



# Aluminum Electrolytic Capacitors

Capacitors with screw terminals

**Series/Type:**                **B43456, B43458**

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## Long life grade capacitors

### 长寿命级电容器

## Applications

### 应用

- Frequency converters  
变频器
- Professional power supplies  
专业电源
- Uninterruptible power supplies  
不间断电源
- Solar and wind power generator  
太阳能和风力发电设备

## Features

### 特点

- High reliability and high ripple current capability  
高可靠性与高耐纹波电流能力
- All-welded constructions ensure reliable electrical contact  
全焊结构，确保可靠的电气接触性
- PAPR terminals available (Protection Against Polarity Reversal)  
可选PAPR型端子（极性颠倒保护）
- Version with optimized construction for base cooling (heat sink mounting) available  
可选底部散热结构优化型（散热板安装）
- Version with low-inductance design available  
可选低感抗型
- RoHS-compatible  
符合RoHS要求

## Construction

### 结构

- Charge/discharge-proof, polar  
耐充放电，有极性
- Aluminum case with insulating sleeve  
铝质外壳，带绝缘套管
- Poles with screw terminal connections  
螺钉连接电极
- Mounting with ring clips, clamps or threaded stud  
采用卡夹/卡环或底部螺栓安装

**Specifications and characteristics in brief**
**规格性能参数一览表**

Rated voltage $V_R$ 额定电压 $V_R$	350...500 V DC					
Surge voltage $V_S$ 浪涌电压 $V_S$	$1.10 \cdot V_R$					
Operating temperature range 工作温度范围	-40 °C...+85 °C					
Rated capacitance $C_R$ 额定电容量 $C_R$ (20 °C, 120 Hz)	1000...18000 $\mu$ F					
Capacitance tolerance 电容量公差	$\pm 20\%$ M					
Dissipation factor(max.) 损耗正切角(最大值) 20°C, 120Hz.	0.2					
Leakage current $I_{leak}$ (20 °C, after 5 minutes) 漏电流 $I_{leak}$ (20 °C, 5分钟后)	$I_{leak} \leq 0.020 \mu A \cdot \left( \frac{C_R}{\mu F} \cdot \frac{V_R}{V} \right)^{0.85} + 4 \mu A$					
Low temperature stability 低温稳定性 (max impedance ratio) (最大阻抗比率)	$V_R$ (V DC)	$\leq 400$	450	500		
	$\frac{Z(-25\text{ °C})}{Z(+20\text{ °C})}$	3	4	3		
	$\frac{Z(-40\text{ °C})}{Z(+20\text{ °C})}$	7	9	10		
Useful life 使用寿命 (85 °C, $V_R, I_{AC,R}$ )	$\leq 450V$	500V	Requirements 要求:			
	12000h	8000h	$\Delta C/C \leq \pm 15\%$ of initial value 初始值的 $\pm 15\%$ $\tan \delta \leq 1.75$ times initial specified limit 1.75倍初始规定值 $I_{leak} \leq$ initial specified limit 初始规定值			
Shelf life 储存寿命	After storage for 1000 h at 85 °C, the capacitors shall meet the requirement of useful life test after reforming process. After test: $V_R$ to be applied for 30 minutes, 24 to 48 hours before measurement. 85°C高温贮存1000小时, 并预处理后, 电容器必须符合使用寿命测试中对其电性能的要求。预处理方法: 先加额定电压充电30分钟, 恢复24至48小时后再测试。					
Frequency multiplier for rated ripple current 额定纹波电流频率系数	$V_R$ (V DC)	50 Hz	120 Hz	300Hz	1 kHz	10 kHz or more
	350...450	0.78	1.00	1.21	1.33	1.37
	500	0.75	1.00	1.27	1.45	1.51
Temperature multiplier for rated ripple current 额定纹波电流温度系数	$V_R$ (V DC)	+40 °C	+55 °C	+70 °C	+85 °C	
	350...450	2.54	2.35	1.68	1.00	
	500	2.79	2.47	1.79	1.00	
Sectional specification 分规范	IEC 60384-4					

**Ripple current capability**
**耐纹波电流能力**

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

因为接触元件的耐纹波电流能力限制，工作电流不得超过下表的极限值

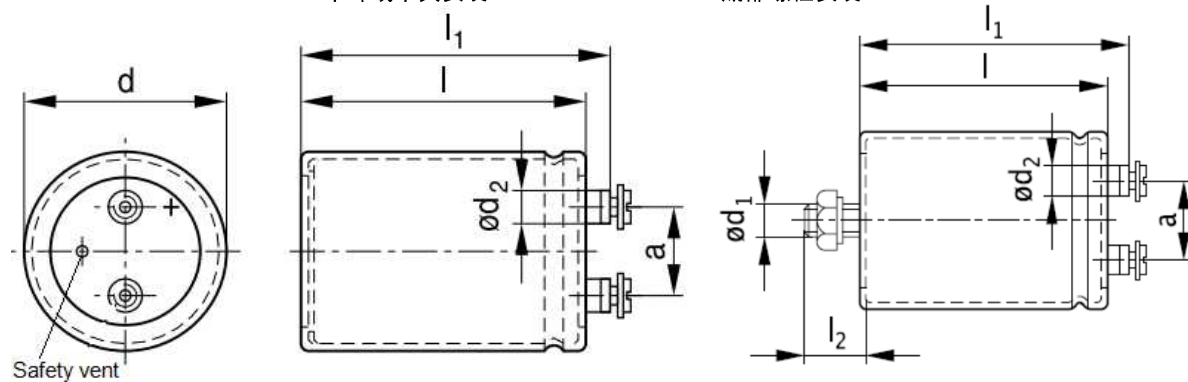
Capacitor diameter 电容器直径	51.6mm	64.3mm	76.9mm	91.0mm
$I_{AC,max}$	34A	45A	57A	80A

**Dimensional drawings**
**尺寸图**
**B43456**

Ring clip/clamp mounting  
卡环或卡夹安装

**B43458**

Threaded stud mounting  
底部螺栓安装



M5: Min. reach of screw = 8 mm

M5: 螺纹最小深度 = 8 mm

M6: Min. reach of screw = 12 mm

M6: 螺纹最小深度 = 12 mm

Positive pole marking: +

正极标志: +

The base of types with threaded stud and  $d = 91$  mm is fully insulated (the lengths  $l$  and  $l_1$  are increased by 0.5mm in these cases). For types with threaded stud and  $d \leq 76$ mm the base is not insulated. For non-insulated and insulated mounting instructions and accessories, refer to chapter "Screw terminals - accessories."

带底部螺栓，且  $d = 91$  mm 型号底部完全绝缘（这些产品的高度  $l$  和  $l_1$  都增加 0.5mm）。带底部螺栓，且  $d \leq 76$  mm 型号的底部不绝缘。关于非绝缘安装及绝缘安装说明及附件，参阅章节“螺钉式电容器 - 附件”。

The can is insulated with one sleeve layer.

铝壳以单层套管绝缘。

**Dimensions and weights**
**尺寸与重量**

Terminal 端子	Dimensions (mm) with insulating sleeve 带绝缘套管的尺寸(mm)							Approx. weight (g) 约计重量(克)
	d	l +3/ -0	l <sub>1</sub> +3/ -0	l <sub>2</sub> +0/ -1	d <sub>1</sub>	d <sub>2</sub> max.	a +0.2/-0.4	
M5	51.6 +0/-0.8	80.7	87.2	17	M12	10.2	22.2	220
		105.7	112.2					280
		118.2	124.7					320
		130.7	137.2					350
M5	64.3 +0/-0.8	105.7	112.2	17	M12	13.2	28.5	440
		130.7	137.2					600
		143.2	149.7					630
M6	76.9 +0/-0.7	105.7	111.5	17	M12	17.7	31.7	620
		118.2	124.0					700
		130.7	136.5					800
		143.2	149.0					840
		168.7	174.5					1000
		190.7	196.5					1150
220.7	226.5	1300						
M6	91.0 +0/-2	144.5	149.8	17	M12	17.7	31.7	1200
		170	175.3					1400
		221	226.3					1900

**Packing**
**包装**

Capacitor diameter 电容器直径	Packing units (pcs.) 包装单位 (件)	Capacitor diameter 电容器直径	Packing units (pcs.) 包装单位 (件)
51.6mm	22	76.9mm	12
64.3mm	15	91.0mm	8

For ecological reasons the packing is pure cardboard.  
为保护生态环境，包装仅使用纸板。

**Accessories**
**附件**

The following items are included in the delivery package, but are not fastened to the capacitors:  
以下物品已包含在交货包装中，但没有固定到电容器上：

	Thread 螺纹	Toothed washers 带齿垫圈	Screws/nuts 螺钉或螺帽	Maximum torque 最大扭矩
For terminals 用于端子	M5	-	Outer hex-cross screw with spring and plain washer M5 × 10 外六角十字型螺钉及弹垫垫圈和平垫圈 M5 × 10	2.5 Nm
	M6	-	Outer hex-cross screw with spring and plain washer M6 × 12 外六角十字型螺钉及弹垫垫圈和平垫圈 M6 × 12	4.0 Nm
For mounting <sup>1)</sup> 用于安装 <sup>1)</sup>	M12	J 12.5 DIN 6797	Hex nut BM 12 DIN 439 六角螺母 BM 12 DIN 439	10 Nm

The following items must be ordered separately. For details, refer to chapter "Screw terminals – accessories".  
以下物品需要另外购买。详情参阅章节“螺钉式电容器—附件”。

Item 物品	Type 型号
Ring clips 卡环	B44030
Clamps for capacitors with $d \geq 64.3$ mm 电容器用卡夹, $d \geq 64.3$ mm	B44030
Insulating parts 绝缘部件	B44020

<sup>1)</sup>with different mounting method, this item is not always required. it will be delivered upon customer request accordingly.

由于安装方式不同，该配件不一定都适用。仅当客户提出要求时，EPCOS将配送该部件。

**Technical dates and ordering codes**

$V_R$	$C_R$ 120Hz 20 °C $\mu\text{F}$	Case dimensions $d \times l$ mm	$\text{ESR}_{\text{typ}}$ 120 Hz 20 °C m $\Omega$	$I_{\text{AC,max}}$ 120 Hz 40 °C A	$I_{\text{AC,R}}$ 120 Hz 85 °C A	Ordering code
350	1500	51.6 x 80.7	43	17.0	5.9	B4345*A4158M0##
	2200	51.6 x 105.7	26	22.0	7.9	B4345*A4228M0##
	3300	51.6 x 118.2	18	29.0	10.4	B4345*A4338M0##
	3900	64.3 x 105.7	16	33.0	12.5	B4345*A4398M0##
	4700	64.3 x 105.7	14	37.0	13.5	B4345*A4478M0##
	5600	76.9 x 105.7	13	45.0	15.6	B4345*A4568M0##
	6800	76.9 x 118.2	11	49.0	17.7	B4345*A4688M0##
	8200	76.9 x 143.2	10	57.0	21.0	B4345*A4828M0##
	10000	76.9 x 143.2	6	57.0	24.0	B4345*A4109M0##
	12000	91.0 x 144.5	6	80.0	29.0	B4345*A4129M0##
400	15000	76.9 x 220.7	7	57.0	35.0	B4345*A4159M0##
	18000	91.0 x 221.0	5	80.0	40.0	B4345*A4189M0##
	1000	51.6 x 80.7	55	14.0	4.8	B4345*A9108M0##
	1500	51.6 x 80.7	42	18.0	6.2	B4345*A9158M0##
	2200	51.6 x 105.7	28	23.0	8.3	B4345*A9228M0##
	2700	51.6 x 130.7	24	27.0	9.7	B4345*A9278M0##
	3300	64.3 x 105.7	21	32.0	11.4	B4345*A9338M0##
	4700	64.3 x 130.7	15	40.0	14.6	B4345*B9478M0##
	4700	76.9 x 105.7	15	42.0	14.6	B4345*A9478M0##
	5600	76.9 x 118.2	13	46.0	16.6	B4345*A9568M0##
400	6800	76.9 x 143.2	10	55.0	20.0	B4345*A9688M0##
	8200	76.9 x 168.7	9	57.0	22.0	B4345*A9828M0##
	10000	76.9 x 190.7	6	57.0	26.0	B4345*B9109M0##
	10000	91.0 x 144.5	6	74.0	26.0	B4345*A9109M0##
	12000	76.9 x 220.7	7	57.0	32.0	B4345*A9129M0##
	15000	91.0 x 221.0	7	80.0	36.0	B4345*A9159M0##

\* = Mounting style

6 = for capacitors with ring clip/clamp mounting

8 = for capacitors with threaded stud

## = Design

00 = for capacitors with standard inductance

03 = for capacitors with low inductance (13 nH) (only capacitors with diameter  $d \geq 64.3$  mm)

07 = for heat sink mounting (only capacitors with diameter  $d \geq 64.3$  mm and without threaded stud)

stud)

50 = for terminals with PAPR style (not for low inductance)

57 = for terminals with PAPR style and heat sink mounting (only  $d \geq 64.3$  mm and only without

**Technical dates and ordering codes**

$V_R$	$C_R$ 120Hz 20 °C $\mu\text{F}$	Case dimensions $d \times l$ mm	$\text{ESR}_{\text{typ}}$ 120 Hz 20 °C m $\Omega$	$I_{\text{AC,max}}$ 120 Hz 40 °C A	$I_{\text{AC,R}}$ 120 Hz 85 °C A	Ordering code
450	1000	51.6 x 80.7	111	14.0	5.0	B4345*A5108M0##
	1500	51.6 x 105.7	74	19.0	6.8	B4345*A5158M0##
	2200	64.3 x 105.7	46	25.0	8.7	B4345*A5228M0##
	2700	64.3 x 105.7	39	27.0	9.8	B4345*A5278M0##
	3300	76.9 x 105.7	32	33.0	12.5	B4345*A5338M0##
	4700	64.3 x 143.2	23	42.0	14.6	B4345*A5478M0##
	4700	76.9 x 118.2	23	42.0	15.6	B4345*B5478M0##
	5600	76.9 x 143.2	21	51.0	17.7	B4345*A5568M0##
	6800	76.9 x 168.7	17	56.0	20.0	B4345*B5688M0##
	6800	91.0 x 144.5	16	59.0	21.0	B4345*A5688M0##
	8200	76.9 x 220.7	14	57.0	25.0	B4345*A5828M0##
	10000	76.9 x 220.7	12	57.0	28.0	B4345*A5109M0##
	10000	91.0 x 170.0	11	77.0	27.0	B4345*B5109M0##
12000	91.0 x 221.0	8	80.0	33.0	B4345*A5129M0##	
500	2700	64.3 x 143.2	35	28.0	10.0	B4345*A6278M0##
	2700	76.9 x 105.7	35	28.0	9.9	B4345*B6278M0##
	3300	76.9 x 130.7	32	30.0	10.8	B4345*A6338M0##
	3900	76.9 x 143.2	26	35.0	12.7	B4345*A6398M0##
	4700	76.9 x 168.7	23	40.0	14.1	B4345*A6478M0##
	4700	91.0 x 144.5	22	41.0	14.5	B4345*B6478M0##

\* = Mounting style

6 = for capacitors with ring clip/clamp mounting

8 = for capacitors with threaded stud

## = Design

00 = for capacitors with standard inductance

03 = for capacitors with low inductance (13 nH) (only capacitors with diameter  $d \geq 64.3$  mm)

07 = for heat sink mounting (only capacitors with diameter  $d \geq 64.3$  mm and without threaded stud)

50 = for terminals with PAPR style (not for low inductance)

57 = for terminals with PAPR style and heat sink mounting (only  $d \geq 64.3$  mm and only without




**Bar code label and marking of the capacitor 条形码标签和电容器标签**



Below is an example of bar code label on package:  
 以下为包装箱上条形码标签示例:

**EPCOS** Alum Elect Capacitor RoHS Compatible  
 6800uF/400V/76.9X143mm Screw


(1P) PROD ID: **B43310B9688M001**



(9K) PROD ORDER NO: **09060040** (D) D/C: **090618**

(T) BATCH NO: **XD09069017** NO: **029** (Q) QTY: **12**




Made in China

Brand 品牌

(1P) Ordering code	订购代码
(9K) Product order number	订单号
(D) Date code (yywwdd)	日期代码 (年月日)
(T) Batch number	批号
(Q) Quantity	数量

The example below shows how the capacitor sleeve are marked:  
 以下示例说明电容器套管上的标签内容:

	Logo	标志
B43310-B9688-M1	Part number (ordering code)	料号 (订购代码)
6800 μF (M)	Rated capacitance, tolerance (in coded form)	额定电容、容差 (代码形式)
400 V- 40/085/56	Rated voltage, climatic category	额定电压、气候分类
06.09 X	Month and year of production	月.年 (生产日期)

The climatic category is specified according to IEC 60068-1. If there is not enough space on the case, the following codes may be used:

气候类别符合 IEC 60068 - 1。如果壳体上没有足够空间，可使用以下代码：  
 E.g.: 40/085/56, in coded form, would read GPF 例如：40/085/56的代码形式为GPF  
 1st letter (lower category temperature) 首字母 (下限类别温度)

Code letter 代码字母	F	G	H
Temperature 温度(°C)	-55	-40	-25

2nd letter (upper category temperature) 第二字母 (上限类别温度)

Code letter 代码字母	K	M	P	S	U
Temperature 温度(°C)	+125	+105(+100)	+85	+70	+60

3rd letter (humidity) 第三字母 (湿度)

Letter F: withstands IEC60068-2-78 Cab (damp heat, steady state), test duration 56 days.  
 字母F: 经受IEC 60068-2-78试验箱 (湿热、恒稳态), 试验周期56天。

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