WIMA FKP 2

Polypropylene (PP) Film and Foil Capacitors for Pulse Applications in PCM 5 mm

Special Features

- Pulse duty construction
- Close tolerances up to ±2.5 % (±1 % on request)
- Very low dissipation factor
- Negative capacitance change versus temperature
- Very low dielectric absorption
- According to RoHS 2002/95/EC

Typical Applications

For high frequency applications e.g.

- Sample and hold
- Timing
- LC-Filtering
- Oscillating circuits
- Audio equipment

Construction

Dielectric:

Polypropylene (PP) film **Capacitor electrodes:** Metal foil **Internal construction:**



Encapsulation:

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

Terminations:

Tinned wire.

Marking:

Colour: Red. Marking: Black. Epoxy resin seal: Yellow

Electrical Data

Capacitance range:

33 pF to 0.033 µF (E12-values on request) **Rated voltages:**

63 VDC, 100 VDC, 250 VDC, 400 VDC, 630 VDC, 800 VDC, 1000 VDC

Capacitance tolerances: ±10%, ±5%, ±2.5% (±2%, ±1.5% or ±1% available as precision capacitors subject to special enquiry)

Operating temperature range: -55° C to $+100^{\circ}$ C

Test specifications: In accordance with IEC 60384-13 and EN 131 800

Climatic test category: 55/100/56 in accordance with IEC

Dissipation factors at +20° C: tan δ

C ≤ 1000 pF at f $1000 \text{ pF} < \text{C} \le 4700 \text{ pF}$ C > 4700 pF≤ 4 x 10-4 1 kHz ≤ 3 x 10-4 ≤ 4 x 10⁻⁴ 10 kHz ≤ 3 x 10-4 $\leq 4 \times 10^{-4}$ $\leq 4 \times 10^{-4}$ 100 kHz ≤ 4 x 10-4 $\leq 5 \times 10^{-4}$ _ 1 MHz $\leq 10 \times 10^{-4}$ _

Mechanical Tests

Pull test on leads:

10 N in direction of leads according to IEC 60068-2-21

Vibration:

6 hours at 10 ... 2000 Hz and 0.75 mm displacement amplitude or 10 g in accordance with IEC 60068-2-6

Low air density:

1kPa = 10 mbar in accordance with IEC 60068-2-13

Bump test:

4000 bumps at 390 m/sec² in accordance with IEC 60068-2-29

Packing

Available taped and reeled.

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

For further details and graphs please refer to Technical Information.



1000 V/µsec for pulses equal to the

A voltage derating factor of 1.35 % per K

must be applied from +85° C for DC

voltages and from +75° C for AC

Operational life > 300 000 hours

Failure rate < 5 fit (0.5 x U_r and 40° C)

Test voltage: $2 \cup_{r'} 2$ sec. Maximum pulse rise time:

Dielectric absorption:

Voltage derating:

Temperature coefficient: -200 x 10⁻⁶/° C (typical)

rated voltage

0.05%

voltages

Reliability:



WIMA FKP 2

Continuation



General Data

Capac- itance		VDC/ H	/40 V/ L	4C* PCM			:/63 V L	AC* PCM	250 W	VDC/		/AC* PCM			/220 \ L		630 W		/250 \ L	VAC* PCM			/250 \ L	VAC* PCM		VDC H	/250 \ L	VAC* PCM
33 pF 47 " 68 "																									4.5 4.5 4.5	6 6 6	7.2 7.2 7.2	5 5 5
100 pF 150 " 220 " 330 " 470 " 680 "	4.5 4.5 4.5 4.5 4.5 4.5	6 6 6 6 6	7.2 7.2 7.2 7.2 7.2 7.2 7.2	5 5 5 5 5 5 5	4.5 4.5 4.5 4.5 4.5 4.5	6 6 6 6 6	7.2 7.2 7.2 7.2 7.2 7.2 7.2	555555	4.5 4.5 4.5 4.5 4.5 4.5	6 6 6 6 6 6 6	7.2 7.2 7.2 7.2 7.2 7.2 7.2	5 5 5 5 5 5 5 5	4.5 4.5 4.5 4.5 4.5 4.5	66666	7.2 7.2 7.2 7.2 7.2 7.2 7.2	5 5 5 5 5 5 5	4.5 4.5 4.5 4.5 4.5 4.5	6 6 6 6 6	7.2 7.2 7.2 7.2 7.2 7.2 7.2	5 5 5 5 5 5 5	4.5 4.5 4.5 5.5 5.5	6 6 6 7 7	7.2 7.2 7.2 7.2 7.2 7.2 7.2	5 5 5 5 5 5 5	4.5 4.5 4.5 5.5 5.5	6 6 6 7 7	7.2 7.2 7.2 7.2 7.2 7.2 7.2	5 5 5 5 5 5
1000 pF 1500 " 2200 " 3300 " 4700 " 6800 "	4.5 4.5 4.5 4.5 4.5 4.5	6 6 6 6 6	7.2 7.2 7.2 7.2 7.2 7.2 7.2	5 5 5 5 5 5	4.5 4.5 4.5 5.5 5.5 5.5	6 6 7 7 7	7.2 7.2 7.2 7.2 7.2 7.2 7.2	5 5 5 5 5 5	4.5 4.5 4.5 5.5 6.5 6.5	6 6 7 8 8	7.2 7.2 7.2 7.2 7.2 7.2 7.2	5 5 5 5 5 5 5	4.5 4.5 4.5 5.5 6.5 7.2	6 6 7 8 8.5	7.2 7.2 7.2 7.2 7.2 7.2 7.2	5 5 5 5 5 5	4.5 4.5 5.5 6.5 6.5 7.2	6 6 7 8 8 8.5	7.2 7.2 7.2 7.2 7.2 7.2 7.2	5 5 5 5 5 5	5.5 5.5 6.5 7.2 8.5	7 7 8.5 10	7.2 7.2 7.2 7.2 7.2 7.2	5 5 5 5 5	6.5 7.2 8.5	8 8.5 10	7.2 7.2 7.2	5 5 5
0.01 µF 0.015 " 0.022 " 0.033 "		7 8 8.5 10	7.2	5 5 5 5	6.5 7.2 8.5	10	7.2 7.2 7.2	5 5 5	7.2 8.5		7.2 7.2	5 5	8.5	10	7.2	5	8.5	10	7.2	5								
* AC voltage: $f \le 1000 \text{ Hz}$; $1.4 \times U_{ms} + \text{UDC} \le U_r$ ** PCM = Printed circuit module = lead spacing. E12 values and individual values available from 27 pF up on request. Dims. in mm. T																												
	Taped version see page 104. $d = 0.5 \ \emptyset$ Rights reserved to amend design data without prior notification. $d = 0.5 \ \emptyset$ $d = 0.5 \ \emptyset$																											
Permiss in relat	ion to	o free	quen	су	turo	ino			Urms V 5 2										Urms V 5 220 2									

at 10° C internal temperature rise (general guide).







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



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

Single wave soldering

Soldering bath temperature: T(260°C Immersion time: t(5 sec

Double wave soldering

Soldering bath temperature: T(260°C Immersion time: 2xt(3sec



Temperature/time graph for the maximum permissible solder bath temperature for the wave soldering of through-hole WIMA capacitors

- PBB/PBDE

- Arsenic

- Mercurv

- etc.

WIMA Quality and Environmental Philosophy-

ISO 9001:2000 Certification

ISO 9001:2000 is an international basic standard of quality assurance systems for all branches of industry. The approval according to ISO 9001:2000 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
- lead attachment cast resin preparation/
- encapsulation
- **100% final inspection**
- AQL check

WIMA Environmental Policy

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

- Lead
- PCB
- CFC
- Hydrocarbon chloride
- Chromium 6+

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

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

We almost completely refrain from using packing materials such as:

- foamed polystyrene (Styropor®)
- adhesive tapes made of plastic
- metal clips

RoHS Compliance

According to the RoHS Directive 2002/95/EC certain hazardous substances like e.g. lead, cadmium, mercury must not be used any longer in electronic equipment as of July 1st, 2006. For the sake of the environment WIMA has refraind from using such substances since years already.



Tape for lead-free WIMA capacitors

DIN EN ISO 14001:2005

WIMA's environmental management has been established in accordance with the guidelines of DIN EN ISO 14001:2005. The certification has been granted in June 2006.





52 ±2 B 58 ±2 or REEL Ø 500 mo 66 ±2 54 ±2 B 60 ±2 68 ±2 depending on PCM and (see also page 105) REEL Ø 360 mox. B 52 ±2 58 ±2 depending on comp. dimension REEL Ø 360 mox. Ø 30 ±1 see details page 107

▲ Please give "H" dimensions and desired packaging type when ordering.

Diameter of leads see General Data.

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

Position of components according to PCM 7.5 (sketch 1), $P_0 = 12.7$ or 15.0 is possible

Please clarify customer-specific deviations with the manufacturer.

Dims in mm.

Unit