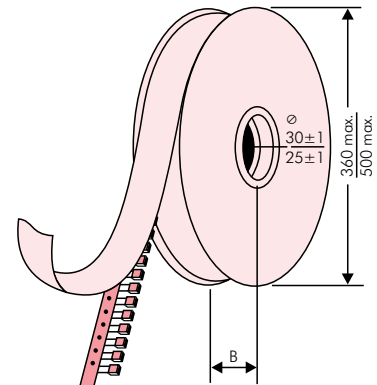
### ■ ROLL Packaging



### ■ 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	RoHS 2011/65/EU
	COO: DE
Customer No.: 0000100002	
Gross Weight [g]: 4557	
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		3000
	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>FA</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>FB</b>	2000			700	1300					1200
	5	11	13	<b>3F</b>	3000			700	1300					1100
	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>FC</b>	1000			600	1200					1200
	6	12.5	18	<b>4C</b>	2000			500	1000					1000
	6	14	19	<b>FD</b>	1000			500	1000					1000
	7	14	18	<b>4D</b>	1600			450	900					850
	7	15	19	<b>FE</b>	1000			450	900					850
	8	15	18	<b>4F</b>	1200			400	800					740
	8	17	19	<b>FF</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>FG</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>FH</b>	500				500					480
	8.5	18.5	26.5	<b>5F</b>	500				480					450
	10	22	28	<b>FI</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>FJ</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>6K</b>	405*	-	-	-	-	-	-	-	-	-	-	-	-	
	15	26	31.5	<b>6F</b>	324*	-	-	-	-	270	-	-	-	-	-	-	-	
	15	26	33	<b>6L</b>	324*	-	-	-	-	-	-	-	-	-	-	-	-	
	17	29	31.5	<b>6G</b>	198*	-	-	-	-	-	-	-	-	-	-	-	-	
	17	34.5	31.5	<b>6I</b>	198*	-	-	-	-	-	-	-	-	-	-	-	-	
	20	32	33	<b>6M</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>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>Version code:</b></p> <p>Standard = 00  Version A1 = 1A  Version A1.1.1 = 1B  Version A2 = 2A  ...</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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