WIMA FKC 3

Polycarbonate film and foil capacitors for pulse applications

■ Good attenuation, high resonant frequency. ■ Constant capacitance value with temperature. ■ Low ESR because of metal foil electrodes and end-surface contacts. ■ High insulation resistance. ■ For pulse applications where constant capacitance values with wide temperature ranges are required. ■ Available taped and reeled.

Technical Data

Dielectric: Polycarbonate film.
Capacitor electrodes: Metal foil.
Encapsulation: Flame retardent plastic case, UL 94 V-0, with epoxy resin seal.
Colour: Yellow. Marking: Black.
Temperature range: -55° C to +100° C.
Test specifications: In accordance with IEC 60384-12 and EN 131700.
Test category: 55/100/56 in accordance with IEC.
Insulation resistance at +20° C:
>= 5 x 10^5 megohms
(mean value: 1 x 10^6 megohms)
In accordance with IEC 60384-12 and EN 131700.
Measuring voltage: 100 V/1 min.
Dissipation factors at +20° C:
tan delta <= 2 x 10^{-3} at 1 kHz
tan delta <= 4 x 10^{-3} at 10 kHz
tan delta <= 8 x 10^{-3} at 100 kHz

Capacitance tolerances: +/-20%, +/-10%, +/-5%.
Maximum pulse rise time: 1000 V/microsecond for pulses equal to the rated voltage
Test voltage: 2 Ur, 2 sec.
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^2 in accordance with IEC 60068-2-29.
Dielectric absorption: 0.05 %.
Voltage derating: A voltage derating factor of 1 % per K must be applied from +85° C for DC voltages and from +75° C for AC voltages.

Graphs:

Taping:

General Data

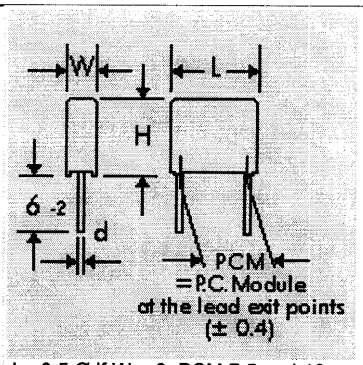
Capaci-tance	160 VDC/ 100 VAC*				250 VDC/ 160 VAC*				400 VDC/ 250 VAC*				630 VDC/ 300 VAC*				1000 VDC/ 300 VAC*			
	W	H	L	PCM**	W	H	L	PCM**	W	H	L	PCM**	W	H	L	PCM**	W	H	L	PCM**
100 pF	3	8.5	10	7.5	3	8.5	10	7.5	3	9	13	10	3	9	13	10				
150 "	3	8.5	10	7.5	3	8.5	10	7.5	3	9	13	10	3	9	13	10				
220 "	3	8.5	10	7.5	3	8.5	10	7.5	3	9	13	10	3	9	13	10				
330 "	3	8.5	10	7.5	3	8.5	10	7.5	3	9	13	10	3	9	13	10				
470 "	3	8.5	10	7.5	3	8.5	10	7.5	3	9	13	10	3	9	13	10				
680 "	3	8.5	10	7.5	3	8.5	10	7.5	3	9	13	10	3	9	13	10				
1000pF	3	8.5	10	7.5	3	8.5	10	7.5	3	9	13	10	3	9	13	10	3	9	13	10
1500 "	3	8.5	10	7.5	3	8.5	10	7.5	3	9	13	10	3	9	13	10	4	10	18	15
2200 "	3	8.5	10	7.5	3	8.5	10	7.5	3	9	13	10	4	9.5	13	10	4	10	18	15
3300 "	3	8.5	10	7.5	4	9	10	7.5	3	9	13	10	4	9.5	13	10	4	10	18	15
4700 "	4	9	10	7.5*	3	9	13	10	4	9.5	13	10	5	11	13	10	5	11	18	15
	3	9	13	10*																
6800 "	4	9	10	7.5*	4	9.5	13	10	5	11	13	10	6	12	13	10	6	12.5	18	15
	4	9.5	13	10*																
0.01µF	4	9.5	13	10	4	9.5	13	10	6	12	13	10	6	12	13	10*	7	14	18	15
													5	11	18	15*				
0.015 "	4	9.5	13	10	5	11	13	10	6	12.5	18	15	7	14	18	15				
0.022 "	5	11	13	10	6	12	13	10	7	14	18	15	8	15	18	15				
0.033 "	6	12	13	10	7	14	18	15	8	15	18	15								
0.047 "	6	12.5	18	15	8	15	18	15	9	16	18	15								

*AC voltage: f <= 400 Hz;
1.4 x Urms + UDC <= Ur

**PCM = Printed circuit module = lead spacing.

*On ordering please state the required PCM (lead spacing).
If not specified, smaller PCM will be booked.

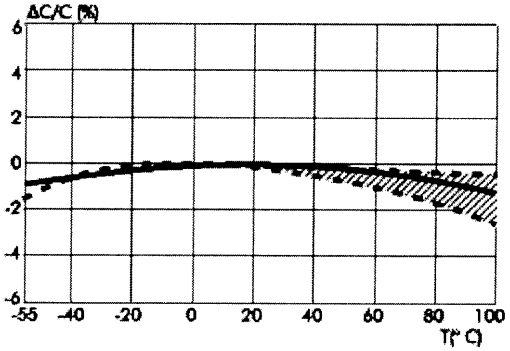
Dims. in mm.



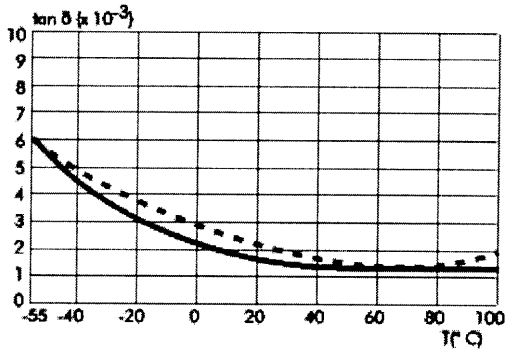
d = 0.5 Ø if W = 3: PCM 7.5 and 10
d = 0.7 Ø if W >= 4: PCM 7.5 and 10
d = 0.8 Ø if PCM = 15

Polycarbonate

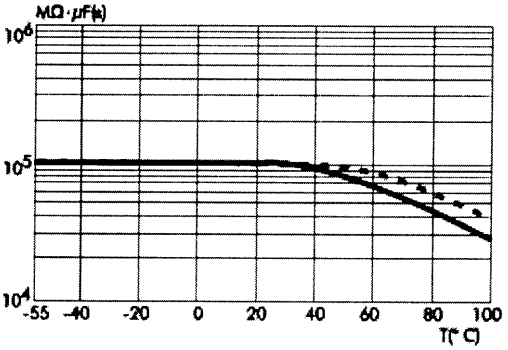
Typical graphs of the polycarbonate dielectric



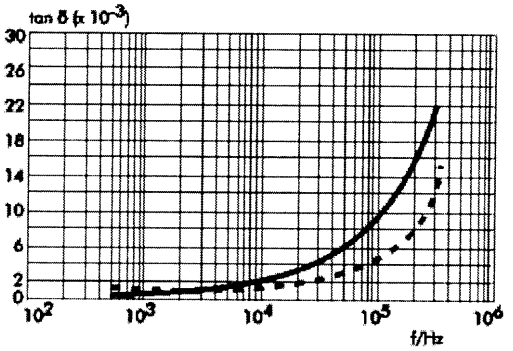
Capacitance change with temperature
(f=1 kHz) (general guide)



Dissipation factor change with temperature
(f=1 kHz) (general guide)



Insulation resistance change with temperature
(general guide)



Dissipation factor change with frequency
(general guide)

Annotation:

The full lines characterize the metallized versions

The broken lines show the film/foil types

Typical dimensions for taping configuration

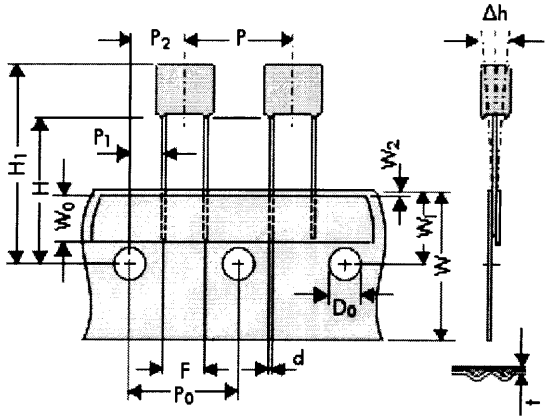


Diagram 1:
PCM 2.5/5/7.5 mm

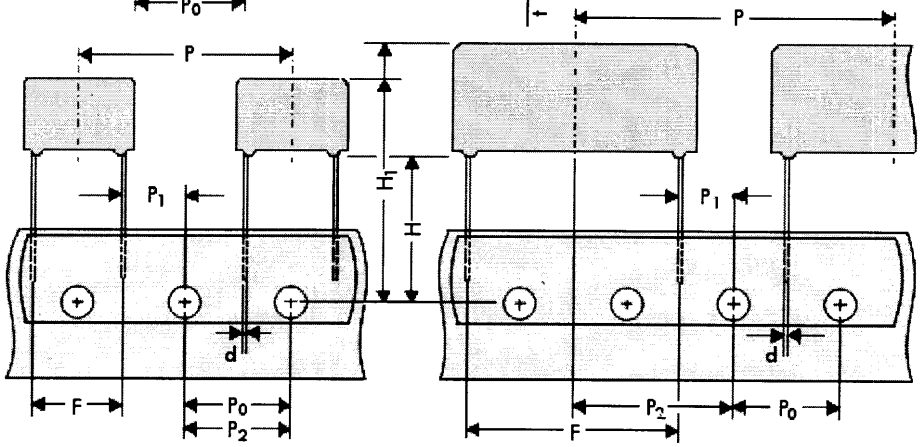


Diagram 2: PCM 10/15 mm

Diagram 3: PCM 22.5 and 27.5*mm
*PCM 27.5 taping possible with two feed holes between components

		Dimensions for radial insertion						
Designation	Symbol	PCM 2.5	PCM 5	PCM 7.5	PCM 10**	PCM 15**	PCM 22.5	PCM 27.5
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	W0	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 adhesiv tape
Hole position	W1	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	W2	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 r
Feed hole diameter	D0	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 o 50.8±1.5
Feed hole pitch	P0	12.7±0.3 cumulative pitch error max. 1.0mm/20pitch	12.7±0.3 cumulative pitch error max. 1.0mm/20pitch	12.7±0.3 cumulative pitch error max. 1.0mm/20pitch	12.7±0.3 cumulative pitch error max. 1.0mm/20pitch	12.7±0.3 cumulative pitch error max. 1.0mm/20pitch	12.7±0.3 cumulative pitch error max. 1.0mm/20pitch	12.7±0.3 cumulative pitch error max. 1.0mm/20pitch
Feed hole centre to lead	P1	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	P2	6.35±1.3	6.35±1.3	6.35±1.3	12.7±1.3	12.7±1.3	19.05±1.3	19.05±1.3
Feed hole centre to bottom edge of the component	H**	16.5±0.3	16.5±0.3	16.5±0.3	16.5±0.3	16.5±0.3	16.5±0.3	16.5±0.3
		18.5±0.5	18.5±0.5	18.5±0.5	18.5±0.5	18.5±0.5	18.5±0.5	18.5±0.5

Feed hole centre to top edge of the component	H_1	$H+H_{component}$ < H_1 32.25 max.	$H+H_{component}$ < H_1 32.25 max.	$H+H_{component}$ < H_1 24.25 to 31.5	$H+H_{component}$ < H_1 25.0 to 31.5.	$H+H_{component}$ < H_1 26.0 to 37.0	$H+H_{component}$ < H_1 30.0 to 43.0	$H+H_{compo}$ < H_1 35.0 45.0
Lead spacing	F	$2.5_{\pm 0.5}$	$5_{+0.8/-0.2}$	$7.5_{\pm 0.8}$	$10.0_{\pm 0.8}$	$15.0_{\pm 0.8}$	$22.5_{\pm 0.8}$	$27.5_{\pm 0.8}$
Lead diameter	d	$0.4_{+0.05}$	$0.5_{+0.05}$	$*0.5_{+0.05}$ or $0.7_{+0.07/-0.05}$	$*0.5_{+0.05}$ or $0.7_{+0.07/-0.05}$	$0.8_{+0.08/-0.05}$	$0.8_{+0.08/-0.05}$	$*0.8_{+0.08/-0.}$ or $1.0_{+0.1/-}$
Component alignment	delta h	± 2.0 max.	± 2.0 max.	± 3.0 max.	± 3.0 max.	± 3.0 max.	± 3.0 max.	± 3.0 max.
Total tape thickness	t	$0.7_{\pm 0.2}$	$0.7_{\pm 0.2}$	$0.7_{\pm 0.2}$	$0.7_{\pm 0.2}$	$0.7_{\pm 0.2}$	$0.7_{\pm 0.2}$	$0.7_{\pm 0.2}$
Package	**	**ROLL / AMMO / REEL**		**AMMO / REEL**				

**Please give "H" dimension and desired packaging type when ordering.

* Diameter of leads see General Data.

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

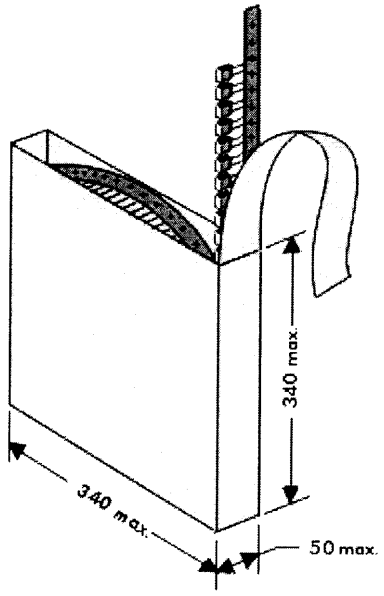
Dims. in mm.

Minimum packing units for capacitors with radial leads

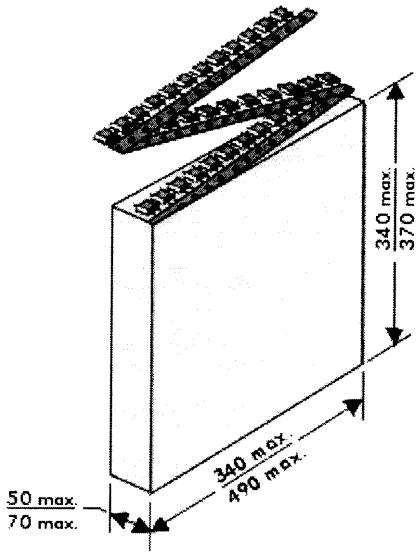
Please clarify customer-specific deviations with the manufacturer.

Types of tape packaging of capacitors for automatic radial insertion

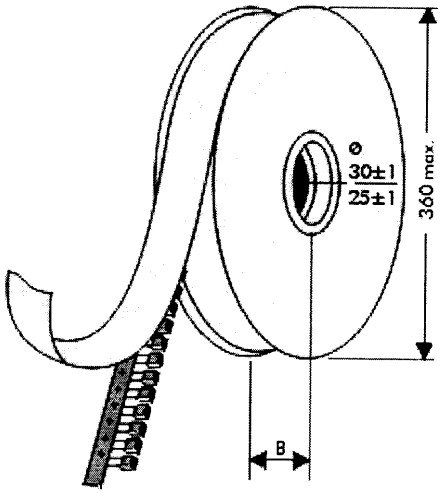
■ **ROLL packaging**



■ **AMMO packaging**



■ **REEL packaging**



REEL Ø 360 max. / Ø 30 ±1 : B = 52±2 / 58±2 / 66±2 or Ø 500 max. / Ø 25 ±1 : B = 54±2 / 60±2 / 68±2 depending on PCM and component dimensions

For further details see packing units