

**Long-life grade capacitors  
for professional applications**

**Applications**

- For use in output circuits of switch-mode power supplies of compact design
- For professional industrial electronics, telecommunications and data processing equipment

**Features**

- Lowest impedance at high frequency
- Lowest equivalent series resistance *ESR*
- High ripple current capability

**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

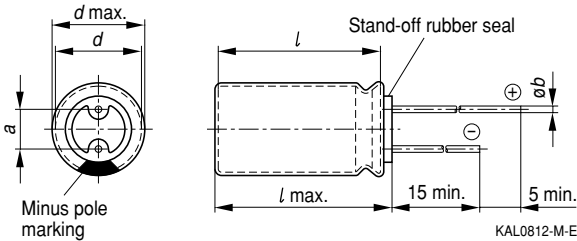
Refer to page 503 for further details and ordering example.



KAL0707-F


**B41886**
**Lowest Impedance – 105 °C**
**Specifications and characteristics in brief**

|                                         |                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                           |
|-----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Rated voltage $U_R$                     | 6,3 ... 25 VDC                                                                                                                                   |                                                                                                                                                                                                                                                                                                                           |
| Surge voltage $U_S$                     | $1,15 \cdot U_R$                                                                                                                                 |                                                                                                                                                                                                                                                                                                                           |
| Rated capacitance $C_R$                 | 100 ... 2 200 $\mu$ F                                                                                                                            |                                                                                                                                                                                                                                                                                                                           |
| Capacitance tolerance                   | $\pm 20 \% \triangleq M$                                                                                                                         |                                                                                                                                                                                                                                                                                                                           |
| Useful life<br>105 °C; $U_R$ ; $I_{-R}$ | > 4 000 h                                                                                                                                        | Requirements:<br>$\Delta C/C \leq \pm 40 \%$ 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; $U_R$ | 2 000 h                                                                                                                                          | Post test requirements:<br>$\Delta C/C \leq \pm 30 \%$ of initial value<br>$\tan \delta \leq 2$ times initial specified limit<br>$I_L \leq$ initial specified limit                                                                                                                                                       |
| Vibration resistance                    | To IEC 68068-2-6, test Fc:<br>displacement amplitude 0,75 mm, frequency range 10 ... 2 000 Hz,<br>acceleration max.10 g, duration $3 \times 2$ h |                                                                                                                                                                                                                                                                                                                           |
| IEC climatic category                   | To IEC 60068-1:<br>40/105/56 (– 40 °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              |
| 8 × 11          | 8,5 × 12                   | 3,5         | 0,60 ± 0,05 | 1,0            |
| 10 × 16         | 10,5 × 17                  | 5,0         | 0,60 ± 0,05 | 1,9            |
| 10 × 20         | 10,5 × 22                  | 5,0         | 0,60 ± 0,05 | 2,6            |
| 12,5 × 25       | 13 × 27                    | 5,0         | 0,60 ± 0,05 | 4,5            |

**Overview of available types**

| $U_R$ (VDC) | 6,3                               | 10        | 16      | 25        |
|-------------|-----------------------------------|-----------|---------|-----------|
| $C_R$ (µF)  | Case dimensions $d \times l$ (mm) |           |         |           |
| 100         |                                   |           |         | 8 × 11    |
| 220         |                                   |           | 8 × 11  | 10 × 16   |
| 330         |                                   | 8 × 11    | 10 × 16 | 10 × 16   |
| 470         | 8 × 11                            | 10 × 16   | 10 × 16 | 10 × 20   |
| 680         | 8 × 11                            |           |         |           |
| 1 000       | 10 × 16                           | 10 × 20   | 10 × 20 | 12,5 × 25 |
| 1 500       | 10 × 20                           |           |         |           |
| 2 200       | 12,5 × 25                         | 12,5 × 25 |         |           |

Other capacitance and voltage ratings are available upon request.


**B41886**
**Lowest Impedance – 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 | $I_{L, \max}$<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>$\Omega$ | $Z_{\max}$<br>100 kHz<br>20 °C<br>$\Omega$ | $I_{\sim R}$<br>100 kHz<br>105 °C<br>mA | Ordering code <sup>1)</sup> |
|-------|-------------------------------------------|------------------------------------------|--------------------------------------------------|-----------------------------------------|---------------------------------------------|--------------------------------------------|-----------------------------------------|-----------------------------|
| 6,3   | 470                                       | 8 × 11                                   | 30                                               | 0,22                                    | 0,78                                        | 0,130                                      | 550                                     | B41886A2477M00*             |
|       | 680                                       | 8 × 11                                   | 43                                               | 0,22                                    | 0,54                                        | 0,110                                      | 660                                     | B41886A2687M00*             |
|       | 1 000                                     | 10 × 16                                  | 63                                               | 0,22                                    | 0,36                                        | 0,048                                      | 930                                     | B41886A2108M00*             |
|       | 1 500                                     | 10 × 20                                  | 95                                               | 0,22                                    | 0,24                                        | 0,028                                      | 1 440                                   | B41886A2158M00*             |
|       | 2 200                                     | 12,5 × 25                                | 139                                              | 0,24                                    | 0,18                                        | 0,021                                      | 1 650                                   | B41886A2228M00*             |
| 10    | 330                                       | 8 × 11                                   | 33                                               | 0,19                                    | 0,95                                        | 0,120                                      | 500                                     | B41886A3337M00*             |
|       | 470                                       | 10 × 16                                  | 47                                               | 0,19                                    | 0,67                                        | 0,084                                      | 760                                     | B41886A3477M00*             |
|       | 1 000                                     | 10 × 20                                  | 100                                              | 0,19                                    | 0,31                                        | 0,043                                      | 1 340                                   | B41886A3108M00*             |
|       | 2 200                                     | 12,5 × 25                                | 220                                              | 0,21                                    | 0,16                                        | 0,024                                      | 1 940                                   | B41886A3228M00*             |
| 16    | 220                                       | 8 × 11                                   | 35                                               | 0,16                                    | 1,21                                        | 0,084                                      | 640                                     | B41886A4227M00*             |
|       | 330                                       | 10 × 16                                  | 53                                               | 0,16                                    | 0,80                                        | 0,070                                      | 760                                     | B41886A4337M00*             |
|       | 470                                       | 10 × 16                                  | 75                                               | 0,16                                    | 0,56                                        | 0,059                                      | 1 050                                   | B41886A4477M00*             |
|       | 1 000                                     | 10 × 20                                  | 160                                              | 0,16                                    | 0,27                                        | 0,035                                      | 1 600                                   | B41886A4108M00*             |
| 25    | 100                                       | 8 × 11                                   | 25                                               | 0,14                                    | 2,32                                        | 0,125                                      | 405                                     | B41886A5107M00*             |
|       | 220                                       | 10 × 16                                  | 55                                               | 0,14                                    | 1,06                                        | 0,084                                      | 740                                     | B41886A5227M00*             |
|       | 330                                       | 10 × 16                                  | 83                                               | 0,14                                    | 0,70                                        | 0,059                                      | 995                                     | B41886A5337M00*             |
|       | 470                                       | 10 × 20                                  | 118                                              | 0,14                                    | 0,49                                        | 0,043                                      | 1 300                                   | B41886A5477M00*             |
|       | 1 000                                     | 12,5 × 25                                | 250                                              | 0,14                                    | 0,23                                        | 0,024                                      | 2 050                                   | B41886A5108M00*             |

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

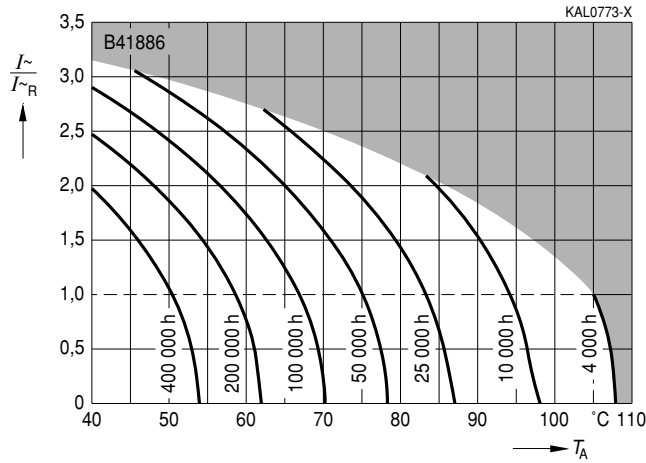
For taping versions, other lead configurations and packing information see page 503.



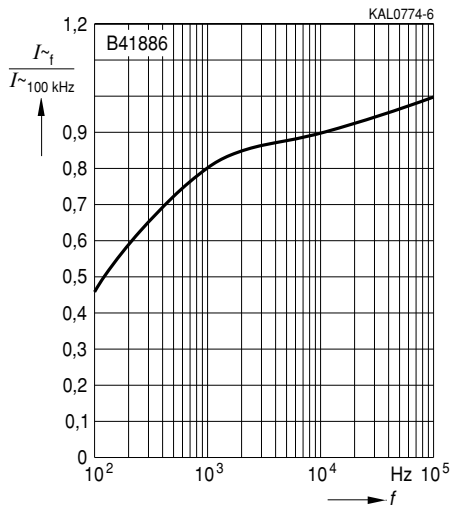
**Useful life**

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

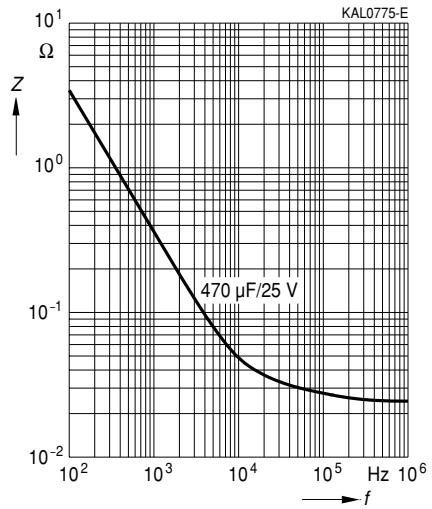
$U_R = 6,3 \dots 25$  VDC



**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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**Unternehmenskommunikation, Postfach 80 17 09, 81617 München, DEUTSCHLAND**

**☎ ++49 89 636 09, FAX (0 89) 636-2 26 89**

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**Corporate Communications, P.O. Box 80 17 09, 81617 Munich, GERMANY**

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