

**Long-life grade capacitors  
for electronic ballasts****Applications**

- Electronic ballast
- Power supply

**Features**

- High ripple current capability at high frequency
- Long useful life (5000 h/105 °C)
- Good electrical characteristics

**Construction**

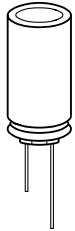
- Radial leads
- Charge-discharge proof, polar
- Aluminum case with insulating sleeve
- Minus pole marking on the insulating sleeve
- Case with safety vent
- Stand off rubber seal

**Delivery mode**

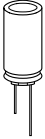
Special terminal configurations and packing:

- Bulk
- Taped, Ammo pack
- Cut
- Kinked
- PAPR (protection against polarity reversal)

Refer to page 503 for further details and ordering example.

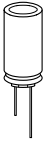


KAL0707-F



# Specifications and characteristics in brief

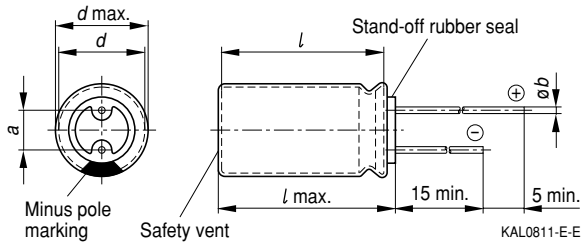
|                                                                              |                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                            |
|------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Rated voltage $U_R$                                                          | 160 ... 450 VDC                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                            |
| Surge voltage $U_S$                                                          | $1,1 \cdot U_R$                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                            |
| Rated capacitance $C_R$                                                      | 2,2 ... 330 $\mu$ F                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                            |
| Capacitance tolerance                                                        | $\pm 20 \% \triangleq M$                                                                                                                                              |                                                                                                                                                                                                                                                                                                                            |
| Useful life<br>105 °C; $U_R$ ; $I_{-R}$<br>40 °C; $U_R$ ; $1,6 \cdot I_{-R}$ | > 5 000 h<br>> 400 000 h                                                                                                                                              | Requirements:<br>$\Delta C/C \leq \pm 50 \%$ 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: $\leq 100$ fit ( $\leq 100 \cdot 10^{-9}/h$ )<br>(for definition "fit", refer to chapter "Quality", page 62) |
| Voltage endurance test<br>105 °C; $U_R$                                      | 5 000 h                                                                                                                                                               | Post test requirements:<br>$\Delta C/C \leq \pm 25 \%$ of initial value<br>$\tan \delta \leq 2$ times initial specified limit<br>$I_L \leq$ initial specified limit                                                                                                                                                        |
| Vibration resistance                                                         | To IEC 60068-2-6, test Fc:<br>displacement amplitude 0,75 mm, frequency range 10 ... 2000 Hz,<br>acceleration max. 10 g, duration $3 \times 2$ h                      |                                                                                                                                                                                                                                                                                                                            |
| IEC climatic category                                                        | To IEC 60068-1:<br>$U_R \leq 250$ VDC: 40/105/56 (– 40 °C/+ 105 °C/56 days damp heat test)<br>$U_R \geq 350$ VDC: 25/105/56 (– 25 °C/+ 105 °C/56 days damp heat test) |                                                                                                                                                                                                                                                                                                                            |
| Sectional specification                                                      | IEC 60384-4                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                            |



**B43858**

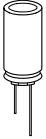
**High Ripple Capability – 105 °C**

### Dimensional drawing



### Dimensions and weights

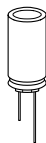
| Dimensions (mm)  |                            |             |                 | Approx. weight<br>g |
|------------------|----------------------------|-------------|-----------------|---------------------|
| $d \times l$     | $d_{\max} \times l_{\max}$ | $a \pm 0,5$ | $b$             |                     |
| 10 $\times$ 16   | 10,5 $\times$ 17           | 5,0         | $0,60 \pm 0,05$ | 1,9                 |
| 10 $\times$ 20   | 10,5 $\times$ 22           | 5,0         | $0,60 \pm 0,05$ | 2,6                 |
| 12,5 $\times$ 20 | 13 $\times$ 22             | 5,0         | $0,60 \pm 0,05$ | 3,6                 |
| 12,5 $\times$ 25 | 13 $\times$ 27             | 5,0         | $0,60 \pm 0,05$ | 4,5                 |
| 16 $\times$ 20   | 16,5 $\times$ 22           | 7,5         | $0,80 \pm 0,05$ | 5,5                 |
| 16 $\times$ 25   | 16,5 $\times$ 27           | 7,5         | $0,80 \pm 0,05$ | 7,5                 |
| 16 $\times$ 31,5 | 16,5 $\times$ 33,5         | 7,5         | $0,80 \pm 0,05$ | 7,8                 |
| 18 $\times$ 20   | 18,5 $\times$ 22           | 7,5         | $0,80 \pm 0,1$  | 8,0                 |
| 18 $\times$ 31,5 | 18,5 $\times$ 32,5         | 7,5         | $0,80 \pm 0,1$  | 11                  |
| 18 $\times$ 35   | 18,5 $\times$ 36           | 7,5         | $0,80 \pm 0,1$  | 13                  |
| 18 $\times$ 40   | 18,5 $\times$ 41           | 7,5         | $0,80 \pm 0,1$  | 16                  |
| 20 $\times$ 20   | 20,5 $\times$ 23           | 10,0        | $0,80 \pm 0,1$  | 18                  |
| 20 $\times$ 35   | 20,5 $\times$ 37           | 10,0        | $0,80 \pm 0,1$  | 18                  |
| 20 $\times$ 40   | 20,5 $\times$ 42           | 10,0        | $0,80 \pm 0,1$  | 20                  |



### Overview of available types

| $U_R$ (VDC) | 160                               | 200                    | 250                    | 350                | 400                | 450                  |
|-------------|-----------------------------------|------------------------|------------------------|--------------------|--------------------|----------------------|
| $C_R$ (μF)  | Case dimensions $d \times l$ (mm) |                        |                        |                    |                    |                      |
| 2,2         |                                   |                        |                        | 10 × 16            | 10 × 16            | 10 × 16              |
| 3,3         |                                   |                        |                        | 10 × 16            | 10 × 16            | 10 × 20              |
| 4,7         |                                   |                        |                        | 10 × 20            | 10 × 20            | 10 × 20              |
| 6,8         |                                   |                        |                        | 10 × 20            | 12,5 × 25          | 12,5 × 25            |
| 10          |                                   | 10 × 16                | 10 × 20                | 12,5 × 25          | 12,5 × 25          | 12,5 × 25            |
| 22          | 10 × 20                           | 10 × 20                | 12,5 × 25              | 16 × 25            | 16 × 25            | 16 × 31,5<br>18 × 20 |
| 33          | 10 × 20                           | 12,5 × 20<br>12,5 × 25 | 12,5 × 20<br>12,5 × 25 | 16 × 20<br>16 × 25 | 16 × 31,5          | 18 × 31,5            |
| 47          | 12,5 × 20<br>12,5 × 25            | 12,5 × 25              | 16 × 20<br>16 × 25     | 18 × 35            | 18 × 35<br>20 × 20 | 18 × 35              |
| 68          | 16 × 25                           | 16 × 20<br>16 × 25     | 16 × 31,5              | 18 × 40            | 20 × 35            | 20 × 40              |
| 100         | 16 × 25                           | 16 × 31,5              | 16 × 31,5              | 18 × 40            | 20 × 40            |                      |
| 220         | 18 × 31,5                         | 18 × 35                | 18 × 40                |                    |                    |                      |
| 330         | 20 × 35                           |                        |                        |                    |                    |                      |

Other voltage and capacitance ratings are also available upon request.

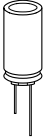

**Technical data and ordering codes**

| $U_R$ | $C_R$<br>120 Hz<br>20 °C<br>$\mu\text{F}$ | Case<br>dimensions<br>$d \times l$<br>mm | $I_L$<br>5 min<br>20 °C<br>$\mu\text{A}$ | $\tan \delta_{\max}$<br>120 Hz<br>20 °C | $Z_{\max}$<br>100 kHz<br>20 °C<br>$\Omega$ | $I_{\sim R}$<br>100 kHz<br>105 °C<br>mA | Ordering code <sup>1)</sup> |
|-------|-------------------------------------------|------------------------------------------|------------------------------------------|-----------------------------------------|--------------------------------------------|-----------------------------------------|-----------------------------|
| VDC   |                                           |                                          |                                          |                                         |                                            |                                         |                             |
| 160   | 22                                        | 10 × 20                                  | 121                                      | 0,20                                    | 1,5                                        | 420                                     | B43858A1226M00*             |
|       | 33                                        | 10 × 20                                  | 173                                      | 0,20                                    | 1,5                                        | 540                                     | B43858A1336M00*             |
|       | 47                                        | 12,5 × 20                                | 241                                      | 0,20                                    | 0,85                                       | 650                                     | B43858F1476M00*             |
|       | 47                                        | 12,5 × 25                                | 241                                      | 0,20                                    | 0,85                                       | 750                                     | B43858A1476M00*             |
|       | 68                                        | 16 × 25                                  | 341                                      | 0,20                                    | 0,70                                       | 900                                     | B43858A1686M00*             |
|       | 100                                       | 16 × 25                                  | 495                                      | 0,20                                    | 0,35                                       | 1100                                    | B43858A1107M00*             |
|       | 220                                       | 18 × 31                                  | 1071                                     | 0,20                                    | 0,25                                       | 1320                                    | B43858A1227M00*             |
|       | 330                                       | 20 × 35                                  | 1599                                     | 0,20                                    | 0,20                                       | 1800                                    | B43858A1337M00*             |
| 200   | 10                                        | 10 × 16                                  | 75                                       | 0,20                                    | 6,0                                        | 200                                     | B43858A2106M00*             |
|       | 22                                        | 10 × 20                                  | 147                                      | 0,20                                    | 1,7                                        | 470                                     | B43858A2226M00*             |
|       | 33                                        | 12,5 × 20                                | 213                                      | 0,20                                    | 1,1                                        | 500                                     | B43858K2336M00*             |
|       | 33                                        | 12,5 × 25                                | 213                                      | 0,20                                    | 1,1                                        | 570                                     | B43858A2336M00*             |
|       | 47                                        | 12,5 × 25                                | 297                                      | 0,20                                    | 0,80                                       | 780                                     | B43858A2476M00*             |
|       | 68                                        | 16 × 20                                  | 423                                      | 0,20                                    | 0,55                                       | 850                                     | B43858T2686M00*             |
|       | 68                                        | 16 × 25                                  | 423                                      | 0,20                                    | 0,55                                       | 900                                     | B43858A2686M00*             |
|       | 100                                       | 16 × 31,5                                | 615                                      | 0,20                                    | 0,26                                       | 1250                                    | B43858A2107M00*             |
|       | 220                                       | 18 × 35                                  | 1335                                     | 0,20                                    | 0,18                                       | 1390                                    | B43858A2227M00*             |
| 250   | 10                                        | 10 × 20                                  | 90                                       | 0,20                                    | 4,0                                        | 280                                     | B43858F2106M00*             |
|       | 22                                        | 12,5 × 25                                | 180                                      | 0,20                                    | 2,5                                        | 510                                     | B43858F2226M00*             |
|       | 33                                        | 12,5 × 20                                | 263                                      | 0,20                                    | 2,0                                        | 500                                     | B43858K2336M00*             |
|       | 33                                        | 12,5 × 25                                | 263                                      | 0,20                                    | 2,0                                        | 600                                     | B43858F2336M00*             |
|       | 47                                        | 16 × 20                                  | 368                                      | 0,20                                    | 0,85                                       | 700                                     | B43858K2476M00*             |
|       | 47                                        | 16 × 25                                  | 368                                      | 0,20                                    | 0,85                                       | 840                                     | B43858F2476M00*             |
|       | 68                                        | 16 × 31,5                                | 525                                      | 0,20                                    | 0,80                                       | 1150                                    | B43858F2686M00*             |
|       | 100                                       | 16 × 31,5                                | 765                                      | 0,20                                    | 0,75                                       | 1350                                    | B43858F2107M00*             |
|       | 220                                       | 18 × 40                                  | 1665                                     | 0,20                                    | 0,40                                       | 1460                                    | B43858F2227M00*             |

Preferred types

1) \* = "0" for bulk version.

For taping versions, other lead configurations and packing information see page 503.

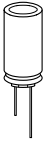


# Technical data and ordering codes

| $U_R$ | $C_R$<br>120 Hz<br>20 °C<br>$\mu F$ | Case<br>dimensions<br>$d \times l$<br>mm | $I_L$<br>5 min<br>20 °C<br>$\mu A$ | $\tan \delta_{max}$<br>120 Hz<br>20 °C | $Z_{max}$<br>100 kHz<br>20 °C<br>$\Omega$ | $I_{\sim R}$<br>100 kHz<br>105 °C<br>mA | Ordering code <sup>1)</sup> |
|-------|-------------------------------------|------------------------------------------|------------------------------------|----------------------------------------|-------------------------------------------|-----------------------------------------|-----------------------------|
| VDC   |                                     |                                          |                                    |                                        |                                           |                                         |                             |
| 350   | 2,2                                 | 10 × 16                                  | 38                                 | 0,20                                   | 6,0                                       | 100                                     | B43858A4225M00*             |
|       | 3,3                                 | 10 × 16                                  | 50                                 | 0,20                                   | 4,0                                       | 130                                     | B43858A4335M00*             |
|       | 4,7                                 | 10 × 20                                  | 64                                 | 0,20                                   | 3,0                                       | 180                                     | B43858A4475M00*             |
|       | 6,8                                 | 10 × 20                                  | 86                                 | 0,20                                   | 2,7                                       | 220                                     | B43858A4685M00*             |
|       | 10                                  | 12,5 × 25                                | 120                                | 0,20                                   | 2,0                                       | 300                                     | B43858A4106M00*             |
|       | 22                                  | 16 × 25                                  | 246                                | 0,20                                   | 0,80                                      | 560                                     | B43858A4226M00*             |
|       | 33                                  | 16 × 20                                  | 362                                | 0,20                                   | 0,80                                      | 550                                     | B43858F4336M00*             |
|       | 33                                  | 16 × 25                                  | 362                                | 0,20                                   | 0,80                                      | 680                                     | B43858A4336M00*             |
|       | 47                                  | 18 × 35                                  | 509                                | 0,20                                   | 0,55                                      | 1000                                    | B43858A4476M00*             |
|       | 68                                  | 18 × 40                                  | 729                                | 0,20                                   | 0,50                                      | 1200                                    | B43858A4686M00*             |
|       | 100                                 | 18 × 40                                  | 1065                               | 0,20                                   | 0,40                                      | 1450                                    | B43858A4107M00*             |
| 400   | 2,2                                 | 10 × 16                                  | 41                                 | 0,24                                   | 7,0                                       | 100                                     | B43858A9225M00*             |
|       | 3,3                                 | 10 × 16                                  | 55                                 | 0,24                                   | 5,0                                       | 130                                     | B43858A9335M00*             |
|       | 4,7                                 | 10 × 20                                  | 71                                 | 0,24                                   | 4,0                                       | 180                                     | B43858A9475M00*             |
|       | 6,8                                 | 12,5 × 25                                | 97                                 | 0,24                                   | 3,5                                       | 270                                     | B43858A9685M00*             |
|       | 10                                  | 12,5 × 25                                | 135                                | 0,24                                   | 2,5                                       | 300                                     | B43858A9106M00*             |
|       | 22                                  | 16 × 25                                  | 279                                | 0,24                                   | 0,80                                      | 560                                     | B43858A9226M00*             |
|       | 33                                  | 16 × 31,5                                | 411                                | 0,24                                   | 0,85                                      | 720                                     | B43858A9336M00*             |
|       | 47                                  | 18 × 35                                  | 579                                | 0,24                                   | 0,55                                      | 980                                     | B43858A9476M00*             |
|       | 47                                  | 20 × 20                                  | 579                                | 0,24                                   | 0,55                                      | 800                                     | B43858F9476M00*             |
|       | 68                                  | 20 × 35                                  | 831                                | 0,24                                   | 0,45                                      | 1300                                    | B43858A9686M00*             |
|       | 100                                 | 20 × 40                                  | 1215                               | 0,24                                   | 0,35                                      | 1550                                    | B43858A9107M00*             |
| 450   | 2,2                                 | 10 × 16                                  | 45                                 | 0,24                                   | 8,5                                       | 100                                     | B43858B5225M00*             |
|       | 3,3                                 | 10 × 20                                  | 60                                 | 0,24                                   | 9,0                                       | 130                                     | B43858B5335M00*             |
|       | 4,7                                 | 10 × 20                                  | 78                                 | 0,24                                   | 4,5                                       | 180                                     | B43858B5475M00*             |
|       | 6,8                                 | 12,5 × 25                                | 107                                | 0,24                                   | 4,0                                       | 270                                     | B43858B5685M00*             |
|       | 10                                  | 12,5 × 25                                | 150                                | 0,24                                   | 3,0                                       | 300                                     | B43858B5106M00*             |
|       | 22                                  | 16 × 31,5                                | 312                                | 0,24                                   | 2,0                                       | 600                                     | B43858B5226M00*             |
|       | 22                                  | 18 × 20                                  | 312                                | 0,24                                   | 2,0                                       | 500                                     | B43858K5226M00*             |
|       | 33                                  | 18 × 31,5                                | 461                                | 0,24                                   | 1,4                                       | 780                                     | B43858B5336M00*             |
|       | 47                                  | 18 × 35                                  | 650                                | 0,24                                   | 1,1                                       | 980                                     | B43858B5476M00*             |
|       | 68                                  | 20 × 40                                  | 933                                | 0,24                                   | 0,85                                      | 1350                                    | B43858B5686M00*             |

1) \* = "0" for bulk version.

For taping versions, other lead configurations and packing information see page 503.



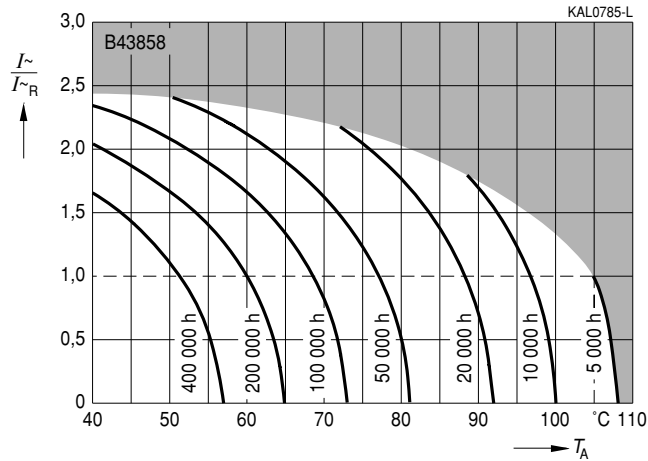
**B43858**

**High Ripple Capability – 105 °C**

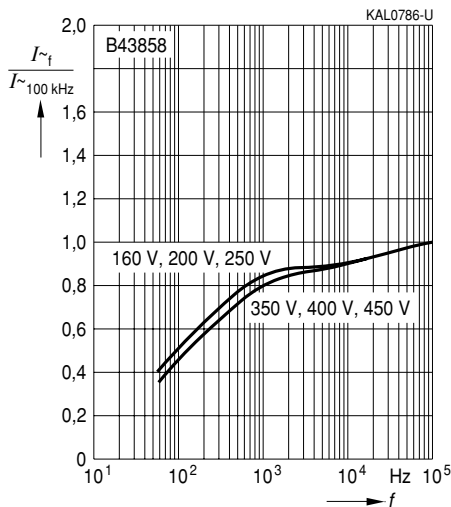
### Useful life

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

$U_R = 160 \dots 450 \text{ VDC}$



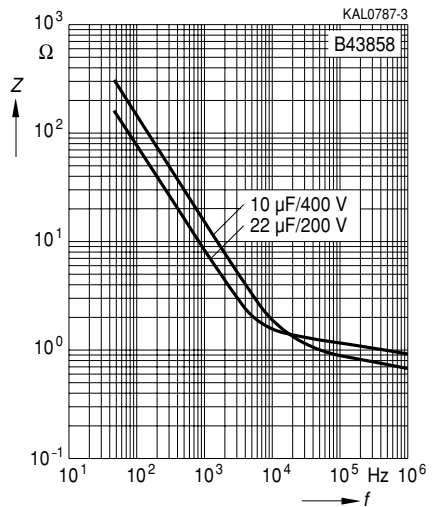
### Frequency factor of permissible ripple current $I_{\sim}$ versus frequency $f$



### Impedance $Z$

versus frequency  $f$

Typical behavior at 20 °C



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

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