

## Long-life grade capacitors

### Applications

- Professional switch-mode power supplies in industrial electronics and in data processing equipment
- Switch-mode power supplies in entertainment electronics
- Frequency converters

### Features

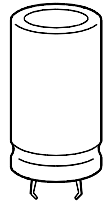
- High reliability
- High CU product, extremely compact
- Low equivalent series resistance *ESR*
- Many different case sizes available for each capacitance value

### 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

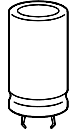
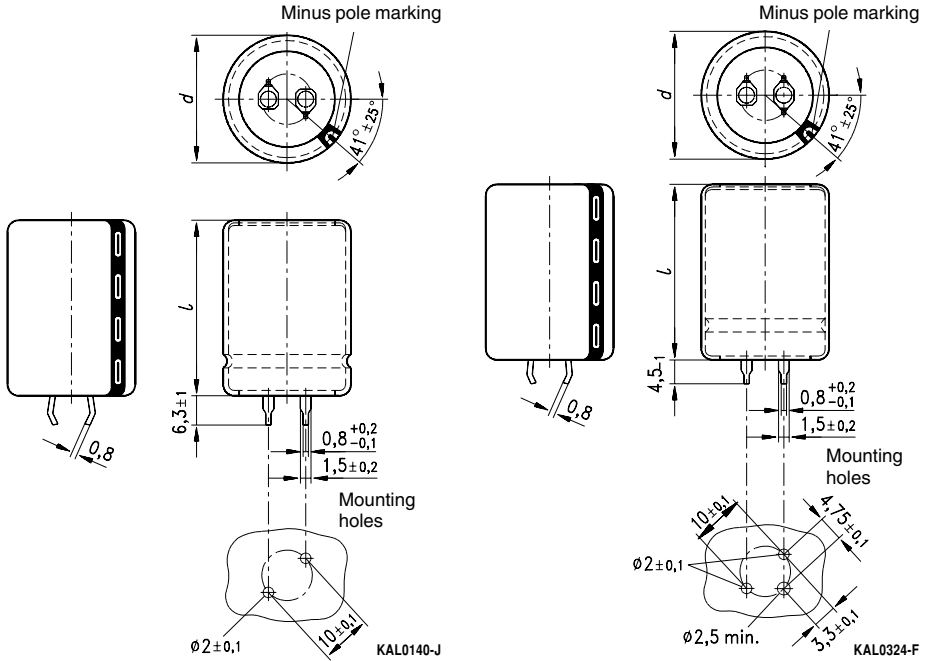
- Standard version with 2 terminals  
2 lengths available: 6,3 and 4,5 mm
- 3 terminals: length 4,5 mm  
(terminal arrangement ensures correct insertion)



KAL0274-A


**Specifications and characteristics in brief**

|   |   |  |
|---|---|--|
| Rated voltage $U_R$   | 200 ... 450 VDC   |  |
| Surge voltage $U_S$   | $1,15 \cdot U_R$ (for $U_R \leq 250$ VDC)<br>$1,10 \cdot U_R$ (for $U_R \geq 400$ VDC)  |  |
| Rated capacitance $C_R$   | 47 ... 2 200 $\mu\text{F}$  |  |
| Capacitance tolerance   | $\pm 20 \% \triangleq \text{M}$   |  |
| Dissipation factor $\tan \delta$<br>(20 °C, 120 Hz)   | $U_R \leq 400$ VDC: $\tan \delta \leq 0,15$<br>$U_R \geq 420$ VDC: $\tan \delta \leq 0,20$  |  |
| Leakage current $I_L$<br>(5 min, 20 °C)   | $I_L \leq 0,3 \mu\text{A} \cdot \left( \frac{C_R}{\mu\text{F}} \cdot \frac{U_R}{\text{V}} \right)^{0,7} + 4 \mu\text{A}$  |  |
| Self-inductance $ESL$   | Approx. 20 nH   |  |
| Useful life<br>105 °C; $U_R$ ; $I_{-R}$<br>85 °C; $U_R$ ; $I_{-max}$<br>40 °C; $U_R$ ; $1,9 \cdot I_{-R}$ | $> 3\ 000$ h<br>$> 6\ 500$ h<br>$> 200\ 000$ h  | <b>Requirements:</b><br>$\Delta C/C \leq \pm 30\ %$ of initial value<br>$\tan \delta \leq 3$ times initial specified limit<br>$I_L \leq$ initial specified limit<br>Failure percentage: $\leq 1\ %$<br>Failure rate: $\leq 40$ fit ( $\leq 40 \cdot 10^{-9}/\text{h}$ )<br>(for definition "fit", refer to chapter "Quality", page 62) |
| Load life test<br>105 °C; $U_R$ ; $I_{-R}$  | 2 000 h   | <b>Post test requirements:</b><br>$\Delta C/C \leq \pm 20\ %$ of initial value<br>$\tan \delta \leq 2$ times initial specified limit<br>$I_L \leq$ initial specified limit   |
| Voltage endurance test<br>105 °C; $U_R$   | 2 000 h   | <b>Post test requirements:</b><br>$\Delta C/C \leq \pm 10\ %$ of initial value<br>$\tan \delta \leq 1,3$ times 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: 40/105/56 (– 40 °C/+ 105 °C/56 days damp heat test)<br>$U_R \geq 420$ VDC: 25/105/56 (– 25 °C/+ 105 °C/56 days damp heat test) |  |
| Detail specification  | Similar to CECC 30301-809   |  |
| 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                    |
| 22              | 50        | 24                 | 160                    |
| <hr/>           |           |                    |                        |
| 25              | 25        | 13                 | 130                    |
| 25              | 30        | 17                 | 130                    |
| 25              | 35        | 19                 | 130                    |
| 25              | 40        | 22                 | 130                    |
| 25              | 45        | 26                 | 130                    |
| 25              | 50        | 30                 | 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                     |
| <hr/>           |           |                    |                        |
| 35              | 25        | 22                 | 60                     |
| 35              | 30        | 29                 | 60                     |
| 35              | 35        | 36                 | 60                     |
| 35              | 40        | 41                 | 60                     |
| 35              | 45        | 57                 | 60                     |
| 35              | 50        | 72                 | 60                     |



B43504

Compact – 105 °C

### Packing of snap-in capacitors



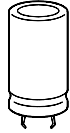
For ecological reasons the packing is pure cardboard. Components can be withdrawn (in full or in part) in the correct position for insertion.

### 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:

B43504A9107M007 } snap-in capacitor with short terminals  
B43504A9107M002 } snap-in capacitor with 3 terminals


**Overview of available types**

| $U_R$ (VDC)      | 200                               | 250                | 400                           | 420                | 450                           |
|------------------|-----------------------------------|--------------------|-------------------------------|--------------------|-------------------------------|
| $C_R$ ( $\mu$ F) | Case dimensions $d \times l$ (mm) |                    |                               |                    |                               |
| 47               |                                   |                    | 22 × 25                       |                    |                               |
| 68               |                                   |                    | 22 × 25                       |                    | 22 × 30                       |
| 82               |                                   |                    | 22 × 30                       | 22 × 30            | 22 × 35                       |
| 100              |                                   |                    | 22 × 35<br>25 × 25            | 22 × 35<br>25 × 30 | 22 × 35<br>25 × 30<br>30 × 25 |
| 120              |                                   |                    | 22 × 35                       | 22 × 40<br>25 × 30 | 25 × 35                       |
| 150              |                                   |                    | 22 × 40<br>30 × 25            | 25 × 35<br>30 × 30 | 25 × 40<br>30 × 30<br>35 × 25 |
| 180              |                                   |                    | 25 × 40<br>30 × 30            | 25 × 40<br>30 × 30 | 25 × 45                       |
| 220              | 22 × 25                           | 22 × 30            | 25 × 45<br>30 × 35<br>35 × 30 | 25 × 45<br>30 × 35 | 25 × 50<br>30 × 40<br>35 × 30 |
| 270              | 22 × 25                           | 22 × 35            | 25 × 50                       | 30 × 40            | 30 × 45<br>35 × 35            |
| 330              | 22 × 30                           | 22 × 40<br>25 × 30 | 30 × 45<br>35 × 35            | 30 × 45<br>35 × 35 | 30 × 50<br>35 × 40            |
| 390              | 22 × 30                           | 25 × 35            | 30 × 50                       | 30 × 50<br>35 × 40 | 35 × 45                       |
| 470              | 22 × 35<br>30 × 25                | 22 × 50<br>30 × 30 | 35 × 45                       | 35 × 45            | 35 × 50                       |
| 560              | 25 × 35                           | 25 × 45            | 35 × 50                       |                    |                               |
| 680              | 25 × 40<br>35 × 25                | 25 × 50<br>30 × 40 |                               |                    |                               |
| 820              | 25 × 45<br>35 × 30                | 30 × 45            |                               |                    |                               |
| 1 000            | 30 × 35                           | 35 × 40            |                               |                    |                               |
| 1 200            | 30 × 40                           | 35 × 45            |                               |                    |                               |
| 1 500            | 35 × 40                           |                    |                               |                    |                               |
| 1 800            | 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**

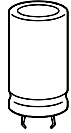
| $U_R$ | $C_R$                 | Case dimensions    | $ESR_{typ}$           | $Z_{max}$             | $I_{\sim max}$       | $I_{\sim max}$       | $I_{\sim R}^{1)}$     | Ordering code <sup>2)</sup> |
|-------|-----------------------|--------------------|-----------------------|-----------------------|----------------------|----------------------|-----------------------|-----------------------------|
| VDC   | 100 Hz<br>20 °C<br>μF | $d \times l$<br>mm | 100 Hz<br>20 °C<br>mΩ | 10 kHz<br>20 °C<br>mΩ | 100 Hz<br>40 °C<br>A | 100 Hz<br>85 °C<br>A | 100 Hz<br>105 °C<br>A |                             |
| 200   | 220                   | 22 × 25            | 580                   | 700                   | 2,6                  | 1,7                  | 0,84                  | B43504E2227M000             |
|       | 270                   | 22 × 25            | 480                   | 570                   | 2,8                  | 1,9                  | 0,93                  | B43504E2277M000             |
|       | 330                   | 22 × 30            | 390                   | 470                   | 3,3                  | 2,2                  | 1,1                   | B43504A2337M000             |
|       | 390                   | 22 × 30            | 330                   | 400                   | 3,6                  | 2,4                  | 1,2                   | B43504E2397M000             |
|       | 470                   | 22 × 35            | 280                   | 330                   | 4,2                  | 2,8                  | 1,4                   | B43504E2477M000             |
|       | 470                   | 30 × 25            | 280                   | 330                   | 4,5                  | 3,0                  | 1,5                   | B43504F2477M000             |
|       | 560                   | 25 × 35            | 230                   | 280                   | 5,0                  | 3,4                  | 1,6                   | B43504E2567M000             |
|       | 680                   | 25 × 40            | 190                   | 230                   | 5,8                  | 3,9                  | 1,9                   | B43504E2687M000             |
|       | 680                   | 35 × 25            | 190                   | 230                   | 6,0                  | 4,0                  | 2,0                   | B43504F2687M000             |
|       | 820                   | 25 × 45            | 160                   | 190                   | 6,6                  | 4,5                  | 2,2                   | B43504E2827M000             |
|       | 820                   | 35 × 30            | 160                   | 190                   | 6,9                  | 4,7                  | 2,3                   | B43504A2827M000             |
|       | 1 000                 | 30 × 35            | 130                   | 160                   | 7,3                  | 4,9                  | 2,4                   | B43504E2108M000             |
|       | 1 200                 | 30 × 40            | 110                   | 130                   | 8,4                  | 5,6                  | 2,7                   | B43504E2128M000             |
|       | 1 500                 | 35 × 40            | 90                    | 110                   | 10                   | 6,9                  | 3,4                   | B43504E2158M000             |
|       | 1 800                 | 35 × 45            | 80                    | 90                    | 12                   | 7,9                  | 3,9                   | B43504E2188M000             |
|       | 2 200                 | 35 × 50            | 60                    | 70                    | 14                   | 9,1                  | 4,4                   | B43504E2228M000             |
| 250   | 220                   | 22 × 30            | 580                   | 700                   | 2,7                  | 1,8                  | 0,89                  | B43504A2227M000             |
|       | 270                   | 22 × 35            | 480                   | 570                   | 3,2                  | 2,2                  | 1,1                   | B43504A2277M000             |
|       | 330                   | 22 × 40            | 390                   | 470                   | 3,7                  | 2,5                  | 1,2                   | B43504B2337M000             |
|       | 330                   | 25 × 30            | 390                   | 470                   | 3,6                  | 2,4                  | 1,2                   | B43504C2337M000             |
|       | 390                   | 25 × 35            | 330                   | 400                   | 4,2                  | 2,8                  | 1,4                   | B43504A2397M000             |
|       | 470                   | 22 × 50            | 280                   | 330                   | 4,9                  | 3,3                  | 1,6                   | B43504A2477M000             |
|       | 470                   | 30 × 30            | 280                   | 330                   | 4,7                  | 3,2                  | 1,6                   | B43504B2477M000             |
|       | 560                   | 25 × 45            | 230                   | 280                   | 5,5                  | 3,7                  | 1,8                   | B43504A2567M000             |
|       | 680                   | 25 × 50            | 190                   | 230                   | 6,3                  | 4,2                  | 2,1                   | B43504A2687M000             |
|       | 680                   | 30 × 40            | 190                   | 230                   | 6,3                  | 4,2                  | 2,1                   | B43504B2687M000             |
|       | 820                   | 30 × 45            | 160                   | 190                   | 7,2                  | 4,9                  | 2,4                   | B43504B2827M000             |
|       | 1 000                 | 35 × 40            | 130                   | 160                   | 8,4                  | 5,7                  | 2,8                   | B43504A2108M000             |
|       | 1 200                 | 35 × 45            | 110                   | 130                   | 9,6                  | 6,5                  | 3,2                   | B43504A2128M000             |

Preferred types

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

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 248.



| $U_R$ | $C_R$<br>100 Hz<br>20 °C<br>$\mu\text{F}$ | Case<br>dimensions<br>$d \times l$<br>mm | $ESR_{\text{typ}}$<br>100 Hz<br>20 °C<br>m $\Omega$ | $Z_{\text{max}}$<br>10 kHz<br>20 °C<br>m $\Omega$ | $I_{\text{max}}$<br>100 Hz<br>40 °C<br>A | $I_{\text{max}}$<br>100 Hz<br>85 °C<br>A | $I_{\text{R}}^{(1)}$<br>100 Hz<br>105 °C<br>A | Ordering code <sup>2)</sup> |
|-------|---|--|---|---|--|--|---|-----------------------------|
| 400   | 47  | 22 × 25                                  | 1870  | 2310  | 1,2                                      | 0,79                                     | 0,39  | B43504A9476M000             |
|       | 68  | 22 × 25                                  | 1290  | 1600  | 1,4                                      | 0,95                                     | 0,47  | B43504A9686M000             |
|       | 82  | 22 × 30                                  | 1070  | 1320  | 1,7                                      | 1,1                                      | 0,55  | B43504A9826M000             |
|       | 100                                       | 22 × 35                                  | 880   | 1090  | 2,0                                      | 1,3                                      | 0,64  | B43504A9107M000             |
|       | 100                                       | 25 × 25                                  | 880   | 1090  | 1,9                                      | 1,3                                      | 0,61  | B43504B9107M000             |
|       | 120                                       | 22 × 35                                  | 730   | 910   | 2,1                                      | 1,4                                      | 0,70  | B43504A9127M000             |
|       | 150                                       | 22 × 40                                  | 590   | 730   | 2,5                                      | 1,7                                      | 0,82  | B43504A9157M000             |
|       | 150                                       | 30 × 25                                  | 590   | 730   | 2,5                                      | 1,7                                      | 0,83  | B43504B9157M000             |
|       | 180                                       | 25 × 40                                  | 490   | 610   | 3,0                                      | 2,0                                      | 0,98  | B43504A9187M000             |
|       | 180                                       | 30 × 30                                  | 490   | 610   | 2,9                                      | 2,0                                      | 0,96  | B43504B9187M000             |
|       | 220                                       | 25 × 45                                  | 400   | 500   | 3,4                                      | 2,3                                      | 1,1   | B43504A9227M000             |
|       | 220                                       | 30 × 35                                  | 400   | 500   | 3,4                                      | 2,3                                      | 1,1   | B43504B9227M000             |
|       | 220                                       | 35 × 30                                  | 400   | 500   | 3,6                                      | 2,4                                      | 1,2   | B43504C9227M000             |
|       | 270                                       | 25 × 50                                  | 330   | 410   | 4,0                                      | 2,7                                      | 1,3   | B43504A9277M000             |
|       | 330                                       | 30 × 45                                  | 270   | 330   | 4,6                                      | 3,1                                      | 1,5   | B43504A9337M000             |
|       | 330                                       | 35 × 35                                  | 270   | 330   | 4,6                                      | 3,1                                      | 1,5   | B43504B9337M000             |
| 390   | 30 × 50                                   | 230                                      | 280   | 5,2   | 3,5                                      | 1,7                                      | B43504A9397M000                               |                             |
| 470   | 35 × 45                                   | 190                                      | 240   | 6,0   | 4,1                                      | 2,0                                      | B43504A9477M000                               |                             |
| 560   | 35 × 50                                   | 160                                      | 200   | 6,8   | 4,6                                      | 2,2                                      | B43504A9567M000                               |                             |
| 420   | 82  | 22 × 30                                  | 1650  | 1950  | 1,66                                     | 1,12                                     | 0,55  | B43504A0826M000             |
|       | 100                                       | 22 × 35                                  | 1360  | 1600  | 1,95                                     | 1,31                                     | 0,64  | B43504A0107M000             |
|       | 100                                       | 25 × 30                                  | 1360  | 1600  | 2,00                                     | 1,34                                     | 0,65  | B43504E0107M000             |
|       | 120                                       | 22 × 40                                  | 1130  | 1330  | 2,25                                     | 1,51                                     | 0,74  | B43504A0127M000             |
|       | 120                                       | 25 × 30                                  | 1130  | 1330  | 2,19                                     | 1,47                                     | 0,72  | B43504E0127M000             |
|       | 150                                       | 25 × 35                                  | 910   | 1070  | 2,58                                     | 1,74                                     | 0,85  | B43504A0157M000             |
|       | 150                                       | 30 × 30                                  | 910   | 1070  | 2,67                                     | 1,80                                     | 0,88  | B43504E0157M000             |
|       | 180                                       | 25 × 40                                  | 760   | 890   | 2,97                                     | 2,00                                     | 0,98  | B43504A0187M000             |
|       | 180                                       | 30 × 30                                  | 760   | 890   | 2,93                                     | 1,97                                     | 0,96  | B43504E0187M000             |

Preferred types

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

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 248.



| $U_R$ | $C_R$<br>100 Hz<br>20 °C<br>$\mu\text{F}$ | Case<br>dimensions<br>$d \times l$<br>mm | $ESR_{\text{typ}}$<br>100 Hz<br>20 °C<br>$\text{m}\Omega$ | $Z_{\text{max}}$<br>10 kHz<br>20 °C<br>$\text{m}\Omega$ | $I_{\text{~max}}$<br>100 Hz<br>40 °C<br>A | $I_{\text{~max}}$<br>100 Hz<br>85 °C<br>A | $I_{\text{~R}}^{(1)}$<br>100 Hz<br>105 °C<br>A | Ordering code <sup>2)</sup> |
|-------|---|--|---|---|---|---|--|-----------------------------|
| 420   | 220                                       | 25 × 45                                  | 620   | 730   | 3,44                                      | 2,31                                      | 1,13   | B43504A0227M000             |
|       | 220                                       | 30 × 35                                  | 620   | 730   | 3,41                                      | 2,29                                      | 1,12   | B43504E0227M000             |
|       | 270                                       | 30 × 40                                  | 510   | 590   | 3,96                                      | 2,66                                      | 1,30   | B43504A0277M000             |
|       | 330                                       | 30 × 45                                  | 410   | 490   | 4,58                                      | 3,08                                      | 1,50   | B43504A0337M000             |
|       | 330                                       | 35 × 35                                  | 410   | 490   | 4,62                                      | 3,11                                      | 1,52   | B43504E0337M000             |
|       | 390                                       | 30 × 50                                  | 350   | 410   | 5,18                                      | 3,48                                      | 1,70   | B43504A0397M000             |
|       | 390                                       | 35 × 40                                  | 350   | 410   | 5,26                                      | 3,54                                      | 1,72   | B43504E0397M000             |
|       | 470                                       | 35 × 45                                  | 290   | 340   | 6,02                                      | 4,05                                      | 1,97   | B43504A0477M000             |
| 450   | 68  | 22 × 30                                  | 1990  | 2350  | 1,5                                       | 1,0                                       | 0,50   | B43504A5686M000             |
|       | 82  | 22 × 35                                  | 1650  | 1950  | 1,8                                       | 1,2                                       | 0,58   | B43504A5826M000             |
|       | 100                                       | 22 × 35                                  | 1360  | 1600  | 2,0                                       | 1,3                                       | 0,64   | B43504A5107M000             |
|       | 100                                       | 25 × 30                                  | 1360  | 1600  | 2,0                                       | 1,3                                       | 0,65   | B43504B5107M000             |
|       | 100                                       | 30 × 25                                  | 1360  | 1600  | 2,1                                       | 1,4                                       | 0,67   | B43504C5107M000             |
|       | 120                                       | 25 × 35                                  | 1130  | 1330  | 2,3                                       | 1,6                                       | 0,76   | B43504A5127M000             |
|       | 150                                       | 25 × 40                                  | 910   | 1070  | 2,7                                       | 1,8                                       | 0,89   | B43504A5157M000             |
|       | 150                                       | 30 × 30                                  | 910   | 1070  | 2,7                                       | 1,8                                       | 0,88   | B43504B5157M000             |
|       | 150                                       | 35 × 25                                  | 910   | 1070  | 2,8                                       | 1,9                                       | 0,92   | B43504C5157M000             |
|       | 180                                       | 25 × 45                                  | 760   | 890   | 3,1                                       | 2,1                                       | 1,0  | B43504A5187M000             |
|       | 220                                       | 25 × 50                                  | 620   | 730   | 3,6                                       | 2,4                                       | 1,2  | B43504A5227M000             |
|       | 220                                       | 30 × 40                                  | 620   | 730   | 3,6                                       | 2,4                                       | 1,2  | B43504B5227M000             |
|       | 220                                       | 35 × 30                                  | 620   | 730   | 3,6                                       | 2,4                                       | 1,2  | B43504C5227M000             |
|       | 270                                       | 30 × 45                                  | 510   | 590   | 4,1                                       | 2,8                                       | 1,4  | B43504A5277M000             |
|       | 270                                       | 35 × 35                                  | 510   | 590   | 4,1                                       | 2,8                                       | 1,4  | B43504B5277M000             |
|       | 330                                       | 30 × 50                                  | 410   | 490   | 4,8                                       | 3,2                                       | 1,6  | B43504A5337M000             |
|       | 330                                       | 35 × 40                                  | 410   | 490   | 4,8                                       | 3,3                                       | 1,6  | B43504B5337M000             |
|       | 390                                       | 35 × 45                                  | 350   | 410   | 5,5                                       | 3,7                                       | 1,8  | B43504A5397M000             |
|       | 470                                       | 35 × 50                                  | 290   | 340   | 6,3                                       | 4,2                                       | 2,1  | B43504A5477M000             |

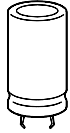
Preferred types

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

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 248.



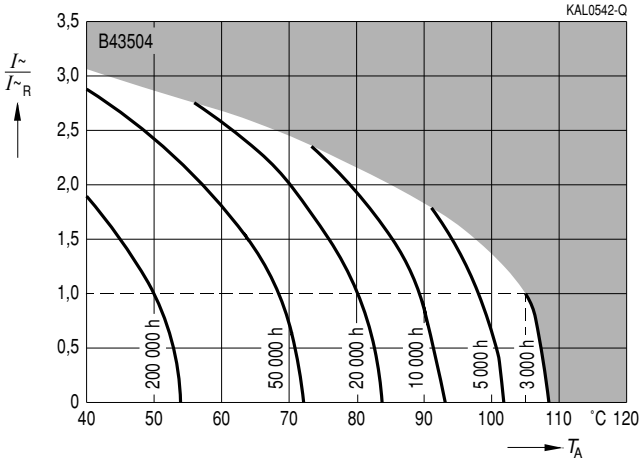


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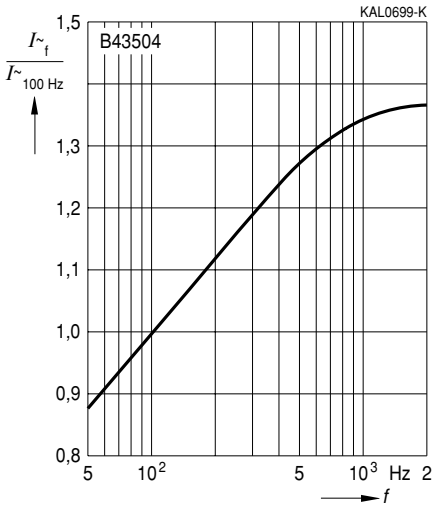
Compact – 105 °C

### Useful life

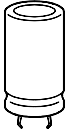
depending on ambient temperature  $T_A$  under ripple current operating conditions<sup>1)</sup>



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



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

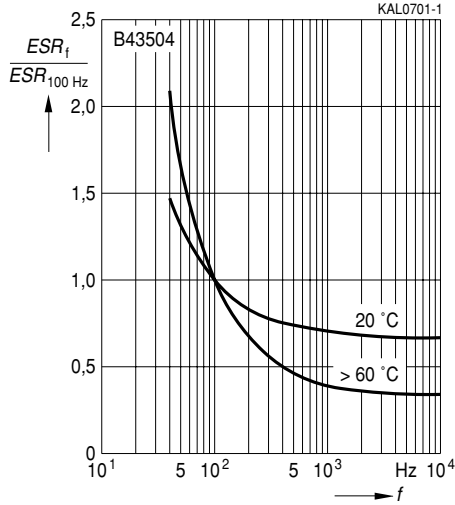


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**Compact – 105 °C**

**Frequency characteristics of ESR**

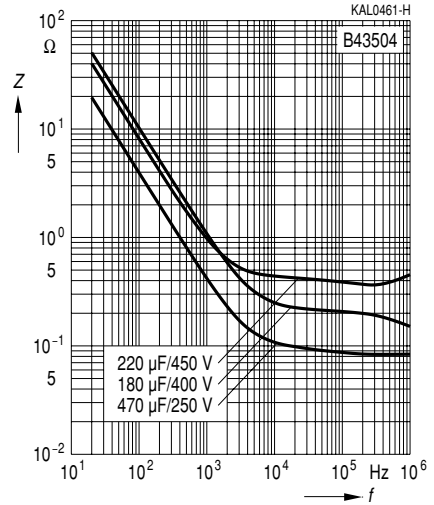
Typical behavior



**Impedance Z**

versus frequency  $f$

Typical behavior at 20 °C



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