



# Aluminum Electrolytic Capacitors

Capacitors with screw terminals

**Series/Type:** B43456, B43458

**Date:** April 1, 2014

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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 $C_R$ 额定容量 $C_R$ (20 °C, 120 Hz)	1000...18000 $\mu$ F					
Capacitance tolerance 电容公差	$\pm 20\%$ 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	
	$Z$ (-25 °C) $Z$ (+20 °C)	3		4	3	
	$Z$ (-40 °C) $Z$ (+20 °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

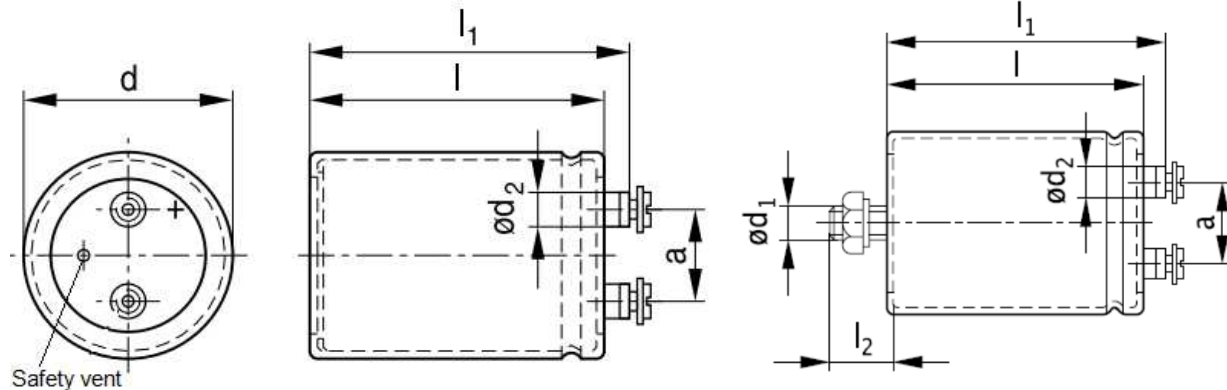
Capacitor diameter 电容器直径	51.6mm	64.3mm	76.9mm	91.0mm
$I_{AC,max}$	34A	45A	57A	80A

**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
M6	91.0 +0/-2	220.7	226.5	17	M12	17.7	31.7	1300
		144.5	149.8					1200
		170	175.3					1400
		221	226.3					1900

**Capacitors with screw terminals 螺钉式电容器**  
**Long life industrial – 85°C 长寿命工业型 – 85°C**

**B43456, B43458**

**Packing**  
**包装**

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

Capacitor diameter 电容器直径	Packing units (pcs.) 包装单位 (件)
76.9mm	12
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。仅当客户提出需求时，EPCOS将配送该部件。

Technical dates and ordering codes

$V_R$	$C_R$	Case dimensions	$ESR_{typ}$	$I_{AC,max}$	$I_{AC,R}$	Ordering code
V DC	120Hz 20 °C $\mu F$	d x l mm	120 Hz 20 °C m $\Omega$	120 Hz 40 °C A	120 Hz 85 °C A	
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##
	15000	76.9 x 220.7	7	57.0	35.0	B4345*A4159M0##
400	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##
	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)
- 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

$V_R$ V DC	$C_R$ 120Hz 20 °C $\mu F$	Case dimensions d x l mm	$ESR_{typ}$ 120 Hz 20 °C m $\Omega$	$I_{AC,max}$ 120 Hz 40 °C A	$I_{AC,R}$ 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##
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	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

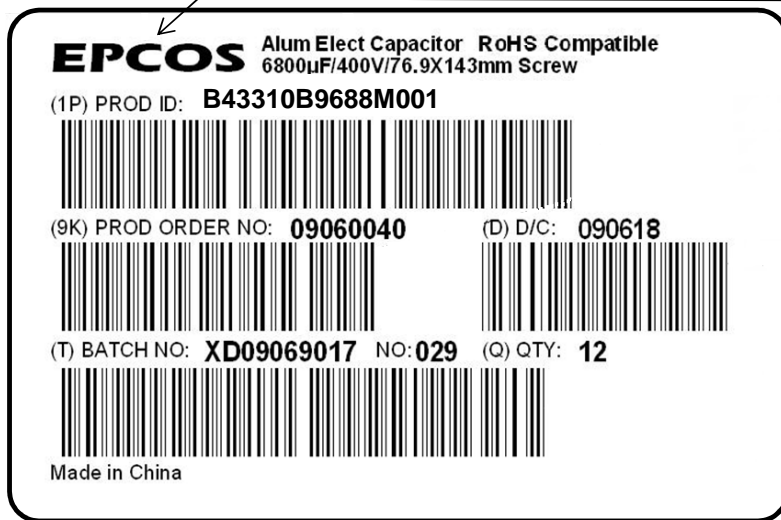
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- 03 = for capacitors with low inductance (13 nH) (only capacitors with diameter  $d \geq 64.3$  mm)
- 07 = for heat sink mounting (only capacitors with diameter  $d \geq 64.3$  mm and without threaded stud)
- 50 = for terminals with PAPR style (not 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:



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:



- EPCOS 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(℃)	-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(℃)	+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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