

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

### Special Features

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

### Typical Applications

For high pulse and high frequency applications e.g.

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

### Construction

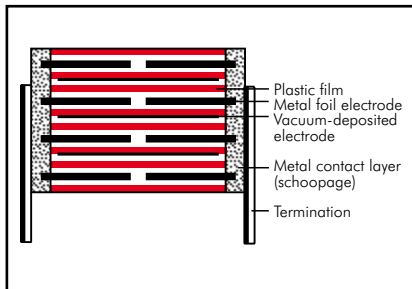
#### Dielectric:

Polypropylene (PP) film

#### Capacitor electrodes:

Aluminium foil and single-sided metallized plastic film

#### Internal construction:



#### Encapsulation:

Solvent-resistant, flame-retardant plastic case with epoxy resin seal, UL 94 V-0

#### Terminations:

Tinned wire.

#### Marking:

Colour: Red. Marking: Black.

### Electrical Data

#### Capacitance range:

100 pF to 1.5 μF (E12-values on request)

#### Rated voltages:

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

#### Capacitance tolerances:

±20%, ±10%, ±5% (other tolerances are available subject to special enquiry)

#### Operating temperature range:

-55° C to +100° C

#### Climatic test category:

55/100/56 in accordance with IEC

#### Insulation resistance at +20° C:

C ≤ 0.1 μF: ≥ 1 × 10<sup>5</sup> MΩ

(mean value: 5 × 10<sup>5</sup> MΩ)

C > 0.1 μF: ≥ 10 000 sec (MΩ × μF)

(mean value: 100 000 sec)

Measuring voltage: 100 V/1 min.

#### Dissipation factors at +20° C: tan δ

at f	C ≤ 0.1 μF	0.1 μF < C ≤ 1.0 μF	C > 1.0 μF
1 kHz	≤ 3 × 10 <sup>-4</sup>	≤ 3 × 10 <sup>-4</sup>	≤ 3 × 10 <sup>-4</sup>
10 kHz	≤ 4 × 10 <sup>-4</sup>	≤ 6 × 10 <sup>-4</sup>	-
100 kHz	≤ 10 × 10 <sup>-4</sup>	-	-

#### Maximum pulse rise time:

Capacitance pF/μF	max. pulse rise time V/μsec at T <sub>A</sub> < 40° 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 ≤ 0.8 φ: 10 N in direction of pins

d > 0.8 φ: 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/sec<sup>2</sup>

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_____

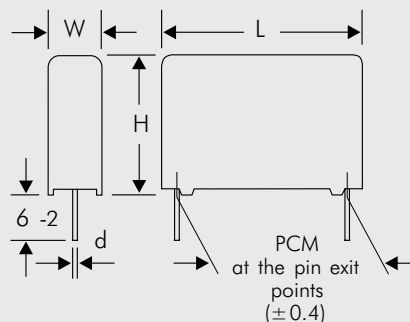
\* AC voltage:  $f \leq 1000 \text{ Hz}$ ;  $1.4 \times U_{\text{rms}} + U_{\text{DC}} \leq U_r$

\*\* PCM = Printed circuit module = pin spacing

Dims. in mm.

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

∅ 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 127.	

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## Continuation

### General Data

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

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

\*\* 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 127.

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## Continuation

### General Data

Capacitance	1600 VDC/500 VAC*					2000 VDC/550 VAC*																		
	W	H	L	PCM**	Part number	W	H	L	PCM**	Part number														
100 pF	5	11	18	15	FKP4T001004B00_	5	11	18	15	FKP4U001004B00_														
150 "	5	11	18	15	FKP4T001504B00_	5	11	18	15	FKP4U001504B00_														
220 "	5	11	18	15	FKP4T002204B00_	5	11	18	15	FKP4U002204B00_														
330 "	5	11	18	15	FKP4T003304B00_	5	11	18	15	FKP4U003304B00_														
470 "	5	11	18	15	FKP4T004704B00_	5	11	18	15	FKP4U004704B00_														
680 "	5	11	18	15	FKP4T006804B00_	5	11	18	15	FKP4U006804B00_														
1000 pF	5	11	18	15	FKP4T011004B00_	5	11	18	15	FKP4U011004B00_														
1500 "	5	11	18	15	FKP4T011504B00_	6	12.5	18	15	FKP4U011504C00_														
2200 "	6	12.5	18	15	FKP4T012204C00_	7	14	18	15	FKP4U012204D00_														
3300 "	7	14	18	15	FKP4T013304D00_	9	16	18	15	FKP4U013304J00_														
4700 "	8	15	18	15	FKP4T014704F00_	6	15	26.5	22.5	FKP4U013305B00_														
6800 "	9	16	18	15	FKP4T016804J00_	7	16.5	26.5	22.5	FKP4U014705D00_														
	6	15	26.5	22.5	FKP4T016805B00_	8.5	18.5	26.5	22.5	FKP4U016805F00_														
0.01 μF	6	15	26.5	22.5	FKP4T021005B00_	10.5	19	26.5	22.5	FKP4U021005G00_														
0.015 "	8.5	18.5	26.5	22.5	FKP4T021505F00_	11	21	26.5	22.5	FKP4U021505I00_														
0.022 "	10.5	19	26.5	22.5	FKP4T022205H00_	9	19	31.5	27.5	FKP4U021506A00_														
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_														
						15	26	31.5	27.5	FKP4U024706F00_														
						15	26	41.5	37.5	FKP4U024707D00_														
						17	34.5	31.5	27.5	FKP4U026806I00_														
						17	29	41.5	37.5	FKP4U026807E00_														
0.1 μF	17	34.5	31.5	27.5	FKP4T031006I00_	19	32	41.5	37.5	FKP4U031007F00_														
0.15 "	20	39.5	31.5	27.5	FKP4T031506J00_	24	45.5	41.5	37.5	FKP4U031507H00_														
	17	29	41.5	37.5	FKP4T031507E00_	Dims. in mm. <table border="1" style="margin-left: 20px;"> <thead> <tr> <th colspan="2">Part number completion:</th> </tr> </thead> <tbody> <tr> <td>Tolerance:</td> <td>20 % = M</td> </tr> <tr> <td></td> <td>10 % = K</td> </tr> <tr> <td></td> <td>5 % = J</td> </tr> <tr> <td>Packing:</td> <td>bulk = S</td> </tr> <tr> <td>Pin length:</td> <td>6-2 = SD</td> </tr> <tr> <td></td> <td>Taped version see page 127.</td> </tr> </tbody> </table>					Part number completion:		Tolerance:	20 % = M		10 % = K		5 % = J	Packing:	bulk = S	Pin length:	6-2 = SD		Taped version see page 127.
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0.22 "	19	32	41.5	37.5	FKP4T032207F00_																			
0.33 "	20	39.5	41.5	37.5	FKP4T033307G00_																			
0.47 "	24	45.5	41.5	37.5	FKP4T034707H00_																			

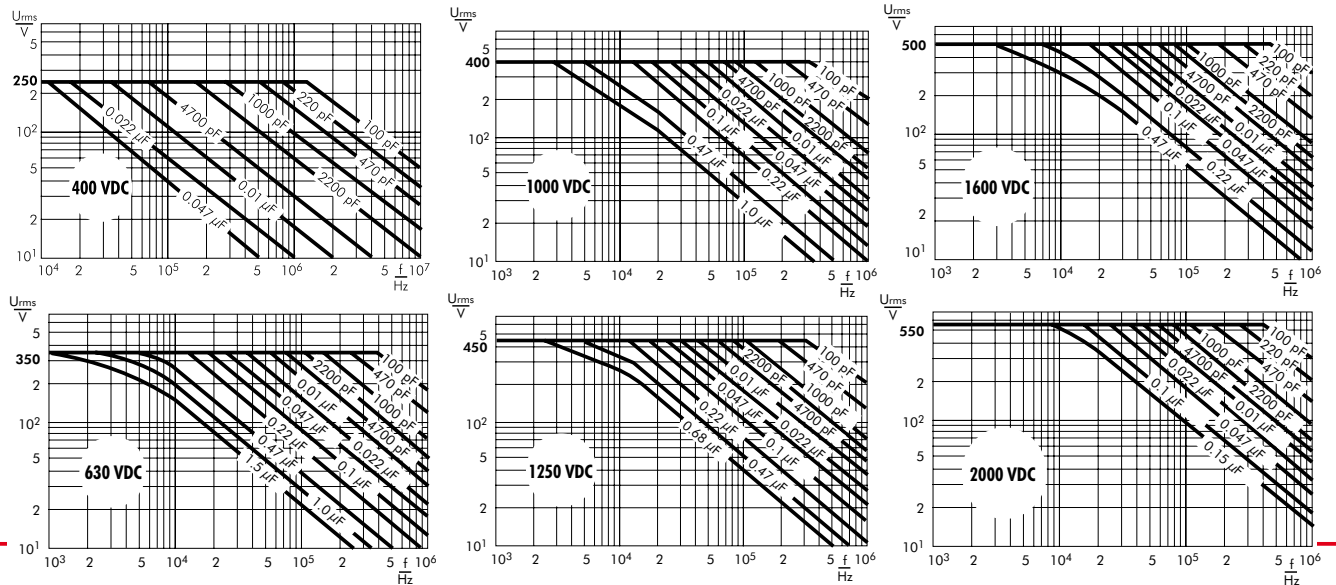
\* AC voltage:  $f \leq 1000 \text{ Hz}$ ;  $1.4 \times U_{\text{rms}} + U_{\text{DC}} \leq U_r$

\*\* PCM = Printed circuit module = pin spacing

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

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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

A preheating of through-hole WIMA capacitors is allowed for temperatures  $T_{\max} < 100^{\circ}\text{C}$ . In practice a preheating duration of  $t < 5$  min. has been proven to be best.

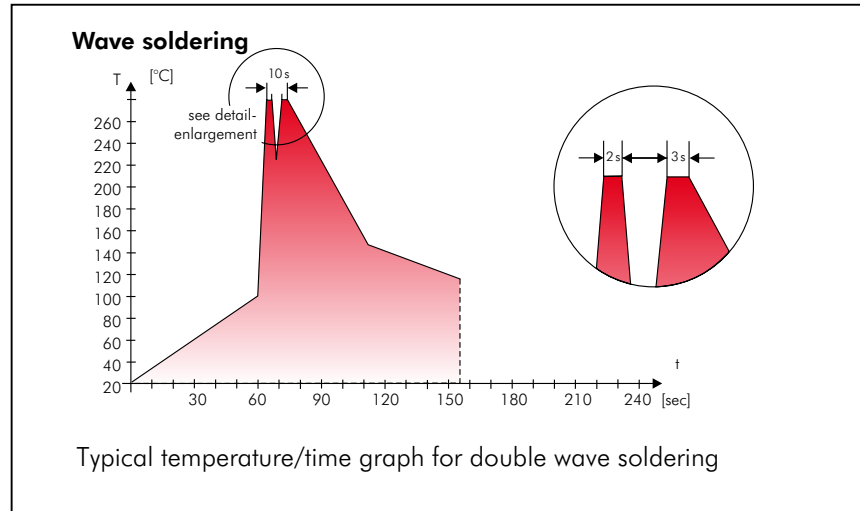
#### Single wave soldering

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

#### Double wave soldering

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

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



## WIMA Quality and Environmental Philosophy

### ISO 9001:2008 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
- AQL check

### WIMA Environmental Policy

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

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

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

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

We almost completely refrain from using packing materials such as:

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

### RoHS Compliance

According to the RoHS Directive 2002/95/EC certain hazardous substances like e.g. lead, cadmium, mercury must not be used any longer in electronic equipment as of July 1st, 2006. For the sake of the environment WIMA has refrained from using such substances since years already.



WIMA Kondensatoren sind bleifrei konform RoHS 2002/95/EG

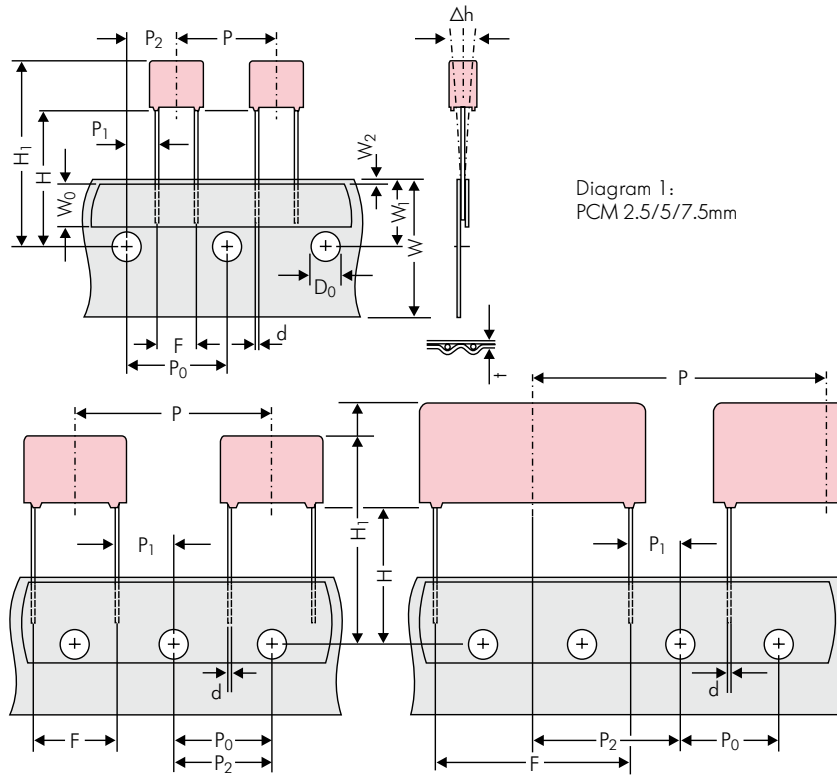
WIMA capacitors are lead free in accordance with RoHS 2002/95/EC

Tape for lead-free WIMA capacitors

### DIN EN ISO 14001:2009

WIMA's environmental management has been established in accordance with the guidelines of DIN EN ISO 14001:2009 to optimize the production processes with regard to energy and resources.

# Typical Dimensions for Taping Configuration



\*PCM 27.5 taping possible with two feed holes between components

Designation	Symbol	Dimensions for Radial Taping						
		PCM 2.5 taping	PCM 5 taping	PCM 7.5 taping	PCM 10 taping*	PCM 15 taping*	PCM 22.5 taping	PCM 27.5 taping
Carrier tape width	W	18.0 ±0.5	18.0 ±0.5	18.0 ±0.5	18.0 ±0.5	18.0 ±0.5	18.0 ±0.5	18.0 ±0.5
Hold-down tape width	W <sub>0</sub>	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 <sub>1</sub>	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 <sub>2</sub>	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 <sub>0</sub>	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 <sub>0</sub>	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 <sub>1</sub>	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 <sub>2</sub>	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 <sub>1</sub>	H+H <sub>component</sub> < H <sub>1</sub> 32.25 max.	H+H <sub>component</sub> < H <sub>1</sub> 32.25 max.	H+H <sub>component</sub> < H <sub>1</sub> 24.5 to 31.5	H+H <sub>component</sub> < H <sub>1</sub> 25.0 to 31.5	H+H <sub>component</sub> < H <sub>1</sub> 26.0 to 37.0	H+H <sub>component</sub> < H <sub>1</sub> 30.0 to 43.0	H+H <sub>component</sub> < H <sub>1</sub> 35.0 to 45.0
Pin spacing at upper edge of carrier tape	F	2.5 ±0.5	5.0 <sup>+0.8</sup> <sub>-0.2</sub>	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 <sup>+0.06</sup> <sub>-0.05</sub>	0.5 ±0.05 or 0.6 <sup>+0.06</sup> <sub>-0.05</sub>	0.8 <sup>+0.08</sup> <sub>-0.05</sub>	0.8 <sup>+0.08</sup> <sub>-0.05</sub>	0.8 <sup>+0.08</sup> <sub>-0.05</sub>
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 128)	ROLL/AMMO			AMMO				
	REEL	φ 360 max. φ 30 ±1	B 52 ±2 58 ±2 } depending on comp. dimensions	REEL	φ 360 max. φ 30 ±1	52 ±2 58 ±2 or 66 ±2	REEL	φ 500 max. φ 25 ±1
Unit	see details page 130.							

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). P<sub>0</sub> = 12.7 or 15.0 is possible

Please clarify customer-specific deviations with the manufacturer.

# Packing Quantities for Bulk Capacitors and TPS\*



PCM	Size				pcs. per packaging unit bulk			pcs. per packaging unit/TPS*	
	W	H	L	Codes	Mini <b>M</b>	Standard <b>S</b>	Maxi <b>G</b>	Mini <b>X</b>	Standard <b>Y</b>
<b>2.5 mm</b>	2.5	7	4.6	<b>0B</b>	1000	5000	10 000	-	-
	3	7.5	4.6	<b>0C</b>	1000	5000	10 000	-	-
	3.8	8.5	4.6	<b>0D</b>	1000	5000	10 000	-	-
	4.6	9	4.6	<b>0E</b>	1000	5000	10 000	-	-
	5.5	10	4.6	<b>0F</b>	1000	5000	10 000	-	-
<b>5 mm</b>	2.5	6.5	7.2	<b>1A</b>	2000	5000	10 000	-	-
	3	7.5	7.2	<b>1B</b>	1000	5000	-	-	-
	3.5	8.5	7.2	<b>1C</b>	1000	5000	-	-	-
	4.5	6	7.2	<b>1D</b>	1000	6000	-	-	-
	4.5	9.5	7.2	<b>1E</b>	1000	4000	-	-	-
	5	10	7.2	<b>1F</b>	1000	3500	-	-	-
	5.5	7	7.2	<b>1G</b>	1000	4000	-	-	-
	5.5	11.5	7.2	<b>1H</b>	500	2500	-	-	-
	6.5	8	7.2	<b>1I</b>	1000	2500	-	-	-
	7.2	8.5	7.2	<b>1J</b>	500	2500	-	-	-
	7.2	13	7.2	<b>1K</b>	500	2000	-	-	-
	8.5	10	7.2	<b>1L</b>	500	2000	-	-	-
	8.5	14	7.2	<b>1M</b>	500	1500	-	-	-
11	16	7.2	<b>1N</b>	250	1000	-	-	-	
<b>7.5 mm</b>	2.5	7	10	<b>2A</b>	1000	5000	-	-	-
	3	8.5	10	<b>2B</b>	1000	5000	-	-	-
	4	9	10	<b>2C</b>	1000	4000	-	-	-
	4.5	9.5	10.3	<b>2D</b>	1000	3500	-	-	-
	5	10.5	10.3	<b>2E</b>	1000	3000	-	-	-
	5.7	12.5	10.3	<b>2F</b>	500	2000	-	-	-
	7.2	12.5	10.3	<b>2G</b>	500	1500	-	-	-
<b>10 mm</b>	3	9	13	<b>3A</b>	1000	3000	-	-	-
	4	8.5	13.5	<b>3B</b>	500	3000	-	-	-
	4	9	13	<b>3C</b>	1000	3000	-	-	-
	4	9.5	13	<b>3D</b>	1000	3000	-	-	-
	5	10	13.5	<b>3E</b>	500	2000	-	-	-
	5	11	13	<b>3F</b>	1000	3000	-	-	-
	6	12	13	<b>3G</b>	800	2400	-	-	-
	6	12.5	13	<b>3H</b>	800	2400	-	-	-
8	12	13	<b>3I</b>	500	2000	-	-	-	
<b>15 mm</b>	5	11	18	<b>4B</b>	800	2400	-	-	-
	5	13	19	<b>4C</b>	200	1000	-	-	-
	6	12.5	18	<b>4D</b>	500	2000	-	-	-
	6	14	19	<b>4E</b>	250	1000	-	-	-
	7	14	18	<b>4F</b>	400	1600	-	-	-
	7	15	19	<b>4G</b>	250	1000	-	-	-
	8	15	18	<b>4H</b>	400	1200	-	-	-
	8	17	19	<b>4I</b>	100	500	-	-	-
	9	14	18	<b>4J</b>	400	1200	-	-	-
	9	16	18	<b>4K</b>	300	900	-	-	-
	10	18	19	<b>4L</b>	100	500	-	-	-
11	14	18	<b>4M</b>	300	1000	-	-	-	
<b>22.5 mm</b>	5	14	26.5	<b>5A</b>	300	1200	-	-	-
	6	15	26.5	<b>5B</b>	250	1000	-	-	-
	7	16.5	26.5	<b>5C</b>	190	760	-	-	-
	8	20	28	<b>5D</b>	125	500	-	-	-
	8.5	18.5	26.5	<b>5E</b>	125	500	-	-	-
	10	22	28	<b>5F</b>	-	-	-	90	540
	10.5	19	26.5	<b>5G</b>	-	-	-	170	680
	10.5	20.5	26.5	<b>5H</b>	-	-	-	170	680
	11	21	26.5	<b>5I</b>	-	-	-	170	680
	12	24	28	<b>5J</b>	-	-	-	75	450
<b>27.5 mm</b>	9	19	31.5	<b>6A</b>	-	-	-	160	640
	11	21	31.5	<b>6B</b>	-	-	-	136	544
	13	24	31.5	<b>6C</b>	-	-	-	112	448
	13	25	33	<b>6D</b>	-	-	-	56	336
	15	26	31.5	<b>6E</b>	-	-	-	96	384
	15	26	33	<b>6F</b>	-	-	-	48	288
	17	29	31.5	<b>6G</b>	-	-	-	88	176
	17	34.5	31.5	<b>6H</b>	-	-	-	88	176
	20	32	33	<b>6I</b>	-	-	-	36	216
	20	39.5	31.5	<b>6J</b>	-	-	-	36	144
<b>37.5 mm</b>	9	19	41.5	<b>7A</b>	-	-	-	60	480
	11	22	41.5	<b>7B</b>	-	-	-	51	408
	13	24	41.5	<b>7C</b>	-	-	-	84	252
	15	26	41.5	<b>7D</b>	-	-	-	72	144
	17	29	41.5	<b>7E</b>	-	-	-	66	132
	19	32	41.5	<b>7F</b>	-	-	-	54	108
	20	39.5	41.5	<b>7G</b>	-	-	-	27	108
	24	45.5	41.5	<b>7H</b>	-	-	-	21	84

08.11

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Samples and pre-production needs on request.

■ Moulded versions.

\* Tray-Packing-System



## Packing Units for Taped Capacitors with Radial Leads

PCM	Size				ROLL		REEL				AMMO			
					H16.5	H18.5	ø 360		ø 500		340 x 340		490 x 370	
	W	H	L	Codes	N	O	F	I	H	J	A	C	B	D
<b>2.5 mm</b>	2.5	7	4.6	<b>0B</b>	2200		2500				2800			
	3	7.5	4.6	<b>0C</b>	2000		2300				2300			
	3.8	8.5	4.6	<b>0D</b>	1500		1800				1800			
	4.6	9	4.6	<b>0E</b>	1200		1500				1500			
	5.5	10	4.6	<b>0F</b>	900		1200				1200			
<b>5 mm</b>	2.5	6.5	7.2	<b>1A</b>	2200		2500				2800			
	3	7.5	7.2	<b>1B</b>	2000		2300				2300			
	3.5	8.5	7.2	<b>1C</b>	1600		2000				2000			
	4.5	6	7.2	<b>1D</b>	1300		1500				1500			
	4.5	9.5	7.2	<b>1E</b>	1300		1500				1500			
	5	10	7.2	<b>1F</b>	1100		1400				1400			
	5.5	7	7.2	<b>1G</b>	1000		1200				1200			
	5.5	11.5	7.2	<b>1H</b>	1000		1200				1200			
	6.5	8	7.2	<b>1I</b>	800		1000				1000			
	7.2	8.5	7.2	<b>1J</b>	700		1000				1000			
	7.2	13	7.2	<b>1K</b>	700		950				1000			
	8.5	10	7.2	<b>1L</b>	600		800				800			
	8.5	14	7.2	<b>1M</b>	600		800				800			
11	16	7.2	<b>1N</b>	500		700				700				
<b>7.5 mm</b>	2.5	7	10	<b>2A</b>			2500		4400		2500			
	3	8.5	10	<b>2B</b>			2200		4300		2300		4150	
	4	9	10	<b>2C</b>			1700		3200		1700		3100	
	4.5	9.5	10.3	<b>2D</b>			1500		2900		1400		2800	
	5	10.5	10.3	<b>2E</b>			1300		2500		1300			
	5.7	12.5	10.3	<b>2F</b>			1000		2200		1100			
	7.2	12.5	10.3	<b>2G</b>			900		1800		1000			
<b>10 mm</b>	3	9	13	<b>3A</b>			1100		2200				1900	
	4	8.5	13.5	<b>FA</b>			900		1600				1450	
	4	9	13	<b>3C</b>			900		1600				1450	
	4	9.5	13	<b>3D</b>			900		1600				1400	
	5	10	13.5	<b>FB</b>			700		1300				1200	
	5	11	13	<b>3F</b>			700		1300				1200	
	6	12	13	<b>3G</b>			550		1100				1000	
	6	12.5	13	<b>3H</b>			550		1100				1000	
8	12	13	<b>3I</b>			400		800				740		
<b>15 mm</b>	5	11	18	<b>4B</b>			600		1200				1150	
	5	13	19	<b>FC</b>			600		1200				1200	
	6	12.5	18	<b>4C</b>			500		1000				1000	
	6	14	19	<b>FD</b>			500		1000				1000	
	7	14	18	<b>4D</b>			450		900				850	
	7	15	19	<b>FE</b>			450		900				850	
	8	15	18	<b>4F</b>			400		800				740	
	8	17	19	<b>FF</b>			400		800				740	
	9	14	18	<b>4H</b>			350		700				650	
	9	16	18	<b>4J</b>			350		700				650	
	10	18	19	<b>FG</b>			300		650				590	
11	14	18	<b>4M</b>			300		600				540		
<b>22.5 mm</b>	5	14	26.5	<b>5A</b>					800				770	
	6	15	26.5	<b>5B</b>					700				640	
	7	16.5	26.5	<b>5D</b>					600				550	
	8	20	28	<b>FH</b>					500				480	
	8.5	18.5	26.5	<b>5F</b>					480				450	
	10	22	28	<b>FI</b>					420				380	
	10.5	19	26.5	<b>5G</b>					400				360	
	10.5	20.5	26.5	<b>5H</b>					400				360	
	11	21	26.5	<b>5I</b>					380				350	
	12	24	28	<b>FJ</b>					350				310	
<b>27.5 mm</b>	9	19	31.5	<b>6A</b>					460/340*				420	
	11	21	31.5	<b>6B</b>					380/280*				350	
	13	24	31.5	<b>6D</b>					300				290	
	15	26	31.5	<b>6F</b>					270				250	

\* for 2-inch transport pitches.

Samples and pre-production needs 1 packing unit minimum.

■ Moulded versions.

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

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

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
<b>M</b>	<b>K</b>	<b>S</b>	<b>2</b>	<b>C</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>A</b>	<b>0</b>	<b>0</b>	<b>M</b>	<b>S</b>	<b>S</b>	<b>D</b>
MKS 2				63 VDC		0.01 µF			2.5x6.5x7.2		-		20%	bulk	6 -2		

<p><b>Type description:</b></p> <p>SMD-PET = SMDT                  SMD-PPS = SMDI                  FKP 02 = FKP0                  MKS 02 = MKS0                  FKS 2 = FKS2                  FKP 2 = FKP2                  MKS 2 = MKS2                  MKP 2 = MKP2                  FKS 3 = FKS3                  FKP 3 = FKP3                  MKS 4 = MKS4                  MKP 4 = MKP4                  MKP 10 = MKP1                  FKP 4 = FKP4                  FKP 1 = FKP1                  MKP-X2 = MKX2                  MKP-X2 R = MKXR                  MKP-Y2 = MKY2                  MP 3-X2 = MPX2                  MP 3-X1 = MPX1                  MP 3-Y2 = MPY2                  MP 3R-Y2 = MPRY                  Snubber MKP = SNMP                  Snubber FKP = SNFP                  GTO MKP = GTOM                  DC-LINK MKP 4 = DCP4                  DC-LINK MKP 5 = DCP5                  DC-LINK MKP 6 = DCP6                  DC-LINK HC = DCH_                  SuperCap C = SCSC                  SuperCap MC = SCMC                  SuperCap R = SCSR                  SuperCap MR = SCMR</p>	<p><b>Rated voltage:</b></p> <p>2.5 VDC = A1                  4 VDC = A2                  14 VDC = A3                  28 VDC = A4                  40 VDC = A5                  5 VDC = A6                  50 VDC = B0                  63 VDC = C0                  100 VDC = D0                  160 VDC = E0                  250 VDC = F0                  400 VDC = G0                  450 VDC = H0                  600 VDC = I0                  630 VDC = J0                  700 VDC = K0                  800 VDC = L0                  850 VDC = M0                  900 VDC = N0                  1000 VDC = O1                  1100 VDC = P0                  1200 VDC = Q0                  1250 VDC = R0                  1500 VDC = S0                  1600 VDC = T0                  2000 VDC = U0                  2500 VDC = V0                  3000 VDC = W0                  4000 VDC = X0                  6000 VDC = Y0                  250 VAC = 0W                  275 VAC = 1W                  300 VAC = 2W                  400 VAC = 3W                  440 VAC = 4W                  500 VAC = 5W</p>	<p><b>Capacitance:</b></p> <p>22 pF = 0022                  47 pF = 0047                  100 pF = 0100                  150 pF = 0150                  220 pF = 0220                  330 pF = 0330                  470 pF = 0470                  680 pF = 0680                  1000 pF = 1100                  1500 pF = 1150                  2200 pF = 1220                  3300 pF = 1330                  4700 pF = 1470                  6800 pF = 1680                  0.01 µF = 2100                  0.022 µF = 2220                  0.047 µF = 2470                  0.1 µF = 3100                  0.22 µF = 3220                  0.47 µF = 3470                  1 µF = 4100                  2.2 µF = 4220                  4.7 µF = 4470                  10 µF = 5100                  22 µF = 5220                  47 µF = 5470                  100 µF = 6100                  220 µF = 6220                  1 F = A010                  2.5 F = A025                  50 F = A500                  100 F = B100                  110 F = B110                  600 F = B600                  1200 F = C120                  ...</p>	<p><b>Size:</b></p> <p>4.8x3.3x3 Size 1812 = X1                  4.8x3.3x4 Size 1812 = X2                  5.7x5.1x3.5 Size 2220 = Y1                  5.7x5.1x4.5 Size 2220 = Y2                  7.2x6.1x3 Size 2824 = T1                  7.2x6.1x5 Size 2824 = T2                  10.2x7.6x5 Size 4030 = K1                  12.7x10.2x6 Size 5040 = V1                  15.3x13.7x7 Size 6054 = Q1                  2.5x7x4.6 PCM 2.5 = 0B                  3x7.5x4.6 PCM 2.5 = 0C                  2.5x6.5x7.2 PCM 5 = 1A                  3x7.5x7.2 PCM 5 = 1B                  2.5x7x10 PCM 7.5 = 2A                  3x8.5x10 PCM 7.5 = 2B                  3x9x13 PCM 10 = 3A                  4x9x13 PCM 10 = 3C                  5x11x18 PCM 15 = 4B                  6x12.5x18 PCM 15 = 4C                  5x14x26.5 PCM 22.5 = 5A                  6x15x26.5 PCM 22.5 = 5B                  9x19x31.5 PCM 27.5 = 6A                  11x21x31.5 PCM 27.5 = 6B                  9x19x41.5 PCM 37.5 = 7A                  11x22x41.5 PCM 37.5 = 7B                  94x49x182 DCH_ = H0                  94x77x182 DCH_ = H1                  ...</p> <p><b>Special features:</b></p> <p>Standard = 00                  Version A1 = 1A                  Version A1.1.1 = 1B                  Version A1.2 = 1C                  ...</p>	<p><b>Tolerance:</b></p> <p>20% = M                  10% = K                  5% = J                  2.5% = H                  1% = E                  ...</p> <p><b>Packing:</b></p> <p>AMMO H16.5 340x340 = A                  AMMO H16.5 490x370 = B                  AMMO H18.5 340x340 = C                  AMMO H18.5 490x370 = D                  REEL H16.5 360 = F                  REEL H16.5 500 = H                  REEL H18.5 360 = I                  REEL H18.5 500 = J                  ROLL H16.5 = N                  ROLL H18.5 = O                  BLISTER W12 180 = P                  BLISTER W12 330 = Q                  BLISTER W16 330 = R                  BLISTER W24 330 = T                  Bulk Mini = M                  Bulk Standard = S                  Bulk Maxi = G                  TPS Mini = X                  TPS Standard = Y                  ...</p> <p><b>Lead length (untaped)</b></p> <p>3.5 ±0.5 = C9                  6 -2 = SD                  16 ±1 = P1                  ...</p>
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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.