



# **MKV AC capacitors**

## **General AC applications**

**Ordering code:**     **B25832**  
**Date:**                September 2005

## Features

- Compact design
- Long-term stability and reliability

## Applications

- For commutation in the low-frequency range

## Construction

- Self-healing
- Plastic dielectric
- Oil-impregnated tubular windings (no PCB)
- Metal-sprayed end faces ensure reliable contacting
- Cylindrical aluminum case
- Ceramic or plastic lead-throughs
- Mounting bolts M8 or M12



## Terminals

- Tab connectors 6.3 mm
- Dual tab connectors 6.3 mm

## Mounting

- If the vibration stress is  $\leq 5\text{ g}$  and the capacitors are  $\leq 60\text{ mm}$  in diameter, the bolt is used for mounting.

## Grounding

- Mounting bolts for grounding in accordance with VDE 0100
- Grounding identification in accordance with DIN 40 011

## Individual data sheets

Individual data sheets contain detailed specification incl. thermal data.  
Upon request, these data sheets are available for each capacitor type.

**Technical data**

|                                          |                                  |                                                                                                                                                  |
|------------------------------------------|----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| Standards                                |                                  | IEC 1071-1/2<br>EN 61071-1/2<br>VDE 0560 part 120 and 121                                                                                        |
| Dielectric dissipation factor            | $\tan \delta_0$                  | $2 \cdot 10^{-4}$                                                                                                                                |
| Capacitance tolerance                    |                                  | $\pm 10 \%$                                                                                                                                      |
| Max. repetitive rate of voltage rise     | $(dv/dt)_{\max}$                 | $\frac{\hat{I}}{C}$                                                                                                                              |
| Max. non-repetitive rate of voltage rise | $(dv/dt)_s$                      | $\frac{I_s}{C}$                                                                                                                                  |
| Climatic data:                           |                                  |                                                                                                                                                  |
| Min. operating temperature               | $T_{\min}$                       | $-25 \text{ }^{\circ}\text{C}$                                                                                                                   |
| Max. operating temperature               | $T_{\max}$                       | $+85 \text{ }^{\circ}\text{C}$                                                                                                                   |
| Average relative humidity                |                                  | $\leq 75 \%$                                                                                                                                     |
| Failure quota                            | $\alpha_{\text{FQ}(\text{co})}$  | 1000 failures per $10^9$ component hours                                                                                                         |
| Load duration                            | $t_{\text{LD}(\text{co})}$       | up to 30 000 h                                                                                                                                   |
| Storage temperature limit                | $T_{\text{stg}}$                 | $-55/+85 \text{ }^{\circ}\text{C}$                                                                                                               |
| IEC climatic category (IEC 68-1 and 2)   |                                  | 25/085/56                                                                                                                                        |
| Test data:                               |                                  |                                                                                                                                                  |
| AC test voltage                          |                                  |                                                                                                                                                  |
| between terminals                        | $V_{\text{TT}}$                  | $1.25 \times V_R, 50 \text{ Hz}, 10 \text{ s}$ (or DC $1.75 \times V_R, 10 \text{ s}$ )                                                          |
| between terminals and case               | $V_{\text{TC}}$                  | $2 \cdot V_i + 1000 \text{ V}, 50 \text{ Hz}, 10 \text{ s}$<br>Insulating voltage $V_i = \text{max. recurrent peak voltage } \hat{v} / \sqrt{2}$ |
| Insulation resistance                    | $R_{\text{ins}}$                 | $\leq 1 \text{ } \mu\text{F}: \geq 3000 \text{ M}\Omega$                                                                                         |
| Self-discharge time constant             | $\tau = R_{\text{ins}} \times C$ | $> 1 \text{ } \mu\text{F}: \geq 3000 \text{ s}$                                                                                                  |
| Dissipation factor                       | $\tan \delta$                    | $\leq 3 \cdot 10^{-4}$                                                                                                                           |

**Characteristics and ordering codes**

| $C_R^{1)}$                                         | $I_{\max}$ | $\hat{I}$ | $I_s$ | $R_S$<br>20 °C                                                                    | $L_{\text{self}}$ | Dimensions<br>$d \times l$                                                                                                              | Fig. | Appr.<br>weight | Ordering code   |
|----------------------------------------------------|------------|-----------|-------|-----------------------------------------------------------------------------------|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------|------|-----------------|-----------------|
| $\mu\text{F}$                                      | A          | A         | A     | m $\Omega$                                                                        | nH                | mm                                                                                                                                      |      | g               |                 |
| <b><math>V_R = \text{AC } 640 \text{ V}</math></b> |            |           |       | <b><math>\hat{V} = 800 \text{ V}</math><br/><math>V_S = 1100 \text{ V}</math></b> |                   | <b><math>V_{TT} = \text{AC } 800 \text{ V, } 10 \text{ s}</math><br/><math>V_{TC} = \text{AC } 2200 \text{ V, } 10 \text{ s}</math></b> |      |                 |                 |
| 1.0                                                | 10         | 40        | 100   | 24.0                                                                              | 50                | 25 × 48                                                                                                                                 | 3    | 30              | B25832F4105K001 |
| 1.5                                                | 10         | 25        | 60    | 54.0                                                                              | 90                | 25 × 80                                                                                                                                 | 3    | 50              | B25832F4155K001 |
| 1.6                                                | 16         | 60        | 160   | 16.0                                                                              | 50                | 30 × 48                                                                                                                                 | 4    | 50              | B25832F4165K001 |
| 2.0                                                | 16         | 80        | 200   | 13.0                                                                              | 50                | 30 × 48                                                                                                                                 | 4    | 50              | B25832F4205K001 |
| 2.2                                                | 10         | 35        | 90    | 39.0                                                                              | 90                | 25 × 80                                                                                                                                 | 3    | 50              | B25832F4225K001 |
| 2.5                                                | 16         | 100       | 250   | 12.0                                                                              | 50                | 35 × 48                                                                                                                                 | 5    | 60              | B25832F4255K001 |
| 3.0                                                | 10         | 50        | 120   | 30.0                                                                              | 90                | 25 × 80                                                                                                                                 | 3    | 50              | B25832F4305K001 |
| 3.0                                                | 16         | 120       | 300   | 11.0                                                                              | 50                | 35 × 48                                                                                                                                 | 5    | 60              | B25832F4305K011 |
| 3.3                                                | 10         | 50        | 130   | 28.0                                                                              | 90                | 25 × 80                                                                                                                                 | 3    | 50              | B25832F4335K001 |
| 4.0                                                | 16         | 60        | 160   | 24.0                                                                              | 90                | 30 × 80                                                                                                                                 | 4    | 70              | B25832F4405K001 |
| 4.7                                                | 16         | 75        | 190   | 21.0                                                                              | 90                | 30 × 80                                                                                                                                 | 4    | 70              | B25832F4475K001 |
| 5.0                                                | 16         | 80        | 200   | 20.0                                                                              | 90                | 30 × 80                                                                                                                                 | 4    | 70              | B25832F4505K001 |
| 6.0                                                | 18         | 240       | 600   | 5.6                                                                               | 70                | 45 × 57                                                                                                                                 | 1    | 110             | B25832C4605K009 |
| 6.8                                                | 16         | 110       | 270   | 17.0                                                                              | 90                | 35 × 80                                                                                                                                 | 5    | 100             | B25832F4685K001 |
| 7.0                                                | 16         | 110       | 280   | 16.0                                                                              | 90                | 35 × 80                                                                                                                                 | 5    | 100             | B25832F4705K001 |
| 8.0                                                | 18         | 130       | 320   | 12.0                                                                              | 90                | 40 × 86                                                                                                                                 | 1    | 130             | B25832C4805K009 |
| 10                                                 | 18         | 160       | 400   | 10.0                                                                              | 90                | 40 × 86                                                                                                                                 | 1    | 130             | B25832C4106K009 |
| 12                                                 | 18         | 190       | 480   | 9.4                                                                               | 90                | 45 × 86                                                                                                                                 | 1    | 160             | B25832C4126K009 |
| 14                                                 | 18         | 220       | 560   | 8.6                                                                               | 90                | 50 × 86                                                                                                                                 | 1    | 200             | B25832C4146K009 |
| 15                                                 | 18         | 240       | 600   | 8.1                                                                               | 90                | 50 × 86                                                                                                                                 | 1    | 200             | B25832C4156K009 |
| 16                                                 | 18         | 260       | 640   | 7.8                                                                               | 90                | 50 × 86                                                                                                                                 | 1    | 200             | B25832C4166K009 |
| 20                                                 | 18         | 320       | 800   | 7.0                                                                               | 90                | 55 × 86                                                                                                                                 | 1    | 250             | B25832C4206K009 |
| 22                                                 | 18         | 350       | 880   | 6.7                                                                               | 90                | 60 × 86                                                                                                                                 | 1    | 300             | B25832C4226K009 |
| 25                                                 | 18         | 400       | 1000  | 6.2                                                                               | 90                | 60 × 86                                                                                                                                 | 1    | 300             | B25832C4256K009 |
| 30                                                 | 18         | 480       | 1200  | 6.8                                                                               | 140               | 50 × 156                                                                                                                                | 1    | 370             | B25832C4306K009 |
| 33                                                 | 18         | 530       | 1300  | 6.6                                                                               | 140               | 50 × 156                                                                                                                                | 1    | 370             | B25832C4336K009 |
| 40                                                 | 18         | 640       | 1600  | 6.2                                                                               | 140               | 55 × 156                                                                                                                                | 1    | 450             | B25832C4406K009 |
| 47                                                 | 18         | 750       | 1900  | 6.1                                                                               | 140               | 60 × 156                                                                                                                                | 1    | 550             | B25832C4476K009 |
| 50                                                 | 18         | 800       | 2000  | 5.9                                                                               | 140               | 60 × 156                                                                                                                                | 1    | 550             | B25832C4506K009 |

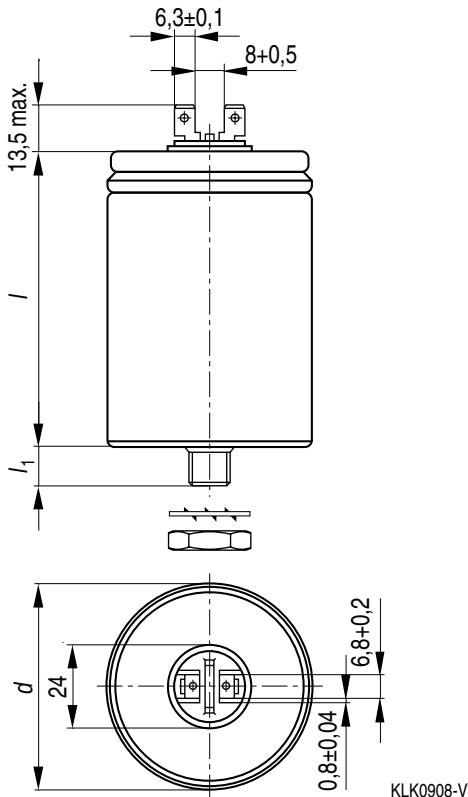
1) Other capacitance values upon request

**Characteristics and ordering codes**

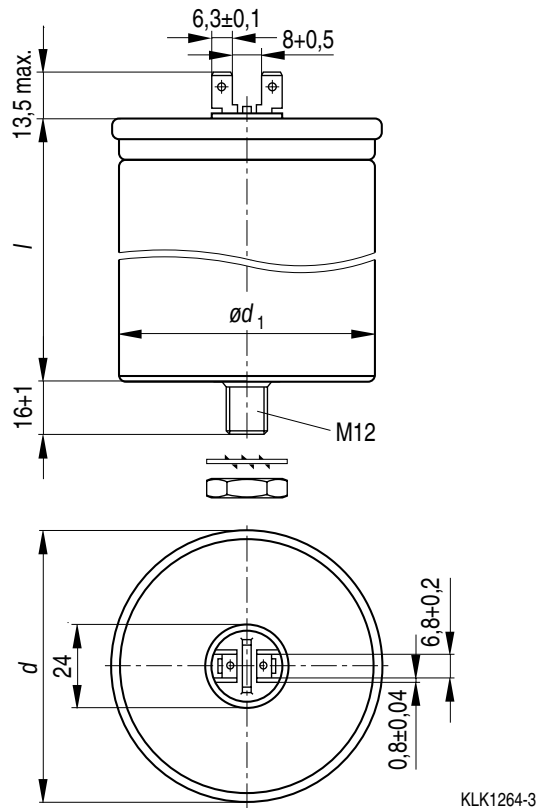
| $C_R^{1)}$                                         | $I_{\max}$ | $\hat{I}$ | $I_s$ | $R_S$<br>20 °C                                                                     | $L_{\text{self}}$ | Dimensions<br>$d \times l$                                                                                                               | Fig. | Appr.<br>weight | Ordering code   |
|----------------------------------------------------|------------|-----------|-------|------------------------------------------------------------------------------------|-------------------|------------------------------------------------------------------------------------------------------------------------------------------|------|-----------------|-----------------|
| $\mu\text{F}$                                      | A          | A         | A     | m $\Omega$                                                                         | nH                | mm                                                                                                                                       |      | g               |                 |
| <b><math>V_R = \text{AC } 930 \text{ V}</math></b> |            |           |       | <b><math>\hat{V} = 1200 \text{ V}</math><br/><math>v_s = 1600 \text{ V}</math></b> |                   | <b><math>V_{TT} = \text{AC } 1200 \text{ V, } 10 \text{ s}</math><br/><math>V_{TC} = \text{AC } 2700 \text{ V, } 10 \text{ s}</math></b> |      |                 |                 |
| 1.5                                                | 10         | 45        | 110   | 33.0                                                                               | 90                | 30 × 80                                                                                                                                  | 4    | 70              | B25832F6155K001 |
| 2.0                                                | 10         | 60        | 150   | 26.0                                                                               | 90                | 30 × 80                                                                                                                                  | 4    | 70              | B25832F6205K001 |
| 2.5                                                | 16         | 75        | 190   | 22.0                                                                               | 90                | 35 × 80                                                                                                                                  | 5    | 100             | B25832F6255K001 |
| 3.0                                                | 18         | 90        | 230   | 17.0                                                                               | 90                | 40 × 86                                                                                                                                  | 1    | 130             | B25832C6305K009 |
| 4.0                                                | 18         | 120       | 300   | 14.0                                                                               | 90                | 40 × 86                                                                                                                                  | 1    | 130             | B25832C6405K009 |
| 5.0                                                | 18         | 150       | 380   | 12.0                                                                               | 90                | 45 × 86                                                                                                                                  | 1    | 160             | B25832C6505K009 |
| 5.5                                                | 18         | 170       | 410   | 11.0                                                                               | 90                | 45 × 86                                                                                                                                  | 1    | 160             | B25832C6555K009 |
| 6.0                                                | 18         | 180       | 450   | 10.0                                                                               | 90                | 50 × 86                                                                                                                                  | 1    | 200             | B25832C6605K009 |
| 7.0                                                | 18         | 210       | 530   | 9.2                                                                                | 90                | 50 × 86                                                                                                                                  | 1    | 200             | B25832C6705K009 |
| 8.0                                                | 18         | 240       | 600   | 8.5                                                                                | 90                | 55 × 86                                                                                                                                  | 1    | 250             | B25832C6805K009 |
| 10                                                 | 18         | 300       | 750   | 7.5                                                                                | 90                | 60 × 86                                                                                                                                  | 1    | 300             | B25832C6106K009 |
| 12                                                 | 18         | 360       | 900   | 6.7                                                                                | 90                | 60 × 86                                                                                                                                  | 1    | 300             | B25832C6126K009 |
| 15                                                 | 18         | 450       | 1100  | 7.0                                                                                | 110               | 79.2 × 104                                                                                                                               | 2    | 600             | B25832C6156K009 |
| 18                                                 | 18         | 540       | 1400  | 6.5                                                                                | 110               | 79.2 × 104                                                                                                                               | 2    | 600             | B25832C6186K009 |
| 20                                                 | 18         | 600       | 1500  | 6.3                                                                                | 110               | 89.3 × 104                                                                                                                               | 2    | 800             | B25832C6206K009 |
| 22                                                 | 18         | 660       | 1700  | 6.2                                                                                | 110               | 89.3 × 104                                                                                                                               | 2    | 800             | B25832C6226K009 |

1) Other capacitance values upon request

**Dimensional drawing 1**  
Dual tab connectors 6.3 mm



**Dimensional drawing 2**  
Dual tab connectors 6.3 mm



Dimensions in mm

| $d_{+0.5/-0.2}$ | $l_{+1/-2}$ | $l_{1+1*})$ | Creepage distance | Clearance |
|-----------------|-------------|-------------|-------------------|-----------|
| 40              | 86          | 8           | 7                 | 5         |
| 45              | 57          | 8           |                   |           |
| 45              | 86          | 8           |                   |           |
| 50              | 86          | 12          |                   |           |
| 50              | 156         | 12          |                   |           |
| 55              | 86          | 12          |                   |           |
| 55              | 156         | 12          |                   |           |
| 60              | 86          | 12          |                   |           |
| 60              | 156         | 12          |                   |           |

Dimensions in mm

| $d-1.2$ | $l-4$ | $\varnothing d_1-0.4$ | Creepage distance | Clearance |
|---------|-------|-----------------------|-------------------|-----------|
| 79.2    | 104   | 75.2                  | 7                 | 5         |
| 89.3    | 104   | 85.2                  |                   |           |

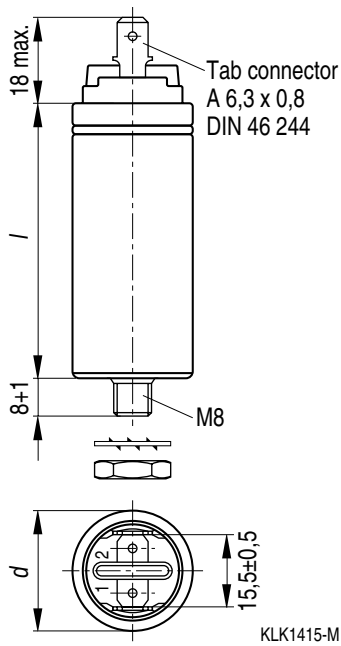
\*) 8 mm = threaded bolt M8  
12 mm = threaded bolt M12

**Mounting parts** (included in delivery)

| Threaded bolt | Max. torque | Toothed washer  | Hex nut     |
|---------------|-------------|-----------------|-------------|
| M8            | 4 Nm        | J 8.2 DIN 6797  | M 8 DIN 439 |
| M12           | 10 Nm       | J 12.5 DIN 6797 | M12 DIN 439 |

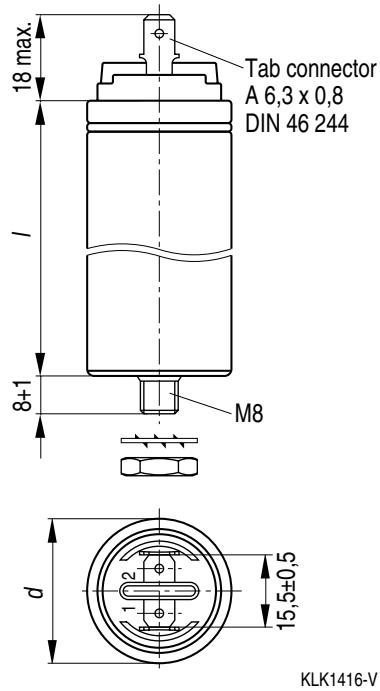
### Dimensional drawing 3

Tab connectors 6.3 mm



### Dimensional drawing 4

Tab connectors 6.3 mm



Dimensions in mm

| $d \begin{smallmatrix} +0,5 \\ -0,2 \end{smallmatrix}$ | $l \pm 2$ | Creepage distance | Clearance |
|--------------------------------------------------------|-----------|-------------------|-----------|
| 25                                                     | 48        | 9                 | 7         |
| 25                                                     | 80        |                   |           |

Dimensions in mm

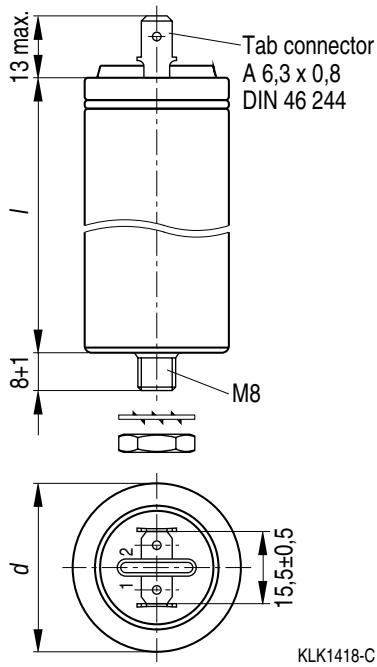
| $d \begin{smallmatrix} +0,5 \\ -0,2 \end{smallmatrix}$ | $l \pm 2$ | Creepage distance | Clearance |
|--------------------------------------------------------|-----------|-------------------|-----------|
| 30                                                     | 48        | 9                 | 7         |
| 30                                                     | 80        |                   |           |

### Mounting parts (included in delivery)

|               |             |                |            |
|---------------|-------------|----------------|------------|
| Threaded bolt | Max. torque | Toothed washer | Hex nut    |
| M8            | 4 Nm        | J 8.2 DIN 6797 | M8 DIN 439 |

### Dimensional drawing 5

Tab connectors 6.3 mm



Dimensions in mm

| $d^{+0.5}_{-0.2}$ | $l \pm 2$ | Creepage distance | Clearance |
|-------------------|-----------|-------------------|-----------|
| 35                | 48        | 6                 | 6         |
| 35                | 80        |                   |           |

### Mounting parts (included in delivery)

| Threaded bolt | Max. torque | Toothed washer | Hex nut     |
|---------------|-------------|----------------|-------------|
| M8            | 4 Nm        | J 8.2 DIN 6797 | M8 ISO 4035 |



## Cautions and warnings

### Safety

- In case of dents of more than 1 mm depth or any other mechanical damage, capacitors must not be used at all. This applies also in cases of oil leakage.
- Electrical or mechanical misapplication of capacitors may be hazardous. Personal injury or property damage may result from bursting of the capacitor or from expulsion of oil or melted material due to mechanical disruption of the capacitor.
- Ensure good, effective grounding for capacitor enclosures.
- Observe appropriate safety precautions during operation (self-recharging phenomena and the high energy contained in capacitors).
- Handle capacitors carefully, because they may still be charged even after disconnection.
- The terminals of capacitors, connected bus bars and cables as well as other devices may also be energized.
- Follow good engineering practice.
- Failure to follow cautions may result, worst case, in premature failures, bursting and fire.

### Thermal load

After installation of the capacitor it is necessary to verify that maximum hot-spot temperature is not exceeded at extreme service conditions (see [www.epcos.com/thermal\\_design](http://www.epcos.com/thermal_design)).

### Mechanical protection

The capacitor has to be installed in a way that mechanical damages and dents in the aluminum can are avoided.

### 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.

### Overpressure disconnecter

To ensure full functionality of an overpressure disconnecter, the following must be observed:

- The elastic elements must not be hindered, i.e.
  - connecting lines must be flexible leads (cables),
  - there must be sufficient space (minimum 12 mm) above the connections for expansion of the overpressure disconnecter,
  - folding crimps must not be retained by clamps.
- Stress parameters of the capacitor must be within the IEC61071 specification.

### Service life expectancy

Electrical components do not have an unlimited service life expectancy; this applies to self-healing capacitors too. The maximum service life expectancy may vary depending on the application the capacitor is used in.

## Important notes

The following applies to all products named in this publication:

1. 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 in the areas of application concerned. We nevertheless expressly point out **that such statements cannot be regarded as binding statements about the suitability of our products for a particular customer application**.

As a rule, EPCOS is either unfamiliar with individual customer applications or less familiar with them than the customers themselves. For these reasons, it is always ultimately incumbent on the customer to check and decide whether an EPCOS product with the properties described in the product specification is suitable for use in a particular customer application.

2. We also point out that **in individual cases, a malfunction of passive electronic components or failure before the end of their usual service life cannot be completely ruled out in the current state of the art, even if they are operated as specified**. In customer applications requiring a very high level of operational safety and especially in customer applications in which the malfunction or failure of a passive electronic component could endanger human life or health (e.g. in accident prevention or life-saving systems), it must therefore be ensured by means of suitable design of the customer application or other action taken by the customer (e.g. installation of protective circuitry or redundancy) that no injury or damage is sustained by third parties in the event of malfunction or failure of a passive electronic component.

3. **The warnings, cautions and product-specific notes must be observed.**

4. In order to satisfy certain technical requirements, **some of the products described in this publication may contain substances subject to restrictions in certain jurisdictions (e.g. because they are classed as "hazardous")**. Useful information on this will be found in our Material Data Sheets on the Internet ([www.epcos.com/material](http://www.epcos.com/material)). Should you have any more detailed questions, please contact our sales offices.

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