

## Long-life grade capacitors

### Applications

- Professional electronic ballasts
- Power supply
- Energy-saving lamps

### Features

- Miniaturized dimensions
- High ripple current capability at high frequency
- Extra long life (8000 to 10000 h / 105 °C)

### Construction

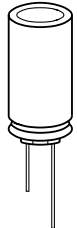
- Radial leads
- Charge-discharge proof, polar
- Aluminum case with insulating sleeve
- Minus pole marking on insulating sleeve
- Stand off rubber seal

### Delivery mode

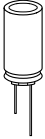
Special terminals configurations and packing:

- Bulk
- Taped, Ammo pack
- Cut
- Kinked

Refer to page 503 for further details and ordering example.



KAL0707-F

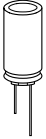
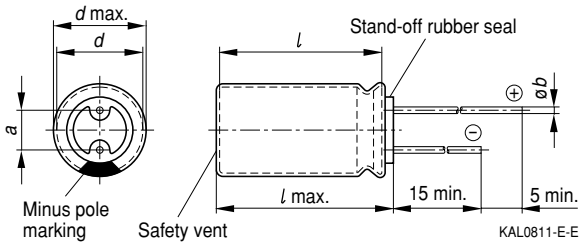


**B43888**

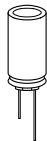
**Extra Long Life – 105 °C**

**Specifications and characteristics in brief**

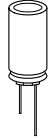
|   |   |   |
|---|---|---|
| Rated voltage $U_R$   | 160 ... 450 VDC   |   |
| Surge voltage $U_S$   | $1,1 \cdot U_R$   |   |
| Rated capacitance $C_R$   | 6,8 ... 100 $\mu$ F   |   |
| Capacitance tolerance   | $\pm 20 \% \triangleq M$  |   |
| Useful life<br>105 °C; $U_R$ ; $I_{-R}$<br>105 °C; $U_R$ ; $I_{-R}$ | 8 000 h for $d = 10$ mm<br>10 000 h for $d \geq 12,5$ mm  | 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 definiton "fit", refer to chapter "Quality", page 62) |
| Voltage endurance test<br>105 °C; $U_R$                             | 8 000 h for $d = 10$ mm<br>10 000 h for $d \geq 12,5$ mm  | 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, 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   |   |


**Dimensional drawing**

**Dimensions and weights**

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


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**Extra Long Life – 105 °C**
**Overview of available types**

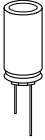
| $U_R$ (VDC)      | 160                               | 200                  | 250                  | 350                  | 400                  | 450                |
|------------------|-----------------------------------|----------------------|----------------------|----------------------|----------------------|--------------------|
| $C_R$ ( $\mu$ F) | Case dimensions $d \times l$ (mm) |                      |                      |                      |                      |                    |
| 6,8              |                                   |                      |                      | 10 × 16              | 10 × 16              | 10 × 20            |
| 10               | 10 × 16                           | 10 × 16              | 10 × 20              | 10 × 20              | 10 × 20              | 12,5 × 20          |
| 22               | 10 × 20                           | 10 × 20              | 12,5 × 20            | 12,5 × 25            | 12,5 × 25            | 16 × 25<br>18 × 20 |
| 33               | 10 × 20                           | 12,5 × 20            | 12,5 × 20            | 16 × 20              | 16 × 25              | 16 × 31,5          |
| 47               | 12,5 × 20                         | 12,5 × 20            | 12,5 × 25<br>16 × 20 | 16 × 31,5<br>20 × 20 | 16 × 31,5<br>20 × 20 | 18 × 31,5          |
| 68               | 12,5 × 25<br>16 × 20              | 12,5 × 25<br>16 × 20 | 16 × 25<br>20 × 20   | 18 × 31,5            | 18 × 31,5            |                    |
| 100              | 16 × 25<br>20 × 20                | 16 × 25<br>20 × 20   | 16 × 31,5<br>20 × 20 |                      |                      |                    |


**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 | $ESR_{\max}$<br>120 Hz<br>20 °C<br>$\Omega$ | $I_{\sim R}$<br>100 kHz<br>105 °C<br>mA | Ordering code <sup>1)</sup> |
|-------|---|--|--|---|---|---|-----------------------------|
| VDC   | 160                                       | 10 × 16                                  | 63                                       | 0,20                                    | 33,2  | 220                                     | B43888A1106M00*             |
|       |   | 22 × 20                                  | 121                                      | 0,20                                    | 15,1  | 350                                     | B43888A1226M00*             |
|       |   | 10 × 20                                  | 173                                      | 0,20                                    | 10,0  | 430                                     | B43888A1336M00*             |
|       |   | 12,5 × 20                                | 241                                      | 0,20                                    | 7,1   | 580                                     | B43888A1476M00*             |
|       |   | 12,5 × 25                                | 341                                      | 0,20                                    | 4,9   | 770                                     | B43888A1686M00*             |
|       |   | 16 × 20                                  | 341                                      | 0,20                                    | 4,9   | 820                                     | B43888F1686M00*             |
|       |   | 16 × 25                                  | 495                                      | 0,20                                    | 3,3   | 1080                                    | B43888A1107M00*             |
|       |   | 20 × 20                                  | 495                                      | 0,20                                    | 3,3   | 1150                                    | B43888F1107M00*             |
| 200   | 10  | 10 × 16                                  | 75                                       | 0,20                                    | 33,2  | 220                                     | B43888A2106M00*             |
|       |   | 10 × 20                                  | 147                                      | 0,20                                    | 15,1  | 350                                     | B43888A2226M00*             |
|       |   | 12,5 × 20                                | 213                                      | 0,20                                    | 10,0  | 490                                     | B43888A2336M00*             |
|       |   | 12,5 × 20                                | 297                                      | 0,20                                    | 7,1   | 580                                     | B43888A2476M00*             |
|       |   | 12,5 × 25                                | 423                                      | 0,20                                    | 4,9   | 770                                     | B43888A2686M00*             |
|       |   | 16 × 20                                  | 423                                      | 0,20                                    | 4,9   | 820                                     | B43888K2686M00*             |
|       |   | 16 × 25                                  | 615                                      | 0,20                                    | 3,3   | 1080                                    | B43888A2107M00*             |
|       |   | 20 × 20                                  | 615                                      | 0,20                                    | 3,3   | 1150                                    | B43888K2107M00*             |
| 250   | 10  | 10 × 20                                  | 75                                       | 0,20                                    | 33,2  | 240                                     | B43888F2106M00*             |
|       |   | 12,5 × 20                                | 180                                      | 0,20                                    | 15,1  | 400                                     | B43888F2226M00*             |
|       |   | 12,5 × 20                                | 263                                      | 0,20                                    | 10,0  | 490                                     | B43888F2336M00*             |
|       |   | 12,5 × 25                                | 368                                      | 0,20                                    | 7,1   | 640                                     | B43888F2476M00*             |
|       |   | 16 × 20                                  | 368                                      | 0,20                                    | 7,1   | 680                                     | B43888P2476M00*             |
|       |   | 16 × 25                                  | 525                                      | 0,20                                    | 4,9   | 890                                     | B43888F2686M00*             |
|       |   | 20 × 20                                  | 525                                      | 0,20                                    | 4,9   | 950                                     | B43888P2686M00*             |
|       |   | 16 × 31,5                                | 765                                      | 0,20                                    | 3,3   | 1180                                    | B43888F2107M00*             |
|       |   | 20 × 20                                  | 765                                      | 0,20                                    | 3,3   | 1150                                    | B43888P2107M00*             |
|       | 350                                       | 6,8                                      | 10 × 16                                  | 66                                      | 0,20  | 48,8                                    | 180                         |
|       |   | 10 × 20                                  | 120                                      | 0,20                                    | 33,2  | 240                                     | B43888A4106M00*             |
|       |   | 12,5 × 25                                | 246                                      | 0,20                                    | 15,1  | 440                                     | B43888A4226M00*             |
|       |   | 16 × 20                                  | 362                                      | 0,20                                    | 10,0  | 570                                     | B43888A4336M00*             |
|       |   | 16 × 31,5                                | 509                                      | 0,20                                    | 7,1   | 810                                     | B43888A4476M00*             |
|       |   | 20 × 20                                  | 509                                      | 0,20                                    | 7,1   | 790                                     | B43888F4476M00*             |
|       |   | 18 × 31,5                                | 729                                      | 0,20                                    | 4,9   | 1040                                    | B43888A4686M00*             |

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

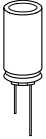
For taping versions, other lead configurations and packing information see page 503.


**B43888**
**Extra Long Life – 105 °C**
**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 | $ESR_{\max}$<br>120 Hz<br>20 °C<br>$\Omega$ | $I_{\sim R}$<br>100 kHz<br>105 °C<br>mA | Ordering code <sup>1)</sup> |
|------------|---|--|--|---|---|---|-----------------------------|
| 400<br>VDC | 6,8                                       | 10 × 16                                  | 86                                       | 0,24                                    | 58,5  | 180                                     | B43888A9685M00*             |
|            | 10  | 10 × 20                                  | 135                                      | 0,24                                    | 39,8  | 240                                     | B43888A9106M00*             |
|            | 22  | 12,5 × 25                                | 279                                      | 0,24                                    | 18,1  | 440                                     | B43888A9226M00*             |
|            | 33  | 16 × 25                                  | 411                                      | 0,24                                    | 12,1  | 620                                     | B43888A9336M00*             |
|            | 47  | 16 × 31,5                                | 579                                      | 0,24                                    | 8,5   | 810                                     | B43888A9476M00*             |
|            | 47  | 20 × 20                                  | 579                                      | 0,24                                    | 8,5   | 790                                     | B43888F9476M00*             |
|            | 68  | 18 × 31,5                                | 831                                      | 0,24                                    | 5,9   | 1040                                    | B43888A9686M00*             |
|            | 450                                       | 6,8                                      | 10 × 20                                  | 97                                      | 0,24  | 58,5                                    | 200                         |
| 10         |   | 12,5 × 20                                | 150                                      | 0,24                                    | 39,8  | 270                                     | B43888A5106M00*             |
| 22         |   | 16 × 25                                  | 312                                      | 0,24                                    | 18,1  | 510                                     | B43888A5226M00*             |
| 22         |   | 18 × 20                                  | 312                                      | 0,24                                    | 18,1  | 500                                     | B43888F5226M00*             |
| 33         |   | 16 × 31,5                                | 461                                      | 0,24                                    | 12,1  | 680                                     | B43888A5336M00*             |
| 47         |   | 18 × 31,5                                | 650                                      | 0,24                                    | 8,5   | 870                                     | B43888A5476M00*             |

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

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



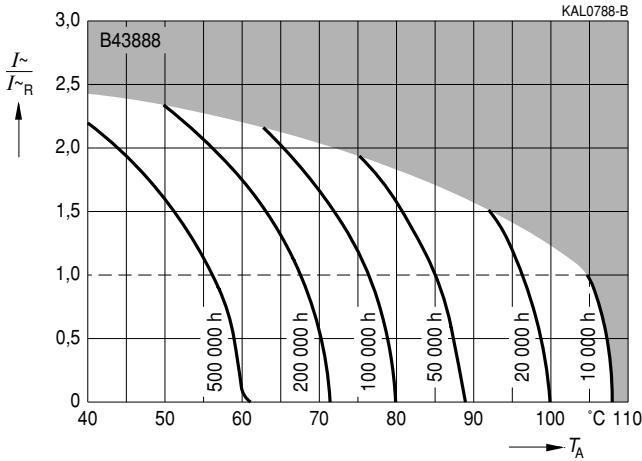
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**Extra Long Life – 105 °C**

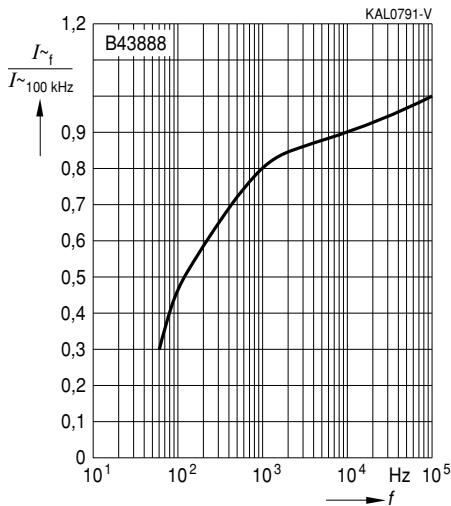
**Useful life**

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

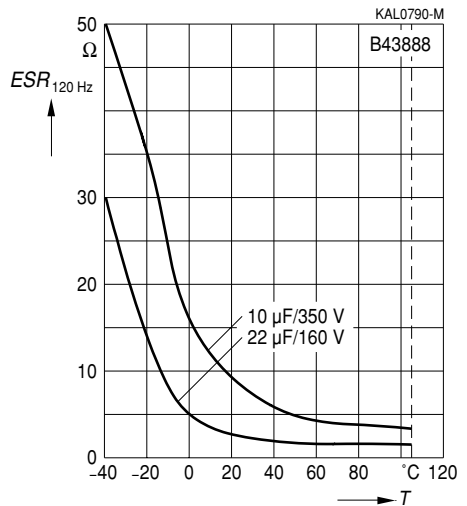
$U_R = 160 \dots 350$  VDC



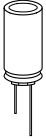
**Frequency factor of permissible ripple current  $I_{\sim}$  versus frequency  $f$**



**Equivalent series resistance ESR versus Temperature  $T$**   
Typical values at 120 Hz



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



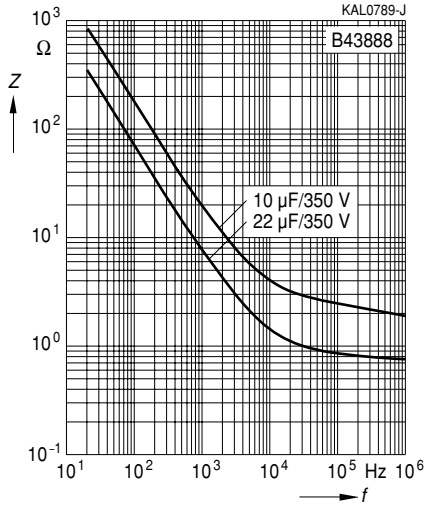
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**Extra Long Life – 105 °C**

**Impedance  $Z$**

versus frequency  $f$

Typical behavior at 20 °C





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