WIMA MKP 4

Metallized Polypropylene (PP) Capacitors in PCM 7.5 mm to 37.5 mm. Capacitances from 0.01 µF to 68 µF. 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** AEC-Q200
- **According to RoHS 2015/863/EU**

Typical Applications

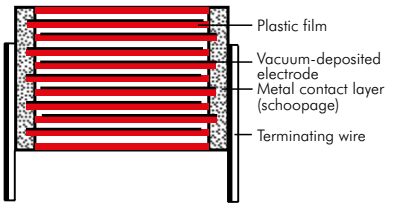
For high frequency applications e.g.

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

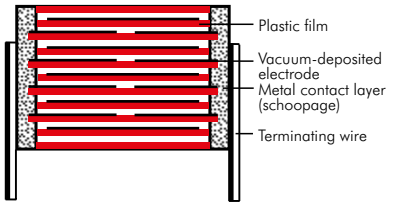
Construction

Dielectric:
Polypropylene (PP) film
Capacitor electrodes:
Vacuum-deposited
Internal construction:

MKP 4: 63 VAC, 160 VAC, 200 VAC, 280 VAC



MKP 4: 400 VAC, 500 VAC



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 µF to 68 µF
Rated voltages:
100 VDC, 250 VDC, 400 VDC, 630 VDC, 1000 VDC, 1250 VDC
Capacitance tolerances:
± 20%, ± 10%, ± 5%
Operating temperature range:
–55° C to +105° C
Climatic test category:
55/100/56 in accordance with IEC
THB: 85° C / 85% RH / 500 hours at U_{rDC}
Insulation resistance at +20° C:
C ⩽ 0.33 µF: ⩾ 1 x 10^5 MΩ
C > 0.33 µF: ⩾ 30 000 sec (MΩ x µF)
Measuring voltage: 100 V/1 min.
Dissipation factors at + 20° C: tan δ

at f	C ⩽ 0.1 µF	0.1 µF < C ⩽ 1.0 µF	C > 1.0 µF
1 kHz	⩽ 6 x 10^{-4}	⩽ 6 x 10^{-4}	⩽ 6 x 10^{-4}
10 kHz	⩽ 8 x 10^{-4}	⩽ 8 x 10^{-4}	–
100 kHz	⩽ 25 x 10^{-4}	–	–

Maximum pulse rise time:

Capacitance µF	max. pulse rise time V/µsec at T_A < 40° 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	–	–

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° C for DC voltages and from +75° C for AC voltages.
Reliability:
Operational life > 300 000 hours
Failure rate < 2 fit (0.5 x U_r and 40° C).

Mechanical Tests

Pull test on pins:
d ⩽ 0.8 Ø: 10 N in direction of pins
d > 0.8 Ø: 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^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.

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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: $f \leqslant 400$ Hz; $1.4 \times U_{rms} + UDC \leqslant U_r$

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: $f \leqslant 400$ Hz; $1.4 \times U_{rms} + UDC \leqslant U_r$

** PCM = Printed circuit module = pin spacing

Dims. in mm.

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General Data

Capacitance	1000 VDC/400 VAC* W	H	L	PCM**	Part number	1250 VDC/500 VAC* 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____					
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 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 ⩽ 400 Hz; 1.4 x U_{rms} + UDC ⩽ U_r

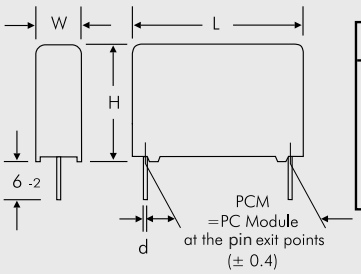
** PCM = Printed circuit module = pin spacing

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

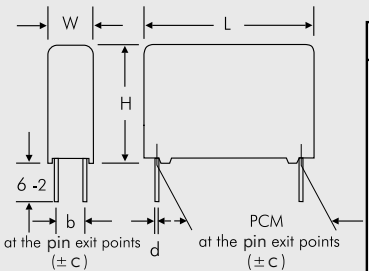
Taped version see page 133.

2-pin version



Ø d	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	Ø d	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

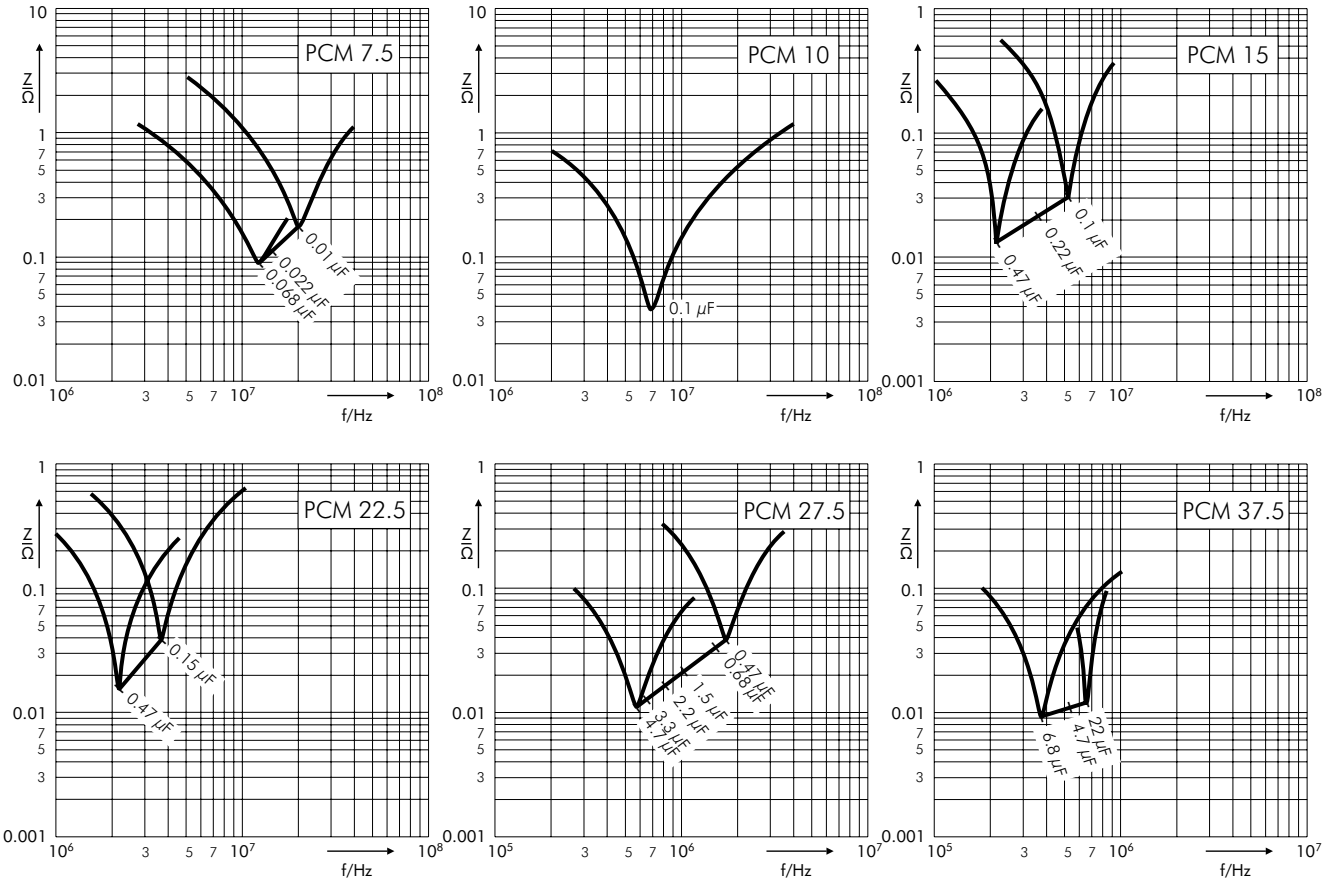
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Continuation page 50

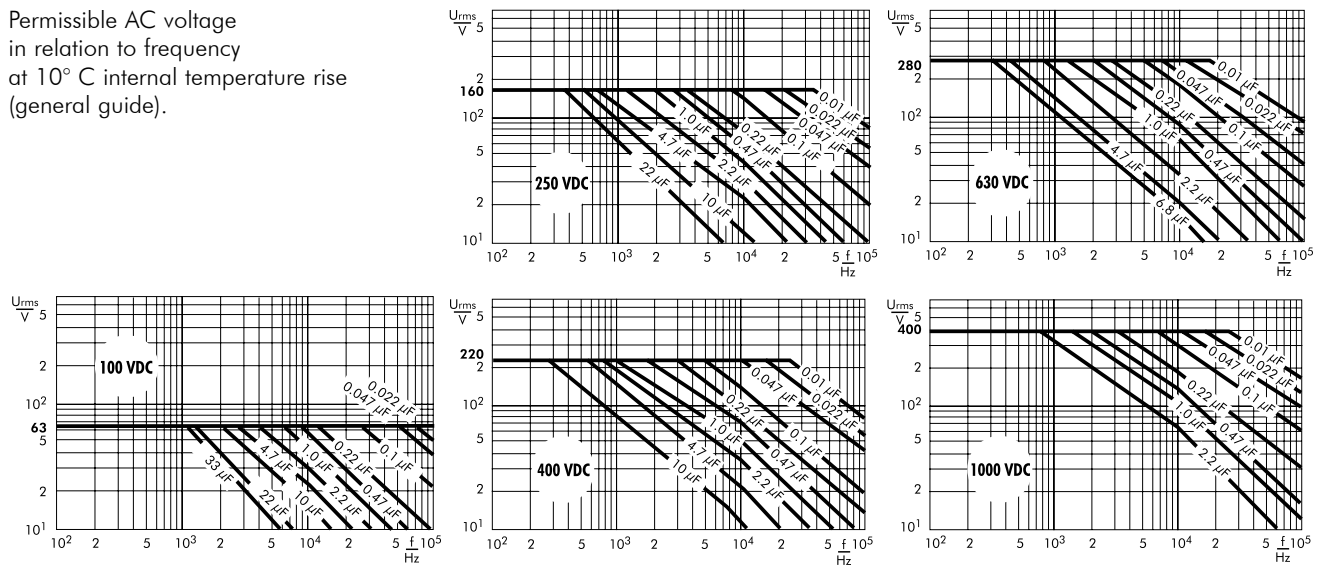
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Continuation

Impedance change with frequency
(general guide).



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



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Recommendation for Processing and Application of Through-Hole Capacitors

Soldering Process

Internal temperature of the capacitor must be kept as follows:

Polyester: preheating: $T_{max.} \leqslant 125°$ C
soldering: $T_{max.} \leqslant 135°$ C

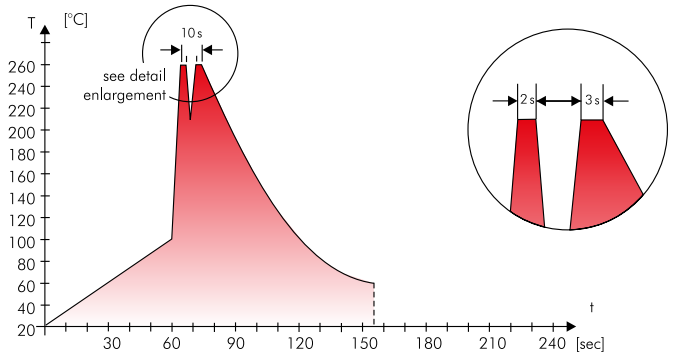
Polypropylene: preheating: $T_{max.} \leqslant 100°$ C
soldering: $T_{max.} \leqslant 110°$ C

Single wave soldering
Soldering bath temperature: $T < 260°$ C
Dwell time: $t < 5$ sec

Double wave soldering
Soldering bath temperature: $T < 260°$ C
Dwell time: $\sum t < 5$ sec

Due to different soldering processes and heat requirements the graphs are to be regarded as a recommendation only.

Wave soldering



Typical temperature/time graph for double wave soldering

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-fraind from using such substances since years already.

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.

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Typical Dimensions for Taping Configuration

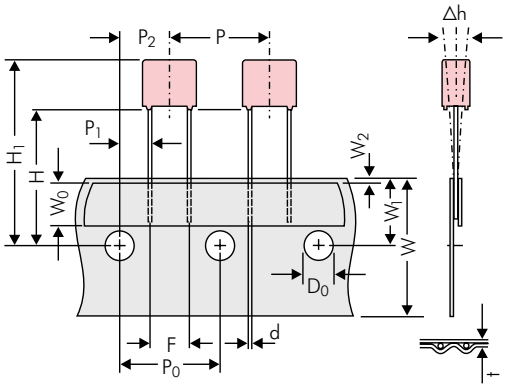


Diagram 1:
PCM 2.5/5/7.5mm

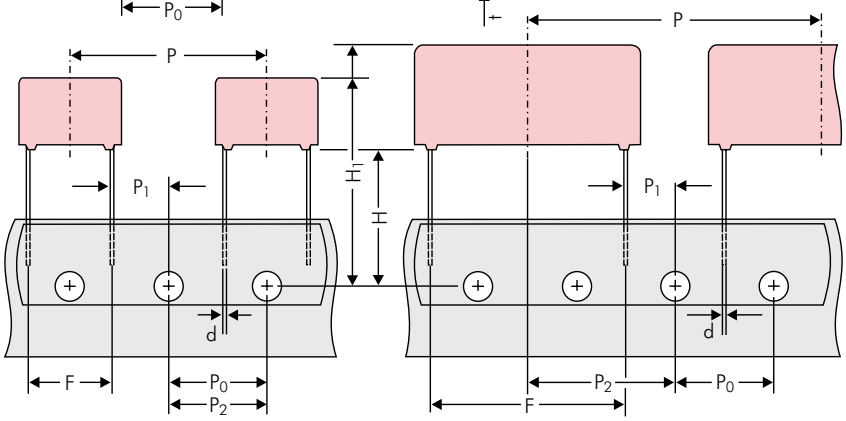


Diagram 2: PCM 10/15 mm

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	16.5 ±0.3	16.5 ±0.5	16.5 ±0.5	16.5 ±0.5	16.5 ±0.5	16.5 ±0.5
		18.5 ±0.5	18.5 ±0.5	18.5 ±0.5	18.5 ±0.5	18.5 ±0.5	18.5 ±0.5	18.5 ±0.5
Feed hole centre to top edge of the component	H_1	$H+H_{component} < H_1$ 32.25 max.	$H+H_{component} < H_1$ 32.25 max.	$H+H_{component} < H_1$ 24.5 to 31.5	$H+H_{component} < H_1$ 25.0 to 31.5	$H+H_{component} < H_1$ 26.0 to 37.0	$H+H_{component} < H_1$ 30.0 to 43.0	$H+H_{component} < H_1$ 35.0 to 45.0
Pin spacing at upper edge of carrier tape	F	2.5 ±0.5	5.0 $^{+0.8}_{-0.2}$	7.5 ±0.8	10.0 ±0.8	15 ±0.8	22.5 ±0.8	27.5 ±0.8
Pin diameter	d	0.4 ±0.05	0.5 ±0.05	•0.5 ±0.05 or $0.6^{+0.06}_{-0.05}$	•0.5 ±0.05 or $0.6^{+0.06}_{-0.05}$	$0.8^{+0.08}_{-0.05}$	$0.8^{+0.08}_{-0.05}$	$0.8^{+0.08}_{-0.05}$
Component alignment	Δh	± 2.0 max.	± 2.0 max.	± 3.0 max.	± 3.0 max.	± 3.0 max.	± 3.0 max.	± 3.0 max.
Total tape thickness	t	0.6 ±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 134)	▲	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 135.						

▲ 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.

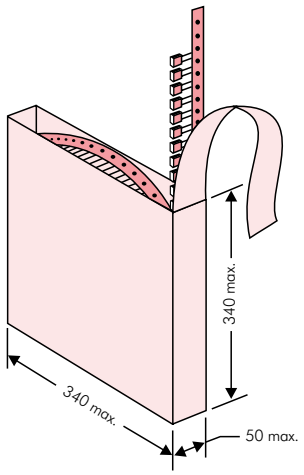
* PCM 10 and PCM 15 can be crimped to PCM 7.5.
Position of components according to PCM 7.5 (sketch 1). P_0 = 12.7 or 15.0 is possible

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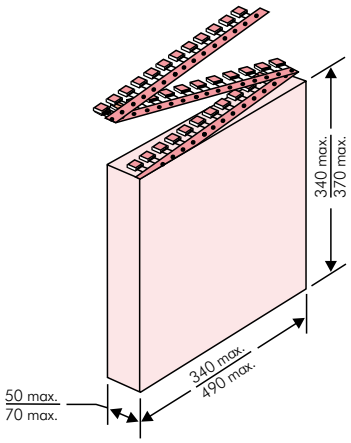
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Types of Tape Packaging of Capacitors for Automatic Radial Insertion

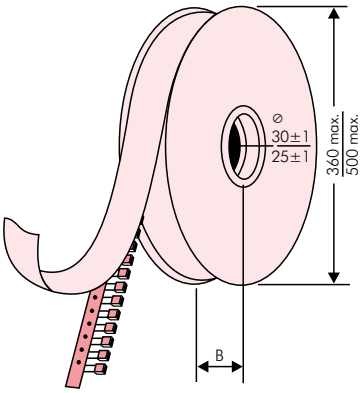
ROLL Packaging



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

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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			
								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
	W	H	L	Codes	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		–	
	11	18	7.2	**1O**	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	4	9	13	**3C**	3000	–		900		1600		–		1450	
	4	9.5	13	**3D**	3000	–		900		1600		–		1400	
	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	
	8	12	13	**3I**	2000	–		400		800		–		740	
15 mm	5	11	18	**4B**	2400	–		600		1200		–		1150	
	6	12.5	18	**4C**	2000	–		500		1000		–		1000	
	7	14	18	**4D**	1600	–		450		900		–		850	
	8	15	18	**4F**	1200	–		400		800		–		740	
	9	14	18	**4H**	1200	–		350		700		–		650	
	9	16	18	**4J**	900	–		350		700		–		650	
	11	14	18	**4M**	1000	–		300		600		–		540	
22.5 mm	5	14	26.5	**5A**	1200	–		–		800		–		770	
	6	15	26.5	**5B**	1000	–		–		700		–		640	
	7	16.5	26.5	**5D**	760	–		–		600		–		550	
	8.5	18.5	26.5	**5F**	500	–		–		480		–		450	
	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	

* for 2-inch transport pitches.

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

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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			
								∅ 360		∅ 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
	W	H	L	Codes	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		–		–	
	15	26	31.5	**6F**	324*	–		–		270		–		–	
	17	29	31.5	**6G**	198*	–		–		–		–		–	
	17	34.5	31.5	**6I**	198*	–		–		–		–		–	
	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*	–		–		–		–		–	

* 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.

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Updated data on www.wima.com

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WIMA Part Number System

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

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

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

Type description:

SMD-PET	= SMDT
SMD-PPS	= SMDI
MKS 02	= MKS0
FKS 2	= FKS2
FKP 2	= FKP2
MKS 2	= MKS2
MKP 2	= MKP2
MKS 4	= MKS4
MKP 4	= MKP4
MKP 10	= MKP1
FKP 1	= FKP1
MKP-X2	= MKX2
MKP-X1 R	= MKX1
MKP-Y2	= MKY2
Snubber MKP	= SNMP
Snubber FKP	= SNFP
GTO MKP	= GTOM
DC-LINK MKP 4	= DCP4
DC-LINK MKP 6	= DCP6
DC-LINK HC	= DCHC

Rated voltage:

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
...	

Capacitance:

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
...	

Size:

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
...	

Version code:

Standard	= 00
Version A1	= 1A
Version A1.1.1	= 1B
Version A2	= 2A
...	

Tolerance:

±20%	= M
±10%	= K
±5%	= J
±2.5%	= H
±1%	= E
...	

Packing:

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
...	

Pin length (untaped)

3.5 ±0.5	= C9
6 -2	= SD
16 ±1	= P1
...	

Pin length (taped)

none	= 00

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.

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