

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

### Special Features

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

### Typical Applications

For high pulse and high frequency applications e.g.

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

### Construction

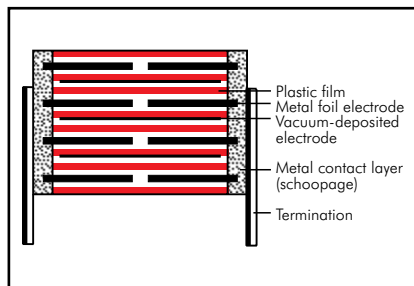
#### Dielectric:

Polypropylene (PP) film

#### Capacitor electrodes:

Aluminium foil and single-sided metallized plastic film

#### Internal construction:



#### Encapsulation:

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

#### Terminations:

Tinned wire.

#### Marking:

Colour: Red. Marking: Black.

### Electrical Data

#### Capacitance range:

100 pF to 1.5  $\mu$ F (E12-values on request)

#### Rated voltages:

400 VDC, 630 VDC, 1000 VDC, 1250 VDC, 1600 VDC, 2000 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  $+100^{\circ}\text{C}$

#### Climatic test category:

55/100/56 in accordance with IEC

#### Insulation resistance at $+20^{\circ}\text{C}$ :

$C \leq 0.1 \mu\text{F}$ :  $\geq 1 \times 10^5 \text{ M}\Omega$

(mean value:  $5 \times 10^5 \text{ M}\Omega$ )

$C > 0.1 \mu\text{F}$ :  $\geq 10000 \text{ sec (M}\Omega \times \mu\text{F)}$

(mean value: 100000 sec)

Measuring voltage: 100 V/1 min.

#### 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   | $\leq 3 \times 10^{-4}$  | $\leq 3 \times 10^{-4}$                    | $\leq 3 \times 10^{-4}$ |
| 10 kHz  | $\leq 4 \times 10^{-4}$  | $\leq 6 \times 10^{-4}$                    | -                       |
| 100 kHz | $\leq 10 \times 10^{-4}$ | -                                          | -                       |

#### Maximum pulse rise time:

| Capacitance<br>pF/ $\mu$ F | max. pulse rise time V/ $\mu$ sec at $T_A < 40^{\circ}\text{C}$ |         |          |          |          |          |
|----------------------------|-----------------------------------------------------------------|---------|----------|----------|----------|----------|
|                            | 400 VDC                                                         | 630 VDC | 1000 VDC | 1250 VDC | 1600 VDC | 2000 VDC |
| 100 ... 220                | 27000                                                           | 31000   | 33000    | 39000    | 39000    | 39000    |
| 330 ... 680                | 19000                                                           | 21000   | 31000    | 34000    | 34000    | 39000    |
| 1000 ... 2200              | 13000                                                           | 15000   | 27000    | 27000    | 27000    | 39000    |
| 3300 ... 6800              | 9000                                                            | 14000   | 15000    | 17000    | 17000    | 21000    |
| 0.01 ... 0.022             | 7000                                                            | 11000   | 11000    | 11000    | 11000    | 11000    |
| 0.033 ... 0.068            | 7000                                                            | 9000    | 9000     | 9000     | 9000     | 9000     |
| 0.1 ... 0.22               | 7000                                                            | 9000    | 9000     | 9000     | 9000     | 9000     |
| 0.33 ... 0.68              | 3000                                                            | 5000    | 5000     | 5000     | 5000     | -        |
| 1.0 ... 1.5                | 1000                                                            | 1600    | 2000     | -        | -        | -        |

for pulses equal to the rated voltage

### Mechanical Tests

#### Pull test on pins:

$d \leq 0.8 \phi$ : 10 N in direction of pins  
 $d > 0.8 \phi$ : 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

#### Test voltage: 2 $U_r$ , 2 sec.

#### Dielectric absorption:

0.05%

#### Voltage derating:

A voltage derating factor of 1.35 % per K must be applied from  $+85^{\circ}\text{C}$  for DC voltages and from  $+75^{\circ}\text{C}$  for AC voltages.

#### Reliability:

Operational life > 300 000 hours

Failure rate < 1 fit ( $0.5 \times U_r$  and  $40^{\circ}\text{C}$ )

### Packing

Available taped and reeled up to and including case size 15 x 26 x 31.5 / PCM 27.5 mm.

Detailed taping information and graphs at the end of the catalogue.

For further details and graphs please refer to Technical Information.

## Continuation

### General Data

| Capacitance | 400 VDC/250 VAC* |      |      |       |                     | 630 VDC/350 VAC* |      |      |       |                     |
|-------------|------------------|------|------|-------|---------------------|------------------|------|------|-------|---------------------|
|             | W                | H    | L    | PCM** | Part number         | W                | H    | L    | PCM** | Part number         |
| 100 pF      | 5                | 11   | 18   | 15    | FKP4G001004B00_____ | 5                | 11   | 18   | 15    | FKP4J001004B00_____ |
| 150 "       | 5                | 11   | 18   | 15    | FKP4G001504B00_____ | 5                | 11   | 18   | 15    | FKP4J001504B00_____ |
| 220 "       | 5                | 11   | 18   | 15    | FKP4G002204B00_____ | 5                | 11   | 18   | 15    | FKP4J002204B00_____ |
| 330 "       | 5                | 11   | 18   | 15    | FKP4G003304B00_____ | 5                | 11   | 18   | 15    | FKP4J003304B00_____ |
| 470 "       | 5                | 11   | 18   | 15    | FKP4G004704B00_____ | 5                | 11   | 18   | 15    | FKP4J004704B00_____ |
| 680 "       | 5                | 11   | 18   | 15    | FKP4G006804B00_____ | 5                | 11   | 18   | 15    | FKP4J006804B00_____ |
| 1000 pF     | 5                | 11   | 18   | 15    | FKP4G011004B00_____ | 5                | 11   | 18   | 15    | FKP4J011004B00_____ |
| 1500 "      | 5                | 11   | 18   | 15    | FKP4G011504B00_____ | 5                | 11   | 18   | 15    | FKP4J011504B00_____ |
| 2200 "      | 5                | 11   | 18   | 15    | FKP4G012204B00_____ | 5                | 11   | 18   | 15    | FKP4J012204B00_____ |
| 3300 "      | 5                | 11   | 18   | 15    | FKP4G013304B00_____ | 5                | 11   | 18   | 15    | FKP4J013304B00_____ |
| 4700 "      | 5                | 11   | 18   | 15    | FKP4G014704B00_____ | 5                | 11   | 18   | 15    | FKP4J014704B00_____ |
| 6800 "      | 5                | 11   | 18   | 15    | FKP4G016804B00_____ | 5                | 11   | 18   | 15    | FKP4J016804B00_____ |
| 0.01 µF     | 5                | 11   | 18   | 15    | FKP4G021004B00_____ | 5                | 11   | 18   | 15    | FKP4J021004B00_____ |
| 0.015 "     | 5                | 11   | 18   | 15    | FKP4G021504B00_____ | 6                | 12.5 | 18   | 15    | FKP4J021504C00_____ |
| 0.022 "     | 6                | 12.5 | 18   | 15    | FKP4G022204C00_____ | 7                | 14   | 18   | 15    | FKP4J022204D00_____ |
| 0.033 "     | 7                | 14   | 18   | 15    | FKP4G023304D00_____ | 8                | 15   | 18   | 15    | FKP4J023304F00_____ |
|             | 5                | 14   | 26.5 | 22.5  | FKP4G023305A00_____ | 6                | 15   | 26.5 | 22.5  | FKP4J023305B00_____ |
| 0.047 "     | 8                | 15   | 18   | 15    | FKP4G024704F00_____ | 9                | 16   | 18   | 15    | FKP4J024704J00_____ |
|             | 6                | 15   | 26.5 | 22.5  | FKP4G024705B00_____ | 7                | 16.5 | 26.5 | 22.5  | FKP4J024705D00_____ |
| 0.068 "     | 7                | 16.5 | 26.5 | 22.5  | FKP4G026805D00_____ | 8.5              | 18.5 | 26.5 | 22.5  | FKP4J026805F00_____ |
| 0.1 µF      | 8.5              | 18.5 | 26.5 | 22.5  | FKP4G031005F00_____ | 10.5             | 19   | 26.5 | 22.5  | FKP4J031005G00_____ |
|             |                  |      |      |       |                     | 11               | 21   | 31.5 | 27.5  | FKP4J031006B00_____ |
| 0.15 "      | 11               | 21   | 26.5 | 22.5  | FKP4G031505I00_____ | 11               | 21   | 26.5 | 22.5  | FKP4J031505I00_____ |
|             | 9                | 19   | 31.5 | 27.5  | FKP4G031506A00_____ | 11               | 21   | 31.5 | 27.5  | FKP4J031506B00_____ |
| 0.22 "      | 11               | 21   | 31.5 | 27.5  | FKP4G032206B00_____ | 13               | 24   | 31.5 | 27.5  | FKP4J032206D00_____ |
| 0.33 "      | 13               | 24   | 31.5 | 27.5  | FKP4G033306D00_____ | 15               | 26   | 31.5 | 27.5  | FKP4J033306F00_____ |
| 0.47 "      | 17               | 29   | 31.5 | 27.5  | FKP4G034706G00_____ | 17               | 34.5 | 31.5 | 27.5  | FKP4J034706I00_____ |
| 0.68 "      | 17               | 34.5 | 31.5 | 27.5  | FKP4G036806I00_____ | 20               | 39.5 | 41.5 | 37.5  | FKP4J036807G00_____ |
| 1.0 µF      | 20               | 39.5 | 31.5 | 27.5  | FKP4G041006J00_____ | 20               | 39.5 | 41.5 | 37.5  | FKP4J041007G00_____ |
| 1.5 "       | 20               | 39.5 | 41.5 | 37.5  | FKP4G041507G00_____ | 24               | 45.5 | 41.5 | 37.5  | FKP4J041507H00_____ |

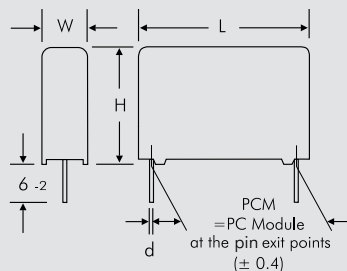
\* AC voltage:  $f \leq 1000 \text{ Hz}$ ;  $1.4 \times U_{\text{rms}} + U_{\text{DC}} \leq U_r$

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

Dims. in mm.

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

| ø d | PCM       |
|-----|-----------|
| 0.8 | 15 - 27.5 |
| 1.0 | 37.5      |



| Part number completion:     |                                 |
|-----------------------------|---------------------------------|
| Tolerance:                  | 20 % = M<br>10 % = K<br>5 % = J |
| Packing:                    | bulk = S                        |
| Pin length:                 | 6-2 = SD                        |
| Taped version see page 140. |                                 |

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## Continuation

### General Data

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

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

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

Dims. in mm.

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

#### Part number completion:

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

Packing: bulk = S  
Pin length: 6-2 = SD

Taped version see page 140.

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## Continuation

### General Data

| Capacitance | 1600 VDC/500 VAC* |      |      |       |                 | 2000 VDC/550 VAC* |      |      |       |                 |
|-------------|-------------------|------|------|-------|-----------------|-------------------|------|------|-------|-----------------|
|             | W                 | H    | L    | PCM** | Part number     | W                 | H    | L    | PCM** | Part number     |
| 100 pF      | 5                 | 11   | 18   | 15    | FKP4T001004B00_ | 5                 | 11   | 18   | 15    | FKP4U001004B00_ |
| 150 "       | 5                 | 11   | 18   | 15    | FKP4T001504B00_ | 5                 | 11   | 18   | 15    | FKP4U001504B00_ |
| 220 "       | 5                 | 11   | 18   | 15    | FKP4T002204B00_ | 5                 | 11   | 18   | 15    | FKP4U002204B00_ |
| 330 "       | 5                 | 11   | 18   | 15    | FKP4T003304B00_ | 5                 | 11   | 18   | 15    | FKP4U003304B00_ |
| 470 "       | 5                 | 11   | 18   | 15    | FKP4T004704B00_ | 5                 | 11   | 18   | 15    | FKP4U004704B00_ |
| 680 "       | 5                 | 11   | 18   | 15    | FKP4T006804B00_ | 5                 | 11   | 18   | 15    | FKP4U006804B00_ |
| 1000 pF     | 5                 | 11   | 18   | 15    | FKP4T011004B00_ | 5                 | 11   | 18   | 15    | FKP4U011004B00_ |
| 1500 "      | 5                 | 11   | 18   | 15    | FKP4T011504B00_ | 6                 | 12.5 | 18   | 15    | FKP4U011504C00_ |
| 2200 "      | 6                 | 12.5 | 18   | 15    | FKP4T012204C00_ | 7                 | 14   | 18   | 15    | FKP4U012204D00_ |
| 3300 "      | 7                 | 14   | 18   | 15    | FKP4T013304D00_ | 9                 | 16   | 18   | 15    | FKP4U013304J00_ |
| 4700 "      | 8                 | 15   | 18   | 15    | FKP4T014704F00_ | 6                 | 15   | 26.5 | 22.5  | FKP4U013305B00_ |
| 6800 "      | 9                 | 16   | 18   | 15    | FKP4T016804J00_ | 7                 | 16.5 | 26.5 | 22.5  | FKP4U014705D00_ |
|             | 6                 | 15   | 26.5 | 22.5  | FKP4T016805B00_ | 8.5               | 18.5 | 26.5 | 22.5  | FKP4U016805F00_ |
| 0.01 µF     | 6                 | 15   | 26.5 | 22.5  | FKP4T021005B00_ | 10.5              | 19   | 26.5 | 22.5  | FKP4U021005G00_ |
| 0.015 "     | 8.5               | 18.5 | 26.5 | 22.5  | FKP4T021505F00_ | 11                | 21   | 26.5 | 22.5  | FKP4U021505I00_ |
| 0.022 "     | 10.5              | 19   | 26.5 | 22.5  | FKP4T022205H00_ | 9                 | 19   | 31.5 | 27.5  | FKP4U021506A00_ |
| 0.033 "     | 9                 | 19   | 31.5 | 27.5  | FKP4T022206A00_ | 11                | 21   | 31.5 | 27.5  | FKP4U022206B00_ |
| 0.047 "     | 11                | 21   | 31.5 | 27.5  | FKP4T023306B00_ | 11                | 22   | 41.5 | 37.5  | FKP4U022207B00_ |
| 0.068 "     | 13                | 24   | 31.5 | 27.5  | FKP4T024706D00_ | 13                | 24   | 31.5 | 27.5  | FKP4U023306D00_ |
|             | 15                | 26   | 31.5 | 27.5  | FKP4T026806F00_ | 13                | 24   | 41.5 | 37.5  | FKP4U023307C00_ |
| 0.1 µF      | 17                | 34.5 | 31.5 | 27.5  | FKP4T031006I00_ | 15                | 26   | 31.5 | 27.5  | FKP4U024706F00_ |
| 0.15 "      | 20                | 39.5 | 31.5 | 27.5  | FKP4T031506J00_ | 15                | 26   | 41.5 | 37.5  | FKP4U024707D00_ |
|             | 17                | 29   | 41.5 | 37.5  | FKP4T031507E00_ | 17                | 34.5 | 31.5 | 27.5  | FKP4U026806I00_ |
| 0.22 "      | 19                | 32   | 41.5 | 37.5  | FKP4T032207F00_ | 17                | 29   | 41.5 | 37.5  | FKP4U026807E00_ |
| 0.33 "      | 20                | 39.5 | 41.5 | 37.5  | FKP4T033307G00_ |                   |      |      |       |                 |
| 0.47 "      | 24                | 45.5 | 41.5 | 37.5  | FKP4T034707H00_ |                   |      |      |       |                 |

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

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

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

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Dims. in mm.

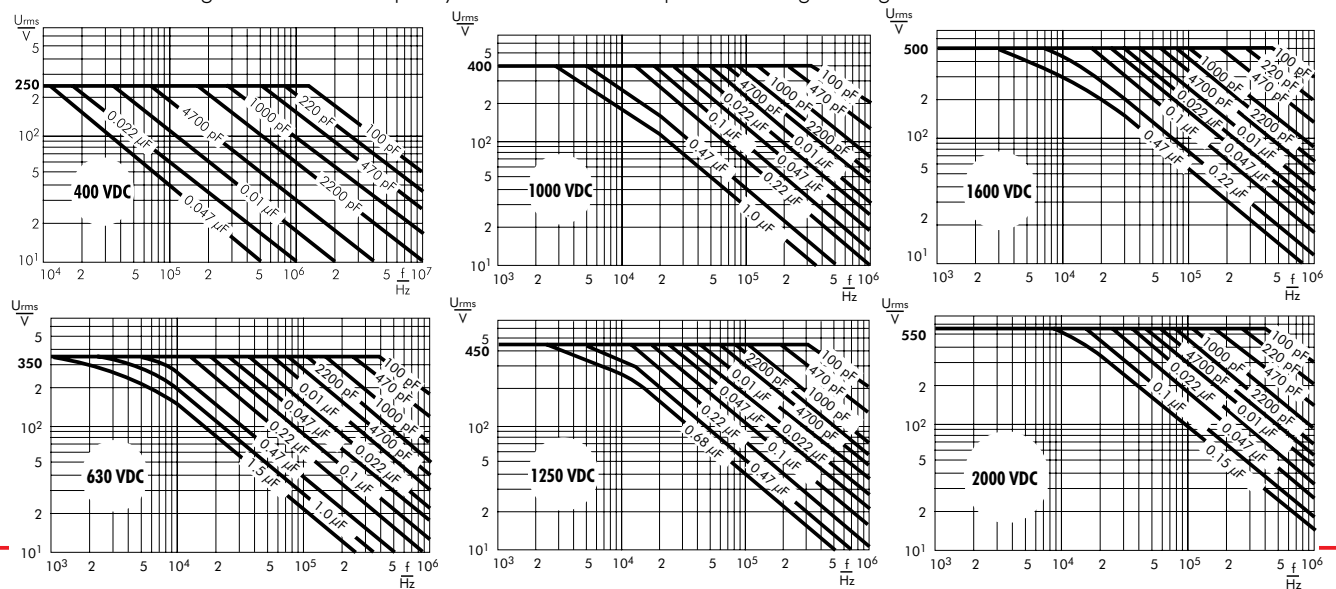
Part number completion:

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

Packing: bulk = S  
Pin length: 6-2 = SD

Taped version see page 140.

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:  $T_{\max.} \leq 125^{\circ}\text{C}$   
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:  $T < 260^{\circ}\text{C}$

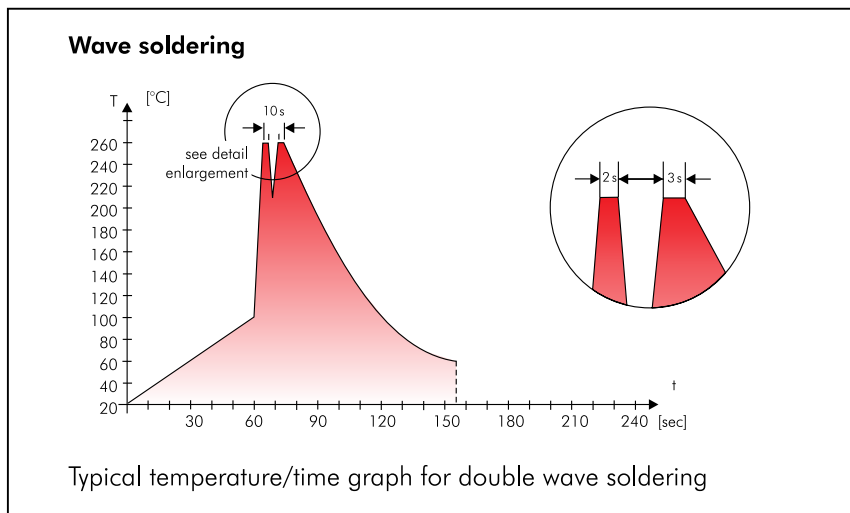
Dwell time:  $t < 5\text{ sec}$

#### Double wave soldering

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

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

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



## WIMA Quality and Environmental Philosophy

### ISO 9001:2008 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
- Testing as per customer requirements

### WIMA Environmental Policy

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

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

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

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

We almost completely refrain from using packing materials such as:

- 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 refrained from using such substances since years already.



WIMA Kondensatoren sind bleifrei  
konform RoHS 2011/65/EU

WIMA capacitors are lead free  
in accordance with RoHS 2011/65/EU

Tape for lead-free WIMA capacitors

### DIN EN ISO 14001:2004

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

## Typical Dimensions for Taping Configuration

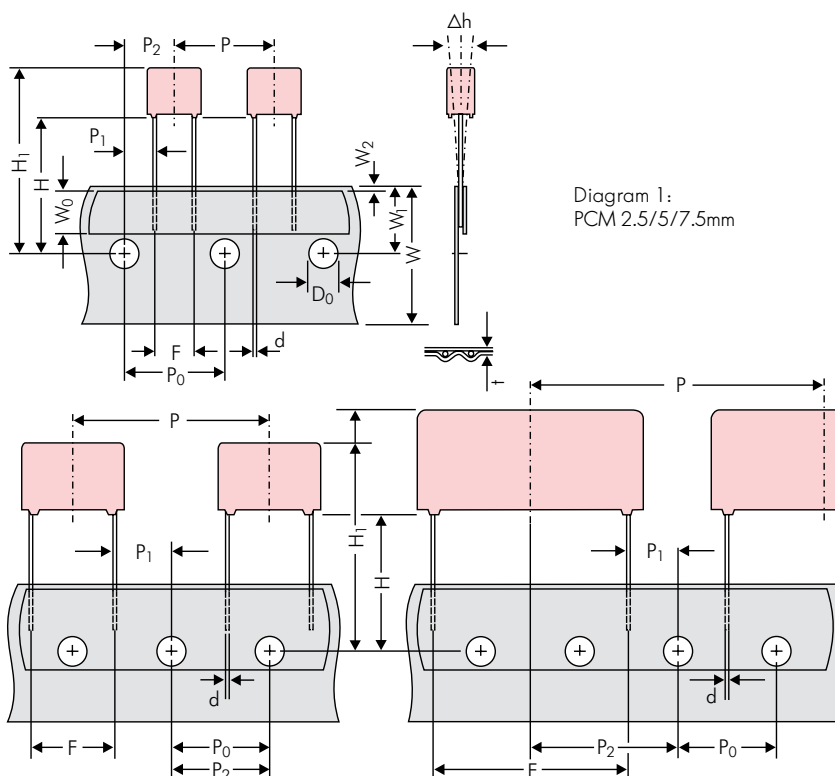


Diagram 1:  
PCM 2.5/5/7.5mm

Diagram 2: PCM 10/15 mm

Diagram 3: PCM 22.5 and 27.5\*mm

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

| Designation                                      | Symbol         | Dimensions for Radial Taping                             |                                                          |                                                           |                                                           |                                                           |                                                           |                                                                       |
|--------------------------------------------------|----------------|----------------------------------------------------------|----------------------------------------------------------|-----------------------------------------------------------|-----------------------------------------------------------|-----------------------------------------------------------|-----------------------------------------------------------|-----------------------------------------------------------------------|
|                                                  |                | PCM 2.5 tapping                                          | PCM 5 tapping                                            | PCM 7.5 tapping                                           | PCM 10 tapping*                                           | PCM 15 tapping*                                           | PCM 22.5 tapping                                          | PCM 27.5 tapping                                                      |
| 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<br>cumulative pitch error max. 1.0 mm/20 pitch | 12.7 ±0.3<br>cumulative pitch error max. 1.0 mm/20 pitch | 12.7 ±0.3<br>cumulative pitch error max. 1.0 mm/20 pitch  | 12.7 ±0.3<br>cumulative pitch error max. 1.0 mm/20 pitch  | 12.7 ±0.3<br>cumulative pitch error max. 1.0 mm/20 pitch  | 12.7 ±0.3<br>cumulative pitch error max. 1.0 mm/20 pitch  | 12.7 ±0.3<br>cumulative pitch error max. 1.0 mm/20 pitch              |
| Feed hole centre to pin                          | P <sub>1</sub> | 5.1 ±0.5                                                 | 3.85 ±0.7                                                | 2.6 ±0.7                                                  | 7.7 ±0.7                                                  | 5.2 ±0.7                                                  | 7.8 ±0.7                                                  | 5.3 ±0.7                                                              |
| Hole centre to component centre                  | P <sub>2</sub> | 6.35 ±1.3                                                | 6.35 ±1.3                                                | 6.35 ±1.3                                                 | 12.7 ±1.3                                                 | 12.7 ±1.3                                                 | 19.05 ±1.3                                                | 19.05 ±1.3                                                            |
| Feed hole centre to bottom edge of the component | H              | 16.5 ±0.3<br>18.5 ±0.5                                   | 16.5 ±0.3<br>18.5 ±0.5                                   | 16.5 ±0.5<br>18.5 ±0.5                                    | 16.5 ±0.5<br>18.5 ±0.5                                    | 16.5 ±0.5<br>18.5 ±0.5                                    | 16.5 ±0.5<br>18.5 ±0.5                                    | 16.5 ±0.5<br>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><br>32.25 max.  | H+H <sub>component</sub> < H <sub>1</sub><br>32.25 max.  | H+H <sub>component</sub> < H <sub>1</sub><br>24.5 to 31.5 | H+H <sub>component</sub> < H <sub>1</sub><br>25.0 to 31.5 | H+H <sub>component</sub> < H <sub>1</sub><br>26.0 to 37.0 | H+H <sub>component</sub> < H <sub>1</sub><br>30.0 to 43.0 | H+H <sub>component</sub> < H <sub>1</sub><br>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<br>(see also page 149)                   |                | ROLL/AMMO                                                |                                                          |                                                           | AMMO                                                      |                                                           |                                                           |                                                                       |
|                                                  |                | REEL ø 360 max.<br>ø 30 ±1                               | B 52 ±2<br>58 ±2 } depending on comp. dimensions         |                                                           | REEL ø 360 max.<br>ø 30 ±1                                | 52 ±2<br>B 58 ±2 or 66 ±2                                 | REEL ø 500 max.<br>ø 25 ±1                                | 54 ±2<br>B 60 ±2<br>68 ±2 } depending on PCM and component dimensions |
| Unit                                             |                | see details page 150.                                    |                                                          |                                                           |                                                           |                                                           |                                                           |                                                                       |

Dims in mm.

\* Diameter of pins see General Data.

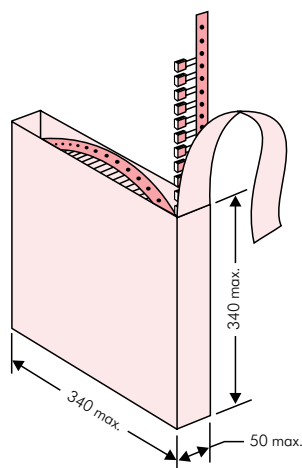
\* PCM 10 and PCM 15 can be crimped to PCM 7.5.

Position of components according to PCM 7.5 (sketch 11). P<sub>0</sub> = 12.7 or 15.0 is possible

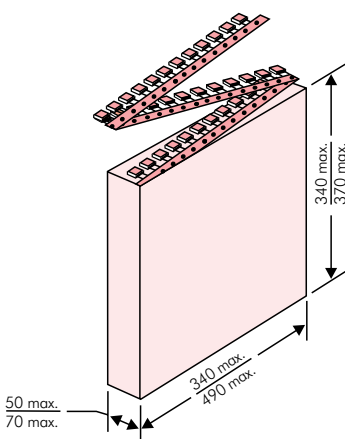
Please clarify customer-specific deviations with the manufacturer.

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

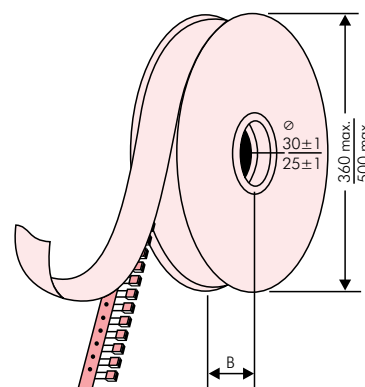
### ■ ROLL Packaging



### ■ 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.

|                                             |                                           |                          |         |
|---------------------------------------------|-------------------------------------------|--------------------------|---------|
| <b>WIMA</b> Best Capacitors Made in Germany |                                           | Werk Unna                |         |
| Supplier-ID: 123456789                      | <b>RoHS</b><br>2011/65/EU                 | Date Code: 08.10.10      |         |
| Purchase Order No. (P/O): Bestellung xyz    |                                           | Quantity: 5.000          |         |
| Customer Part No.: KUNDETEILENUMMER         |                                           | Customer No.: 0000100002 |         |
| WIMA Confirmation No.: 0001004063000100     |                                           | Gross Weight [g]: 1870   |         |
| WIMA Part No.: MKS2C034701C00K88D           |                                           |                          |         |
| Handling Unit:                              | MKS 2                                     | QTY: 5.000               | COO: DE |
|                                             | MKS 2 0.47 $\mu$ F 63 VDC 3.5x8.5x7.2 RMS |                          |         |
|                                             | Standard 10% Loss - Standard Drähte 6-2   |                          |         |
| 1000067326                                  | Vorlage Debitur Inland                    | Week 03/2011             |         |

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  |           |           |   |   |   |
|         | W    | H    | L    | Codes |      | S                     | H16.5 | H18.5 | ø 360 | ø 500 | 340 × 340 | 490 × 370 |   |   |   |
|         |      |      |      |       |      | N                     | O     | F     | I     | H     | J         | A         | C | B | D |
| 2.5 mm  | 2.5  | 7    | 4.6  | 0B    | 5000 |                       |       |       |       |       |           |           |   |   |   |
|         | 3    | 7.5  | 4.6  | 0C    | 5000 |                       |       |       |       |       |           |           |   |   |   |
|         | 3.8  | 8.5  | 4.6  | 0D    | 5000 |                       |       |       |       |       |           |           |   |   |   |
|         | 4.6  | 9    | 4.6  | 0E    | 5000 |                       |       |       |       |       |           |           |   |   |   |
|         | 5.5  | 10   | 4.6  | 0F    | 5000 |                       |       |       |       |       |           |           |   |   |   |
| 5 mm    | 2.5  | 6.5  | 7.2  | 1A    | 5000 |                       |       |       |       |       |           |           |   |   |   |
|         | 3    | 7.5  | 7.2  | 1B    | 5000 |                       |       |       |       |       |           |           |   |   |   |
|         | 3.5  | 8.5  | 7.2  | 1C    | 5000 |                       |       |       |       |       |           |           |   |   |   |
|         | 4.5  | 6    | 7.2  | 1D    | 6000 |                       |       |       |       |       |           |           |   |   |   |
|         | 4.5  | 9.5  | 7.2  | 1E    | 4000 |                       |       |       |       |       |           |           |   |   |   |
|         | 5    | 10   | 7.2  | 1F    | 3500 |                       |       |       |       |       |           |           |   |   |   |
|         | 5.5  | 7    | 7.2  | 1G    | 4000 |                       |       |       |       |       |           |           |   |   |   |
|         | 5.5  | 11.5 | 7.2  | 1H    | 2500 |                       |       |       |       |       |           |           |   |   |   |
|         | 6.5  | 8    | 7.2  | 1I    | 2500 |                       |       |       |       |       |           |           |   |   |   |
|         | 7.2  | 8.5  | 7.2  | 1J    | 2500 |                       |       |       |       |       |           |           |   |   |   |
|         | 7.2  | 13   | 7.2  | 1K    | 2000 |                       |       |       |       |       |           |           |   |   |   |
|         | 8.5  | 10   | 7.2  | 1L    | 2000 |                       |       |       |       |       |           |           |   |   |   |
|         | 8.5  | 14   | 7.2  | 1M    | 1500 |                       |       |       |       |       |           |           |   |   |   |
|         | 11   | 16   | 7.2  | 1N    | 1000 |                       |       |       |       |       |           |           |   |   |   |
| 7.5 mm  | 2.5  | 7    | 10   | 2A    | 5000 |                       |       |       |       |       |           |           |   |   |   |
|         | 3    | 8.5  | 10   | 2B    | 5000 |                       |       |       |       |       |           |           |   |   |   |
|         | 4    | 9    | 10   | 2C    | 4000 |                       |       |       |       |       |           |           |   |   |   |
|         | 4.5  | 9.5  | 10.3 | 2D    | 3500 |                       |       |       |       |       |           |           |   |   |   |
|         | 5    | 10.5 | 10.3 | 2E    | 3000 |                       |       |       |       |       |           |           |   |   |   |
|         | 5.7  | 12.5 | 10.3 | 2F    | 2000 |                       |       |       |       |       |           |           |   |   |   |
|         | 7.2  | 12.5 | 10.3 | 2G    | 1500 |                       |       |       |       |       |           |           |   |   |   |
| 10 mm   | 3    | 9    | 13   | 3A    | 3000 |                       |       |       |       |       |           |           |   |   |   |
|         | 4    | 8.5  | 13.5 | FA    | 3000 |                       |       |       |       |       |           |           |   |   |   |
|         | 4    | 9    | 13   | 3C    | 3000 |                       |       |       |       |       |           |           |   |   |   |
|         | 4    | 9.5  | 13   | 3D    | 3000 |                       |       |       |       |       |           |           |   |   |   |
|         | 5    | 10   | 13.5 | FB    | 2000 |                       |       |       |       |       |           |           |   |   |   |
|         | 5    | 11   | 13   | 3F    | 3000 |                       |       |       |       |       |           |           |   |   |   |
|         | 6    | 12   | 13   | 3G    | 2400 |                       |       |       |       |       |           |           |   |   |   |
|         | 6    | 12.5 | 13   | 3H    | 2400 |                       |       |       |       |       |           |           |   |   |   |
|         | 8    | 12   | 13   | 3I    | 2000 |                       |       |       |       |       |           |           |   |   |   |
| 15 mm   | 5    | 11   | 18   | 4B    | 2400 |                       |       |       |       |       |           |           |   |   |   |
|         | 5    | 13   | 19   | FC    | 1000 |                       |       |       |       |       |           |           |   |   |   |
|         | 6    | 12.5 | 18   | 4C    | 2000 |                       |       |       |       |       |           |           |   |   |   |
|         | 6    | 14   | 19   | FD    | 1000 |                       |       |       |       |       |           |           |   |   |   |
|         | 7    | 14   | 18   | 4D    | 1600 |                       |       |       |       |       |           |           |   |   |   |
|         | 7    | 15   | 19   | FE    | 1000 |                       |       |       |       |       |           |           |   |   |   |
|         | 8    | 15   | 18   | 4F    | 1200 |                       |       |       |       |       |           |           |   |   |   |
|         | 8    | 17   | 19   | FF    | 500  |                       |       |       |       |       |           |           |   |   |   |
|         | 9    | 14   | 18   | 4H    | 1200 |                       |       |       |       |       |           |           |   |   |   |
|         | 9    | 16   | 18   | 4J    | 900  |                       |       |       |       |       |           |           |   |   |   |
|         | 10   | 18   | 19   | FG    | 500  |                       |       |       |       |       |           |           |   |   |   |
|         | 11   | 14   | 18   | 4M    | 1000 |                       |       |       |       |       |           |           |   |   |   |
| 22.5 mm | 5    | 14   | 26.5 | 5A    | 1200 |                       |       |       |       |       |           |           |   |   |   |
|         | 6    | 15   | 26.5 | 5B    | 1000 |                       |       |       |       |       |           |           |   |   |   |
|         | 7    | 16.5 | 26.5 | 5D    | 760  |                       |       |       |       |       |           |           |   |   |   |
|         | 8    | 20   | 28   | FH    | 500  |                       |       |       |       |       |           |           |   |   |   |
|         | 8.5  | 18.5 | 26.5 | 5F    | 500  |                       |       |       |       |       |           |           |   |   |   |
|         | 10   | 22   | 28   | FI    | 540* |                       |       |       |       |       |           |           |   |   |   |
|         | 10.5 | 19   | 26.5 | 5G    | 680* |                       |       |       |       |       |           |           |   |   |   |
|         | 10.5 | 20.5 | 26.5 | 5H    | 680* |                       |       |       |       |       |           |           |   |   |   |
|         | 11   | 21   | 26.5 | 5I    | 680* |                       |       |       |       |       |           |           |   |   |   |
|         | 12   | 24   | 28   | FJ    | 450* |                       |       |       |       |       |           |           |   |   |   |

\* 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 |      |      |           | bulk     | ROLL     |          | pcs. per packing unit |          |           |           | AMMO     |          |          |          |
|----------------|------|------|------|-----------|----------|----------|----------|-----------------------|----------|-----------|-----------|----------|----------|----------|----------|
|                |      |      |      |           |          |          |          | REEL                  |          |           |           |          |          |          |          |
|                | W    | H    | L    | Codes     |          | H16.5    | H18.5    | ø 360                 | ø 500    | 340 × 340 | 490 × 370 | H16.5    | H18.5    | H16.5    | H18.5    |
|                |      |      |      |           | <b>S</b> | <b>N</b> | <b>O</b> | <b>F</b>              | <b>I</b> | <b>H</b>  | <b>J</b>  | <b>A</b> | <b>C</b> | <b>B</b> | <b>D</b> |
| <b>27.5 mm</b> | 9    | 19   | 31.5 | <b>6A</b> | 640*     | –        | –        | –                     | –        | 460/340*  | –         | –        | –        | 420      | –        |
|                | 11   | 21   | 31.5 | <b>6B</b> | 544*     | –        | –        | –                     | –        | 380/280*  | –         | –        | –        | 350      | –        |
|                | 13   | 24   | 31.5 | <b>6D</b> | 448*     | –        | –        | –                     | –        | 300       | –         | –        | –        | 290      | –        |
|                | 13   | 25   | 33   | <b>FK</b> | 336*     | –        | –        | –                     | –        | –         | –         | –        | –        | –        | –        |
|                | 15   | 26   | 31.5 | <b>6F</b> | 384*     | –        | –        | –                     | –        | 270       | –         | –        | –        | 250      | –        |
|                | 15   | 26   | 33   | <b>FL</b> | 288*     | –        | –        | –                     | –        | –         | –         | –        | –        | –        | –        |
|                | 17   | 29   | 31.5 | <b>6G</b> | 176*     | –        | –        | –                     | –        | –         | –         | –        | –        | –        | –        |
|                | 17   | 34.5 | 31.5 | <b>6I</b> | 176*     | –        | –        | –                     | –        | –         | –         | –        | –        | –        | –        |
|                | 20   | 32   | 33   | <b>FM</b> | 216*     | –        | –        | –                     | –        | –         | –         | –        | –        | –        | –        |
|                | 20   | 39.5 | 31.5 | <b>6J</b> | 144*     | –        | –        | –                     | –        | –         | –         | –        | –        | –        | –        |
| <b>37.5 mm</b> | 9    | 19   | 41.5 | <b>7A</b> | 480*     | –        | –        | –                     | –        | –         | –         | –        | –        | –        | –        |
|                | 11   | 22   | 41.5 | <b>7B</b> | 408*     | –        | –        | –                     | –        | –         | –         | –        | –        | –        | –        |
|                | 13   | 24   | 41.5 | <b>7C</b> | 252*     | –        | –        | –                     | –        | –         | –         | –        | –        | –        | –        |
|                | 15   | 26   | 41.5 | <b>7D</b> | 144*     | –        | –        | –                     | –        | –         | –         | –        | –        | –        | –        |
|                | 17   | 29   | 41.5 | <b>7E</b> | 132*     | –        | –        | –                     | –        | –         | –         | –        | –        | –        | –        |
|                | 19   | 32   | 41.5 | <b>7F</b> | 108*     | –        | –        | –                     | –        | –         | –         | –        | –        | –        | –        |
|                | 20   | 39.5 | 41.5 | <b>7G</b> | 108*     | –        | –        | –                     | –        | –         | –         | –        | –        | –        | –        |
|                | 24   | 45.5 | 41.5 | <b>7H</b> | 84*      | –        | –        | –                     | –        | –         | –         | –        | –        | –        | –        |
|                | 27   | 15   | 41.5 | <b>7M</b> | 100*     | –        | –        | –                     | –        | –         | –         | –        | –        | –        | –        |
|                | 31   | 46   | 41.5 | <b>7I</b> | 72*      | –        | –        | –                     | –        | –         | –         | –        | –        | –        | –        |
|                | 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> | 50*      | –        | –        | –                     | –        | –         | –         | –        | –        | –        | –        |
|                | 23   | 34   | 56   | <b>8E</b> | 72*      | –        | –        | –                     | –        | –         | –         | –        | –        | –        | –        |
|                | 27   | 37.5 | 56   | <b>8H</b> | 60*      | –        | –        | –                     | –        | –         | –         | –        | –        | –        | –        |
|                | 33   | 48   | 56   | <b>8J</b> | 48*      | –        | –        | –                     | –        | –         | –         | –        | –        | –        | –        |
|                | 37   | 54   | 56   | <b>8L</b> | 25*      | –        | –        | –                     | –        | –         | –         | –        | –        | –        | –        |
| <b>52.5 mm</b> | 35   | 50   | 57   | <b>9F</b> | 25*      | –        | –        | –                     | –        | –         | –         | –        | –        | –        | –        |
|                | 45   | 55   | 57   | <b>9H</b> | 20*      | –        | –        | –                     | –        | –         | –         | –        | –        | –        | –        |
|                | 45   | 65   | 57   | <b>9J</b> | 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.

## 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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |   |   |    | 2.5×6.5×7.2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |    | -  |    | 20%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | bulk | 6 -2 |    |
| <b>Type description:</b><br><br>SMD-PET = SMDT<br>SMD-PEN = SMDN<br>SMD-PPS = SMDI<br>FKP 02 = FKPO<br>MKS 02 = MKS0<br>FKS 2 = FKS2<br>FKP 2 = FKP2<br>MKS 2 = MKS2<br>MKP 2 = MKP2<br>FKS 3 = FKS3<br>FKP 3 = FKP3<br>MKS 4 = MKS4<br>MKP 4 = MKP4<br>MKP 10 = MKP1<br>FKP 4 = FKP4<br>FKP 1 = FKP1<br>MKP-X2 = MKX2<br>MKP-X2 R = MKXR<br>MKP-X1 R = MKX1<br>MKP-Y2 = MKY2<br>MP 3-X2 = MPX2<br>MP 3-X1 = MPX1<br>MP 3-Y2 = MPY2<br>MP 3R-Y2 = MPRY<br>Snubber MKP = SNMP<br>Snubber FKP = SNFP<br>GTO MKP = GTOM<br>DC-LINK MKP 3 = DCP3<br>DC-LINK MKP 4 = DCP4<br>DC-LINK MKP4S = DCP5<br>DC-LINK MKP 5 = DCP5<br>DC-LINK MKP 6 = DCP6<br>DC-LINK HC = DCHC |   |   |   | <b>Rated voltage:</b><br><br>50 VDC = B0<br>63 VDC = C0<br>100 VDC = D0<br>250 VDC = F0<br>400 VDC = G0<br>450 VDC = H0<br>600 VDC = I0<br>630 VDC = J0<br>700 VDC = K0<br>800 VDC = L0<br>850 VDC = M0<br>900 VDC = N0<br>1000 VDC = O1<br>1100 VDC = P0<br>1200 VDC = Q0<br>1250 VDC = R0<br>1500 VDC = S0<br>1600 VDC = T0<br>2000 VDC = U0<br>2500 VDC = V0<br>3000 VDC = W0<br>4000 VDC = X0<br>6000 VDC = Y0<br>250 VAC = 0W<br>275 VAC = 1W<br>300 VAC = 2W<br>305 VAC = AW<br>400 VAC = 3W<br>440 VAC = 4W<br>500 VAC = 5W<br><br>... |   | <b>Capacitance:</b><br><br>22 pF = 0022<br>47 pF = 0047<br>100 pF = 0100<br>150 pF = 0150<br>220 pF = 0220<br>330 pF = 0330<br>470 pF = 0470<br>680 pF = 0680<br>1000 pF = 1100<br>1500 pF = 1150<br>2200 pF = 1220<br>3300 pF = 1330<br>4700 pF = 1470<br>6800 pF = 1680<br>0.01 μF = 2100<br>0.022 μF = 2220<br>0.047 μF = 2470<br>0.1 μF = 3100<br>0.22 μF = 3220<br>0.47 μF = 3470<br>1 μF = 4100<br>2.2 μF = 4220<br>4.7 μF = 4470<br>10 μF = 5100<br>22 μF = 5220<br>47 μF = 5470<br>100 μF = 6100<br>220 μF = 6220<br>1000 μF = 7100<br>1500 μF = 7150<br><br>... |   |   |    | <b>Size:</b><br><br>4.8×3.3×3 Size 1812 = KA<br>4.8×3.3×4 Size 1812 = KB<br>5.7×5.1×3.5 Size 2220 = QA<br>5.7×5.1×4.5 Size 2220 = QB<br>7.2×6.1×3 Size 2824 = TA<br>7.2×6.1×5 Size 2824 = TB<br>10.2×7.6×5 Size 4030 = VA<br>12.7×10.2×6 Size 5040 = XA<br>15.3×13.7×7 Size 6054 = YA<br>2.5×7×4.6 PCM 2.5 = 0B<br>3×7.5×4.6 PCM 2.5 = 0C<br>2.5×6.5×7.2 PCM 5 = 1A<br>3×7.5×7.2 PCM 5 = 1B<br>2.5×7×10 PCM 7.5 = 2A<br>3×8.5×10 PCM 7.5 = 2B<br>3×9×13 PCM 10 = 3A<br>4×9×13 PCM 10 = 3C<br>5×11×18 PCM 15 = 4B<br>6×12.5×18 PCM 15 = 4C<br>5×14×26.5 PCM 22.5 = 5A<br>6×15×26.5 PCM 22.5 = 5B<br>9×19×31.5 PCM 27.5 = 6A<br>11×21×31.5 PCM 27.5 = 6B<br>9×19×41.5 PCM 37.5 = 7A<br>11×22×41.5 PCM 37.5 = 7B<br>19×31×56 PCM 48.5 = 8D<br>35×50×57 PCM 52.5 = 9F<br><br>...<br><br><b>Version code:</b><br>Standard = 00<br>Version A1 = 1A<br>Version A1.1.1 = 1B<br>Version A2 = 2A<br><br>... |    |    |    | <b>Tolerance:</b><br><br>±20% = M<br>±10% = K<br>±5% = J<br>±2.5% = H<br>±1% = E<br><br>...<br><br><b>Packing:</b><br>AMMO H16.5 340×340 = A<br>AMMO H16.5 490×370 = B<br>AMMO H18.5 340×340 = C<br>AMMO H18.5 490×370 = D<br>REEL H16.5 360 = F<br>REEL H16.5 500 = H<br>REEL H18.5 360 = I<br>REEL H18.5 500 = J<br>ROLL H16.5 = N<br>ROLL H18.5 = O<br>BLISTER W12 180 = P<br>BLISTER W12 330 = Q<br>BLISTER W16 330 = R<br>BLISTER W24 330 = T<br>Bulk/TPS Standard = S<br><br>...<br><br><b>Pin length (untaped)</b><br>3.5 ±0.5 = C9<br>6 -2 = SD<br>16 ±1 = P1<br><br>... |      |      |    |

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.