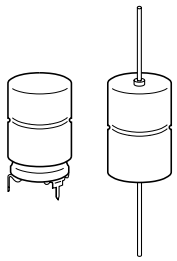
EPCOS

SIKOREL®



KAL0573-K

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

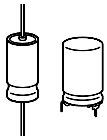
Terminals

- 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.



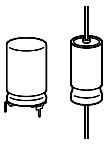
Specifications and characteristics in brief

Rated voltage U_R	25 and 40 VDC					
Surge voltage U_S	1,15 · U_R					
Rated capacitance C_R	470 … 3 300 µF					
Capacitance tolerance	– 10/+ 30 % ≙ Q					
Leakage current I_L (5 min, 20 °C)	$I_L \leq 0{,}006\ \mu A \cdot \left(\frac{C_R}{\mu F} \cdot \frac{U_R}{V}\right) + 4\ \mu A$					
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		Requirements:	
125 °C; U_R; $I_{\sim R}$	> 3 000 h	$\Delta C/C$	≤ ± 30 % of initial value
85 °C; U_R; $I_{\sim max}$	> 15 000 h	*ESR*	≤ 3 times initial specified limit
40 °C; U_R; 2,9 · $I_{\sim R}$	> 200 000 h	I_L	≤ initial specified limit
		Failure percentage:	≤ 0,5 %
		Failure rate:	≤ 10 fit (≤ 10 · 10^{-9}/h)
		(for definiton “fit”, refer to chapter *“Quality”*, page 62)	
Voltage endurance test		Post test requirements:	
125 °C, U_R	2 000 h	ΔC/C	≤ ± 10 % of initial value
		ESR	≤ 1,3 % initial specified limit
		I_L	≤ initial specified limit

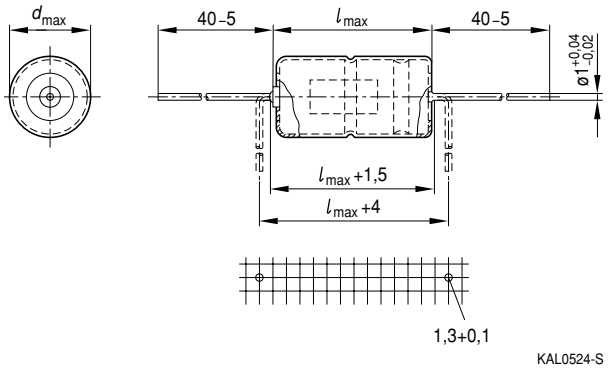
Vibration resistance	To IEC 60068-2-6, test Fc: displacement amplitude 1,5 mm, at 10 Hz to 2 kHz, acceleration max. 20 *g*, duration 3 × 2 h
IEC climatic category	To IEC 60068-1: 55/125/56 (– 55 °C/+ 125 °C/56 days damp heat test)
Detail specification	Similar to CECC 30301-802
Sectional specification	IEC 60384-4

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



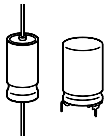
Dimensional drawings

Axial-lead capacitor

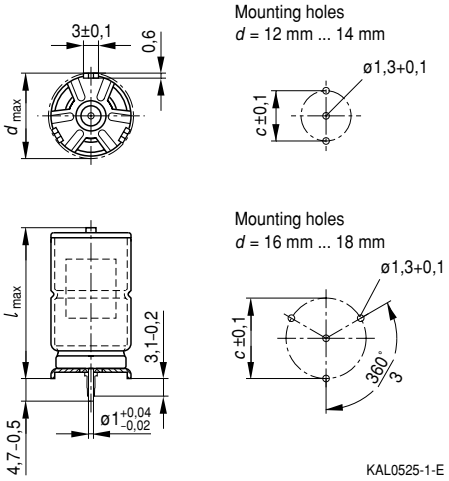


Dimensions, weights and packing units

$d \times l$	$d_{max} \times l_{max}$	Approx. weight	Packing units (pieces)	
mm	mm	g	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	—



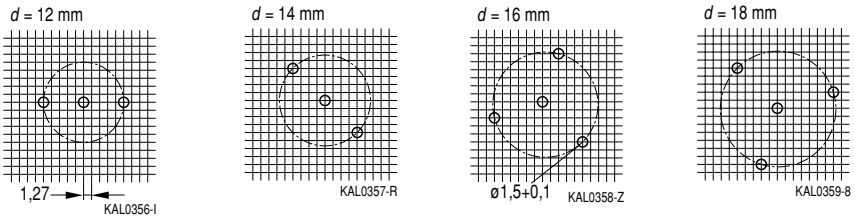
Soldering star capacitors



Soldering star is connected to the negative pole

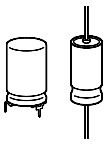
The PC-board hole arrangement specified above is based on circular arcs.

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



EPCOS

B41696 / B41796

Low ESR, Compact – 125 °C

Overview of available types

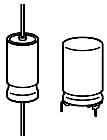
U_R (VDC)	25	40
C_R (µF)	Case dimensions $d \times l$ (mm)	
470		12 × 30
680	12 × 30	
1 000	14 × 25	16 × 30
2 200		18 × 39
3 300	18 × 39	

Case dimensions and ordering codes

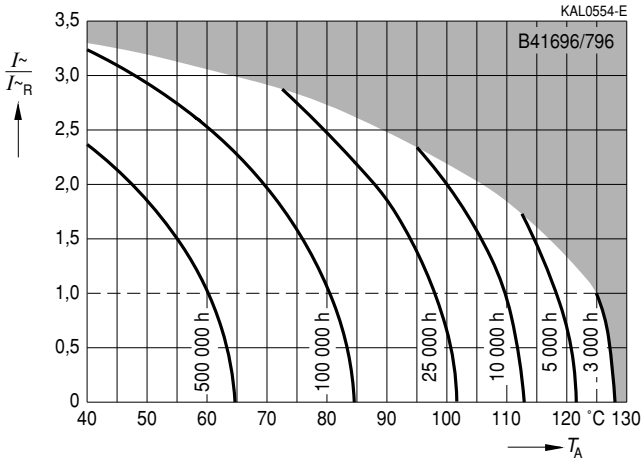
U_R	C_R	Case dim. $d \times l$	Ordering code Axial	Axial	Soldering star
VDC	µF	mm	pallet package	reel	
25	680	12 × 30	B41696A5687Q007	B41696A5687Q009	B41796A5687Q000
	1 000	14 × 25	B41696A5108Q007	B41696A5108Q009	B41796A5108Q000
	3 300	18 x 39	B41696A5338Q007		B41796A5338Q000
40	470	12 × 30	B41696A7477Q007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

Technical data

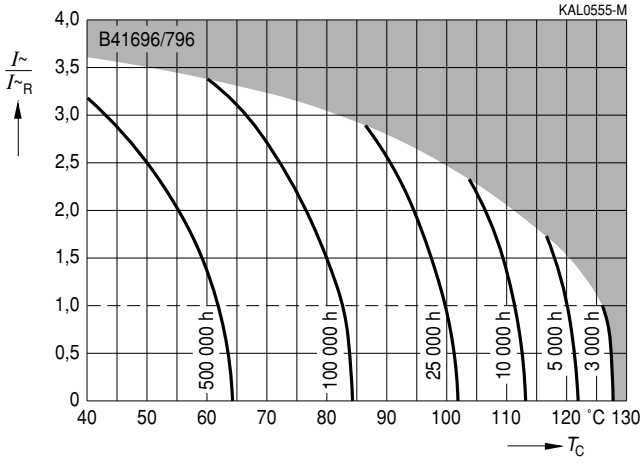
C_R 100 Hz 20 °C µF	ESR_{typ} 100 Hz 20 °C mΩ	ESR_{max} 100 Hz 20 °C mΩ	ESR_{max} 100 Hz –40 °C Ω	ESR_{max} 10 kHz 20 °C mΩ	Z_{max} 100 kHz 20 °C mΩ	$I_{\sim max}$ 10 kHz 40 °C A	$I_{\sim max}$ 10 kHz 85 °C A	$I_{\sim R}$ 10 kHz 125 °C A
25 VDC								
680	110	170	1,20	95	90	5,40	4,25	1,60
1 000	80	120	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



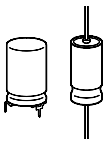
Useful life
depending on ambient temperature T_A under ripple current operating conditions at U_R [1)]



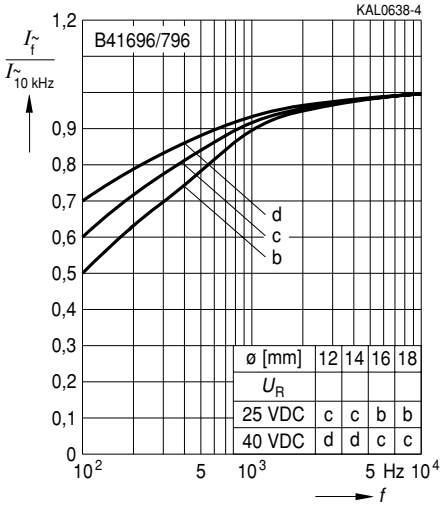
Useful life
depending on case temperature T_C under ripple current operating conditions at U_R [1)]



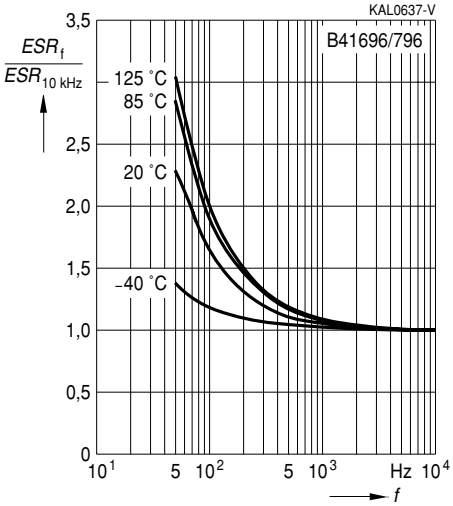
1) Refer to page 40 for an explanation on how to interpret the useful life graphs.



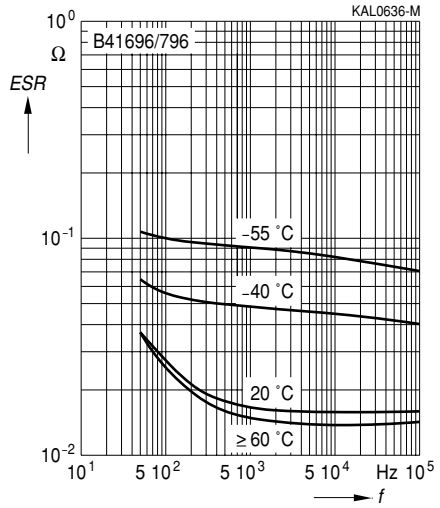
Frequency factor of permissible ripple current *I*~
versus frequency *f*



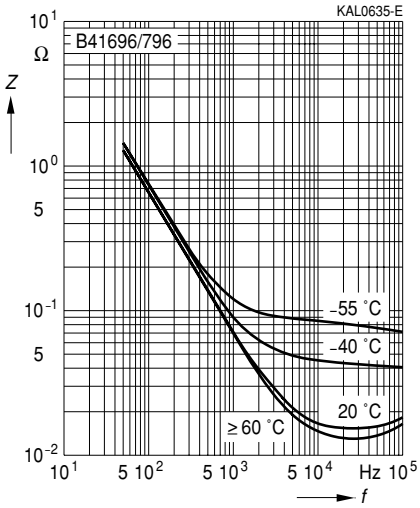
Frequency characteristics of *ESR*
at different temperatures
typical behavior



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



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



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