

EPCOS Product Brief 2011

# Power Factor Correction

PhiCap Capacitors for Power Quality Solutions

Based on the well-proven MKP-technology with stacked winding, PhiCap® capacitors are found in numberless industrial and semi-industrial surroundings all over the world. The cost-effective design offers a broad output range from 0.7 to 6.0 kvar for single-phase capacitors and 0.5 to 30 kvar for three-phase capacitors. The voltage range covers 230 to 525 V.

## Applications

- Power Factor Correction (PFC)
- Automatic capacitor banks
- Fixed PFC applications, e.g. motor compensation
- Detuned PFC systems
- Dynamic PFC systems

## Features

- Compact design in cylindrical aluminum can with stud
- Stacked winding
- MKP technology

- Output range 0.5 ... 30 kvar
- Voltage range 230 ... 525 V AC

## Safety

- Self-healing
- Overpressure disconnecter
- Optimized capacitor safety terminal for B32344E series

## Electrical

- Up to 30 kvar per case for three-phase applications
- Up to 6 kvar per case for single-phase applications
- Long life expectancy up to 135 000 hours at temperature class -40/C
- High pulse current withstand capability (up to  $200 \bullet I_R$ )

## Mechanical and maintenance

- Reduced mounting costs, easy installation and connection
- Low weight and compact volume
- Maintenance-free

PQS



# PhiCap Capacitors



## Product range of PFC capacitors

### Single-phase capacitor B32340 series

- With fast-on terminals, discharge resistors included in delivery unit
- Output range: 0.7 kvar at 50 Hz to 6 kvar at 60 Hz

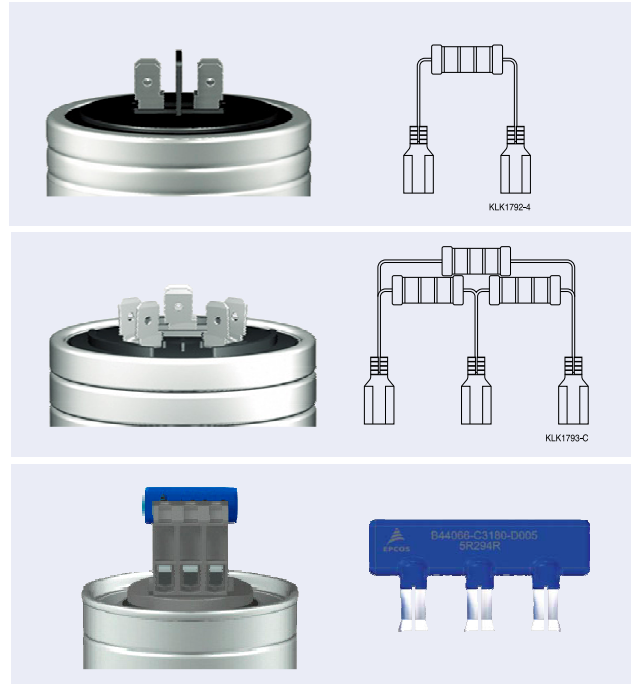
### Three-phase capacitor B32343 series

- With fast-on terminals, discharge resistors included in delivery unit
- Output range: 0.5 kvar at 50 Hz to 6.0 kvar at 60 Hz

### Three-phase capacitor B32344E series

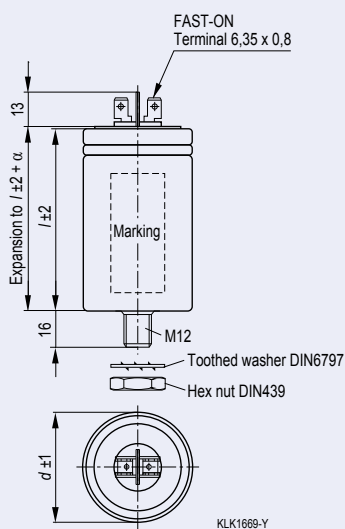
- With optimized capacitor safety terminal, discharge resistor pre-mounted
- Output range: 2.0 to 30 kvar

For particular ordering codes please refer to the PFC Product Profile or contact your local EPCOS sales office.



## Dimensional drawing: single-phase capacitors

### Capacitor B32340 series



Creepage distance	10.0 mm
Clearance	16.5 mm
Diameter (Ø)	63.5 mm
Expansion $\alpha$	max. 12 mm

### Mounting

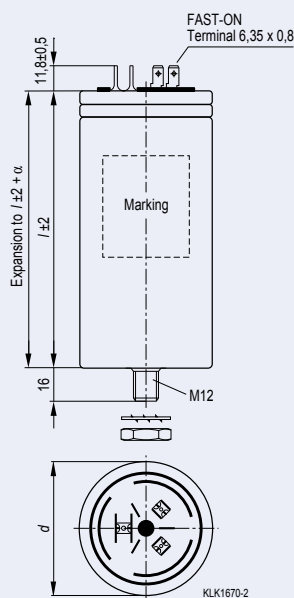
Torque	<u>M12</u> T = 10 Nm
Toothed washer	J12.5 DIN 6797
Hex nut	BM 12 DIN 439

# PhiCap Capacitors



## Dimensional drawings: three-phase capacitors

### Capacitor B32343 series

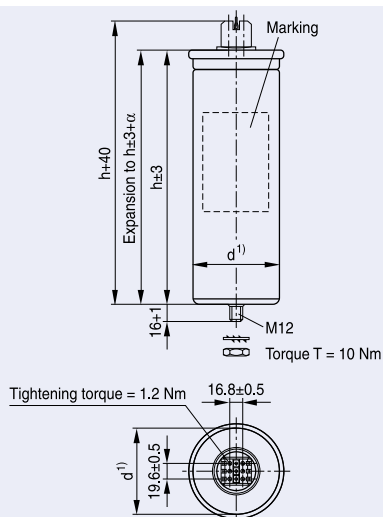


Creepage distance	10.5 mm (Ø53)
	10.0 mm (Ø 63.5)
Clearance	13.0 mm (Ø53)
	16.5 mm (Ø63.5)
Diameter (Ø)	53.0 mm
	63.5 mm
Expansion $\alpha$	max. 12 mm

#### Mounting

	<u>M12</u>	<u>M8</u>
	(Ø63.5 mm)	(Ø53.0 mm)
Torque	T = 10 Nm	T = 4 Nm
Toothed washer	J12.5	J8.0
	DIN 6797	DIN 6797
Hex nut	BM 12	BM 8
	DIN 439	DIN439

### Capacitor B32344 series



Creepage distance	9.6 mm
Clearance	12.7 mm
Diameter d1 (Ø)	75.0 mm / 85.0 mm
Expansion $\alpha$	max. 13 mm

#### Mounting

	<u>M12</u>
Torque	T = 10 Nm
Toothed washer	J12.5
	DIN 6797
Hex nut	BM 12
	DIN 439

<sup>1)</sup> Seaming adds 4 mm in diameter

KLK1842-9-E

# PhiCap Capacitors



## Technical data and limit values

Standards IEC 60831-1+2, IS: 13340/41, GOST

Overvoltage	$V_{max}$	$V_R + 10\%$ (up to 8 h daily) / $V_R + 15\%$ (up to 30 min daily) $V_R + 20\%$ (up to 5 min daily) / $V_R + 30\%$ (up to 1 min daily)
Overcurrent	$I_{max}$	up to $1.5 \cdot I_R$ including combined effects of harmonics, overvoltages and capacitances
Inrush current	$I_s$	up to $200 \cdot I_R$
Losses: - Dielectric - Total*		$< 0.2 \text{ W/kvar}$ $< 0.45 \text{ W/kvar}$
Rated frequency	$f$	50/60 Hz
Capacitance tolerance		-5% / +10%
Test voltage, terminal / terminal	$V_{TT}$	$2.15 \cdot V_R$ , AC, 2 s
Test voltage, terminal / case	$V_{TC}$	3000 V AC, 10 s
Mean life expectancy	$t_{LD(Co)}$	up to 135 000 h at temperature class -40/C up to 100 000 h at temperature class -40/D
Ambient temperature		-40/D; max. temperature 55 °C; max. mean 24 h = 45 °C; max. mean 1 year = 35 °C; lowest temperature = -40 °C
Cooling		natural or forced
Humidity	$H_{rel}$	max. 95%
Altitude		max. 4000 m above sea level
Mounting position		upright
Mounting and grounding		threaded M12 (10 Nm) for case size diameter $> 53 \text{ mm}$ , M8 (4 Nm) for case size diameter $\leq 53 \text{ mm}$
Safety		self-healing technology, overpressure disconnecter, max. allowed fault current 10 000 A in accordance with UL 810 standard
Discharge resistor		discharge module included, pre-mounted for B32344 series
Case		extruded aluminum can
Enclosure		IP00 for B32340/B32343, indoor mounting (IP54 for B32344 with plastic terminal cap; for other series please refer to particular data sheets)
Dielectric		polypropylene film
Impregnation		biodegradable soft resin, semi-dry
Terminals		optimized capacitor safety terminal for B32344 series, max. current 50 A, max. $16 \text{ mm}^2$ cable cross-section, fast-on terminals for B32340 and 32343 series
Number of switching operations		max. 5000 switchings per year according to IEC 60831-1+2

\* without discharge resistors

**Important information:** Some parts of this publication contain statements about the suitability of our products for certain areas of application. These statements are based on our knowledge of typical requirements that are often placed on our products. We expressly point out that these statements cannot be regarded as binding statements about the suitability of our products for a particular customer application. It is incumbent on the customer to check and decide whether a product is suitable for use in a particular application. This publication is only a brief product survey which may be changed from time to time. Our products are described in detail in our data sheets. The Important notes ([www.epcos.com/ImportantNotes](http://www.epcos.com/ImportantNotes)) and the product-specific Cautions and warnings must be observed. All relevant information is available through our sales offices.