

Polypropylene (PP) Film and Foil Capacitors for Pulse Applications in PCM 5 mm

Special Features

- Pulse duty construction
- Close tolerances up to $\pm 2.5\%$ ($\pm 1\%$ on request)
- Very low dissipation factor
- Negative capacitance change versus temperature
- Very low dielectric absorption
- According to RoHS 2011/65/EU

Typical Applications

For high frequency applications e.g.

- Sample and hold
- Timing
- LC-Filtering
- Oscillating circuits
- Audio equipment

Construction

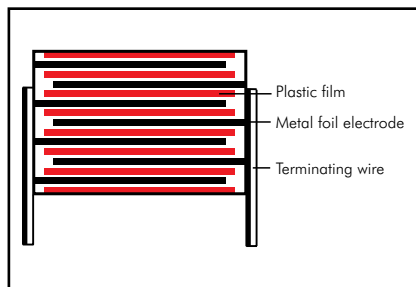
Dielectric:

Polypropylene (PP) film

Capacitor electrodes:

Metal foil

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: Yellow

Electrical Data

Capacitance range:

33 pF to 0.033 μ F (E12-values on request)

Rated voltages:

63 VDC, 100 VDC, 250 VDC, 400 VDC, 630 VDC, 800 VDC, 1000 VDC

Capacitance tolerances:

$\pm 20\%$, $\pm 10\%$, $\pm 5\%$, $\pm 2.5\%$ ($\pm 2\%$, $\pm 1.5\%$ or $\pm 1\%$ available as precision capacitors subject to special enquiry)

Operating temperature range:

-55°C to $+100^\circ\text{C}$

Test specifications:

In accordance with IEC 60384-13

Climatic test category:

55/100/56 in accordance with IEC

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

$\geq 5 \times 10^5 \text{ M}\Omega$

(mean value: $1 \times 10^6 \text{ M}\Omega$)

Measuring voltage:

$U_r = 63 \text{ V}$: $U_{\text{test}} = 50 \text{ V/1 min.}$

$U_r \geq 100 \text{ V}$: $U_{\text{test}} = 100 \text{ V/1 min.}$

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

at f	$C \leq 1000 \text{ pF}$	$1000 \text{ pF} < C \leq 4700 \text{ pF}$	$C > 4700 \text{ pF}$
1 kHz	$\leq 3 \times 10^{-4}$	$\leq 4 \times 10^{-4}$	$\leq 4 \times 10^{-4}$
10 kHz	$\leq 3 \times 10^{-4}$	$\leq 4 \times 10^{-4}$	$\leq 4 \times 10^{-4}$
100 kHz	$\leq 4 \times 10^{-4}$	$\leq 5 \times 10^{-4}$	–
1 MHz	$\leq 10 \times 10^{-4}$	–	–

Test voltage: $2 U_r$, 2 sec.

Maximum pulse rise time:

1000 V/ μ sec for pulses equal to the rated voltage

Dielectric absorption:

0.05%

Temperature coefficient:

$-200 \times 10^{-6}/^\circ\text{C}$ (typical)

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 $< 5 \text{ fit}$ ($0.5 \times U_r$ and 40°C)

Mechanical Tests

Pull test on pins:

10 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.

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	63 VDC/40 VAC*					100 VDC/63 VAC*				
	W	H	L	PCM**	Part number	W	H	L	PCM**	Part number
100 pF	4.5	6	7.2	5	FKP2C001001D00_____	4.5	6	7.2	5	FKP2D001001D00_____
150 "	4.5	6	7.2	5	FKP2C001501D00_____	4.5	6	7.2	5	FKP2D001501D00_____
220 "	4.5	6	7.2	5	FKP2C002201D00_____	4.5	6	7.2	5	FKP2D002201D00_____
330 "	4.5	6	7.2	5	FKP2C003301D00_____	4.5	6	7.2	5	FKP2D003301D00_____
470 "	4.5	6	7.2	5	FKP2C004701D00_____	4.5	6	7.2	5	FKP2D004701D00_____
680 "	4.5	6	7.2	5	FKP2C006801D00_____	4.5	6	7.2	5	FKP2D006801D00_____
1000 pF	4.5	6	7.2	5	FKP2C011001D00_____	4.5	6	7.2	5	FKP2D011001D00_____
1500 "	4.5	6	7.2	5	FKP2C011501D00_____	4.5	6	7.2	5	FKP2D011501D00_____
2200 "	4.5	6	7.2	5	FKP2C012201D00_____	4.5	6	7.2	5	FKP2D012201D00_____
3300 "	4.5	6	7.2	5	FKP2C013301D00_____	5.5	7	7.2	5	FKP2D013301G00_____
4700 "	4.5	6	7.2	5	FKP2C014701D00_____	5.5	7	7.2	5	FKP2D014701G00_____
6800 "	4.5	6	7.2	5	FKP2C016801D00_____	5.5	7	7.2	5	FKP2D016801G00_____
0.01 µF	5.5	7	7.2	5	FKP2C021001G00_____	6.5	8	7.2	5	FKP2D021001I00_____
0.015 "	6.5	8	7.2	5	FKP2C021501I00_____	7.2	8.5	7.2	5	FKP2D021501J00_____
0.022 "	7.2	8.5	7.2	5	FKP2C022201J00_____	8.5	10	7.2	5	FKP2D022201L00_____
0.033 "	8.5	10	7.2	5	FKP2C023301L00_____					

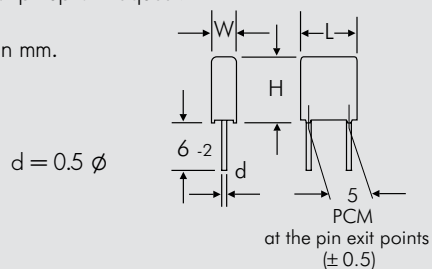
Capacitance	250 VDC/160 VAC*					400 VDC/220 VAC*				
	W	H	L	PCM**	Part number	W	H	L	PCM**	Part number
100 pF	4.5	6	7.2	5	FKP2F001001D00_____	4.5	6	7.2	5	FKP2G001001D00_____
150 "	4.5	6	7.2	5	FKP2F001501D00_____	4.5	6	7.2	5	FKP2G001501D00_____
220 "	4.5	6	7.2	5	FKP2F002201D00_____	4.5	6	7.2	5	FKP2G002201D00_____
330 "	4.5	6	7.2	5	FKP2F003301D00_____	4.5	6	7.2	5	FKP2G003301D00_____
470 "	4.5	6	7.2	5	FKP2F004701D00_____	4.5	6	7.2	5	FKP2G004701D00_____
680 "	4.5	6	7.2	5	FKP2F006801D00_____	4.5	6	7.2	5	FKP2G006801D00_____
1000 pF	4.5	6	7.2	5	FKP2F011001D00_____	4.5	6	7.2	5	FKP2G011001D00_____
1500 "	4.5	6	7.2	5	FKP2F011501D00_____	4.5	6	7.2	5	FKP2G011501D00_____
2200 "	4.5	6	7.2	5	FKP2F012201D00_____	4.5	6	7.2	5	FKP2G012201D00_____
3300 "	5.5	7	7.2	5	FKP2F013301G00_____	5.5	7	7.2	5	FKP2G013301G00_____
4700 "	6.5	8	7.2	5	FKP2F014701I00_____	6.5	8	7.2	5	FKP2G014701I00_____
6800 "	6.5	8	7.2	5	FKP2F016801I00_____	7.2	8.5	7.2	5	FKP2G016801J00_____
0.01 µF	7.2	8.5	7.2	5	FKP2F021001J00_____	8.5	10	7.2	5	FKP2G021001L00_____
0.015 "	8.5	10	7.2	5	FKP2F021501L00_____					

* 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.

E12 values and individual values available from 27 pF up on request.

Dims. in mm.



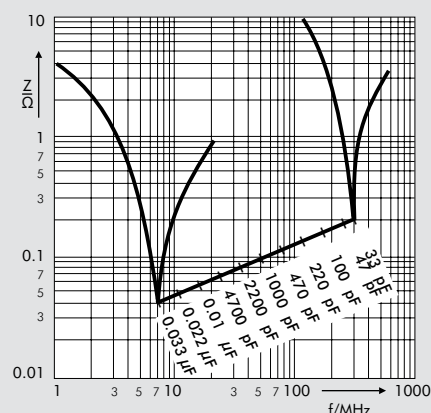
Part number completion:

Tolerance: 20 % = M
10 % = K
5 % = J
2.5 % = H
2 % = G
1.5 % = F
1 % = E

Packing: bulk = S

Pin length: 6-2 = SD

Taped version see page 140.



Impedance change with frequency (general guideline).

Rights reserved to amend design data without prior notification.

Continuation page 36

Continuation

General Data

Capacitance	630 VDC/250 VAC*					800 VDC/250 VAC*				
	W	H	L	PCM**	Part number	W	H	L	PCM**	Part number
100 pF	4.5	6	7.2	5	FKP2J001001D00_____	4.5	6	7.2	5	FKP2L001001D00_____
150 "	4.5	6	7.2	5	FKP2J001501D00_____	4.5	6	7.2	5	FKP2L001501D00_____
220 "	4.5	6	7.2	5	FKP2J002201D00_____	4.5	6	7.2	5	FKP2L002201D00_____
330 "	4.5	6	7.2	5	FKP2J003301D00_____	4.5	6	7.2	5	FKP2L003301D00_____
470 "	4.5	6	7.2	5	FKP2J004701D00_____	5.5	7	7.2	5	FKP2L004701G00_____
680 "	4.5	6	7.2	5	FKP2J006801D00_____	5.5	7	7.2	5	FKP2L006801G00_____
1000 pF	4.5	6	7.2	5	FKP2J011001D00_____	5.5	7	7.2	5	FKP2L011001G00_____
1500 "	4.5	6	7.2	5	FKP2J011501D00_____	5.5	7	7.2	5	FKP2L011501G00_____
2200 "	5.5	7	7.2	5	FKP2J012201G00_____	6.5	8	7.2	5	FKP2L012201I00_____
3300 "	6.5	8	7.2	5	FKP2J013301I00_____	7.2	8.5	7.2	5	FKP2L013301J00_____
4700 "	6.5	8	7.2	5	FKP2J014701I00_____	8.5	10	7.2	5	FKP2L014701L00_____
6800 "	7.2	8.5	7.2	5	FKP2J016801J00_____					
0.01 µF	8.5	10	7.2	5	FKP2J021001L00_____					

Capacitance	1000 VDC/250 VAC*				
	W	H	L	PCM**	Part number
33 pF	4.5	6	7.2	5	FKP2O100331D00_____
47 "	4.5	6	7.2	5	FKP2O100471D00_____
68 "	4.5	6	7.2	5	FKP2O100681D00_____
100 pF	4.5	6	7.2	5	FKP2O101001D00_____
150 "	4.5	6	7.2	5	FKP2O101501D00_____
220 "	4.5	6	7.2	5	FKP2O102201D00_____
330 "	4.5	6	7.2	5	FKP2O103301D00_____
470 "	5.5	7	7.2	5	FKP2O104701G00_____
680 "	5.5	7	7.2	5	FKP2O106801G00_____
1000 pF	6.5	8	7.2	5	FKP2O111001I00_____
1500 "	7.2	8.5	7.2	5	FKP2O111501J00_____
2200 "	8.5	10	7.2	5	FKP2O112201L00_____

E12 values and individual values available from 27 pF up on request.

Dims. in mm.

Part number completion:

Tolerance: 20 % = M
10 % = K
5 % = J
2.5 % = H
2 % = G
1.5 % = F
1 % = E

Packing: bulk = S

Pin length: 6-2 = SD

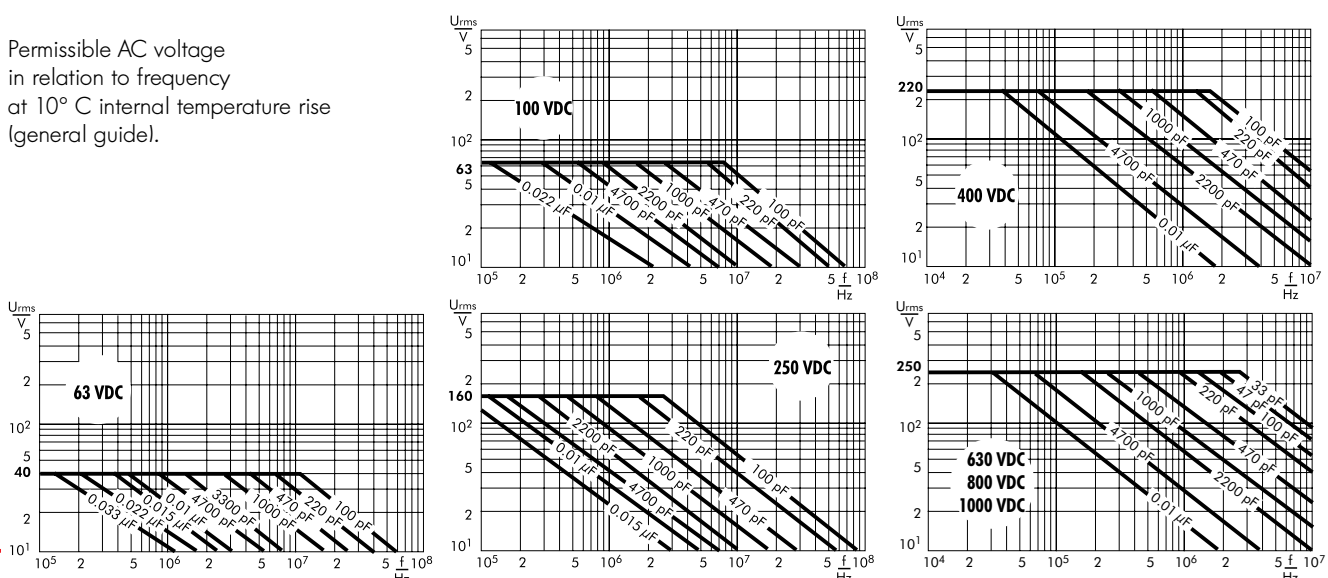
Taped version see page 140.

* 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.

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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

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

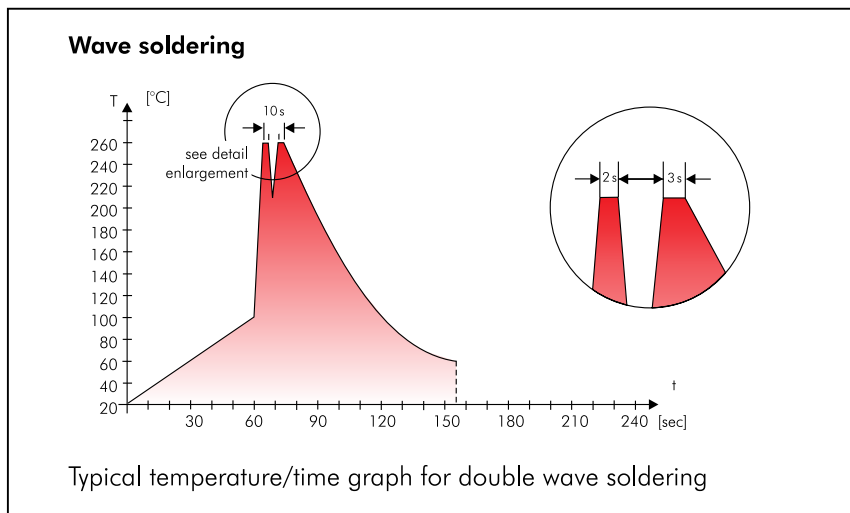
Dwell time: $t < 5\text{ sec}$

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

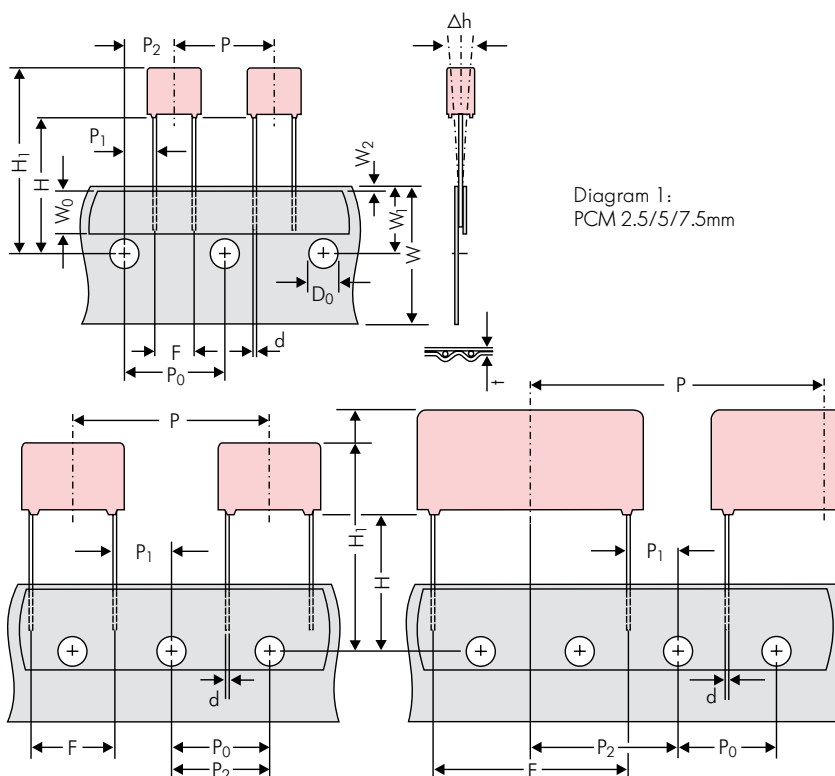


Diagram 2: PCM 10/15 mm

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 ϕ 360 max. ϕ 30 ±1			REEL ϕ 360 max. ϕ 30 ±1				52 ±2 B 58 ±2 or 66 ±2	
Unit									54 ±2 B 60 ±2 68 ±2	
									} depending on PCM and component dimensions	
see details page 142.										

Dims in mm.

* Diameter of pins see General Data.

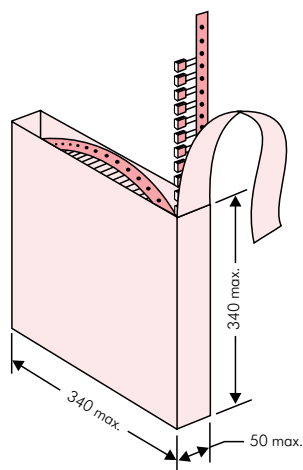
Please clarify customer-specific deviations with the manufacturer.

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

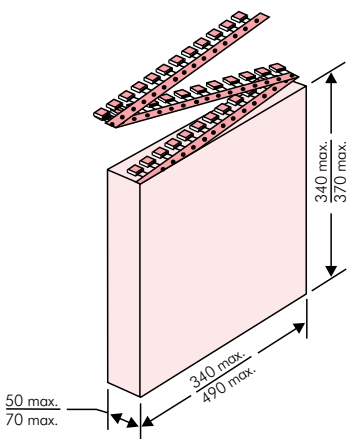
Position of components according to PCM 7.5 (sketch 11). P₀ = 12.7 or 15.0 is possible

Types of Tape Packaging of Capacitors for Automatic Radial Insertion

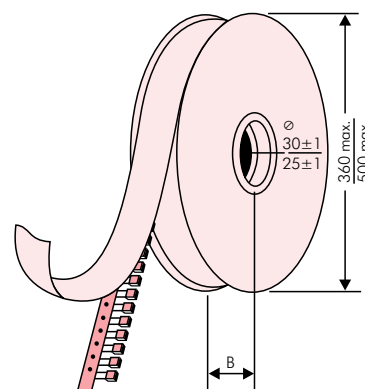
■ ROLL Packaging



■ 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.: MKS2C034701C00K88D			
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.

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WIMA Part Number System

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

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

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
M	K	S	2	C	0	2	1	0	0	1	A	0	0	M	S	S	D
MKS 2				63 VDC		0.01 μF				2.5×6.5×7.2		-		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							
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							
DC-LINK MKP 3 = DCP3				400 VAC = 3W		220 μF = 6220				...							
DC-LINK MKP 4 = DCP4				440 VAC = 4W		1000 μF = 7100				Version code:				Pin length (untaped)			
DC-LINK MKP 4S = DCP5				500 VAC = 5W		1500 μF = 7150											
DC-LINK MKP 5 = DCP5				...		...											
DC-LINK MKP 6 = DCP6										Standard = 00				3.5 ±0.5 = C9			
DC-LINK HC = DCHC										Version A1 = 1A				6 -2 = SD			
										Version A1.1.1 = 1B				16 ±1 = P1			
										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.

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