

## EPCOS Product Brief 2017

# Film Capacitors

## for AC Filtering in Industrial Applications

EPCOS is known as one of the world's leading manufacturer of electronic components. Hardly any other supplier offers one-stop-shopping for all key components. The growing sale of power-quality products has led EPCOS to develop a strategy for AC applications.

In conjunction with technical experts, the aim is to offer application know-how rather than just products. That means customized service packages put together by individual application experts and assembled by specialists.

In view of the growing importance of power quality, EPCOS is focusing on AC filtering solutions. The wide range of different powers means that filtering products are split up into various segments: small single-phase systems mostly with powers up to 12 kVA, followed by 3-phase mid and high-power ranges up to 50 kVA, 200 kVA and even above 200 kVA. When used as filters, capacitors will smooth any irregularities that could be introduced in the power network and help to improve power quality and reliability.



# AC Filtering in Industrial Applications

**Capacitors overview**

**B3236\***



**B3237\***



**B3275\*  
B3292xA/B4**



**B32354S**



**B33331V**



A typical inverter of the mid power range uses an average of ten or more power capacitors per system for filtering whereas smaller range uses one or two film capacitors per phase. EPCOS offers these components in different

variants. The appropriate film capacitors for input and output filters of inverter systems are FilterCap, MKP or AC series.

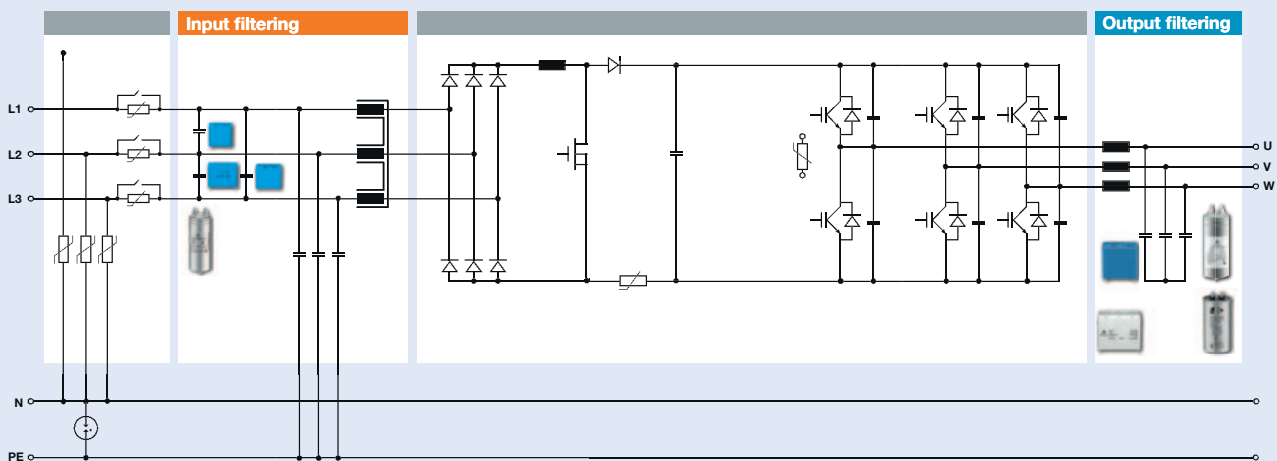
# AC Filtering in Industrial Applications

Overview									
Applications									
	UPS			Wind energy	Photo voltaic		Inverters		
	< 10 kW	10 ... 50 kW	> 50 kW		Modular	Central	Low voltage	Medium/high voltage	
B3236*, B3237*		■	■	■		■	■		■
B3275*	■	■					■		
B3292xA/B4	■	■	■	■	■	■	■		
B32354S	■	■			■		■		
B33331V	■	■			■	■	■		

Technical data										
	Voltage $V_{RMS}$			Mounting			Certifications			
	< 460	460 ... 690	> 690	PCB		Terminals	UL 810	IEC 61071		IEC 60384/-14
				Pins	Fast-on		Fast-on	Fast-on	Terminals	
B3236*, B3237*	■	■	■		■	■	■	■	■	
B3275*	■			■						
B3292xA/B4	■			■						■
B32354S	■			■						
B33331V	■				■	■	■	■		

## Block diagram medium power inverters



# AC Filtering in Industrial Applications

Power Electronic Capacitors B3236\* Series



## General

### Features

- Very high reliability
- High peak-current capability
- Voltage series up to 480 V RMS
- Customized configurations

### Design

- Resin filling, non-PCB, soft polyurethane
- Safety device: over pressure disconnector, self-healing technology
- Mounting and grounding by stud on bottom of aluminum can
- Naturally air-cooled or forced air-cooling
- Indoor mounting
- Reference standard IEC 61071
- UL-approval file E106388

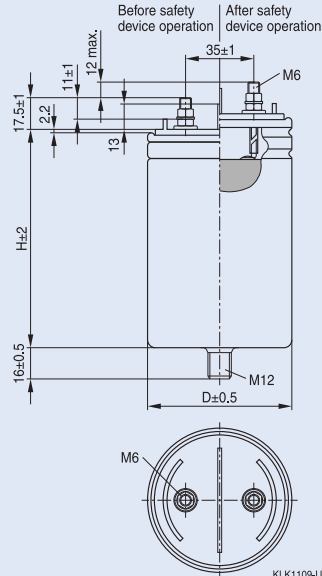


## Technical data

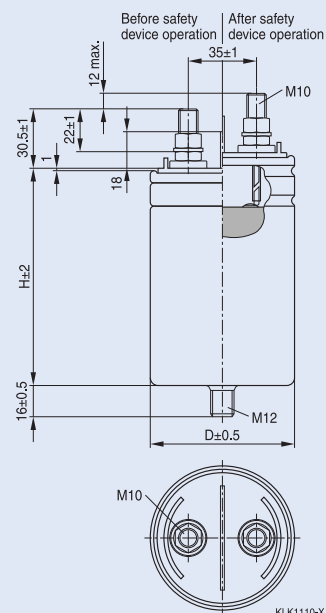
Type/series	$V_R$ V AC	$V_R$ V RMS	$C_R$ $\mu F$
B32361	350	250	50 ... 200
	460	330	50 ... 100
	680	480	10 ... 70
B32362	350	250	150 ... 600
	460	330	100 ... 400
	680	480	60 ... 250

## Dimensional drawings

B32361



B32362



# AC Filtering in Industrial Applications

Power Electronic Capacitors B3237\* Series – Single-phase



## General

### Features

- Very high reliability
- High peak-current capability
- Voltage series up to 600 V RMS
- Five different terminal styles
- Customized configurations

### Design

- Resin filling, non-PCB, soft polyurethane
- Safety device: over pressure disconnecter, self-healing technology
- Mounting and grounding by stud on bottom of aluminum can
- Naturally air-cooled or forced air-cooling
- Indoor mounting
- Reference standard IEC 61071
- UL-approval file E487229



## Technical data

Type/series	V <sub>R</sub> V AC	V <sub>R</sub> V RMS	C <sub>R</sub> μF
<b>B32370</b> (Fast-on)	350	250	10 ... 150
	460	330	10 ... 120
	590	420	10 ... 100
	680	480	6.8 ... 70
	750	530	10 ... 60
	850	600	5 ... 45
<b>B32371</b> (M6)	350	250	50 ... 200
	460	330	30 ... 120
	590	420	10 ... 100
	680	480	10 ... 70
	750	530	10 ... 50
	850	600	10 ... 40
<b>B32372</b> (M8)	350	250	100 ... 300
	460	330	80 ... 300
	590	420	60 ... 200
	680	480	20 ... 250
<b>B32373</b> (M10)	350	250	150 ... 600
	460	330	100 ... 500
	590	420	60 ... 400
	680	480	60 ... 350
	750	530	47 ... 330
	850	600	70 ... 300
<b>B32374</b> (Clamp terminals)	350	250	100 ... 400
	460	330	100 ... 300
	590	420	60 ... 250
	680	480	100 ... 250
	750	530	100 ... 200
	850	600	100 ... 150

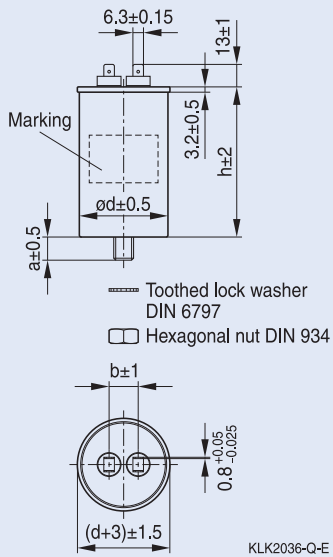
# AC Filtering in Industrial Applications

Power Electronic Capacitors B3237\* Series – Single-phase

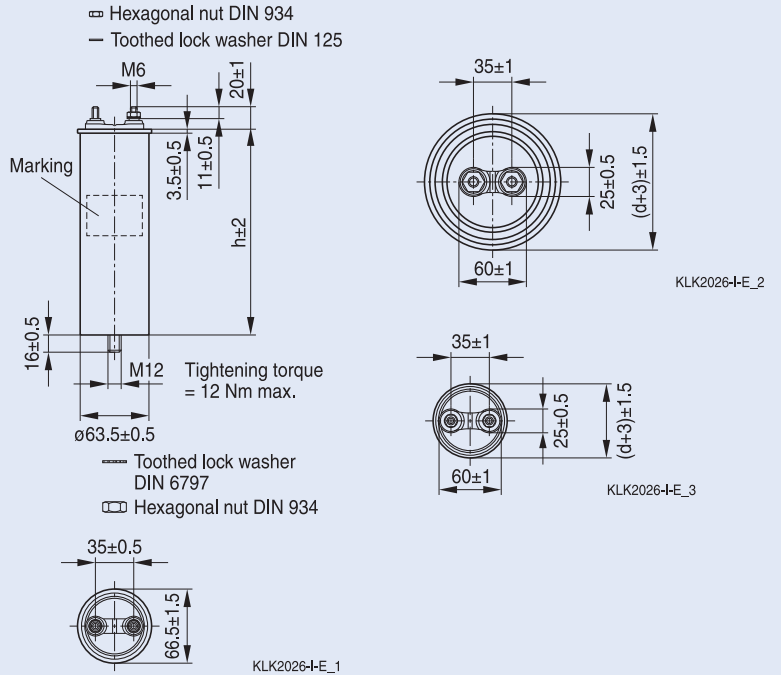


## Dimensional drawings

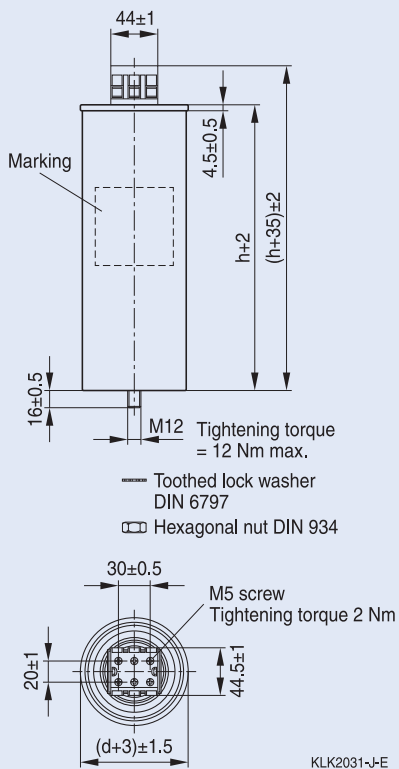
B32370



B32371 ... B32373



B32374



# AC Filtering in Industrial Applications

Power Electronic Capacitors B3237\* Series – Three-phase



## General

### Features

- Very high reliability
- High peak-current capability
- Voltage series up to 600 V RMS
- Customized configurations

### Design

- Resin filling, non-PCB, soft polyurethane
- Safety device: over pressure disconnector, self-healing technology
- Mounting and grounding by stud on bottom of aluminum can
- Naturally air-cooled or forced air-cooling
- Indoor mounting
- Reference standard IEC 61071
- UL-approval

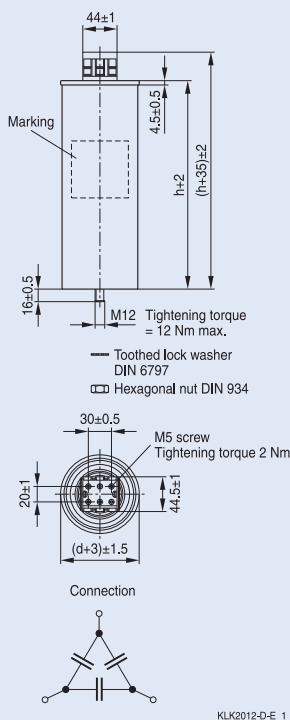


## Technical data

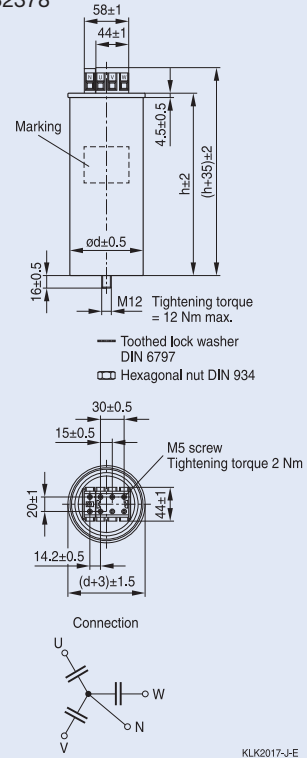
Type/series	$V_R$ V AC	$V_R$ V RMS	$C_R$ $\mu F$
B32377 ... B32378	350 ... 850	250 ... 600	3x 20 ... 3x 400

## Dimensional drawings

B32377



B32378



# AC Filtering in Industrial Applications

Film Capacitors B3275\* Series



## General

### Construction

- Dielectric: polypropylene (PP)
- Plastic case (UL 94 V-0)
- Epoxy resin sealing (UL 94 V-0)

### Features

- Optimized AC voltage performance
- High ripple current/frequency handling capability
- For PCB mounting
- +60 °C, 95% RH, V AC, 1000 h

### Typical applications

- Output AC filter for power converters
- UPS
- Motor drives

### Terminals

- Parallel wire leads, lead-free tinned
- 2-pins and 4-pins versions
- Standard lead lengths: 6–1 mm



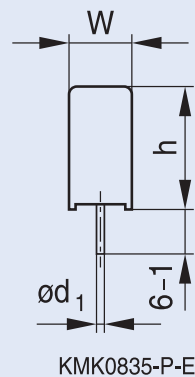
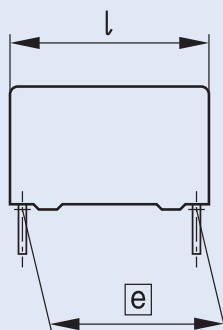
## Technical data

Type/series	V <sub>RMS</sub> V AC	C <sub>R</sub> μF
B3275xC/G2	250	1 ... 70
B3275xC/G7	275	1 ... 55
B3275xC/G3	310	1 ... 45

## Dimensional drawings

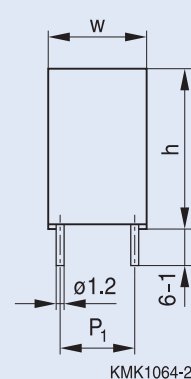
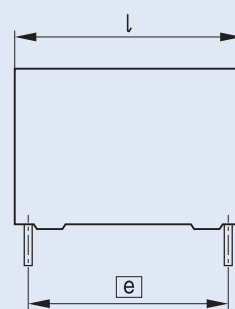
B3275xC...

2-pin



B3275xG...

4-pin





# AC Filtering in Industrial Applications

Film Capacitors B3292xA/B4 Series



## General

### Construction

- Dielectric: polypropylene (PP)
- Plastic case (UL 94 V-0)
- Epoxy resin sealing (UL 94 V-0)

### Features

- Internal series construction
- Good self-healing properties
- High current handling
- Stable capacitance in severe ambient conditions
- +85 °C, 85% RH, 330 V AC, 1000 h

### Typical applications

- X2 class for interference suppression
- Severe ambient conditions  
e.g. solar inverters, drives
- E-meters, In-series with mains
- Across-the-line applications

### Terminals

- Parallel wire leads, lead-free tinned
- Special lead lengths available on request



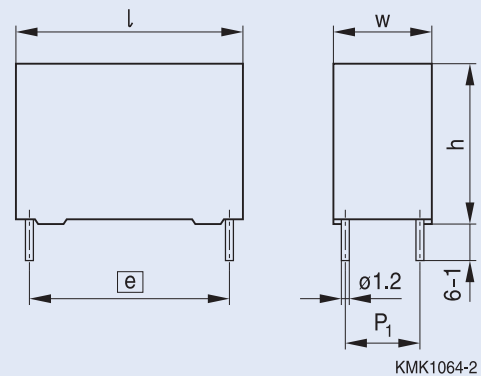
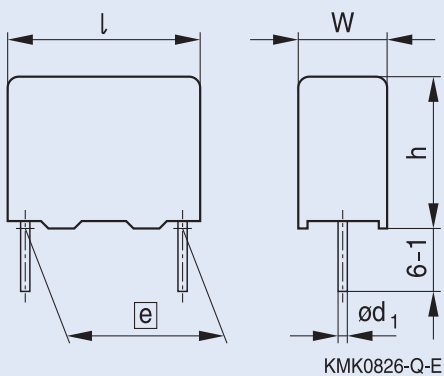
## Technical data

Type/series	V <sub>RMS</sub> V AC	C <sub>R</sub> µF
B3292xA/B4	350 (X2), V <sub>max</sub> 400 at +85 °C	0.47 ... 20

## Dimensional drawings

2-pin

4-pin



# AC Filtering in Industrial Applications

AC Capacitors B32354S Series



## General

### Construction

- Dielectric: polypropylene (PP)
- Electrode: segmented metalized film
- Dry type
- Plastic case ( UL 94-V0)
- Resin sealing (UL 94-V0)

### Features

- Self-healing properties
- Low dissipation factor
- Safety function
- High insulation resistance
- Low ESR value
- For PCB mounting
- CE compatible (pending)
- +85 °C, 85% RH, 350 V AC, 1000 h (pending)
- Reference standard IEC 61071 (pending)

### Typical applications

- UPS
- General sine-wave filters
- Output AC filter for power converters
- Motor drives

### Terminals

- Tin copper leads for balanced fitment in PCB



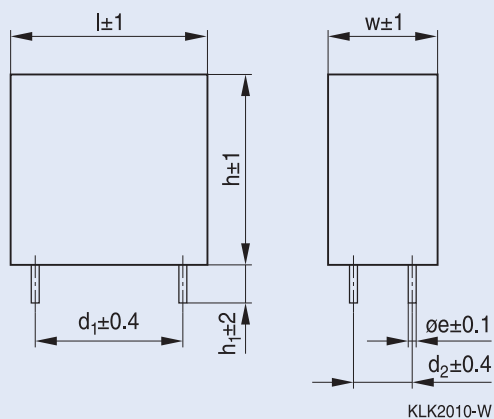
## Technical data

Type/series	V <sub>R</sub> V AC	V <sub>R</sub> V RMS	C <sub>R</sub> µF
B32354S	350, 500	250, 350	10 ... 40

## Dimensional drawings

B32354S

4-pin



# AC Filtering in Industrial Applications

## AC Capacitors B3331V Series



### General

#### Construction

- Dielectric: polypropylene (PP)
- Aluminum can and top
- Soft polyurethane resin

#### Features

- Self-healing properties
- Low dissipation factor
- Overpressure disconnecter for all terminals
- CE compatible
- Low ESR value
- UL 810 approval file E238746
- +85 °C, 85% RH, 460 V AC, 1000 h (pending)
- Reference standard IEC 61071

#### Typical applications

- UPS
- General sine-wave filters
- Output AC filter for power converters
- Motor drives

#### Terminals

- 2+2 fast-on terminals 6.3 x 0.8 mm

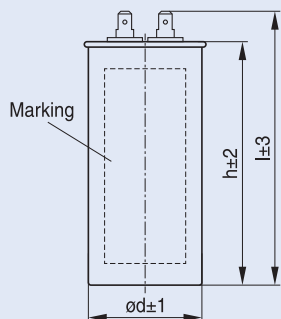


### Technical data

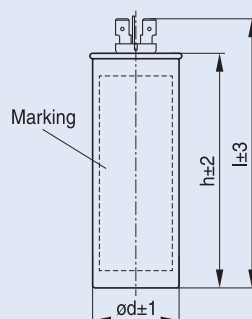
Type/series	V <sub>R</sub> V AC	V <sub>R</sub> V RMS	C <sub>R</sub> µF
B33331V	650	460	2 ... 50

### Dimensional drawings

B33331V



KLK2027-R-E



KLK2032-S-E

# Get in Contact

## Europe

### Austria

TDK Austria GesmbH  
T +43 1 25 63 630 56 39  
F +43 1 25 63 630 56 44  
sales.austria@eu.tdk.com

### Bulgaria, Greece, Macedonia

TDK Austria GesmbH  
T +43 1 25 63 630 56 30  
F +43 1 25 63 630 56 44  
sales.csee@eu.tdk.com

### Czech Republic

TDK Czech s.r.o.  
T +420 2 33 03 22 81  
F +420 2 33 03 22 89  
sales.czech@eu.tdk.com

### Finland, Estonia

TDK Nordic OY  
T +358 10 34 90 108  
sales.nordic@eu.tdk.com

### France, Belgium, Luxembourg, Malta

TDK Electronics France SAS  
T +33 1 49 46 67 89  
F +33 1 49 46 67 67  
sales.france@eu.tdk.com

### Germany, Liechtenstein, Netherlands, Switzerland

TDK Europe GmbH  
T (D) 0180 500 33 48  
(0.14 Euro/min.)  
(NL) +31 70 33 10 611  
(CH) +49 89 54020 2691  
F +49 89 54020 2913  
sales.germany@eu.tdk.com

### Hungary

TDK Electronics Hungary Ltd.  
T +36 1 436 07 20  
F +36 1 436 07 21  
sales.hungary@eu.tdk.com

### Italy

TDK Italy S.r.l.  
T +39 02 50 99 54 25  
F +39 02 50 99 54 55  
sales.italy@eu.tdk.com

### Poland, Latvia, Lithuania

TDK Polska Sp. z o.o.  
T +48 22 24 60 409  
F +48 22 24 60 400  
sales.poland@eu.tdk.com

### Portugal

TDK Electronics Spain S.L.U.  
T +34 93 480 42 92  
+34 93 480 42 68  
F +34 93 480 42 31  
sales.iberia@eu.tdk.com

### Romania

TDK Austria GesmbH  
T +43 1 25 63 630 56 30  
F +43 1 25 63 630 56 44  
sales.romania@eu.tdk.com

### Russia, Belarus, Kazakhstan, Moldavia, Ukraine

TDK CIS LLC  
T +7 495 663 21 00  
+7 495 663 21 22  
sales.cis@eu.tdk.com

### Slovakia

TDK Austria GesmbH  
T +43 1 25 63 630 56 30  
F +43 1 25 63 630 56 44  
sales.slovakia@eu.tdk.com

### Bosnia and Herzegovina, Croatia, Montenegro, Serbia, Slovenia

TDK Austria GesmbH  
T +43 1 25 63 630 56 30  
F +43 1 25 63 630 56 44  
sales.slovenia@eu.tdk.com

### Spain

TDK Electronics Spain S.L.U.  
T +34 93 480 42 92  
+34 93 480 43 33  
F +34 91 514 70 14  
sales.iberia@eu.tdk.com

### Sweden, Iceland, Denmark, Norway

TDK Nordic AB  
T +46 8 4 77 27 00  
F +46 8 4 77 27 01  
sales.nordic@eu.tdk.com

### Turkey

TDK Europe GmbH  
T +90 216 5 69 81 01  
F +90 216 4 64 07 56  
sales.turkey@eu.tdk.com

### United Kingdom, Ireland

TDK UK Limited  
T +44 13 44 38 15 10  
F +44 13 44 38 15 12  
sales.uk@eu.tdk.com

## Asia

### Afghanistan, Iran, Iraq, Jordan, Lebanon, Pakistan, Syria

TDK Europe GmbH  
T +90 216 5 69 81 01  
F +90 216 4 64 07 56  
sales.turkey@eu.tdk.com

### China

EPCOS (Shanghai) Ltd.  
T +86 21 22 19 15 00  
F +86 21 22 19 15 99  
sales.cn@epcos.com

### Hong Kong

EPCOS Limited  
T +852 36 69 82 00  
F +852 36 69 82 56  
sales.cn@epcos.com

### India, Bahrain, Bangladesh, Kuwait, Nepal, Oman, Qatar, Saudi Arabia, Sri Lanka, United Arab Emirates

EPCOS India Private Ltd.  
T +91 120 45 05 801  
F +91 120 45 05 818  
sales.in@epcos.com

## Israel

TDK Sales Representative  
T +972 73 2676 317  
sales.israel@eu.tdk.com

## Japan

TDK Corporation  
T +81 3 68 52 73 00  
inquiry@jp.tdk.com

## Korea

EPCOS Korea LLC  
T +82 2 21 56 68 18  
F +82 2 21 56 68 98  
sales.kr@epcos.com

## Malaysia

EPCOS RDC SDN. BHD.  
T +60 6 79 98 168  
F +60 6 79 98 162  
sales.asean@epcos.com

## Philippines

c/o TDK Electronics Philippines Corporation  
T +63 49 541 31 41 66 30  
+63 49 541 31 41 66 31  
F +63 49 541 31 40  
sales.asean@epcos.com

## Singapore, Indonesia, Thailand, Vietnam

EPCOS COMPONENTS PTE. LTD.  
T +65 65 97 06 28  
F +65 65 97 06 07  
sales.asean@epcos.com

## Taiwan

EPCOS Taiwan Co. Ltd.  
T +886 2 26 55 76 76  
F +886 2 27 82 03 89  
sales.tw@epcos.com

## Americas

### USA, Canada, Mexico

EPCOS Inc.  
T +1 732 9 06 43 00  
F +1 732 9 06 43 95  
sales.usa@epcos.com

### South America

EPCOS do Brasil Ltda.  
T +55 11 32 89 95 99 Ext. 6851  
F +55 11 32 89 99 40  
sales.br@epcos.com

## Australia

### Australia, New Zealand

TDK Sales Representative  
T +61 3 95 66 72 17  
F +61 3 95 66 72 99  
sales.au@epcos.com

## Africa

### Egypt

TDK Europe GmbH  
T +90 216 5 69 81 01  
F +90 216 4 64 07 56  
sales.turkey@eu.tdk.com

## Morocco, Tunisia

TDK Electronics France SAS  
T +33 1 49 46 67 89  
F +33 1 49 46 67 67  
sales.france@eu.tdk.com

## South Africa

TDK Sales Representative  
T +27 11 458 90 00 32  
F +27 11 458 90 34  
sales.southernafrica@epcos.com

The addresses of our worldwide distributors and regional sales offices are available at [www.epcos.com/sales](http://www.epcos.com/sales)

**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.