

Long-life grade capacitors
Lowest impedance

Applications

- Circuits that requires very high ambient temperature environments and heavy duty services
- Automotive
- Industrial
- High-temperature environments

Features

- Lowest impedance at high frequency
- Lowest *ESR*
- High reliability and long useful life
- High ripple current capability
- Wide temperature range

Construction

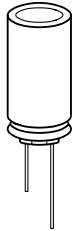
- Radial leads
- Charge-discharge proof, polar
- Aluminum case with insulating sleeve
- Minus pole marking on the insulating sleeve
- Case with safety vent
- Stand off rubber seal

Delivery mode

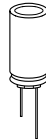
Special terminal configurations and packing:

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

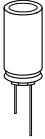
Refer to page 503 for further details and ordering example.



KAL0707-F


Specifications and characteristics in brief

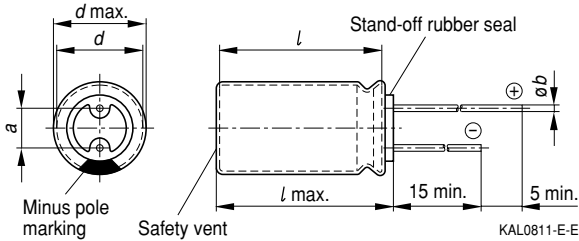
| | | |
|---|--|--|
| Rated voltage U_R | 10 ... 50 VDC | |
| Surge voltage U_S | $1,15 \cdot U_R$ | |
| Rated capacitance C_R | 100 ... 4 700 μ F | |
| Capacitance tolerance | $\pm 20 \% \triangleq M$ | |
| Useful life 150 °C; U_R ; I_R | > 1 000 h | Requirements: $\Delta C/C \leq \pm 45 \%$ of initial value $ESR \leq 3$ times initial specified limit $I_L \leq$ initial specified limit Failure percentage: $\leq 1 \%$ Failure rate: ≤ 10 fit ($\leq 10 \cdot 10^{-9}/h$) (for definition "fit", refer to chapter "Quality", page 62) |
| Voltage endurance test 150 °C; U_R | 1 000 h | Post test requirements: $\Delta C/C \leq \pm 30 \%$ of initial value $\tan \delta \leq 3$ times initial specified limit $I_L \leq$ initial specified limit |
| Vibration resistance | To IEC 60068-2-6, test Fc: displacement amplitude 0,75 mm, frequency range 10 ... 2000 Hz, acceleration max. 10 g, duration 3×2 h | |
| IEC climatic category | To IEC 60068-1: 55/150/56 (– 55 °C/+ 150 °C/56 days damp heat test) | |
| Sectional specification | IEC 60384-4 | |



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150 °C

Dimensional drawing



Dimensions and weights

| Dimensions (mm) | | | | Approx. weight g |
|-----------------|----------------------------|-------------|-------------|---------------------|
| $d \times l$ | $d_{\max} \times l_{\max}$ | $a \pm 0,5$ | b | |
| 12,5 × 25 | 13 × 27 | 5,0 | 0,60 ± 0,05 | 4,5 |
| 16 × 25 | 16,5 × 27 | 7,5 | 0,80 ± 0,05 | 7,5 |
| 16 × 31,5 | 16,5 × 33,5 | 7,5 | 0,80 ± 0,05 | 7,8 |
| 18 × 31,5 | 18,5 × 32,5 | 7,5 | 0,80 ± 0,1 | 11 |
| 18 × 35 | 18,5 × 36 | 7,5 | 0,80 ± 0,1 | 13 |
| 18 × 40 | 18,5 × 41 | 7,5 | 0,80 ± 0,1 | 16 |
| 20 × 40 | 20,5 × 42 | 10,0 | 0,80 ± 0,1 | 20 |

Overview of available types

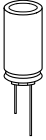
| U_R (VDC) | 10 | 16 | 25 | 35 | 50 |
|-------------|-----------------------------------|-----------|-----------|-----------|-----------|
| C_R (µF) | Case dimensions $d \times l$ (mm) | | | | |
| 100 | | | | 12,5 × 25 | 12,5 × 25 |
| 220 | | | 12,5 × 25 | 12,5 × 25 | 16 × 25 |
| 330 | | 12,5 × 25 | 12,5 × 25 | 16 × 25 | 16 × 31,5 |
| 470 | 12,5 × 25 | 12,5 × 25 | 16 × 25 | 16 × 31,5 | 18 × 35 |
| 1 000 | 12,5 × 25 | 16 × 25 | 16 × 31,5 | 18 × 40 | 20 × 40 |
| 2 200 | 16 × 31,5 | 18 × 31,5 | 18 × 35 | 20 × 40 | |
| 3 300 | 18 × 35 | 18 × 40 | 20 × 40 | | |
| 4 700 | 18 × 40 | 20 × 40 | | | |

Other voltage and capacitance ratings are also available upon request.


Technical data and ordering codes

| U_R | C_R 120 Hz 20 °C μF | Case dimensions $d \times l$ mm | I_L 5 min 20 °C μA | $\tan\delta_{\max}$ 120 Hz 20 °C | ESR_{\max} 120 Hz 20 °C Ω | $I_{\sim R}$ 100 kHz 150 °C mA | Ordering code ¹⁾ |
|-------|--------------------------------|--|-------------------------------|--|--------------------------------------|---|-----------------------------|
| 10 | 470 | 12,5 × 25 | 141 | 0,20 | 0,71 | 385 | B41868A3477M00* |
| | 1 000 | 12,5 × 25 | 300 | 0,20 | 0,33 | 550 | B41868A3108M00* |
| | 2 200 | 16 × 31,5 | 660 | 0,22 | 0,17 | 1000 | B41868A3228M00* |
| | 3 300 | 18 × 35 | 990 | 0,24 | 0,12 | 1200 | B41868A3338M00* |
| | 4 700 | 18 × 40 | 1410 | 0,26 | 0,09 | 1300 | B41868A3478M00* |
| 16 | 330 | 12,5 × 25 | 159 | 0,16 | 0,80 | 380 | B41868A4337M00* |
| | 470 | 12,5 × 25 | 226 | 0,16 | 0,56 | 430 | B41868A4477M00* |
| | 1 000 | 16 × 25 | 480 | 0,16 | 0,27 | 750 | B41868A4108M00* |
| | 2 200 | 18 × 31,5 | 1056 | 0,18 | 0,14 | 1200 | B41868A4228M00* |
| | 3 300 | 18 × 40 | 1584 | 0,20 | 0,10 | 1300 | B41868A4338M00* |
| | 4 700 | 20 × 40 | 2256 | 0,22 | 0,08 | 1400 | B41868A4478M00* |
| 25 | 220 | 12,5 × 25 | 165 | 0,14 | 1,06 | 370 | B41868A5227M00* |
| | 330 | 12,5 × 25 | 248 | 0,14 | 0,70 | 400 | B41868A5337M00* |
| | 470 | 16 × 25 | 353 | 0,14 | 0,49 | 550 | B41868A5477M00* |
| | 1 000 | 16 × 31,5 | 750 | 0,14 | 0,23 | 850 | B41868A5108M00* |
| | 2 200 | 18 × 35 | 1650 | 0,16 | 0,12 | 1150 | B41868A5228M00* |
| | 3 300 | 18 × 40 | 2475 | 0,18 | 0,09 | 1400 | B41868A5338M00* |
| 35 | 100 | 12,5 × 25 | 105 | 0,12 | 1,99 | 300 | B41868A7107M00* |
| | 220 | 12,5 × 25 | 231 | 0,12 | 0,90 | 350 | B41868A7227M00* |
| | 330 | 16 × 25 | 347 | 0,12 | 0,60 | 500 | B41868A7337M00* |
| | 470 | 16 × 31,5 | 494 | 0,12 | 0,42 | 650 | B41868A7477M00* |
| | 1 000 | 18 × 40 | 1050 | 0,12 | 0,20 | 1100 | B41868A7108M00* |
| | 2 200 | 20 × 40 | 2310 | 0,14 | 0,11 | 1500 | B41868A7228M00* |
| 50 | 100 | 12,5 × 25 | 150 | 0,10 | 1,66 | 300 | B41868A6107M00* |
| | 220 | 16 × 25 | 330 | 0,10 | 0,75 | 430 | B41868A6227M00* |
| | 330 | 16 × 31,5 | 495 | 0,10 | 0,50 | 550 | B41868A6337M00* |
| | 470 | 18 × 35 | 705 | 0,10 | 0,35 | 750 | B41868A6477M00* |
| | 1 000 | 20 × 40 | 1500 | 0,10 | 0,17 | 1200 | B41868A6108M00* |

1) * = "0" for bulk version. For taping versions, other lead configurations and packing information see page 503.



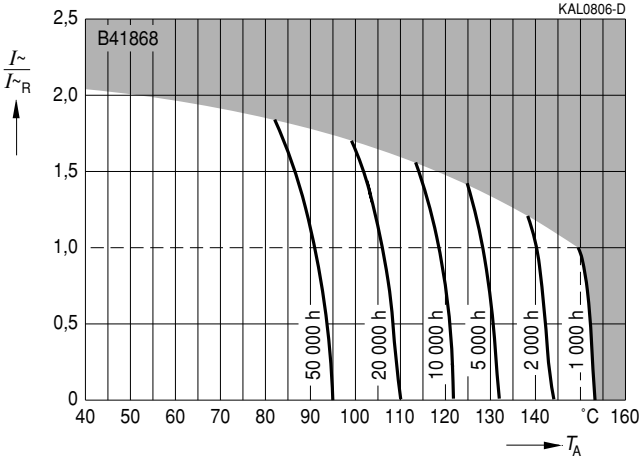
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150 °C

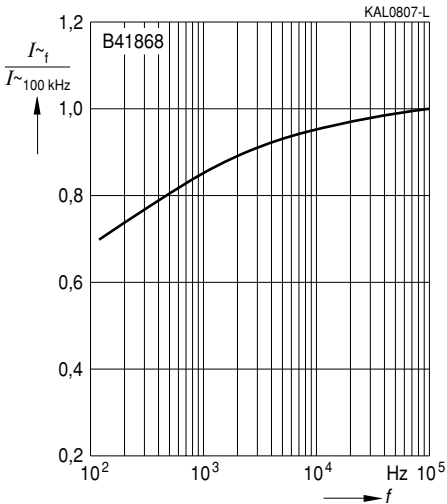
Useful life

depending on ambient temperature T_A under ripple current operating conditions¹⁾

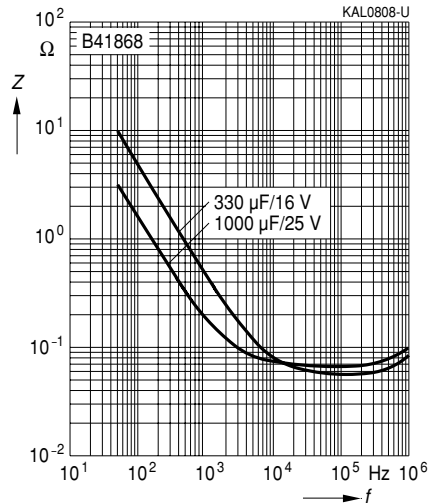
$U_R = 10 \dots 50 \text{ VDC}$



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.

Herausgegeben von EPCOS AG

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Published by EPCOS AG

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