

Metallized Polypropylene (PP) Capacitors
in PCM 7.5 mm to 37.5 mm. Capacitances from 0.01 μ F to 68 μ 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 2011/65/EU

Typical Applications

For high frequency applications e.g.

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

Construction

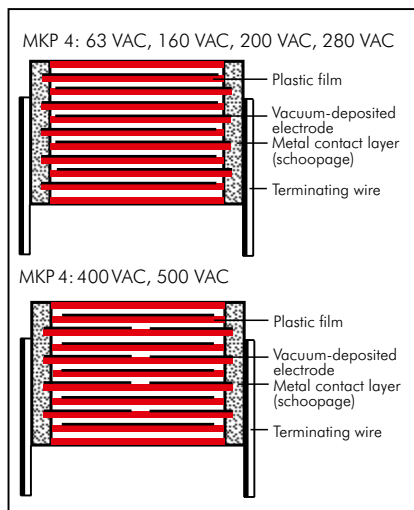
Dielectric:

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 μ F to 68 μ F

Rated voltages:

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

Capacitance tolerances:

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

Operating temperature range:

-55°C to $+105^{\circ}\text{C}$

Climatic test category:

55/100/56 in accordance with IEC

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

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

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

Measuring voltage: 100 V/1 min.

Dissipation factors at $+20^{\circ}\text{C}$:

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 μF	max. pulse rise time V/ μsec 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:

$d \leq 0.8 \phi$: 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:

1 kPa = 10 mbar in accordance with IEC 60068-2-13

Bump test:

4000 bumps at 390 m/sec²
 in accordance with IEC 60068-2-29

Test specifications:

In accordance with IEC 60384-16

Test voltage: 1.6 U_r , 2 sec.

Dielectric absorption:

0.05%

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 < 2 fit ($0.5 \times U_r$ and 40°C).

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: $f \leq 400 \text{ Hz}$; $1.4 \times U_{\text{rms}} + U_{\text{DC}} \leq U_r$

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_____					
0.015 "	4	9	10	7.5	MKP4G021502C00_____	4	9	13	10	MKP4J021003C00_____					
	4	9	13	10	MKP4G021503C00_____	4	9	13	10	MKP4J021502C00_____					
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_____	8	15	18	15	MKP4J031504F00_____					
0.15 "	6	12.5	18	15	MKP4G031504C00_____										
0.22 "	7	14	18	15	MKP4G032204D00_____	6	15	26.5	22.5	MKP4J031505B00_____					
						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_____					
	0.68 "	8.5	18.5	26.5	22.5						MKP4G036805F00_____	11	21	31.5	27.5
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_____					
						17	34.5	31.5	27.5	MKP4J042206I00_____					
2.2 "	15	26	31.5	27.5	MKP4G042206F00_____	17	29	41.5	37.5	MKP4J042207E00_____					
	13	24	41.5	37.5	MKP4G042207C00_____										
2.7 "	17	29	31.5	27.5	MKP4G042706G00_____	17	29	41.5	37.5	MKP4J042707E00_____					
											17	29	31.5	27.5	MKP4G043306G00_____
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: $f \leq 400 \text{ Hz}$; $1.4 \times U_{\text{rms}} + U_{\text{DC}} \leq U_r$

■ New values and box sizes.

The box sizes according to main catalogue 2019 are still available on request.

** PCM = Printed circuit module = pin spacing

Dims. in mm.

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Continuation page 61

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 μF	5.7	12.5	10.3	7.5	MKP4O121002F00_____	5	11	18	15	MKP4R021004B00_____
	5	11	13	10	MKP4O121003F00_____					
	5	11	13	10	MKP4O121503F00_____	6	12.5	18	15	MKP4R021504C00_____
	5	11	18	15	MKP4O121504B00_____					
	5	11	18	15	MKP4O122204B00_____	7	14	18	15	MKP4R022204D00_____
0.022 "	5	11	18	15	MKP4O122204B00_____					
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 μF	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 μF	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: $f \leq 400 \text{ Hz}$; $1.4 \times U_{\text{rms}} + U_{\text{DC}} \leq U_r$

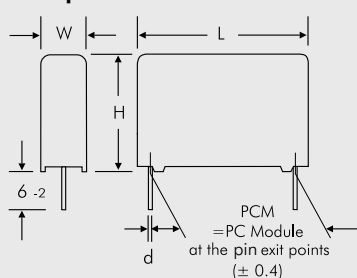
New values, box sizes and range. The box sizes according to main catalogue 2019 are still available on request.

** PCM = Printed circuit module = pin spacing

Dims. in mm.

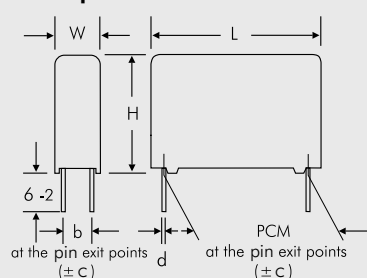
Part number completion:	
Version code:	2-pin = 00
	4-pin = D4
Tolerance:	20 % = M
	10 % = K
	5 % = J
Packing:	bulk = S
Pin length:	6-2 = SD
Taped version see page 161.	

2-pin version



ϕd	PCM	W
0.5	7.5	≥ 3
0.6	7.5	≥ 4
0.6	10	
0.8	15 - 27.5	
1.0	37.5	

4-pin version

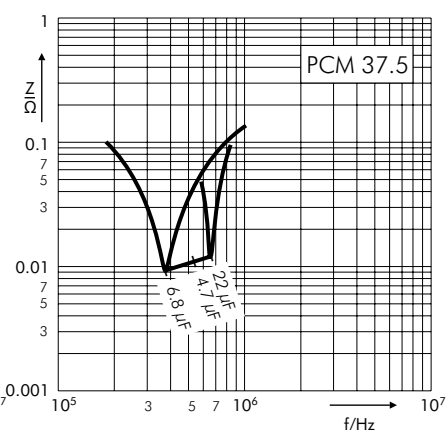
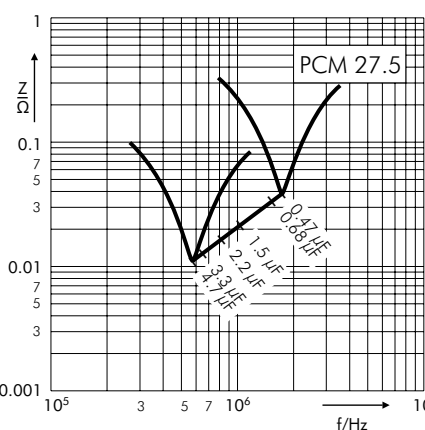
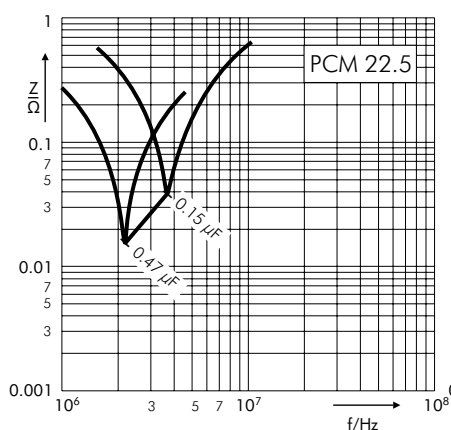
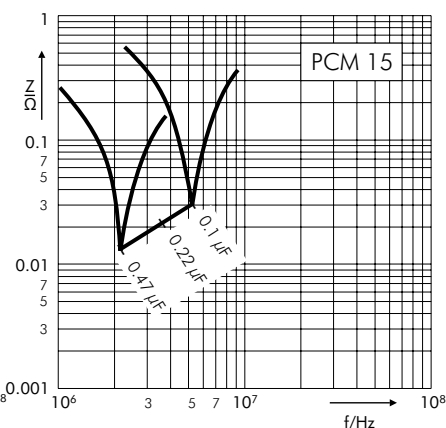
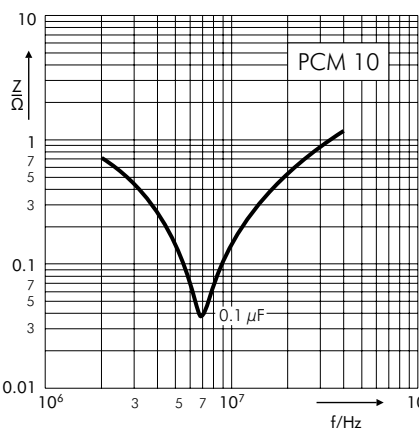
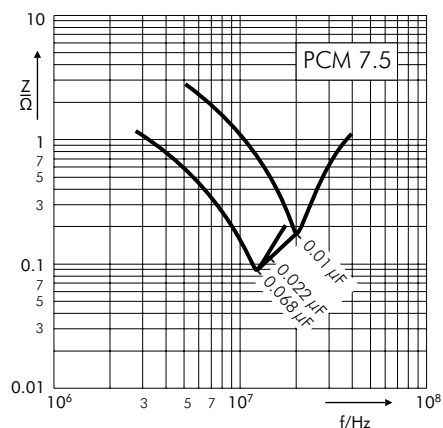


W	PCM	b	ϕd	c
17	37.5	10	1.0	0.4
19	37.5	10	1.0	0.4
20	37.5	12.5	1.0	0.4
24	37.5	12.5	1.0	0.4
28	37.5	10	1.0	0.4
31	37.5	20	1.0	0.4
35	37.5	20	1.0	0.4
40	37.5	20	1.0	0.4

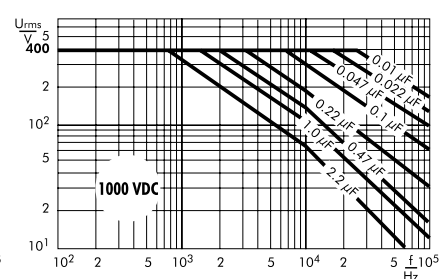
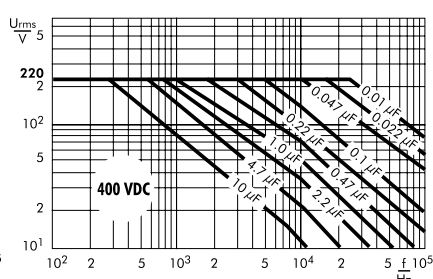
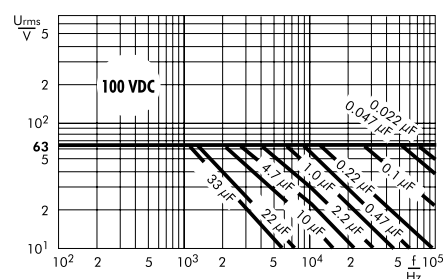
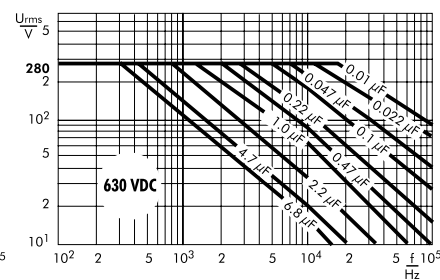
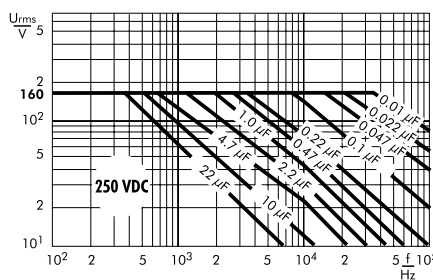
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Continuation

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: $T_{\max.} \leq 125^{\circ}\text{C}$
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: $T < 260^{\circ}\text{C}$

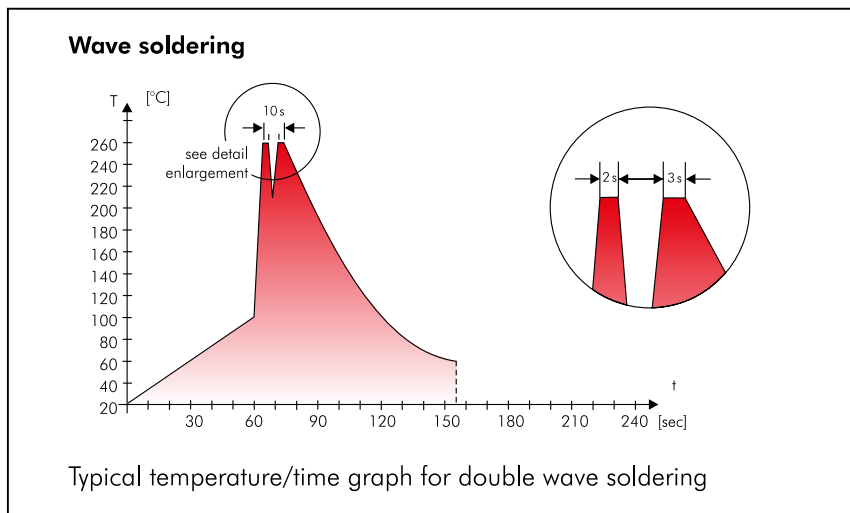
Dwell time: $t < 5\text{ sec}$

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 9001:2015 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 ifaz (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 | - 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:

- 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

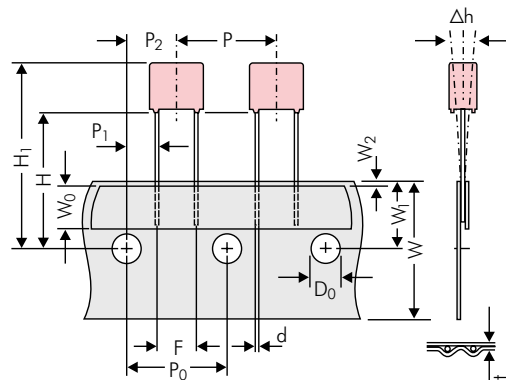


Diagram 1:
PCM 2.5/5/7.5mm

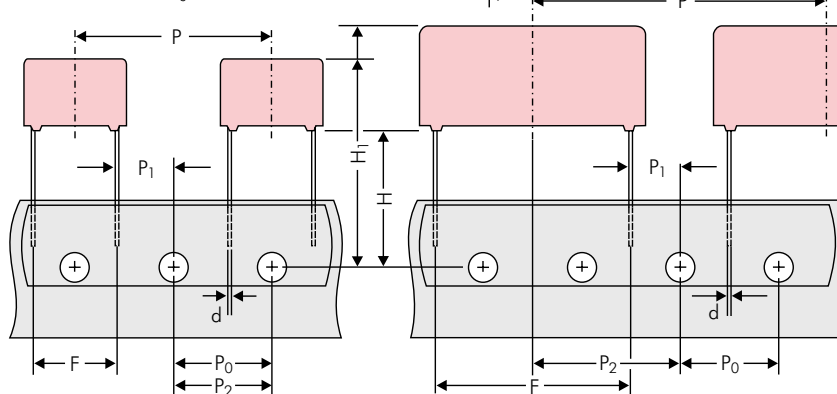


Diagram 2: PCM 10/15 mm

Diagram 3: PCM 22.5 and 27.5*mm

*PCM 27.5 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	0.6 ±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 Ø 360 max. Ø 30 ±1	B 52 ±2 58 ±2 } depending on comp. dimensions		REEL Ø 360 max. Ø 30 ±1	52 ±2 58 ±2 or 66 ±2	REEL Ø 500 max. Ø 25 ±1	54 ±2 60 ±2 or 68 ±2 } depending on PCM and component dimensions
Unit		see details page 163.						

Dims in mm.

* Diameter of pins see General Data.

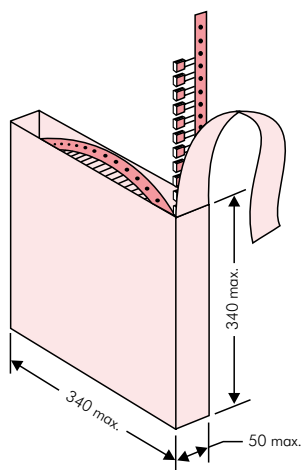
Please clarify customer-specific deviations with the manufacturer.

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

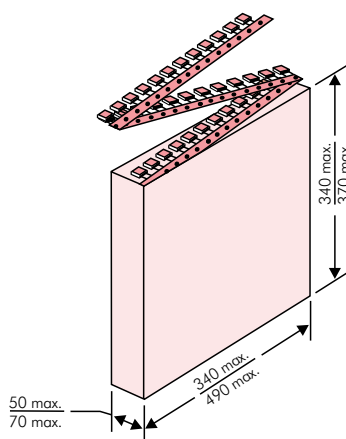
Position of components according to PCM 7.5 (sketch 11). P₀ = 12.7 or 15.0 is possible

Types of Tape Packaging of Capacitors for Automatic Radial Insertion

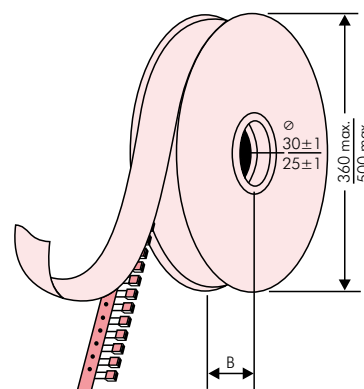
■ ROLL Packaging



■ AMMO Packaging



■ REEL Packaging














BAR CODE (Labelling)

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

- 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	
	
Customer No.: 0000100002	RoHS 2011/65/EU
Gross Weight [g]: 4557	COO: DE
	
WIMA – MKP 10 WIMA Part No.: MKP1F041006B00KSSD	
MKP 10 1.0 µF 250 VDC 11x21x31.5 RM27.5	
Standard 10% Vorlage Debitor Inland	Loose – Standard Drähte 6–2
	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 22.5 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	H16.5	H18.5	H16.5	H18.5
					S	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		–		640		–	
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		3000	
	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		–		1100	
	6	12	13	3G	2400	–		550		1100		–		1000	
	6	12.5	13	3H	2400	–		550		1100		–		1000	
15 mm	8	12	13	3I	2000	–		400		800		–		740	
	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	
22.5 mm	10	18	19	FG	500	–		300		650		–		590	
	11	14	18	4M	1000	–		300		600		–		540	
	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	5H	500	–		–		500		–		480	
	8.5	18.5	26.5	5F	500	–		–		480		–		450	
22.5 mm	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*	–	–	–	–	–
	11	21	31.5	6B	459*	–	–	–	–	380/280*	–	–	–	–	–
	13	24	31.5	6D	378*	–	–	–	–	300	–	–	–	–	–
	13	25	33	FK	405*	–	–	–	–	–	–	–	–	–	–
	15	26	31.5	6F	324*	–	–	–	–	270	–	–	–	–	–
	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*	–	–	–	–	–	–	–	–	–	–
	28	38	41.5	7L	84*	–	–	–	–	–	–	–	–	–	–
	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 = FKPO				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 4 = MKP4				900 VDC = N0		4700 pF = 1470				3x7.5x7.2 PCM 5 = 1B				BLISTER W16 330 = R			
MKP 10 = MKP1				1000 VDC = O1		6800 pF = 1680				2.5x7x10 PCM 7.5 = 2A				BLISTER W24 330 = T			
FKP 4 = FKPO				1100 VDC = P0		0.01 µF = 2100				3x8.5x10 PCM 7.5 = 2B				Bulk/TPS Standard = S			
FKP 1 = FKPO				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				1700 VDC = TA		0.47 µF = 3470				5x14x26.5 PCM 22.5 = 5A							
MP 3-X1 = MPX1				2000 VDC = U0		1 µF = 4100				6x15x26.5 PCM 22.5 = 5B							
MP 3-Y2 = MPY2				2500 VDC = V0		2.2 µF = 4220				9x19x31.5 PCM 27.5 = 6A							
MP 3R-Y2 = MPRY				3000 VDC = W0		4.7 µF = 4470				11x21x31.5 PCM 27.5 = 6B							
MKP 4F = MKPF				4000 VDC = X0		10 µF = 5100				9x19x41.5 PCM 37.5 = 7A							
Snubber MKP = SNMP				6000 VDC = Y0		22 µF = 5220				11x22x41.5 PCM 37.5 = 7B							
Snubber FKP = SNFP				250 VAC = 0V		47 µF = 5470				19x31x56 PCM 48.5 = 8D							
GTO MKP = GTOM				275 VAC = 1V		100 µF = 6100				25x45x57 PCM 52.5 = 9D							
DC-LINK MKP 4 = DCP4				300 VAC = 2V		220 µF = 6220				...							
DC-LINK MKP 6 = DCP6				305 VAC = AV		1000 µF = 7100											
DC-LINK HC = DCHC				350 VAC = BV		1500 µF = 7150											
				440 VAC = 4V		...											
				500 VAC = 5V													
				...													