

Metallized Polypropylene (PP) Capacitors PCM 7.5 mm to 37.5 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 2002/95/EC

Typical Applications

For high frequency applications e.g.

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

Construction

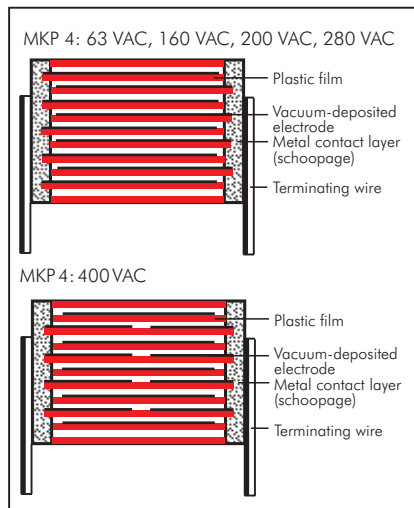
Dielectric:

Polypropylene (PP) film

Capacitor electrodes:

Vacuum-deposited

Internal construction:



Encapsulation:

Solvent-resistant, flame-retardent 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 33 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 $+100^{\circ}$ C

Climatic test category:

55/100/56 in accordance with IEC

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

C ! 0.33 μ F: & 1×10^5 M Ω

(mean value: 5×10^5 M Ω)

C) 0.33 μ F: & 30 000 sec (M $\Omega \times \mu$ F)

(mean value: 100 000 sec)

Measuring voltage: 100 V/1 min.

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

$\tan \delta$! 10×10^{-4} at 1 kHz

Maximum pulse rise time:

Capacitance μ F	max. pulse rise time V/ μ sec at $T_A < 40^{\circ}$ 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	-
6,8 ... 10	40	50	60	85	-
15 ... 33	35	50	-	-	-

for pulses equal to the rated voltage

Mechanical Tests

Pull test on leads:

d ! 0.8 ϕ : 10 N in direction of leads

d > 0.8 ϕ : 20 N in direction of leads

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/sec²

in accordance with IEC 60068-2-29

Test specifications:

In accordance with IEC 60384-16
and EN 131 200

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 $+85^{\circ}$ C for DC

voltages and from $+75^{\circ}$ 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*				400 VDC/220 VAC*				630 VDC/280 VAC*				1000 VDC/400 VAC*			
	W	H	L	PCM**	W	H	L	PCM**	W	H	L	PCM**	W	H	L	PCM**	W	H	L	PCM**
0.01 µF	3	8.5	10	7.5	3	8.5	10	7.5	3	8.5	10	7.5	3	8.5	10	7.5*	5.7	12.5	10.3	7.5*
0.015 "	3	8.5	10	7.5	3	8.5	10	7.5	3	8.5	10	7.5*	4	9	13	10*	5	11	13	10*
0.022 "	3	8.5	10	7.5	3	8.5	10	7.5	4	9	13	10*	4	9	13	10*	5	11	18	15*
0.033 "	3	8.5	10	7.5*	3	8.5	10	7.5*	4	9	13	10*	4.5	9.5	10.3	7.5*	5	11	18	15
0.047 "	4	9	13	10*	4	9	13	10*	4	9	13	10*	4	9	13	10*	5	11	18	15
0.068 "	4	9	10	7.5*	4	9	10	7.5*	4	9	13	10*	5	11	13	10*	5.7	12.5	10.3	7.5*
	4	9	13	10*	4	9	13	10*	5	11	13	10*	6	12.5	18	15*	6	15	26.5	22.5*
0.1 µF	4.5	9.5	10.3	7.5*	4.5	9.5	10.3	7.5*	6	12	13	10*	7	14	18	15	9	16	18	15*
	4	9	13	10*	4	9	13	10*	5	11	18	15*	7	14	18	15	7	16.5	26.5	22.5*
0.15 µF	5	10.5	10.3	7.5*	5	10.5	10.3	7.5*	6	12.5	18	15	8	15	18	15*	8.5	18.5	26.5	22.5
	5	11	13	10*	5	11	13	10*	6	15	26.5	22.5*	6	15	26.5	22.5*				
0.22 µF	6	12	13	10*	6	12	13	10*	7	14	18	15	9	16	18	15*	11	21	26.5	22.5*
	5	11	18	15*	5	11	18	15*	7	16.5	26.5	22.5*	7	16.5	26.5	22.5*	11	21	31.5	27.5*
0.33 µF	6	12.5	18	15	6	12.5	18	15	8	15	18	15*	8.5	18.5	26.5	22.5	11	21	31.5	27.5
									6	15	26.5	22.5*								
0.47 µF	7	14	18	15	7	14	18	15	7	16.5	26.5	22.5	10.5	19	26.5	22.5*	13	24	31.5	27.5
													11	21	31.5	27.5*				
0.68 µF	8	15	18	15*	8	15	18	15*	8.5	18.5	26.5	22.5	11	21	31.5	27.5	17	29	31.5	27.5
	6	15	26.5	22.5*	6	15	26.5	22.5*												
1.0 µF	7	16.5	26.5	22.5	7	16.5	26.5	22.5	11	21	26.5	22.5*	13	24	31.5	27.5	17	29	41.5	37.5
									11	21	31.5	27.5*								
1.5 "	10.5	19	26.5	22.5	10.5	19	26.5	22.5	11	21	31.5	27.5	15	26	31.5	27.5	20	39.5	41.5	37.5
2.2 "	11	21	26.5	22.5*	11	21	26.5	22.5*	15	26	31.5	27.5	17	29	41.5	37.5	24	45.5	41.5	37.5
	11	21	31.5	27.5*	11	21	31.5	27.5*												
3.3 "	13	24	31.5	27.5	13	24	31.5	27.5	17	29	31.5	27.5*	19	32	41.5	37.5				
									17	29	41.5	37.5*								
4.7 "	13	24	31.5	27.5	15	26	31.5	27.5	19	32	41.5	37.5	20	39.5	41.5	37.5				
6.8 "	15	26	31.5	27.5*	17	29	31.5	27.5*	20	39.5	41.5	37.5	24	45.5	41.5	37.5				
	13	24	41.5	37.5*	15	26	41.5	37.5*												
10 µF	17	29	41.5	37.5	19	32	41.5	37.5	24	45.5	41.5	37.5								
15 "	19	32	41.5	37.5	20	39.5	41.5	37.5												
22 "	20	39.5	41.5	37.5	24	45.5	41.5	37.5												
33 "	24	45.5	41.5	37.5																

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

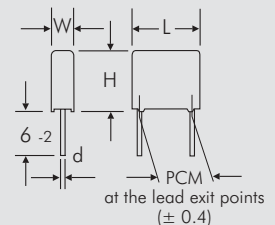
** PCM = Printed circuit module = lead spacing

* On ordering please state the required PCM (lead spacing)!
If not specified, smaller PCM will be booked.

Dims. in mm.

Taped version see page 104.

∅ 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	



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Typical Dimensions for Taping Configuration

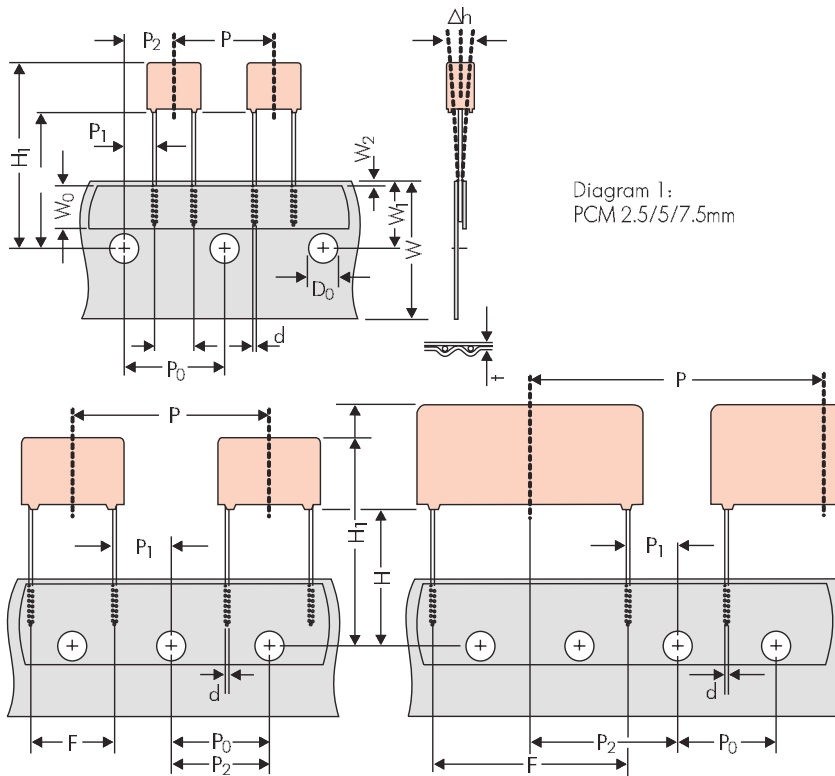


Diagram 1:
PCM 2.5/5/7.5mm

Diagram 2: PCM 10/15 mm

Diagram 3: PCM 22.5 and 27.5*mm

*PCM 27.5 tapping possible with two feed holes between components

Designation	Symbol	Dimensions for Radial Taping						
		PCM 2.5 tapping	PCM 5 tapping	PCM 7.5 tapping	PCM 10 tapping	PCM 15 tapping*		
			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
to lead	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_{Δ}	16.5 ±0.3 18.5 ±0.5	16.5 ±0.3 18.5 ±	16.5 ±0.5 18.5 ±0.5	16.5 ±0.5 18.5 ±	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	H	$H+H_{\text{component}} < H_1$	$H+H < H_1$	$H+H_{\text{component}} < H_1$	$H+H_{\text{component}} < H_1$	$H+H_{\text{component}} < H_1$	$H+H_{\text{component}} < H_1$	$H+H_{\text{component}} < H_1$
	F	2.5 ±0.5	5.0 ^{+0.8} _{-0.2}	7.5 ±	10.0 ±0.8	15 ±0.8	22.5 ±	±
Lead 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	±0.2	0.7 ±0.2
Package (see also page 1051)	Δ	ROLL/AMMO			AMMO			
		REEL ϕ 360 max. ϕ 30 ±1	B 52 ± 2 58 ± 2 } depending on compo. dimensions		REEL ϕ 360 max. $52 \pm$ B 58 ± 2 or 66 ± 2	REEL ϕ 500 max. ϕ 25 ±1	B 60 ± 2 68 ± 2 } depending on PCM and compoener* dimensions	
Unit		see details page 107.						

▲ Please give „H“ dimensions and desired packaging type when ordering.

▪ Diameter of leads see General Data.

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

Position of components according to PCM 7.5 sketch 11. $P_0 = 12.7$ or 15.0 is possible

Dims in mm.

Please clarify customer-specific deviations with the manufacturer.