



# Aluminum Electrolytic Capacitors

Capacitors with screw terminals

**Series/Type:**            **B43704, B43724**

**Date:**                    September 22, 2016

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**Long life grade capacitors****长寿命级电容器****Applications****应用**

- Frequency converters  
变频器
- Wind power converters and solar inverters  
风能变流器和太阳能逆变器
- Professional power supplies  
专业电源
- Uninterruptible power supplies  
不间断电源

**Features****特点**

- High CV product, i.e. very compact  
大容量高电压电容器，紧凑型
- High reliability and very high ripple current capability  
高可靠性与超高耐纹波电流能力
- 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（带极性颠倒保护）
- 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
- The bases with threaded stud types are not insulated.  
带螺栓的型号底部不绝缘

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

Rated voltage $V_R$ 额定电压 $V_R$	400 ... 550 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)	820 ... 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, 120 Hz.	0.2								
Leakage current $I_{leak}$ (20 °C, after 5 minutes) 漏电流 $I_{leak}$ (20 °C, 5分 钟后)	$I_{leak} \leq 0.020 \mu A \cdot \left( \frac{C_R}{\mu F} \cdot \frac{V_R}{V} \right)^{0.85} + 4 \mu A$								
Useful life 使用寿命 (85 °C, $V_R$ , $I_{AC,R}$ )	400 V ... 500 V	550 V	Requirements 要求: $\Delta C/C \leq \pm 15\%$ 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						
	>12000 h	>8000 h							
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30分钟, 放置24至48小时后再测试。								
Frequency multiplier for rated ripple current (Guiding values)* 额定纹波电流频率系数 (参考值)*	d (mm)	$V_R$ (V DC)	50 Hz	100 Hz	120 Hz	300 Hz	1 kHz	10 kHz	20 kHz
	51.6	450 ... 550	0.71	0.94	1.00	1.23	1.42	1.50	1.50
		400	0.72	0.94	1.00	1.22	1.39	1.44	1.42
	64.3	500, 550	0.71	0.94	1.00	1.23	1.40	1.47	1.46
		450	0.72	0.94	1.00	1.22	1.36	1.36	1.32
		400							
	76.9	500, 550	0.73	0.95	1.00	1.21	1.35	1.33	1.30
	90	550							
	76.9	450	0.73	0.95	1.00	1.20	1.32	1.26	1.21
	90	450, 500							
76.9	400	0.75	0.96	1.00	1.16	1.23	1.17	1.13	
90	400	0.76	0.95	1.00	1.15	1.21	1.11	1.05	

\*Frequency and temperature multipliers are intended for guidance purpose only. In general, each single capacitor has individual values. Please refer to the AICap Useful Life Calculation Tool, available from EPCOS web page (Design Support > Design Tools > Aluminum Electrolytic Capacitors > AICap Useful Life Calculation Tool). \*频率和温度的额定纹波电流系数仅为参考值, 具体计算请使用在EPCOS官网上的铝电解电容寿命计算工具。

**Capacitors with screw terminals 螺钉式电容器 B43704, B43724**

**High ripple current – 85 °C 高纹波电流型 – 85 °C**

Temperature multipliers for rated ripple current at natural convection (Guiding values)* 额定纹波电流温度系数 自然冷却(参考值)*	d (mm)	V <sub>R</sub> (V DC)	l (mm)	+40 °C	+50 °C	+60 °C	+70 °C	+85 °C	
	51.6, 64.3	400	all	2.0	1.8	1.7	1.5	1.0	
	76.9		l ≤ 156.2						
	76.9	450	l ≥ 168.7	1.9	1.8	1.6	1.4	1.0	
	90		all						
	51.6, 64.3	500	all	2.3	2.1	1.9	1.6	1.0	
	76.9		l ≤ 156.2						
	76.9		l ≥ 168.7	2.2	2.1	1.8	1.6	1.0	
	90		all						
	51.6, 64.3	550	all	2.5	2.3	2.0	1.7	1.0	
	76.9		l ≤ 156.2						
	76.9		l ≥ 168.7	2.4	2.2	1.9	1.6	1.0	
	90		all						
	Sectional specification 分规范	IEC 60384-4							

\*Frequency and temperature multipliers are intended for guidance purpose only. In general, each single capacitor has individual values. Please refer to the AICap Useful Life Calculation Tool, available from EPCOS web page (Design Support > Design Tools > Aluminum Electrolytic Capacitors > AICap Useful Life Calculation Tool). \*频率和温度的额定纹波电流系数仅为参考值，具体计算请使用在EPCOS官网上的铝电解电容寿命计算工具。

**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

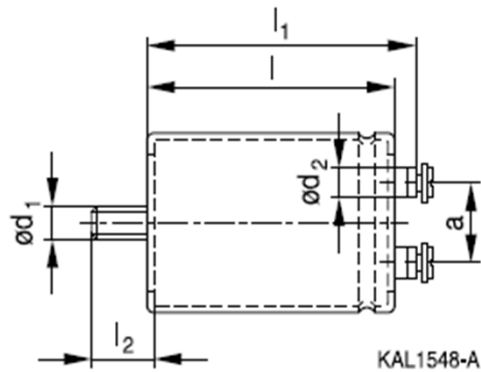
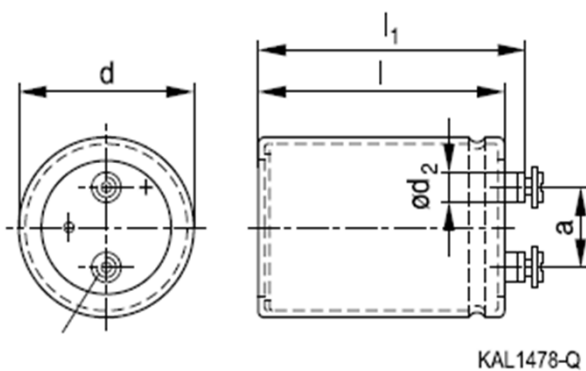
Capacitor diameter 电容器直径	51.6 mm	64.3 mm	76.9 mm	90 mm
$I_{AC,max}$	45 A	60 A	67 A	80 A

**Dimensional drawings**
**尺寸图**
**B43704**

Ring clip/clamp mounting  
卡环或卡夹安装

**B43724**

Threaded stud mounting  
底部螺栓安装



M5: Min. reach of screw = 9.5 mm

M5: 螺纹最小深度 = 9.5 mm

M6: Min. reach of screw = 12 mm

M6: 螺纹最小深度 = 12 mm

Positive pole marking: +

正极标志: +

For types with threaded stud the bases is not insulated. Also refer to the mounting instructions in chapter "Capacitors with screw terminals - Accessories".

带底部螺栓，底部不绝缘。安装说明，参阅章节“螺钉式电容器 - 附件”。

Screw terminals with UNF threads are available upon request.

带UNF螺纹的螺钉产品可以供应

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 ± 1	l <sub>1</sub> ± 1	l <sub>2</sub> +0/ -1	d <sub>1</sub>	d <sub>2</sub> max.	a +0.2/-0.4	
M5	51.6 +0.5/-1	80.7	87.2	17	M12	10.2	22.2	220
		96.7	103.2					250
		105.7	112.2					280
		118.2	124.7					320
		130.7	137.2					350
M5	64.3 +0.5/-1	80.7	87.2	17	M12	13.2	28.5	370
		96.7	103.2					400
		105.7	112.2					440
		118.2	124.7					510
		130.7	137.2					600
M6	76.9 +0.5/-1	143.2	149.7	17	M12	17.7	31.7	630
		96.7	102.5					570
		105.7	111.5					620
		118.2	124.0					700
		130.7	136.5					800
		143.2	149.0					840
		156.2	162.0					920
168.7	174.5	1000						
190.7	196.5	1150						
220.7	226.5	1300						
M6	90 +0.5/-1.5	120	125.3	17	M12	17.7	31.7	1000
		144.5	149.8					1200
		170.0	175.3					1400
		197.0	202.3					1700
		221.0	226.3					1900

**Capacitors with screw terminals 螺钉式电容器 B43704, B43724**  
**High ripple current – 85 °C 高纹波电流型 – 85 °C**

**Packing  
包装**

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

Capacitor diameter 电容器直径	Length 长度	Packing units (pcs.) 包装单位 (件)
76.9 mm	All	12
90 mm	All	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	A5.1 DIN6797	Outer hex-cross screw with spring and plain washer M5 x 10 外六角十字型螺钉及弹垫垫圈和平垫圈 M5 x 10	2.5 Nm thread depth t ≥ 8 mm
	M6	A6.4 DIN6797	Outer hex-cross screw with spring and plain washer M6 x 12 外六角十字型螺钉及弹垫垫圈和平垫圈 M6 x 12	4.0 Nm thread depth t ≥ 9.5 mm
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 ≥ 64.3 mm 电容器用卡夹, d ≥ 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 技术参数与订货编码**

$V_R$	$C_R$ 120 Hz 20 °C $\mu\text{F}$	Case dimensions d x l mm	$\text{ESR}_{\text{typ}}$ 120 Hz 20 °C m $\Omega$	$I_{\text{AC,max}}$ 120 Hz 60 °C A	$I_{\text{AC,R}}$ 120 Hz 85 °C A	Ordering code
400	1500	51.6 x 80.7	70	14.1	8.25	B437*4A9158M0##
	1800	51.6 x 96.7	60	16.3	9.59	B437*4A9188M0##
	2200	51.6 x 105.7	50	18.7	10.9	B437*4A9228M0##
	2700	51.6 x 118.2	38	21.6	12.6	B437*4A9278M0##
	3300	64.3 x 96.7	32	24.4	14.2	B437*4A9338M0##
	3900	64.3 x 105.7	28	27.3	15.9	B437*4A9398M0##
	4700	64.3 x 130.7	22	31.1	18.2	B437*4A9478M0##
	4700	76.9 x 96.7	24	31.6	18.4	B437*4B9478M0##
	5600	64.3 x 143.2	19	35.1	20.5	B437*4A9568M0##
	5600	76.9 x 118.2	19	35.6	20.8	B437*4B9568M0##
	6800	76.9 x 130.7	16	40.2	23.5	B437*4A9688M0##
	8200	76.9 x 156.2	13	45.6	26.6	B437*4A9828M0##
	8200	90.0 x 120.0	13	48.0	28.9	B437*4B9828M0##
	10000	76.9 x 168.7	11	52.1	31.4	B437*4A9109M0##
	10000	90.0 x 144.5	11	54.4	32.8	B437*4B9109M0##
	12000	76.9 x 220.7	9.2	59.4	36.0	B437*4A9129M0##
	12000	90.0 x 170.0	9.2	61.1	36.9	B437*4B9129M0##
15000	90.0 x 197.0	7.4	70.6	42.7	B437*4A9159M0##	
18000	90.0 x 221.0	6.3	79.9	48.3	B437*4A9189M0##	

**Composition of ordering code**
**订货编码规则**

\* = Mounting style 装配方式

0 = for capacitors with ring clip/clamp  
mounting

带卡环固定的电容器

2 = for capacitors with threaded stud

带底部螺栓电容器

## = Design 设计

00 = for standard capacitors 标准型号

50 = for terminals with PAPR style PAPR型端子



**Technical dates and ordering codes 技术参数与订货编码**

$V_R$	$C_R$	Case dimensions d × l mm	$ESR_{typ}$	$I_{AC,max}$	$I_{AC,R}$	Ordering code
V DC	120 Hz 20 °C μF		120 Hz 20 °C mΩ	120 Hz 60 °C A	120 Hz 85 °C A	
450	1200	51.6 x 80.7	75	12.7	7.54	B437*4A5128M0##
	1500	51.6 x 96.7	60	15.2	8.99	B437*4A5158M0##
	1800	51.6 x 105.7	50	17.2	10.1	B437*4A5188M0##
	1800	64.3 x 80.7	50	17.4	10.3	B437*4B5188M0##
	2200	51.6 x 118.2	40	19.8	11.7	B437*4A5228M0##
	2200	64.3 x 96.7	40	19.8	11.7	B437*4B5228M0##
	2700	64.3 x 96.7	34	22.5	13.3	B437*4A5278M0##
	3300	64.3 x 118.2	28	25.8	15.2	B437*4A5338M0##
	3300	76.9 x 96.7	28	26.9	15.9	B437*4B5338M0##
	3900	64.3 x 130.7	24	29.0	17.1	B437*4A5398M0##
	3900	76.9 x 105.7	24	29.7	17.5	B437*4B5398M0##
	4700	76.9 x 118.2	20	33.4	19.7	B437*4A5478M0##
	5600	76.9 x 130.7	17	37.4	22.1	B437*4A5568M0##
	5600	90.0 x 120.0	17	40.0	24.5	B437*4B5568M0##
	6800	76.9 x 156.2	14	42.6	25.2	B437*4A5688M0##
	6800	90.0 x 144.5	14	45.0	27.5	B437*4B5688M0##
	8200	76.9 x 190.7	12	48.5	29.7	B437*4A5828M0##
	8200	90.0 x 144.5	12	50.5	30.8	B437*4B5828M0##
10000	76.9 x 220.7	9.7	55.9	34.2	B437*4A5109M0##	
10000	90.0 x 170.0	9.7	57.3	35.0	B437*4B5109M0##	
12000	90.0 x 197.0	8.1	64.7	39.5	B437*4A5129M0##	

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$V_R$	$C_R$ 120 Hz 20 °C $\mu F$	Case dimensions d x l mm	$ESR_{typ}$ 120 Hz 20 °C m $\Omega$	$I_{AC,max}$ 120 Hz 60 °C A	$I_{AC,R}$ 120 Hz 85°C A	Ordering code
500	820	51.6 x 80.7	100	10.4	5.42	B437*4A6827M0##
	1000	51.6 x 96.7	85	11.8	6.19	B437*4A6108M0##
	1200	51.6 x 96.7	70	13.4	7.00	B437*4A6128M0##
	1500	51.6 x 118.2	55	15.7	8.18	B437*4A6158M0##
	1500	64.3 x 80.7	60	15.8	8.25	B437*4B6158M0##
	1800	51.6 x 130.7	50	17.9	9.34	B437*4A6188M0##
	1800	64.3 x 96.7	50	17.8	9.29	B437*4B6188M0##
	2200	64.3 x 105.7	40	20.3	10.6	B437*4A6228M0##
	2700	64.3 x 118.2	32	23.4	12.1	B437*4A6278M0##
	2700	76.9 x 96.7	32	24.2	12.6	B437*4B6278M0##
	3300	64.3 x 143.2	26	26.9	14.0	B437*4A6338M0##
	3300	76.9 x 118.2	26	27.5	14.3	B437*4B6338M0##
	3900	76.9 x 130.7	22	30.6	15.9	B437*4A6398M0##
	4700	76.9 x 143.2	19	34.6	18.0	B437*4A6478M0##
	4700	90.0 x 120.0	19	37.0	19.7	B437*4B6478M0##
	5600	76.9 x 168.7	16	39.4	21.0	B437*4A6568M0##
	5600	90.0 x 144.5	16	41.1	21.9	B437*4B6568M0##
	6800	76.9 x 190.7	13	45.2	24.1	B437*4A6688M0##
	6800	90.0 x 170.0	13	46.4	24.8	B437*4B6688M0##
	8200	76.9 x 220.7	11	51.8	27.6	B437*4A6828M0##
8200	90.0 x 197.0	11	52.4	28.0	B437*4B6828M0##	
10000	90.0 x 221.0	9	60.0	32.0	B437*4A6109M0##	

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550	820	51.6 x 80.7	120	10.3	5.11	B437*4A7827M0##
	1000	51.6 x 96.7	100	11.7	5.83	B437*4A7108M0##
	1200	51.6 x 105.7	85	13.3	6.62	B437*4A7128M0##
	1200	64.3 x 80.7	85	13.6	6.75	B437*4B7128M0##
	1500	51.6 x 130.7	65	15.6	7.77	B437*4A7158M0##
	1500	64.3 x 96.7	65	15.6	7.78	B437*4B7158M0##
	1800	64.3 x 96.7	55	17.6	8.75	B437*4A7188M0##
	2200	64.3 x 118.2	45	20.2	10.0	B437*4A7228M0##
	2200	76.9 x 96.7	45	21.1	10.4	B437*4B7228M0##
	2700	64.3 x 130.7	38	23.3	11.5	B437*4A7278M0##
	2700	76.9 x 105.7	38	24.0	11.8	B437*4B7278M0##
	3300	76.9 x 118.2	32	27.2	13.5	B437*4A7338M0##
	3900	76.9 x 143.2	26	30.4	15.0	B437*4A7398M0##
	3900	90.0 x 120.0	26	32.6	16.5	B437*4B7398M0##
	4700	76.9 x 156.2	22	34.5	17.0	B437*4A7478M0##
	4700	90.0 x 144.5	22	36.4	18.5	B437*4B7478M0##
	5600	76.9 x 190.7	19	39.2	19.9	B437*4A7568M0##
	5600	90.0 x 144.5	19	40.9	20.7	B437*4B7568M0##
	6800	76.9 x 220.7	15	45.1	22.9	B437*4A7688M0##
	6800	90.0 x 170.0	15	46.3	23.5	B437*4B7688M0##
	8200	90.0 x 197.0	13	52.4	26.6	B437*4A7828M0##

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 0 = for capacitors with ring clip/clamp  
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带底部螺栓电容器

## = Design

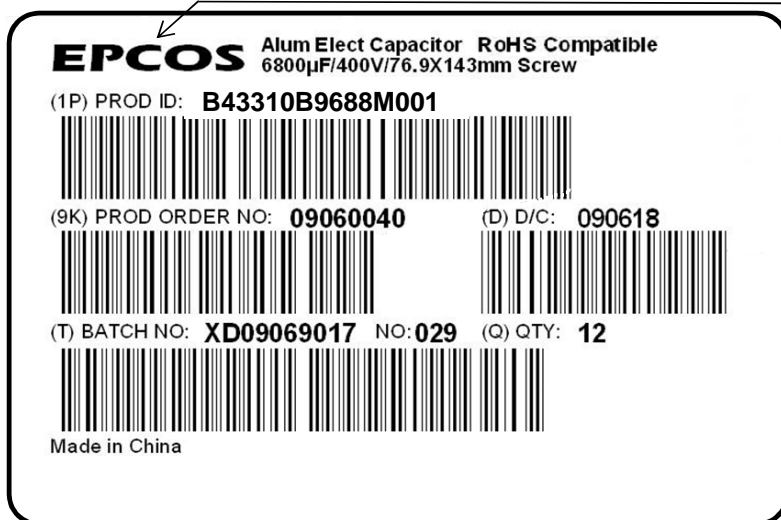
00 = for standard capacitors 标准型号

50 = for terminals with PAPR style PRPR型端子

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:



- (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)
400V 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(湿度、恒稳态), 试验周期56天

## Important notes

The following applies to all products named in this publication:

1. Some parts of this publication contain **statements about the suitability of our products for certain areas of application**. These statements are based on our knowledge of typical requirements that are often placed on our products in the areas of application concerned. We nevertheless expressly point out **that such statements cannot be regarded as binding statements about the suitability of our products for a particular customer application**. As a rule we are either unfamiliar with individual customer applications or less familiar with them than the customers themselves. For these reasons, it is always ultimately incumbent on the customer to check and decide whether a product with the properties described in the product specification is suitable for use in a particular customer application.
2. We also point out that **in individual cases, a malfunction of electronic components or failure before the end of their usual service life cannot be completely ruled out in the current state of the art, even if they are operated as specified**. In customer applications requiring a very high level of operational safety and especially in customer applications in which the malfunction or failure of an electronic component could endanger human life or health (e.g. in accident prevention or life-saving systems), it must therefore be ensured by means of suitable design of the customer application or other action taken by the customer (e.g. installation of protective circuitry or redundancy) that no injury or damage is sustained by third parties in the event of malfunction or failure of an electronic component.
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We also **reserve the right to discontinue production and delivery of products**. Consequently, we cannot guarantee that all products named in this publication will always be available. The aforementioned does not apply in the case of individual agreements deviating from the foregoing for customer-specific products.
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