

WIMA MP 3-Y2 / 3R-Y2



**Metallized Paper (MP) RFI-Capacitors Class Y2
in PCM 10 mm to 27.5 mm. Capacitances from 1000 pF to 0.1 µF.
Rated Voltages 250 VAC and 300 VAC.**

Special Features

- Particularly high reliability against active and passive flammability
- Excellent self-healing as well as high voltage strength
- Twice the safety by internal series connection (300 VAC)
- 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 Y2 RFI applications to meet EMC regulations

- Capacitors connected to the mains between phase or neutral and earthed casing
- By-passing of the basic or supplementary insulation, pulse peak voltage $\leq 5 \text{ kV}$

Construction

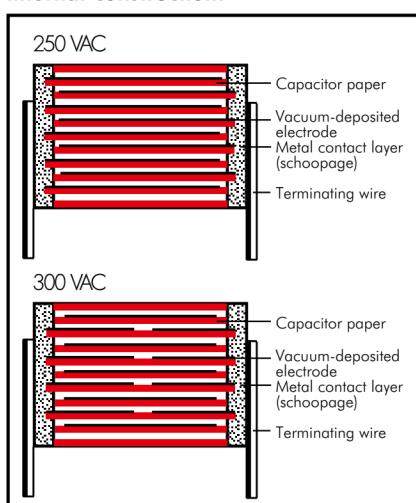
Dielectric:

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 0.1 µF (E12-values on request)

Rated voltages:

250 VAC, 300 VAC

Continuous DC voltage*

(general guide): 250 VAC: $\leq 1000 \text{ V}$

300 VAC: $\leq 1250 \text{ V}$

Capacitance tolerances:

$\pm 20\%$

Operating temperature range:

-40°C to +110°C

Climatic test category:

250 VAC: 40/110/56/C

300 VAC: 40/110/56/B

in accordance with IEC

Insulation resistance at +20°C:

$> 12 \times 10^3 \text{ M}\Omega$

Measuring voltage: 100 V/1 min.

Dissipation factors:

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

Test specifications:

in accordance with IEC 60384-14

Approvals:

Authority	Specification	Symbol	Approval-No.
UL/Demko	EN 60384-14		ENEC-02833 (250 VAC) ENEC-02399 (300 VAC)
UL	UL 60384-14 CAN/CSA-E60384-14		E 100438

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: 1kPa = 10 mbar in accordance with IEC 60068-2-13

Bump test: 4000 bumps at 390 m/sec² in accordance with IEC 60068-2-29

* 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

$$F_{max.} = F_r \times \sqrt{2} \times UAC / UDC$$

if the DC operating voltage UDC is higher than $\sqrt{2} \times UAC$

Maximum pulse rise time 250 VAC:

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

Maximum pulse rise time 300 VAC:

Capacitance pF/µF	Pulse rise time V/µsec max. operation
1000 ... 4700	2500
6800 ... 0.015	1850
0.022 ... 0.1	600

for pulses equal to a voltage amplitude with $\sqrt{2} \times 250 \text{ VAC} = 355 \text{ V}$

with $\sqrt{2} \times 300 \text{ VAC} = 425 \text{ V}$

according to IEC 60384-14

Test voltage: 2400 VDC, 2sec.

Reliability:

Operational life > 300 000 hours

Failure rate < 1 fit (0.5 x U_r and 40°C)

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.

WIMA MP 3-Y2 / 3R-Y2



Continuation

General Data

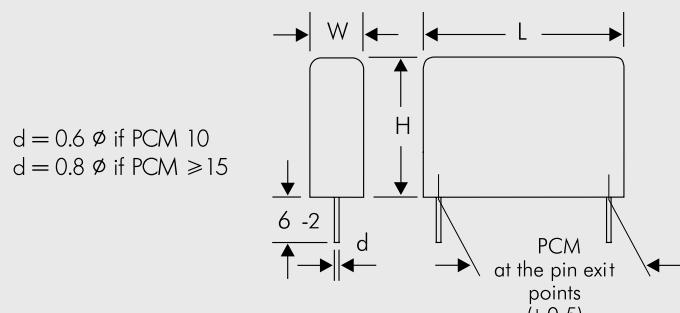
Capacitance	250 VAC*					300 VAC*				
	W	H	L	PCM**	Part number	W	H	L	PCM**	Part number
1000 pF	4	8.5	13.5	10	MPY20W1100FA00_____	5	13	19	15	MPRY2W1100FC00_____
1500 "	4	8.5	13.5	10	MPY20W1150FA00_____	5	13	19	15	MPRY2W1150FC00_____
2200 "	4	8.5	13.5	10	MPY20W1220FA00_____	5	13	19	15	MPRY2W1220FC00_____
3300 "	4	8.5	13.5	10	MPY20W1330FA00_____	5	13	19	15	MPRY2W1330FC00_____
4700 "	5	10	13.5	10	MPY20W1470FB00_____	6	14	19	15	MPRY2W1470FD00_____
6800 "	5	13	19	15	MPY20W1680FC00_____	7	15	19	15	MPRY2W1680FE00_____
0.01 μF	5	13	19	15	MPY20W2100FC00_____	8	17	19	15	MPRY2W2100FF00_____
0.015 "	6	14	19	15	MPY20W2150FD00_____	10	18	19	15	MPRY2W2150FG00_____
0.022 "	7	15	19	15	MPY20W2220FE00_____	8	20	28	22.5	MPRY2W2220FH00_____
0.033 "						8	20	28	22.5	MPRY2W2330FH00_____
0.047 "						10	22	28	22.5	MPRY2W2470FI00_____
0.068 "						12	24	28	22.5	MPRY2W2680FJ00_____
0.1 μF						13	25	33	27.5	MPRY2W3100FK00_____

* f = 50/60 Hz

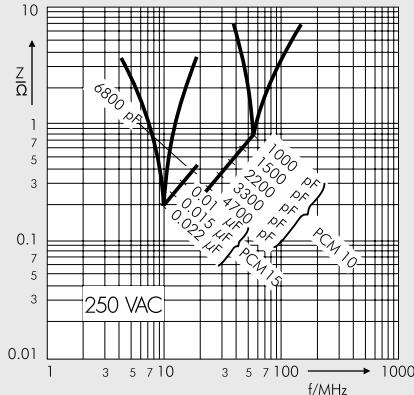
** PCM = Printed circuit module = pin spacing

Upon request with long pins 35.2 mm max.

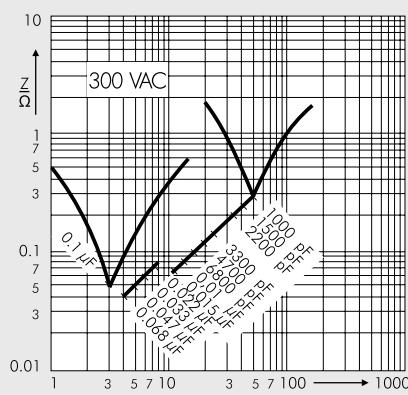
Dims. in mm.



Part number completion:
Tolerance: 20 % = M
Packing: bulk = S
Pin length: 6-2 = SD
Taped version see page 161.



Impedance change with frequency
(general guide)



Impedance change with frequency
(general guide)

Rights reserved to amend design data without prior notification.

Recommendation for Processing and Application of Through-Hole Capacitors



Soldering Process

Internal temperature of the capacitor must be kept as follows:

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

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

Single wave soldering

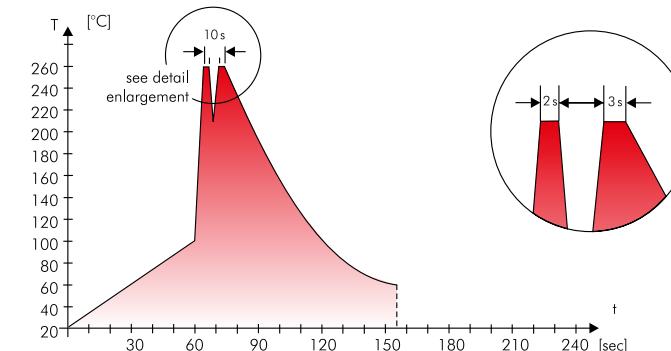
Soldering bath temperature: $T < 260^\circ C$
Dwell time: $t < 5 \text{ sec}$

Double wave soldering

Soldering bath temperature: $T < 260^\circ C$
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.

Wave soldering



Typical temperature/time graph for double wave soldering

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

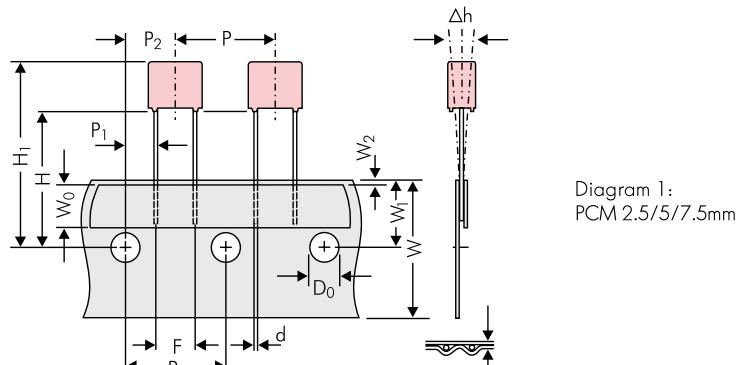


Diagram 1:
PCM 2.5/5/7.5mm

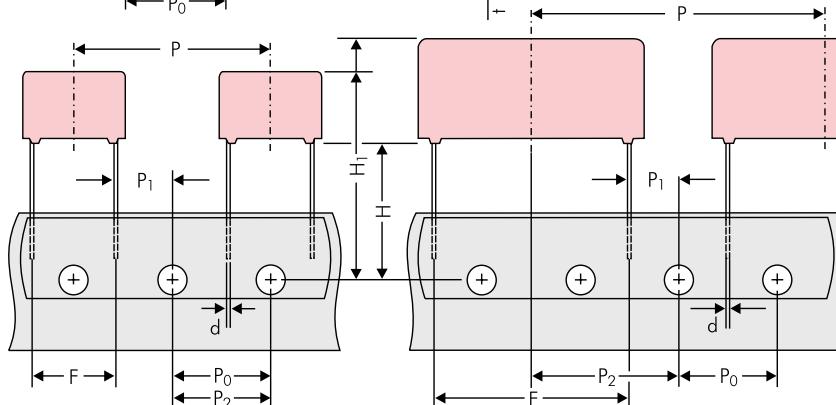


Diagram 2: PCM 10/15 mm

Diagram 3: PCM 22.5 and 27.5*mm

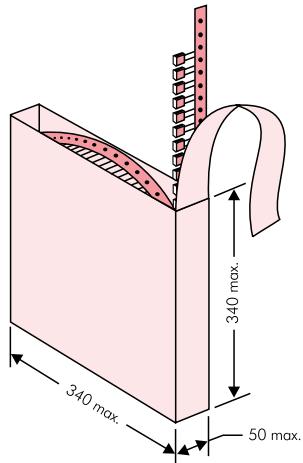
*PCM 27.5 taping possible with two feed holes between components

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						
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						
Hold-down tape width	W0	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						
Hole position	W1	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	W2	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	D0	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 or 50.8 ±1.5						
Feed hole pitch	P0	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	P1	5.1 ±0.5	3.85 ±0.7	2.6 ±0.7	7.7 ±0.7	5.2 ±0.7	7.8 ±0.7						
Hole centre to component centre	P2	6.35 ±1.3	6.35 ±1.3	6.35 ±1.3	12.7 ±1.3	12.7 ±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						
Feed hole centre to top edge of the component	H1	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						
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						
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}						
Component alignment	Δh	± 2.0 max.	± 2.0 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						
Package (see also page 162)	ROLL/AMMO			AMMO									
	REEL Ø 360 max. Ø 30 ±1	B 52 ±2 } depending on 58 ±2 } comp. dimensions		REEL Ø 360 max. Ø 30 ±1	B 52 ±2 or REEL Ø 500 max. 66 ±2	B 60 ±2 } depending 68 ±2 } on PCM and component dimensions							
Unit		see details page 163.											
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 1). P0 = 12.7 or 15.0 is possible													
Please clarify customer-specific deviations with the manufacturer.													

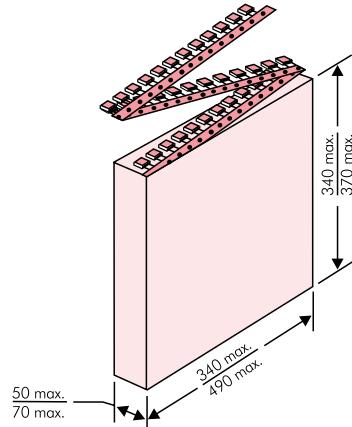


Types of Tape Packaging of Capacitors for Automatic Radial Insertion

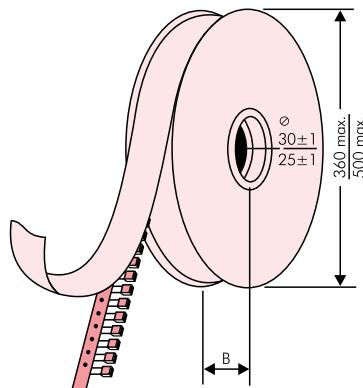
■ ROLL Packaging



■ AMMO Packaging



■ REEL Packaging



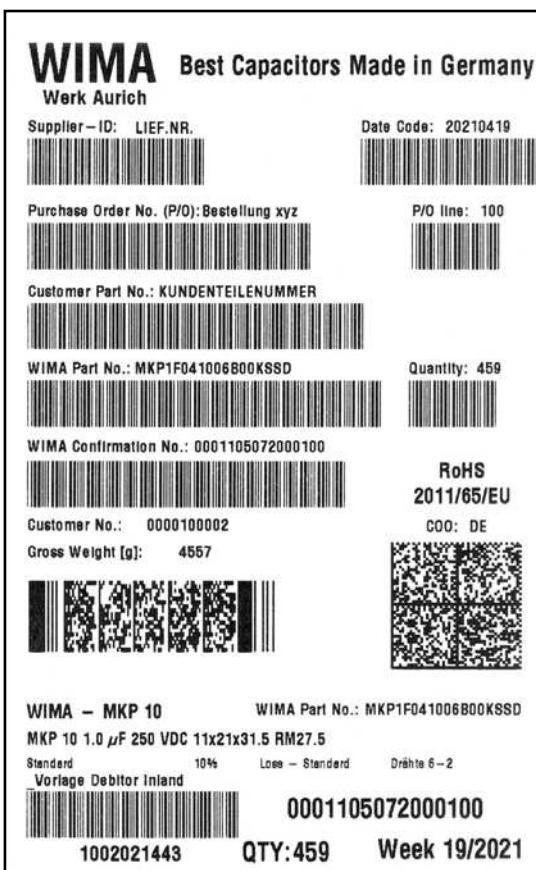
BAR CODE (Labelling)

Labelling of package units in plain text and with alphanumerical Bar Code

- WIMA supplier number
- Date code
- Customer's P/O number
- P/O line
- Customer's part number
- WIMA part number
- Quantity
- WIMA confirmation number
- Country of origin
- Customer name
- Handling unit number
- Week of delivery.

In addition part description of

- article
- capacitance value
- rated voltage
- dimensions
- technical note
- capacitance tolerance
- packing
- connecting information



BARCODE PDF417
BARCODE 2D Datamatrix

Packing Quantities for Capacitors with Radial Pins in PCM 2.5 mm to 22.5 mm



PCM	Size				bulk	ROLL		pcs. per packing unit				AMMO			
						H16.5	H18.5	H16.5	H18.5	φ 360	φ 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		3000	
	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		-		1100	
	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-Packaging-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				
						H16.5	H18.5	REEL		∅ 360		∅ 500		340 × 340		490 × 370
	W	H	L	Codes		S	N	O	F	I	H	J	A	C	B	D
27.5 mm	9	19	31.5	6A	567*						460/340*					
	11	21	31.5	6B	459*						380/280*					
	13	24	31.5	6D	378*						300					
	13	25	33	FK	405*						-					
	15	26	31.5	6F	324*						270					
	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*						-					
	28	38	41.5	7L	84*						-					
	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-Packung-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



- 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)

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.