

## Long-life grade capacitors

### Applications

- Frequency converters
- Professional power supplies
- Uninterruptible power supplies

### Features

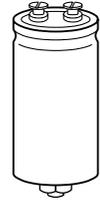
- High CV product, i.e. extremely compact
- High reliability and high ripple current capability
- All-welded construction ensures reliable electrical contact

### 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 and  $d \leq 76.9$  mm are not insulated, types with  $d = 91$  mm have fully insulated bases



B43456



B43458

**Specifications and characteristics in brief**

Rated voltage $V_R$ Surge voltage $V_S$	400 ... 450 V DC $1.10 \cdot V_R$	
Rated capacitance $C_R$ Capacitance tolerance	1500 ... 15000 $\mu\text{F}$ $\pm 20\% \triangleq M$	
Leakage current $I_{\text{leak}}$ (20 °C, after 5 minutes)	$I_{\text{leak}} \leq 0.3 \mu\text{A} \cdot \left( \frac{C_R}{\mu\text{F}} \cdot \frac{V_R}{V} \right)^{0.7} + 4 \mu\text{A}$	
$\tan \delta_{\text{max}}$ (20 °C, 120 Hz)	0.2	
Load life 85 °C, $V_R$ , $I_{\text{AC,R}}$ 40 °C, $V_R$ , $1.5 \cdot I_{\text{AC,R}}$	> 12000 h > 250000 h	Requirements: $\Delta C/C \leq \pm 15\%$ of initial value $\tan \delta \leq 175\%$ of specified value $I_{\text{leak}} \leq$ initial specified limit
Vibration resistance test	To IEC 60068-2-6, test Fc: Displacement amplitude 0.75 mm, frequency range 10 ... 55 Hz, acceleration max. 10 g, duration $3 \times 2$ h. Capacitor mounted by its body which is rigidly clamped to the work surface.	
IEC climatic category	To IEC 60068-1: 40/085/56 (–40 °C/+85 °C/56 days damp heat test)	
Detail specification	Similar to CECC 30301-803, CECC 30301-807	
Sectional specification	IEC 60384-4	

### Ripple current capability

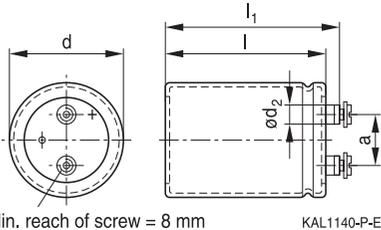
Due to the ripple current capability of the contact elements, the following current upper limits must not be exceeded:

Capacitor diameter	51.6 mm	64.3 mm	76.9 mm	91 mm
$I_{AC,max}$	34 A	45 A	57 A	80 A

### Dimensional drawings

#### B43456

Ring clip/clamp mounting



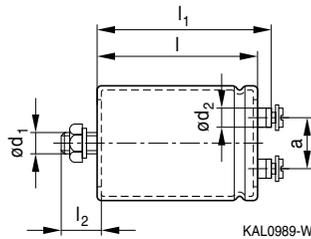
M5: Min. reach of screw = 8 mm

M6: Min. reach of screw = 12 mm

Positive pole marking: +

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Threaded stud mounting



The base of types with threaded stud and  $d = 91$  mm is fully insulated (the lengths  $l$  and  $l_1$  are increased by 0.5 mm in these cases). For types with threaded stud and  $d \leq 76$  mm the base is not insulated. Also refer to the mounting instructions in chapter "Capacitors with screw terminals – Accessories" on the internet.

### Dimensions and weights

Terminal	Dimensions (mm) with insulating sleeve							Approx. weight (g)
	d	$l +3/0$	$l_1 +3/0$	$l_2 +0/-1$	$d_1$	$d_2 \text{ max.}$	$a +0.2/-0.4$	
M5	51.6 +0/-0.8	115	121.2	17	M12	10.2	22.2	310
M5	51.6 +0/-0.8	130	135.7	17	M12	10.2	22.2	350
M5	64.3 +0/-0.8	96	101.7	17	M12	13.2	28.5	420
M5	64.3 +0/-0.8	115	121.2	17	M12	13.2	28.5	530
M5	64.3 +0/-0.8	130	135.7	17	M12	13.2	28.5	600
M6	76.9 +0/-0.8	115	120.5	17	M12	17.7	31.7	680
M6	76.9 +0/-0.8	130	135.0	17	M12	17.7	31.7	800
M6	76.9 +0/-0.8	155	160.5	17	M12	17.7	31.7	920
M6	91.0 +0/-2	157	162.3	17	M12	17.7	31.7	1300
M6	91.0 +0/-2	196	200.8	17	M12	17.7	31.7	1700
M6	91.0 +0/-2	220	224.6	17	M12	17.7	31.7	1900

**Packing**

Capacitor diameter d	Packing units (pcs.)	Capacitor diameter d	Packing units (pcs.)
51.6 mm	22	76.9 mm	12
64.3 mm	15	91.0 mm	8

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	M5	A 5.1 DIN 6797	Cylinder-head screw M5 × 8 DIN 84-4.8	2 Nm
	M6	A 6.4 DIN 6797	Cylinder-head screw M6 × 12 DIN 85-4.8	2.5 Nm
For mounting	M12	J 12.5 DIN 6797	Hex nut BM 12 DIN 439	10 Nm

The following items must be ordered separately. For details, refer to chapter "Capacitors with screw terminals – Accessories".

Item	Type
Ring clips	B44030
Clamps for capacitors with $d \geq 64.3$ mm	B44030
Insulating parts	B44020

**Overview of available types**

$V_R$ (V DC)	400	450
	Case dimensions $d \times l$ (mm)	
$C_R$ ( $\mu$ F)		
1500	51.6 × 115	51.6 × 115
2200	51.6 × 115	51.6 × 115
3300	64.3 × 96	64.3 × 115
3900	64.3 × 115	64.3 × 130
4700	64.3 × 130 76.9 × 115	76.9 × 115
5600	76.9 × 115	76.9 × 130
6800	76.9 × 130	76.9 × 155
8200	76.9 × 155	91 × 157
10000	91 × 157	91 × 196
12000	91 × 157	91 × 220
15000	91 × 196	

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 B43456**

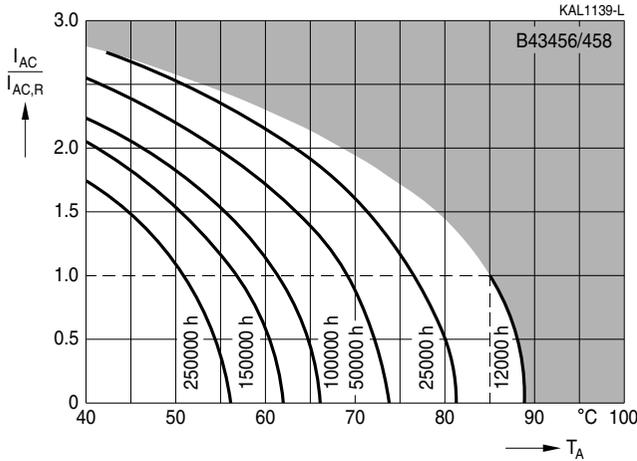
V <sub>R</sub>	C <sub>R</sub> 120 Hz 20 °C	Case dimensions d × l mm	ESR <sub>typ</sub> 120 Hz 20 °C mΩ	I <sub>AC,max</sub> 120 Hz 40 °C A	I <sub>AC,R</sub> 120 Hz 85 °C A	Ordering code (composition see below)
V DC	μF					
400	1500	51.6 × 115	73	17.6	6.3	B4345*K9158M000
	2200	51.6 × 115	46	23.2	8.3	B4345*K9228M000
	3300	64.3 × 96	31	30.8	11.0	B4345*K9338M000
	3900	64.3 × 115	27	34.7	12.4	B4345*K9398M000
	4700	64.3 × 130	22	40.3	14.4	B4345*L9478M000
	4700	76.9 × 115	22	40.3	14.4	B4345*K9478M000
	5600	76.9 × 115	19	45.6	16.3	B4345*K9568M000
	6800	76.9 × 130	16	52.9	18.9	B4345*K9688M000
	8200	76.9 × 155	14	57.0	22.0	B4345*K9828M000
	10000	91 × 157	10	71.1	25.4	B4345*K9109M000
	12000	91 × 157	8	80.0	29.2	B4345*K9129M000
15000	91 × 196	7	80.0	34.9	B4345*K9159M000	
450	1500	51.6 × 115	74	18.2	6.5	B4345*K5158M000
	2200	51.6 × 115	46	23.8	8.5	B4345*K5228M000
	3300	64.3 × 115	32	31.6	11.3	B4345*K5338M000
	3900	64.3 × 130	28	35.8	12.8	B4345*K5398M000
	4700	76.9 × 115	23	41.7	14.9	B4345*K5478M000
	5600	76.9 × 130	21	46.5	16.6	B4345*K5568M000
	6800	76.9 × 155	16	56.8	20.3	B4345*K5688M000
	8200	91 × 157	14	65.0	23.2	B4345*K5828M000
	10000	91 × 196	12	75.6	27.0	B4345*K5109M000
	12000	91 × 220	8	80.0	31.2	B4345*K5129M000

**Composition of ordering code**

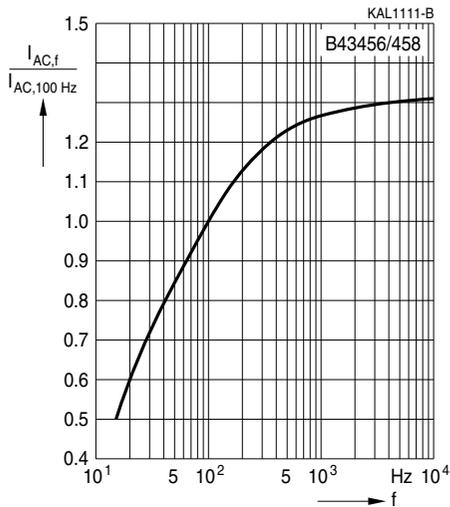
- \* = Mounting style  
6 = for capacitors with ring clip mounting  
8 = for capacitors with threaded stud

**Useful life**

depending on ambient temperature  $T_A$  under ripple current operating conditions<sup>1) 2)</sup>



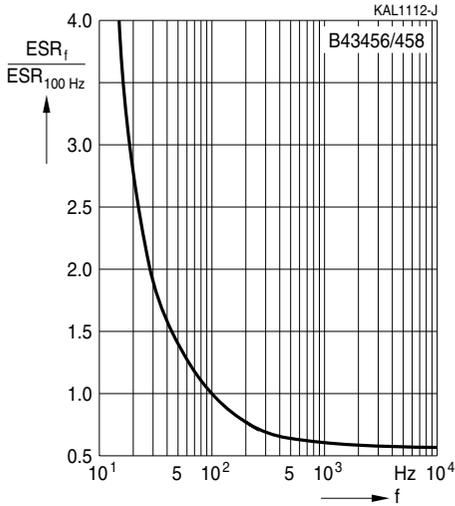
**Frequency factor of permissible ripple current  $I_{AC}$  versus frequency  $f$**



- 1) The ripple current refers to  $I_{AC,R}$  for natural cooling.
- 2) Refer to chapter "General technical information, 5.3 Calculation of useful life" on how to interpret the useful life graphs.

### Frequency characteristics of ESR

Typical behavior



### Impedance Z versus frequency f

Typical behavior at 20 °C

