

Metallized Polypropylene (PP) Capacitors PCM 7.5 mm to 52.5 mm

Special Features

- High volume/capacitance ratio
- Self-healing
- Very low dissipation factor
- Negative capacitance change versus temperature
- Very low dielectric absorption
- According to RoHS 2011/65/EC

Typical Applications

For high frequency applications e.g.

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

Construction

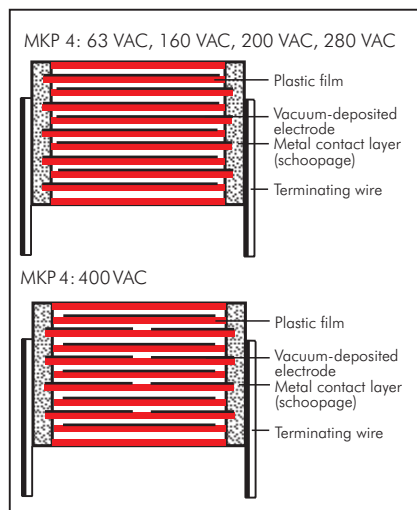
Dielectric:

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.
Epoxy resin seal: Red

Electrical Data

Capacitance range:

0.01 μ F to 150 μ F (E12-values on request)

Rated voltages:

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

Capacitance tolerances:

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

Operating temperature range:

-55°C to $+100^{\circ}\text{C}$

Climatic test category:

55/100/56 in accordance with IEC

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

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

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

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

(mean value: 100\,000 sec)

Measuring voltage: 100 V/1 min.

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

$\tan \delta \leq 10 \times 10^{-4}$ at 1 kHz ($C \leq 50 \mu\text{F}$)

$\tan \delta \leq 15 \times 10^{-4}$ at 1 kHz ($C > 50 \mu\text{F}$)

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
0.01 ... 0.022	450	450	450	500	550
0.033 ... 0.068	250	250	300	350	400
0.1 ... 0.22	150	150	200	250	300
0.33 ... 0.68	100	100	150	200	200
1.0 ... 2.2	75	100	100	150	150
3.3 ... 4.7	60	100	100	120	140
6.8 ... 10	40	50	60	85	100
15 ... 33	35	50	18	36	–
47 ... 150	10	13	–	–	–

for pulses equal to the rated voltage

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)

Specific dissipation:

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

* other box sizes see page 10.

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 μ F	3	8.5	10	7.5	MKP4D021002B_____	3	8.5	10	7.5	MKP4F021002B_____
0.015 "	3	8.5	10	7.5	MKP4D021502B_____	3	8.5	10	7.5	MKP4F021502B_____
0.022 "	3	8.5	10	7.5	MKP4D022202B_____	3	8.5	10	7.5	MKP4F022202B_____
0.033 "	3	8.5	10	7.5	MKP4D023302B_____	3	8.5	10	7.5	MKP4F023302B_____
	4	9	13	10	MKP4D023303C_____	4	9	13	10	MKP4F023303C_____
0.047 "	4	9	10	7.5	MKP4D024702C_____	4	9	10	7.5	MKP4F024702C_____
	4	9	13	10	MKP4D024703C_____	4	9	13	10	MKP4F024703C_____
0.068 "	4	9	10	7.5	MKP4D026802C_____	4	9	10	7.5	MKP4F026802C_____
	4	9	13	10	MKP4D026803C_____	4	9	13	10	MKP4F026803C_____
0.1 μ F	4.5	9.5	10.3	7.5	MKP4D031002D_____	4.5	9.5	10.3	7.5	MKP4F031002D_____
	4	9	13	10	MKP4D031003C_____	4	9	13	10	MKP4F031003C_____
0.15 "	5	10.5	10.3	7.5	MKP4D031502E_____	5	10.5	10.3	7.5	MKP4F031502E_____
	5	11	13	10	MKP4D031503F_____	5	11	13	10	MKP4F031503F_____
0.22 "	6	12	13	10	MKP4D032203G_____	6	12	13	10	MKP4F032203G_____
	5	11	18	15	MKP4D032204B_____	5	11	18	15	MKP4F032204B_____
0.33 "	6	12.5	18	15	MKP4D033304C_____	6	12.5	18	15	MKP4F033304C_____
0.47 "	7	14	18	15	MKP4D034704D_____	7	14	18	15	MKP4F034704D_____
0.68 "	8	15	18	15	MKP4D036804F_____	8	15	18	15	MKP4F036804F_____
	6	15	26.5	22.5	MKP4D036805B_____	6	15	26.5	22.5	MKP4F036805B_____
1.0 μ F	7	16.5	26.5	22.5	MKP4D041005D_____	7	16.5	26.5	22.5	MKP4F041005D_____
1.5 "	10.5	19	26.5	22.5	MKP4D041505G_____	10.5	19	26.5	22.5	MKP4F041505G_____
2.2 "	11	21	26.5	22.5	MKP4D042205I_____	11	21	26.5	22.5	MKP4F042205I_____
	11	21	31.5	27.5	MKP4D042206B_____	11	21	31.5	27.5	MKP4F042206B_____
3.3 "	13	24	31.5	27.5	MKP4D043306D_____	13	24	31.5	27.5	MKP4F043306D_____
4.7 "	13	24	31.5	27.5	MKP4D044706D_____	15	26	31.5	27.5	MKP4F044706F_____
6.8 "	15	26	31.5	27.5	MKP4D046806F_____	17	29	31.5	27.5	MKP4F046806G_____
	13	24	41.5	37.5	MKP4D046807C_____	15	26	41.5	37.5	MKP4F046807D_____
10 μ F	17	29	41.5	37.5	MKP4D051007E_____	19	32	41.5	37.5	MKP4F051007F_____
15 "	19	32	41.5	37.5	MKP4D051507F_____	20	39.5	41.5	37.5	MKP4F051507G_____
22 "	20	39.5	41.5	37.5	MKP4D052207G_____	24	45.5	41.5	37.5	MKP4F052207H_____
33 "	24	45.5	41.5	37.5	MKP4D053307H_____	35	50	41.5	37.5	MKP4F053307J_____
47 "	35	50	41.5	37.5	MKP4D054707J_____	35	50	57	52.5	MKP4F054709F_____
68 "	40	55	41.5	37.5	MKP4D056807K_____	45	65	57	52.5	MKP4F056809J_____
	35	50	57	52.5	MKP4D056809F_____					
100 μ F	45	55	57	52.5	MKP4D061009H_____					
150 "	45	65	57	52.5	MKP4D061509J_____					

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

New values

** 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 148.

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Continuation page 53

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	MKP4G021002B_____	3	8.5	10	7.5	MKP4J021002B_____
0.015 "	3	8.5	10	7.5	MKP4G021502B_____	4	9	13	10	MKP4J021003C_____
	4	9	13	10	MKP4G021503C_____	4	9	10	7.5	MKP4J021502C_____
0.022 "	4	9	10	7.5	MKP4G022202C_____	4	9	13	10	MKP4J021503C_____
	4	9	13	10	MKP4G022203C_____	4.5	9.5	10.3	7.5	MKP4J022202D_____
0.033 "	4.5	9.5	10.3	7.5	MKP4G023302D_____	4	9	13	10	MKP4J022203C_____
	4	9	13	10	MKP4G023303C_____	5	10.5	10.3	7.5	MKP4J023302E_____
0.047 "	5	10.5	10.3	7.5	MKP4G024702E_____	4	9	13	10	MKP4J023303C_____
	4	9	13	10	MKP4G024703C_____	5.7	12.5	10.3	7.5	MKP4J024702F_____
0.068 "	5.7	12.5	10.3	7.5	MKP4G026802F_____	5	11	13	10	MKP4J024703F_____
	5	11	13	10	MKP4G026803F_____	6	12	13	10	MKP4J026803G_____
						6	12.5	18	15	MKP4J026804C_____
0.1 μF	6	12	13	10	MKP4G031003G_____	7	14	18	15	MKP4J031004D_____
0.15 "	5	11	18	15	MKP4G031004B_____					
	6	12.5	18	15	MKP4G031504C_____	8	15	18	15	MKP4J031504F_____
0.22 "						6	15	26.5	22.5	MKP4J031505B_____
	7	14	18	15	MKP4G032204D_____	9	16	18	15	MKP4J032204J_____
0.33 "						7	16.5	26.5	22.5	MKP4J032205D_____
	8	15	18	15	MKP4G033304F_____	8.5	18.5	26.5	22.5	MKP4J033305F_____
0.47 "	6	15	26.5	22.5	MKP4G033305B_____					
	7	16.5	26.5	22.5	MKP4G034705D_____	10.5	19	26.5	22.5	MKP4J034705G_____
0.68 "						11	21	31.5	27.5	MKP4J034706B_____
	8.5	18.5	26.5	22.5	MKP4G036805F_____	11	21	31.5	27.5	MKP4J036806B_____
1.0 μF	11	21	26.5	22.5	MKP4G041005I_____	13	24	31.5	27.5	MKP4J041006D_____
1.5 "	11	21	31.5	27.5	MKP4G041006B_____					
	11	21	31.5	27.5	MKP4G041506B_____	15	26	31.5	27.5	MKP4J041506F_____
2.2 "	15	26	31.5	27.5	MKP4G042206F_____	17	29	41.5	37.5	MKP4J042207E_____
3.3 "	17	29	31.5	27.5	MKP4G043306G_____	19	32	41.5	37.5	MKP4J043307F_____
	17	29	41.5	37.5	MKP4G043307E_____					
4.7 "	19	32	41.5	37.5	MKP4G044707F_____	20	39.5	41.5	37.5	MKP4J044707G_____
6.8 "	20	39.5	41.5	37.5	MKP4G046807G_____	24	45.5	41.5	37.5	MKP4J046807H_____
10 μF	24	45.5	41.5	37.5	MKP4G051007H_____	35	50	41.5	37.5	MKP4J051007J_____
15 "	31	46	41.5	37.5	MKP4G051507I_____	35	50	57	52.5	MKP4J051509F_____
22 "	40	55	41.5	37.5	MKP4G052207K_____	45	65	57	52.5	MKP4J052209J_____
	35	50	57	52.5	MKP4G052209F_____					
33 "	45	65	57	52.5	MKP4G053309J_____					

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

New values

** 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 148.		

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Continuation page 54

Continuation

General Data

Capacitance	W	H	L	PCM**	Part number	* AC voltage: $f \leq 400 \text{ Hz}; 1.4 \times U_{\text{rms}} + U_{\text{DC}} \leq U_r$
0.01 μF	5.7	12.5	10.3	7.5	MKP4O121002F_____	New values
	5	11	13	10	MKP4O121003F_____	** PCM = Printed circuit module = pin spacing
0.015 "	5	11	13	10	MKP4O121503F_____	Dims. in mm.
	5	11	18	15	MKP4O121504B_____	
0.022 "	5	11	18	15	MKP4O122204B_____	
0.033 "	6	12.5	18	15	MKP4O123304C_____	
0.047 "	7	14	18	15	MKP4O124704D_____	
0.068 "	8	15	18	15	MKP4O126804F_____	
	6	15	26.5	22.5	MKP4O126805B_____	
0.1 μF	9	16	18	15	MKP4O131004J_____	
	7	16.5	26.5	22.5	MKP4O131005D_____	
0.15 "	8.5	18.5	26.5	22.5	MKP4O131505F_____	
0.22 "	11	21	26.5	22.5	MKP4O132205I_____	
	11	21	31.5	27.5	MKP4O132206B_____	
0.33 "	11	21	31.5	27.5	MKP4O133306B_____	
0.47 "	13	24	31.5	27.5	MKP4O134706D_____	
0.68 "	17	29	31.5	27.5	MKP4O136806G_____	
1.0 μF	17	29	41.5	37.5	MKP4O141007E_____	
1.5 "	20	39.5	41.5	37.5	MKP4O141507G_____	
2.2 "	24	45.5	41.5	37.5	MKP4O142207H_____	
3.3 "	31	46	41.5	37.5	MKP4O143307I_____	
4.7 "	35	50	41.5	37.5	MKP4O144707J_____	
6.8 "	35	50	57	52.5	MKP4O146809F_____	
10 μF	45	65	57	52.5	MKP4O151009J_____	

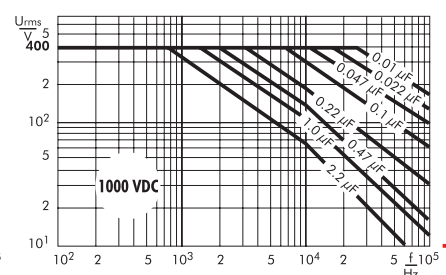
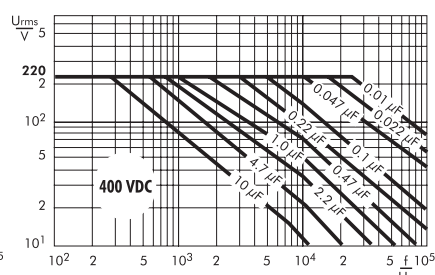
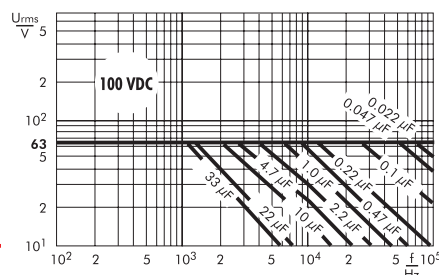
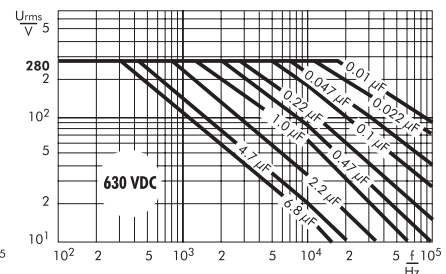
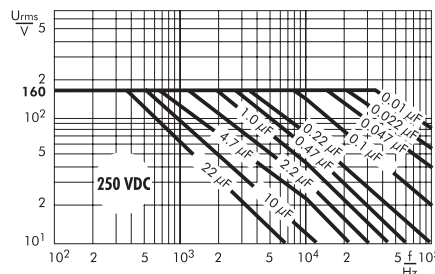
Version code:	2-pin	= 00
	4-pin	= D4
Tolerance:	20 %	= M
	10 %	= K
	5 %	= J
Packing:	bulk	= S
Pin length:	6-2	= SD
Taped version see page 148.		

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
31	37.5	20	1.0	0.4
35	37.5	20	1.0	0.4
40	37.5	20	1.0	0.4
35	52.5	20	1.2	0.8
45	52.5	20	1.2	0.8

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	

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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

A preheating of through-hole WIMA capacitors is allowed for temperatures $T_{\max} < 100^{\circ}\text{C}$. In practice a preheating duration of $t < 5 \text{ min.}$ has been proven to be best.

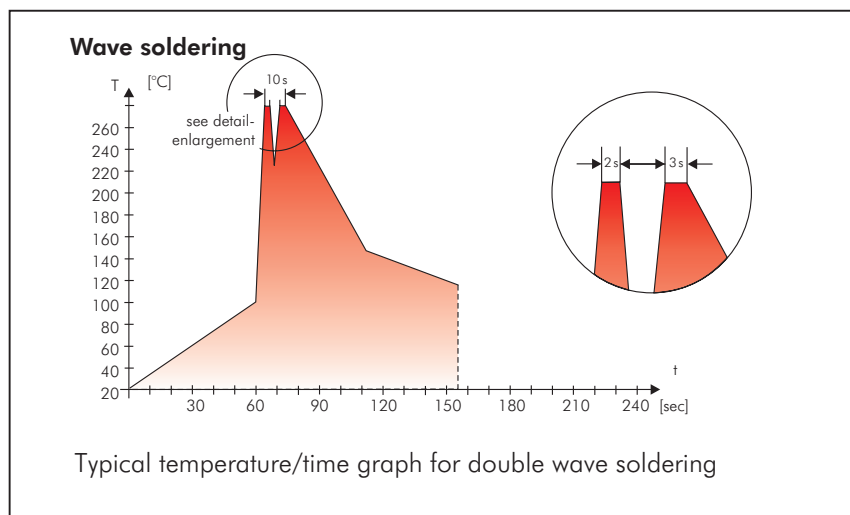
Single wave soldering

Soldering bath temperature: $T < 260^{\circ}\text{C}$
Immersion time: $t < 5 \text{ sec}$

Double wave soldering

Soldering bath temperature: $T < 260^{\circ}\text{C}$
Immersion time: $2 \times t < 3 \text{ sec}$

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



WIMA Quality and Environmental Philosophy

ISO 9001:2008 Certification

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

WIMA WPCS

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

- incoming material inspection
- metallization
- film inspection
- schoopage
- pre-healing
- pin attachment
- cast resin preparation/encapsulation
- 100% final inspection
- AQL check

WIMA Environmental Policy

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

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

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

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

We almost completely refrain from using packing materials such as:

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

RoHS Compliance

According to the RoHS Directive 2011/65/EC 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/EC

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

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

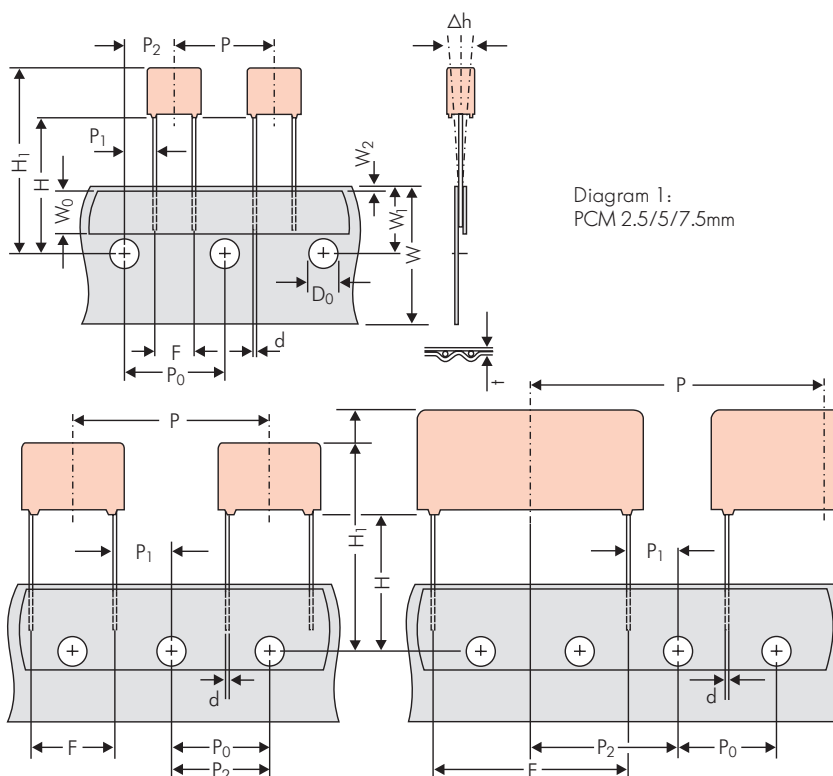


Diagram 2: PCM 10/15 mm

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	0.7 ±0.2	0.7 ±0.2	0.7 ±0.2	0.7 ±0.2	0.7 ±0.2	0.7 ±0.2	0.7 ±0.2
Package (see also page 149)		ROLL/AMMO			AMMO			
		REEL ϕ 360 max. ϕ 30 ±1	B 52 ±2 58 ±2	} depending on comp. dimensions	REEL ϕ 360 max. ϕ 30 ±1	52 ±2 B 58 ±2 or 66 ±2	REEL ϕ 500 max. ϕ 25 ±1	54 ±2 B 60 ±2 68 ±2
see details page 150.								

Dims in mm.

* Diameter of pins see General Data.

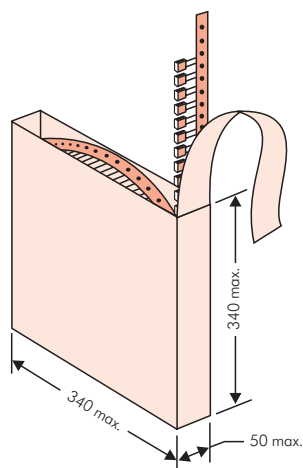
* PCM 10 and PCM 15 can be crimped to PCM 7.5.

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

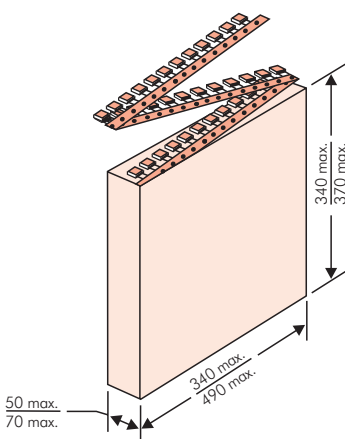
Please clarify customer-specific deviations with the manufacturer.

Types of Tape Packaging of Capacitors for Automatic Radial Insertion

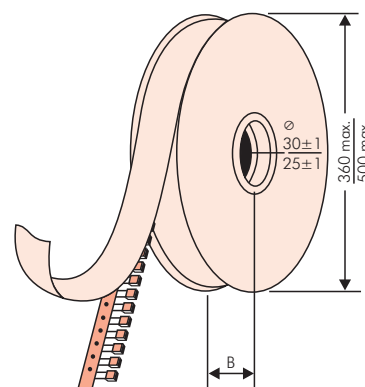
■ ROLL Packaging



■ AMMO Packaging



■ REEL Packaging



BAR CODE (Labelling)

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

Scanner decoding of

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

In addition part description of

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

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

WIMA Best Capacitors Made in Germany		Werk Unna	
Supplier-ID: 123456789	RoHS 2011/65/EC	Date Code: 08.10.10	
Purchase Order No. (P/O): Bestellung xyz		Quantity: 5.000	
Customer Part No.: KUNDETEILENUMMER		Customer No.: 0000100002	
WIMA Confirmation No.: 0001004063000100		Gross Weight [g]: 1870	
WIMA Part No.: MKS2C034701C00K89D			
Handling Unit:	MKS 2	QTY: 5.000	COO: DE
1000067326	MKS 2 0.47 μ F 63 VDC 3.5x8.5x7.2 RMS		
	Standard 10% Loss - Standard Drähte 6-2		
	Vorlage Debitur Inland	Week 03/2011	

BARCODE „Code 39“



Packing Quantities for Capacitors with Radial Pins in PCM 2.5 mm to 22.5 mm

PCM	Size				bulk	pcs. per packing unit									
						ROLL		REEL				AMMO			
	H16.5	H18.5	ø 360	ø 500		340 × 340		490 × 370							
	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			2500		–		2800		–	
	3	7.5	4.6	0C	5000	2200		2300		–		2300		–	
	3.8	8.5	4.6	0D	5000	2000		1800		–		1800		–	
	4.6	9	4.6	0E	5000	1500		1500		–		1500		–	
	5.5	10	4.6	0F	5000	1200		1200		–		1200		–	
5 mm	2.5	6.5	7.2	1A	5000	900		2500		–		2800		–	
	3	7.5	7.2	1B	5000	2200		2300		–		2300		–	
	3.5	8.5	7.2	1C	5000	2000		2000		–		2000		–	
	4.5	6	7.2	1D	6000	1600		1500		–		1500		–	
	4.5	9.5	7.2	1E	4000	1300		1500		–		1500		–	
	5	10	7.2	1F	3500	1300		1400		–		1400		–	
	5.5	7	7.2	1G	4000	1100		1200		–		1200		–	
	5.5	11.5	7.2	1H	2500	1000		1200		–		1200		–	
	6.5	8	7.2	1I	2500	1000		1000		–		1000		–	
	7.2	8.5	7.2	1J	2500	800		1000		–		1000		–	
	7.2	13	7.2	1K	2000	700		950		–		1000		–	
	8.5	10	7.2	1L	2000	700		800		–		800		–	
	8.5	14	7.2	1M	1500	800		800		–		800		–	
	11	16	7.2	1N	1000	600		600		–		400		–	
7.5 mm	2.5	7	10	2A	5000	–		2500		4400		2500		–	
	3	8.5	10	2B	5000	–		2200		4300		2300		4150	
	4	9	10	2C	4000	–		1700		3200		1700		3100	
	4.5	9.5	10.3	2D	3500	–		1500		2900		1400		2800	
	5	10.5	10.3	2E	3000	–		1300		2500		1300		–	
	5.7	12.5	10.3	2F	2000	–		1000		2200		1100		–	
	7.2	12.5	10.3	2G	1500	–		900		1800		1000		–	
10 mm	3	9	13	3A	3000	–		1100		2200		–		1900	
	4	8.5	13.5	FA	3000	–		900		1600		–		1450	
	4	9	13	3C	3000	–		900		1600		–		1450	
	4	9.5	13	3D	3000	–		900		1600		–		1400	
	5	10	13.5	FB	2000	–		700		1300		–		1200	
	5	11	13	3F	3000	–		700		1300		–		1200	
	6	12	13	3G	2400	–		550		1100		–		1000	
	6	12.5	13	3H	2400	–		550		1100		–		1000	
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	
	10	18	19	FG	500	–		300		650		–		590	
	11	14	18	4M	1000	–		300		600		–		540	
22.5 mm	5	14	26.5	5A	1200	–		–		800		–		770	
	6	15	26.5	5B	1000	–		–		700		–		640	
	7	16.5	26.5	5D	760	–		–		600		–		550	
	8	20	28	FH	500	–		–		500		–		480	
	8.5	18.5	26.5	5F	500	–		–		480		–		450	
	10	22	28	FI	540*	–		–		420		–		380	
	10.5	19	26.5	5G	680*	–		–		400		–		360	
	10.5	20.5	26.5	5H	680*	–		–		400		–		360	
	11	21	26.5	5I	680*	–		–		380		–		350	
	12	24	28	FJ	450*	–		–		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 × 340	490 × 370	H16.5	H18.5	H16.5	H18.5
					S	N	O	F	I	H	J	A	C	B	D
27.5 mm	9	19	31.5	6A	640*	–	–	–	–	460/340*	–	–	–	420	–
	11	21	31.5	6B	544*	–	–	–	–	380/280*	–	–	–	350	–
	13	24	31.5	6D	448*	–	–	–	–	300	–	–	–	290	–
	13	25	33	FK	336*	–	–	–	–	–	–	–	–	–	–
	15	26	31.5	6F	384*	–	–	–	–	270	–	–	–	250	–
	15	26	33	FL	288*	–	–	–	–	–	–	–	–	–	–
	17	29	31.5	6G	176*	–	–	–	–	–	–	–	–	–	–
	17	34.5	31.5	6I	176*	–	–	–	–	–	–	–	–	–	–
	19	30	31.5	6L	50*	–	–	–	–	–	–	–	–	–	–
	20	32	33	FM	216*	–	–	–	–	–	–	–	–	–	–
	20	39.5	31.5	6J	144*	–	–	–	–	–	–	–	–	–	–
37.5 mm	9	19	41.5	7A	480*	–	–	–	–	–	–	–	–	–	–
	11	22	41.5	7B	408*	–	–	–	–	–	–	–	–	–	–
	13	24	41.5	7C	252*	–	–	–	–	–	–	–	–	–	–
	15	26	41.5	7D	144*	–	–	–	–	–	–	–	–	–	–
	17	29	41.5	7E	132*	–	–	–	–	–	–	–	–	–	–
	19	32	41.5	7F	108*	–	–	–	–	–	–	–	–	–	–
	20	39.5	41.5	7G	108*	–	–	–	–	–	–	–	–	–	–
	24	45.5	41.5	7H	84*	–	–	–	–	–	–	–	–	–	–
	31	46	41.5	7I	72*	–	–	–	–	–	–	–	–	–	–
	35	50	41.5	7J	35*	–	–	–	–	–	–	–	–	–	–
	40	55	41.5	7K	28*	–	–	–	–	–	–	–	–	–	–
48.5 mm	19	31	56	8D	50*	–	–	–	–	–	–	–	–	–	–
	23	34	56	8E	72*	–	–	–	–	–	–	–	–	–	–
	27	37.5	56	8H	60*	–	–	–	–	–	–	–	–	–	–
	33	48	56	8J	48*	–	–	–	–	–	–	–	–	–	–
	37	54	56	8L	25*	–	–	–	–	–	–	–	–	–	–
52.5 mm	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.



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:				Rated voltage:		Capacitance:				Size:				Tolerance:			
SMD-PET = SMDT				2.5 VDC = A1		22 pF = 0022				4.8x3.3x3 Size 1812 = KA				20% = M			
SMD-PPS = SMDI				4 VDC = A2		47 pF = 0047				4.8x3.3x4 Size 1812 = KB				10% = K			
FKP 02 = FKP0				14 VDC = A3		100 pF = 0100				5.7x5.1x3.5 Size 2220 = QA				5% = J			
MKS 02 = MKS0				28 VDC = A4		150 pF = 0150				5.7x5.1x4.5 Size 2220 = QB				2.5% = H			
FKS 2 = FKS2				40 VDC = A5		220 pF = 0220				7.2x6.1x3 Size 2824 = TA				1% = E			
FKP 2 = FKP2				5 VDC = A6		330 pF = 0330				7.2x6.1x5 Size 2824 = TB				...			
MKS 2 = MKS2				50 VDC = B0		470 pF = 0470				10.2x7.6x5 Size 4030 = VA				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 ...			
MKP 2 = MKP2				63 VDC = C0		680 pF = 0680				12.7x10.2x6 Size 5040 = XA							
FKS 3 = FKS3				100 VDC = D0		1000 pF = 1100				15.3x13.7x7 Size 6054 = YA							
FKP 3 = FKP3				160 VDC = E0		1500 pF = 1150				2.5x7x4.6 PCM 2.5 = 0B							
MKS 4 = MKS4				250 VDC = F0		2200 pF = 1220				3x7.5x4.6 PCM 2.5 = 0C							
MKP 4 = MKP4				400 VDC = G0		3300 pF = 1330				2.5x6.5x7.2 PCM 5 = 1A							
MKP 10 = MKP1				450 VDC = H0		4700 pF = 1470				3x7.5x7.2 PCM 5 = 1B							
FKP 4 = FKP4				600 VDC = I0		6800 pF = 1680				2.5x7x10 PCM 7.5 = 2A							
FKP 1 = FKP1				630 VDC = J0		0.01 μF = 2100				3x8.5x10 PCM 7.5 = 2B							
MKP-X2 = MKX2				700 VDC = K0		0.022 μF = 2220				3x9x13 PCM 10 = 3A							
MKP-X2 R = MKXR				800 VDC = L0		0.047 μF = 2470				4x9x13 PCM 10 = 3C							
MKP-Y2 = MKY2				850 VDC = M0		0.1 μF = 3100				5x11x18 PCM 15 = 4B							
MP 3-X2 = MPX2				900 VDC = N0		0.22 μF = 3220				6x12.5x18 PCM 15 = 4C							
MP 3-X1 = MPX1				1000 VDC = O1		0.47 μF = 3470				5x14x26.5 PCM 22.5 = 5A							
MP 3-Y2 = MPY2				1100 VDC = P0		1 μF = 4100				6x15x26.5 PCM 22.5 = 5B							
MP 3R-Y2 = MPRY				1200 VDC = Q0		2.2 μF = 4220				9x19x31.5 PCM 27.5 = 6A							
Snubber MKP = SNMP				1250 VDC = R0		4.7 μF = 4470				11x21x31.5 PCM 27.5 = 6B							
Snubber FKP = SNFP				1500 VDC = S0		10 μF = 5100				9x19x41.5 PCM 37.5 = 7A							
GTO MKP = GTOM				1600 VDC = T0		22 μF = 5220				11x22x41.5 PCM 37.5 = 7B							
DC-LINK MKP 3 = DCP3				2000 VDC = U0		47 μF = 5470				94x49x182 DCH_ = H0							
DC-LINK MKP 4 = DCP4				2500 VDC = V0		100 μF = 6100				94x77x182 DCH_ = H1							
DC-LINK MKP 4S = DCPS				3000 VDC = W0		220 μF = 6220				...							
DC-LINK MKP 5 = DCP5				4000 VDC = X0		1 F = A010				Version code: Standard = 00 Version A1 = 1A Version A1.1.1 = 1B Version A2 = 2A ... Pin length (untaped) 3.5 ±0.5 = C9 6 -2 = SD 16 ±1 = P1 ...							
DC-LINK MKP 6 = DCP6				6000 VDC = Y0		2.5 F = A025											
DC-LINK HC = DCH_				250 VAC = 0W		50 F = A500											
DC-LINK HY = DCHY				275 VAC = 1W		100 F = B100											
SuperCap C = SCSC				300 VAC = 2W		110 F = B110											
SuperCap MC = MC_				400 VAC = 3W		600 F = B600											
SuperCap C60 = SCSC				440 VAC = 4W		1200 F = C120											
SuperCap R = SCSR				500 VAC = 5W		...											
SuperCap MR = MRPP				...													

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.