

## Long-life grade capacitors

### Applications

- Switch-mode power supplies in industrial and entertainment electronics
- Frequency converters

### Features

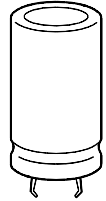
- Long useful life
- High reliability and high ripple current capability
- Low equivalent series resistance *ESR*
- High *CU* product, i.e. compact
- Different case sizes available for each capacitance value

### Construction

- Charge-discharge proof, polar
- Aluminum case, fully insulated
- Snap-in solder pins to hold component in place on PC-board
- Minus pole marking on case surface
- Minus pole not insulated from case
- Overload protection (safety vent)

### Terminals

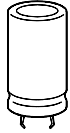
- Standard version with 2 terminals  
2 lengths available: 6,3 and 4,5 mm
- 3 terminals: length 4,5 mm  
(terminal arrangement ensures correct insertion)



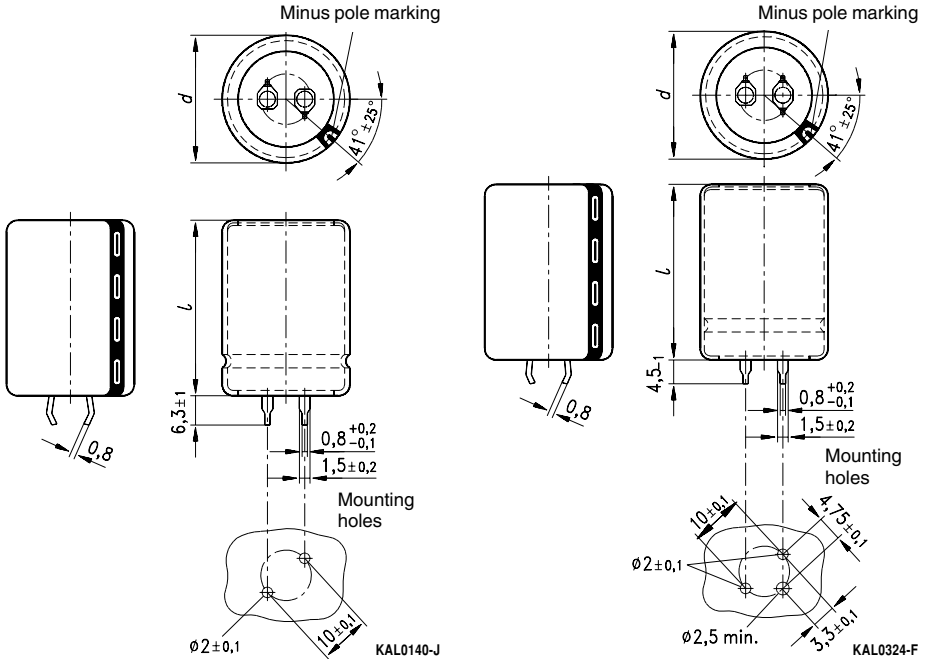
KAL0274-A


**Specifications and characteristics in brief**

|                                                                                     |                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                        |
|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Rated voltage $U_R$                                                                 | 160 ... 450 VDC                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                        |
| Surge voltage $U_S$                                                                 | $1,15 \cdot U_R$ (for $U_R \leq 250$ VDC)<br>$1,10 \cdot U_R$ (for $U_R \geq 385$ VDC)                                                                              |                                                                                                                                                                                                                                                                                                                        |
| Rated capacitance $C_R$                                                             | 47 ... 2 200 $\mu$ F                                                                                                                                                |                                                                                                                                                                                                                                                                                                                        |
| Capacitance tolerance                                                               | $\pm 20 \% \triangleq M$                                                                                                                                            |                                                                                                                                                                                                                                                                                                                        |
| Leakage current $I_L$<br>(5 min, 20 °C)                                             | $I_L \leq 0,3 \mu A \cdot \left( \frac{C_R}{\mu F} \cdot \frac{U_R}{V} \right)^{0,7} + 4 \mu A$                                                                     |                                                                                                                                                                                                                                                                                                                        |
| Self-inductance $L_{ESL}$                                                           | Approx. 20 nH                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                        |
| Useful life<br>85 °C; $U_R$ ; $I_{\sim R}$<br>40 °C; $U_R$ ; $1,4 \cdot I_{\sim R}$ | > 10 000 h<br>> 200 000 h                                                                                                                                           | <b>Requirements:</b><br>$\Delta C/C \leq \pm 30 \%$ of initial value<br>$ESR \leq 3$ times initial specified limit<br>$I_L \leq$ initial specified limit<br>Failure percentage: $\leq 1 \%$<br>Failure rate: $\leq 50$ fit ( $\leq 50 \cdot 10^{-9}/h$ )<br>(for definiton "fit", refer to chapter "Quality", page 62) |
| Voltage endurance test<br>85 °C; $U_R$                                              | 5 000 h                                                                                                                                                             | <b>Post test requirements:</b><br>$\Delta C/C \leq \pm 10 \%$ of initial value<br>$ESR \leq 1,3$ times initial specified limit<br>$I_L \leq$ initial specified limit                                                                                                                                                   |
| Vibration resistance                                                                | To IEC 60068-2-6, test Fc:<br>displacement amplitude 0,35 mm, frequency range 10 ... 55 Hz,<br>acceleration max. 5 g, duration $3 \times 2$ h                       |                                                                                                                                                                                                                                                                                                                        |
| IEC climatic category                                                               | To IEC 60068-1:<br>$U_R \leq 400$ VDC: 40/085/56 (– 40 °C/+ 85 °C/56 days damp heat test)<br>$U_R \geq 420$ VDC: 25/085/56 (– 25 °C/+ 85 °C/56 days damp heat test) |                                                                                                                                                                                                                                                                                                                        |
| Detail specification                                                                | Similar to CECC 30301-811                                                                                                                                           |                                                                                                                                                                                                                                                                                                                        |
| Sectional specification                                                             | IEC 60384-4                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                        |



## Dimensional drawings



Snap-in terminals, standard (length  $6,3 \pm 1$  mm). Also available in a shorter version with a length of  $4,5 - 1$  mm. For packing mode and ordering example see next page.

Snap-in capacitors are also available with 3 terminals (length  $4,5 - 1$  mm).

For packing mode and ordering example see next page.

| Dimensions (mm) |           | Approx. weight (g) | Packing units (pieces) |
|-----------------|-----------|--------------------|------------------------|
| $d + 1$         | $l \pm 2$ |                    |                        |
| 22              | 25        | 9                  | 160                    |
| 22              | 30        | 12                 | 160                    |
| 22              | 35        | 15                 | 160                    |
| 22              | 40        | 18                 | 160                    |
| 25              | 25        | 13                 | 130                    |
| 25              | 30        | 17                 | 130                    |
| 25              | 35        | 19                 | 130                    |
| 25              | 40        | 22                 | 130                    |

| Dimensions (mm) |           | Approx. weight (g) | Packing units (pieces) |
|-----------------|-----------|--------------------|------------------------|
| $d + 1$         | $l \pm 2$ |                    |                        |
| 30              | 25        | 17                 | 80                     |
| 30              | 30        | 23                 | 80                     |
| 30              | 35        | 29                 | 80                     |
| 30              | 40        | 36                 | 80                     |
| 30              | 45        | 41                 | 80                     |
| 30              | 50        | 47                 | 80                     |
| 35              | 35        | 36                 | 60                     |
| 35              | 40        | 41                 | 60                     |
| 35              | 45        | 57                 | 60                     |
| 35              | 50        | 72                 | 60                     |



**B43501**

**Long Life – 85 °C**

## Packing of snap-in capacitors



For ecological reasons the packing is pure cardboard. Components can be withdrawn (in full or in part) in the correct position for insertion.

## Ordering codes

| Snap-in terminals<br>Version    | Identification in 3rd block of ordering code |
|---------------------------------|----------------------------------------------|
| Standard terminals (6,3 ± 1) mm | M000                                         |
| Short terminals (4,5 – 1) mm    | M007                                         |
| 3 terminals (4,5 – 1) mm        | M002                                         |

Ordering example:

B43501A3107M007 } snap-in capacitor with short terminals  
 B43501A3107M002 } snap-in capacitor with 3 terminals



### Overview of available types

| $U_R$ (VDC) | 160                               | 200                | 250                | 385                | 400                | 420                | 450                           |
|-------------|-----------------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|-------------------------------|
| $C_R$ (μF)  | Case dimensions $d \times l$ (mm) |                    |                    |                    |                    |                    |                               |
| 47          |                                   |                    |                    |                    |                    |                    | 22 × 25                       |
| 68          |                                   |                    |                    | 22 × 25            | 22 × 25            |                    | 22 × 30<br>25 × 25            |
| 100         |                                   |                    |                    | 22 × 30<br>25 × 25 | 22 × 30<br>25 × 25 | 22 × 30<br>25 × 25 | 22 × 40<br>25 × 30<br>30 × 25 |
| 120         |                                   |                    |                    |                    | 22 × 35            | 25 × 30            |                               |
| 150         |                                   |                    | 22 × 25            | 22 × 40<br>25 × 30 | 22 × 40<br>30 × 25 | 22 × 40<br>25 × 35 | 25 × 40<br>30 × 30            |
| 180         |                                   |                    |                    |                    | 30 × 30            | 25 × 30<br>30 × 33 | 30 × 35                       |
| 220         | 22 × 25                           | 22 × 25            | 22 × 30<br>25 × 25 | 25 × 40<br>30 × 30 | 25 × 40<br>30 × 35 | 25 × 40<br>30 × 35 | 30 × 40                       |
| 270         |                                   |                    |                    |                    | 30 × 35            | 30 × 35<br>35 × 30 | 30 × 45                       |
| 330         | 22 × 30                           | 22 × 30<br>25 × 25 | 22 × 40<br>25 × 30 | 30 × 40            | 30 × 45            | 30 × 45<br>35 × 35 | 35 × 40                       |
| 390         |                                   |                    |                    |                    | 30 × 50            | 30 × 50            |                               |
| 470         | 22 × 35                           | 22 × 40<br>30 × 25 | 25 × 40<br>30 × 30 | 35 × 40            | 35 × 45            | 35 × 45            | 35 × 50                       |
| 560         |                                   |                    |                    | 35 × 45            | 35 × 50            | 35 × 50            |                               |
| 680         | 25 × 35                           | 25 × 40<br>30 × 30 | 30 × 40            |                    |                    |                    |                               |
| 1 000       | 30 × 35                           | 30 × 40<br>35 × 35 | 35 × 40            |                    |                    |                    |                               |
| 1 500       | 30 × 45                           | 35 × 45            |                    |                    |                    |                    |                               |
| 2 200       | 35 × 50                           |                    |                    |                    |                    |                    |                               |

The capacitance and voltage ratings listed above are available in different cases upon request. Other voltage and capacitance ratings are also available upon request.


**Technical data and ordering codes**

| $U_R$ | $C_R$<br>100 Hz<br>20 °C<br>μF | Case<br>dimensions<br>$d \times l$<br>mm | $ESR_{typ}$<br>100 Hz<br>20 °C<br>mΩ | $ESR_{max}$<br>100 Hz<br>20 °C<br>mΩ | $Z_{max}$<br>10 kHz<br>20 °C<br>mΩ | $I_{~max}$<br>100 Hz<br>40 °C<br>A | $I_{~R}^{1)}$<br>100 Hz<br>85 °C<br>A | Ordering code <sup>2)</sup> |
|-------|--------------------------------|------------------------------------------|--------------------------------------|--------------------------------------|------------------------------------|------------------------------------|---------------------------------------|-----------------------------|
| VDC   |                                |                                          |                                      |                                      |                                    |                                    |                                       |                             |
| 160   | 220                            | 22 × 25                                  | 530                                  | 910                                  | 730                                | 2,4                                | 1,1                                   | B43501A1227M000             |
|       | 330                            | 22 × 30                                  | 360                                  | 610                                  | 490                                | 3,2                                | 1,4                                   | B43501A1337M000             |
|       | 470                            | 22 × 35                                  | 250                                  | 430                                  | 350                                | 4,0                                | 1,8                                   | B43501A1477M000             |
|       | 680                            | 25 × 35                                  | 180                                  | 300                                  | 240                                | 5,2                                | 2,4                                   | B43501A1687M000             |
|       | 1 000                          | 30 × 35                                  | 120                                  | 200                                  | 160                                | 6,9                                | 3,1                                   | B43501A1108M000             |
|       | 1 500                          | 30 × 45                                  | 80                                   | 140                                  | 120                                | 9,2                                | 4,2                                   | B43501A1158M000             |
|       | 2 200                          | 35 × 50                                  | 60                                   | 91                                   | 80                                 | 13                                 | 5,8                                   | B43501A1228M000             |
| 200   | 220                            | 22 × 25                                  | 380                                  | 610                                  | 490                                | 2,4                                | 1,1                                   | B43501A2227M000             |
|       | 330                            | 22 × 30                                  | 260                                  | 410                                  | 330                                | 3,2                                | 1,4                                   | B43501A2337M000             |
|       | 330                            | 25 × 25                                  | 260                                  | 410                                  | 330                                | 3,2                                | 1,5                                   | B43501J2337M000             |
|       | 470                            | 22 × 40                                  | 180                                  | 290                                  | 240                                | 4,2                                | 1,9                                   | B43501A2477M000             |
|       | 470                            | 30 × 25                                  | 180                                  | 290                                  | 350                                | 4,2                                | 1,9                                   | B43501J2477M000             |
|       | 680                            | 25 × 40                                  | 130                                  | 200                                  | 160                                | 5,5                                | 2,5                                   | B43501A2687M000             |
|       | 680                            | 30 × 30                                  | 130                                  | 200                                  | 160                                | 5,4                                | 2,4                                   | B43501J2687M000             |
|       | 1 000                          | 30 × 40                                  | 83                                   | 140                                  | 120                                | 7,2                                | 3,3                                   | B43501A2108M000             |
|       | 1 000                          | 35 × 35                                  | 83                                   | 140                                  | 120                                | 7,6                                | 3,5                                   | B43501J2108M000             |
|       | 1 500                          | 35 × 45                                  | 56                                   | 90                                   | 80                                 | 10                                 | 4,6                                   | B43501A2158M000             |
| 250   | 150                            | 22 × 25                                  | 560                                  | 890                                  | 800                                | 2,0                                | 0,91                                  | B43501B2157M000             |
|       | 220                            | 22 × 30                                  | 380                                  | 610                                  | 500                                | 2,6                                | 1,2                                   | B43501B2227M000             |
|       | 220                            | 25 × 25                                  | 380                                  | 610                                  | 490                                | 2,6                                | 1,2                                   | B43501K2227M000             |
|       | 330                            | 22 × 40                                  | 260                                  | 410                                  | 330                                | 3,5                                | 1,6                                   | B43501B2337M000             |
|       | 330                            | 25 × 30                                  | 260                                  | 410                                  | 330                                | 3,4                                | 1,6                                   | B43501K2337M000             |
|       | 470                            | 25 × 40                                  | 180                                  | 290                                  | 240                                | 4,5                                | 2,1                                   | B43501B2477M000             |
|       | 470                            | 30 × 30                                  | 180                                  | 290                                  | 240                                | 4,5                                | 2,0                                   | B43501K2477M000             |
|       | 680                            | 30 × 40                                  | 130                                  | 200                                  | 160                                | 5,9                                | 2,7                                   | B43501B2687M000             |
|       | 1 000                          | 35 × 40                                  | 83                                   | 140                                  | 120                                | 8,0                                | 3,6                                   | B43501B2108M000             |

Preferred types

1) 120 Hz conversion factor of ripple current:  $I_{~}(120 \text{ Hz}) = 1,03 \cdot I_{~}(100 \text{ Hz})$

2) Ordering code for standard terminals (6,3 mm).

To determine the ordering code for short terminals (4,5 mm) and 3 terminals (4,5 mm) see page 238.


**B43501**
**Long Life – 85 °C**

| $U_R$      | $C_R$<br>100 Hz<br>20 °C<br>$\mu F$ | Case<br>dimensions<br>$d \times l$<br>mm | $ESR_{typ}$<br>100 Hz<br>20 °C<br>m $\Omega$ | $ESR_{max}$<br>100 Hz<br>20 °C<br>m $\Omega$ | $Z_{max}$<br>10 kHz<br>20 °C<br>m $\Omega$ | $I_{~max}$<br>100 Hz<br>40 °C<br>A | $I_{~R}^{1)}$<br>100 Hz<br>85 °C<br>A | Ordering code <sup>2)</sup> |
|------------|-------------------------------------|------------------------------------------|----------------------------------------------|----------------------------------------------|--------------------------------------------|------------------------------------|---------------------------------------|-----------------------------|
| 385<br>VDC | 68                                  | 22 × 25                                  | 980                                          | 1960                                         | 1570                                       | 1,3                                | 0,61                                  | B43501A3686M000             |
|            | 100                                 | 22 × 30                                  | 670                                          | 1330                                         | 1070                                       | 1,7                                | 0,79                                  | B43501A3107M000             |
|            | 100                                 | 25 × 25                                  | 670                                          | 1330                                         | 1070                                       | 1,8                                | 0,80                                  | B43501B3107M000             |
|            | 150                                 | 22 × 40                                  | 450                                          | 890                                          | 720                                        | 2,4                                | 1,1                                   | B43501A3157M000             |
|            | 150                                 | 25 × 30                                  | 450                                          | 890                                          | 720                                        | 2,3                                | 1,0                                   | B43501B3157M000             |
|            | 220                                 | 25 × 40                                  | 310                                          | 610                                          | 490                                        | 3,1                                | 1,4                                   | B43501A3227M000             |
|            | 220                                 | 30 × 30                                  | 310                                          | 610                                          | 490                                        | 3,1                                | 1,4                                   | B43501B3227M000             |
|            | 330                                 | 30 × 40                                  | 210                                          | 410                                          | 330                                        | 4,1                                | 1,9                                   | B43501A3337M000             |
|            | 470                                 | 35 × 40                                  | 150                                          | 290                                          | 240                                        | 5,5                                | 2,5                                   | B43501A3477M000             |
|            | 560                                 | 35 × 45                                  | 120                                          | 240                                          | 200                                        | 6,2                                | 2,8                                   | B43501A3567M000             |
| 400        | 68                                  | 22 × 25                                  | 980                                          | 1960                                         | 1570                                       | 1,3                                | 0,61                                  | B43501A9686M000             |
|            | 100                                 | 22 × 30                                  | 670                                          | 1330                                         | 1070                                       | 1,7                                | 0,79                                  | B43501A9107M000             |
|            | 100                                 | 25 × 25                                  | 670                                          | 1330                                         | 1070                                       | 1,8                                | 0,80                                  | B43501B9107M000             |
|            | 120                                 | 22 × 35                                  | 560                                          | 1100                                         | 890                                        | 2,0                                | 0,92                                  | B43501A9127M000             |
|            | 150                                 | 22 × 40                                  | 450                                          | 890                                          | 720                                        | 2,4                                | 1,1                                   | B43501A9157M000             |
|            | 150                                 | 30 × 25                                  | 450                                          | 890                                          | 720                                        | 2,4                                | 1,1                                   | B43501B9157M000             |
|            | 180                                 | 30 × 30                                  | 370                                          | 740                                          | 600                                        | 2,7                                | 1,2                                   | B43501A9187M000             |
|            | 220                                 | 25 × 40                                  | 310                                          | 610                                          | 490                                        | 3,1                                | 1,4                                   | B43501A9227M000             |
|            | 220                                 | 30 × 35                                  | 310                                          | 610                                          | 490                                        | 3,2                                | 1,5                                   | B43501B9227M000             |
|            | 270                                 | 30 × 35                                  | 250                                          | 490                                          | 400                                        | 3,5                                | 1,6                                   | B43501A9277M000             |
|            | 330                                 | 30 × 45                                  | 210                                          | 410                                          | 330                                        | 4,3                                | 2,0                                   | B43501A9337M000             |
|            | 390                                 | 30 × 50                                  | 180                                          | 340                                          | 280                                        | 4,8                                | 2,2                                   | B43501A9397M000             |
|            | 470                                 | 35 × 45                                  | 150                                          | 290                                          | 240                                        | 5,7                                | 2,6                                   | B43501A9477M000             |
|            | 560                                 | 35 × 50                                  | 120                                          | 240                                          | 200                                        | 6,4                                | 2,9                                   | B43501A9567M000             |

Preferred types

1) 120 Hz conversion factor of ripple current:  $I_{~}(120 \text{ Hz}) = 1,03 \cdot I_{~}(100 \text{ Hz})$

2) Ordering code for standard terminals (6,3 mm).

To determine the ordering code for short terminals (4,5 mm) and 3 terminals (4,5 mm) see page 238.



# B43501

Long Life – 85 °C

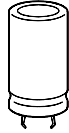
| $U_R$ | $C_R$<br>100 Hz<br>20 °C<br>$\mu F$ | Case<br>dimensions<br>$d \times l$<br>mm | $ESR_{typ}$<br>100 Hz<br>20 °C<br>m $\Omega$ | $ESR_{max}$<br>100 Hz<br>20 °C<br>m $\Omega$ | $Z_{max}$<br>10 kHz<br>20 °C<br>m $\Omega$ | $I_{-max}$<br>100 Hz<br>40 °C<br>A | $I_{-R}^{1)}$<br>100 Hz<br>85 °C<br>A | Ordering code <sup>2)</sup> |                 |
|-------|-------------------------------------|------------------------------------------|----------------------------------------------|----------------------------------------------|--------------------------------------------|------------------------------------|---------------------------------------|-----------------------------|-----------------|
| VDC   | 420                                 | 100                                      | 22 × 30                                      | 1330                                         | 1990                                       | 1600                               | 1,74                                  | 0,79                        | B43501A0107M000 |
|       |                                     | 100                                      | 25 × 25                                      | 1330                                         | 1990                                       | 1600                               | 1,77                                  | 0,80                        | B43501E0107M000 |
|       |                                     | 120                                      | 22 × 30                                      | 1110                                         | 1660                                       | 1330                               | 2,06                                  | 0,94                        | B43501A0127M000 |
|       |                                     | 150                                      | 22 × 40                                      | 890                                          | 1330                                       | 1070                               | 2,37                                  | 1,08                        | B43501A0157M000 |
|       |                                     | 150                                      | 25 × 35                                      | 890                                          | 1330                                       | 1070                               | 2,44                                  | 1,11                        | B43501E0157M000 |
|       |                                     | 180                                      | 25 × 35                                      | 740                                          | 1110                                       | 890                                | 2,67                                  | 1,21                        | B43501A0187M000 |
|       |                                     | 180                                      | 30 × 30                                      | 740                                          | 1110                                       | 890                                | 2,76                                  | 1,26                        | B43501E0187M000 |
|       |                                     | 220                                      | 25 × 40                                      | 610                                          | 910                                        | 730                                | 3,11                                  | 1,41                        | B43501A0227M000 |
|       |                                     | 220                                      | 30 × 35                                      | 610                                          | 910                                        | 730                                | 3,22                                  | 1,46                        | B43501E0227M000 |
|       |                                     | 270                                      | 30 × 35                                      | 500                                          | 740                                        | 590                                | 3,57                                  | 1,62                        | B43501A0277M000 |
|       |                                     | 270                                      | 35 × 30                                      | 500                                          | 740                                        | 590                                | 3,76                                  | 1,71                        | B43501E0277M000 |
|       |                                     | 330                                      | 30 × 45                                      | 410                                          | 610                                        | 490                                | 4,32                                  | 1,96                        | B43501A0337M000 |
|       |                                     | 330                                      | 35 × 35                                      | 410                                          | 610                                        | 490                                | 4,37                                  | 1,98                        | B43501E0337M000 |
|       |                                     | 390                                      | 30 × 50                                      | 350                                          | 520                                        | 410                                | 4,89                                  | 2,22                        | B43501A0397M000 |
|       |                                     | 470                                      | 35 × 45                                      | 290                                          | 430                                        | 340                                | 5,69                                  | 2,58                        | B43501A0477M000 |
|       |                                     | 560                                      | 35 × 50                                      | 240                                          | 360                                        | 290                                | 6,45                                  | 2,93                        | B43501A0567M000 |
| 450   | 47                                  | 22 × 25                                  | 2830                                         | 4240                                         | 3400                                       | 1,1                                | 0,51                                  | B43501A5476M000             |                 |
|       | 68                                  | 22 × 30                                  | 1960                                         | 2930                                         | 2350                                       | 1,4                                | 0,65                                  | B43501A5686M000             |                 |
|       | 68                                  | 25 × 25                                  | 1960                                         | 2930                                         | 2350                                       | 1,5                                | 0,66                                  | B43501B5686M000             |                 |
|       | 100                                 | 22 × 40                                  | 1330                                         | 1990                                         | 1600                                       | 1,9                                | 0,88                                  | B43501A5107M000             |                 |
|       | 100                                 | 25 × 30                                  | 1330                                         | 1990                                         | 1600                                       | 1,9                                | 0,86                                  | B43501B5107M000             |                 |
|       | 100                                 | 30 × 25                                  | 1330                                         | 1990                                         | 1600                                       | 1,9                                | 0,90                                  | B43501C5107M000             |                 |
|       | 150                                 | 25 × 40                                  | 890                                          | 1330                                         | 1070                                       | 2,6                                | 1,2                                   | B43501A5157M000             |                 |
|       | 150                                 | 30 × 30                                  | 890                                          | 1330                                         | 1070                                       | 2,5                                | 1,1                                   | B43501B5157M000             |                 |
|       | 180                                 | 30 × 35                                  | 750                                          | 1100                                         | 890                                        | 2,9                                | 1,3                                   | B43501A5187M000             |                 |
|       | 220                                 | 30 × 40                                  | 610                                          | 910                                          | 730                                        | 3,4                                | 1,5                                   | B43501A5227M000             |                 |
|       | 270                                 | 30 × 45                                  | 500                                          | 740                                          | 600                                        | 3,9                                | 1,8                                   | B43501A5277M000             |                 |
|       | 330                                 | 35 × 40                                  | 410                                          | 610                                          | 490                                        | 4,6                                | 2,1                                   | B43501A5337M000             |                 |
|       | 470                                 | 35 × 50                                  | 290                                          | 430                                          | 350                                        | 5,9                                | 2,7                                   | B43501A5477M000             |                 |

Preferred types

1) 120 Hz conversion factor of ripple current:  $I_{~}(120 \text{ Hz}) = 1,03 \cdot I_{~}(100 \text{ Hz})$

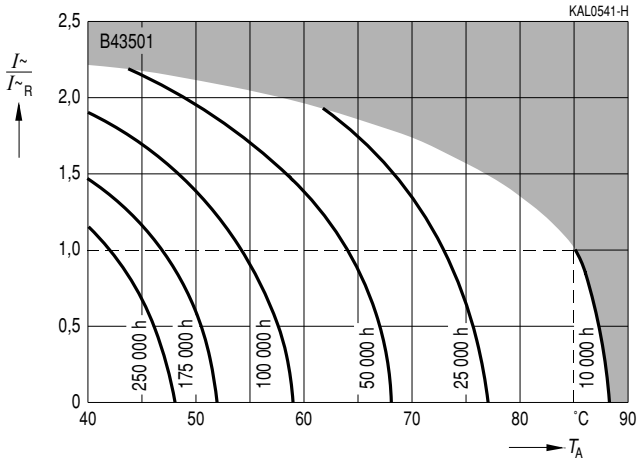
2) Ordering code for standard terminals (6,3 mm).

To determine the ordering code for short terminals (4,5 mm) and 3 terminals (4,5 mm) see page 238.

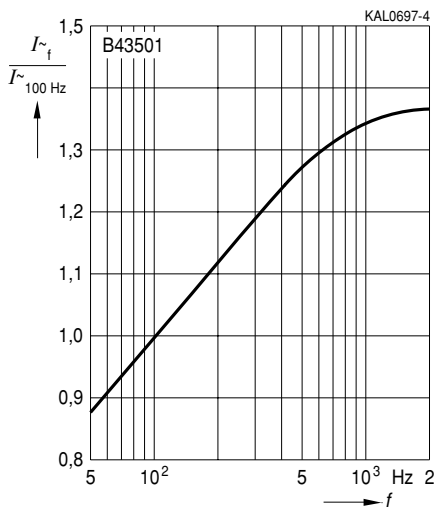


### Useful life

depending on ambient temperature  $T_A$  under ripple current operating conditions<sup>1)</sup>



### Frequency factor of permissible ripple current $I_{\sim}$ versus frequency $f$

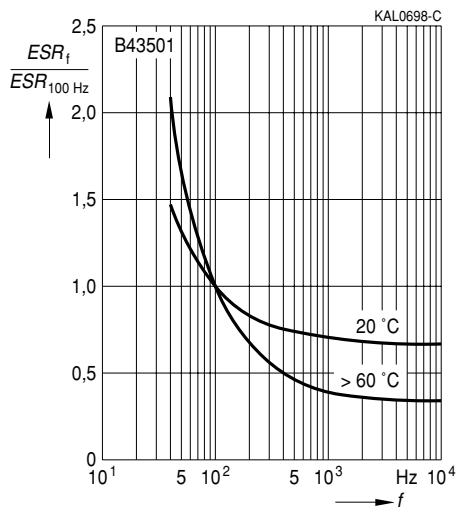


<sup>1)</sup> Refer to page 40 for an explanation on how to interpret the useful life graphs.



## Frequency characteristics of *ESR*

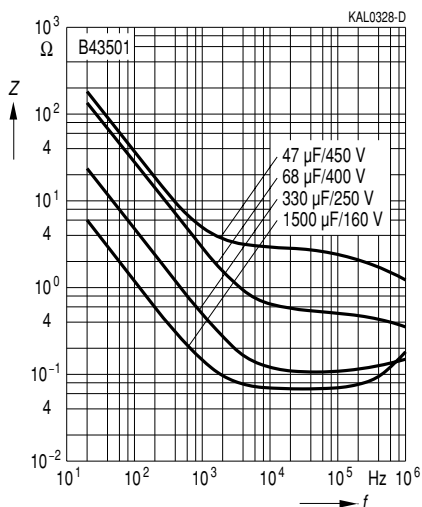
Typical behavior



## Impedance *Z*

versus frequency *f*

Typical behavior at 20 °C



**Herausgegeben von EPCOS AG****Unternehmenskommunikation, Postfach 80 17 09, 81617 München, DEUTSCHLAND****☎ ++49 89 636 09, FAX (0 89) 636-2 26 89**

© EPCOS AG 2002. Vervielfältigung, Veröffentlichung, Verbreitung und Verwertung dieser Broschüre und ihres Inhalts ohne ausdrückliche Genehmigung der EPCOS AG nicht gestattet.

Bestellungen unterliegen den vom ZVEI empfohlenen Allgemeinen Lieferbedingungen für Erzeugnisse und Leistungen der Elektroindustrie, soweit nichts anderes vereinbart wird.

Diese Broschüre ersetzt die vorige Ausgabe.

Fragen über Technik, Preise und Liefermöglichkeiten richten Sie bitte an den Ihnen nächstgelegenen Vertrieb der EPCOS AG oder an unsere Vertriebsgesellschaften im Ausland. Bauelemente können aufgrund technischer Erfordernisse Gefahrstoffe enthalten. Auskünfte darüber bitten wir unter Angabe des betreffenden Typs ebenfalls über die zuständige Vertriebsgesellschaft einzuholen.

**Published by EPCOS AG****Corporate Communications, P.O. Box 80 17 09, 81617 Munich, GERMANY****☎ ++49 89 636 09, FAX (0 89) 636-2 26 89**

© EPCOS AG 2002. Reproduction, publication and dissemination of this brochure and the information contained therein without EPCOS' prior express consent is prohibited.

Purchase orders are subject to the General Conditions for the Supply of Products and Services of the Electrical and Electronics Industry recommended by the ZVEI (German Electrical and Electronic Manufacturers' Association), unless otherwise agreed.

This brochure replaces the previous edition.

For questions on technology, prices and delivery please contact the Sales Offices of EPCOS AG or the international Representatives.

Due to technical requirements components may contain dangerous substances. For information on the type in question please also contact one of our Sales Offices.