

Polypropylene (PP) Capacitors for Pulse Applications with Metal Foil Electrodes, Schoopage Contacts and Self-Healing, Internal Series Connection for Increased Current Carrying Capability PCM 15 mm to 37.5 mm

Special Features

- High pulse duty
- Self-healing
- Internal series connection
- Very low dissipation factor
- Negative capacitance change versus temperature
- According to RoHS 2002/95/EC

Typical Applications

For high pulse and high frequency applications e.g.

- Switch mode power supplies
- Converter in drives and power electronics
- Deflection systems in monitors and TV-sets
- Electronic ballasts

Construction

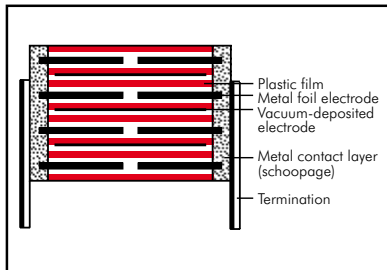
Dielectric:

Polypropylene (PP) film

Capacitor electrodes:

Aluminium foil and single-sided metallized plastic film

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:

100 pF to 1.5 μ F (E12-values on request)

Rated voltages:

400 VDC, 630 VDC, 1000 VDC, 1250 VDC, 1600 VDC, 2000 VDC

Capacitance tolerances:

$\pm 20\%$, $\pm 10\%$, $\pm 5\%$ (other tolerances are available subject to special enquiry!)

Operating temperature range:

-55°C to $+100^\circ\text{C}$

Climatic test category:

55/100/56 in accordance with IEC

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

$C \leq 0.1 \mu\text{F}$: $\geq 1 \times 10^5 \text{ M}\Omega$

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

$C > 0.1 \mu\text{F}$: $\geq 10000 \text{ sec (M}\Omega \times \mu\text{F)}$

(mean value: 100000 sec)

Measuring voltage: 100 V/1 min.

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

at f	$C \leq 0.1 \mu\text{F}$	$0.1 \mu\text{F} < C \leq 1.0 \mu\text{F}$	$C > 1.0 \mu\text{F}$
1 kHz	$\leq 3 \times 10^{-4}$	$\leq 3 \times 10^{-4}$	$\leq 3 \times 10^{-4}$
10 kHz	$\leq 4 \times 10^{-4}$	$\leq 6 \times 10^{-4}$	-
100 kHz	$\leq 10 \times 10^{-4}$	-	-

Maximum pulse rise time:

Capacitance $\mu\text{F}/\mu\text{F}$	max. pulse rise time V/ μsec at $T_A < 40^\circ\text{C}$					
	400 VDC	630 VDC	1000 VDC	1250 VDC	1600 VDC	2000 VDC
100 ... 220	27000	31000	33000	39000	39000	39000
330 ... 680	19000	21000	31000	34000	34000	39000
1000 ... 2200	13000	15000	27000	27000	27000	39000
3300 ... 6800	9000	14000	15000	17000	17000	21000
0.01 ... 0.022	7000	11000	11000	11000	11000	11000
0.033 ... 0.068	7000	9000	9000	9000	9000	9000
0.1 ... 0.22	7000	9000	9000	9000	9000	9000
0.33 ... 0.68	3000	5000	5000	5000	5000	-
1.0 ... 1.5	1000	1600	2000	-	-	-

for pulses equal to the rated voltage

Mechanical Tests

Pull test on leads:

$d \leq 0.8 \phi$: 10 N in direction of leads

$d > 0.8 \phi$: 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:

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

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

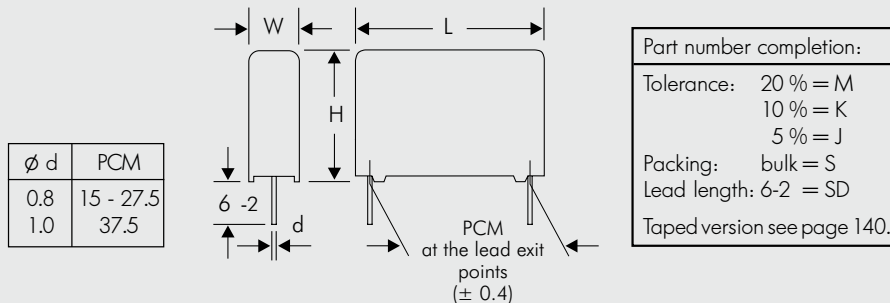
Capacitance	400 VDC/250 VAC*					630 VDC/350 VAC*				
	W	H	L	PCM**	Part number	W	H	L	PCM**	Part number
100 pF	5	11	18	15	FKP4G001004B00_	5	11	18	15	FKP4J001004B00_
150 "	5	11	18	15	FKP4G001504B00_	5	11	18	15	FKP4J001504B00_
220 "	5	11	18	15	FKP4G002204B00_	5	11	18	15	FKP4J002204B00_
330 "	5	11	18	15	FKP4G003304B00_	5	11	18	15	FKP4J003304B00_
470 "	5	11	18	15	FKP4G004704B00_	5	11	18	15	FKP4J004704B00_
680 "	5	11	18	15	FKP4G006804B00_	5	11	18	15	FKP4J006804B00_
1000 pF	5	11	18	15	FKP4G011004B00_	5	11	18	15	FKP4J011004B00_
1500 "	5	11	18	15	FKP4G011504B00_	5	11	18	15	FKP4J011504B00_
2200 "	5	11	18	15	FKP4G012204B00_	5	11	18	15	FKP4J012204B00_
3300 "	5	11	18	15	FKP4G013304B00_	5	11	18	15	FKP4J013304B00_
4700 "	5	11	18	15	FKP4G014704B00_	5	11	18	15	FKP4J014704B00_
6800 "	5	11	18	15	FKP4G016804B00_	5	11	18	15	FKP4J016804B00_
0.01 µF	5	11	18	15	FKP4G021004B00_	5	11	18	15	FKP4J021004B00_
0.015 "	5	11	18	15	FKP4G021504B00_	6	12.5	18	15	FKP4J021504C00_
0.022 "	6	12.5	18	15	FKP4G022204C00_	7	14	18	15	FKP4J022204D00_
0.033 "	7	14	18	15	FKP4G023304D00_	8	15	18	15	FKP4J023304F00_
	5	14	26.5	22.5	FKP4G023305A00_	6	15	26.5	22.5	FKP4J023305B00_
0.047 "	8	15	18	15	FKP4G024704F00_	9	16	18	15	FKP4J024704J00_
	6	15	26.5	22.5	FKP4G024705B00_	7	16.5	26.5	22.5	FKP4J024705D00_
0.068 "	7	16.5	26.5	22.5	FKP4G026805D00_	8.5	18.5	26.5	22.5	FKP4J026805F00_
0.1 µF	8.5	18.5	26.5	22.5	FKP4G031005F00_	10.5	19	26.5	22.5	FKP4J031005G00_
						11	21	31.5	27.5	FKP4J031006B00_
0.15 "	11	21	26.5	22.5	FKP4G031505I00_	11	21	26.5	22.5	FKP4J031505I00_
	9	19	31.5	27.5	FKP4G031506A00_	11	21	31.5	27.5	FKP4J031506B00_
0.22 "	11	21	31.5	27.5	FKP4G032206B00_	13	24	31.5	27.5	FKP4J032206D00_
0.33 "	13	24	31.5	27.5	FKP4G033306D00_	15	26	31.5	27.5	FKP4J033306F00_
0.47 "	17	29	31.5	27.5	FKP4G034706G00_	17	34.5	31.5	27.5	FKP4J034706I00_
0.68 "	17	34.5	31.5	27.5	FKP4G036806I00_	20	39.5	41.5	37.5	FKP4J036807G00_
1.0 µF	20	39.5	31.5	27.5	FKP4G041006J00_	20	39.5	41.5	37.5	FKP4J041007G00_
1.5 "	20	39.5	41.5	37.5	FKP4G041507G00_	24	45.5	41.5	37.5	FKP4J041507H00_

* AC voltage: $f \leq 1000 \text{ Hz}$; $1.4 \times U_{\text{rms}} + U_{\text{DC}} \leq U_r$

** PCM = Printed circuit module = lead spacing

Dims. in mm.

Ionisation inception level in isolated cases may be lower than admissible rated AC voltage.



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Continuation page 79

Continuation

General Data

Capacitance	1000 VDC/400 VAC*					1250 VDC/450 VAC*				
	W	H	L	PCM**	Part number	W	H	L	PCM**	Part number
100 pF	5	11	18	15	FKP4O101004B00_____	5	11	18	15	FKP4R001004B00_____
150 „	5	11	18	15	FKP4O101504B00_____	5	11	18	15	FKP4R001504B00_____
220 „	5	11	18	15	FKP4O102204B00_____	5	11	18	15	FKP4R002204B00_____
330 „	5	11	18	15	FKP4O103304B00_____	5	11	18	15	FKP4R003304B00_____
470 „	5	11	18	15	FKP4O104704B00_____	5	11	18	15	FKP4R004704B00_____
680 „	5	11	18	15	FKP4O106804B00_____	5	11	18	15	FKP4R001684B00_____
1000 pF	5	11	18	15	FKP4O111004B00_____	5	11	18	15	FKP4R011004B00_____
1500 „	5	11	18	15	FKP4O111504B00_____	5	11	18	15	FKP4R011504B00_____
2200 „	5	11	18	15	FKP4O112204B00_____	5	11	18	15	FKP4R012204B00_____
3300 „	5	11	18	15	FKP4O113304B00_____	6	12.5	18	15	FKP4R013304C00_____
4700 „	5	11	18	15	FKP4O114704B00_____	7	14	18	15	FKP4R014704D00_____
6800 „	5	11	18	15	FKP4O116804B00_____	8	15	18	15	FKP4R016804F00_____
0.01 µF	6	12.5	18	15	FKP4O121004C00_____	9	16	18	15	FKP4R021004J00_____
	5	14	26.5	22.5	FKP4O121005A00_____	6	15	26.5	22.5	FKP4R021005B00_____
0.015 „	7	14	18	15	FKP4O121504D00_____	7	16.5	26.5	22.5	FKP4R021505D00_____
	6	15	26.5	22.5	FKP4O121505B00_____					
0.022 „	8	15	18	15	FKP4O122204F00_____	8.5	18.5	26.5	22.5	FKP4R022205F00_____
	6	15	26.5	22.5	FKP4O122205B00_____					
0.033 „	7	16.5	26.5	22.5	FKP4O123305D00_____	10.5	19	26.5	22.5	FKP4R023305G00_____
						9	19	31.5	27.5	FKP4R023306A00_____
0.047 „	8.5	18.5	26.5	22.5	FKP4O124705F00_____	11	21	31.5	27.5	FKP4R024706B00_____
	9	19	31.5	27.5	FKP4O124706A00_____					
0.068 „	11	21	26.5	22.5	FKP4O126805I00_____	13	24	31.5	27.5	FKP4R026806D00_____
	9	19	31.5	27.5	FKP4O126806A00_____					
0.1 µF	11	21	31.5	27.5	FKP4O131006B00_____	15	26	31.5	27.5	FKP4R031006F00_____
0.15 „	13	24	31.5	27.5	FKP4O131506D00_____	15	26	31.5	27.5	FKP4R031506F00_____
0.22 „	15	26	31.5	27.5	FKP4O132206F00_____	20	39.5	31.5	27.5	FKP4R032206J00_____
						17	29	41.5	37.5	FKP4R032207E00_____
0.33 „	17	34.5	31.5	27.5	FKP4O133306I00_____	19	32	41.5	37.5	FKP4R033307F00_____
	17	29	41.5	37.5	FKP4O133307E00_____					
0.47 „	19	32	41.5	37.5	FKP4O134707F00_____	20	39.5	41.5	37.5	FKP4R034707G00_____
0.68 „	20	39.5	41.5	37.5	FKP4O136807G00_____	24	45.5	41.5	37.5	FKP4R036807H00_____
1.0 µF	24	45.5	41.5	37.5	FKP4O141007H00_____					

* AC voltage: $f \leq 1000 \text{ Hz}$; $1.4 \times U_{\text{rms}} + U_{\text{DC}} \leq U_r$

** PCM = Printed circuit module = lead spacing

Dims. in mm.

Ionisation inception level in isolated cases may be lower than admissible rated AC voltage.

Part number completion:

Tolerance: 20 % = M
10 % = K
5 % = J

Packing: bulk = S
Lead length: 6-2 = SD

Taped version see page 140.

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Continuation

General Data

Capacitance	1600 VDC/500 VAC*					2000 VDC/550 VAC*				
	W	H	L	PCM**	Part number	W	H	L	PCM**	Part number
100 pF	5	11	18	15	FKP4T001004B00_____	5	11	18	15	FKP4U001004B00_____
150 "	5	11	18	15	FKP4T001504B00_____	5	11	18	15	FKP4U001504B00_____
220 "	5	11	18	15	FKP4T002204B00_____	5	11	18	15	FKP4U002204B00_____
330 "	5	11	18	15	FKP4T003304B00_____	5	11	18	15	FKP4U003304B00_____
470 "	5	11	18	15	FKP4T004704B00_____	5	11	18	15	FKP4U004704B00_____
680 "	5	11	18	15	FKP4T006804B00_____	5	11	18	15	FKP4U006804B00_____
1000 pF	5	11	18	15	FKP4T011004B00_____	5	11	18	15	FKP4U011004B00_____
1500 "	5	11	18	15	FKP4T011504B00_____	6	12.5	18	15	FKP4U011504C00_____
2200 "	6	12.5	18	15	FKP4T012204C00_____	7	14	18	15	FKP4U012204D00_____
3300 "	7	14	18	15	FKP4T013304D00_____	9	16	18	15	FKP4U013304J00_____
4700 "	8	15	18	15	FKP4T014704F00_____	6	15	26.5	22.5	FKP4U013305B00_____
6800 "	9	16	18	15	FKP4T016804J00_____	7	16.5	26.5	22.5	FKP4U014705D00_____
	6	15	26.5	22.5	FKP4T016805B00_____	8.5	18.5	26.5	22.5	FKP4U016805F00_____
0.01 µF	6	15	26.5	22.5	FKP4T021005B00_____	10.5	19	26.5	22.5	FKP4U021005G00_____
0.015 "	8.5	18.5	26.5	22.5	FKP4T021505F00_____	11	21	26.5	22.5	FKP4U021505I00_____
0.022 "	10.5	19	26.5	22.5	FKP4T022205H00_____	9	19	31.5	27.5	FKP4U021506A00_____
	9	19	31.5	27.5	FKP4T022206A00_____	11	21	31.5	27.5	FKP4U022206B00_____
0.033 "	11	21	31.5	27.5	FKP4T023306B00_____	11	22	41.5	37.5	FKP4U022207B00_____
						13	24	31.5	27.5	FKP4U023306D00_____
0.047 "	13	24	31.5	27.5	FKP4T024706D00_____	13	24	41.5	37.5	FKP4U023307C00_____
						15	26	31.5	27.5	FKP4U024706F00_____
0.068 "	15	26	31.5	27.5	FKP4T026806F00_____	15	26	41.5	37.5	FKP4U024707D00_____
						17	34.5	31.5	27.5	FKP4U026806I00_____
						17	29	41.5	37.5	FKP4U026807E00_____
0.1 µF	17	34.5	31.5	27.5	FKP4T031006I00_____	19	32	41.5	37.5	FKP4U031007F00_____
0.15 "	20	39.5	31.5	27.5	FKP4T031506J00_____	24	45.5	41.5	37.5	FKP4U031507H00_____
	17	29	41.5	37.5	FKP4T031507E00_____					
0.22 "	19	32	41.5	37.5	FKP4T032207F00_____					
0.33 "	20	39.5	41.5	37.5	FKP4T033307G00_____					
0.47 "	24	45.5	41.5	37.5	FKP4T034707H00_____					

* AC voltage: $f \leq 1000 \text{ Hz}$; $1.4 \times U_{\text{rms}} + \text{UDC} \leq U_r$

** PCM = Printed circuit module = lead spacing

Dims. in mm.

Ionisation inception level in isolated cases may be lower than admissible rated AC voltage.

Part number completion:

Tolerance: 20 % = M
10 % = K
5 % = J

Packing: bulk = S
Lead length: 6-2 = SD

Taped version see page 140.

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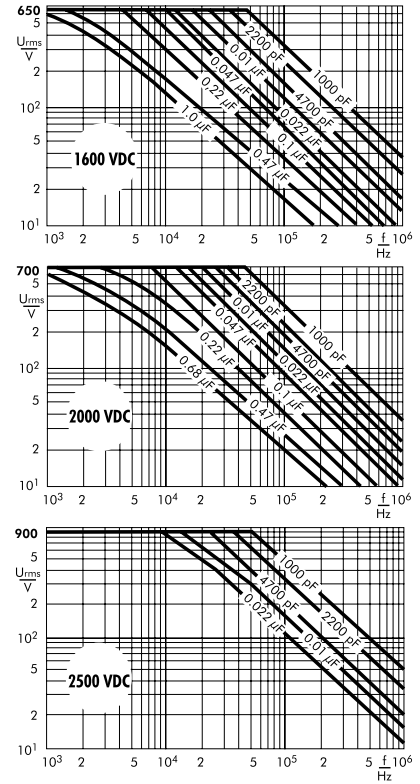
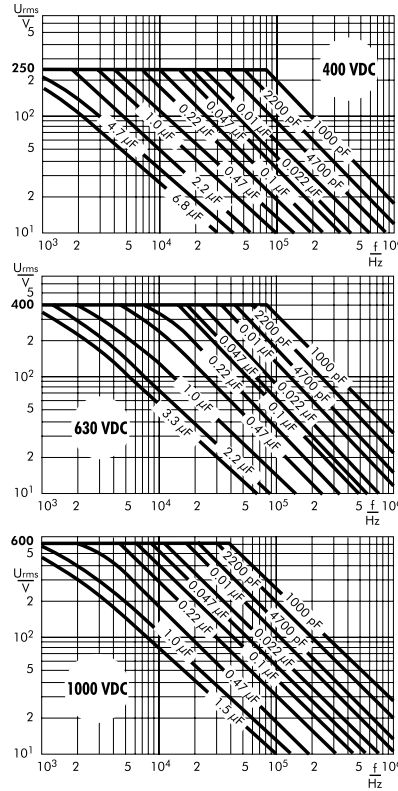
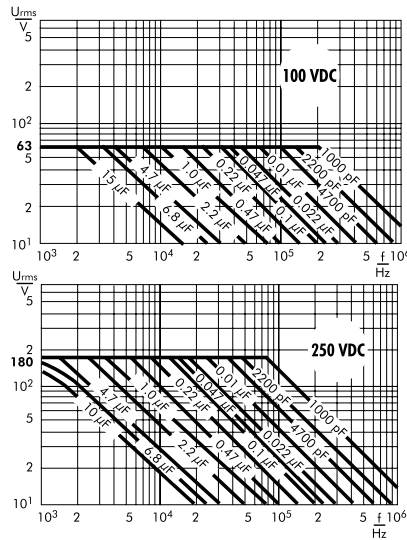
AC voltage graphs see page 76.

WIMA MKP 10



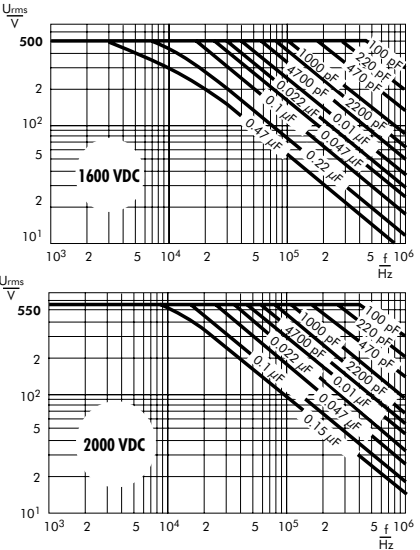
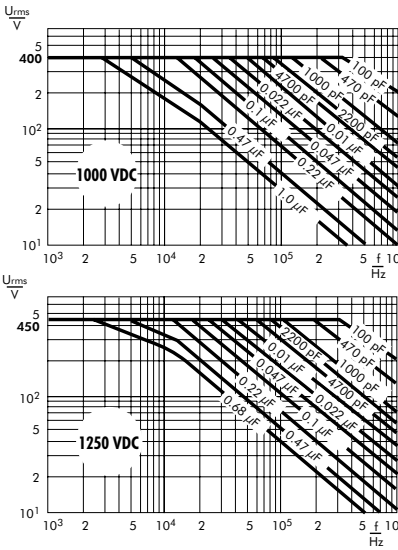
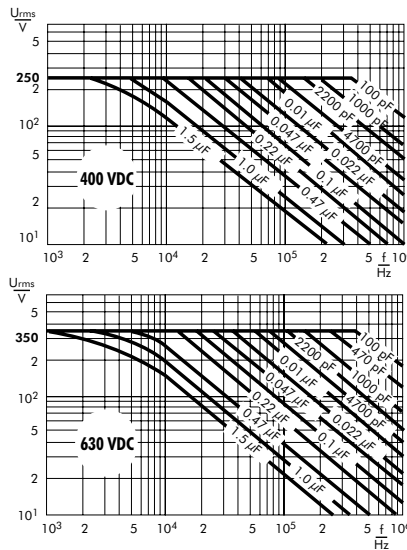
Continuation

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



WIMA FKP 4

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



Technical information and general data see page 77.

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 $t < 5$ min. has been proven to be best.

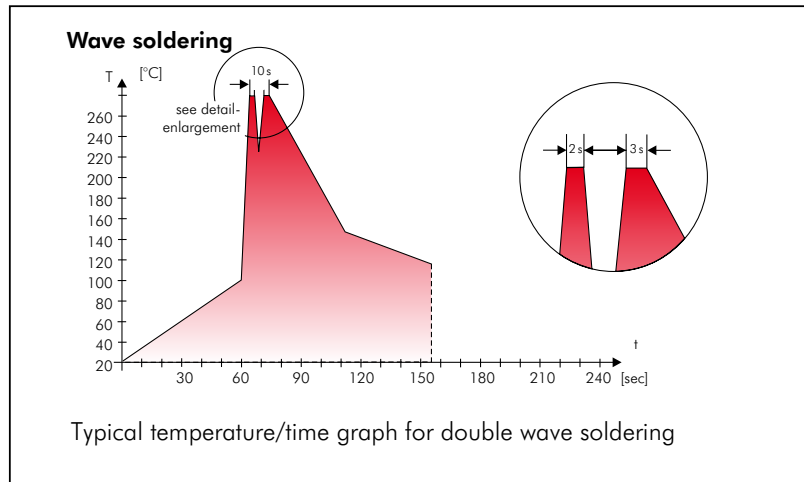
Single wave soldering

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

Double wave soldering

Soldering bath temperature: $T < 260^{\circ}\text{C}$
Immersion time: $2 \times t < 3$ 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 9001:2000 Certification

ISO 9001:2000 is an international basic standard of quality assurance systems for all branches of industry. The approval according to ISO 9001:2000 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
- lead 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
- 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:

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

RoHS Compliance

According to the RoHS Directive 2002/95/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 2002/95/EG

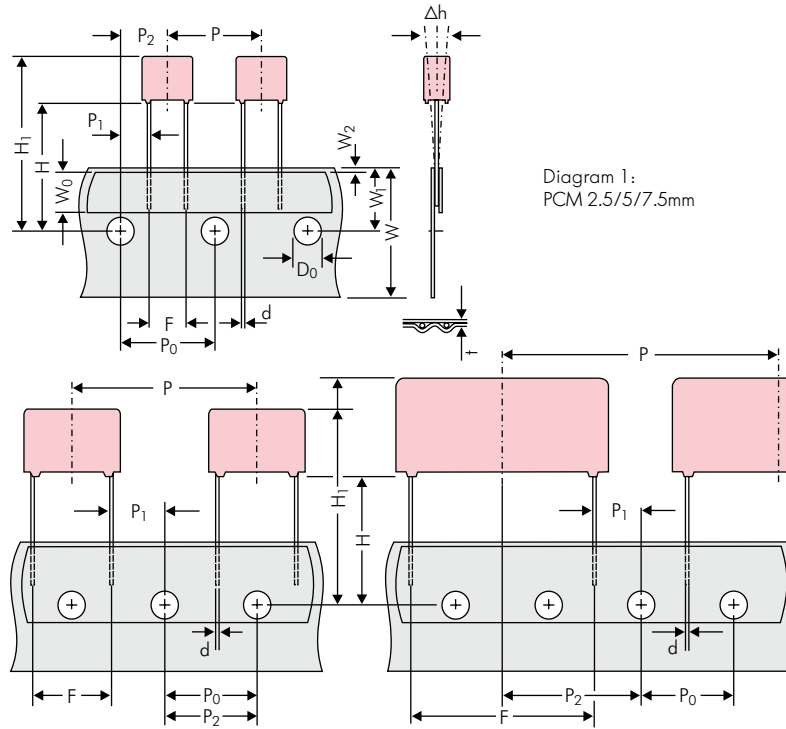
WIMA capacitors are lead free in accordance with RoHS 2002/95/EC

Tape for lead-free WIMA capacitors

DIN EN ISO 14001:2005

WIMA's environmental management has been established in accordance with the guidelines of DIN EN ISO 14001:2005. The certification has been granted in June 2006.

Typical Dimensions for Taping Configuration



*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 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	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
Lead 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
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	0.7 ±0.2	0.7 ±0.2
Package (see also page 141)		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 B 58 ±2 or 66 ±2	REEL ø 500 max. ø 25 ±1	54 ±2 B 60 ±2 68 ±2 } depending on PCM and component dimensions
Unit		see details page 143.						

Dims in mm.

• 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 1). P₀ = 12.7 or 15.0 is possible

Please clarify customer-specific deviations with the manufacturer.

Packing Quantities for Bulk Capacitors and TPS*



PCM	Size			pcs. per packaging unit bulk			pcs. per packaging unit/TPS*	
	Part number codes	W	H	L	Mini M	Standard S	Maxi G	Mini X
2.5 mm	2.5	7	4.6	1000	5000	10000	-	-
	3	7.5	4.6	1000	5000	10000	-	-
	3.8	8.5	4.6	1000	5000	10000	-	-
	4.6	9	4.6	1000	5000	10000	-	-
	5.5	10	4.6	1000	5000	10000	-	-
5 mm	2.5	6.5	7.2	2000	5000	10000	-	-
	3	7.5	7.2	1000	5000	-	-	-
	3.5	8.5	7.2	1000	5000	-	-	-
	4.5	6	7.2	1000	6000	-	-	-
	4.5	9.5	7.2	1000	4000	-	-	-
	5	10	7.2	1000	3500	-	-	-
	5.5	7	7.2	1000	4000	-	-	-
	5.5	11.5	7.2	500	2500	-	-	-
	6.5	8	7.2	1000	2500	-	-	-
	7.2	8.5	7.2	500	2500	-	-	-
	7.2	13	7.2	500	2000	-	-	-
	8.5	10	7.2	500	2000	-	-	-
	8.5	14	7.2	500	1500	-	-	-
11	16	7.2	250	1000	-	-	-	
7.5 mm	2.5	7	10	1000	5000	-	-	-
	3	8.5	10	1000	5000	-	-	-
	4	9	10	1000	4000	-	-	-
	4.5	9.5	10.3	1000	3500	-	-	-
	5	10.5	10.3	1000	3000	-	-	-
	5.7	12.5	10.3	500	2000	-	-	-
	7.2	12.5	10.3	500	1500	-	-	-
10 mm	3	9	13	1000	3000	-	-	-
	4	8.5	13.5	500	3000	-	-	-
	4	9	13	1000	3000	-	-	-
	4	9.5	13	1000	3000	-	-	-
	5	10	13.5	500	2000	-	-	-
	5	11	13	1000	3000	-	-	-
	6	12	13	800	2400	-	-	-
	6	12.5	13	800	2400	-	-	-
8	12	13	500	2000	-	-	-	
15 mm	5	11	18	800	2400	-	-	-
	5	13	19	200	1000	-	-	-
	6	12.5	18	500	2000	-	-	-
	6	14	19	250	1000	-	-	-
	7	14	18	400	1600	-	-	-
	7	15	19	250	1000	-	-	-
	8	15	18	400	1200	-	-	-
	8	17	19	100	500	-	-	-
	9	14	18	400	1200	-	-	-
	9	16	18	300	900	-	-	-
	10	18	19	100	500	-	-	-
11	14	18	300	1000	-	-	-	
22.5 mm	5	14	26.5	300	1200	-	-	-
	6	15	26.5	250	1000	-	-	-
	7	16.5	26.5	190	760	-	-	-
	8	20	28	-	-	-	115	690
	8.5	18.5	26.5	-	-	-	220	880
	10	22	28	-	-	-	90	540
	10.5	19	26.5	-	-	-	170	680
	10.5	20.5	26.5	-	-	-	170	680
	11	21	26.5	-	-	-	170	680
12	24	28	-	-	-	75	450	
27.5 mm	9	19	31.5	-	-	-	160	640
	11	21	31.5	-	-	-	136	544
	13	24	31.5	-	-	-	112	448
	13	25	33	-	-	-	56	336
	15	26	31.5	-	-	-	96	384
	15	26	33	-	-	-	48	288
	17	29	31.5	-	-	-	88	176
	17	34.5	31.5	-	-	-	88	176
	20	32	33	-	-	-	36	216
	20	39.5	31.5	-	-	-	36	144
37.5 mm	9	19	41.5	-	-	-	60	480
	11	22	41.5	-	-	-	51	408
	13	24	41.5	-	-	-	84	252
	15	26	41.5	-	-	-	72	144
	17	29	41.5	-	-	-	66	132
	19	32	41.5	-	-	-	54	108
	20	39.5	41.5	-	-	-	27	108
24	45.5	41.5	-	-	-	21	84	

Rights reserved to amend design data without prior notification.
Samples and pre-production needs on request.

■ Moulded versions.

* Tray-Packing-System

Packing Units for Taped Capacitors with Radial Leads



PCM	Size			ROLL		REEL				AMMO			
				H16.5	H18.5	ø 360		ø 500		340 x 340		490 x 370	
Part number codes	W	H	L	N	O	F	I	H	J	A	C	B	D
2.5 mm	2.5	7	4.6	2200		2500		-		2800		-	
	3	7.5	4.6	2000		2300		-		2300		-	
	3.8	8.5	4.6	1500		1800		-		1800		-	
	4.6	9	4.6	1200		1500		-		1500		-	
	5.5	10	4.6	900		1200		-		1200		-	
5 mm	2.5	6.5	7.2	2200		2500		-		2800		-	
	3	7.5	7.2	2000		2300		-		2300		-	
	3.5	8.5	7.2	1600		2000		-		2000		-	
	4.5	6	7.2	1300		1500		-		1500		-	
	4.5	9.5	7.2	1300		1500		-		1500		-	
	5	10	7.2	1100		1400		-		1400		-	
	5.5	7	7.2	1000		1200		-		1200		-	
	5.5	11.5	7.2	1000		1200		-		1200		-	
	6.5	8	7.2	800		1000		-		1000		-	
	7.2	8.5	7.2	700		1000		-		1000		-	
	7.2	13	7.2	700		950		-		1000		-	
	8.5	10	7.2	600		800		-		800		-	
	8.5	14	7.2	600		800		-		800		-	
	11	16	7.2	500		700		-		700		-	
7.5 mm	2.5	7	10	-		2500		4400		2800		-	
	3	8.5	10	-		2200		4300		2300		4150	
	4	9	10	-		1700		3200		1700		3100	
	4.5	9.5	10.3	-		1500		2900		1400		2800	
	5	10.5	10.3	-		1300		2500		1300		-	
	5.7	12.5	10.3	-		1000		2200		1100		-	
	7.2	12.5	10.3	-		900		1800		1000		-	
10 mm	3	9	13	-		1100		2200		-		1900	
	4	8.5	13.5	-		900		1600		-		1450	
	4	9	13	-		900		1600		-		1450	
	4	9.5	13	-		900		1600		-		1400	
	5	10	13.5	-		700		1300		-		1200	
	5	11	13	-		700		1300		-		1200	
	6	12	13	-		550		1100		-		1000	
	6	12.5	13	-		550		1100		-		1000	
8	12	13	-		400		800		-		740		
15 mm	5	11	18	-		600		1200		-		1150	
	5	13	19	-		600		1200		-		1200	
	6	12.5	18	-		500		1000		-		1000	
	6	14	19	-		500		1000		-		1000	
	7	14	18	-		450		900		-		850	
	7	15	19	-		450		900		-		850	
	8	15	18	-		400		800		-		740	
	8	17	19	-		400		800		-		740	
	9	14	18	-		350		700		-		650	
	9	16	18	-		350		700		-		650	
	10	18	19	-		300		650		-		590	
11	14	18	-		300		600		-		540		
22.5 mm	5	14	26.5	-		-		800		-		770	
	6	15	26.5	-		-		700		-		640	
	7	16.5	26.5	-		-		600		-		550	
	8	20	28	-		-		500		-		480	
	8.5	18.5	26.5	-		-		480		-		450	
	10	22	28	-		-		420		-		380	
	10.5	19	26.5	-		-		400		-		360	
	10.5	20.5	26.5	-		-		400		-		360	
	11	21	26.5	-		-		380		-		350	
12	24	28	-		-		350		-		310		
27.5 mm	9	19	31.5	-		-		460/340*		-		420	
	11	21	31.5	-		-		380/280*		-		350	
	13	24	31.5	-		-		300		-		290	
	15	26	31.5	-		-		270		-		250	

* for 2-inch transport pitches.

Samples and pre-production needs 1 packing unit minimum.

■ Moulded versions.

Rights reserved to amend design data without prior notification.



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: Special features (e.g. Snubber versions)
- Field 15: Capacitance tolerance
- Field 16: Packing
- Field 17 - 18: Lead 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	3	1	0	0	1	A	0	0	M	S	S	D
MKS 2				63 VDC		0.01 μ F			2.5x6.5x7.2		-		20%	bulk	6-2		

Type description:

SMD-PET	=	SMDT
SMD-PEN	=	SMDN
SMD-PPS	=	SMDI
FKP 02	=	FKS0
MKS 02	=	MKS0
FKS 2	=	FKS2
FKM 2	=	FKM2
FKP 2	=	FKP2
MKS 2	=	MKS2
MKP 2	=	MKP2
MKI 2	=	MKI2
FKS 3	=	FKS3
FKM 3	=	FKM3
FKP 3	=	FKP3
MKS 4	=	MKS4
MKM 4	=	MKM4
MKP 4	=	MKP4
MKP 10	=	MKP1
FKP 4	=	FKP4
FKP 1	=	FKP1
MKP-X2	=	MKX2
MKP-X2 R	=	MKXR
MKP-Y2	=	MKY2
MP 3-X2	=	MPX2
MP 3-X1	=	MPX1
MP 3-Y2	=	MPY2
MP 3R-Y2	=	MPYR
Snubber FKP	=	SNFF
Snubber MKP	=	SNMP
GTO MKP	=	GTOM
DC-LINK MKP 4	=	DCP4
DC-LINK MKP C	=	DCPC
DC-LINK HC	=	DCH_
SuperCap C	=	SCSC
SuperCap MC	=	SCMC
SuperCap R	=	SCSR
SuperCap MR	=	SCMR

Rated voltage:

16 VDC	=	A0
2.5 VDC	=	A1
4 VDC	=	A2
14 VDC	=	A3
28 VDC	=	A4
40 VDC	=	A5
50 VDC	=	B0
63 VDC	=	C0
100 VDC	=	D0
160 VDC	=	E0
250 VDC	=	F0
400 VDC	=	G0
630 VDC	=	J0
800 VDC	=	L0
850 VDC	=	M0
1000 VDC	=	O1
1200 VDC	=	Q0
1600 VDC	=	T0
2000 VDC	=	U0
2500 VDC	=	V0
4000 VDC	=	X0
6000 VDC	=	Y0
250 VAC	=	0W
275 VAC	=	1W
300 VAC	=	2W
400 VAC	=	3W
440 VAC	=	4W
500 VAC	=	5W
...	=	...

Capacitance:

22 pF	=	0022
47 pF	=	0047
100 pF	=	0100
220 pF	=	0220
470 pF	=	0470
1000 pF	=	1100
2200 pF	=	1220
4700 pF	=	1470
0.01 μ F	=	2100
0.022 μ F	=	2220
0.047 μ F	=	2470
0.1 μ F	=	3100
0.22 μ F	=	3220
0.47 μ F	=	3470
1 μ F	=	4100
2.2 μ F	=	4220
4.7 μ F	=	4470
10 μ F	=	5100
22 μ F	=	5220
47 μ F	=	5470
100 μ F	=	6100
220 μ F	=	6220
1 F	=	A010
2.5 F	=	A025
50 F	=	A500
100 F	=	B100
600 F	=	B600
1200 F	=	C120
...	=	...

Size:

4.8x3.3x3	Size 1812	=	X1
5.7x5.1x3.5	Size 2220	=	Y1
7.2x6.1x3	Size 2824	=	T1
2.5x7x4.6	PCM2.5	=	0B
3x7.5x4.6	PCM2.5	=	0C
2.5x6.5x7.2	PCM5	=	1A
3x7.5x7.2	PCM5	=	1B
2.5x7x10	PCM7.5	=	2A
3x8.5x10	PCM7.5	=	2B
3x9x13	PCM10	=	3A
4x9x13	PCM10	=	3B
5x11x18	PCM15	=	4A
6x12.5x18	PCM15	=	4B
5x14x26.5	PCM22.5	=	5A
6x15x26.5	PCM22.5	=	5B
9x19x31.5	PCM27.5	=	6A
11x21x31.5	PCM27.5	=	6B
9x19x41.5	PCM37.5	=	7A
11x22x41.5	PCM37.5	=	7B
94x49x182	DCH_	=	H0
94x77x182	DCH_	=	H1
...			

Special features:

Standard	=	00
Version A1	=	1A
Version A1.1	=	1B
...		

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 180	=	Q
BLISTER W12 180	=	R
BLISTER W12 180	=	T
Bulk Mini	=	M
Bulk Standard	=	S
Bulk Maxi	=	G
TPS Mini	=	X
TPS Standard	=	Y
...		

Lead length (untaped)

3.5 \pm 0.5	=	C9
6-2	=	SD
16-1	=	P4
...		

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.