

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 2011/65/EU

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

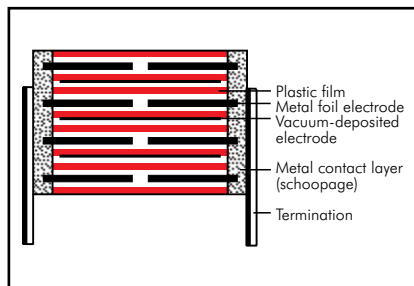
Dielectric:

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 pF/ μ F	max. pulse rise time V/ μ sec 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 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

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_____

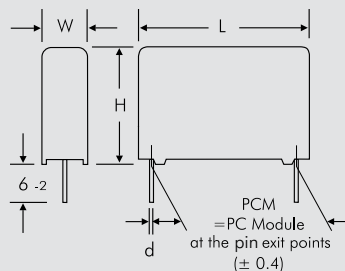
* AC voltage: $f \leq 1000 \text{ Hz}$; $1.4 \times U_{\text{rms}} + U_{\text{DC}} \leq U_r$

** PCM = Printed circuit module = pin spacing

Dims. in mm.

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

ø d	PCM
0.8	15 - 27.5
1.0	37.5



Part number completion:	
Tolerance:	20 % = M
	10 % = K
	5 % = J
Packing:	bulk = S
Pin length:	6-2 = SD
Taped version see page 140.	

Rights reserved to amend design data without prior notification.

Continuation page 68

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_____
0.015 "	5	14	26.5	22.5	FKP4O121005A00_____	6	15	26.5	22.5	FKP4R021005B00_____
	7	14	18	15	FKP4O121504D00_____	7	16.5	26.5	22.5	FKP4R021505D00_____
0.022 "	6	15	26.5	22.5	FKP4O121505B00_____	8.5	18.5	26.5	22.5	FKP4R022205F00_____
	8	15	18	15	FKP4O122204F00_____					
0.033 "	6	15	26.5	22.5	FKP4O122205B00_____	10.5	19	26.5	22.5	FKP4R023305G00_____
	7	16.5	26.5	22.5	FKP4O123305D00_____					
0.047 "	8.5	18.5	26.5	22.5	FKP4O124705F00_____	9	19	31.5	27.5	FKP4R023306A00_____
					FKP4O124706A00_____	11	21	31.5	27.5	FKP4R024706B00_____
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_____
0.33 "	17	34.5	31.5	27.5	FKP4O133306I00_____	17	29	41.5	37.5	FKP4R032207E00_____
					FKP4O133307E00_____	19	32	41.5	37.5	FKP4R033307F00_____
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: $f \leq 1000 \text{ Hz}$; $1.4 \times U_{\text{rms}} + \text{UDC} \leq U_r$

** PCM = Printed circuit module = pin 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
Pin length: 6-2 = SD

Taped version see page 140.

Rights reserved to amend design data without prior notification.

Continuation page 69

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_
0.033 "	9	19	31.5	27.5	FKP4T022206A00_	11	21	31.5	27.5	FKP4U022206B00_
0.047 "	11	21	31.5	27.5	FKP4T023306B00_	11	22	41.5	37.5	FKP4U022207B00_
0.068 "	13	24	31.5	27.5	FKP4T024706D00_	13	24	31.5	27.5	FKP4U023306D00_
	15	26	31.5	27.5	FKP4T026806F00_	13	24	41.5	37.5	FKP4U023307C00_
0.1 µF	17	34.5	31.5	27.5	FKP4T031006I00_	15	26	31.5	27.5	FKP4U024706F00_
0.15 "	20	39.5	31.5	27.5	FKP4T031506J00_	15	26	41.5	37.5	FKP4U024707D00_
	17	29	41.5	37.5	FKP4T031507E00_	17	34.5	31.5	27.5	FKP4U026806I00_
0.22 "	19	32	41.5	37.5	FKP4T032207F00_	17	29	41.5	37.5	FKP4U026807E00_
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 = pin spacing

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

Rights reserved to amend design data without prior notification.

Dims. in mm.

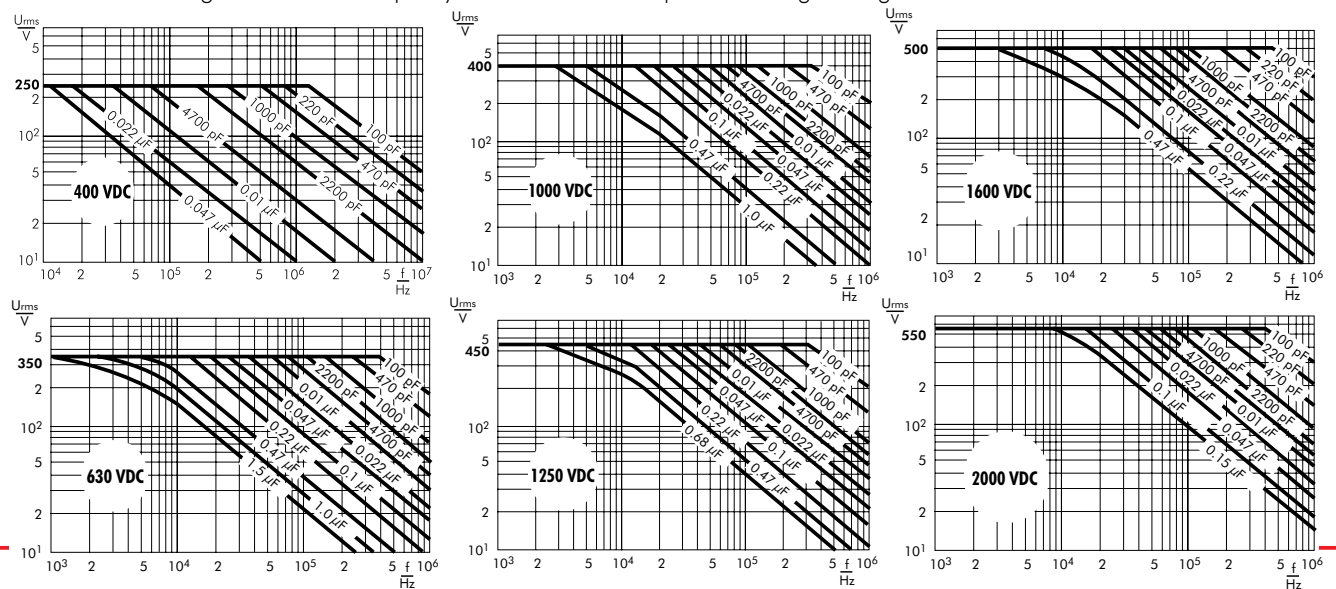
Part number completion:

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

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

Taped version see page 140.

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



Recommendation for Processing and Application of Through-Hole Capacitors

Soldering Process

Internal temperature of the capacitor must be kept as follows:

Polyester: preheating: $T_{\max.} \leq 125^{\circ}\text{C}$
soldering: $T_{\max.} \leq 135^{\circ}\text{C}$

Polypropylene: preheating: $T_{\max.} \leq 100^{\circ}\text{C}$
soldering: $T_{\max.} \leq 110^{\circ}\text{C}$

Single wave soldering

Soldering bath temperature: $T < 260^{\circ}\text{C}$

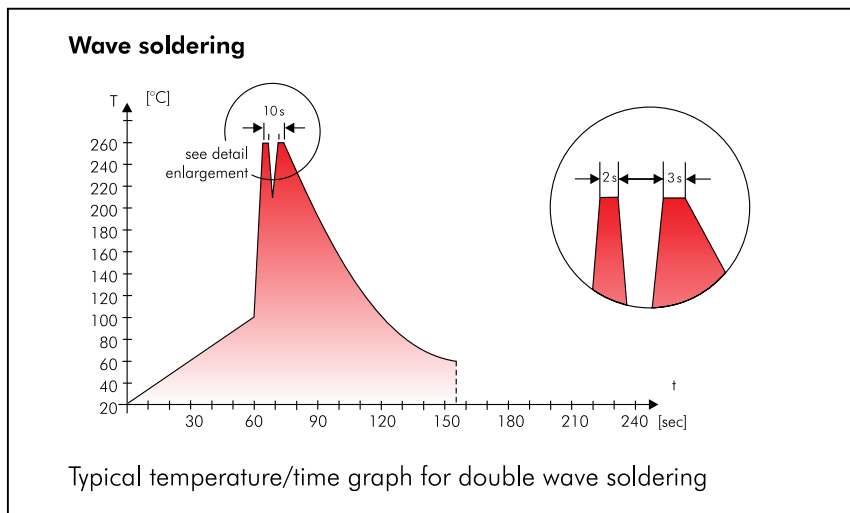
Dwell time: $t < 5\text{ sec}$

Double wave soldering

Soldering bath temperature: $T < 260^{\circ}\text{C}$

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

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



WIMA Quality and Environmental Philosophy

ISO 9001:2008 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
- Testing as per customer requirements

WIMA Environmental Policy

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

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

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

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

We almost completely refrain from using packing materials such as:

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

RoHS Compliance

According to the RoHS Directive 2011/65/EU certain hazardous substances like e.g. lead, cadmium, mercury must not be used any longer in electronic equipment as of July 1st, 2006. For the sake of the environment WIMA has refrained from using such substances since years already.



WIMA Kondensatoren sind bleifrei
konform RoHS 2011/65/EU

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

Tape for lead-free WIMA capacitors

DIN EN ISO 14001:2004

WIMA's environmental management has been established in accordance with the guidelines of DIN EN ISO 14001:2004 to optimize the production processes with regard to energy and resources.

Typical Dimensions for Taping Configuration

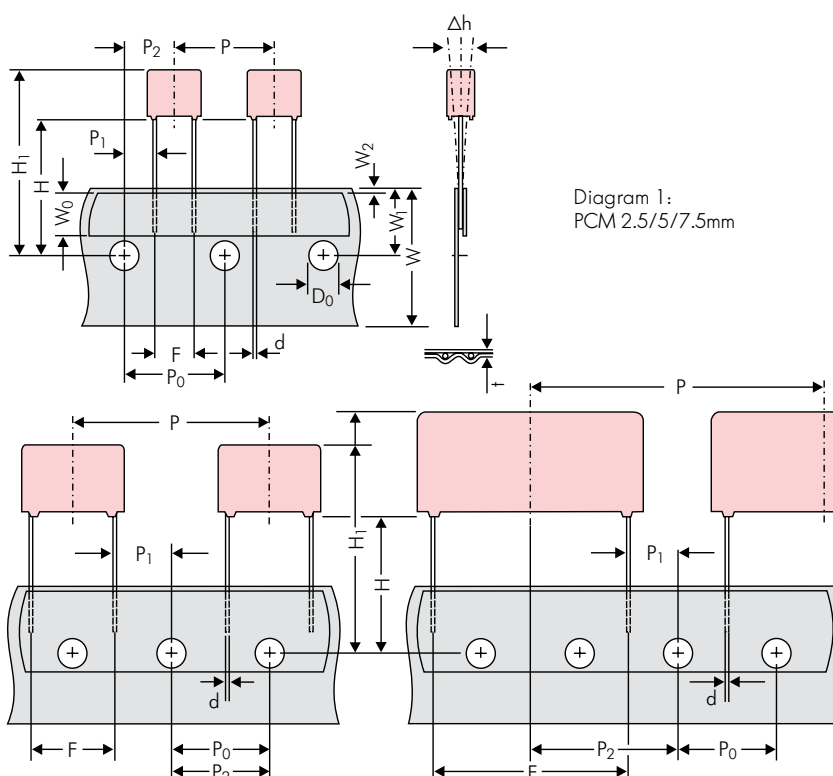


Diagram 2: PCM 10/15 mm

Diagram 3: PCM 22.5 and 27.5*mm

*PCM 27.5 tapping possible with two feed holes between components

Dimensions for Radial Taping								
Designation	Symbol	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 141)		ROLL/AMMO			AMMO			
		REEL ø 360 max. ø 30 ±1	B 52 ±2 B 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 142.						

Dims in mm.

* Diameter of pins see General Data.

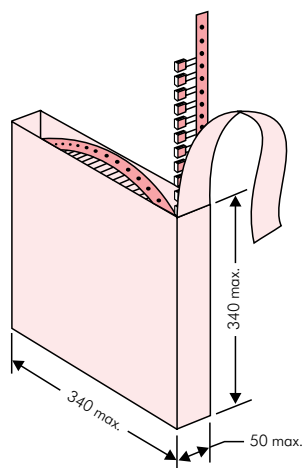
* PCM 10 and PCM 15 can be crimped to PCM 7.5.

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

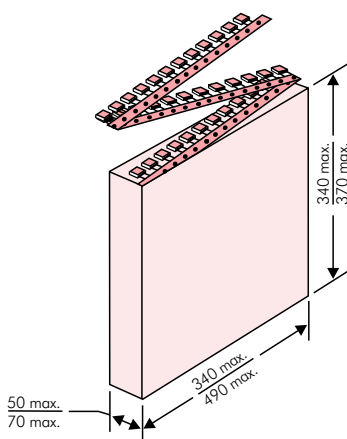
Please clarify customer-specific deviations with the manufacturer.

Types of Tape Packaging of Capacitors for Automatic Radial Insertion

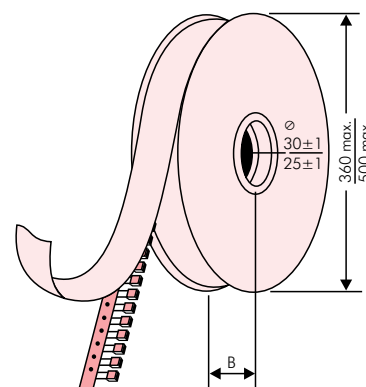
■ ROLL Packaging



■ 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/EU	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
MKS 2 0.47 µF 63 VDC 3.5x8.5x7.2 RMS			
Standard 10% Loss - Standard Drähte 6-2			
1000067326 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				
	W	H	L	Codes		S	H16.5	H18.5	ø 360	ø 500	340 × 340		490 × 370			
						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		–		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
	8	12	13	3I	2000			–		400		800		–		740
15 mm	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*	–	–	–	–	–	–	–	–	–	–
	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*	–	–	–	–	–	–	–	–	–	–
	27	15	41.5	7M	100*	–	–	–	–	–	–	–	–	–	–
	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				2.5×6.5×7.2		-		20%	bulk	6 -2	
Type description:				Rated voltage:		Capacitance:				Size:				Tolerance:			
SMD-PET = SMDT				50 VDC = B0		22 pF = 0022				4.8×3.3×3 Size 1812 = KA				±20% = M			
SMD-PEN = SMDN				63 VDC = C0		47 pF = 0047				4.8×3.3×4 Size 1812 = KB				±10% = K			
SMD-PPS = SMDI				100 VDC = D0		100 pF = 0100				5.7×5.1×3.5 Size 2220 = QA				±5% = J			
FKP 02 = FKPO				250 VDC = F0		150 pF = 0150				5.7×5.1×4.5 Size 2220 = QB				±2.5% = H			
MKS 02 = MKS0				400 VDC = G0		220 pF = 0220				7.2×6.1×3 Size 2824 = TA				±1% = E			
FKS 2 = FKS2				450 VDC = H0		330 pF = 0330				7.2×6.1×5 Size 2824 = TB				...			
FKP 2 = FKP2				600 VDC = I0		470 pF = 0470				10.2×7.6×5 Size 4030 = VA				Packing:			
MKS 2 = MKS2				630 VDC = J0		680 pF = 0680				12.7×10.2×6 Size 5040 = XA							
MKP 2 = MKP2				700 VDC = K0		1000 pF = 1100				15.3×13.7×7 Size 6054 = YA				AMMO H16.5 340×340 = A			
FKS 3 = FKS3				800 VDC = L0		1500 pF = 1150				2.5×7×4.6 PCM 2.5 = 0B				AMMO H16.5 490×370 = B			
FKP 3 = FKP3				850 VDC = M0		2200 pF = 1220				3×7.5×4.6 PCM 2.5 = 0C				AMMO H18.5 340×340 = C			
MKS 4 = MKS4				900 VDC = N0		3300 pF = 1330				2.5×6.5×7.2 PCM 5 = 1A				AMMO H18.5 490×370 = D			
MKP 4 = MKP4				1000 VDC = O1		4700 pF = 1470				3×7.5×7.2 PCM 5 = 1B				REEL H16.5 360 = F			
MKP 10 = MKP1				1100 VDC = P0		6800 pF = 1680				2.5×7×10 PCM 7.5 = 2A				REEL H16.5 500 = H			
FKP 4 = FKP4				1200 VDC = Q0		0.01 μF = 2100				3×8.5×10 PCM 7.5 = 2B				REEL H18.5 360 = I			
FKP 1 = FKP1				1250 VDC = R0		0.022 μF = 2220				3×9×13 PCM 10 = 3A				REEL H18.5 500 = J			
MKP-X2 = MKX2				1500 VDC = S0		0.047 μF = 2470				4×9×13 PCM 10 = 3C				ROLL H16.5 = N			
MKP-X2 R = MKXR				1600 VDC = T0		0.1 μF = 3100				5×11×18 PCM 15 = 4B				ROLL H18.5 = O			
MKP-X1 R = MKX1				2000 VDC = U0		0.22 μF = 3220				6×12.5×18 PCM 15 = 4C				BLISTER W12 180 = P			
MKP-Y2 = MKY2				2500 VDC = V0		0.47 μF = 3470				5×14×26.5 PCM 22.5 = 5A				BLISTER W12 330 = Q			
MP 3-X2 = MPX2				3000 VDC = W0		1 μF = 4100				6×15×26.5 PCM 22.5 = 5B				BLISTER W16 330 = R			
MP 3-X1 = MPX1				4000 VDC = X0		2.2 μF = 4220				9×19×31.5 PCM 27.5 = 6A				BLISTER W24 330 = T			
MP 3-Y2 = MPY2				6000 VDC = Y0		4.7 μF = 4470				11×21×31.5 PCM 27.5 = 6B				Bulk/TPS Standard = S			
MP 3R-Y2 = MPRY				250 VAC = 0W		10 μF = 5100				9×19×41.5 PCM 37.5 = 7A				...			
Snubber MKP = SNMP				275 VAC = 1W		22 μF = 5220				11×22×41.5 PCM 37.5 = 7B				Pin length (untaped)			
Snubber FKP = SNFP				300 VAC = 2W		47 μF = 5470				19×31×56 PCM 48.5 = 8D							
GTO MKP = GTOM				305 VAC = AW		100 μF = 6100				35×50×57 PCM 52.5 = 9F				3.5 ±0.5 = C9			
DC-LINK MKP 3 = DCP3				400 VAC = 3W		220 μF = 6220				...				6 -2 = SD			
DC-LINK MKP 4 = DCP4				440 VAC = 4W		1000 μF = 7100				Version code:				16 ±1 = P1			
DC-LINK MKP 4S = DCP5				500 VAC = 5W		1500 μF = 7150				Standard = 00				...			
DC-LINK MKP 5 = DCP5				...		...				Version A1 = 1A							
DC-LINK MKP 6 = DCP6										Version A1.1.1 = 1B							
DC-LINK HC = DCHC										Version A2 = 2A							
										...							

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.