

**Polypropylene (PP) Capacitors for Very High Pulse Applications with Metal Foil Electrodes and Metallized Internal Series Connection in PCM 15 mm to 52.5 mm. Capacitances from 100 pF to 4.7  $\mu$ F. Rated Voltages from 400 VDC to 6000 VDC.**

## Special Features

- Extremely high pulse duty
- Self-healing
- Internal series connection
- Very low dissipation factor
- Negative capacitance change versus temperature
- AEC-Q200 qualified
- According to RoHS 2011/65/EU

## Typical Applications

For high pulse and high frequency applications e.g.

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

## Construction

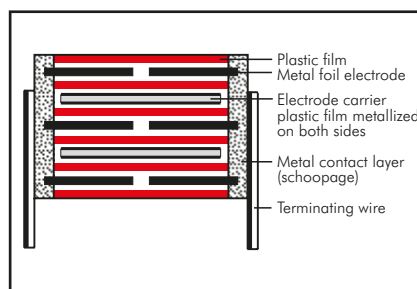
### Dielectric:

Polypropylene (PP) film

### Capacitor electrodes:

Aluminium foil and double-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 4.7  $\mu$ F (E12-values on request)

### Rated voltages:

400 VDC, 630 VDC, 1000 VDC, 1250 VDC, 1600 VDC, 2000 VDC, 4000 VDC, 6000 VDC

### Capacitance tolerances:

$\pm 20\%$ ,  $\pm 10\%$ ,  $\pm 5\%$  (other tolerances are available subject to special enquiry)

### Operating temperature range:

$-55^{\circ}\text{C}$  to  $+105^{\circ}\text{C}$

### Climatic test category:

55/100/56 in accordance with IEC

### Test voltage: 2 sec

PCM	< 4000 VDC	4000 VDC	6000 VDC
< 37.5	$2 U_r$	$2 U_r$	$1.6 U_r$
$\geq 37.5$	$2 U_r$	$1.6 U_r$	$1.2 U_r$

### Dissipation factors at $+20^{\circ}\text{C}$ : $\tan \delta$

at f	$C \leq 0.1 \mu\text{F}$	$0.1 \mu\text{F} < C \leq 1.0 \mu\text{F}$	$C > 1.0 \mu\text{F}$
1 kHz	$\leq 5 \times 10^{-4}$	$\leq 5 \times 10^{-4}$	$\leq 5 \times 10^{-4}$
10 kHz	$\leq 6 \times 10^{-4}$	$\leq 6 \times 10^{-4}$	-
100 kHz	$\leq 10 \times 10^{-4}$	-	-

### Maximum pulse rise time:

Capacitance pF/ $\mu$ F	max. pulse rise time V/ $\mu$ sec at $T_A < 40^{\circ}\text{C}$							
	400VDC	630VDC	1000VDC	1250VDC	1600VDC	2000VDC	4000VDC	6000VDC
100 ... 220	-	-	-	-	56000	56000	-	-
330 ... 680	-	-	-	-	51000	56000	56000	56000
1000 ... 2200	29000	29000	29000	29000	46000	51000	51000	51000
3300 ... 6800	9000	14000	27000	29000	29000	29000	29000	29000
0.01 ... 0.022	9000	11000	11000	11000	11000	13000	13000	13000
0.033 ... 0.068	9000	11000	11000	11000	11000	11000	13000	13000
0.1 ... 0.22	7000	11000	11000	11000	11000	11000	13000	13000
0.33 ... 0.68	6000	10000	11000	11000	11000	11000	-	-
1.0 ... 2.2	5000	6600	8300	9500	11000	-	-	-
3.3 ... 4.7	2500	-	-	-	-	-	-	-

## Mechanical Tests

### Pull test on pins:

$d \leq 0.8 \text{ mm}$ : 10 N in direction of pins  
 $d > 0.8 \text{ mm}$ : 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/400 VAC*				
	W	H	L	PCM**	Part number	W	H	L	PCM**	Part number
1000 pF	5	11	18	15	FKP1G011004B	5	11	18	15	FKP1J011004B
1500 "	5	11	18	15	FKP1G011504B	5	11	18	15	FKP1J011504B
2200 "	5	11	18	15	FKP1G012204B	5	11	18	15	FKP1J012204B
3300 "	5	11	18	15	FKP1G013304B	5	11	18	15	FKP1J013304B
4700 "	5	11	18	15	FKP1G014704B	5	11	18	15	FKP1J014704B
6800 "	5	11	18	15	FKP1G016804B	6	12.5	18	15	FKP1J016804C
0.01 µF	5	11	18	15	FKP1G021004B	7	14	18	15	FKP1J021004D
0.015 "	6	12.5	18	15	FKP1G021504C	5	14	26.5	22.5	FKP1J021005A
0.022 "	7	14	18	15	FKP1G022204D	8	15	18	15	FKP1J021504F
0.033 "	5	14	26.5	22.5	FKP1G022205A	6	15	26.5	22.5	FKP1J021505B
0.047 "	8	15	18	15	FKP1G023304F	7	16.5	26.5	22.5	FKP1J022205D
0.068 "	6	15	26.5	22.5	FKP1G023305B	8.5	18.5	26.5	22.5	FKP1J023305F
0.1 µF	7	16.5	26.5	22.5	FKP1G024705D	10.5	20.5	26.5	22.5	FKP1J024705H
0.15 "	8.5	18.5	26.5	22.5	FKP1G026805F	9	19	31.5	27.5	FKP1J024706A
0.22 "	10.5	20.5	26.5	22.5	FKP1G031005H	11	21	31.5	27.5	FKP1J026806B
0.33 "	9	19	31.5	27.5	FKP1G031006A	9	19	41.5	37.5	FKP1J026807A
0.47 "	11	21	31.5	27.5	FKP1G031506B	13	24	31.5	27.5	FKP1J031006D
0.68 "	13	24	31.5	27.5	FKP1G032206D	11	22	41.5	37.5	FKP1J031007B
1.0 µF	11	22	41.5	37.5	FKP1G032207B	13	24	41.5	37.5	FKP1J031507C
1.5 "	13	24	41.5	37.5	FKP1G033307C	15	26	41.5	37.5	FKP1J032207D
2.2 "	11	22	41.5	37.5	FKP1G034707E	19	32	41.5	37.5	FKP1J033307F
3.3 "	13	24	41.5	37.5	FKP1G036807F	20	39.5	41.5	37.5	FKP1J034707G
4.7 "	17	29	41.5	37.5	FKP1G041007G	24	45.5	41.5	37.5	FKP1J036807H
6.8 "	19	32	41.5	37.5	FKP1G041507I	35	50	41.5	37.5	FKP1J041007J
10 "	20	39.5	41.5	37.5	FKP1G042207J	40	55	41.5	37.5	FKP1J041507K
15 "	31	46	41.5	37.5	FKP1G043309F	35	50	57	52.5	FKP1J041509F
22 "	35	50	41.5	37.5	FKP1G044709J	45	55	57	52.5	FKP1J042209H
33 "	35	50	57	52.5						
47 "	45	65	57	52.5						

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

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

Dims. in mm.

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

Part number completion:	
Version code:	2-pin = 00
	4-pin = D4
Tolerance:	20 % = M
	10 % = K
	5 % = J
Packing:	bulk = S
Pin length:	6-2 = SD
Taped version see page 157.	

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## Continuation

### General Data

Capacitance	1000 VDC/600 VAC*					Part number
	W	H	L	PCM**		
1000 pF	5	11	18	15		FKP1O111004B_____
1500 "	5	11	18	15		FKP1O111504B_____
2200 "	5	11	18	15		FKP1O112204B_____
3300 "	5	11	18	15		FKP1O113304B_____
4700 "	6	12.5	18	15		FKP1O114704C_____
6800 "	7	14	18	15		FKP1O116804D_____
0.01 µF	8	15	18	15		FKP1O121004F_____
	6	15	26.5	22.5		FKP1O121005B_____
0.015 "	6	15	26.5	22.5		FKP1O121505B_____
0.022 "	8.5	18.5	26.5	22.5		FKP1O122205F_____
0.033 "	10.5	20.5	26.5	22.5		FKP1O123305H_____
	9	19	31.5	27.5		FKP1O123306A_____
0.047 "	11	21	31.5	27.5		FKP1O124706B_____
0.068 "	13	24	31.5	27.5		FKP1O126806D_____
	11	22	41.5	37.5		FKP1O126807B_____
0.1 µF	13	24	41.5	37.5		FKP1O131007C_____
0.15 "	15	26	41.5	37.5		FKP1O131507D_____
0.22 "	19	32	41.5	37.5		FKP1O132207F_____
0.33 "	20	39.5	41.5	37.5		FKP1O133307G_____
0.47 "	31	46	41.5	37.5		FKP1O134707I_____
0.68 "	35	50	41.5	37.5		FKP1O136807J_____
1.0 µF	40	55	41.5	37.5		FKP1O141007K_____
	35	50	57	52.5		FKP1O141009F_____
1.5 "	45	55	57	52.5		FKP1O141509H_____
2.2 "	45	65	57	52.5		FKP1O142209J_____

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

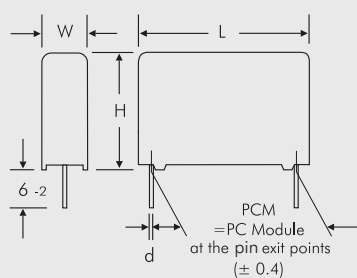
\*\* PCM = Printed circuit module = pin spacing

Dims. in mm.

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

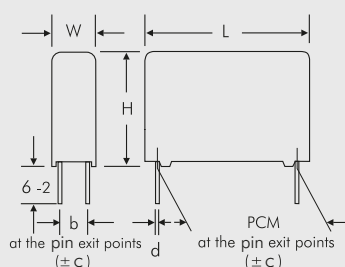
Part number completion:	
Version code:	2-pin = 00
	4-pin = D4
Tolerance:	20 % = M
	10 % = K
	5 % = J
Packing:	bulk = S
Pin length:	6-2 = SD
Taped version see page 157.	

#### 2-pin version



Ø d	PCM
0.8	15 - 27.5
1.0	37.5

#### 4-pin version



W	PCM	b	Ø d	c
17	37.5	10	1.0	0.4
19	37.5	10	1.0	0.4
20	37.5	12.5	1.0	0.4
24	37.5	12.5	1.0	0.4
31	37.5	20	1.0	0.4
35	37.5	20	1.0	0.4
40	37.5	20	1.0	0.4
35	52.5	20	1.2	0.8
45	52.5	20	1.2	0.8

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## Continuation

### General Data

Capacitance	1250 VDC/600 VAC*					1600 VDC/650 VAC*				
	W	H	L	PCM**	Part number	W	H	L	PCM**	Part number
100 pF						5	11	18	15	FKP1T001004B
150 "						5	11	18	15	FKP1T001504B
220 "						5	11	18	15	FKP1T002204B
330 "						5	11	18	15	FKP1T003304B
470 "						5	11	18	15	FKP1T004704B
680 "						5	11	18	15	FKP1T006804B
1000 pF	5	11	18	15	FKP1R011004B	6	12.5	18	15	FKP1T011004C
1500 "	5	11	18	15	FKP1R011504B	5	14	26.5	22.5	FKP1T011005A
2200 "	5	11	18	15	FKP1R012204B	7	14	18	15	FKP1T011504D
3300 "	6	12.5	18	15	FKP1R013304C	5	14	26.5	22.5	FKP1T011505A
4700 "	7	14	18	15	FKP1R014704D	8	15	18	15	FKP1T012204F
6800 "	8	15	18	15	FKP1R016804F	5	14	26.5	22.5	FKP1T012205A
	5	14	26.5	22.5	FKP1R016805A	6	15	26.5	22.5	FKP1T013305B
0.01 µF	7	16.5	26.5	22.5	FKP1R021005D	7	16.5	26.5	22.5	FKP1T014705D
0.015 "	8.5	18.5	26.5	22.5	FKP1R021505F	8.5	18.5	26.5	22.5	FKP1T016805F
0.022 "	10.5	20.5	26.5	22.5	FKP1R022205H					
0.033 "	11	21	31.5	27.5	FKP1R023306B					
	9	19	41.5	37.5	FKP1R023307A					
0.047 "	13	24	31.5	27.5	FKP1R024706D					
	11	22	41.5	37.5	FKP1R024707B					
0.068 "	11	22	41.5	37.5	FKP1R026807B					
0.1 µF	15	26	41.5	37.5	FKP1R031007D					
0.15 "	17	29	41.5	37.5	FKP1R031507E					
0.22 "	19	32	41.5	37.5	FKP1R032207F					
0.33 "	24	45.5	41.5	37.5	FKP1R033307H					
0.47 "	31	46	41.5	37.5	FKP1R034707I					
0.68 "	40	55	41.5	37.5	FKP1R036807K					
1.0 µF	35	50	57	52.5	FKP1R041009F					
1.5 "	45	65	57	52.5	FKP1R041509J					

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

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

Dims. in mm.

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

Part number completion:		
Version code:	2-pin	= 00
	4-pin	= D4
Tolerance:	20 %	= M
	10 %	= K
	5 %	= J
Packing:	bulk	= S
Pin length:	6-2	= SD
Taped version see page 157.		

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## Continuation

### General Data

Capacitance	2000 VDC/700 VAC*					4000 VDC/700 VAC*				
	W	H	L	PCM**	Part number	W	H	L	PCM**	Part number
100 pF	5	11	18	15	FKP1U001004B					
150 "	5	11	18	15	FKP1U001504B					
220 "	5	11	18	15	FKP1U002204B					
330 "	6	12.5	18	15	FKP1U003304C					
470 "	6	12.5	18	15	FKP1U004704C	5	14	26.5	22.5	FKP1X004705A
680 "	6	12.5	18	15	FKP1U006804C	5	14	26.5	22.5	FKP1X006805A
1000 pF	7	14	18	15	FKP1U011004D	5	14	26.5	22.5	FKP1X011005A
	5	14	26.5	22.5	FKP1U011005A					
1500 "	6	15	26.5	22.5	FKP1U011505B	7	16.5	26.5	22.5	FKP1X011505D
2200 "	7	16.5	26.5	22.5	FKP1U012205D	8.5	18.5	26.5	22.5	FKP1X012205F
3300 "	7	16.5	26.5	22.5	FKP1U013305D	10.5	20.5	26.5	22.5	FKP1X013305H
4700 "	8.5	18.5	26.5	22.5	FKP1U014705F	11	21	31.5	27.5	FKP1X014706B
6800 "	10.5	20.5	26.5	22.5	FKP1U016805H	13	24	31.5	27.5	FKP1X016806D
0.01 µF	11	21	31.5	27.5	FKP1U021006B	15	26	31.5	27.5	FKP1X021006F
0.015 "	13	24	31.5	27.5	FKP1U021506D	13	24	41.5	37.5	FKP1X021507C
0.022 "	15	26	31.5	27.5	FKP1U022206F	17	29	41.5	37.5	FKP1X022207E
	13	24	41.5	37.5	FKP1U022207C					
0.033 "	13	24	41.5	37.5	FKP1U023307C	20	39.5	41.5	37.5	FKP1X023307G
0.047 "	17	29	41.5	37.5	FKP1U024707E	24	45.5	41.5	37.5	FKP1X024707H
0.068 "	19	32	41.5	37.5	FKP1U026807F	31	46	41.5	37.5	FKP1X026807I
0.1 µF	20	39.5	41.5	37.5	FKP1U031007G	35	50	41.5	37.5	FKP1X031007J
0.15 "	24	45.5	41.5	37.5	FKP1U031507H	40	55	41.5	37.5	FKP1X031507K
0.22 "	35	50	41.5	37.5	FKP1U032207J	45	55	57	52.5	FKP1X032209H
0.33 "	40	55	41.5	37.5	FKP1U033307K					
0.47 "	45	55	57	52.5	FKP1U034709H					
0.68 "	45	65	57	52.5	FKP1U036809J					

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

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

Dims. in mm.

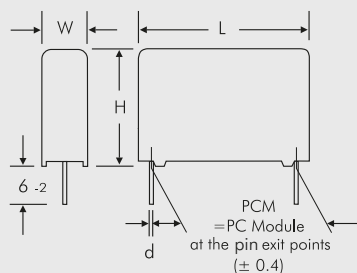
Ionisation inception level in isolated cases may be lower than admissible rated AC voltage.

#### Part number completion:

Version code: 2-pin = 00  
 4-pin = D4  
 Tolerance: 20 % = M  
 10 % = K  
 5 % = J  
 Packing: bulk = S  
 Pin length: 6-2 = SD

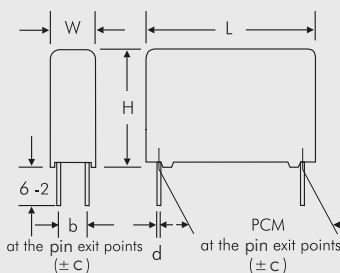
Taped version see page 157.

#### 2-pin version



Ø d	PCM
0.8	15 - 27.5
1.0	37.5

#### 4-pin version



W	PCM	b	Ø d	c
17	37.5	10	1.0	0.4
19	37.5	10	1.0	0.4
20	37.5	12.5	1.0	0.4
24	37.5	12.5	1.0	0.4
31	37.5	20	1.0	0.4
35	37.5	20	1.0	0.4
40	37.5	20	1.0	0.4
35	52.5	20	1.2	0.8
45	52.5	20	1.2	0.8

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## Continuation

### General Data

Capacitance	6000 VDC/700 VAC*					Part number
	W	H	L	PCM**		
470 pF	5	14	26.5	22.5		FKP1Y004705A
680 "	5	14	26.5	22.5		FKP1Y006805A
1000 pF	5	14	26.5	22.5		FKP1Y011005A
1500 "	7	16.5	26.5	22.5		FKP1Y011505D
2200 "	10.5	20.5	26.5	22.5		FKP1Y012205H
3300 "	10.5	20.5	26.5	22.5		FKP1Y013305H
4700 "	11	21	31.5	27.5		FKP1Y014706B
6800 "	13	24	31.5	27.5		FKP1Y016806D
0.01 µF	15	26	31.5	27.5		FKP1Y021006F
0.015 "	13	24	41.5	37.5		FKP1Y021507C
0.022 "	17	29	41.5	37.5		FKP1Y022207E
0.033 "	20	39.5	41.5	37.5		FKP1Y023307G
0.047 "	24	45.5	41.5	37.5		FKP1Y024707H
0.068 "	31	46	41.5	37.5		FKP1Y026807I
0.1 µF	35	50	41.5	37.5		FKP1Y031007J
0.15 "	40	55	41.5	37.5		FKP1Y031507K
0.22 "	45	55	57	52.5		FKP1Y032209H

Dims. in mm.

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

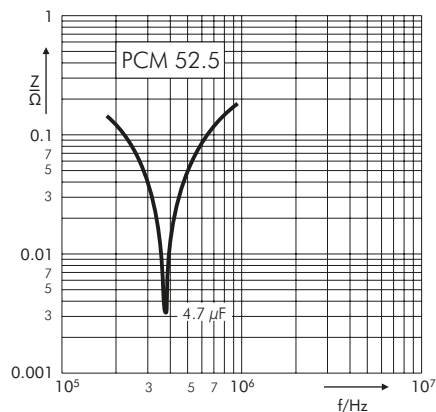
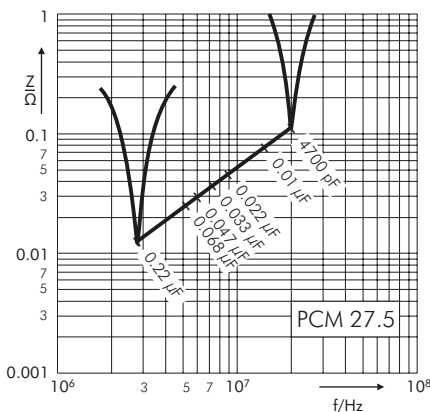
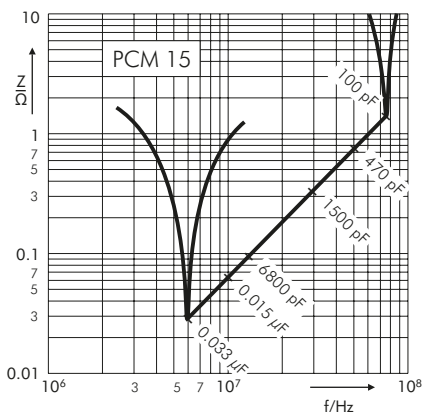
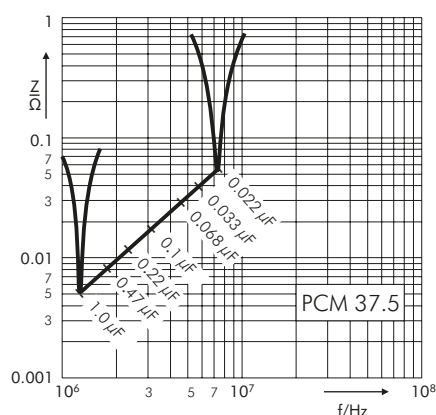
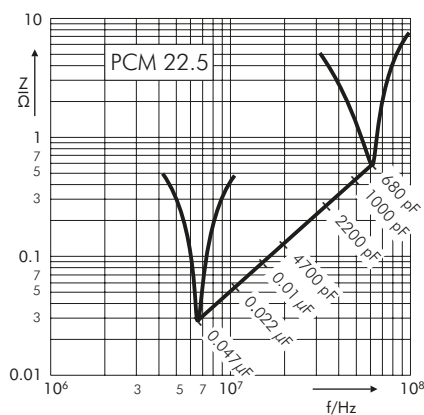
Part number completion:	
Version code:	2-pin = 00
	4-pin = D4
Tolerance:	20 % = M
	10 % = K
	5 % = J
Packing:	bulk = S
Pin length:	6-2 = SD
Taped version see page 157.	

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

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

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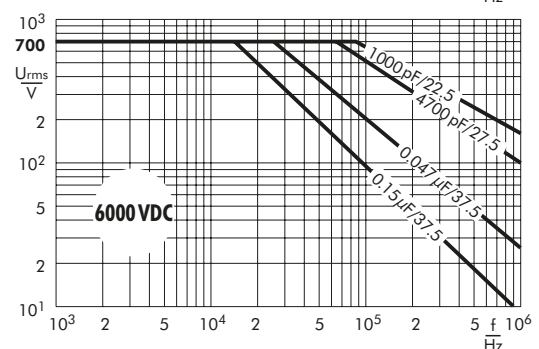
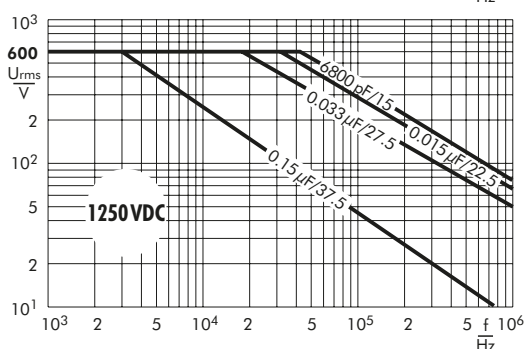
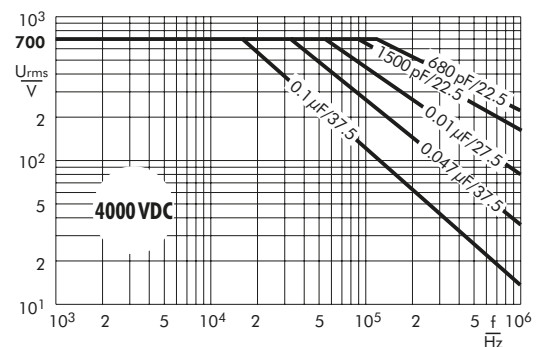
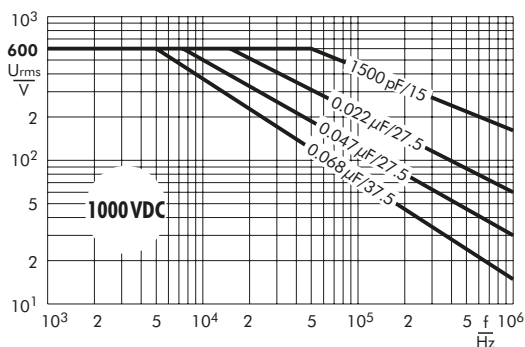
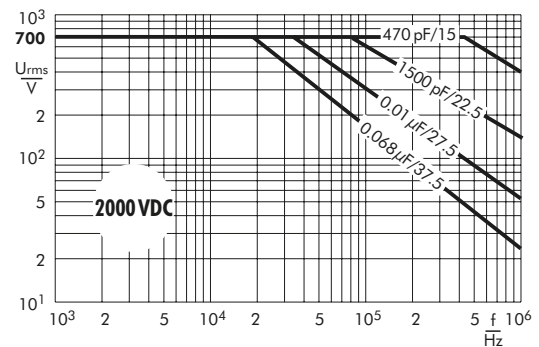
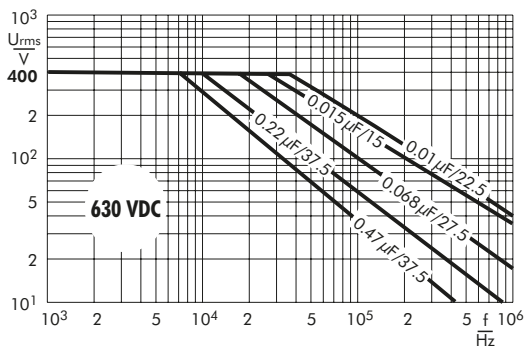
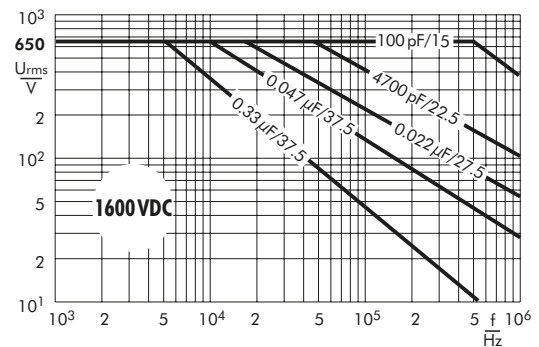
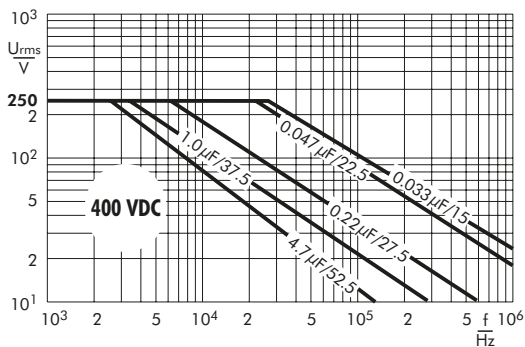
Impedance change with frequency  
(general guide).



## Continuation

Permissible AC voltage in relation to frequency till  
15° C internal temperature rise (general guide).

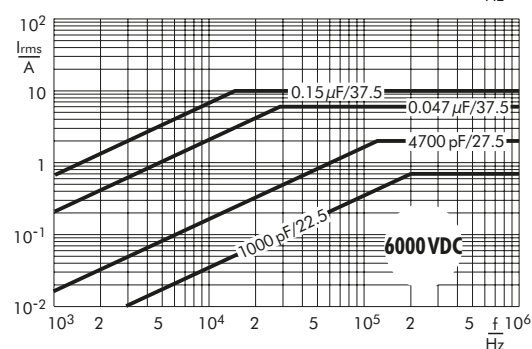
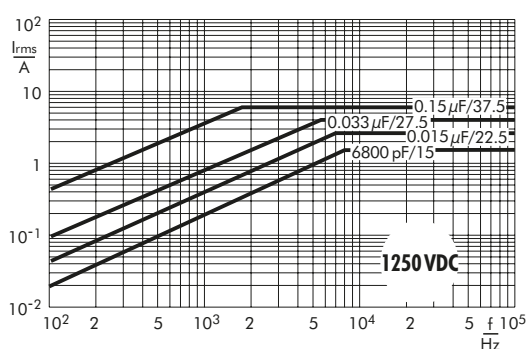
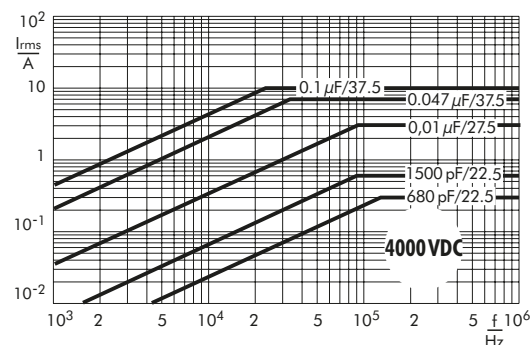
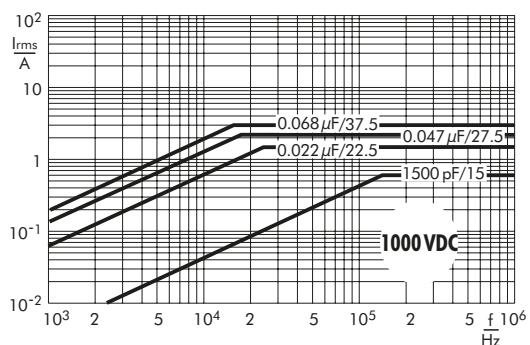
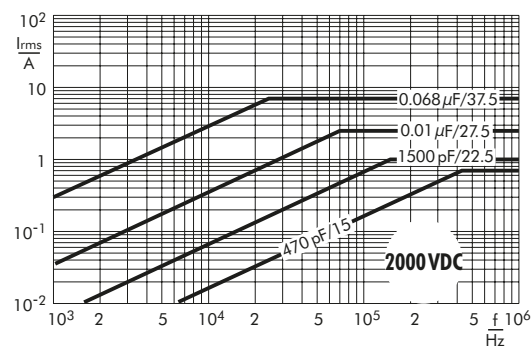
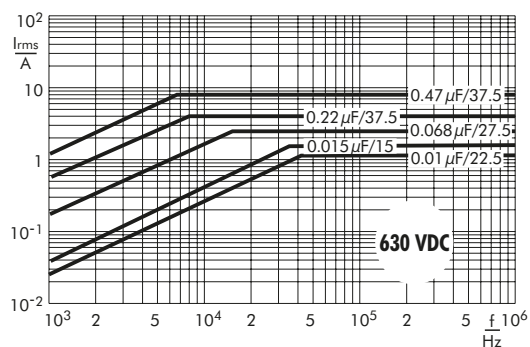
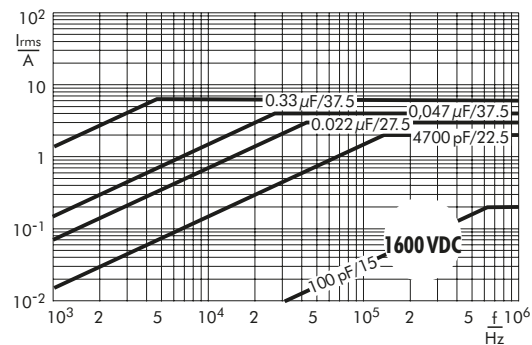
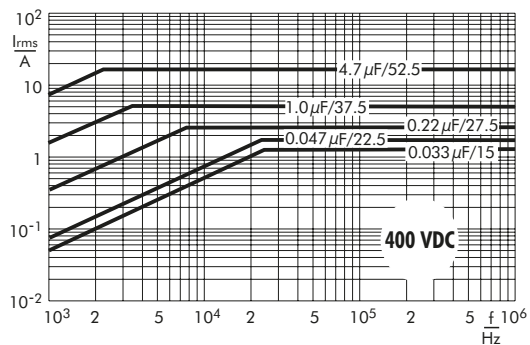
The information behind the cross bar denote the PCM  
of the measured value.



## Continuation

Permissible AC current in relation to frequency till  
15° C internal temperature rise (general guide).

The information behind the cross bar denote the PCM  
of the measured value.





## Recommendation for Processing and Application of Through-Hole Capacitors

### Soldering Process

Internal temperature of the capacitor must be kept as follows:

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

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

#### Single wave soldering

Soldering bath temperature:  $T < 260^{\circ}\text{C}$

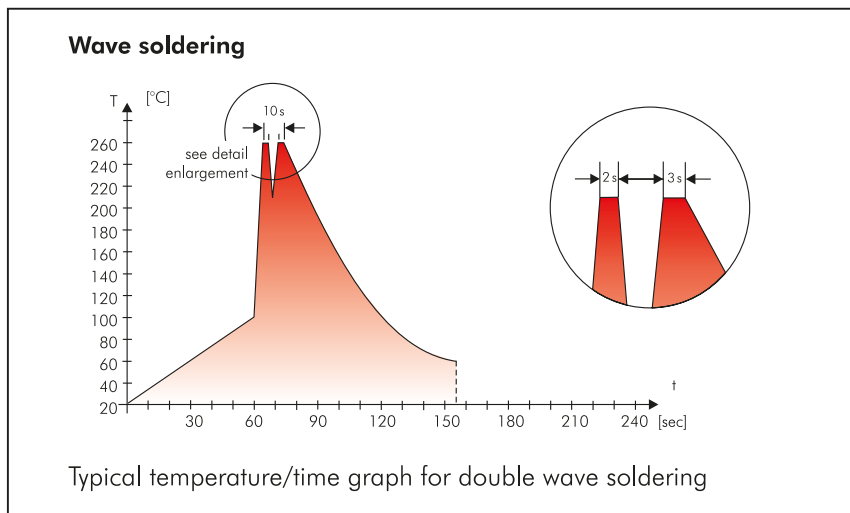
Dwell time:  $t < 5\text{ sec}$

#### Double wave soldering

Soldering bath temperature:  $T < 260^{\circ}\text{C}$

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

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



## WIMA Quality and Environmental Philosophy

### ISO 9001:2015 Certification

ISO 9001:2015 is an international basic standard of quality assurance systems for all branches of industry. The approval according to ISO 9001:2015 of our factories 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:

- adhesive tapes made of plastic
- metal clips

### RoHS Compliance

According to the RoHS Directive 2015/863/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 re-frained from using such substances since years already.



WIMA Kondensatoren sind bleifrei konform RoHS 2015/863/EU

WIMA capacitors are lead free in accordance with RoHS 2015/863/EU

Tape for lead-free WIMA capacitors

### DIN EN ISO 14001:2004

WIMA's environmental management has been established in accordance with the guidelines of DIN EN ISO 14001:2004 to optimize the production processes with regard to energy and resources.

## Typical Dimensions for Taping Configuration

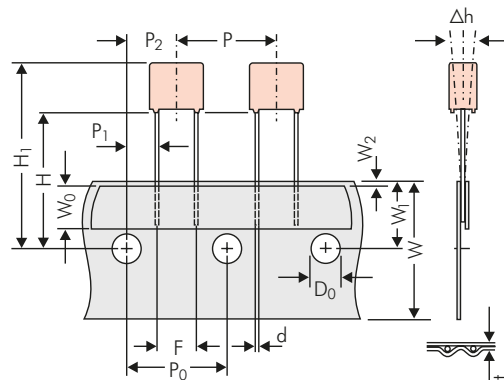


Diagram 1:  
PCM 2.5/5/7.5mm

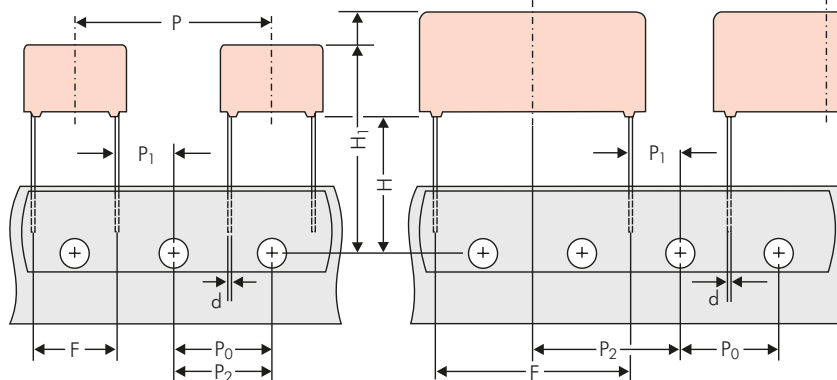


Diagram 2: PCM 10/15 mm

Diagram 3: PCM 22.5 and 27.5\*mm

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

Designation	Symbol	Dimensions for Radial Taping						
		PCM 2.5 taping	PCM 5 taping	PCM 7.5 taping	PCM 10 taping*	PCM 15 taping*	PCM 22.5 taping	PCM 27.5 taping
Carrier tape width	W	18.0 ±0.5	18.0 ±0.5	18.0 ±0.5	18.0 ±0.5	18.0 ±0.5	18.0 ±0.5	18.0 ±0.5
Hold-down tape width	W <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 error max. 1.0 mm/20 pitch	12.7 ±0.3 error max. 1.0 mm/20 pitch	12.7 ±0.3 error max. 1.0 mm/20 pitch	12.7 ±0.3 error max. 1.0 mm/20 pitch	12.7 ±0.3 error max. 1.0 mm/20 pitch	12.7 ±0.3 error max. 1.0 mm/20 pitch	12.7 ±0.3 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 ±0.3 18.5 ±0.5	16.5 ±0.3 18.5 ±0.5	16.5 ±0.3 18.5 ±0.5	16.5 ±0.3 18.5 ±0.5	16.5 ±0.3 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	0.6 ±0.2	0.6 ±0.2	0.6 ±0.2	0.6 ±0.2	0.6 ±0.2	0.6 ±0.2	0.6 ±0.2
Package (see also page 158)	▲	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 or 66 ±2	REEL Ø 500 max. Ø 25 ±1	B 54 ±2 60 ±2 or 68 ±2 depending on PCM and component dimensions
Unit		see details page 159.						

▲ When ordering please specify dimension H and required packaging type.

Dims in mm.

• Diameter of pins see General Data.

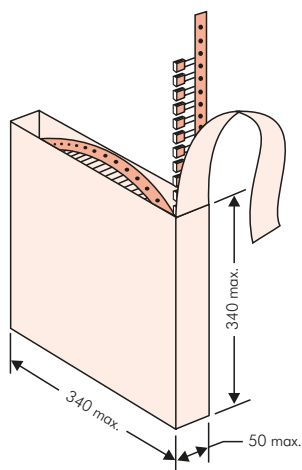
Please clarify customer-specific deviations with the manufacturer.

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

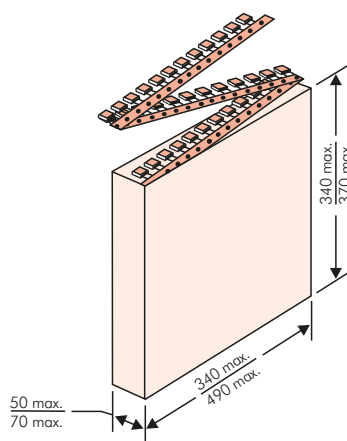
Position of components according to PCM 7.5 (sketch 1). P<sub>0</sub> = 12.7 or 15.0 is possible

## Types of Tape Packaging of Capacitors for Automatic Radial Insertion

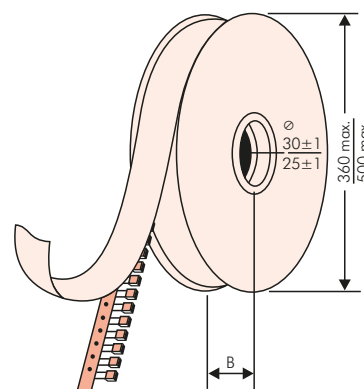
### ■ ROLL Packaging



### ■ AMMO Packaging



### ■ REEL Packaging



## BAR CODE (Labelling)

Labelling of package units in plain text and with alphanumeric 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

<b>WIMA</b> Best Capacitors Made in Germany Werk Aurich	
Supplier-ID: LIEF.NR.	Date Code: 20210419
Purchase Order No. (P/O): Bestellung xyz	P/O line: 100
Customer Part No.: KUNDENTEILENUMMER	
WIMA Part No.: MKP1F041006B00KSSD	Quantity: 459
WIMA Confirmation No.: 0001105072000100	
Customer No.: 0000100002	RoHS 2011/65/EU
Gross Weight [g]: 4557	COO: DE
WIMA – MKP 10      WIMA Part No.: MKP1F041006B00KSSD MKP 10 1.0 µF 250 VDC 11x21x31.5 RM27.5 Standard 10%      Loss – Standard      Drähte 6–2 Vorlage Debitor Inland	
	0001105072000100
1002021443	QTY: 459      Week 19/2021

## Packing Quantities for Capacitors with Radial Pins in PCM 2.5 mm to 27.5 mm



PCM	Size				bulk	ROLL		pcs. per packing unit				AMMO			
								REEL							
	W	H	L	Codes		H16.5	H18.5	Ø 360	Ø 500	340 x 340	490 x 370	H16.5	H18.5	H16.5	H18.5
					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	9	13	3C	3000	–		900		1600		–		1450	
	4	9.5	13	3D	3000	–		900		1600		–		1400	
	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	
	6	12.5	18	4C	2000	–		500		1000		–		1000	
	7	14	18	4D	1600	–		450		900		–		850	
	8	15	18	4F	1200	–		400		800		–		740	
	9	14	18	4H	1200	–		350		700		–		650	
	9	16	18	4J	900	–		350		700		–		650	
	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	
	8.5	18.5	26.5	5F	500	–		–		480		–		450	
	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	
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		–		–	
	15	26	31.5	6F	324*	–		–		270		–		–	
	17	29	31.5	6G	198*	–		–		–		–		–	
	17	34.5	31.5	6I	198*	–		–		–		–		–	
	20	39.5	31.5	6J	162*	–		–		–		–		–	

\* for 2-inch transport pitches.

\* TPS (Tray-Packing-System). Plate versions may have different packing units. Samples and pre-production needs on request.

Rights reserved to amend design data without prior notification.

## Packing Quantities for Capacitors with Radial Pins in PCM 37.5 mm to 52.5 mm

PCM	Size				bulk	ROLL		REEL				AMMO			
						H16.5	H18.5	Ø 360		Ø 500		340 x 340		490 x 370	
	W	H	L	Codes				H16.5	H18.5	H16.5	H18.5	H16.5	H18.5	H16.5	H18.5
					S	N	O	F	I	H	J	A	C	B	D
<b>37.5 mm**</b>	9	19	41.5	<b>7A</b>	441*	—	—	—	—	—	—	—	—	—	—
	11	22	41.5	<b>7B</b>	357*	—	—	—	—	—	—	—	—	—	—
	13	24	41.5	<b>7C</b>	294*	—	—	—	—	—	—	—	—	—	—
	15	26	41.5	<b>7D</b>	252*	—	—	—	—	—	—	—	—	—	—
	17	29	41.5	<b>7E</b>	154*	—	—	—	—	—	—	—	—	—	—
	19	32	41.5	<b>7F</b>	140*	—	—	—	—	—	—	—	—	—	—
	20	39.5	41.5	<b>7G</b>	126*	—	—	—	—	—	—	—	—	—	—
	24	45.5	41.5	<b>7H</b>	112*	—	—	—	—	—	—	—	—	—	—
	28	38	41.5	<b>7L</b>	84*	—	—	—	—	—	—	—	—	—	—
	31	46	41.5	<b>7I</b>	84*	—	—	—	—	—	—	—	—	—	—
	35	50	41.5	<b>7J</b>	35*	—	—	—	—	—	—	—	—	—	—
	40	55	41.5	<b>7K</b>	28*	—	—	—	—	—	—	—	—	—	—
<b>48.5 mm**</b>	19	31	56	<b>8D</b>	120*	—	—	—	—	—	—	—	—	—	—
	23	34	56	<b>8E</b>	80*	—	—	—	—	—	—	—	—	—	—
	27	37.5	56	<b>8H</b>	84*	—	—	—	—	—	—	—	—	—	—
	33	48	56	<b>8J</b>	25*	—	—	—	—	—	—	—	—	—	—
	37	54	56	<b>8L</b>	25*	—	—	—	—	—	—	—	—	—	—
<b>52.5 mm</b>	25	45	57	<b>9D</b>	70*	—	—	—	—	—	—	—	—	—	—
	30	45	57	<b>9E</b>	60*	—	—	—	—	—	—	—	—	—	—
	35	50	57	<b>9F</b>	25*	—	—	—	—	—	—	—	—	—	—
	45	55	57	<b>9H</b>	20*	—	—	—	—	—	—	—	—	—	—
	45	65	57	<b>9J</b>	20*	—	—	—	—	—	—	—	—	—	—

\* TPS (Tray-Packing-System). Plate versions may have different packing units.

\*\*For Snubber capacitors in 2-pin version the PCM is changing to 38.5 respective 49.5 mm.  
Samples and pre-production needs on request.

Rights reserved to amend design data without prior notification.

Updated data on [www.wima.com](http://www.wima.com)

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

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

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
M	K	S	2	C	0	2	1	0	0	1	A	0	0	M	S	S	D	
MKS 2				63 VDC		0.01 µF			2.5x6.5x7.2			-		20%	bulk	6 -2		
<b>Type description:</b>				<b>Rated voltage:</b>		<b>Capacitance:</b>			<b>Size:</b>					<b>Tolerance:</b>				
SMD-PET = SMDT				50 VDC = B0		22 pF = 0022			4.8x3.3x3 Size 1812 = KA					±20% = M				
SMD-PEN = SMDN				63 VDC = C0		47 pF = 0047			4.8x3.3x4 Size 1812 = KB					±10% = K				
SMD-PPS = SMDI				100 VDC = D0		100 pF = 0100			5.7x5.1x3.5 Size 2220 = QA					±5% = J				
FKP 02 = FKPO				250 VDC = F0		150 pF = 0150			5.7x5.1x4.5 Size 2220 = QB					±2.5% = H				
MKS 02 = MKS0				400 VDC = G0		220 pF = 0220			7.2x6.1x3 Size 2824 = TA					±1% = E				
FKS 2 = FKS2				450 VDC = H0		330 pF = 0330			7.2x6.1x5 Size 2824 = TB					...				
FKP 2 = FKP2				520 VDC = H2		470 pF = 0470			10.2x7.6x5 Size 4030 = VA									
FKS 3 = FKS3				600 VDC = I0		680 pF = 0680			12.7x10.2x6 Size 5040 = XA									
FKP 3 = FKP 3				630 VDC = J0		1000 pF = 1100			15.3x13.7x7 Size 6054 = YA									
MKS 2 = MKS2				700 VDC = K0		1500 pF = 1150			2.5x7x4.6 PCM2.5 = 0B							AMMO H16.5 340x340 = A		
MKP 2 = MKP2				800 VDC = L0		2200 pF = 1220			3x7.5x4.6 PCM2.5 = 0C							AMMO H16.5 490x370 = B		
MKS 4 = MKS4				850 VDC = M0		3300 pF = 1330			2.5x6.5x7.2 PCM5 = 1A							AMMO H18.5 340x340 = C		
MKP 4 = MKP4				900 VDC = N0		4700 pF = 1470			3x7.5x7.2 PCM5 = 1B							AMMO H18.5 490x370 = D		
MKP 10 = MKP1				1000 VDC = O1		6800 pF = 1680			2.5x7x10 PCM7.5 = 2A							REEL H16.5 360 = F		
FKP 4 = FKP4				1100 VDC = P0		0.01 µF = 2100			3x8.5x10 PCM7.5 = 2B							REEL H16.5 500 = H		
FKP 1 = FKP1				1200 VDC = Q0		0.022 µF = 2220			3x9x13 PCM10 = 3A							REEL H18.5 360 = I		
MKP-X2 = MKX2				1250 VDC = R0		0.047 µF = 2470			4x9x13 PCM10 = 3C							REEL H18.5 500 = J		
MKP-X1 R = MKX1				1500 VDC = S0		0.1 µF = 3100			5x11x18 PCM15 = 4B							ROLL H16.5 = N		
MKP-Y2 = MKY2				1600 VDC = T0		0.22 µF = 3220			6x12.5x18 PCM15 = 4C							ROLL H18.5 = O		
MKP 4F = MKPF				1700 VDC = TA		0.47 µF = 3470			5x14x26.5 PCM22.5 = 5A							BLISTER W12 180 = P		
Snubber MKP = SNMP				2000 VDC = U0		1 µF = 4100			6x15x26.5 PCM22.5 = 5B							BLISTER W12 330 = Q		
Snubber FKP = SNFP				2500 VDC = V0		2.2 µF = 4220			9x19x31.5 PCM27.5 = 6A							BLISTER W16 330 = R		
GTO MKP = GTOM				3000 VDC = W0		4.7 µF = 4470			11x21x31.5 PCM27.5 = 6B							BLISTER W24 330 = T		
DC-LINK MKP 4 = DCP4				4000 VDC = X0		10 µF = 5100			9x19x41.5 PCM37.5 = 7A							Bulk/TPS Standard = S		
DC-LINK MKP 6 = DCP6				6000 VDC = Y0		22 µF = 5220			11x22x41.5 PCM37.5 = 7B							...		
DC-LINK HC = DCHC				230 VAC = 3Y		47 µF = 5470			19x31x56 PCM 48.5 = 8D									
				275 VAC = 1W		100 µF = 6100			25x45x57 PCM 52.5 = 9D									
				300 VAC = 2W		220 µF = 6220			...									
				305 VAC = AW		1000 µF = 7100												
				350 VAC = BW		1500 µF = 7150												
				440 VAC = 4W		...												
				...														
							<b>Version code:</b>									<b>Pin length (untaped)</b>		
							Standard = 00									3.5 ±0.5 = C9		
							Version A1 = 1A									6 -2 = SD		
							Version A1.1.1 = 1B									16 ±1 = P1		
							Version A2 = 2A									...		
							...									<b>Pin length (taped)</b>		
																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.