EN: This Datasheet/Document is presented by the manufacturer.

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WIMA MKP 4

Metallized Polypropylene (PP) Capacitors in PCM 7.5 mm to 37.5 mm. Capacitances from 1000 pF to 10 µF. Rated Voltages from 100 VDC to 2000 VDC.

Special Features

- **High volume/capacitance ratio**
- **Self-healing**
- **Very low dissipation factor**
- **Negative capacitance change versus temperature**
- **Very low dielectric absorption**
- **According to RoHS 2011/65/EU**

Typical Applications

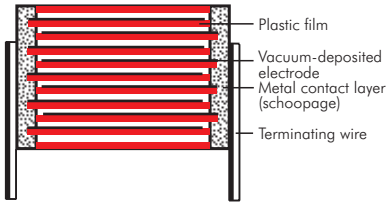
For high frequency applications e.g.

- **Sample and hold**
- **Timing**
- **Oscillating circuits**
- **High frequency coupling and decoupling**

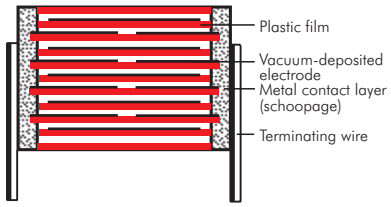
Construction

Dielectric:
Polypropylene (PP) film
Capacitor electrodes:
Vacuum-deposited
Internal construction:

MKP 4: 63 VAC, 160 VAC, 200 VAC, 280 VAC



MKP 4: 400 VAC, 630 VAC, 700 VAC



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

Electrical Data

Capacitance range:
1000 pF to 10 µF (E12-values on request)
Rated voltages:
100 VDC, 250 VDC, 400 VDC, 630 VDC, 850 VDC, 1000 VDC, 1600 VDC, 2000 VDC
Capacitance tolerances:
±20%, ±10%, ±5%
Operating temperature range:
–55° C to +100° C
Climatic test category:
55/100/56 in accordance with IEC
Insulation resistance at +20° C:
C ⩽ 0.33 µF: ⩾ 1 x 10^5 MΩ
(mean value: 5 x 10^5 MΩ)
C > 0.33 µF: ⩾ 30 000 sec (MΩ x µF)
(mean value: 100 000 sec)
Measuring voltage: 100 V/1 min.
Maximum pulse rise time:

Capacitance pF/µF	max. pulse rise time V/µsec at T_A < 40° CC							
	100 VDC	250 VDC	400 VDC	630 VDC	850 VDC	1000 VDC	1600 VDC	2000 VDC
1000 ... 2200	–	–	–	–	2200	2200	3500	5200
3300 ... 6800	–	–	–	–	1150	1150	2700	3500
0.01 ... 0.022	450	450	450	500	550	550	1800	2700
0.033 ... 0.068	250	250	300	350	400	400	900	1800
0.1 ... 0.22	150	150	200	250	300	300	500	900
0.33 ... 0.68	100	100	150	200	200	200	–	–
1.0 ... 2.2	75	100	100	150	150	150	–	–
3.3 ... 4.7	60	100	100	120	140	140	–	–
6.8 ... 10	40	50	60	85	–	–	–	–

for pulses equal to the rated voltage

Dissipation factors at + 20° C:
tan δ ⩽ 10 x 10^{-4} at 1 kHz
Test specifications:
In accordance with IEC 60384-16
Test voltage: 1.6 U_r, 2 sec.
Dielectric absorption: 0.05 %
Voltage derating:
A voltage derating factor of 1.35 % per K must be applied from +85° C for DC voltages and from +75° C for AC voltages.
Reliability:
Operational life > 300 000 hours
Failure rate < 2 fit (0.5 x U_r and 40° C).

Mechanical Tests

Pull test on pins:
d ⩽ 0.8 ø: 10 N in direction of pins
d > 0.8 ø: 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:
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 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	100 VDC/63 VAC*					250 VDC/160 VAC*				
	W	H	L	PCM**	Part number	W	H	L	PCM**	Part number
0.01 µF	3	8.5	10	**7.5**	MKP4D021002B00_ _ _ _	3	8.5	10	**7.5**	MKP4F021002B00_ _ _ _
0.015 „	3	8.5	10	**7.5**	MKP4D021502B00_ _ _ _	3	8.5	10	**7.5**	MKP4F021502B00_ _ _ _
0.022 „	3	8.5	10	**7.5**	MKP4D022202B00_ _ _ _	3	8.5	10	**7.5**	MKP4F022202B00_ _ _ _
0.033 „	3	8.5	10	**7.5**	MKP4D023302B00_ _ _ _	3	8.5	10	**7.5**	MKP4F023302B00_ _ _ _
	4	9	13	10	MKP4D023303C00_ _ _ _	4	9	13	10	MKP4F023303C00_ _ _ _
0.047 „	4	9	10	**7.5**	MKP4D024702C00_ _ _ _	4	9	10	**7.5**	MKP4F024702C00_ _ _ _
	4	9	13	10	MKP4D024703C00_ _ _ _	4	9	13	10	MKP4F024703C00_ _ _ _
0.068 „	4	9	10	**7.5**	MKP4D026802C00_ _ _ _	4	9	10	**7.5**	MKP4F026802C00_ _ _ _
	4	9	13	10	MKP4D026803C00_ _ _ _	4	9	13	10	MKP4F026803C00_ _ _ _
0.1 µF	4.5	9.5	10.3	**7.5**	MKP4D031002D00_ _ _ _	4.5	9.5	10.3	**7.5**	MKP4F031002D00_ _ _ _
	4	9	13	10	MKP4D031003C00_ _ _ _	4	9	13	10	MKP4F031003C00_ _ _ _
0.15 „	5	10.5	10.3	**7.5**	MKP4D031502E00_ _ _ _	5	10.5	10.3	**7.5**	MKP4F031502E00_ _ _ _
	5	11	13	10	MKP4D031503F00_ _ _ _	5	11	13	10	MKP4F031503F00_ _ _ _
0.22 „	6	12	13	10	MKP4D032203G00_ _ _ _	6	12	13	10	MKP4F032203G00_ _ _ _
	5	11	18	15	MKP4D032204B00_ _ _ _	5	11	18	15	MKP4F032204B00_ _ _ _
0.33 „	6	12.5	18	15	MKP4D033304C00_ _ _ _	6	12.5	18	15	MKP4F033304C00_ _ _ _
0.47 „	7	14	18	15	MKP4D034704D00_ _ _ _	7	14	18	15	MKP4F034704D00_ _ _ _
0.68 „	8	15	18	15	MKP4D036804F00_ _ _ _	8	15	18	15	MKP4F036804F00_ _ _ _
	6	15	26.5	22.5	MKP4D036805B00_ _ _ _	6	15	26.5	22.5	MKP4F036805B00_ _ _ _
1.0 µF	7	16.5	26.5	22.5	MKP4D041005D00_ _ _ _	7	16.5	26.5	22.5	MKP4F041005D00_ _ _ _
1.5 „	10.5	19	26.5	22.5	MKP4D041505G00_ _ _ _	10.5	19	26.5	22.5	MKP4F041505G00_ _ _ _
2.2 „	11	21	26.5	22.5	MKP4D042205I00_ _ _ _	11	21	26.5	22.5	MKP4F042205I00_ _ _ _
	11	21	31.5	27.5	MKP4D042206B00_ _ _ _	11	21	31.5	27.5	MKP4F042206B00_ _ _ _
3.3 „	13	24	31.5	27.5	MKP4D043306D00_ _ _ _	13	24	31.5	27.5	MKP4F043306D00_ _ _ _
4.7 „	13	24	31.5	27.5	MKP4D044706D00_ _ _ _	15	26	31.5	27.5	MKP4F044706F00_ _ _ _
6.8 „	15	26	31.5	27.5	MKP4D046806F00_ _ _ _	17	29	31.5	27.5	MKP4F046806G00_ _ _ _
	13	24	41.5	37.5	MKP4D046807C00_ _ _ _	15	26	41.5	37.5	MKP4F046807D00_ _ _ _
10 µF	17	29	41.5	37.5	MKP4D051007E00_ _ _ _	19	32	41.5	37.5	MKP4F051007F00_ _ _ _

* AC voltages: f ⩽ 400 Hz; 1.4 x U_{rms} + UDC ⩽ U_r

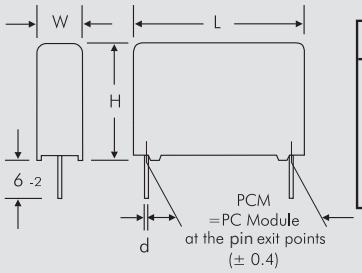
** PCM = Printed circuit module = pin spacing

The high values and large box sizes according to main catalogue 2015 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 145.

Dims. in mm.



ø d	PCM	W
0.5	7.5	= 3
0.6	7.5	⩾ 4
0.6	10	
0.8	15 - 27.5	
1.0	37.5	

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Continuation

General Data

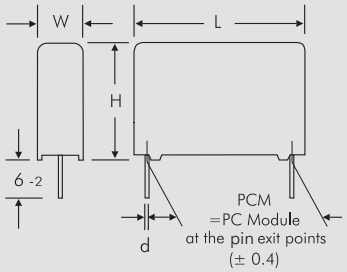
Capacitance	400 VDC/220 VAC*					630 VDC/280 VAC*				
	W	H	L	PCM**	Part number	W	H	L	PCM**	Part number
0.01 µF	3	8.5	10	**7.5**	MKP4G021002B00____	3	8.5	10	**7.5**	MKP4J021002B00____
						4	9	13	10	MKP4J021003C00____
0.015 „	4	9	10	**7.5**	MKP4G021502C00____	4	9	10	**7.5**	MKP4J021502C00____
	4	9	13	10	MKP4G021503C00____	4	9	13	10	MKP4J021503C00____
0.022 „	4.5	9.5	10.3	**7.5**	MKP4G022202D00____	4.5	9.5	10.3	**7.5**	MKP4J022202D00____
	4	9	13	10	MKP4G022203C00____	4	9	13	10	MKP4J022203C00____
0.033 „	5	10.5	10.3	**7.5**	MKP4G023302E00____	5	10.5	10.3	**7.5**	MKP4J023302E00____
	4	9	13	10	MKP4G023303C00____	4	9	13	10	MKP4J023303C00____
0.047 „	5	10.5	10.3	**7.5**	MKP4G024702E00____	5.7	12.5	10.3	**7.5**	MKP4J024702F00____
	5	11	13	10	MKP4G024703F00____	5	11	13	10	MKP4J024703F00____
0.068 „	5.7	12.5	10.3	**7.5**	MKP4G026802F00____	6	12	13	10	MKP4J026803G00____
	5	11	13	10	MKP4G026803F00____	6	12.5	18	15	MKP4J026804C00____
0.1 µF	6	12	13	10	MKP4G031003G00____	7	14	18	15	MKP4J031004D00____
	5	11	18	15	MKP4G031004B00____					
0.15 „	6	12.5	18	15	MKP4G031504C00____	8	15	18	15	MKP4J031504F00____
						6	15	26.5	22.5	MKP4J031505B00____
0.22 „	7	14	18	15	MKP4G032204D00____	9	16	18	15	MKP4J032204J00____
						7	16.5	26.5	22.5	MKP4J032205D00____
0.33 „	8	15	18	15	MKP4G033304F00____	8.5	18.5	26.5	22.5	MKP4J033305F00____
	6	15	26.5	22.5	MKP4G033305B00____					
0.47 „	7	16.5	26.5	22.5	MKP4G034705D00____	10.5	19	26.5	22.5	MKP4J034705G00____
						11	21	31.5	27.5	MKP4J034706B00____
0.68 „	8.5	18.5	26.5	22.5	MKP4G036805F00____	11	21	31.5	27.5	MKP4J036806B00____
1.0 µF	11	21	26.5	22.5	MKP4G041005I00____	13	24	31.5	27.5	MKP4J041006D00____
	11	21	31.5	27.5	MKP4G041006B00____					
1.5 „	11	21	31.5	27.5	MKP4G041506B00____	15	26	31.5	27.5	MKP4J041506F00____
2.2 „	15	26	31.5	27.5	MKP4G042206F00____	17	29	41.5	37.5	MKP4J042207E00____
3.3 „	17	29	31.5	27.5	MKP4G043306G00____	19	32	41.5	37.5	MKP4J043307F00____
	17	29	41.5	37.5	MKP4G043307E00____					
4.7 „	19	32	41.5	37.5	MKP4G044707F00____	20	39.5	41.5	37.5	MKP4J044707G00____
6.8 „	20	39.5	41.5	37.5	MKP4G046807G00____	24	45.5	41.5	37.5	MKP4J046807H00____
10 µF	24	45.5	41.5	37.5	MKP4G051007H00____	35	50	41.5	37.5	MKP4J051007J00____

* AC voltages: f ⩽ 400 Hz; 1.4 x U_{rms} + UDC ⩽ U_r

** PCM = Printed circuit module = pin spacing

The high values and large box sizes according to main catalogue 2015 are still available on request.

Dims. in mm.



ø d	PCM	W
0.5	7.5	= 3
0.6	7.5	⩾ 4
0.6	10	
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 145.

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Continuation

General Data

Capacitance	850 VDC/400 VAC*					1000 VDC/400 VAC*				
	W	H	L	PCM**	Part number	W	H	L	PCM**	Part number
1000 pF	4	9	13	10	MKP4M011003C00_ _ _ _	4	9	13	10	MKP4O111003C00_ _ _ _
1500 „	4	9	13	10	MKP4M011503C00_ _ _ _	4	9	13	10	MKP4O111503C00_ _ _ _
2200 „	4	9	13	10	MKP4M012203C00_ _ _ _	4	9	13	10	MKP4O112203C00_ _ _ _
3300 „	4	9	13	10	MKP4M013303C00_ _ _ _	4	9	13	10	MKP4O113303C00_ _ _ _
4700 „	4	9	13	10	MKP4M014703C00_ _ _ _	4	9	13	10	MKP4O114703C00_ _ _ _
6800 „	4	9	13	10	MKP4M016803C00_ _ _ _	5	11	13	10	MKP4O116803F00_ _ _ _
0.01 µF	5	11	13	10	MKP4M021003F00_ _ _ _	5	11	13	10	MKP4O121003F00_ _ _ _
0.015 „	5	11	13	10	MKP4M021503F00_ _ _ _	5	11	13	10	MKP4O121503F00_ _ _ _
	5	11	18	15	MKP4M021504B00_ _ _ _	5	11	18	15	MKP4O121504B00_ _ _ _
0.022 „	5	11	18	15	MKP4M022204B00_ _ _ _	5	11	18	15	MKP4O122204B00_ _ _ _
0.033 „	6	12.5	18	15	MKP4M023304C00_ _ _ _	6	12.5	18	15	MKP4O123304C00_ _ _ _
0.047 „	7	14	18	15	MKP4M024704D00_ _ _ _	7	14	18	15	MKP4O124704D00_ _ _ _
0.068 „	8	15	18	15	MKP4M026804F00_ _ _ _	8	15	18	15	MKP4O126804F00_ _ _ _
	6	15	26.5	22.5	MKP4M026805B00_ _ _ _	6	15	26.5	22.5	MKP4O126805B00_ _ _ _
0.1 µF	9	16	18	15	MKP4M031004J00_ _ _ _	9	16	18	15	MKP4O131004J00_ _ _ _
	7	16.5	26.5	22.5	MKP4M031005D00_ _ _ _	7	16.5	26.5	22.5	MKP4O131005D00_ _ _ _
0.15 „	8.5	18.5	26.5	22.5	MKP4M031505F00_ _ _ _	8.5	18.5	26.5	22.5	MKP4O131505F00_ _ _ _
0.22 „	11	21	26.5	22.5	MKP4M032205I00_ _ _ _	11	21	26.5	22.5	MKP4O132205I00_ _ _ _
	11	21	31.5	27.5	MKP4M032206B00_ _ _ _	11	21	31.5	27.5	MKP4O132206B00_ _ _ _
0.33 „	11	21	31.5	27.5	MKP4M033306B00_ _ _ _	11	21	31.5	27.5	MKP4O133306B00_ _ _ _
0.47 „	13	24	31.5	27.5	MKP4M034706D00_ _ _ _	13	24	31.5	27.5	MKP4O134706D00_ _ _ _
0.68 „	17	29	31.5	27.5	MKP4M036806G00_ _ _ _	17	29	31.5	27.5	MKP4O136806G00_ _ _ _
1.0 µF	17	29	41.5	37.5	MKP4M041007E00_ _ _ _	17	29	41.5	37.5	MKP4O141007E00_ _ _ _
1.5 „	20	39.5	41.5	37.5	MKP4M041507G00_ _ _ _	20	39.5	41.5	37.5	MKP4O141507G00_ _ _ _
2.2 „	24	45.5	41.5	37.5	MKP4M042207H00_ _ _ _	24	45.5	41.5	37.5	MKP4O142207H00_ _ _ _
3.3 „	31	46	41.5	37.5	MKP4M043307I00_ _ _ _	31	46	41.5	37.5	MKP4O143307I00_ _ _ _
4.7 „	35	50	41.5	37.5	MKP4M044707J00_ _ _ _	35	50	41.5	37.5	MKP4O144707J00_ _ _ _

* AC voltages: f ⩽ 400 Hz; 1.4 x U_{rms} + UDC ⩽ U_r

New values and range

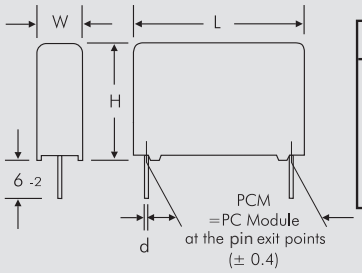
** PCM = Printed circuit module = pin spacing

The high values and large box sizes according to main catalogue 2015 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 145.

Dims. in mm.



ø d	PCM	W
0.5	7.5	= 3
0.6	7.5	⩾ 4
0.6	10	
0.8	15 - 27.5	
1.0	37.5	

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Continuation

General Data

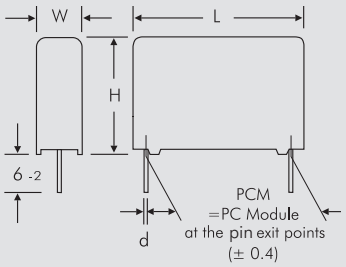
Capacitance	1600 VDC/630 VAC*					2000 VDC/700 VAC*				
	W	H	L	PCM**	Part number	W	H	L	PCM**	Part number
1000 pF	4	9	13	10	MKP4T011003C00_ _ _ _	4	9	13	10	MKP4U011003C00_ _ _ _
1500 „	4	9	13	10	MKP4T011503C00_ _ _ _	4	9	13	10	MKP4U011503C00_ _ _ _
2200 „	4	9	13	10	MKP4T012203C00_ _ _ _	4	9	13	10	MKP4U012203C00_ _ _ _
3300 „	4	9	13	10	MKP4T013303C00_ _ _ _	4	9	13	10	MKP4U013303C00_ _ _ _
4700 „	4	9	13	10	MKP4T014703C00_ _ _ _	4	9	13	10	MKP4U014703C00_ _ _ _
6800 „	5	11	13	10	MKP4T016803F00_ _ _ _	5	11	13	10	MKP4U016803F00_ _ _ _
						5	11	18	15	MKP4U016804B00_ _ _ _
0.01 µF	5	11	13	10	MKP4T021003F00_ _ _ _	6	12.5	18	15	MKP4U021004C00_ _ _ _
0.015 „	5	11	18	15	MKP4T021504B00_ _ _ _	7	14	18	15	MKP4U021504D00_ _ _ _
0.022 „	6	12.5	18	15	MKP4T022204C00_ _ _ _	8	15	18	15	MKP4U022204F00_ _ _ _
0.033 „	7	14	18	15	MKP4T023304D00_ _ _ _	9	16	18	15	MKP4U023304J00_ _ _ _
	6	15	26.5	22.5	MKP4T023305B00_ _ _ _	6	15	26.5	22.5	MKP4U023305B00_ _ _ _
0.047 „	9	16	18	15	MKP4T024704J00_ _ _ _	7	16.5	26.5	22.5	MKP4U024705D00_ _ _ _
	6	15	26.5	22.5	MKP4T024705B00_ _ _ _					
0.068 „	7	16.5	26.5	22.5	MKP4T026805D00_ _ _ _	8.5	18.5	26.5	22.5	MKP4U026805F00_ _ _ _
0.1 µF	8.5	18.5	26.5	22.5	MKP4T031005F00_ _ _ _	11	21	26.5	22.5	MKP4U031005I00_ _ _ _

* AC voltages: f ⩽ 400 Hz; 1.4 x U_{rms} + UDC ⩽ U_r

New ranges

** PCM = Printed circuit module = pin spacing

Dims in mm



ø d	PCM	W
0.5	7.5	= 3
0.6	7,5	⩾ 4
0.6	10	
0.8	15 - 27.5	
1.0	37.5	

Part number completion:

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

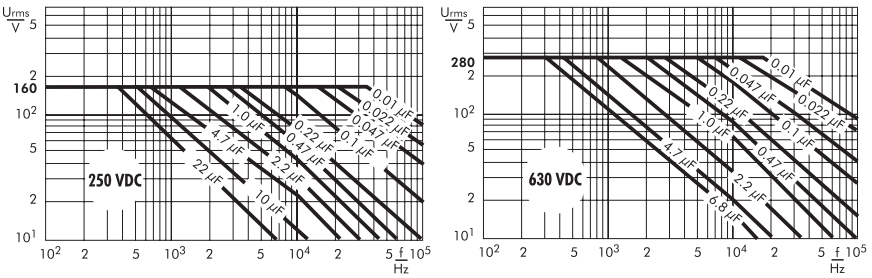
Packing: bulk = S

Pin length: 6-2 = SD

Taped version see page 145.

Rights reserved to amend design data without prior notification.

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



Recommendation for Processing and Application of Through-Hole Capacitors

Soldering Process

Internal temperature of the capacitor must be kept as follows:

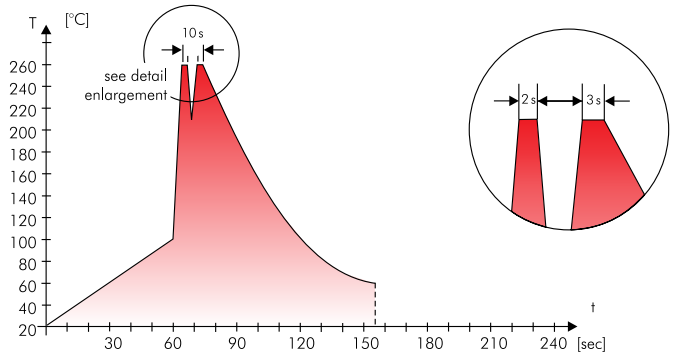
Polyester:	preheating:	$T_{max.} \leqslant 125°$ C
	soldering:	$T_{max.} \leqslant 135°$ C
Polypropylene:	preheating:	$T_{max.} \leqslant 100°$ C
	soldering:	$T_{max.} \leqslant 110°$ C

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

Double wave soldering
Soldering bath temperature: T < 260° C
Dwell time: Σt < 5 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 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**
- **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 2011/65/EU certain hazardous substances like e.g. lead, cadmium, mercury must not be used any longer in electronic equipment as of July 1st, 2006. For the sake of the environment WIMA has refraind from using such substances since years already.

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

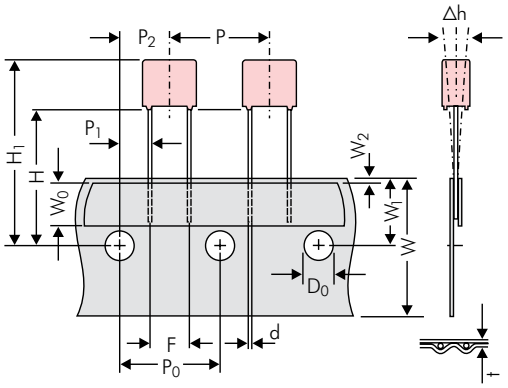


Diagram 1:
PCM 2.5/5/7.5mm

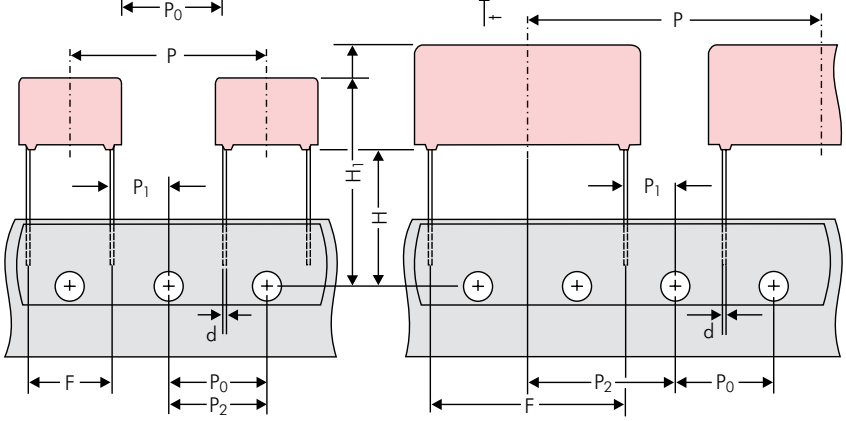


Diagram 2: PCM 10/15 mm

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	16.5 ±0.3	16.5 ±0.5	16.5 ±0.5	16.5 ±0.5	16.5 ±0.5	16.5 ±0.5
		18.5 ±0.5	18.5 ±0.5	18.5 ±0.5	18.5 ±0.5	18.5 ±0.5	18.5 ±0.5	18.5 ±0.5
Feed hole centre to top edge of the component	H_1	$H+H_{component} < H_1$ 32.25 max.	$H+H_{component} < H_1$ 32.25 max.	$H+H_{component} < H_1$ 24.5 to 31.5	$H+H_{component} < H_1$ 25.0 to 31.5	$H+H_{component} < H_1$ 26.0 to 37.0	$H+H_{component} < H_1$ 30.0 to 43.0	$H+H_{component} < H_1$ 35.0 to 45.0
Pin spacing at upper edge of carrier tape	F	2.5 ±0.5	5.0 +0.8 −0.2	7.5 ±0.8	10.0 ±0.8	15 ±0.8	22.5 ±0.8	27.5 ±0.8
Pin diameter	d	0.4 ±0.05	0.5 ±0.05	•0.5 ±0.05 or 0.6 +0.06 −0.05	•0.5 ±0.05 or 0.6 +0.06 −0.05	0.8 +0.08 −0.05	0.8 +0.08 −0.05	0.8 +0.08 −0.05
Component alignment	Δh	± 2.0 max.	± 2.0 max.	± 3.0 max.	± 3.0 max.	± 3.0 max.	± 3.0 max.	± 3.0 max.
Total tape thickness	t	0.7 ±0.2	0.7 ±0.2	0.7 ±0.2	0.7 ±0.2	0.7 ±0.2	0.7 ±0.2	0.7 ±0.2
Package (see also page 146)		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 147.						

Dims in mm.

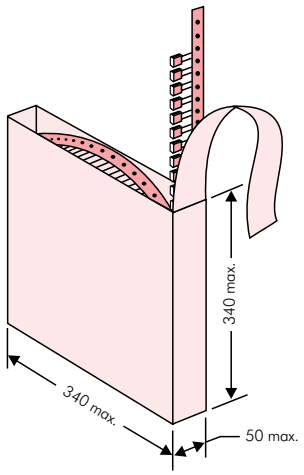
• Diameter of pins see General Data.

Please clarify customer-specific deviations with the manufacturer.

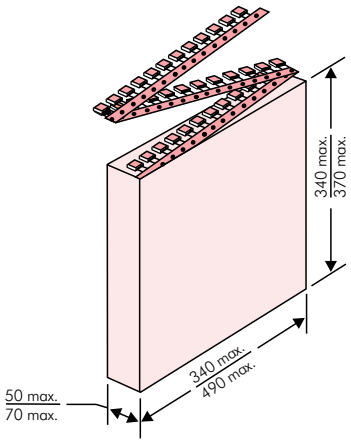
* PCM 10 and PCM 15 can be crimped to PCM 7.5.
Position of components according to PCM 7.5 (sketch 1). P_0 = 12.7 or 15.0 is possible

Types of Tape Packaging of Capacitors for Automatic Radial Insertion

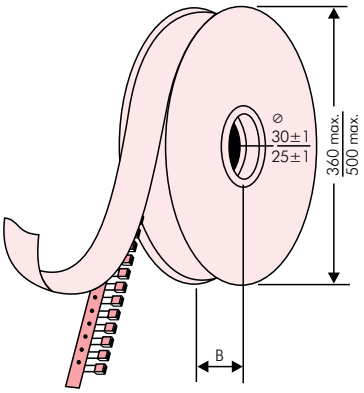
ROLL Packaging



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.



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			
								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	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		–		400		–	
7.5 mm	2.5	7	10	**2A**	5000	–		2500		4400		2500		–	
	3	8.5	10	**2B**	5000	–		2200		4300		2300		4150	
	4	9	10	**2C**	4000	–		1700		3200		1700		3100	
	4.5	9.5	10.3	**2D**	3500	–		1500		2900		1400		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				pcs. per packing unit											
					bulk	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	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.

Rights reserved to amend design data without prior notification.

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)

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-PEN	= SMDN
SMD-PPS	= SMDI
FKP 02	= FKP0
MKS 02	= MKS0
FKS 2	= FKS2
FKP 2	= FKP2
FKS 3	= FKS3
FKP 3	= FKP 3
MKS 2	= MKS2
MKP 2	= MKP2
MKS 4	= MKS4
MKP 4C	= MKPC
MKP 4	= MKP4
MKP 10	= MKP1
FKP 1	= FKP1
MKP-X2	= MKX2
MKP-X1 R	= MKX1
MKP-Y2	= MKY2
MP 3-X2	= MPX2
MP 3-X1	= MPX1
MP 3-Y2	= MPY2
MP 3R-Y2	= MPRY
MKP 4F	= MKPF
Snubber MKP	= SNMP
Snubber FKP	= SNFP
GTO MKP	= GTOM
DC-LINK MKP 3	= DCP3
DC-LINK MKP 4	= DCP4
DC-LINK MKP 4S	= DCPS
DC-LINK MKP 5	= DCP5
DC-LINK MKP 6	= DCP6
DC-LINK HC	= DCHC
DC-LINK HY	= DCHY

Rated voltage:

50 VDC	= B0
63 VDC	= C0
100 VDC	= D0
250 VDC	= F0
400 VDC	= G0
450 VDC	= H0
520 VDC	= H2
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
305 VAC	= AW
350 VAC	= BW
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
1000 µF	= 7100
1500 µF	= 7150
...	

Size:

4.8 x 3.3 x 3 Size 1812	= KA
4.8 x 3.3 x 4 Size 1812	= KB
5.7 x 5.1 x 3.5 Size 2220	= QA
5.7 x 5.1 x 4.5 Size 2220	= QB
7.2 x 6.1 x 3 Size 2824	= TA
7.2 x 6.1 x 5 Size 2824	= TB
10.2 x 7.6 x 5 Size 4030	= VA
12.7 x 10.2 x 6 Size 5040	= XA
15.3 x 13.7 x 7 Size 6054	= YA
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
19 x 31 x 56 PCM 48.5	= 8D
25 x 45 x 57 PCM 52.5	= 9D
...	

Version code:

Standard	= 00
Version A1	= 1A
Version A1.1.1	= 1B
Version A2	= 2A
...	

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/TPS Standard	= S
...	

Pin length (untaped)

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

Pin length (taped)

none	= 00

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.