

**Metallized Polypropylene (PP) Capacitors**  
**in PCM 7.5 mm to 37.5 mm. Capacitances from 0.01  $\mu\text{F}$  to 68  $\mu\text{F}$ .**  
**Rated Voltages from 100 VDC to 1250 VDC.**

## Special Features

- High volume/capacitance ratio
- Self-healing
- Very low dissipation factor
- Negative capacitance change versus temperature
- Very low dielectric absorption
- AEC-Q200 qualified
- According to RoHS 2015/863/EU

## Typical Applications

For high frequency applications e.g.

- Sample and hold
- Timing
- Oscillating circuits
- High frequency coupling and decoupling

## Construction

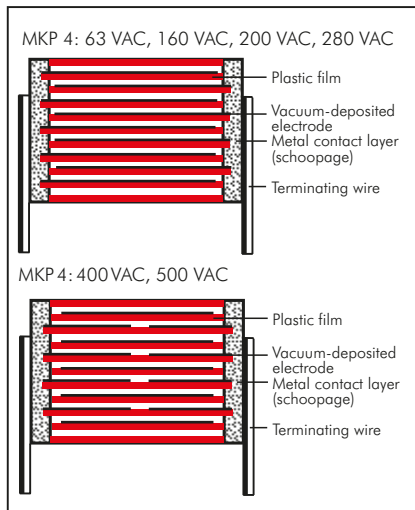
### Dielectric:

Polypropylene (PP) film

### Capacitor electrodes:

Vacuum-deposited

### 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:

0.01  $\mu\text{F}$  to 68  $\mu\text{F}$

### Rated voltages:

100VDC, 250VDC, 400VDC, 630VDC, 1000VDC, 1250VDC

### Capacitance tolerances:

$\pm 20\%$ ,  $\pm 10\%$ ,  $\pm 5\%$

### Operating temperature range:

$-55^\circ\text{C}$  to  $+105^\circ\text{C}$

### Climatic test category:

55/100/56 in accordance with IEC

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

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

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

Measuring voltage: 100 V/1 min.

### 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	$\leq 8 \times 10^{-4}$	$\leq 8 \times 10^{-4}$	–
100 kHz	$\leq 25 \times 10^{-4}$	–	–

### Maximum pulse rise time:

Capacitance $\mu\text{F}$	max. pulse rise time V/ $\mu\text{sec}$ at $T_A < 40^\circ\text{C}$					
	100 VDC	250 VDC	400 VDC	630 VDC	1000 VDC	1250 VDC
0.01 ... 0.022	450	450	450	500	550	600
0.033 ... 0.068	250	250	300	350	400	450
0.1 ... 0.22	150	150	200	250	300	350
0.33 ... 0.68	100	100	150	200	200	250
1.0 ... 2.2	75	100	100	150	150	200
3.3 ... 4.7	60	100	100	120	140	160
6.8 ... 10	40	50	60	85	–	–
12 ... 68	20	20	40	50	–	–

## Mechanical Tests

### Pull test on pins:

$d \leq 0.8 \text{ } \varnothing$ : 10 N in direction of pins

$d > 0.8 \text{ } \varnothing$ : 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  $\text{m}/\text{sec}^2$

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/160 VAC*				
	W	H	L	PCM**	Part number	W	H	L	PCM**	Part number
0.01 µF	3	8.5	10	7.5	MKP4D021002B00	3	8.5	10	7.5	MKP4F021002B00
0.015 "	3	8.5	10	7.5	MKP4D021502B00	3	8.5	10	7.5	MKP4F021502B00
0.022 "	3	8.5	10	7.5	MKP4D022202B00	3	8.5	10	7.5	MKP4F022202B00
0.033 "	3	8.5	10	7.5	MKP4D023302B00	3	8.5	10	7.5	MKP4F023302B00
	4	9	13	10	MKP4D023303C00	4	9	13	10	MKP4F023303C00
0.047 "	4	9	10	7.5	MKP4D024702C00	4	9	10	7.5	MKP4F024702C00
	4	9	13	10	MKP4D024703C00	4	9	13	10	MKP4F024703C00
0.068 "	4	9	10	7.5	MKP4D026802C00	4	9	10	7.5	MKP4F026802C00
	4	9	13	10	MKP4D026803C00	4	9	13	10	MKP4F026803C00
0.1 µF	4.5	9.5	10.3	7.5	MKP4D031002D00	4.5	9.5	10.3	7.5	MKP4F031002D00
	4	9	13	10	MKP4D031003C00	4	9	13	10	MKP4F031003C00
0.15 "	5	10.5	10.3	7.5	MKP4D031502E00	5	10.5	10.3	7.5	MKP4F031502E00
	5	11	13	10	MKP4D031503F00	5	11	13	10	MKP4F031503F00
0.22 "	6	12	13	10	MKP4D032203G00	6	12	13	10	MKP4F032203G00
	5	11	18	15	MKP4D032204B00	5	11	18	15	MKP4F032204B00
0.33 "	6	12.5	18	15	MKP4D033304C00	6	12.5	18	15	MKP4F033304C00
0.47 "	7	14	18	15	MKP4D034704D00	7	14	18	15	MKP4F034704D00
0.68 "	8	15	18	15	MKP4D036804F00	8	15	18	15	MKP4F036804F00
	6	15	26.5	22.5	MKP4D036805B00	6	15	26.5	22.5	MKP4F036805B00
1.0 µF	7	16.5	26.5	22.5	MKP4D041005D00	7	16.5	26.5	22.5	MKP4F041005D00
						9	19	31.5	27.5	MKP4F041006A00
1.2 "	10.5	19	26.5	22.5	MKP4D041205G00	10.5	19	26.5	22.5	MKP4F041205G00
						9	19	31.5	27.5	MKP4F041206A00
1.5 "	10.5	19	26.5	22.5	MKP4D041505G00	10.5	19	26.5	22.5	MKP4F041505G00
						11	21	31.5	27.5	MKP4F041506B00
1.8 "	11	21	26.5	22.5	MKP4D041805I00	11	21	26.5	22.5	MKP4F041805I00
						11	21	31.5	27.5	MKP4F041806B00
2.2 "	11	21	26.5	22.5	MKP4D042205I00	11	21	26.5	22.5	MKP4F042205I00
	9	19	31.5	27.5	MKP4D042206A00	11	21	31.5	27.5	MKP4F042206B00
2.7 "	9	19	31.5	27.5	MKP4D042706A00	11	21	31.5	27.5	MKP4F042706B00
3.3 "	9	19	31.5	27.5	MKP4D043306A00	13	24	31.5	27.5	MKP4F043306D00
3.9 "	11	21	31.5	27.5	MKP4D043906B00	13	24	31.5	27.5	MKP4F043906D00
4.7 "	13	24	31.5	27.5	MKP4D044706D00	15	26	31.5	27.5	MKP4F044706F00
						13	24	41.5	37.5	MKP4F044707C00
5.6 "	13	24	31.5	27.5	MKP4D045606D00	17	29	31.5	27.5	MKP4F045606G00
						15	26	41.5	37.5	MKP4F045607D00
6.8 "	15	26	31.5	27.5	MKP4D046806F00	17	29	31.5	27.5	MKP4F046806G00
						15	26	41.5	37.5	MKP4F046807D00
8.2 "	15	26	31.5	27.5	MKP4D048206F00	17	34.5	31.5	27.5	MKP4F046806I00
						17	29	41.5	37.5	MKP4F046807E00
10 µF	17	29	31.5	27.5	MKP4D051006G00	20	39.5	31.5	27.5	MKP4F051006J00
	13	24	41.5	37.5	MKP4D051007C00	19	32	41.5	37.5	MKP4F051007F00
12 "	17	29	31.5	27.5	MKP4D051206G00	20	39.5	41.5	37.5	MKP4F051207G00
	15	26	41.5	37.5	MKP4D051207D00					
15 "	17	34.5	31.5	27.5	MKP4D051506I00	20	39.5	41.5	37.5	MKP4F051507G00
	17	29	41.5	37.5	MKP4D051507E00					
18 "	20	39.5	31.5	27.5	MKP4D051806J00	24	45.5	41.5	37.5	MKP4F051807H00
	19	32	41.5	37.5	MKP4D051807F00					
22 "	20	39.5	41.5	37.5	MKP4D052207G00	24	45.5	41.5	37.5	MKP4F052207H00
						28	38	41.5	37.5	MKP4F052207L00
27 "	20	39.5	41.5	37.5	MKP4D052707G00	31	46	41.5	37.5	MKP4F052707I00
33 "	28	38	41.5	37.5	MKP4D053307L00	35	50	41.5	37.5	MKP4F053307J00
	24	45.5	41.5	37.5	MKP4D053307H00					
39 "	31	46	41.5	37.5	MKP4D053907I00	40	55	41.5	37.5	MKP4F053907K00
47 "	35	50	41.5	37.5	MKP4D054707J00					
56 "	35	50	41.5	37.5	MKP4D055607J00					
68 "	40	55	41.5	37.5	MKP4D056807K00					

\* AC voltage:  $f \leq 400 \text{ Hz}$ ;  $1.4 \times U_{\text{rms}} + \text{UDC} \leq U_r$

Dims. in mm.

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

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## Continuation

### General Data

Capacitance	400 VDC/220 VAC*					630 VDC/280 VAC*				
	W	H	L	PCM**	Part number	W	H	L	PCM**	Part number
0.01 µF	3	8.5	10	7.5	MKP4G021002B00_____	3	8.5	10	7.5	MKP4J021002B00_____
						4	9	13	10	MKP4J021003C00_____
0.015 "	4	9	10	7.5	MKP4G021502C00_____	4	9	10	7.5	MKP4J021502C00_____
	4	9	13	10	MKP4G021503C00_____	4	9	13	10	MKP4J021503C00_____
0.022 "	4.5	9.5	10.3	7.5	MKP4G022202D00_____	4.5	9.5	10.3	7.5	MKP4J022202D00_____
	4	9	13	10	MKP4G022203C00_____	4	9	13	10	MKP4J022203C00_____
0.033 "	5	10.5	10.3	7.5	MKP4G023302E00_____	5	10.5	10.3	7.5	MKP4J023302E00_____
	4	9	13	10	MKP4G023303C00_____	4	9	13	10	MKP4J023303C00_____
0.047 "	5	10.5	10.3	7.5	MKP4G024702E00_____	5.7	12.5	10.3	7.5	MKP4J024702F00_____
	5	11	13	10	MKP4G024703F00_____	5	11	13	10	MKP4J024703F00_____
0.068 "	5.7	12.5	10.3	7.5	MKP4G026802F00_____	6	12	13	10	MKP4J026803G00_____
	5	11	13	10	MKP4G026803F00_____	6	12.5	18	15	MKP4J026804C00_____
0.1 µF	6	12	13	10	MKP4G031003G00_____	7	14	18	15	MKP4J031004D00_____
	5	11	18	15	MKP4G031004B00_____					
0.15 "	6	12.5	18	15	MKP4G031504C00_____	8	15	18	15	MKP4J031504F00_____
						6	15	26.5	22.5	MKP4J031505B00_____
0.22 "	7	14	18	15	MKP4G032204D00_____	9	16	18	15	MKP4J032204J00_____
						7	16.5	26.5	22.5	MKP4J032205D00_____
0.33 "	8	15	18	15	MKP4G033304F00_____	8.5	18.5	26.5	22.5	MKP4J033305F00_____
	6	15	26.5	22.5	MKP4G033305B00_____					
0.47 "	7	16.5	26.5	22.5	MKP4G034705D00_____	10.5	19	26.5	22.5	MKP4J034705G00_____
						11	21	31.5	27.5	MKP4J034706B00_____
0.68 "	8.5	18.5	26.5	22.5	MKP4G036805F00_____	11	21	31.5	27.5	MKP4J036806B00_____
1.0 µF	11	21	26.5	22.5	MKP4G041005I00_____	13	24	31.5	27.5	MKP4J041006D00_____
	11	21	31.5	27.5	MKP4G041006B00_____					
1.2 "	11	21	31.5	27.5	MKP4G041206B00_____	15	26	31.5	27.5	MKP4J041206F00_____
1.5 "	11	21	31.5	27.5	MKP4G041506B00_____	15	26	31.5	27.5	MKP4J041506F00_____
						13	24	41.5	37.5	MKP4J041507C00_____
1.8 "	13	24	31.5	27.5	MKP4G041806D00_____	17	29	31.5	27.5	MKP4J041806G00_____
						15	26	41.5	37.5	MKP4J041807D00_____
2.2 "	15	26	31.5	27.5	MKP4G042206F00_____	17	34.5	31.5	27.5	MKP4J042206I00_____
	13	24	41.5	37.5	MKP4G042207C00_____	17	29	41.5	37.5	MKP4J042207E00_____
2.7 "	17	29	31.5	27.5	MKP4G042706G00_____	17	29	41.5	37.5	MKP4J042707E00_____
3.3 "	17	29	31.5	27.5	MKP4G043306G00_____	20	39.5	31.5	27.5	MKP4J043306J00_____
	15	26	41.5	37.5	MKP4G043307D00_____	19	32	41.5	37.5	MKP4J043307F00_____
3.9 "	20	39.5	31.5	27.5	MKP4G043906J00_____	20	39.5	41.5	37.5	MKP4J043907G00_____
4.7 "	20	39.5	31.5	27.5	MKP4G044706J00_____	20	39.5	41.5	37.5	MKP4J044707G00_____
	19	32	41.5	37.5	MKP4G044707F00_____					
5.6 "	20	39.5	41.5	37.5	MKP4G045607G00_____	24	45.5	41.5	37.5	MKP4J045607H00_____
						28	38	41.5	37.5	MKP4J045607L00_____
6.8 "	20	39.5	41.5	37.5	MKP4G046807G00_____	24	45.5	41.5	37.5	MKP4J046807H00_____
						28	38	41.5	37.5	MKP4J046807L00_____
8.2 "	24	45.5	41.5	37.5	MKP4G048207H00_____	31	46	41.5	37.5	MKP4J048207I00_____
10 µF	24	45.5	41.5	37.5	MKP4G051007H00_____	35	50	41.5	37.5	MKP4J051007J00_____
	28	38	41.5	37.5	MKP4G051007L00_____					
12 "	31	46	41.5	37.5	MKP4G051207I00_____	40	55	41.5	37.5	MKP4J051207K00_____
15 "	31	46	41.5	37.5	MKP4G051507I00_____					
18 "	35	50	41.5	37.5	MKP4G051807J00_____					
22 "	40	55	41.5	37.5	MKP4G052207K00_____					

\* AC voltages:  $f \leq 400 \text{ Hz}$ ;  $1.4 \times U_{\text{rms}} + U_{\text{DC}} \leq U_{\text{r}}$

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

Dims. in mm.

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Continuation page 64

## Continuation

### General Data

Capacitance	1000 VDC/400 VAC*					1250 VDC/500 VAC*				
	W	H	L	PCM**	Part number	W	H	L	PCM**	Part number
0.01 $\mu$ F	5.7	12.5	10.3	7.5	MKP4O121002F00_____	5	11	18	15	MKP4R021004B00_____
	5	11	13	10	MKP4O121003F00_____					
0.015 "	5	11	13	10	MKP4O121503F00_____	6	12.5	18	15	MKP4R021504C00_____
	5	11	18	15	MKP4O121504B00_____					
0.022 "	5	11	18	15	MKP4O122204B00_____	7	14	18	15	MKP4R022204D00_____
0.033 "	6	12.5	18	15	MKP4O123304C00_____	8	15	18	15	MKP4R023304F00_____
0.047 "	7	14	18	15	MKP4O124704D00_____	6	15	26.5	22.5	MKP4R024705B00_____
0.068 "	8	15	18	15	MKP4O126804F00_____	8.5	18.5	26.5	22.5	MKP4R026805F00_____
	6	15	26.5	22.5	MKP4O126805B00_____					
0.1 $\mu$ F	9	16	18	15	MKP4O131004J00_____	10.5	19	26.5	22.5	MKP4R031005G00_____
	7	16.5	26.5	22.5	MKP4O131005D00_____	9	19	31.5	27.5	MKP4R031006A00_____
0.15 "	8.5	18.5	26.5	22.5	MKP4O131505F00_____	11	21	31.5	27.5	MKP4R031506B00_____
0.22 "	11	21	26.5	22.5	MKP4O132205I00_____	13	24	31.5	27.5	MKP4R032206D00_____
	11	21	31.5	27.5	MKP4O132206B00_____					
0.33 "	11	21	31.5	27.5	MKP4O133306B00_____	15	26	31.5	27.5	MKP4R033306F00_____
						13	24	41.5	37.5	MKP4R033307C00_____
0.47 "	13	24	31.5	27.5	MKP4O134706D00_____	17	29	31.5	27.5	MKP4R034706G00_____
						15	26	41.5	37.5	MKP4R034707D00_____
0.68 "	17	29	31.5	27.5	MKP4O136806G00_____	20	39.5	31.5	27.5	MKP4R036806J00_____
	15	26	41.5	37.5	MKP4O136807D00_____	19	32	41.5	37.5	MKP4R036807F00_____
1.0 $\mu$ F	20	39.5	31.5	27.5	MKP4O141006J00_____	20	39.5	41.5	37.5	MKP4R041007G00_____
	17	29	41.5	37.5	MKP4O141007E00_____					
1.2 "	19	32	41.5	37.5	MKP4O141207F00_____	20	39.5	41.5	37.5	MKP4R041207G00_____
1.5 "	20	39.5	41.5	37.5	MKP4O141507G00_____	24	45.5	41.5	37.5	MKP4R041507H00_____
1.8 "	20	39.5	41.5	37.5	MKP4O141807G00_____	24	45.5	41.5	37.5	MKP4R041807H00_____
2.2 "	24	45.5	41.5	37.5	MKP4O142207H00_____	31	46	41.5	37.5	MKP4R042207I00_____
	28	38	41.5	37.5	MKP4O142207L00_____					
2.7 "	31	46	41.5	37.5	MKP4O142707I00_____	35	50	41.5	37.5	MKP4R042707J00_____
3.3 "	31	46	41.5	37.5	MKP4O143307I00_____	40	55	41.5	37.5	MKP4R043307K00_____
3.9 "	35	50	41.5	37.5	MKP4O143907J00_____					
4.7 "	35	50	41.5	37.5	MKP4O144707J00_____					

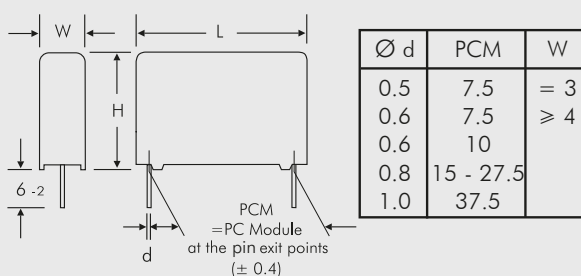
\* AC voltages:  $f \leq 400$  Hz;  $1.4 \times U_{rms} + UDC \leq U_r$

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

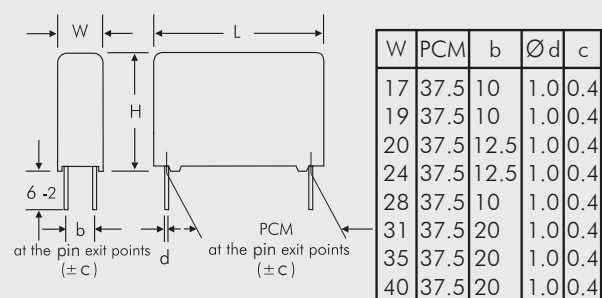
Dims. in mm.

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 157.	

#### 2-pin version



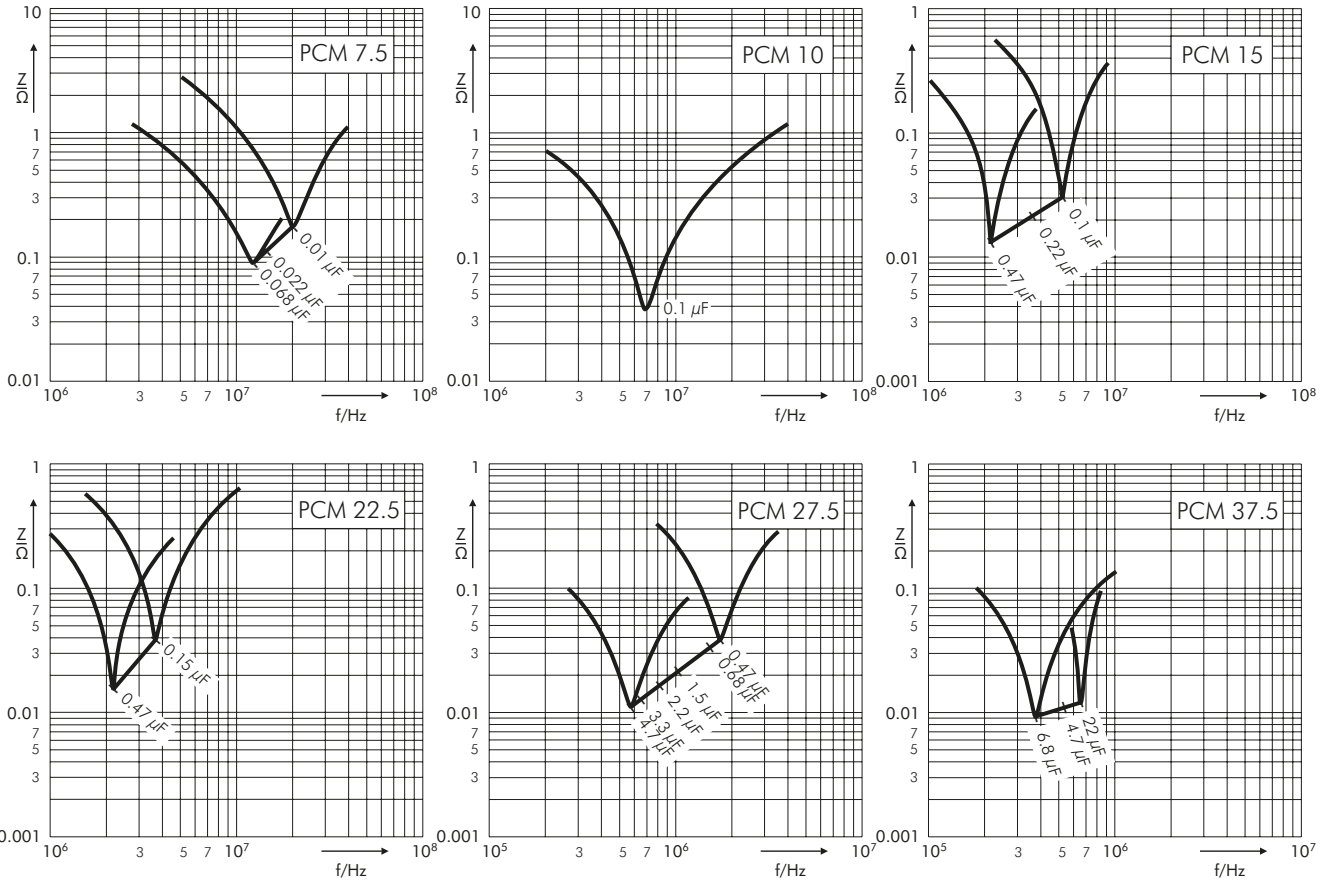
#### 4-pin version



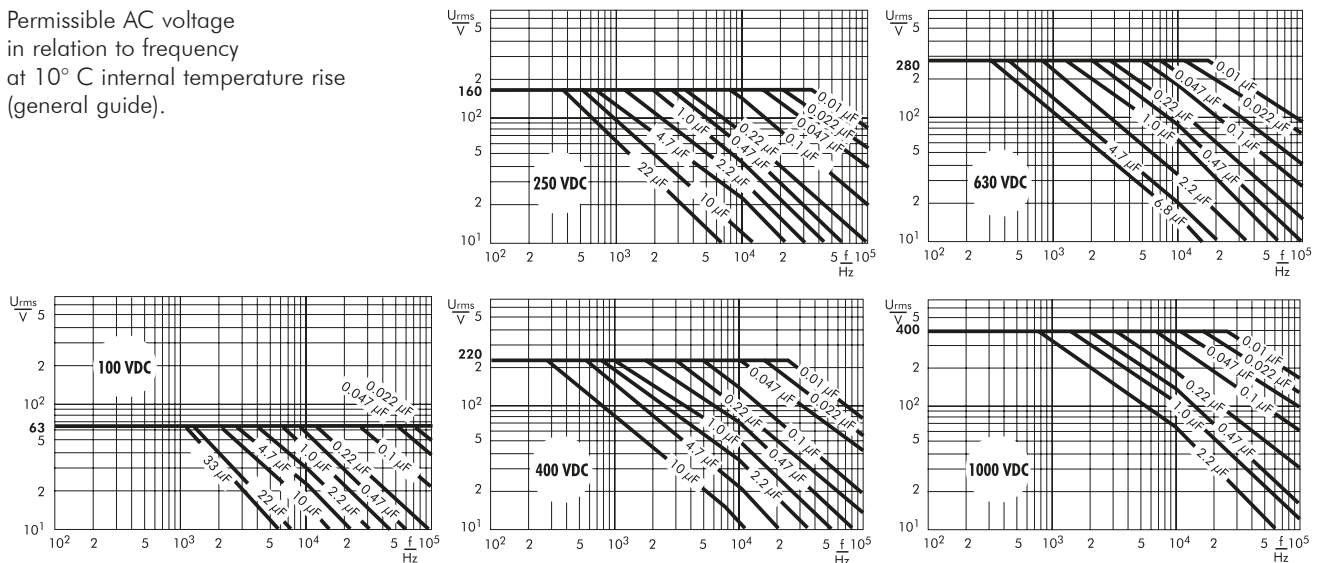
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## Continuation

Impedance change with frequency  
(general guide).



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



## 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:  $T_{max.} \leq 110^{\circ}C$

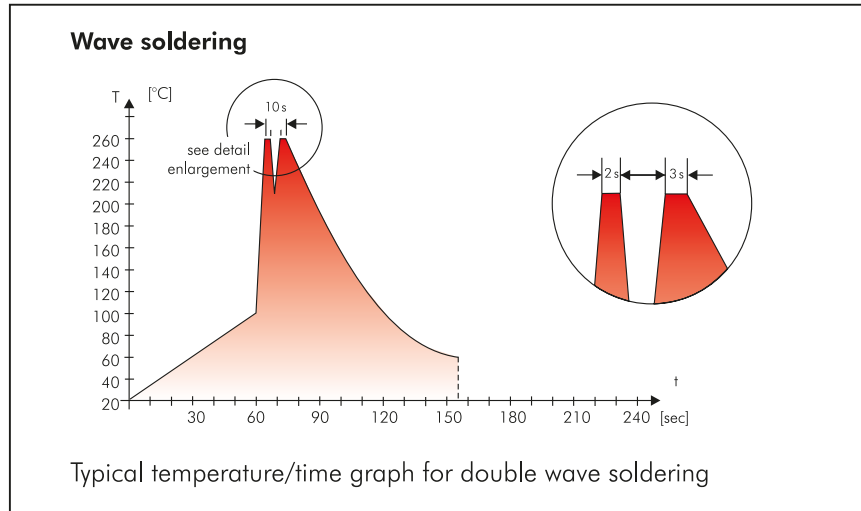
#### Single wave soldering

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:  $\sum t < 5 \text{ sec}$

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 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 2015/863/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 re-frained from using such substances since years already.



WIMA Kondensatoren sind bleifrei konform RoHS 2015/863/EU

WIMA capacitors are lead free in accordance with RoHS 2015/863/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

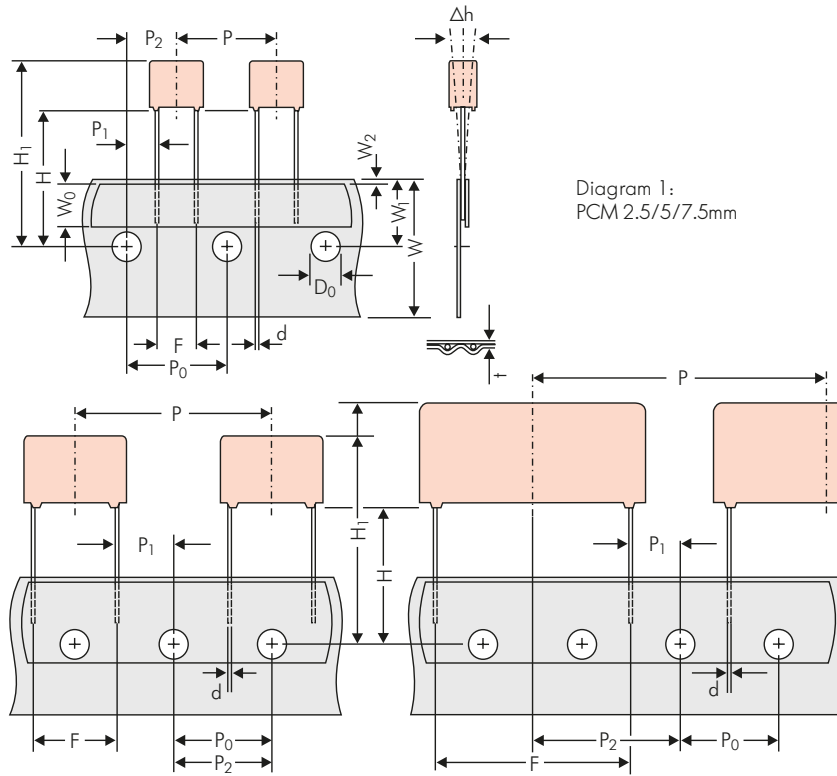


Diagram 1:  
PCM 2.5/5/7.5mm

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 error max. 1.0 mm/20 pitch	12.7 ±0.3 error max. 1.0 mm/20 pitch	12.7 ±0.3 error max. 1.0 mm/20 pitch	12.7 ±0.3 error max. 1.0 mm/20 pitch	12.7 ±0.3 error max. 1.0 mm/20 pitch	12.7 ±0.3 error max. 1.0 mm/20 pitch	12.7 ±0.3 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 <sub>▲</sub>	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 158)	▲	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 66 ±2 } or REEL Ø 500 max. Ø 25 ±1	B 54 ±2 60 ±2 68 ±2 } depending on PCM and component dimensions	
Unit		see details page 159.						

▲ When ordering please specify dimension H and required packaging type.

Dims in mm.

• Diameter of pins see General Data.

Please clarify customer-specific deviations with the manufacturer.

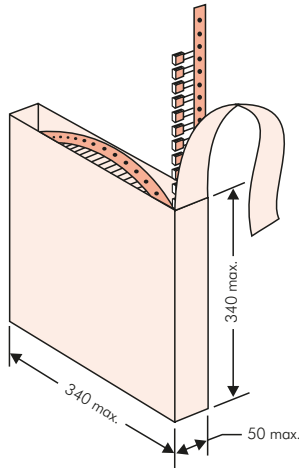
\* PCM 10 and PCM 15 can be crimped to PCM 7.5.

Position of components according to PCM 7.5 (sketch 1). P<sub>0</sub> = 12.7 or 15.0 is possible

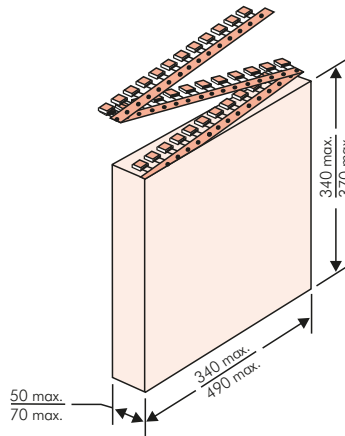


## Types of Tape Packaging of Capacitors for Automatic Radial Insertion

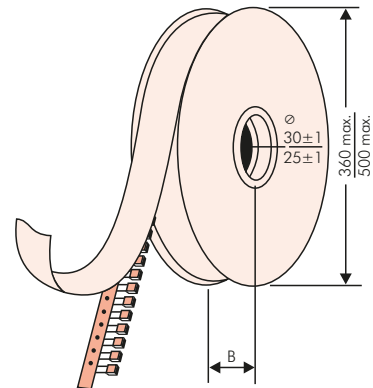
### ■ ROLL Packaging



### ■ AMMO Packaging



### ■ REEL Packaging



## BAR CODE (Labelling)

Labelling of package units in plain text and with alphanumeric 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

**WIMA** 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	
<b>WIMA – MKP 10</b>	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

BARCODE PDF417  
BARCODE 2D Datamatrix



## Packing Quantities for Capacitors with Radial Pins in PCM 2.5 mm to 27.5 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	
<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	9	13	<b>3C</b>	3000						900			1600			1450	
	4	9.5	13	<b>3D</b>	3000						900			1600			1400	
	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	
	6	12.5	18	<b>4C</b>	2000						500			1000			1000	
	7	14	18	<b>4D</b>	1600						450			900			850	
	8	15	18	<b>4F</b>	1200						400			800			740	
	9	14	18	<b>4H</b>	1200						350			700			650	
	9	16	18	<b>4J</b>	900						350			700			650	
	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	
	8.5	18.5	26.5	<b>5F</b>	500									480			450	
	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		
<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				
	15	26	31.5	<b>6F</b>	324*									270				
	17	29	31.5	<b>6G</b>	198*													
	17	34.5	31.5	<b>6I</b>	198*													
	20	39.5	31.5	<b>6J</b>	162*													

\* for 2-inch transport pitches.

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

Rights reserved to amend design data without prior notification.



## Packing Quantities for Capacitors with Radial Pins in PCM 37.5 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>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*	-	-	-	-	-	-	-	-	-	-	-	

\* TPS (Tray-Packing-System). Plate versions may have different packing units.

\*\*For Snubber capacitors in 2-pin version the PCM is changing to 38.5 respective 49.5 mm. Samples and pre-production needs on request.

Rights reserved to amend design data without prior notification.

Updated data on [www.wima.com](http://www.wima.com)



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

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

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
M	K	S	2	C	0	2	1	0	0	1	A	0	0	M	S	S	D
MKS 2				63 VDC		0.01 µF			2.5x6.5x7.2			-		20%	bulk	6 -2	

<p><b>Type description:</b></p> <p>SMD-PET = SMDT                  SMD-PEN = SMDN                  SMD-PPS = SMDI                  FKP 02 = FKPO                  MKS 02 = MKSO                  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                  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                  230 VAC = 3Y                  275 VAC = 1W                  300 VAC = 2W                  305 VAC = AW                  350 VAC = BW                  440 VAC = 4W                  ...</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 = YA                  15.3x13.7x7 Size 6054 = YA                  2.5x7x4.6 PCM2.5 = 0B                  3x7.5x4.6 PCM2.5 = 0C                  2.5x6.5x7.2 PCM5 = 1A                  3x7.5x7.2 PCM5 = 1B                  2.5x7x10 PCM7.5 = 2A                  3x8.5x10 PCM7.5 = 2B                  3x9x13 PCM10 = 3A                  4x9x13 PCM10 = 3C                  5x11x18 PCM15 = 4B                  6x12.5x18 PCM15 = 4C                  5x14x26.5 PCM22.5 = 5A                  6x15x26.5 PCM22.5 = 5B                  9x19x31.5 PCM27.5 = 6A                  11x21x31.5 PCM27.5 = 6B                  9x19x41.5 PCM37.5 = 7A                  11x22x41.5 PCM37.5 = 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>

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.