

SIKOREL®

Applications

- For compact design in automotive applications

Features

- High ripple current capability
- High vibration resistance
- Very low ESR at low temperature, down to – 55 °C
- Compact and small design
- High reliability

Construction

- Charge-discharge proof, polar
- Aluminum case with insulating sleeve
- Negative pole connected to case

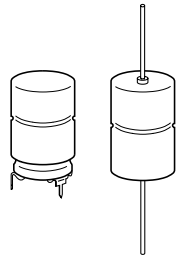
Terminals

- Axial leads, welded to ensure perfect electrical contact
- Also available with soldering stars

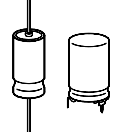
Taping and packing

- Axial-lead capacitors will be delivered in pallet package.
Capacitors with $d \times l \leq 16 \times 30$ mm are also available taped on reel.
- Solder-star capacitors are packed in cardboard.

For details on taping and packing, refer to page 342.

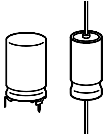


KAL0573-K


Specifications and characteristics in brief

| | | | | | | |
|---|--|---|--|------------------------------------|--------|---------|
| Rated voltage U_R | 25 and 40 VDC | | | | | |
| Surge voltage U_S | $1,15 \cdot U_R$ | | | | | |
| Rated capacitance C_R | 470 ... 3 300 μF | | | | | |
| Capacitance tolerance | – 10/+ 30 % \triangleq Q | | | | | |
| Leakage current I_L (5 min, 20 °C) | $I_L \leq 0,006 \mu\text{A} \cdot \left(\frac{C_R}{\mu\text{F}} \cdot \frac{U_R}{\text{V}} \right) + 4 \mu\text{A}$ | | | | | |
| Self-inductance $ESL^{1)}$ | Diameter d | 12 mm | 14 mm | 16 mm | 18 mm | |
| | Length l | Terminal | Approx. ESL (nH) | | | |
| | 25 mm | axial / solder star | — / — | 22 / 6 | 26 / 7 | — / — |
| | 30 mm | axial / solder star | 21 / 6 | 24 / 7 | 29 / 8 | 34 / 10 |
| | 39 mm | axial / solder star | — / — | — / — | 33 / 9 | 38 / 11 |
| Useful life 125 °C; U_R ; I_{-R} 85 °C; U_R ; I_{-max} 40 °C; U_R ; $2,9 \cdot I_{-R}$ | > 3 000 h | Requirements: $\Delta C/C \leq \pm 30$ % of initial value $ESR \leq 3$ times initial specified limit $I_L \leq$ initial specified limit Failure percentage: $\leq 0,5$ % Failure rate: ≤ 10 fit ($\leq 10 \cdot 10^{-9}/\text{h}$) (for definition “fit”, refer to chapter “Quality”, page 62) | | | | |
| | > 15 000 h | | | | | |
| > 200 000 h | | | | | | |
| Voltage endurance test 125 °C, U_R | 2 000 h | Post test requirements: | | | | |
| | | $\Delta C/C \leq \pm 10$ % of initial value | $ESR \leq 1,3$ % initial specified limit | $I_L \leq$ initial specified limit | | |
| Vibration resistance | To IEC 60068-2-6, test Fc: displacement amplitude 1,5 mm, at 10 Hz to 2 kHz, acceleration max. 20 g, duration 3×2 h | | | | | |
| IEC climatic category | To IEC 60068-1: 55/125/56 (– 55 °C/+ 125 °C/56 days damp heat test) | | | | | |
| Detail specification | Similar to CECC 30301-802 | | | | | |
| Sectional specification | IEC 60384-4 | | | | | |

1) If optimum circuit design is used, the values are lower by 30 %.

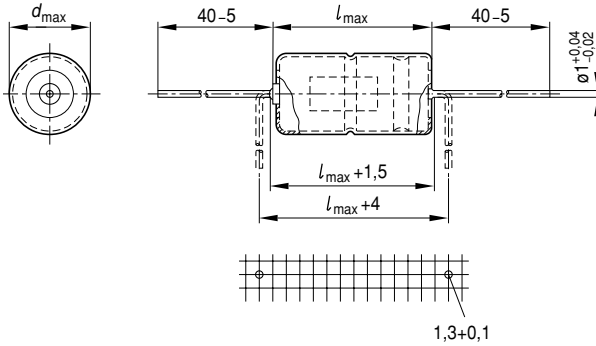


B41696 / B41796

Low ESR, Compact – 125 °C

Dimensional drawings

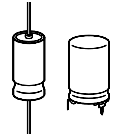
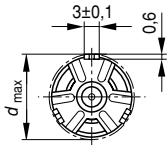
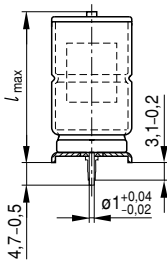
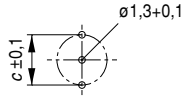
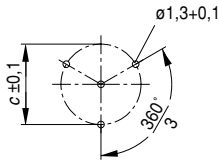
Axial-lead capacitor



KAL0524-S

Dimensions, weights and packing units

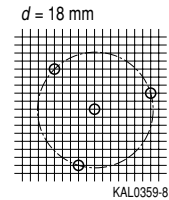
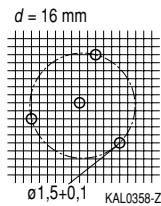
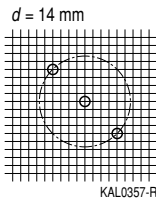
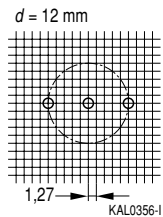
| $d \times l$ mm | $d_{\max} \times l_{\max}$ mm | Approx. weight g | Packing units (pieces) | |
|--------------------|----------------------------------|---------------------|------------------------|------|
| | | | Pallet | Reel |
| 12 × 30 | 12,5 × 30,5 | 5,1 | 288 | 450 |
| 14 × 25 | 14,5 × 25,5 | 5,7 | 200 | 350 |
| 16 × 30 | 16,5 × 30,5 | 8,9 | 180 | 250 |
| 18 × 39 | 18,5 × 40 | 14,7 | 160 | — |


Soldering star capacitors

 Mounting holes
 $d = 12 \text{ mm} \dots 14 \text{ mm}$

 Mounting holes
 $d = 16 \text{ mm} \dots 18 \text{ mm}$


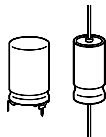
Soldering star is connected to the negative pole

KAL0525-1-E

The PC-board hole arrangement specified above is based on circular arcs.

 If, however, the mounting holes have to be matched to a standard drilling raster, a spacing of 1,27 mm ($1/20''$) has proved to be sufficiently accurate if the following arrangements are used:

Dimensions, weights and packing units

| $d \times l$ mm | $d_{\max} \times l_{\max}$ mm | $c \pm 0,1$ mm | Approx. weight g | Packing units pieces |
|--------------------|----------------------------------|-------------------|---------------------|-------------------------|
| 12 × 30 | 13,5 × 32 | 12,5 | 5,4 | 480 |
| 14 × 25 | 15,5 × 27 | 14,5 | 6,1 | 480 |
| 16 × 30 | 17,5 × 32 | 16,5 | 9,4 | 300 |
| 18 × 39 | 19,5 × 41,5 | 18,5 | 15,4 | 200 |


B41696 / B41796
Low ESR, Compact – 125 °C
Overview of available types

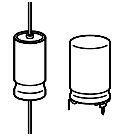
| | | |
|------------------|-----------------------------------|---------|
| U_R (VDC) | 25 | 40 |
| C_R (μ F) | Case dimensions $d \times l$ (mm) | |
| 470 | | 12 × 30 |
| 680 | 12 × 30 | |
| 1 000 | 14 × 25 | 16 × 30 |
| 2 200 | | 18 × 39 |
| 3 300 | 18 × 39 | |

Case dimensions and ordering codes

| U_R VDC | C_R μ F | Case dim. $d \times l$ mm | Ordering code | | Soldering star |
|--------------|------------------|---------------------------------|-------------------------|-----------------|-----------------|
| | | | Axial pallet package | Axial reel | |
| 25 | 680 | 12 × 30 | B41696A5687Q007 | B41696A5687Q009 | B41796A5687Q000 |
| | 1 000 | 14 × 25 | B41696A5108Q007 | B41696A5108Q009 | B41796A5108Q000 |
| | 3 300 | 18 × 39 | B41696A5338Q007 | | B41796A5338Q000 |
| 40 | 470 | 12 × 30 | B41696A7477Q007 | B41696A7477Q009 | B41796A7477Q000 |
| | 1 000 | 16 × 30 | B41696A7108Q007 | B41696A7108Q009 | B41796A7108Q000 |
| | 2 200 | 18 × 39 | B41696A7228Q007 | | B41796A7228Q000 |

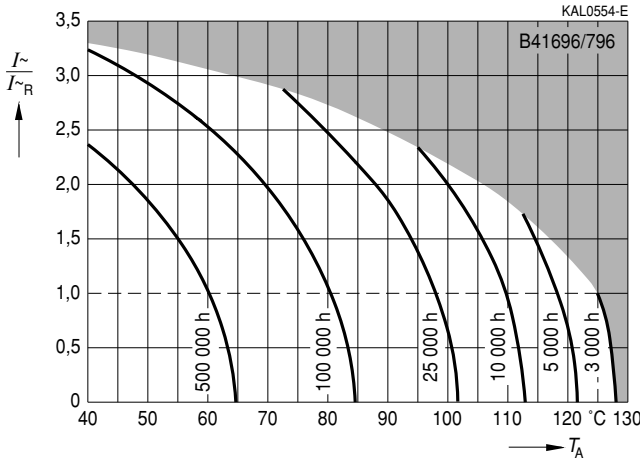
Technical data

| C_R 100 Hz 20 °C μ F | ESR_{typ} 100 Hz 20 °C m Ω | ESR_{max} 100 Hz 20 °C m Ω | ESR_{max} 100 Hz -40 °C Ω | ESR_{max} 10 kHz 20 °C m Ω | Z_{max} 100 kHz 20 °C m Ω | $I_{\sim max}$ 10 kHz 40 °C A | $I_{\sim max}$ 10 kHz 85 °C A | $I_{\sim R}$ 10 kHz 125 °C A |
|-------------------------------------|--|--|---|--|---|--|--|---------------------------------------|
| 25 VDC | | | | | | | | |
| 680 | 110 | 170 | 1,20 | 95 | 90 | 5,40 | 4,25 | 1,60 |
| 1 000 | 80 | 120 | 0,65 | 70 | 68 | 5,70 | 4,50 | 1,70 |
| 3 300 | 30 | 45 | 0,20 | 25 | 24 | 11,50 | 9,20 | 3,50 |
| 40 VDC | | | | | | | | |
| 470 | 110 | 180 | 0,90 | 75 | 72 | 5,80 | 4,60 | 1,75 |
| 1 000 | 60 | 90 | 0,45 | 45 | 44 | 8,00 | 6,30 | 2,40 |
| 2 200 | 30 | 50 | 0,20 | 25 | 24 | 11,50 | 9,20 | 3,50 |



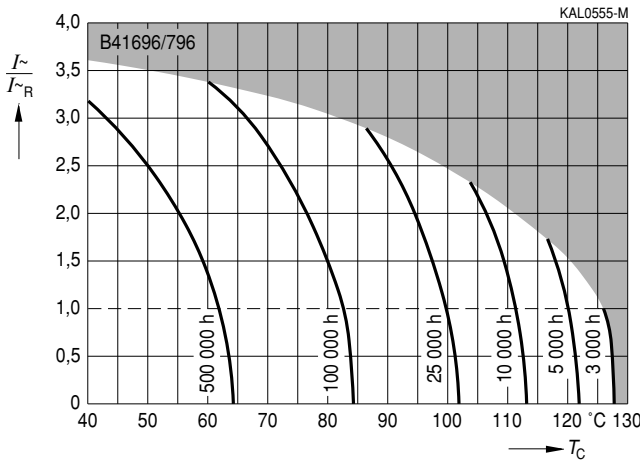
Useful life

depending on ambient temperature T_A under ripple current operating conditions at $U_R^{1)}$

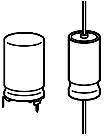


Useful life

depending on case temperature T_C under ripple current operating conditions at $U_R^{1)}$



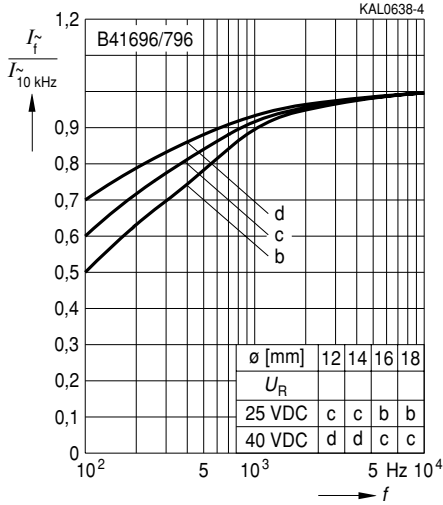
1) Refer to page 40 for an explanation on how to interpret the useful life graphs.



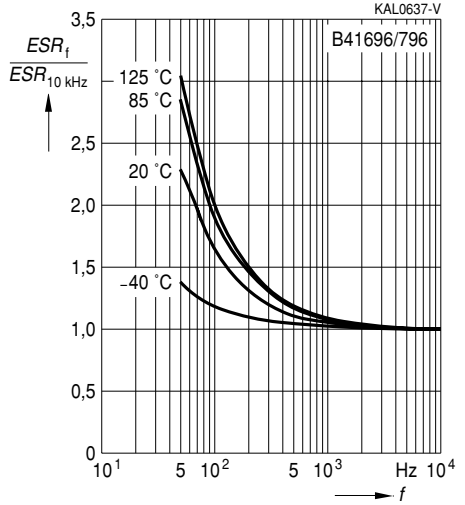
B41696 / B41796

Low ESR, Compact – 125 °C

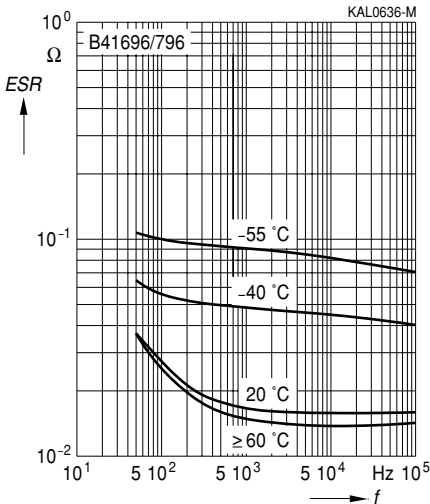
Frequency factor of permissible ripple current $I_{\tilde{r}}$ versus frequency f



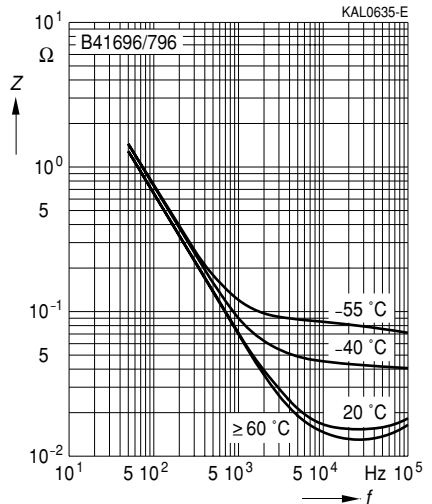
Frequency characteristics of ESR at different temperatures typical behavior



Equivalent series resistance ESR versus frequency f at different temperatures Typical behavior for 2 200 μ F/40 V



Impedance Z versus frequency f at different temperatures Typical behavior for 2 200 μ F/40 V



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