

SIKOREL® 105
Long-life grade capacitors
Applications

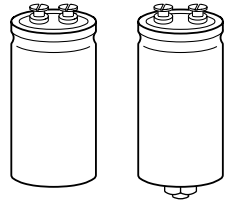
- Highly professional power supplies

Features

- Maximum reliability
- Operation at temperatures up to 125 °C permissible without insulating sleeve¹⁾
- High ripple current capability
- Long useful life
- Shelf life up to 10 years
- All-welded construction ensures reliable electrical contact

Construction

- Charge-discharge proof, polar
- Aluminum case with insulating sleeve
- Poles with screw terminal connections
- Mounting with ring clips, clamps or threaded stud
- The bases of types with threaded stud are not insulated

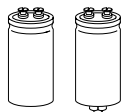


KAL0567-B

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1) For $\varnothing \leq 51,6$ mm: 2500 h, for $\varnothing \geq 64,3$ mm: 5000 h

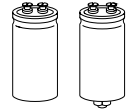

Specifications and characteristics in brief

Rated voltage U_R	16 ... 100 VDC	
Surge voltage U_S	$1,15 \cdot U_R$	
Rated capacitance C_R	1 500 ... 220 000 μF	
Capacitance tolerance	– 10/+ 30 % $\triangleq$ Q	
Leakage current I_L (5 min, 20 °C)	$I_L \leq 0,3 \mu\text{A} \cdot \left(\frac{C_R}{\mu\text{F}} \cdot \frac{U_R}{V} \right)^{0,7} + 4 \mu\text{A}$	
Self-inductance ESL	$d = 35,7 \text{ mm}$: approx. 10 nH $d = 51,6 \text{ mm}$: approx. 15 nH $d \geq 64,3 \text{ mm}$: approx. 20 nH	
Useful life	$d \leq 51,6 \text{ mm}$ $d \geq 64,3 \text{ mm}$	Requirements:
105 °C; U_R ; $I_{\sim R}$	> 10 000 h > 20 000 h	$\Delta C/C$ $\leq \pm 45$ % of initial value
85 °C; U_R ; $I_{\sim \max}$	> 15 000 h > 25 000 h	ESR ≤ 3 times initial specified limit
40 °C; U_R ($2,4 \cdot I_{\sim R}$)	> 200 000 h –	I_L $\leq$ initial specified limit
40 °C; U_R ($2,7 \cdot I_{\sim R}$)	– > 200 000 h	Failure percentage: ≤ 1 % Failure rate: $\leq 20 \text{ fit}$ ($\leq 20 \cdot 10^{-9}/\text{h}$) (for definition “fit”, refer to chapter “Quality”, page 62)
Voltage endurance test	5 000 h	Post test requirements:
105 °C; U_R ; $I_{\sim R}$		$\Delta C/C$ $\leq \pm 15$ % of initial value ESR $\leq 1,3$ 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 to 55 Hz, acceleration max. 10 g, duration $3 \times 2 \text{ h}$	
IEC climatic category	To IEC 60068-1: 55/105/56 (– 55 °C/+ 105 °C/56 days damp heat test)	
Detail specification	Similar to CECC 30301-804	
Sectional specification	IEC 60384-4	

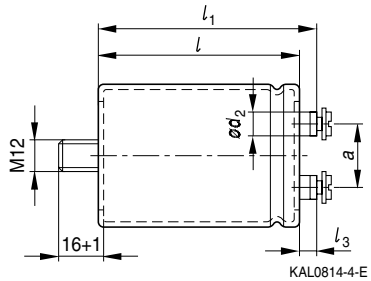
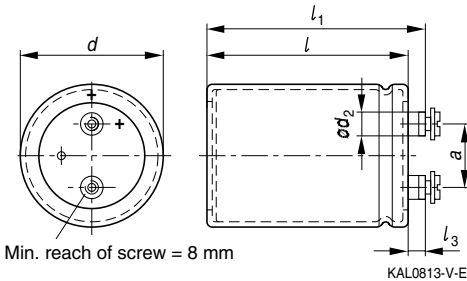
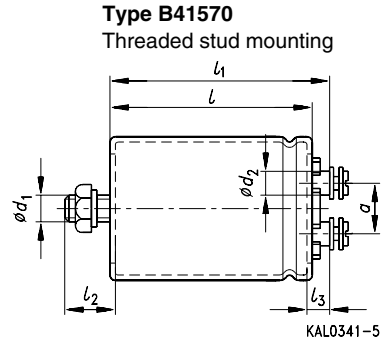
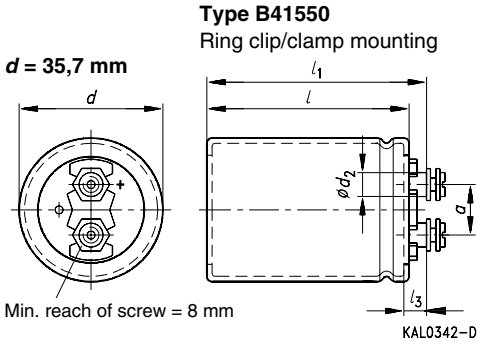
Ripple current capability

Due to the ripple current capability of the contact elements, the following current upper limits must not be exceeded:

Capacitor diameter	$\leq 51,6 \text{ mm}$	$> 51,6 \text{ mm}$
$I_{\sim \max}$	30 A	40 A



Dimensional drawings



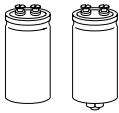
Positive pole marking: +

Dimensions and weights

Ter- minal	Dimensions (mm) with insulating sleeve								Approx. wt. (g)
	d	$l \pm 1$	$l_1 \pm 1$	$l_2^{+0}_{-1}$	l_3	d_1	$d_2 \text{ max}$	$a^{+0,2}_{-0,4}$	
M 5	35,7+ 0/- 0,8	55,7	62,0	13	7,0+ 0,2/- 1	M 8	8,2	12,7	65
M 5	35,7+ 0/- 0,8	80,7	87,0	13	7,0+ 0,2/- 1	M 8	8,2	12,7	105
M 5	35,7+ 0/- 0,8	105,7	112,0	13	7,0+ 0,2/- 1	M 8	8,2	12,7	135
M 5	51,6+ 0/- 0,8	80,7	87,0	17	7,0+ 0,2/- 1	M 12	8,2	22,2	220
M 5	64,3+ 0/- 0,8	80,7	87,0	17	7,0+ 0,2/- 1	M 12	8,2	28,5	345
M 5	64,3+ 0/- 0,8	105,7	112,0	17	7,0+ 0,2/- 1	M 12	8,2	28,5	440
M 5	76,9+ 0/- 0,7	105,7	112,0	17	7,0+ 0,2/- 1	M 12	8,2	31,7	540
M 5	76,9+ 0/- 0,7	143,2	149,5	17	7,0+ 0,2/- 1	M 12	8,2	31,7	840

Packing (For ecological reasons the packing is pure cardboard.)

Capacitor diameter d	Packing units (pieces)	Capacitor diameter d	Packing units (pieces)
35,7 mm	36	64,3 mm	15
51,6 mm	22	76,9 mm	12



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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
For mounting	M 8	J 8,2 DIN 6797	Hex nut BM 8 DIN 439	4 Nm
	M 12	J 12,5 DIN 6797	Hex nut BM 12 DIN 439	10 Nm

The following must be ordered separately:

Ring clips

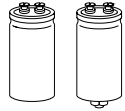
B44030 (cf. page 169)

Clamps for capacitors with $d \geq 64,3$ mm

B44030 (cf. page 173)

Insulating parts

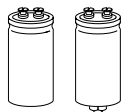
B44020 (cf. page 166)



Overview of available types

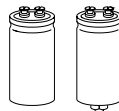
U_R (VDC)	16	25	40	63	100
C_R (μF)	Case dimensions $d \times l$ (mm)				
1 500					35,7 × 55,7
2 200				35,7 × 55,7	35,7 × 80,7
3 300				35,7 × 80,7	35,7 × 105,7
4 700			35,7 × 55,7	35,7 × 80,7	51,6 × 80,7
6 800		35,7 × 55,7	35,7 × 80,7	35,7 × 105,7	64,3 × 80,7
10 000	35,7 × 55,7	35,7 × 80,7	35,7 × 80,7	51,6 × 80,7	64,3 × 80,7
15 000	35,7 × 80,7	35,7 × 80,7	35,7 × 105,7	64,3 × 80,7	64,3 × 105,7
22 000	35,7 × 80,7	35,7 × 105,7	51,6 × 80,7	64,3 × 105,7	76,9 × 105,7
33 000	35,7 × 105,7	51,6 × 80,7	64,3 × 80,7	76,9 × 105,7	76,9 × 143,2
47 000	51,6 × 80,7	64,3 × 80,7	64,3 × 105,7	76,9 × 143,2	
68 000	64,3 × 80,7	64,3 × 105,7	76,9 × 105,7		
100 000	64,3 × 105,7	76,9 × 105,7	76,9 × 143,2		
150 000	76,9 × 105,7	76,9 × 143,2			
220 000	76,9 × 143,2				

The capacitance and voltage ratings listed above are available in different cases upon request.
Other voltage and capacitance ratings are also available upon request.


Technical data and ordering codes

U_R	C_R	Case dimensions	ESR_{max}	Z_{max}	$I_{~max}$	$I_{~max}$	$I_{~R}$	Ordering code ¹⁾
VDC	100 Hz 20 °C μF	$d \times l$ mm	100 Hz 20 °C mΩ	10 kHz 20 °C mΩ	100 Hz 40 °C A	100 Hz 85 °C A	100 Hz 105 °C A	
16	10 000	35,7 × 55,7	38	26	17	12	6,2	B415*0E4109Q000
	15 000	35,7 × 80,7	26	21	23	16	8,1	B415*0E4159Q000
	22 000	35,7 × 80,7	21	18	29	21	10	B415*0E4229Q000
	33 000	35,7 × 105,7	17	15	30	24	12	B415*0E4339Q000
	47 000	51,6 × 80,7	13	13	30	30	16	B415*0E4479Q000
	68 000	64,3 × 80,7	13	11	40	38	17	B415*0E4689Q000
	100 000	64,3 × 105,7	10	9,0	40	39	19	B415*0E4100Q000
	150 000	76,9 × 105,7	10	8,0	40	40	22	B415*0E4150Q000
25	220 000	76,9 × 143,2	8,0	7,0	40	40	26	B415*0A4220Q000
	6 800	35,7 × 55,7	32	27	18	13	6,4	B415*0A5688Q000
	10 000	35,7 × 80,7	28	21	21	15	7,5	B415*0E5109Q000
	15 000	35,7 × 80,7	24	17	26	19	9,4	B415*0E5159Q000
	22 000	35,7 × 105,7	20	15	30	22	11	B415*0E5229Q000
	33 000	51,6 × 80,7	15	12	30	29	15	B415*0E5339Q000
	47 000	64,3 × 80,7	13	11	40	34	17	B415*0E5479Q000
	68 000	64,3 × 105,7	11	9,0	40	35	17	B415*0E5689Q000
40	100 000	76,9 × 105,7	9,0	8,0	40	39	21	B415*0E5100Q000
	150 000	76,9 × 143,2	7,0	6,0	40	40	26	B415*0A5150Q000
	4 700	35,7 × 55,7	33	24	20	14	7,2	B415*0E7478Q000
	6 800	35,7 × 80,7	28	17	24	16	8,4	B415*0A7688Q000
	10 000	35,7 × 80,7	27	14	26	19	9,4	B415*0E7109Q000
	15 000	35,7 × 105,7	20	12	30	22	11	B415*0E7159Q000
	22 000	51,6 × 80,7	15	12	30	29	15	B415*0E7229Q000
	33 000	64,3 × 80,7	13	10	40	34	17	B415*0E7339Q000
	47 000	64,3 × 105,7	12	9,0	40	35	17	B415*0E7479Q000
	68 000	76,9 × 105,7	9,0	7,0	40	39	21	B415*0E7689Q000
	100 000	76,9 × 143,2	7,0	6,0	40	40	26	B415*0A7100Q000

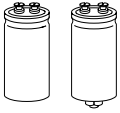
1) * "5" = for capacitors with ring clip/clamp mounting
 "7" = for capacitors with threaded stud



Technical data and ordering codes

U_R	C_R	Case dimensions	ESR_{max}	Z_{max}	$I_{~max}$	$I_{~max}$	$I_{~R}$	Ordering code ¹⁾
VDC	100 Hz 20 °C μF	$d \times l$ mm	100 Hz 20 °C m Ω	10 kHz 20 °C m Ω	100 Hz 40 °C A	100 Hz 85 °C A	100 Hz 105 °C A	
63	2 200	35,7 × 55,7	60	30	13	9,4	4,7	B415*0E8228Q000
	3 300	35,7 × 80,7	39	24	19	14	6,8	B415*0E8338Q000
	4 700	35,7 × 80,7	31	20	24	17	8,7	B415*0E8478Q000
	6 800	35,7 × 105,7	23	17	28	20	10	B415*0E8688Q000
	10 000	51,6 × 80,7	18	14	30	27	13	B415*0E8109Q000
	15 000	64,3 × 80,7	15	11	40	31	15	B415*0E8159Q000
	22 000	64,3 × 105,7	12	9,0	40	35	17	B415*0E8229Q000
	33 000	76,9 × 105,7	9,0	8,0	40	39	21	B415*0E8339Q000
100	47 000	76,9 × 143,2	7,0	6,0	40	40	26	B415*0A8479Q000
	1 500	35,7 × 55,7	83	34	12	8,8	4,2	B415*0A9158Q000
	2 200	35,7 × 80,7	57	30	16	12	5,9	B415*0E9228Q000
	3 300	35,7 × 105,7	37	24	22	16	8,0	B415*0E9338Q000
	4 700	51,6 × 80,7	29	20	28	20	10	B415*0E9478Q000
	6 800	64,3 × 80,7	22	17	36	26	13	B415*0E9688Q000
	10 000	64,3 × 80,7	15	14	40	32	16	B415*0E9109Q000
	15 000	64,3 × 105,7	13	11	40	36	18	B415*0E9159Q000
	22 000	76,9 × 105,7	11	9,0	40	38	19	B415*0A9229Q000
	33 000	76,9 × 143,2	9,0	8,0	40	40	23	B415*0A9339Q000

1) * "5" = for capacitors with ring clip/clamp mounting
"7" = for capacitors with threaded stud



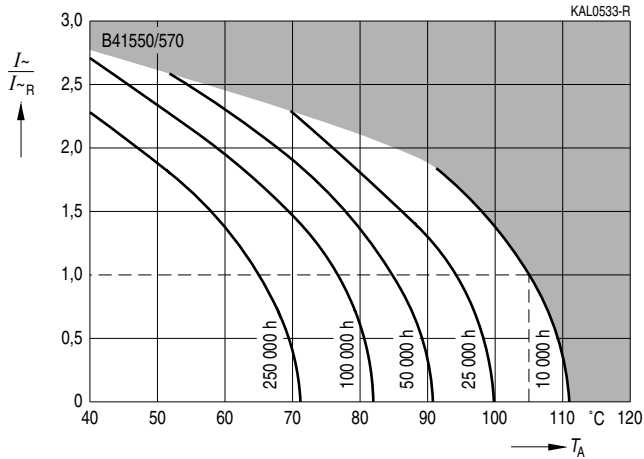
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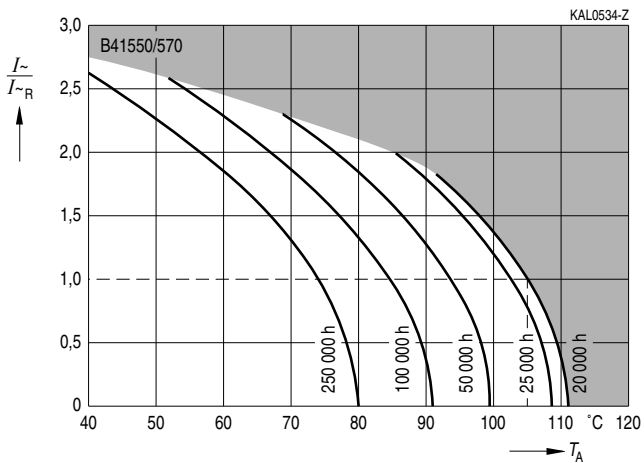
Useful life

depending on ambient temperature T_A under ripple current operating conditions¹⁾

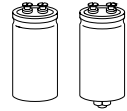
$d \leq 51,6 \text{ mm}$



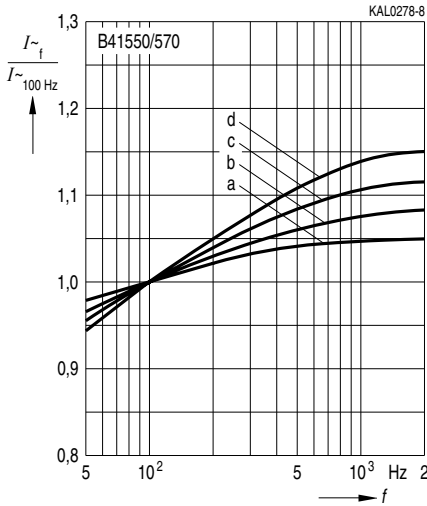
$d \geq 64,3 \text{ mm}$



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



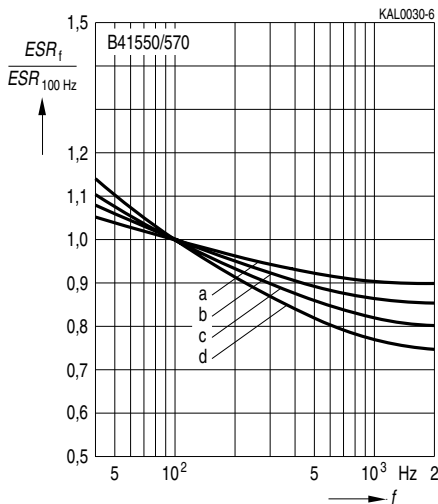
Frequency factor of permissible ripple current $I_{\sim}$ versus frequency f



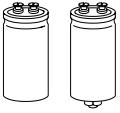
U_R (VDC)	16; 25	40	63	100
$d = 35,7 \text{ mm}$	b	c	d	d
$d = 51,6 \text{ mm}$	a	b	c	c
$d = 64,3 \text{ mm}$	a	a	c	c
$d = 76,9 \text{ mm}$	a	a	b	c

Frequency characteristics of ESR

Typical behavior



U_R (VDC)	16; 25	40	63	100
$d = 35,7 \text{ mm}$	b	c	d	d
$d = 51,6 \text{ mm}$	a	b	c	c
$d = 64,3 \text{ mm}$	a	a	c	c
$d = 76,9 \text{ mm}$	a	a	b	c



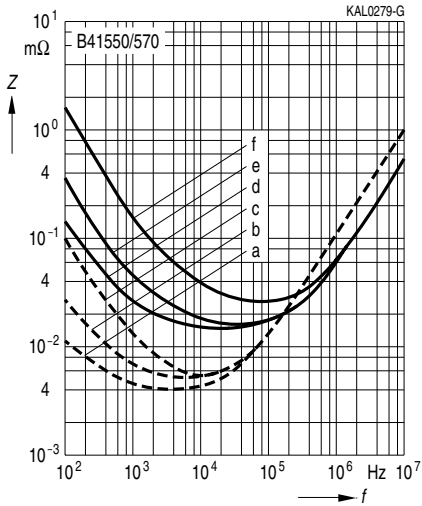
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SIKOREL – 105 °C

Impedance Z

versus frequency f

Typical behavior at 20 °C



C_R μF	U_R VDC	d mm	Curve
150 000	16	76,9	a
68 000	40		b
15 000	100	64,3	c
10 000	16		d
4 700	40	35,7	e
1 500	100		f

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