EPCOS

Power Factor Correction

Construction

- Dielectric: Polypropylene film
- Non PCB, biodegradable soft resin
- Extruded round aluminum can with stud
- Provided with discharge resistors

Features

- Three phase, delta connected
- Naturally air cooled or forced air cooling
- Indoor mounting

Typical applications

PFC and detuned systems

Terminals

Fast-on terminals

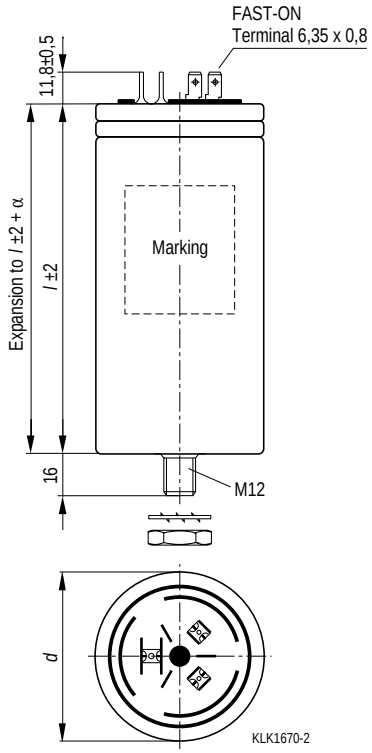
Mounting parts

- Threaded stud at bottom of can
  Max. torque = 4 Nm for M8 (Ø 53 mm)
  Max. torque = 10 Nm for M12 (Ø 63.5 mm)

Technical data and specifications

Standard	IEC 831-1+2, IS: 13340/41 UL 810 5th edition, cUL file E106388
Rated capacitance C_N & Q_R	According to dimensions table
Tolerance (%)	-5 / +10
Rated voltage U_R	According to dimensions table
Rated frequency f_R	50/60 Hz
Mean life expectancy	Up to 100 000 operating hours
Maximum ratings	
Maximum permissible overvoltage U_{max}	U_R + 10% (up to 8 h daily) U_R + 15% (up to 30 min daily), U_R + 20% (up to 5 min daily) U_R + 30% (up to 1 min daily)
Maximum permissible overcurrent I_{max}	1.5 x I_R (I_R: rated current), including combined effects of harmonics, overvoltages and capacitance
Number of switching operations	Max. 5 000 switchings per year according IEC 831
Transient inrush current (max) I_S	Up to 200 x I_R
Losses: Dielectric Total	 < 0.2 W/kvar < 0.45 W/kvar
Test voltage, terminal/terminal U_{TT}	2.15 x U_R , 10 s
Test voltage, terminal/case U_{TC}	3 000 V_{AC}, 10 s
Temperature class	-25/D Max. temp. 55 °C Max. mean 24 h = 45 °C Max. mean 1 year = 35 °C
Safety	Self-healing technology, overpressure disconnector, maximum allowed fault current 10 000 A in accordance with UL 810-standard
Case/shape	Aluminum/cylindrical
Enclosure	IP00, IP20, optionally IP54
Permissible maximum humidity	95%
Maximum permissible altitude	4 000 m above sea level
Mounting position	Upright
Mounting and grounding	Threaded M8 (4 Nm / Ø 53 mm), M12 (10 Nm / Ø 63.5mm)

Dimensional drawing



Creepage distance	10.5 mm (ø 53) 10.0 mm (ø 63.5)
Clearance	13.0 mm (ø 53) 16.5 mm (ø 63.5)
Diameter (ø)	53 mm 63.5 mm
Expansion α	max. 12 mm

Mounting

	M12 (ø 63.5 mm)	M8 (ø 53 mm)
Torque	T=10 Nm	T=4 Nm
Toothed washer	J12.5 DIN 6797	J8.0 DIN 6797
Hex nut	BM12 DIN 439	BM8 DIN 439

Rated voltage: 230 VAC, 50/60 Hz, delta connection

Type	50 Hz		60 Hz		C_N	d x h	Weight	Ordering code
	Output kvar	I_R A	Output kvar	I_R A	µF	mm	kg	
MKP230-D-0.5	0.5	1.3	0.6	1.6	3 * 10	53 x 114	0.30	B32343C2002A530
MKP230-D-0.7	0.7	1.9	0.9	2.3	3 * 15	53 x 114	0.30	B32343C2002A730
MKP230-D-1.0	1.0	2.5	1.2	3.0	3 * 20	63.5 x 129	0.30	B32343C2012A030
MKP230-D-1.5	1.5	3.8	1.8	4.6	3 * 30	63.5 x 129	0.40	B32343C2012A530

Rated voltage: 400 VAC, 50/60 Hz, delta connection

Type	50 Hz		60 Hz		C_N	d x h	Weight	Ordering code
	Output kvar	I_R A	Output kvar	I_R A	µF	mm	kg	
MKP400-D-1.0	1.0	1.4	1.2	1.7	3 * 7	53 x 114	0.30	B32343C4012A000
MKP400-D-1.5	1.5	2.2	1.8	2.6	3 * 10	53 x 114	0.30	B32343C4012A500
MKP400-D-2.0	2.0	2.9	2.4	3.5	3 * 13	63.5 x 129	0.40	B32343C4022A000
MKP400-D-2.5	2.5	3.6	3.0	4.3	3 * 17	63.5 x 129	0.40	B32343C4022A500
MKP400-D-5.0	5.0	7.2	6.0	8.6	3 * 33	63.5 x 129	0.40	B32343C4052A000

Rated voltage: 415 VAC, 50/60 Hz, delta connection

Type	50 Hz		60 Hz		C_N	d x h	Weight	Ordering code
	Output kvar	I_R A	Output kvar	I_R A	µF	mm	kg	
MKP415-D-1.0	1.0	1.4	1.2	1.6	3 * 6	53 x 114	0.30	B32343C4012A010
MKP415-D-1.5	1.5	2.1	1.8	2.4	3 * 9	53 x 114	0.30	B32343C4012A510
MKP415-D-2.0	2.0	2.8	2.4	3.4	3 * 12	53 x 114	0.40	B32343C4022A010
MKP415-D-2.5	2.5	3.5	3.0	4.2	3 * 15	63.5 x 129	0.40	B32343C4022A510
MKP415-D-5.0	5.0	7.0	6.0	8.4	3 * 31	63.5 x 154	0.40	B32343C4052A010

Rated voltage: 440 VAC, 50/60 Hz, delta connection

Type	50 Hz		60 Hz		C_N	d x h	Weight	Ordering code
	Output kvar	I_R A	Output kvar	I_R A	µF	mm	kg	
MKP440-D-0.9	0.9	1.2	1.0	1.3	3 * 5	53 x 114	0.30	B32343C4011A040
MKP440-D-1.0	1.0	1.3	1.2	1.6	3 * 6	53 x 114	0.30	B32343C4012A040
MKP440-D-1.2	1.2	1.6	1.5	2.0	3 * 7	53 x 114	0.30	B32343C4011A540
MKP440-D-1.5	1.5	2.0	1.8	2.3	3 * 8	53 x 114	0.30	B32343C4012A540
MKP440-D-2.1	2.1	2.7	2.5	3.3	3 * 11	53 x 114	0.40	B32343C4021A540
MKP440-D-2.5	2.5	3.3	3.0	3.9	3 * 13	63.5 x 129	0.30	B32343C4022A540
MKP440-D-4.2	4.2	5.5	5.0	6.6	3 * 23	63.5 x 129	0.40	B32343C4051A040
MKP440-D-5.0	5.0	6.5	6.0	7.8	3 * 27	63.5 x 154	0.50	B32343C4052A040

Rated voltage: 480 VAC, 50/60 Hz, delta connection

Type	50 Hz		60 Hz		C_N	d x h	Weight	Ordering code
	Output kvar	I_R A	Output kvar	I_R A	µF	mm	kg	
MKP480-D-1.5	1.5	1.8	1.8	2.2	3 * 7	63.5 x 129	0.40	B32343C4012A580
MKP480-D-2.0	2.0	2.4	2.4	2.9	3 * 9	63.5 x 129	0.40	B32343C4022A080
MKP480-D-2.5	2.5	3.0	3.0	3.6	3 *11	63.5 x 129	0.40	B32343C4022A580

Rated voltage: 525 VAC, 50/60 Hz, delta connection

Type	50 Hz		60 Hz		C_N	d x h	Weight	Ordering code
	Output kvar	I_R A	Output kvar	I_R A	µF	mm	kg	
MKP525-D-1.0	1.0	1.1	1.2	1.3	3 * 4	53 x 114	0.30	B32343C5012A020
MKP525-D-1.5	1.5	1.6	1.8	2.0	3 * 6	53 x 114	0.30	B32343C5012A520
MKP525-D-2.0	2.0	2.2	2.4	2.6	3 * 8	63.5 x 129	0.40	B32343C5022A020
MKP525-D-2.5	2.5	2.7	2.7	3.0	3 * 9	63.5 x 129	0.40	B32343C5022A520

Cautions

Discharge and short circuit capacitor before handling!

Mechanical damage

In case of dents of more than 0.5 mm or any other mechanical damage, capacitors must not be used at all.

Vibration resistance

The resistance to vibration of capacitors corresponds to IEC 68, part 2–6. Max. test conditions:

Test duration 2 h	corresponding to max. 0.7 g
Frequency range 10 ... 55 Hz	corresponding to max. 0.7 g
Displacement amplitude 0.75 mm	corresponding to max. 0.7 g

These figures apply to the capacitor alone. Because the fixing and the terminals may influence the vibration properties, it is necessary to check stability when a capacitor is built in and exposed to vibration. Irrespective of this, you are advised not to locate capacitors where vibration amplitude reaches the maximum in strongly vibrating equipment.

Connection

Make sure connection cables are of flexible type or flexible copper bands are used. This is mandatory to allow the overpressure disconnector work and avoid mechanical stress on the terminals and feed throughs. The connection cables to the capacitor should be designed for a current of at least 1.5 times the rated current so that no heat is conducted into the capacitor. If reactors are used in an application, the distance between reactor and capacitor must be great enough so that no heat of the reactors, which are operating at a much higher temperature level, is conducted via connection cable to the capacitors.

Avoid bending cable lugs, cables or other mechanical force on the terminals. Otherwise leakages may set the safety device out of operation. Ensure firm fixing of terminals, fixing torque to be applied as per individual specification. Maximum specified terminal current (please refer to technical data of specific series) must not be exceeded at any case.

Grounding

The threaded bottom stud of the capacitor has to be used for grounding. In case grounding is done via metal chassis that the capacitor is mounted to, the layer of varnish beneath the washer and nut should be removed.

Storage and operating conditions

Do not use or store capacitors in corrosive atmosphere, especially where chloride gas, sulfide gas, acid, alkali, salt or the like are present. In dusty environments regular maintenance and cleaning especially of the terminals is required to avoid conductive path between phases and/or phases and ground.

⚠ Please read information about PFC capacitors and cautions as well as installation and maintenance instructions (Power Factor Correction Product Profile, actual version) to ensure optimum performance and prevent products from failing, and in worst case, bursting and fire, etc.

Information given in the PFC-product profile and values given in the data sheet reflect typical specifications. You are kindly requested to approve our product specifications or request our approval for your specification before ordering.