WIMA MKS 2

Metallized Polyester (PET) Capacitors in PCM 5 mm

Special Features

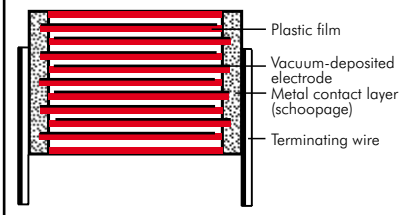
- **High volume/capacitance ratio**
- **Self-healing**
- **According to RoHS 2002/95/EC**

Typical Applications

For general DC-applications e.g.
- **By-pass**
- **Blocking**
- **Coupling and decoupling**
- **Timing**

Construction

Dielectric:
Polyethylene-terephthalate (PET) film
Capacitor electrodes:
Vacuum-deposited
Internal construction:



Encapsulation:
Solvent-resistant, flame-retardant plastic case with epoxy resin seal, UL 94 V-0
Terminations:
Tinned wire.
Marking:
Colour: Red. Marking: Silver/White. Epoxy resin seal: Red

Electrical Data

Capacitance range:
0.01 µF to 10 µF (E12-values on request)
Rated voltages:
50 VDC, 63 VDC, 100 VDC, 250 VDC, 400 VDC, 630 VDC
Capacitance tolerances:
±20%, ±10%, ±5%
Operating temperature range:
–55° C to +100° C (+125° C available subject to special enquiry)
Climatic test category:
55/100/21 in accordance with IEC
Insulation resistance at +20° C:

U_r	U_{test}	C ⩽ 0.33 µF	0.33 µF < C ⩽ 10 µF
50 VDC	10 V	⩾5 x 10^3 MΩ (mean value: 3 x 10^4 MΩ)	⩾1000 sec (MΩ x µF) (mean value: 3000 sec)
63 VDC	50 V	⩾1 x 10^4 MΩ (mean value: 5 x 10^4 MΩ)	⩾1250 sec (MΩ x µF) (mean value: 3000 sec)
⩾100 VDC	100 V	⩾1.5 x 10^4 MΩ (mean value: 1 x 10^5 MΩ)	⩾3000 sec (MΩ x µF) (mean value: 6000 sec)

Measuring time: 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	⩽ 8 x 10^{-3}	⩽ 8 x 10^{-3}	⩽ 10 x 10^{-3}
10 kHz	⩽ 15 x 10^{-3}	⩽ 15 x 10^{-3}	–
100 kHz	⩽ 30 x 10^{-3}	–	–

Maximum pulse rise time: for pulses equal to the rated voltage

Capacitance µF	Pulse rise time V/µsec max. operation/test					
	50 VDC	63 VDC	100 VDC	250 VDC	400 VDC	630 VDC
0.01 ... 0.022	–	35/350	35/350	50/500	80/800	110/1100
0.033 ... 0.068	–	20/200	25/250	50/500	80/800	90/900
0.1 ... 0.47	10/100	15/150	20/200	50/500	80/800	–
0.68 ... 1.0	8/80	12/120	15/150	25/250	–	–
1.5 ... 3.3	8/80	7.5/75	10/100	–	–	–
4.7	5/50	5/50	–	–	–	–
6.8	3/30	3/30	–	–	–	–
10	2.5/25	–	–	–	–	–

Test specifications:
In accordance with IEC 60384-2 and EN 130400
Test voltage: 1.6 U_r, 2 sec.
Voltage derating:
A voltage derating factor of 1.25 % per K must be applied from +85° C for DC voltages and from +75° C for AC voltages
Reliability:
Operational life > 300000 hours
Failure rate < 2 fit (0.5 x 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:
1kPa = 10 mbar in accordance with IEC 60068-2-13
Bump test:
4000 bumps at 390 m/sec^2 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	50 VDC/30 VAC*					63 VDC/40 VAC*				
	W	H	L	PCM**	Part number	W	H	L	PCM**	Part number
0.01 µF						2.5	6.5	7.2	**5**	MKS2C021001A00_ _ _ _
0.015 „						2.5	6.5	7.2	**5**	MKS2C021501A00_ _ _ _
0.022 „						2.5	6.5	7.2	**5**	MKS2C022201A00_ _ _ _
0.033 „						2.5	6.5	7.2	**5**	MKS2C023301A00_ _ _ _
0.047 „						2.5	6.5	7.2	**5**	MKS2C024701A00_ _ _ _
0.068 „						2.5	6.5	7.2	**5**	MKS2C026801A00_ _ _ _
0.1 µF						2.5	6.5	7.2	**5**	MKS2C031001A00_ _ _ _
0.15 „						2.5	6.5	7.2	**5**	MKS2C031501A00_ _ _ _
0.22 „						3	7.5	7.2	**5**	MKS2C032201B00_ _ _ _
0.33 „	2.5	6.5	7.2	**5**	MKS2B033301A00_ _ _ _	3.5	8.5	7.2	**5**	MKS2C033301C00_ _ _ _
0.47 „	3	7.5	7.2	**5**	MKS2B034701B00_ _ _ _	3.5	8.5	7.2	**5**	MKS2C034701C00_ _ _ _
0.68 „	3.5	8.5	7.2	**5**	MKS2B036801C00_ _ _ _	4.5	9.5	7.2	**5**	MKS2C036801E00_ _ _ _
1.0 µF	3.5	8.5	7.2	**5**	MKS2B041001C00_ _ _ _	5	10	7.2	**5**	MKS2C041001F00_ _ _ _
1.5 „	4.5	9.5	7.2	**5**	MKS2B041501E00_ _ _ _	5.5	11.5	7.2	**5**	MKS2C041501H00_ _ _ _
2.2 „	5	10	7.2	**5**	MKS2B042201F00_ _ _ _	7.2	13	7.2	**5**	MKS2C042201K00_ _ _ _
3.3 „	5.5	11.5	7.2	**5**	MKS2B043301H00_ _ _ _	7.2	13	7.2	**5**	MKS2C043301K00_ _ _ _
4.7 „	7.2	13	7.2	**5**	MKS2B044701K00_ _ _ _	8.5	14	7.2	**5**	MKS2C044701M00_ _ _ _
6.8 „	8.5	14	7.2	**5**	MKS2B046801M00_ _ _ _	11	16	7.2	**5**	MKS2C046801N00_ _ _ _
10 µF	11	16	7.2	**5**	MKS2B051001N00_ _ _ _					

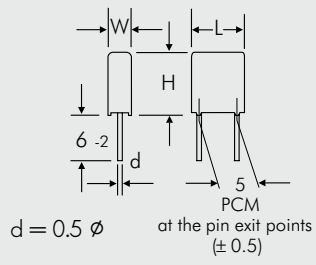
Capacitance	100 VDC/63 VAC*					250 VDC/160 VAC*				
	W	H	L	PCM**	Part number	W	H	L	PCM**	Part number
0.01 µF	2.5	6.5	7.2	**5**	MKS2D021001A00_ _ _ _	2.5	6.5	7.2	**5**	MKS2F021001A00_ _ _ _
0.015 „	2.5	6.5	7.2	**5**	MKS2D021501A00_ _ _ _	2.5	6.5	7.2	**5**	MKS2F021501A00_ _ _ _
0.022 „	2.5	6.5	7.2	**5**	MKS2D022201A00_ _ _ _	2.5	6.5	7.2	**5**	MKS2F022201A00_ _ _ _
0.033 „	2.5	6.5	7.2	**5**	MKS2D023301A00_ _ _ _	3.5	8.5	7.2	**5**	MKS2F023301C00_ _ _ _
0.047 „	2.5	6.5	7.2	**5**	MKS2D024701A00_ _ _ _	3.5	8.5	7.2	**5**	MKS2F024701C00_ _ _ _
0.068 „	2.5	6.5	7.2	**5**	MKS2D026801A00_ _ _ _	3.5	8.5	7.2	**5**	MKS2F026801C00_ _ _ _
0.1 µF	2.5	6.5	7.2	**5**	MKS2D031001A00_ _ _ _	4.5	9.5	7.2	**5**	MKS2F031001E00_ _ _ _
0.15 „	3.5	8.5	7.2	**5**	MKS2D031501C00_ _ _ _	5	10	7.2	**5**	MKS2F031501F00_ _ _ _
0.22 „	3.5	8.5	7.2	**5**	MKS2D032201C00_ _ _ _	5.5	11.5	7.2	**5**	MKS2F032201H00_ _ _ _
0.33 „	4.5	9.5	7.2	**5**	MKS2D033301E00_ _ _ _	7.2	13	7.2	**5**	MKS2F033301K00_ _ _ _
0.47 „	4.5	9.5	7.2	**5**	MKS2D034701E00_ _ _ _	8.5	14	7.2	**5**	MKS2F034701M00_ _ _ _
0.68 „	5	10	7.2	**5**	MKS2D036801F00_ _ _ _	11	16	7.2	**5**	MKS2F036801N00_ _ _ _
1.0 µF	7.2	13	7.2	**5**	MKS2D041001K00_ _ _ _					
1.5 „	8.5	14	7.2	**5**	MKS2D041501M00_ _ _ _					
2.2 „	11	16	7.2	**5**	MKS2D042201N00_ _ _ _					

* AC voltage: f = 50 Hz; 1.4 x U_{rms} + UDC ⩽ U_r

** PCM = Printed circuit module = pin spacing.

Dims. in mm.

The value 10 µF has been transferred from the former WIMA MKS 2-XL range.



Part number completion:

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

Packing: bulk = S

Pin length: 6-2 = SD

Taped version see page 127.

Continuation page 35

Continuation

General Data

Capacitance	400 VDC/200 VAC* W	H	L	PCM**	Part number	630 VDC/220 VAC* W	H	L	PCM**	Part number
0.01 µF	2.5	6.5	7.2	**5**	MKS2G021001A00_ _ _ _	5.5	11.5	7.2	**5**	MKS2J021001H00_ _ _ _
0.015 „	2.5	6.5	7.2	**5**	MKS2G021501A00_ _ _ _	7.2	13	7.2	**5**	MKS2J021501K00_ _ _ _
0.022 „	3.5	8.5	7.2	**5**	MKS2G022201C00_ _ _ _	7.2	13	7.2	**5**	MKS2J022201K00_ _ _ _
0.033 „	4.5	9.5	7.2	**5**	MKS2G023301E00_ _ _ _	7.2	13	7.2	**5**	MKS2J023301K00_ _ _ _
0.047 „	4.5	9.5	7.2	**5**	MKS2G024701E00_ _ _ _	8.5	14	7.2	**5**	MKS2J024701M00_ _ _ _
0.068 „	5.5	11.5	7.2	**5**	MKS2G026801H00_ _ _ _					
0.1 µF	7.2	13	7.2	**5**	MKS2G031001K00_ _ _ _					
0.15 „	8.5	14	7.2	**5**	MKS2G031501M00_ _ _ _					
0.22 „	11	16	7.2	**5**	MKS2G032201N00_ _ _ _					

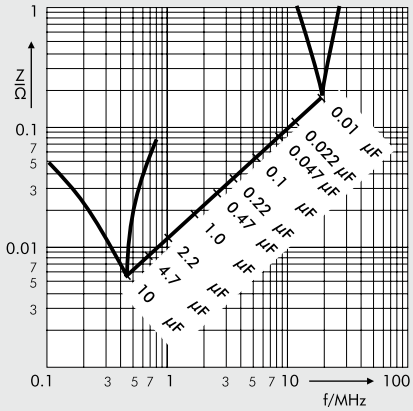
* AC voltage: f = 50 Hz; 1.4 x U_{rms} + UDC ⩽ U_r

** PCM = Printed circuit module = pin spacing.

Dims. in mm.

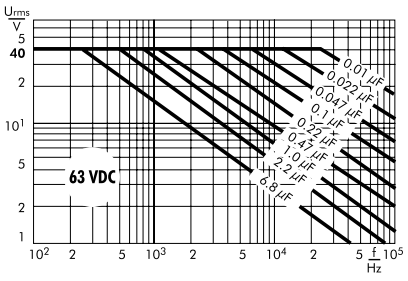
The values of the WIMA MKM 2 and WIMA MKI 2 ranges according to the main catalogue 2009 are still available on request.

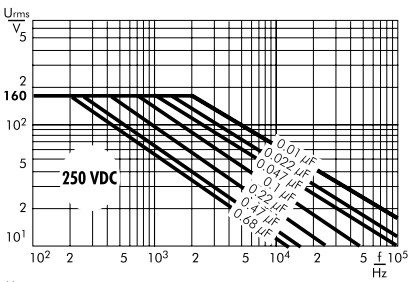
Part number completion:	
Tolerance:	20 % = M
	10 % = K
	5 % = J
Packing:	bulk = S
Pin length:	6-2 = SD
Taped version see page 127.	

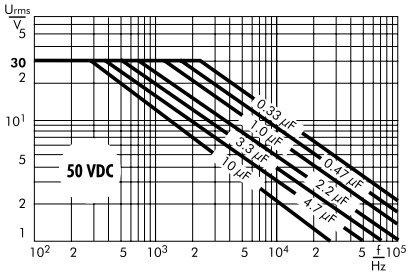


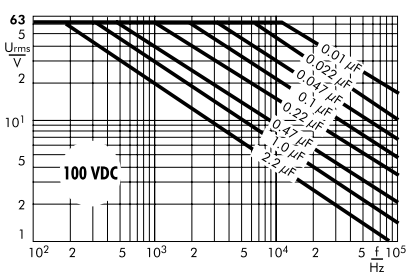
Impedance change with frequency (general guide).

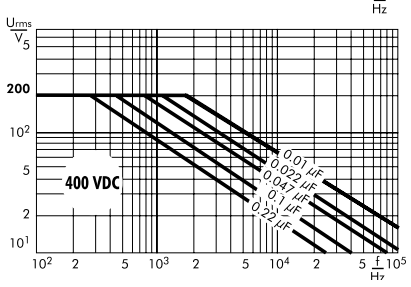
Permissible AC voltage in relation to frequency at 10° C internal temperature rise (general guide).











Recommendation for Processing and Application of Through-Hole Capacitors

Soldering Process

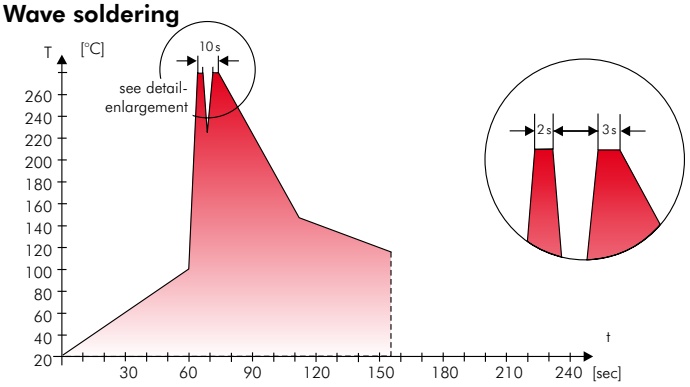
A preheating of through-hole WIMA capacitors is allowed for temperatures $T_{max} < 100°C$.
In practice a preheating duration of $t < 5$ min. has been proven to be best.

Single wave soldering
Soldering bath temperature: $T < 260°C$
Immersion time: $t < 5$ sec

Double wave soldering
Soldering bath temperature: $T < 260°C$
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.

Wave soldering



Typical temperature/time graph for double wave soldering

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 refraind from using such substances since years already.

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

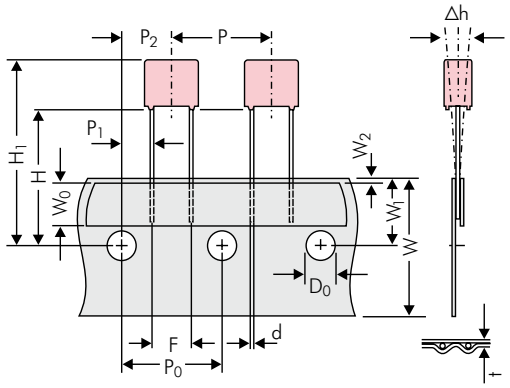


Diagram 1:
PCM 2.5/5/7.5mm

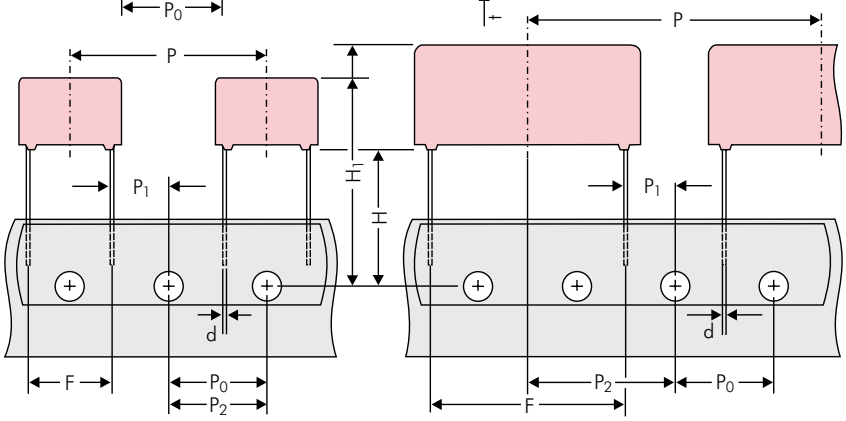


Diagram 2: PCM 10/15 mm

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	0.7 ±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 ø 360 max. ø 30 ±1 B 52 ±2 / 58 ±2 } depending on comp. dimensions		REEL ø 360 max. ø 30 ±1 B 52 ±2 / 58 ±2 / 66 ±2 or REEL ø 500 max. ø 25 ±1 B 54 ±2 / 60 ±2 / 68 ±2 } depending on PCM and component dimensions				
Unit		see details page 130.						

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 1). P_0 = 12.7 or 15.0 is possible

Packing Quantities for Bulk Capacitors and TPS*

PCM	Size				pcs. per packaging unit bulk			pcs. per packaging unit/TPS*	
					Mini	Standard	Maxi	Mini	Standard
	W	H	L	Codes	**M**	**S**	**G**	**X**	**Y**
2.5 mm	2.5	7	4.6	**0B**	1000	5000	10000	–	–
	3	7.5	4.6	**0C**	1000	5000	10000	–	–
	3.8	8.5	4.6	**0D**	1000	5000	10000	–	–
	4.6	9	4.6	**0E**	1000	5000	10000	–	–
	5.5	10	4.6	**0F**	1000	5000	10000	–	–
5 mm	2.5	6.5	7.2	**1A**	2000	5000	10000	–	–
	3	7.5	7.2	**1B**	1000	5000	–	–	–
	3.5	8.5	7.2	**1C**	1000	5000	–	–	–
	4.5	6	7.2	**1D**	1000	6000	–	–	–
	4.5	9.5	7.2	**1E**	1000	4000	–	–	–
	5	10	7.2	**1F**	1000	3500	–	–	–
	5.5	7	7.2	**1G**	1000	4000	–	–	–
	5.5	11.5	7.2	**1H**	500	2500	–	–	–
	6.5	8	7.2	**1I**	1000	2500	–	–	–
	7.2	8.5	7.2	**1J**	500	2500	–	–	–
	7.2	13	7.2	**1K**	500	2000	–	–	–
	8.5	10	7.2	**1L**	500	2000	–	–	–
	8.5	14	7.2	**1M**	500	1500	–	–	–
	11	16	7.2	**1N**	250	1000	–	–	–
7.5 mm	2.5	7	10	**2A**	1000	5000	–	–	–
	3	8.5	10	**2B**	1000	5000	–	–	–
	4	9	10	**2C**	1000	4000	–	–	–
	4.5	9.5	10.3	**2D**	1000	3500	–	–	–
	5	10.5	10.3	**2E**	1000	3000	–	–	–
	5.7	12.5	10.3	**2F**	500	2000	–	–	–
	7.2	12.5	10.3	**2G**	500	1500	–	–	–
10 mm	3	9	13	**3A**	1000	3000	–	–	–
	4	8.5	13.5	**FA**	500	3000	–	–	–
	4	9	13	**3C**	1000	3000	–	–	–
	4	9.5	13	**3D**	1000	3000	–	–	–
	5	10	13.5	**FB**	500	2000	–	–	–
	5	11	13	**3F**	1000	3000	–	–	–
	6	12	13	**3G**	800	2400	–	–	–
	6	12.5	13	**3H**	800	2400	–	–	–
	8	12	13	**3I**	500	2000	–	–	–
15 mm	5	11	18	**4B**	800	2400	–	–	–
	5	13	19	**FC**	200	1000		–	–
	6	12.5	18	**4C**	500	2000	–	–	–
	6	14	19	**FD**	250	1000		–	–
	7	14	18	**4D**	400	1600	–	–	–
	7	15	19	**FE**	250	1000		–	–
	8	15	18	**4F**	400	1200	–	–	–
	8	17	19	**FF**	100	500		–	–
	9	14	18	**4H**	400	1200	–	–	–
	9	16	18	**4J**	300	900	–	–	–
	10	18	19	**FG**	100	500	–	–	–
	11	14	18	**4M**	300	1000	–	–	–
22.5 mm	5	14	26.5	**5A**	300	1200	–	–	–
	6	15	26.5	**5B**	250	1000	–	–	–
	7	16.5	26.5	**5D**	190	760	–	–	–
	8	20	28	**FH**	125	500	–	–	–
	8.5	18.5	26.5	**5F**	125	500	–	–	–
	10	22	28	**FI**	–	–	–	90	540
	10.5	19	26.5	**5G**	–	–	–	170	680
	10.5	20.5	26.5	**5H**	–	–	–	170	680
	11	21	26.5	**5I**	–	–	–	170	680
	12	24	28	**FJ**	–	–	–	75	450
27.5 mm	9	19	31.5	**6A**	–	–	–	160	640
	11	21	31.5	**6B**	–	–	–	136	544
	13	24	31.5	**6D**	–	–	–	112	448
	13	25	33	**FK**	–	–	–	56	336
	15	26	31.5	**6F**	–	–	–	96	384
	15	26	33	**FL**	–	–	–	48	288
	17	29	31.5	**6G**	–	–	–	88	176
	17	34.5	31.5	**6I**	–	–	–	88	176
	20	32	33	**FM**	–	–	–	36	216
	20	39.5	31.5	**6J**	–	–	–	36	144
37.5 mm	9	19	41.5	**7A**	–	–	–	60	480
	11	22	41.5	**7B**	–	–	–	51	408
	13	24	41.5	**7C**	–	–	–	84	252
	15	26	41.5	**7D**	–	–	–	72	144
	17	29	41.5	**7E**	–	–	–	66	132
	19	32	41.5	**7F**	–	–	–	54	108
	20	39.5	41.5	**7G**	–	–	–	27	108
	24	45.5	41.5	**7H**	–	–	–	21	84

08.11

Moulded versions.

* Tray-Packing-System

Packing Units for Taped Capacitors with Radial Leads

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

* for 2-inch transport pitches.
Samples and pre-production needs 1 packing unit minimum.

Moulded versions.

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: 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
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 x 6.5 x 7.2		-		20%	bulk	6 -2	

Type description:

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

Rated voltage:

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
...	

Capacitance:

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
...	

Size:

4.8 x 3.3 x 3 Size 1812	= X1
4.8 x 3.3 x 4 Size 1812	= X2
5.7 x 5.1 x 3.5 Size 2220	= Y1
5.7 x 5.1 x 4.5 Size 2220	= Y2
7.2 x 6.1 x 3 Size 2824	= T1
7.2 x 6.1 x 5 Size 2824	= T2
10.2 x 7.6 x 5 Size 4030	= K1
12.7 x 10.2 x 6 Size 5040	= V1
15.3 x 13.7 x 7 Size 6054	= Q1
2.5 x 7 x 4.6 PCM 2.5	= 0B
3 x 7.5 x 4.6 PCM 2.5	= 0C
2.5 x 6.5 x 7.2 PCM 5	= 1A
3 x 7.5 x 7.2 PCM 5	= 1B
2.5 x 7 x 10 PCM 7.5	= 2A
3 x 8.5 x 10 PCM 7.5	= 2B
3 x 9 x 13 PCM 10	= 3A
4 x 9 x 13 PCM 10	= 3C
5 x 11 x 18 PCM 15	= 4B
6 x 12.5 x 18 PCM 15	= 4C
5 x 14 x 26.5 PCM 22.5	= 5A
6 x 15 x 26.5 PCM 22.5	= 5B
9 x 19 x 31.5 PCM 27.5	= 6A
11 x 21 x 31.5 PCM 27.5	= 6B
9 x 19 x 41.5 PCM 37.5	= 7A
11 x 22 x 41.5 PCM 37.5	= 7B
94 x 49 x 182 DCH_	= H0
94 x 77 x 182 DCH_	= H1
...	

Special features:

Standard	= 00
Version A1	= 1A
Version A1.1.1	= 1B
Version A1.2	= 1C
...	

Tolerance:

20%	= M
10%	= K
5%	= J
2.5%	= H
1%	= E
...	

Packing:

AMMO H16.5 340 x 340	= A
AMMO H16.5 490 x 370	= B
AMMO H18.5 340 x 340	= C
AMMO H18.5 490 x 370	= 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
...	

Lead length (untaped)

3.5 ±0.5	= C9
6 -2	= SD
16 ±1	= P1
...	

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.