

Metallized Paper (MP) RFI-Capacitors Class X1
in PCM 10 mm to 22.5 mm. Capacitances from 1000 pF to 0.15 µF.
Rated Voltages from 300 VAC to 500 VAC.

Special Features

- Particularly high reliability against active and passive flammability
- Excellent self-healing as well as high voltage strength
- High degree of interference suppression due to good attenuation and low ESR
- For temperatures up to +110° C
- According to RoHS 2011/65/EU

Typical Applications

Class X1 RFI applications to meet EMC regulations

- Capacitors connected to the mains between phase and neutral or phase and phase conductors
- High peak voltage applications, pulse peak voltage ≤ 4 kV

Construction

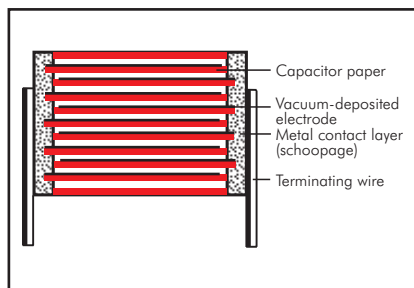
Dielectric:

Paper, epoxy resin impregnated

Capacitor electrodes:

Vacuum-deposited

Internal construction:



Encapsulation:

Self-extinguishing epoxy resin, UL 94 V-0, metal foil

Terminations:

Tinned wire.

Marking:

Marking: Black on Silver.

Electrical Data

Capacitance range:

1000 pF to 0.15 µF (E12-values on request)

Rated voltages:

300 VAC, 440 VAC, 500 VAC

Continuous DC voltage* (general guide):

≤ 730 V for 300 VAC

≤ 850 V for 440 VAC and 500 VAC

Capacitance tolerances: $\pm 20\%$

Operating temperature range:

-40°C to $+110^{\circ}\text{C}$

Climatic test category:

40/110/56/C in accordance with IEC

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

$\geq 12 \times 10^3$ MΩ

Measuring voltage:


100 V/1 min. for 300 VAC and 440 VAC

500 V/1 min. for 500 VAC

Dissipation factors:

$\tan \delta \leq 13 \times 10^{-3}$ at 1 kHz and $+20^{\circ}\text{C}$

Approvals:

Authority	Specification	Symbol	Approval-No.
UL	UL 60384-14 CAN/CSA-E60384-14		E 100438 (300 VAC)

Test specifications:

In accordance with IEC 60384-14

Maximum pulse rise time:

Capacitance pF/µF	Pulse rise time V/µsec max. operation
1000 ... 4700	2500
6800 ... 0.022	1750
0.033 ... 0.15	750

for pulses equal to a voltage amplitude with $\sqrt{2} \times 300$ VAC = 425 V,
 with $\sqrt{2} \times 440$ VAC = 623 V,
 with $\sqrt{2} \times 500$ VAC = 707 V
 according to IEC 60384-14

Test voltage: 2300 VDC, 2 sec.

Reliability:

Operational life > 300 000 hours

Failure rate < 1 fit ($0.5 \times U_r$ and 40°C)

Mounting Recommendation

To minimize or avoid shock and/or vibration stresses to terminating wires and solder connections we recommend to fix voluminous resin-potted MP capacitors as from e.g. PCM 22.5 mm in an appropriate way since for constructional reasons they do not sit tight on the board.

* If safety-approved EMI suppression capacitors are operated with a DC voltage being above the specified AC voltage rating the given approvals are no longer valid (IEC 60384-14).

Furthermore the permissible pulse rise time du/dt ($F_{\max.}$) will be subject to a reduction according to

$$F_{\max.} = F_r \times \sqrt{2} \times U_{AC} / U_{DC}$$

if the DC operating voltage U_{DC} is higher than $\sqrt{2} \times U_{AC}$

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	300 VAC*					440 VAC*				
	W	H	L	PCM**	Part number	W	H	L	PCM**	Part number
1000 pF	4	8.5	13.5	10	MPX12W1100FA00_					
1500 "	4	8.5	13.5	10	MPX12W1150FA00_					
2200 "	4	8.5	13.5	10	MPX12W1220FA00_					
3300 "	4	8.5	13.5	10	MPX12W1330FA00_					
4700 "	5	10	13.5	10	MPX12W1470FB00_					
6800 "	5	13	19	15	MPX12W1680FC00_	5	13	19	15	MPX14W1680FC00_
0.01 µF	5	13	19	15	MPX12W2100FC00_	5	13	19	15	MPX14W2100FC00_
0.015 "	6	14	19	15	MPX12W2150FD00_	6	14	19	15	MPX14W2150FD00_
0.022 "	7	15	19	15	MPX12W2220FE00_	7	15	19	15	MPX14W2220FE00_
0.033 "	8	17	19	15	MPX12W2330FF00_	10	18	19	15	MPX14W2330FG00_
0.047 "	10	18	19	15	MPX12W2470FG00_					
0.068 "	8	20	28	22.5	MPX12W2680FH00_					
0.1 µF	10	22	28	22.5	MPX12W3100FI00_					
0.15 "	12	24	28	22.5	MPX12W3150FJ00_					

Capacitance	500 VAC*				
	W	H	L	PCM**	Part number
6800 pF	5	13	19	15	MPX15W1680FC00_
0.01 µF	5	13	19	15	MPX15W2100FC00_
0.015 "	6	14	19	15	MPX15W2150FD00_
0.022 "	7	15	19	15	MPX15W2220FE00_
0.033 "	10	18	19	15	MPX15W2330FG00_

* f = 50/60 Hz

Dims in mm.

Rights reserved to amend design data without prior notification.

Part number completion:

Tolerance: 20 % = M

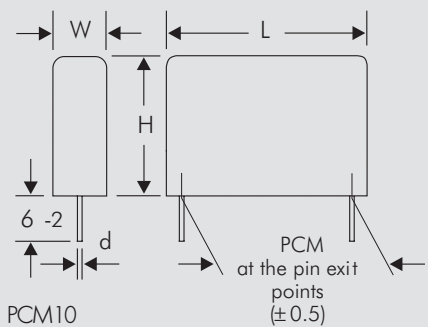
Packing: bulk = S

Pin length: 6-2 = SD

Taped version see page 149.

** PCM = Printed circuit module = pin spacing

Upon request with long pins 35-2 mm max.



d = 0.6 φ if PCM10
d = 0.8 φ if PCM ≥ 15

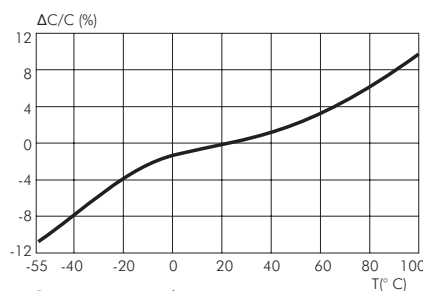
Typical Graphs of the Capacitor Paper Dielectric

valid for:

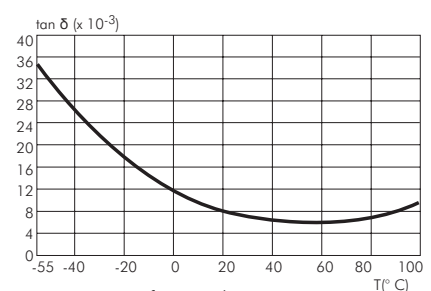
MP 3-X2

MP 3-X1

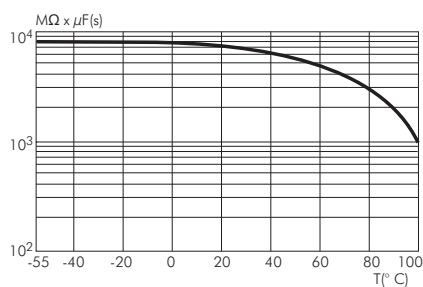
MP 3-Y2 / 3R-Y2



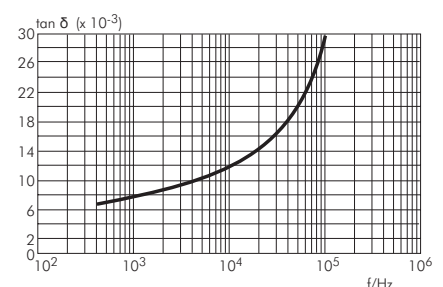
Capacitance change versus temperature (f=1 kHz) (general guide)



Dissipation factor change versus temperature (f=1 kHz) (general guide)



Insulation resistance change versus temperature (general guide)



Dissipation factor change versus frequency (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: $T < 260^{\circ}\text{C}$

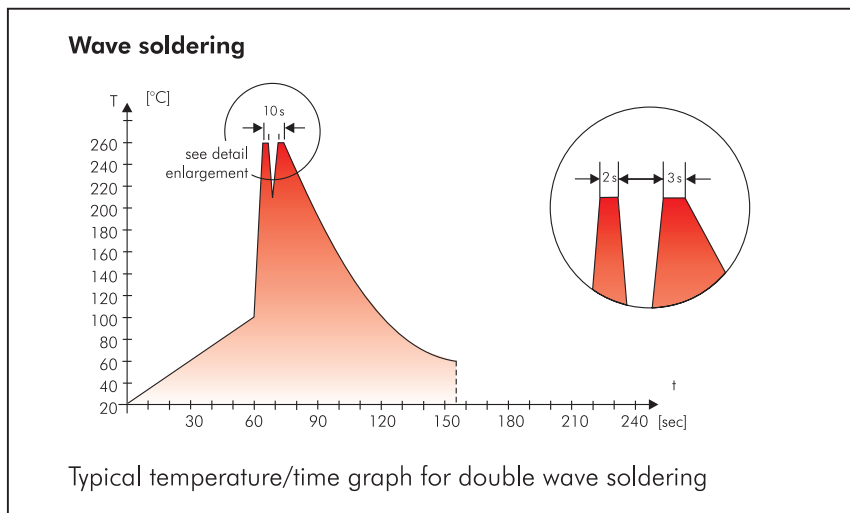
Dwell time: $t < 5\text{ sec}$

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 9001:2015 Certification

ISO 9001:2015 is an international basic standard of quality assurance systems for all branches of industry. The approval according to ISO 9001:2015 of our factories by the infaz (Institut für Auditierung und Zertifizierung) 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 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:

- adhesive tapes made of plastic
- metal clips

RoHS Compliance

According to the RoHS Directive 2011/65/EU as amended from time to time 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

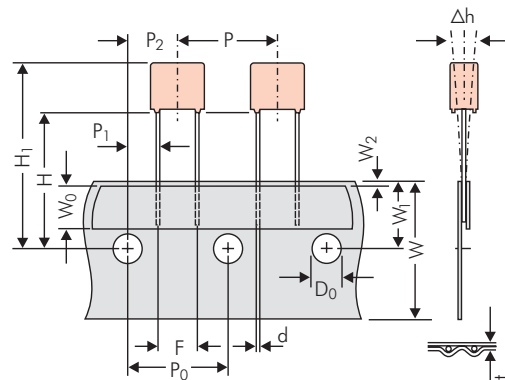


Diagram 1:
PCM 2.5/5/7.5mm

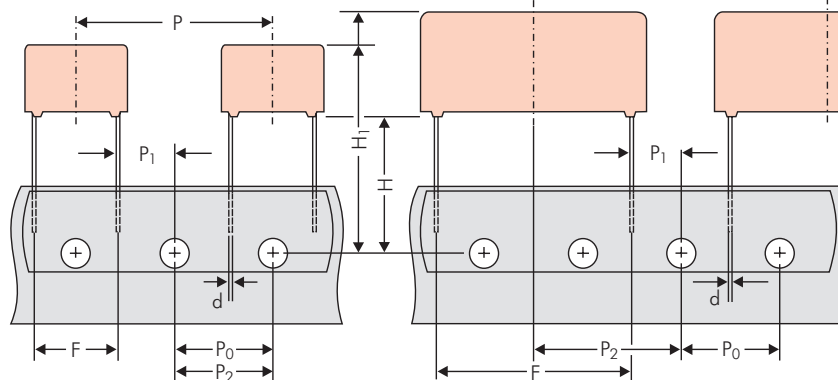


Diagram 2: PCM 10/15 mm

Diagram 3: PCM 22.5 and 27.5*mm

*PCM 27.5 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 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
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	0.6 ±0.2	0.6 ±0.2	0.6 ±0.2	0.6 ±0.2	0.6 ±0.2	0.6 ±0.2	0.6 ±0.2
Package (see also page 150)		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 58 ±2 or 66 ±2	REEL Ø 500 max. Ø 25 ±1	54 ±2 60 ±2 or 68 ±2 } depending on PCM and component dimensions
Unit		see details page 151.						

Dims in mm.

* Diameter of pins see General Data.

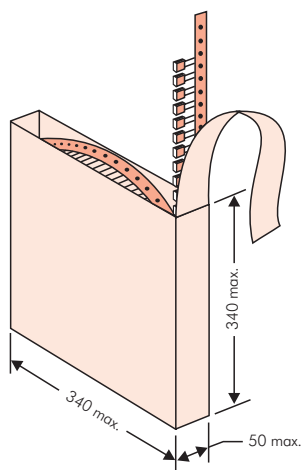
Please clarify customer-specific deviations with the manufacturer.

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

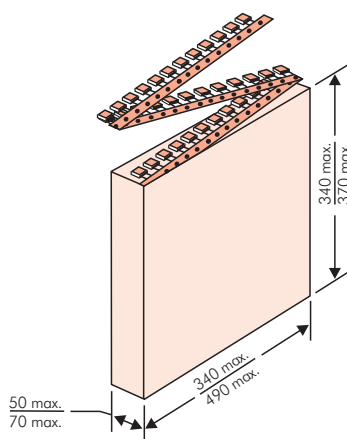
Position of components according to PCM 7.5 (sketch 11). P₀ = 12.7 or 15.0 is possible

Types of Tape Packaging of Capacitors for Automatic Radial Insertion

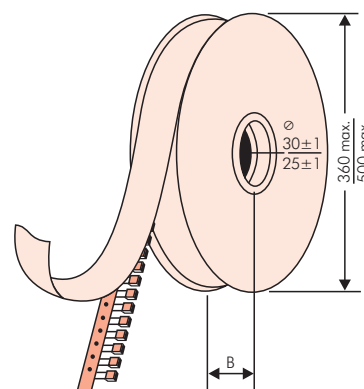
■ ROLL Packaging



■ 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	
		Gross Weight [g]: 1870	
WIMA Confirmation No.: 0001004053000100		WIMA Part No.: MKS2C034701C00K88D	
Handling Unit:	MKS 2	QTY: 5.000	COO: DE
	MKS 2 0.47 μ F 63 VDC 3.5x8.5x7.2 RM5		
	Standard 10% Loss - Standard	Drühte 6-2	Week 03/2011
1000067326	Vorlage Debitor Inland		

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	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		—		640		—		
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		2700	
	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	570*	—		—		420		—		380	
	10.5	19	26.5	5G	594*	—		—		400		—		360	
	10.5	20.5	26.5	5H	594*	—		—		400		—		360	
	11	21	26.5	5I	561*	—		—		380		—		350	
	12	24	28	FJ	480*	—		—		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 x 340	490 x 370				
					S	N	O	F	I	H	J	A	C	B	D
27.5 mm	9	19	31.5	6A	567*	–	–	–	–	460/340*	–	–	–	420	–
	11	21	31.5	6B	459*	–	–	–	–	380/280*	–	–	–	350	–
	13	24	31.5	6D	378*	–	–	–	–	300	–	–	–	290	–
	13	25	33	FK	405*	–	–	–	–	–	–	–	–	–	–
	15	26	31.5	6F	324*	–	–	–	–	270	–	–	–	250	–
	15	26	33	FL	324*	–	–	–	–	–	–	–	–	–	–
	17	29	31.5	6G	198*	–	–	–	–	–	–	–	–	–	–
	17	34.5	31.5	6I	198*	–	–	–	–	–	–	–	–	–	–
	20	32	33	FM	162*	–	–	–	–	–	–	–	–	–	–
	20	39.5	31.5	6J	162*	–	–	–	–	–	–	–	–	–	–
37.5 mm	9	19	41.5	7A	441*	–	–	–	–	–	–	–	–	–	–
	11	22	41.5	7B	357*	–	–	–	–	–	–	–	–	–	–
	13	24	41.5	7C	294*	–	–	–	–	–	–	–	–	–	–
	15	26	41.5	7D	252*	–	–	–	–	–	–	–	–	–	–
	17	29	41.5	7E	154*	–	–	–	–	–	–	–	–	–	–
	19	32	41.5	7F	140*	–	–	–	–	–	–	–	–	–	–
	20	39.5	41.5	7G	126*	–	–	–	–	–	–	–	–	–	–
	24	45.5	41.5	7H	112*	–	–	–	–	–	–	–	–	–	–
	31	46	41.5	7I	84*	–	–	–	–	–	–	–	–	–	–
	35	50	41.5	7J	35*	–	–	–	–	–	–	–	–	–	–
	40	55	41.5	7K	28*	–	–	–	–	–	–	–	–	–	–
48.5 mm	19	31	56	8D	120*	–	–	–	–	–	–	–	–	–	–
	23	34	56	8E	80*	–	–	–	–	–	–	–	–	–	–
	27	37.5	56	8H	84*	–	–	–	–	–	–	–	–	–	–
	33	48	56	8J	25*	–	–	–	–	–	–	–	–	–	–
	37	54	56	8L	25*	–	–	–	–	–	–	–	–	–	–
52.5 mm	25	45	57	9D	70*	–	–	–	–	–	–	–	–	–	–
	30	45	57	9E	60*	–	–	–	–	–	–	–	–	–	–
	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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Updated data on www.wima.com



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:		Packing:			
SMD-PET = SMDT				50 VDC = B0		22 pF = 0022				4.8x3.3x3 Size 1812 = KA		±20% = M		AMMO H16.5 340x340 = A			
SMD-PEN = SMDN				63 VDC = C0		47 pF = 0047				4.8x3.3x4 Size 1812 = KB		±10% = K		AMMO H16.5 490x370 = B			
SMD-PPS = SMDI				100 VDC = D0		100 pF = 0100				5.7x5.1x3.5 Size 2220 = QA		±5% = J		AMMO H18.5 340x340 = C			
FKP 02 = FKPO				250 VDC = F0		150 pF = 0150				5.7x5.1x4.5 Size 2220 = QB		±2.5% = H		AMMO H18.5 490x370 = D			
MKS 02 = MKS0				400 VDC = G0		220 pF = 0220				7.2x6.1x3 Size 2824 = TA		±1% = E		REEL H16.5 360 = F			
FKS 2 = FKS2				450 VDC = H0		330 pF = 0330				7.2x6.1x5 Size 2824 = TB		...		REEL H16.5 500 = H			
FKP 2 = FKP2				520 VDC = H2		470 pF = 0470				10.2x7.6x5 Size 4030 = VA				REEL H18.5 360 = I			
FKS 3 = FKS3				600 VDC = I0		680 pF = 0680				12.7x10.2x6 Size 5040 = XA				REEL H18.5 500 = J			
FKP 3 = FKPO				630 VDC = J0		1000 pF = 1100				15.3x13.7x7 Size 6054 = YA				ROLL H16.5 = N			
MKS 2 = MKS2				700 VDC = K0		1500 pF = 1150				2.5x7x4.6 PCM 2.5 = 0B				ROLL H18.5 = O			
MKP 2 = MKP2				800 VDC = L0		2200 pF = 1220				3x7.5x4.6 PCM 2.5 = 0C				BLISTER W12 180 = P			
MKS 4 = MKS4				850 VDC = M0		3300 pF = 1330				2.5x6.5x7.2 PCM 5 = 1A				BLISTER W12 330 = Q			
MKP 4C = MKPC				900 VDC = N0		4700 pF = 1470				3x7.5x7.2 PCM 5 = 1B				BLISTER W16 330 = R			
MKP 4 = MKP4				1000 VDC = O1		6800 pF = 1680				2.5x7x10 PCM 7.5 = 2A				BLISTER W24 330 = T			
MKP 10 = MKP1				1100 VDC = P0		0.01 μF = 2100				3x8.5x10 PCM 7.5 = 2B				Bulk/TPS Standard = S			
FKP 1 = FKPO				1200 VDC = Q0		0.022 μF = 2220				3x9x13 PCM 10 = 3A				...			
MKP-X2 = MKX2				1250 VDC = R0		0.047 μF = 2470				4x9x13 PCM 10 = 3C							
MKP-X1 R = MKX1				1500 VDC = S0		0.1 μF = 3100				5x11x18 PCM 15 = 4B							
MKP-Y2 = MKY2				1600 VDC = T0		0.22 μF = 3220				6x12.5x18 PCM 15 = 4C							
MP 3-X2 = MPX2				2000 VDC = U0		0.47 μF = 3470				5x14x26.5 PCM 22.5 = 5A							
MP 3-X1 = MPX1				2500 VDC = V0		1 μF = 4100				6x15x26.5 PCM 22.5 = 5B							
MP 3-Y2 = MPY2				3000 VDC = W0		2.2 μF = 4220				9x19x31.5 PCM 27.5 = 6A							
MP 3R-Y2 = MPRY				4000 VDC = X0		4.7 μF = 4470				11x21x31.5 PCM 27.5 = 6B							
MKP 4F = MKPF				6000 VDC = Y0		10 μF = 5100				9x19x41.5 PCM 37.5 = 7A							
Snubber MKP = SNMP				250 VAC = 0V		22 μF = 5220				11x22x41.5 PCM 37.5 = 7B							
Snubber FKP = SNFP				275 VAC = 1V		47 μF = 5470				19x31x56 PCM 48.5 = 8D							
GTO MKP = GTOM				300 VAC = 2V		100 μF = 6100				25x45x57 PCM 52.5 = 9D							
DC-LINK MKP 3 = DCP3				305 VAC = AV		220 μF = 6220				...							
DC-LINK MKP 4 = DCP4				350 VAC = BV		1000 μF = 7100											
DC-LINK MKP 4S = DCP5				440 VAC = 4V		1500 μF = 7150											
DC-LINK MKP 5 = DCP5				500 VAC = 5V		...											
DC-LINK MKP 6 = DCP6				...													
DC-LINK HC = DCHC																	
DC-LINK HY = DCHY																	