SIKOREL® 125
Long-life grade capacitors

KAL0574-T

Applications

- High-reliability equipment in automotive power electronics, e.g. integrated starter alternator
- Applications with highest ripple current load at high frequencies

Features

- Outstanding ripple current capability
- Optimized for high frequencies
- Optimized design for bottom cooling
- Low profile
- Vibration resistance 30 *g* upon request
- Stud mounting upon request
- Shelf life up to 10 years
- All-welded construction ensures reliable electrical contact

Construction

- Charge-discharge proof, polar
- Aluminum case without insulating sleeve (for bottom cooling)
- Poles with screw terminal connections
- Mounting with ring clips or clamps

Specifications and characteristics in brief

Rated voltage U_R	25 ... 63 VDC	
Surge voltage U_S	1,15 · U_R	
Rated capacitance C_R	3 900 to 20 000 µF	
Capacitance tolerance	± 20 % ≙ M	
Leakage current I_L (5 min, 20 °C)	$I_L \leq 0{,}3\ \mu A \cdot \left(\frac{C_R}{\mu F} \cdot \frac{U_R}{V}\right)^{0{,}7} + 4\ \mu A$	
Self-inductance *ESL*	Approx. 13 nH	
Useful life		Requirements:
125 °C, U_R; $I_{\sim R}$	> 2 500 h	$\Delta C/C$ ≤ ± 45 % of initial value
85 °C, U_R; $I_{\sim max}$	> 15 000 h	*ESR* ≤ 3 times initial specified limit
40 °C, U_R; 3,4 · $I_{\sim R}$	>200 000 h	I_L ≤ initial specified limit
		Failure percentage: ≤ 1 % Failure rate: ≤ 20 fit (≤ 20 · 10^{-9}/h) (for definiton "fit", refer to chapter *"Quality"*, page 62)
Voltage endurance test	2 000 h	Post test requirements:
125 °C; U_R; $I_{\sim R}$		$\Delta C/C$ ≤ ± 15 % of initial value *ESR* ≤ 1,3 times initial specified limit I_L ≤ initial specified limit
Vibration resistance	To IEC 60068-2-6, test Fc: displacement amplitude 0,75 mm, frequency range 10 to 55 Hz, acceleration max. 10 *g*, duration 3 × 2 h Vibration resistance up to 30 *g* upon request	
IEC climatic category	To IEC 60068-1: 55/125/56 (– 55 °C/+ 125 °C/56 days damp heat test)	
Detail specifications	Similar to CECC 30301-803, CECC 30301-807	
Sectional specification	IEC 60384-4	

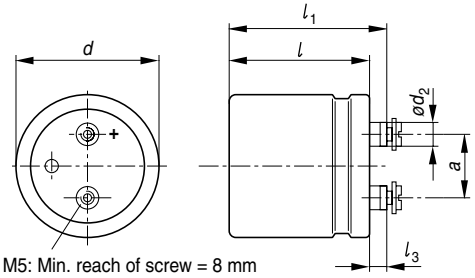
Ripple current capability

Due to the ripple current capability of the contact elements, the following current upper limits must not be exceeded:
$I_{\sim max}$ = 50 A
In case of additional thermal cooling:
$I_{\sim max}$ = 55 A

B41754

Automotive – 125 °C

Dimensional drawing



Positive pole marking: **+**

KAL0824-B-E

Stud mounting upon request

Dimensions, weights and packing units

Terminal	Dimensions (mm)						Approx. weight (g)	Packing unit pieces
	d +0/–0,4	l ± 0,8	l_1 ± 0,8	l_3 +0,2/–1	d_2 ± 0,2	a +0,2/–0,4		
M 5	50,9	39,5	46,1	7,0	8,2	22,2	115	22
M 5	50,9	49,5	56,1	7,0	8,2	22,2	135	22

For ecological reasons the packing is pure cardboard.

Accessories

The following items are included in the delivery package, but are not fastened to the capacitors:

	Thread	Toothed washers	Screws/Nuts	Maximum torque
For terminals	M 5	A 5,1 DIN 6797	Cylinder-head screw M 5 × 8 DIN 84-4.8	2 Nm
	M 6	A 6,4 DIN 6797	Cylinder-head screw M 6 × 12 DIN 85-4.8	2,5 Nm

The following must be ordered separately:

Ring clips	B44030 (cf. page 169)
Insulating parts	B44020 (cf. page 166)

Overview of available types

U_R (VDC)	25	40	55	63
C_R (µF)	Case dimensions $d \times l$ (mm)			
3 900				50,9 × 39,5
4 700			50,9 × 39,5	
6 000				50,9 × 49,5
7 500		50,9 × 39,5	50,9 × 49,5	
12 000	50,9 × 39,5	50,9 × 49,5		
20 000	50,9 × 49,5			

Case dimensions and ordering codes

U_R VDC	C_R µF	Case dimensions $d \times l$ mm	Ordering code
25	12 000	50,9 × 39,5	B41754A5129M000
	20 000	50,9 × 49,5	B41754A5209M000
40	7 500	50,9 × 39,5	B41754A7758M000
	12 000	50,9 × 49,5	B41754A7129M000
55	4 700	50,9 × 39,5	B41754A0478M000
	7 500	50,9 × 49,5	B41754A0758M000
63	3 900	50,9 × 39,5	B41754A8398M000
	6 000	50,9 × 49,5	B41754A8608M000

B41754

Automotive – 125 °C

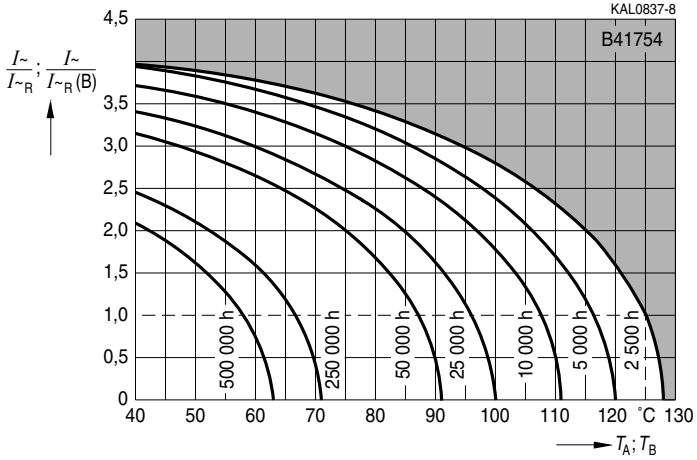
Technical data

C_R	ESR_{typ} 100 Hz 20 °C	ESR_{max} 100 Hz 20 °C	ESR_{max} 100 Hz –40 °C	ESR_{max} 10 kHz 20 °C	Z_{max} 10 kHz 20 °C	$I_{\sim max}$(B) 10 kHz 85 °C	$I_{\sim max}$(B) 10 kHz 105 °C	$I_{\sim R}$ 10 kHz 125 °C	$I_{\sim R}$(B) 10 kHz 125 °C
µF	mΩ	mΩ	mΩ	mΩ	mΩ	A	A	A	A
25 VDC									
12 000	21	36	234	27	28	50[1)]	50[1)]	7,6	20
20 000	14	24	156	18	19	50[1)]	50[1)]	8,5	21
40 VDC									
7 500	21	36	234	27	28	50[1)]	50[1)]	7,6	20
12 000	15	25	162	18	19	50[1)]	50[1)]	8,5	21
55 VDC									
4 700	23	39	234	28	30	50[1)]	50[1)]	7,6	20
7 500	17	29	174	23	24	50[1)]	50[1)]	8,5	21
63 VDC									
3 900	23	39	234	28	30	50[1)]	50[1)]	7,6	20
6 000	17	29	174	23	24	50[1)]	50[1)]	8,5	21

1) Max. 50 A due to max. terminal load
55 A in case of additional terminal cooling

Useful life

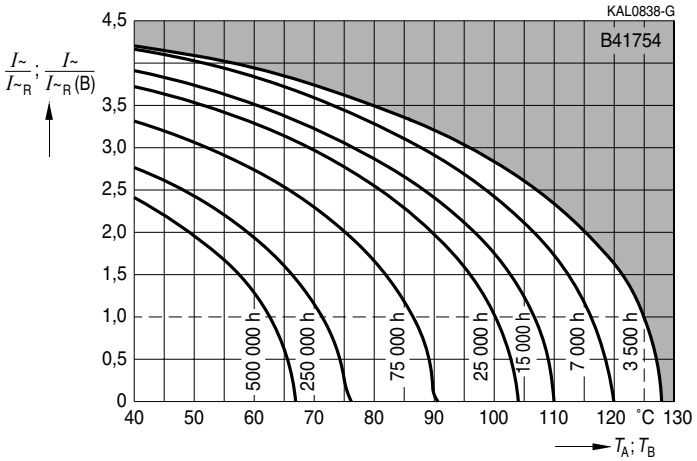
depending on ambient temperature T_A (for natural cooling) and versus temperature of case base T_B (for base cooling) under ripple current operating conditions at U_R[1)]



Depending on ambient temperature T_A (for natural cooling) and versus temperature of case base T_B (for base cooling) under ripple current operating conditions at U_{op}[1)]

U_R = 25 V: $U_{op} \leq$ 22 V U_R = 55 V: $U_{op} \leq$ 48 V

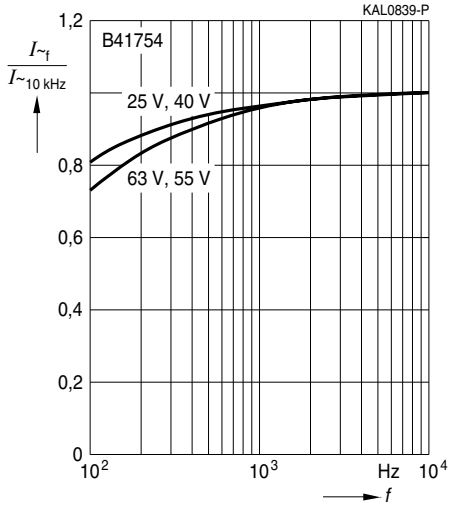
U_R = 40 V: $U_{op} \leq$ 35 V U_R = 63 V: $U_{op} \leq$ 55 V



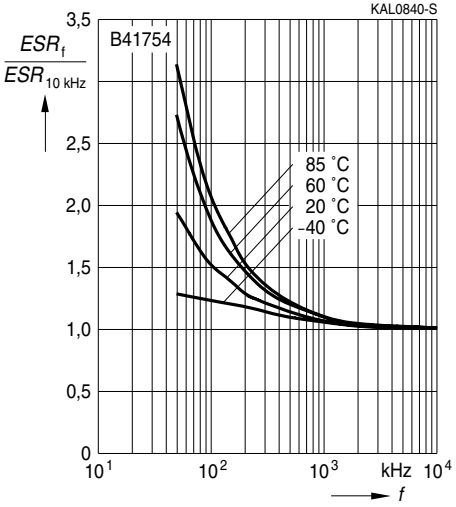
3500 h rated service life at 125 °C;
up to 500 h (accumulated) operating at 150 °C in discontinous operation

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

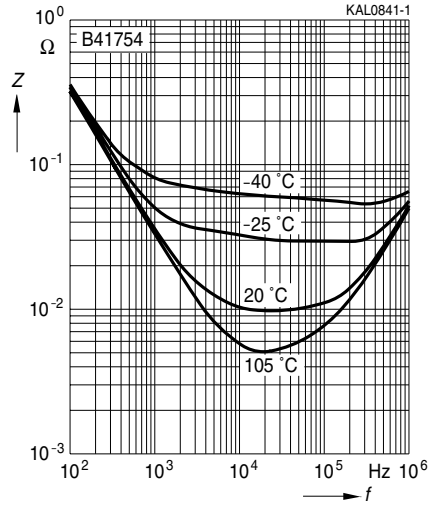
Frequency factor of permissible ripple current *I~*
versus frequency *f*



Frequency characteristics of *ESR*
typical behavior



Impedance *Z*
at different temperatures *T*
Typical behavior for 3900 µF/63 V



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