



VERTICAL CHIP CAPACITORS

TOSHIN KOGYO

Jan 1, 2024



公司简介

本公司于 1950 年，在长野县丸子镇（现上田市），以制丝业起家，“社会信赖的公司、品质第一、贡献社会”为公司的经营理念。

为应对经济发展的变化，我们开始生产电解电容器和薄膜电容器。在动荡的电子行业，我们 TK 品牌不断开发满足客户需求的特色产品，获得高信赖评价。

以应对无国界时代，我们将加强与海外领先企业的合作。我们通过引进和管理作为制造商培育的质量控制体系，扩大液晶模块等各种电子部件的销售。

从现在起，我们将通过开发对地球温和，与环保产品兼容的产品，来发挥社会贡献的作用。

公司概况

事业内容

- 电解电容器生产销售
- 薄膜电容器生产销售
- 液晶模组销售
- 各种电子部件的销售
- 所持有的不动产管理（公寓·工厂出租）
- 太阳能发电

办事处

- 总部（东京）
- 丸子事务所

国内生产基地

- 糸鱼川 TK 股份有限公司

海外办事处

- 东信工业(香港)有限公司
- 东莞市笠原东信工电子有限公司

CAMPANY PROFILE

BUSINESS LINE

- Electrolytic capacitors
- Film capacitors
- Liquid Crystal Display module
- Various electronic parts
- Real estate(Apartment ·Factory lease)
- Photovoltaic generation

OFFICE

- HEAD OFFICE (Tokyo)
- MARUKO OFFICE/DOMESTIC SEALS DEP. (Nagano)

DOMESTIC PRODUCTION NETWORK

- ITOIGAWA TK CO.,LTD.

OVERSEAS NETWORK

- TOSHINCON ELECTRONICS (H.K.) CO.,LTD.
- DONGGUAN KASAHARA TOSHINCON ELECTRONICS CO.,LTD.

生产销售基地

PRODUCTION AND SALE



公司沿革

1950 年 6 月 成立了株式会社东信制丝厂
1959 年 10 月 开始了铝电解电容的生产

1959 年 10 月 公司名变更为東信工業株式会社
1962 年 7 月 开始了薄膜电容的生产
1973 年 5 月 成立了板仓电子株式会社
1985 年 6 月 成立了系鱼川 TK 株式会社
2002 年 9 月 在台湾成立了东信工股份有限公司
2003 年 2 月 中国东信工电子厂生产开始-电解电容
2012 年 12 月 成立了东信工业（香港）有限公司
2015 年 6 月 投资加入了江西生产工厂-薄膜电容
2017 年 11 月 成立了东莞市笠原东信工电子有限公司
2017 年 12 月 成立了 U-NIT TK 株式会社
2019 年 12 月 板仓电子(株)与系鱼川 TK(株)合并为系鱼川 TK 株式会社

COMPANY HISTORY

Jun.1950 Establish Toshin Co., Ltd.
Oct.1959 Started production of Aluminum Electrolytic Capacitors
Oct.1959 Name change to Toshin Kogyo Co., Ltd.
Jul.1962 Started production of Film Capacitors
May 1973 Establish Itakura Denshi Co., Ltd.
Jun.1985 Establish Itoigawa TK Co., Ltd.
Sep.2002 Establish Taiwan Toshin Kogyo
Feb.2003 Establish Toshincon Electronics Factory(China)
Dec.2012 Establish Toshincon Electronics(H.K.) CO.,LTD
Jun.2015 Capital participation in Nistrionics
Nov.2017 Establish Dongguan Kasahara Toshincon Electronics CO.,LTD
Dec.2019 Absorbed and merged with domestic production base Itoigawa TK Co.,Ltd.

主要客户

国内 松下集团各公司
(安桥)股份公司
夏普股份公司
精工爱普生股份公司
股份公司东芝
先锋股份公司
股份公司巴法络
股份公司日立制作所
富士通联合国股份公司
船井电机股份公司
三菱电机股份公司
雅马哈股份公司
力仕股份公司

MAIN CUSTOMER

DOMESTIC Panasonic Group
ONKYO Corporation
SHARP Corporation
SEIKO EPSON Corporation
TOSHIBA Corporation
PIONEER Corporation
BUFFALO INC.
HITACHI LTD
FUJITSU General Limited
FUNAI Electric Co.,LTD
MITSUBISHI Electric corporation
YMAHA Corporation
LUXMAN Corporation

海外(OVERSEAS)

美国(USA) APPLE INC.
DELL INC.
MOTOROLA INC.

中国台湾(TAIWAN) PHIHONG TECHNOLOGY CO.,LTD
LITE-ON TECHNOLOGY CORP.
ACER INC.

韩国(KOREA) HUMAX CO.,LTD
SUNG HO ELECTRONICS CORP.
DONG YANG E&P

其他国内外还有 400 家(Others 400 companies)

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股份公司巴法络
股份公司日立制作所
富士通联合国股份公司
船井电机股份公司
三菱电机股份公司
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铝电解电容器

Aluminum Electrolytic Capacitors

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●产品系列一览表 / PRODUCTS SUMMARY

■贴片型铝电解电容器 / Chip Aluminum Electrolytic Capacitors

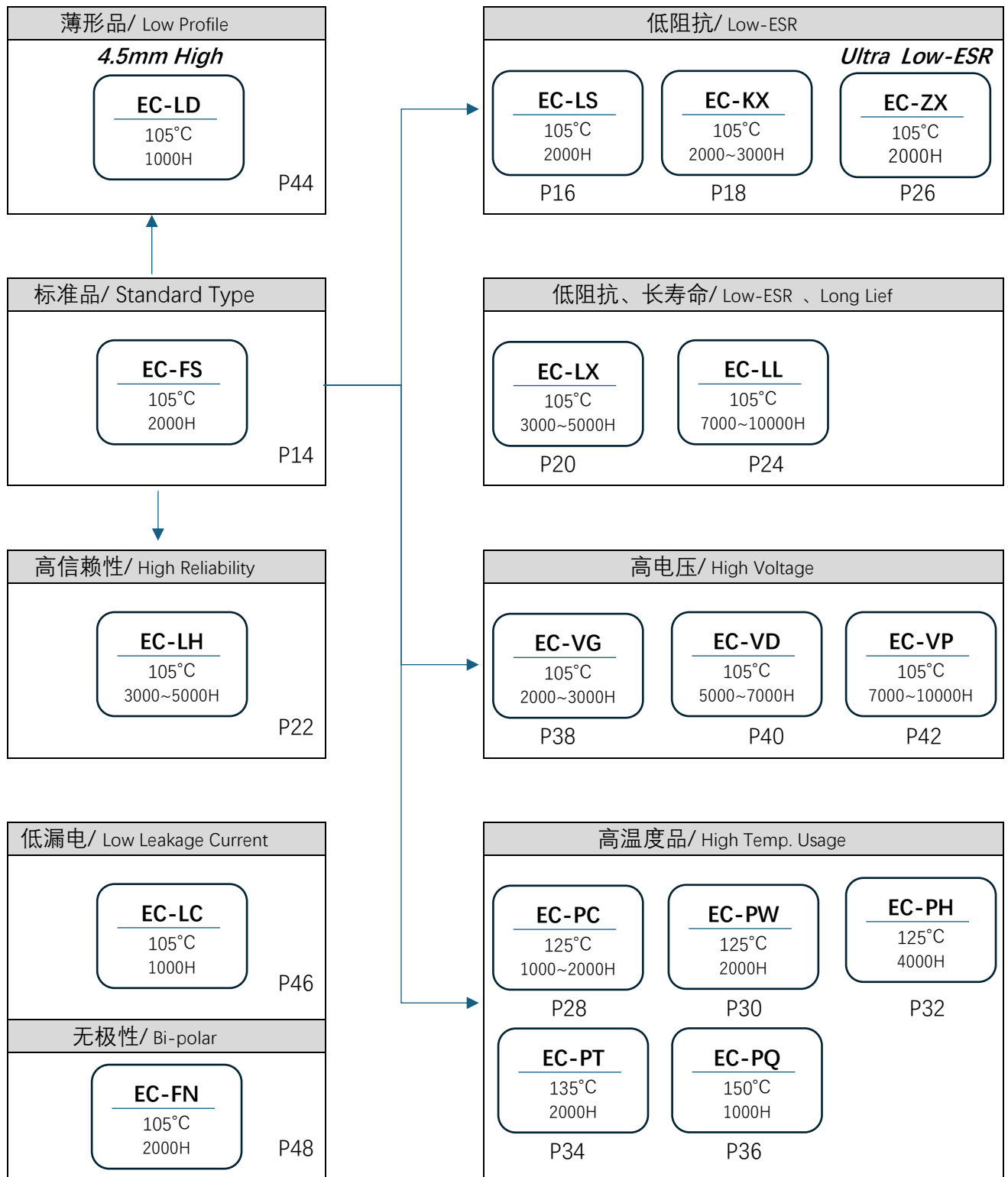
分类 Classification	系列名 Type	概要 Application	工作温度范围 Category temp. range (°C)	工作寿命 Endurance	额定电压范围 Rated voltage (V.DC)	静电容量范围 Capacitance (uF)	页码 page
CE-32 标准品 Standard	EC-FS	105°C标准品 105°C Standard	-55~+105	2000Hrs	6.3~100	1~3300	P14
CE-32 高信赖性品 High Reliability	EC-LS	低阻抗品 Low ESR	-55~+105	2000Hrs	6.3~100	4.7~3300	P16
	EC-KX	超低阻抗品 Ultra Low ESR	-55~+105	2000~3000Hrs	6.3~100	4.7~3300	P18
	EC-LX	长寿命.超低阻抗品 Long life & Ultra Low ESR	-55~+105	3000~5000Hrs	6.3~100	4.7~2200	P20
	EC-LH	长寿命品 Long life	-55~+105	3000~5000Hrs	6.3~100	1~1500	P22
	EC-LL	长寿命.低阻抗品 Long life & Low ESR	-55~+105	7000~10000H	6.3~100	1~1500	P24
	EC-ZX	小型化.低阻抗品 Miniaturized & Low-ESR	-55~+105	2000Hrs	6.3~50	10~2200	P26
	EC-PC	125°C标准品 125°C Standard	-40~+125	1000~2000Hrs	10~100	10~470	P28
	EC-PW	125°C小型化 2000H 125°C Downsize	-40~+125	2000Hrs	10~50	10~470	P30
	EC-PH	125°C长寿命 125°C Long life	-40~+125	4000Hrs	10~100	10~470	P32
	EC-PT	135°C 高温品 135°C High Temp. Usage	-40~+135	2000Hrs	10~50	47~470	P34
	EC-PQ	150°C 高温品 150°C High Temp. Usage	-40~+150	1000Hrs	10~50	33~330	P36
CE-32 高电压品 High Voltage	EC-VG	标准品 Standard	-40~+105 -25~+105	2000~3000Hrs	160~400 450	1~22	P38
	EC-VD	长寿命品 Long Life	-40~+105 -25~+105	5000~7000Hrs	160~400 450	1~22	P40
	EC-VP	长寿命品 Long Life	-40~+105 -25~+105	7000~10000Hrs	160~400 450	1~22	P42
CE-32 薄形品 Low Profile	EC-LD	4.5mm 高度品 4.5mm Height	-55~+85	1000Hrs	4~50	0.47~220	P44
CE-32 低漏电品	EC-LC	低漏电流品 Low Leakage Current	-55~+105	1000Hrs	6.3~50	0.1~330	P46
CE-32 无极性品 Bi-polar	EC-FN	105°C 无极性品 105°C Bi-polarized	-55~+105	2000Hrs	6.3~63	0.1~47	P48

这上面没有记载的定制产品我们也生产的，如有需求请联络。

.Produce custom products too, which are not found in these tables

● 产品体系图 / PRODUCTS CHART

■ 贴片型铝电解电容器 / Chip Aluminum Electrolytic Capacitors



● 产品编码标准称呼方式（指定方法） / METHOD OF BASIC DENOMINATING ITEM NUMBER
(HOW TO BASIC SPECIFY ITEM NUMBER)

例/Example

电压	系列	静电容量	容许误差	设计代码	尺寸	特殊代码
1E	EC-FS	101	M	D	E77	
①	②	③	④	⑤	⑥	⑦
Rated Voltage	Series	Nominal Capacitance	Tolerance	Design code	Size Code	Special Code

① 额定工作电压/Rated Voltage

额定工作电压用 2 码表示/Rated voltage in volts (V) is represented by a two-digit code.

Rated Voltage(V)	4	6.3	10	16	25	35	50	63	100	160	200	250	400
Code	0G	0J	1A	1C	1E	1V	1H	1J	2A	2C	2D	2E	2G

② 系列/Series:

依目录系列名/Write a series name of catalog.

③ 静电容量/Capacitance:

电容单位为 μF ，由三位数代码表示，前两位数字为有效数字，第三位数字表示有效数字后面的零个数，“R”表示电容在 $10\mu\text{F}$ 以下的小数点。

Capacitance in μF is represented by a three-digit code. The first two digits are significant and the third digit indicates the number of zeros following the significant figure. “R” represents the decimal point for capacitance under $10\mu\text{F}$.

capacitance	0.47	1	4.7	10	47	100	470	1000	4700
Code	R47	010	4R7	100	470	101	471	102	472

④ 容许误差/Tolerance:

K = -10% ~ +10%	M = -20% ~ +20%	V = -10% ~ +20%
-----------------	-----------------	-----------------

⑤ 设计代码/Design code:

D: 无铅引线+镀膜铝壳(标准设计)/Pb free wire + coated case (Standard design)

⑥ 尺寸代码/Size code:

Size ($\phi\text{D}\times\text{L}$)	4x5.7	5x5.7	6.3x5.7	6.3x7.7	8x10.5	10x10.5	12.5x13.5	12.5x16.5
Code	C57	D57	E57	E77	F10	G10	H13	H16

⑦ 特殊码/Special Code:

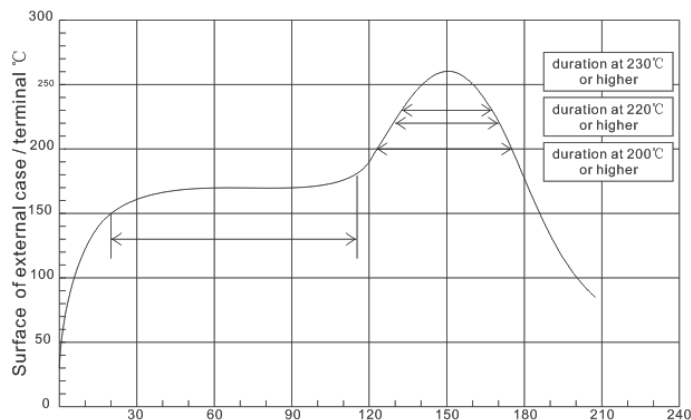
空白=没有特殊要求 None= No special requirements
Y=车载品 Y=Automotive control code

● 贴片型(CE-32)回流焊接条件/ Chip(CE-32)Type Permissible Reflow Conditions

■ 推荐焊接温度条件/Recommended soldering heat conditions

1. 在玻璃环氧电路板上采用焊糊对 SMD 产品进行空气对流和红外回流焊时，建议采用以下条件。所示的温度是罐顶和电容端子上的表面温度值/The following conditions are recommended for air convection and infrared reflow soldering on the SMD products onto a glass epoxy circuit boards by cream solder. The temperatures shown are the surface temperature values on the top of the can and on the capacitor terminals.
2. 回流焊次数不超过 2 次/Reflow should be performed twice or less.
3. 在第二次回流之前，请确保电容器足够冷到室温(5 至 35℃)。/Please ensure that the capacitor became cold enough to the room temperature (5 to 35℃) before the second reflow.

■ 回流概要/Classification Reflow Profile

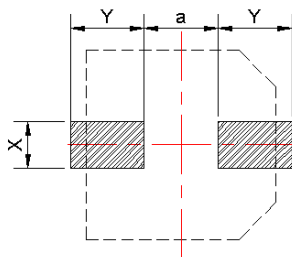


注意/Notice:

1. 平均升温速率为 5°C/秒/Average ramp-up rate is 5°C/second max.
2. 下降速率最高 6°C/秒/Ramp-down rate is 6°C/second max.
3. 从 25°C 到峰值温度的时间最长为 6 分钟。
/Time from 25°C to peak temperature is 6 minutes max.

对象	预热 Preheat	超过 200°C 的时间 Time maintained above 200°C	超过 220°C 的时间 Time maintained above 220°C	超过 230°C 的时间 Time maintained above 230°C	峰值温度 Peak temp.	回流次数 Reflow number
φ4~10mm general	120°C to 180°C 120 sec. Max.	60 sec.	50 sec.	30 sec.	250°C Max.	2 times or less
φ8x6.5		50 sec.	40 sec.	25 sec.	245°C Max.	2 times or less
WV 160v-450v		60 sec.	50 sec.	30 sec.	240°C Max.	2 times or less
φ12.5~20mm		60 sec.	40 sec.	30 sec.	240°C Max.	2 times or less
125°C Category Temp.		60 sec.	40 sec.	30 sec.	250°C Max.	2 times or less

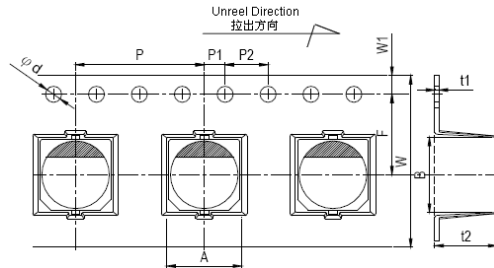
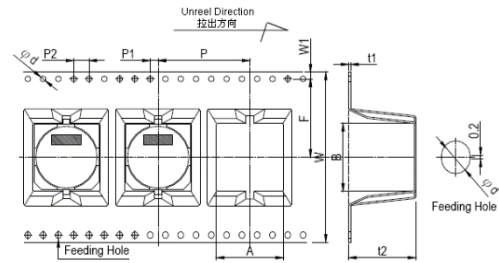
■ 推荐焊盘尺寸/Recommended Solder Land Size on PC Board



Size	a	X	Y
Φ4	1.0	1.6	2.6
Φ5	1.4	1.6	3.0
Φ6.3	2.1	1.6	3.5
Φ8x6.5	2.1	1.6	4.5
Φ8x10.5	3.0	2.5	3.5
Φ10	4.0	2.5	4.0
Φ12.5	4.0	3.0	5.7
Φ16	6.0	3.5	6.5

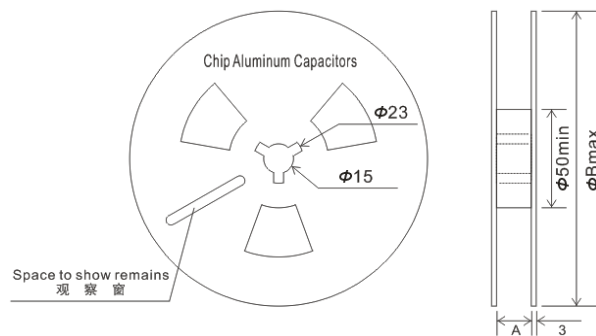
● 贴片型(CE-32)编带仕様/ Chip(CE-32)Type Taping

■ 带式载体/Carrier Tape

【 $\phi D \leq 10$ 】【 $\phi D \geq 12.5$ 】

Case Size $\phi D \times L$	W (mm)	W1 (mm)	F (mm)	P (mm)	P1 (mm)	P2 (mm)	A (mm)	B (mm)	t1 (mm)	t2 (mm)
$\phi 4 \times 5.7$	12	1.75	5.5	8	2	4	4.7	4.7	0.4	6.3
$\phi 5 \times 5.7$	12		5.5	12			6	6		6.3
$\phi 6.3 \times 4.5$	16		7.5	12			7	7		4.8
$\phi 6.3 \times 5.2$	16		7.5	12			7	7		5.9
$\phi 6.3 \times 5.4 \sim 5.7$	16		7.5	12			7	7		6.3
$\phi 6.3 \times 7.0$	16		7.5	12			7	7		6.8
$\phi 6.3 \times 7.7$	16		7.5	12			7	7		8.3
$\phi 6.3 \times 8.7$	16		7.5	12			7	7		9.3
$\phi 6.3 \times 10.5$	16		7.5	12			7	7	0.5	11.2
$\phi 8 \times 10.5$	24		11.5	16			8.7	8.7	0.4	11.0
$\phi 8 \times 12.5$	24		11.5	16			8.7	8.7	0.5	13.1
$\phi 10 \times 10.5$	24		11.5	16			10.7	10.7	0.4	11.0
$\phi 10 \times 12.5$	24		11.5	16			10.7	10.7	0.5	13.1
$\phi 12.5 \times 13.5$	32		14.2	24			14	14		14.5
$\phi 12.5 \times 16.5$	32		14.2	24			14	14	0.5	17.0
Tolerance	± 0.3	± 0.15	± 0.1	± 0.1	± 0.1	± 0.1	± 0.2	± 0.2	± 0.1	± 0.2

■ 卷&包装数量/Reel & Package Quantity



Case Size	Reel	Carton	A ± 0.3	B ± 2	Case Size	Reel	Carton	A ± 0.3	B ± 2
$\phi 4 \times 5.7$	2000	20000	14	382	$\phi 6.3 \times 8.7$	700	7000	18	382
$\phi 5 \times 4.5$	1500	15000	14	382	$\phi 6.3 \times 10.5$	700	7000	18	382
$\phi 5 \times 5.7$	1000	10000	18	382	$\phi 8 \times 10.5$	500	5000	26	382
$\phi 6.3 \times 4.5$	1500	15000	18	382	$\phi 8 \times 12.5$	500	5000	26	382
$\phi 6.3 \times 5.2$	1000	10000	18	382	$\phi 10 \times 10.5$	500	5000	26	382
$\phi 6.3 \times 5.7$	1000	10000	18	382	$\phi 10 \times 12.5$	400	4000	26	382
$\phi 6.3 \times 7.0$	1000	10000	18	382	$\phi 12.5 \times 13.5$	250	1500	34	382
$\phi 6.3 \times 7.7$	1000	10000	18	382	$\phi 12.5 \times 16.5$	200	1200	34	382

● 铝电解电容使用上的注意事项/Application Guidelines

1. 电路设计上

- (1) 请在确认使用环境及装配环境的基础上, 在产品目录及规格说明书中规定的电容器额定性能范围内使用。
- (2) 请不要在高温(超过工作上限温度的温度)下使用。若电容器使用在高于最大额定温度时将致电容器寿命减短或使铝壳防爆阀开启且制品会损坏,
- (3) 请不要对产品施加高于额定纹波电流值的过电流。施加之纹波电流值高于额定纹波电流值则制品容量会下降、电容内部会发热及缩短电容的寿命、或使铝壳防爆阀开启且制品会损坏。额定纹波电流是有纹波频率条件的, 如需在规定以外的频率使用的话, 也需要在按照每个系列规格的频率系数做了补正后的数值内使用。
- (4) 设计电路时, 要选用与设备寿命符合的电容器。
- (5) 铝电解电容器具有极性。请不要施加任何逆电压或者交流电压。当非固体铝电解电容器使用于极性颠倒的电路中时请选择双极性电容器。但极性电容器也不可使用于交流电路。
- (6) 通用电容器请勿使用于急速充放电的电路中。如需要使用于反复急速充放电的电路中的电容器请向我司咨询。
- (7) 请不要加载过大电压(超过额定电压的电压)。电容器上设定了额定电压。请将和直流电压重叠的纹波电压的峰值设定在额定电压以下。虽然规定了超过额定电压的浪涌电压, 但有限制条件, 不能保证长时间使用。
- (8) 电容器在以下, 情况下要与电路完全隔离
 - ① 非固体铝电解电容器的外壳和阴极端子及阳极端子和电路型板之间
 - ② 非固体铝电解电容器基板自立型的无连接(强度增强用)端子和其他(阳极及阴极)端子及电路型板之间。
- (9) 电容器的外装套管之材质并不保证具有绝佳的绝缘性请勿用于需要绝缘的地方。如果需要套管之材质要具有极佳绝缘功能的话请联系我们。

1. Circuit Design

- (1) Ensure that operational and mounting conditions follow the specified conditions detailed in the catalog and specification sheets.
- (2) Category temperature must be within our specification. If category temperature exceed the maximum guaranteed limit, rapid electrical parameter deterioration will occur, and irreversible damage will result.
- (3) Do not apply excessive current which exceeds the rated ripple current. The excessive ripple current will shorten the lifetime of capacitors and damage the capacitors by generating heat, venting, etc. The maximum rated ripple current has been specified at a certain ripple frequency. If the capacitors are operated at the other frequencies, the maximum rated ripple current must be multiplied by frequencies multipliers prescribed for each product series.
- (4) Select the capacitors to meet the service life of a device.
- (5) Aluminum electrolytic capacitors are polarized. Do not apply reverse voltage or AC voltage. Please use bi-polarized capacitors for a circuit that can possibly see reversed polarity. Note : Even bi-polarized capacitors can not be used for AC voltage application.
- (6) Do not use aluminum electrolytic capacitors in a circuit that requires rapid and very frequent charge/discharge. In this type of circuit, it is necessary to use a special design capacitor with extended life characteristics.
- (7) Do not apply an over-voltage exceeding the full rated voltage of the capacitor. When AC voltage is superimposed to DC voltage, the peak value of the DC voltage and peak AC voltage ripple current must not exceed the full rated voltage. A surge voltage value, which exceeds the full rated voltage, is prescribed in the catalogs, but it only applies to the limited conditions and for short periods of time.
- (8) Electrically isolate the following sections of a capacitor when designing the device circuits.
 - ① The outer can case of a non-solid aluminum capacitors from the negative terminal, positive terminal and circuit traces.
 - ② The dummy terminals of a non-solid aluminum capacitor, which may be especially designed for mounting stability, from the positive terminal, negative terminal and circuit traces.
- (9) The outer sleeve of a capacitor has not been assured as an insulation-functioning part. For a place that requires the outer sleeves functioning as insulation, a special type of capacitors should be designed.

(10) 电容器请不要在以下环境中使用。

- ① 流体物质包括水、盐雾及油烟或者凝结气候等状态环境。
- ② 充满了有害气体(硫化氢、亚硫酸、亚硝酸、氯、或者溴气氨气等)环境。
- ③ 臭氧、紫外线及辐射的环境。
- ④ 超出规格书规范之剧烈震动或撞击的环境

(11) 配置电容器之前请在确认以下内容后进行设计

- ① 请对准电容器的端子间隔和印刷配线板的孔间隔②配线或电路不可延伸到电容器的压力阀部上③电容器的压力阀部位的上方请设置预留以下空间。

制品直径	间隔
Φ8(6.3)~Φ16	2mm 以上
Φ18~Φ35	3mm 以上
Φ40	5mm 以上

- ④ 如果电容器的压力阀部接触印刷配线板边时, 根据压力阀的位置, 打开压力阀动作的排气孔。
- ⑤ 请不要在电容器的封口部下面进行电路配线。如果电容器附近配线, 请确保线路间隔距离, 防止电解液漏造成线路板短路
- ⑥ 请勿在电容器的周边及印刷配线板的背面(电容器的下面)放置发热的部件
- ⑦ 两面印刷配线板上安装电容器时, 设计时注意电容器下方不可有多余的基板孔或表里连接用贯通孔。
- ⑧ 螺丝端子型电容器(CE-33)的拧紧及主体安装螺丝的扭力不要超过产品目录或规格说明书规定的范围。此外, 横放时, 压力阀的位置不可居于下方
- ⑨ 螺丝端子型电容器(CE-33)的安装请参照目录书或者纳入规格书规定的范围内操作。

(12)贴片型电容器(CE-32)用的印刷配线板的焊盘图形请根据产品目录及规格说明书所推荐的尺寸来设计

(13)随着温度及频率的变动, 电容器的电气特性会发生变化。请在 确认这种变化量后设计电路。

(14)将 2 个电容器并联连接时, 电路设计请考虑电流的平衡力

(15)将 2 个电容器串联连接时, 要考虑电压的平衡, 可插入与电容器并列的分压电阻力

(10)Do not expose capacitors to the following environment

- ①Water, salt water or oil spatters, or dewy places.
- ②Toxic gases (hydrogen sulfide, sulfurous acid, nitrous acid, chlorine, ammonium, etc.) fills into.
- ③ Ozone, ultraviolet rays or radiation is applied to.
- ④Severe vibration or mechanical shock conditions that exceed the limits prescribed in the catalogs or product specification.
- (11)When designing a circuit board, please pay attention to following :

- ①Make the hole spacing on the P.C. board match the lead space of the capacitor.
- ② There should not be any circuit pattern or circuit wire above the capacitor safety vent.
- ③Unless otherwise specified, following clearance should be made above the safety vent.

Case Diameter	Gap Required
Φ8(6.3)~Φ16	2mm or more
Φ18~Φ35	3mm or more
Φ40	5mm or more

- ④In case the vent side is placed toward P.C. board(such as end seal vented parts),make a corresponding hole on the PC. board to release the gas when vent is operated.
- ⑤The main chemical solution of the electrolyte and the separator paper used in the capacitors are combustible. The electrolyte is conductive. When it comes in contact with the P.C. board, there isa possibility of pattern corrosion or short circuit between the circuit pattern which could in result smoking or catching fire. Do not Locate any circuit pattern beneath the capacitor end seal.
- ⑥Do not design a circuit board so that heat generating components such as resistor and transistors are placed near an aluminum capacitor or reverse side of P.C board (under the capacitor)
- ⑦ When you are designing capacitors for use on double-sides PC. boards, avoid circuit patterns or through holes such to connect both sides, that are placed under the capacitor.
- ⑧ The sealing side of the screw terminal type (CE-33) should not face down in the application. When the capacitors are mounted horizontally, the positive terminals must be positioned at the upper side.
- ⑨ Torque of tightening screw terminals (CE-33) should not exceed the specified maximum value which is described in the catalog or specification sheets.
- (12)Please refer to the pad size layout recommendations in our catalog when designing in surface mount capacitors(CE-32).
- (13)The electrical characteristics of capacitors vary with respect to temperature, frequency and service life. Design the device circuits by taking these changes into account.
- (14)If using more than one capacitor to connect in parallel, design the circuits so that the currents can equally flow into the individual capacitors.
- (15)If using more than one capacitor to connect in series connect resistors in parallel with the individual capacitors for balancing the voltage.

2. 安装

- (1) 已经成套组装并通过电的电容器请勿再次使用。除了定期检查 电气性能时拆下的电容器以外，其他不能再次使用。
- (2) 电容器可能产生再生电压。此时请通过 1k Ω 左右的电阻放电。
- (3) 超过产品目录或规格说明书的规定期限进行长期保管时电容器的漏电流有可能增大。此时，请通过 1k Ω 左右的电阻进行电压处理。
- (4) 安装前请确认电容器的额定规格(静电容量及额定电压)。
- (5) 安装前请确认电容器的极性，
 - ① 产品本体侧面，有带式或者箭头标示的那面为负极。
 - ② 导针同一方向型(CE-04)是、导针端子短的一边是负极。
 - ③ 基板自立型(CE-69)是、端子板上有[⊗]刻印的为负极。
 - ④ 贴片型(CE-32)是有 [◀] 状印刷方向是负极。
- (6) 请注意不要将电容跌落到底板上，请勿使用跌落到地板上的电容。
- (7) 安装时请注意勿使电容器变形。
- (8) 请确认电容器的端子间隔和印刷配线板孔间隔是否对准后再 进行安装。引线型可采用成型加工品。
- (9) 在印刷配线板上安装基板自立型非固体铝电解电容器(CE69)时，要按压使其与配线板紧贴(不可使其处于浮起状态)。
- (10) 不可对电容器施加产品目录或规格说明书规定的机械强度以上的力。自动装配机在吸附、装配及位置对准时，或者切割端子时有可能产生应力，请注意它的冲击。
- (11) 焊接时的焊接：
 - ① 焊接条件(温度、时间)必须符合产品目录或规格说明书规定的范围。

■ 2. Mounting

- (1) The used capacitors are not reusable, except the case that they are taken from a device for periodic inspection to measure their electrical characteristics and then returned to the device.
- (2) Capacitors may have been re-charged by a recovery voltage phenomenon. Although discharged at a final manufacturing process, the capacitors are somewhat re-charged spontaneously by a recovery voltage phenomenon, Which is caused by a slowly polarizing dielectric, with time. If these capacitors bring an electric shock or damages any sensitive circuit at assembly processes, discharge the electricity of the capacitors through a resistor of approximately 1k Ω before use.
- (3) Leakage current of the capacitors, that have been stored for a long time, may increase. When leakage current has increased, please perform a voltage treatment using 1k Ω resistor.
- (4) Make sure of the rated capacitances and voltages of the capacitors when installing.
- (5) Make sure of the polarity of the capacitors when installing.
 - ① Negative polarity is indicated on the side of body by means of a stripe or an arrow.
 - ② On Radial leaded type capacitors(CE-04), the shorter lead is the negative polarity.
 - ③ On Snap-In (CE-69) terminal type capacitors, the knurled rivet [⊗] indicates the negative polarity.
 - ④ On Surface mounting type capacitors (CE-32), the mark [◀] indicates the direction of negative polarity.
- (6) Do not drop capacitors on the floor, nor use a capacitor that was dropped.
- (7) Do not deform the can cases of capacitors.
- (8) Please confirm that the lead spacing of the capacitor matches the hole spacing of the P.C. board prior to installation.
- (9) Snap-in type capacitor (CE-69) should be installed tightly to the P.C. board (allow no gap between the P.C. board and bottom of the capacitor)
- (10) Do not apply any mechanical force more than the limits prescribed in the catalogs or product specifications to capacitors. Also, note the capacitors may be damaged by mechanical shocks caused by the vacuum/insertion head, component checker or centering operation of an automatic mounting or insertion machine.
- (11) Hand soldering
 - ① Soldering conditions (temperature and time) should be within the limits prescribed in the catalogs or product specifications.

- ②因端子间隔和印刷配线板的孔间隔不对应，需要对引线端子进行加工时，端子加工在焊接前进行，注意不要对电容器主体施加压力。
- ③当需要用手来调整的时候，已经焊接过一次的电容要取出来的情况下，请不要对电容端子部施加压力。让其充分熔合后在进行。
- ④请勿让烙铁的尖端接触电容器主体。

(12)进行波峰焊时:

- ①进行焊接时，请勿将铝电解电容器主体浸入到熔融的焊剂中。插入印刷配线板作为阻隔，只对放电容器侧面反面的基板表面进行焊接。
- ②焊接条件(预热、焊锡温度、条件)不可超出产品目录或规格说明书中规定的范围。
- ③除端子部以外，不可附着有焊剂。
- ④进行焊接时，要注意避免其他部件翻倒接触到电容器。

(13)进行回流焊时:

回流焊只针对 SMT 部品(CE-32)可以。

- ①焊接条件(预热、回流温度、时间)不可超出产品目录或规格说明书中规定的范围。
- ②使用红外线加热器时，因电容器的颜色和材质不同会导致红 外线的吸收率不同，请注意加热的程度。
- ③铝电解电容器的回流次数在产品目录或规格说明书中有规定。一般只一次。如果一定需要两次的情况下，请跟我们咨询。

(14)印刷配线板焊接后的处理注意不可施加以下机械压力。

- ①电容器主体不可倾斜、倒地或扭转
- ②不可抓住电容器的主体移动电路
- ③将非固体铝电解电容器安装在双面印刷配线板上时，请注意电容器主体的安装部位不可有电路面线。

(15)基板清洗:

- ①电容器不可用以下清洗剂进行清。如果有必要进行清洗时，请务必使用对清洗有保证的电容器、并保持在产品目录和规格说明书中规定的范围内。请特别注意超声波清洗条件。

②推荐清洗方法

- ② If it is necessary that the leads must be formed due to a mismatch of the lead space to hole space on the board, bend the lead prior to soldering without applying too much stress to the capacitor.

- ③ If you need to remove parts which were soldered, please melt the solder enough so that stress is not applied to lead.

4Please pay attention so that solder iron does not touch any portion of capacitor body) Flow soldering (Wave solder):

- ① Aluminum capacitor body must not be submerged into the solder bath. Aluminum capacitors must be mounted on the "top side" of the P.C. board and only allow the bottom side of the P.C. board to come in contact with the solder.

- ② Soldering condition must be confirmed to be within our specification.

- ③ Please avoid having flux adhere to any portion except the terminal.

- ④ Please avoid contact between other components and the aluminum capacitor.

(13) Reflow soldering (SMT CE-32 only):

- ① Soldering condition must be confirmed to be within our specification.

- ② When an infrared heater is used, please pay attention to the extent of heating since the absorption rate of infrared, will vary due to difference in the color of the capacitor body material of the sleeve and capacitor size.

- ③ The number of reflow time for SMT aluminum electrolytic capacitors shall be one time. If this type of capacitor has to be inevitably subjected to the reflow twice, please contact our sales office

(14) Do not apply any mechanical stress to the capacitor after soldering to the P.C. board.

- ① Do not incline, twist or push the body of the capacitor down after soldering it to the P.C. board.

- ② Do not take the assembly board by the capacitor in lifting or carrying the assembly board.3 Do not bump or strike any object against the capacitor after soldering to the P.C. board. Also, if the assembly boards are piled up, they should be so placed that any of the boards and other components can not touch the capacitor.

(15) Circuit Board cleaning :

- ① Do not clean capacitors with halogenated cleaning agent. However, if it is necessary to clean with halogenated cleaning agent, use cleaning proof capacitors but within the range specified in the specification.

② Recommended cleaning method

<Applicable>

Washable product

《对象品》 耐清洗品

《清洗剂》

派因阿尔法(Pine Alpha)ST-100S

库林斯鲁(Clean Through)750H

异丙醇 (IPA)

《洗净条件》

在 60°C 以下液温中浸泡, 不超过 10 分钟, 或超声波清洗。不管采用什么清洗方法, 不可擦拭其他部件、印刷配线板上的电容器标注部分。此外, 用清洗液进行冲洗, 有可能对电容器的标注部分带来不良影响, 请充分注意。

3 氟氯碳化物替代品清洗剂

《对象品》 耐清洗品

《清洗剂》 AK-225AES

《清洗条件》

采用液中浸泡、超声波、蒸汽中的任意清洗方法清洗 5 分钟以下(KRE 为 2 分钟以内, SRM 为 3 分钟 以内)。但换代产品氟利昂从地球环境的角度而言, 会逐渐 禁止使用, 请尽量避免使用。

(16)对电容使用固定剂·涂层剂时候, 请注意确认以下内容。

- ①请不要使用含有卤素类溶剂等的固定材和涂层剂。
- ②印刷配线板和电容器封口之间不可残留有焊剂残渣及污垢。
- ③在涂固定剂和涂层剂之前, 请先干燥清洗液。且封口处不可 全部被堵住。
- ④有关固定剂、涂层剂的热硬化条件, 请按照纳入规格书上的规定执行。

3. 配套使用

- (1)请不要直接接触电容器的端子。
- (2)电容器的端子之间不可有导电体以免造成短路。此外, 请不要把酸性及碱性溶液等导电性溶液溅到电容器上。
- (3)请确认装配了电容器的成套电路的安装环境。请不要在 1-(10)的环境中使用

(Cleaning agents)

<Cleaning conditions>

Pine Alpha ST-100s

Clean Through-750H

Iso-propyl Alcohol (IPA)

Total cleaning time shall be within 5 minutes (5mm and 7mm height. within 3 minutes) by immersion. ultrasonic or other method. (Temperature of the cleaning agent shall be 60°C or lower.) After cleaning capacitors should be dried using hot air for minimum of 10 minutes along with the P.C. board. Hot air temperature should be below the maximum category temperature of the capacitor. Insufficient dry after water rinse may cause appearance problems. sleeve shrink, bottom-plate bulge and such.

③ CFC substitute

<Applicable>

<Cleaning agents>

<Cleaning conditions>

Washable product

AK-225AES

Total cleaning time shall be within 2 or 3 minutes by immersion, ultrasonic or other method. (Temperature of the cleaning agent shall be 40°C or lower.)

However, this CFCs substitute solvent should be considered as one of the solvents to be completely regulated in future from the environmental point of view

(16)Fixing materials and coating materials

- ① Do not use any ingredients which contain halogen.
- ② Please pay attention to remove flux and any contamination which remains in the gap between the end seal and P.C. board and dry that portion well before coating.
- ③ Please do not apply any material all around the capacitor body but apply it partially. 4 Please contact our sales office to make sure whether the curing condition of coating material would cause any problems.

■ 3. In the Equipment

- (1) Do not directly touch terminal by hand
- (2) Do not short between terminals by conductor, nor spill conductible liquid such as alkaline or acidic solution on or near the capacitor.
- (3) Please make sure that the ambient conditions where the set is installed will be free from spilling water or oil, direct sunlight, ultraviolet rays, radiation, poisonous gases, vibration or mechanical shock.

4. 保养点检

(1)请定期检查使用于工业设备上的电容器。点检项目如下。

- ①外观: (压力阀动作、漏液等)有无明显异常。
- ②电器的特性:(漏电流、静电容量、损失角的正切值及产品目录或交货规格书中规定的项目。

5. 紧急情况

(1)发现配套设备中使用的电容器的压力阀动作过程中有气体溢出时, 请切断设备的电源或从插座上拔下电源线的插头。

(2)当电容器的压力阀动作时, 会喷出超过 100°C 的高温气体, 请不要将脸部靠近。万一喷出的气体不慎进入眼睛, 或吸入的时候, 请马上用水 洗眼、漱口。当粘附在皮肤上时, 请用肥皂冲洗。

6. 保管条件

(1)不可将电容器保存在高温高湿的环境。请保管在室温 5~35°C、湿度 75% 以下的环境。

(2)请避免在溅水、高温高湿及结露的环境、或者充满气体油成分的环境下保管。

(3)不要放置在充满酸性有毒气体(硫化氢、亚硫酸、亚硝酸、氯、溴、溴化甲烷等)的环境

4)避免放置在直射阳光、臭氧、紫外线及放射线照射的环境。

7. 废弃处理

(1)废弃电容器时, 请交给专业的工业废弃物处理厂进行焚烧 1)或 填埋等处理

①为了防止电容器爆炸, 请在 电容器上开孔或者充分碾碎之后焚烧。请用高温焚烧(800°C 以上)。

②低温焚烧的时候, 会产生卤素气体等有害气体。

■4. Maintenance and Inspection

(1)Please periodically inspect the aluminum capacitors that are installed in industrial equipment. The following items should be checked :

- ① Appearance: Remarkable abnormality such as vent operation. leaking electrolyte etc.
- ②Electrical characteristic Capacitance, Dissipation factor, Leakage current etc., which are specified in the drawing exchanged between TK and our customers or the catalog.

■5. In an Emergency

(1)If you see smoke due to operation of safety vent, turn off the main switch or pull out the plug from the outlet.(2)Do not draw your face the safety vent since gas which in over 100°C will be emitted when the safety vent operates.

(2)If the gas has entered your eyes, please flush your eyes immediately in pure water. If you breathed the gas, immediately wash out your mouth and throat with water. Do not ingest electrolyte. If your skin is exposed to electrolyte, please wash it away using soap and water.

■6. Storage

(1)Do not keep capacitor in high temperature and high humidity. Storage ambient should be:

Temperature :5°C~ 35°C , Humidity : lower than 75% Place : indoor

(2)Avoid ambient conditions:

Where capacitors can be covered with water, brine or oil.

(3)Avoid ambient conditions:

Where capacitors are exposed poisonous gases such as hydrogen sulfide, sulfurous acid, nitrous acid. chlorine, ammonium etc.

(4)Do not keep capacitor in conditions, that expose the capacitor to ozone, ultraviolet ray or radiation.

■7. Disposal

(1) Please dispose capacitors in either of the following ways :

- ①Incinerate capacitors (high temperature of more than 800°C) after crushing parts of making a hole on the capacitor body.
- ② Bury capacitors in the ground. Please have a disposal specialist do it.

以上, 关于铝电解电容器的使用注意事项, 是按照 EIAJ Rec-2367 B(2002 年 7 月修改)“「电子设备用固定铝电解电容器使用注意事项指南」”为基准的, 详细的参照上面的指南。

The above mentioned material is according to EIAJ,RCR-2367B revised in July, 2002 , titled “Guideline of notabilia for Fixed Aluminum Electrolytic Capacitors for use in Electrolytic Equipment”. Please refer to the book for details.

●纵型贴片 105℃品
EC-FS 系列

JIS C5101
CE-32
(耐洗净品)

●VERTICAL CHIP TYPE 105℃ USE

TYPE EC-FS

JIS C5101
CE-32
(Washable product)

■特 征

- 105℃、2000 小时品
- 耐热性优良，可以用于回流焊。
- 符合 AEC-Q200

■FEATURES

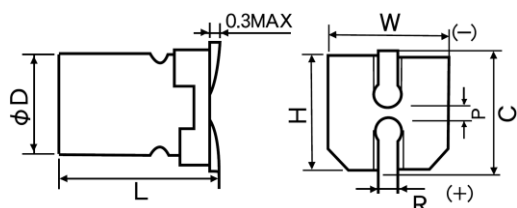
- It is guaranteed for 105℃ as well as 2,000 hours, and is so excellent in heat resistance that it allows reflow soldering.
- AEC-Q200 qualified

■性 能/PERFORMANCE SPECIFICATIONS

工 作 温 度 范 围	CATEGORY TEMPERATURE RANGE	-55℃~+105℃								
静 电 容 量 容 许 误 差	STANDARD CAPACITANCE TOLERANCE	-20% ~+20% (120Hz)								
漏 电 流 （ 最 大 值 ）	LEAKAGE CURRENT (MAX. VALUE)	I=0.01CV OR 3μA WHICHEVER IS THE GREATER (after 2 minutes)								
损 失 角 正 切 值 （ 最 大 值 ） (tan δ)	DISSIPATION FACTOR (MAX. VALUE)	W.V	6.3	10	16	25	35	50	63	100
		Ø4~ Ø10	0.30	0.24	0.20	0.18	0.16	0.14	0.14	0.14
		Ø12.5	0.38	0.34	0.30	0.26	0.22	0.18	0.14	0.14
		When the capacitance exceed 1,000μF, the value of tanδ is increased by 0.02 for each increment of 1,000μF or its fraction.								
耐 久 性 2000 小时 105℃加载额定电压	ENDURANCE 2000hrs APPLICATION OF RATED VOLTAGE AT 105℃	CAPACITANCE CHANGE : LESS THAN 30% OF THE INITIAL MEASURED VALUE. DISSIPATION FACTOR : LESS THAN 300% OF THE INITIAL SPECIFIED VALUE. LEAKAGE CURRENT : LESS THAN THE INITIAL SPECIFIED VALUE.								
低 温 特 性 阻 抗 比 最 大 值 (120Hz)	LOW TEMPERATURE STABILITYRATIO OF IMPEDANCE AT COLD TOT THAT AT 20℃, 120Hz. MAX.VALUE	W.V	6.3	10	16	25	35	50	63	100
		-25℃/+20℃	5	4	3	2	2	2	2	2
		-55℃/+20℃	10	8	6	4	3	3	3	3

(单位: mm)

■尺寸图/DIAGRAM OF DIMENSIONS



D+0.5MAX	L	W±0.3	H±0.2	C±0.2	R	P±0.2
4	5.7±0.3	4.3	4.3	5.0	0.5~0.8	1.0
5	5.7±0.3	5.3	5.3	6.0	0.5~0.8	1.4
6.3	5.7±0.3	6.6	6.6	7.3	0.5~0.8	2
6.3	7.7±0.3	6.6	6.6	7.3	0.5~0.8	2
8	10.5±0.3	8.3	8.3	9.0	0.7~1.2	3.1
10	10.5±0.3	10.3	10.3	11.0	0.7~1.2	4.7
12.5	13.5±0.5	12.8	12.8	13.5	0.7~1.2	4.7

■额定纹波修正系数/ FREQUENCY CORRECTION FACTOR

纹波频率与标准一览表中不同时，请参考下表中的修正系数。

When the ripple frequency differs from the specification shown in the list of standard products, multiply the value with the coefficient shown below, and use the products under the obtained value.

Frequency (Hz) Capacitance (μF)	50	120	1k	10k up
Under 100	0.70	1.00	1.35	1.50
100 ~ 2200μF	0.80	1.00	1.20	1.30

■料号表示方法 / HOW TO SPECIFY ITEM NUMBER

详细请参考第 5 页的“产品编码标准称呼方式”。

For more details, please refer to “HOW TO BASIC SPECIFY ITEM NUMBER” on page 5.

■ 尺寸表 (ØD×L) SIZE TABLE (ØD×L)

WV uF	6.3V (0J)		10V (1A)		16V (1C)		25V (1E)		35V (1V)		50V (1H)		63V (1V)		100V (2A)	
1.0 (010)											4x5.7	7	4x5.7	7	4x5.7	7
2.2 (2R2)											4x5.7	11	4x5.7	11	4x5.7	9
3.3 (3R3)									4x5.7	13	4x5.7	13	5x5.7	13	5x5.7	14
4.7 (4R7)							4x5.7	13	4x5.7	14	4x5.7	13	5x5.7	16	5x5.7	16
											5x5.7	16			6.3x5.7	21
6.8 (6R8)							4x5.7	14	4x5.7	14	4x5.7	14	5x5.7	17	6.3x5.7	21
											5x5.7	17				
10 (100)					4x5.7	18	4x5.7	14	4x5.7	14	5x5.7	18	5x5.7	19	6.3x5.7	35
							5x5.7	20	5x5.7	21	6.3x5.7	24	6.3x5.7	24	6.3x7.7	50
22 (220)			4x5.7	20	4x5.7	20	4x5.7	19	5x5.7	30	6.3x5.7	42	6.3x5.7	40	6.3x7.7	60
			5x5.7	25	5x5.7	27	5x5.7	25	6.3x5.7	38	6.3x7.7	51	6.3x7.7	49	8x10.5	84
33 (330)	4x5.7	22	4x5.7	22	4x5.7	22	4x5.7	22	5x5.7	34	6.3x5.7	45	6.3x7.7	53	8x10.5	90
			5x5.7	30	5x5.7	28	5x5.7	29	6.3x5.7	42	6.3x7.7	60	8x10.5	112	10x10.5	133
47 (470)	4x5.7	25	4x5.7	25	5x5.7	31	5x5.7	35	6.3x5.7	50	6.3x7.7	63	6.3x7.7	75	10x10.5	140
	5x5.7	33	5x5.7	30	6.3x5.7	48	6.3x5.7	48	6.3x7.7	70			8x10.5	119		
68 (680)	4x5.7	25	5x5.7	30	5x5.7	31	6.3x5.7	48	6.3x5.7	50	6.3x7.7	63	8x10.5	125	10x10.5	155
	5x5.7	33			6.3x5.7	48			6.3x7.7	70	8x10.5	120			10x12.5	180
100 (101)	5x5.7	39	5x5.7	45	6.3x5.7	60	6.3x5.7	72	6.3x7.7	84	8x10.5	140	8x10.5	135	12.5x13.5	380
	6.3x5.7	50	6.3x5.7	53			6.3x7.7	91	8x10.5	120			10x10.5	195		
150 (151)	5x5.7	45	6.3x5.7	62	6.3x5.7	65	6.3x7.7	100	6.3x7.7	95	8x10.5	155	10x10.5	205		
	6.3x5.7	55			6.3x7.7	95			8x10.5	155	10x10.5	170	10x12.5	225		
220 (221)	6.3x5.7	67	6.3x5.7	70	6.3x7.7	110	6.3x7.7	120	8x10.5	190	10x10.5	220	12.5x13.5	470		
	6.3x7.7	105	6.3x7.7	105			8x10.5	175	10x10.5	220						
330 (331)	6.3x7.7	105	6.3x7.7	130	6.3x7.7	120	8x10.5	220	8x10.5	225	12.5x13.5	420				
					8x10.5	195	10x10.5	240	10x10.5	245						
470 (471)	6.3x7.7	120	6.3x7.7	150	8x10.5	230	8x10.5	240	10x10.5	320						
	8x10.5	210	8x10.5	210			10x10.5	280	10x12.5	375						
680 (681)	8x10.5	210	8x10.5	240	8x10.5	255	10x10.5	350	12.5x13.5	530						
			10x10.5	270	10x10.5	315	10x12.5	400								
1000 (102)	8x10.5	230	8x10.5	260	10x10.5	330	12.5x13.5	580								
	10x10.5	300	10x10.5	315	10x12.5	390										
1500 (152)	10x10.5	315	10x12.5	460	12.5x13.5	550			ØD X L		Ripple current (mA, r.m.s) (120Hz, 105°C)					
	10x12.5	450														
2200 (222)	10x10.5	350	12.5x13.5	680												
	10x12.5	520														
3300 (332)	12.5x13.5	660														

●纵型贴片低阻抗品

EC-LS 系列

JIS C5101
CE-32
(耐洗净品)

■特 征

- 贴片型低阻抗品
- 符合 AEC-Q200

●VERTICAL CHIP LOW IMPEDANCE TYPE

TYPE EC-LS

JIS C5101
CE-32
(Washable product)

■FEATURES

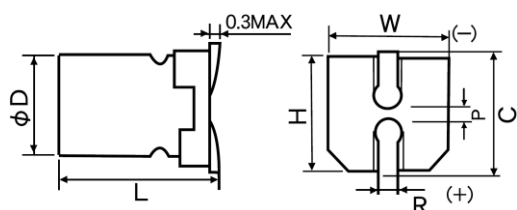
- EC-LS series is low impedance.
- AEC-Q200 qualified

■性 能/PERFORMANCE SPECIFICATIONS

工 作 温 度 范 围	CATEGORY TEMPERATURE RANGE	-55℃~+105℃									
静 电 容 量 容 许 误 差	STANDARD CAPACITANCE	-20% ~+20% (120Hz)									
漏 电 流 （ 最 大 值 ）	LEAKAGE CURRENT (MAX. VALUE)	I=0.01CV OR 3μA WHICHEVER IS THE GREATER (after 2 minutes)									
损 失 角 正 切 值 （ 最 大 值 ） (tan δ)	DISSIPATION FACTOR (MAX. VALUE)	W.V	6.3	10	16	25	35	50	63	100	
		Ø4~ Ø10	0.26	0.22	0.18	0.16	0.14	0.12	0.12	0.08	
		Ø12.5	0.30	0.26	0.20	0.18	0.16	0.14	0.12	0.09	
		When the capacitance exceed 1,000μF, the value of tanδ is increased by 0.02 for each increment of 1,000μF or its fraction.									
耐 久 性 2000 小时 105℃加载额定电压	ENDURANCE 2000hrs APPLICATION OF RATED VOLTAGE AT 105℃	CAPACITANCE CHANGE : LESS THAN 30% OF THE INITIAL MEASURED VALUE. DISSIPATION FACTOR : LESS THAN 300% OF THE INITIAL SPECIFIED VALUE. LEAKAGE CURRENT : LESS THAN THE INITIAL SPECIFIED VALUE.									
低 温 特 性 阻 抗 比 最 大 值 (120Hz)	LOW TEMPERATURE STABILITYRATIO OF IMPEDANCE AT COLD TOTHAT AT 20℃, 120Hz. MAX.VALUE	W.V	6.3	10	16	25	35	50	63	100	
		-25℃/+20℃	4	3	2	2	2	2	2	2	
		-55℃/+20℃	8	5	4	3	3	3	3	3	

(单位: mm)

■尺寸图/DIAGRAM OF DIMENSIONS



D+0.5MAX	L	W±0.3	H±0.2	C±0.2	R	P±0.2
4	5.7±0.3	4.3	4.3	5.0	0.5~0.8	1.0
5	5.7±0.3	5.3	5.3	6.0	0.5~0.8	1.4
6.3	5.7±0.3	6.6	6.6	7.3	0.5~0.8	2.0
6.3	7.7±0.3	6.6	6.6	7.3	0.5~0.8	2.0
8	10.5±0.3	8.3	8.3	9.0	0.7~1.2	3.1
10	10.5±0.3	10.3	10.3	11.0	0.7~1.2	4.7
12.5	13.5±0.5	12.8	12.8	13.5	0.7~1.2	4.7

■额定纹波修正系数/ FREQUENCY CORRECTION FACTOR

纹波频率与标准一览表中不同时, 请参考下表中的修正系数。

When the ripple frequency differs from the specification shown in the list of standard products, multiply the value with the coefficient shown below, and use the products under the obtained value.

Cap \ F	50Hz	120Hz	1kHz	10kHz	100KHz
C ≤ 100μF	0.35	0.5	0.7	0.9	1.00
100μF < C ≤ 10000μF	0.40	0.65	0.85	0.95	1.00

■料号表示方法/HOW TO SPECIFY ITEM NUMBER

详细请参考第 5 页的“产品编码标准称呼方式”。

For more details, please refer to “HOW TO BASIC SPECIFY ITEM NUMBER” on page 5.



■尺寸表 (ØD×L) SIZE TABLE (ØD×L)

uF \ WV	6.3V (0J)			10V (1A)			16V (1C)			25V (1E)			35V (1V)			50V (1H)			63V (1J)			100V (2A)					
4.7 (4R7)													4x5.7	3.0	60	4x5.7	5.0	30				5x5.7	3.0	50	6.3x5.7	3.0	40
													5x5.7	3.0	50												
10 (100)									4x5.7	3.0	60	4x5.7	3.0	60	5x5.7	3.0	50	5x5.7	3.0	50	6.3x5.7	3.0	50	6.3x7.7	2.4	60	
									5x5.7	1.8	95	6.3x5.7	2.0	70	6.3x5.7	2.0	70	6.3x5.7	1.5	80	6.3x7.7	1.2	120	8x10.5	1.5	110	
22 (220)				4x5.7	3.0	60	4x5.7	3.0	60	4x5.7	3.0	60	5x5.7	1.8	95	6.3x5.7	2.0	70	6.3x5.7	1.5	80	6.3x7.7	1.2	120	8x10.5	1.5	110
				5x5.7	1.8	95	5x5.7	1.8	95	5x5.7	1.8	95	6.3x5.7	1.0	140	6.3x7.7	1.0	120	8x10.5	0.65	250	10x10.5	0.80	170	10x10.5	0.80	170
33 (330)				4x5.7	3.0	60	4x5.7	3.0	60	4x5.7	3.0	60	5x5.7	1.8	95	6.3x5.7	2.0	70	6.3x7.7	1.2	120	8x10.5	0.65	250	10x10.5	0.80	170
				5x5.7	1.8	95	5x5.7	1.8	95	5x5.7	1.8	95	6.3x5.7	1.0	140	6.3x7.7	1.0	120	8x10.5	0.65	250	10x10.5	0.80	170	10x10.5	0.80	170
47 (470)	4x5.7	3.0	60	4x5.7	3.0	60	5x5.7	1.8	95	5x5.7	1.8	95	6.3x5.7	1.0	140	6.3x7.7	1.0	120	8x10.5	0.65	250	10x10.5	0.80	170	10x10.5	0.80	170
				5x5.7	1.8	95	6.3x5.7	1.0	140	6.3x5.7	1.0	140	6.3x5.7	1.0	140	6.3x7.7	1.0	120	8x10.5	0.65	250	10x10.5	0.80	170	10x10.5	0.80	170
56 (560)	5x5.7	1.8	95	4x5.7	3.0	60	5x5.7	1.8	95	6.3x5.7	1.0	140	6.3x5.7	1.0	140	6.3x7.7	1.0	120	8x10.5	0.65	250	10x10.5	0.80	170	10x10.5	0.80	170
				5x5.7	1.8	95	6.3x5.7	1.0	140	6.3x5.7	1.0	140	6.3x5.7	1.0	140	6.3x7.7	1.0	120	8x10.5	0.65	250	10x10.5	0.80	170	10x10.5	0.80	170
68 (680)	5x5.7	1.8	95	5x5.7	1.8	95	5x5.7	1.8	95	6.3x5.7	1.0	140	6.3x5.7	1.0	140	6.3x7.7	1.0	120	8x10.5	0.65	250	10x10.5	0.80	170	10x10.5	0.80	170
				6.3x5.7	1.0	140	6.3x7.7	0.60	230	6.3x7.7	0.60	230	6.3x7.7	0.60	230	10x10.5	0.30	500	10x10.5	0.35	400	12.5x13.5	0.52	350			
100 (101)	5x5.7	1.8	95	5x5.7	1.8	95	6.3x5.7	1.0	140	6.3x5.7	1.0	140	6.3x7.7	0.60	230	8x10.5	0.30	450	8x10.5	0.30	450	10x10.5	0.30	500	12.5x13.5	0.26	600
	5x5.7	1.8	95	6.3x5.7	1.0	140	6.3x7.7	0.60	230	6.3x7.7	0.60	230	6.3x7.7	0.60	230	10x10.5	0.30	500	10x10.5	0.35	400						
150 (151)	6.3x5.7	1.0	140				6.3x7.7	0.60	230	8x10.5	0.30	450	8x10.5	0.30	450	10x10.5	0.15	670									
				6.3x5.7	1.0	140	6.3x7.7	0.60	230	8x10.5	0.30	450	8x10.5	0.30	450	10x10.5	0.15	670									
220 (221)	6.3x5.7	1.0	140	6.3x5.7	1.0	140	6.3x7.7	0.60	230	8x10.5	0.30	450	8x10.5	0.30	450	10x10.5	0.15	670									
				6.3x7.7	0.60	230							10x10.5	0.15	670												
330 (331)	6.3x5.7	1.0	140	6.3x7.7	0.60	230	6.3x7.7	0.60	230	8x10.5	0.30	450	10x10.5	0.15	670	12.5x13.5	0.20	650									
	6.3x7.7	0.60	230				8x10.5	0.30	450	10x10.5	0.15	670															
470 (471)	6.3x7.7	0.60	230	6.3x7.7	0.60	230	8x10.5	0.30	450	10x10.5	0.15	670	10x10.5	0.15	670												
				8x10.5	0.30	450																					
680 (681)	8x10.5	0.30	450	8x10.5	0.30	450	8x10.5	0.30	450	10x10.5	0.15	670	12.5x13.5	0.11	820												
							10x10.5	0.15	670	12.5x13.5	0.11	820															
1000 (102)	8x10.5	0.30	450	8x10.5	0.30	450	10x10.5	0.15	670	12.5x13.5	0.11	820															
				10x10.5	0.15	670																					
1500 (152)	8x10.5	0.30	450	12.5x13.5	0.11	820	12.5x13.5	0.11	820																		
	10x10.5	0.15	670																								
2200 (222)	12.5x13.5	0.11	820	12.5x13.5	0.11	820																					
3300 (332)	12.5x13.5	0.11	820																								

ØD X L

Ripple current (mA r.m.s)
(100kHz, 105°C)

Impedance (Ω)
MAX. at 100kHz, 20°C

●纵型贴片低阻抗品

EC-KX 系列

JIS C5101
CE-32
(耐洗净品)

●VERTICAL CHIP LOW IMPEDANCE TYPE

TYPE EC-KX

JIS C5101
CE-32
(Washable product)

■特 征

- 贴片型低阻抗品
- 符合 AEC-Q200

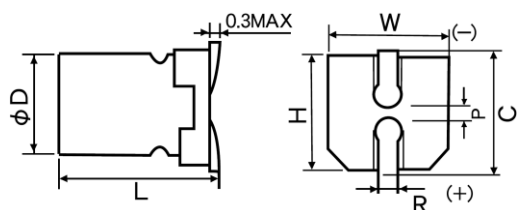
■FEATURES

- EC-KX series is low impedance.
- AEC-Q200 qualified

■性 能/PERFORMANCE SPECIFICATIONS

工 作 温 度 范 围	CATEGORY TEMPERATURE RANGE	-55℃~+105℃								
静 电 容 量 容 许 误 差	STANDARD CAPACITANCE	-20% ~+20% (120Hz)								
漏 电 流 （ 最 大 值 ）	LEAKAGE CURRENT (MAX. VALUE)	I=0.01CV OR 3μA WHICHEVER IS THE GREATER (after 2 minutes)								
损 失 角 正 切 值 （ 最 大 值 ） (tan δ)	DISSIPATION FACTOR (MAX. VALUE)	W.V	6.3	10	16	25	35	50	63	100
		Ø4~ Ø10	0.24	0.20	0.16	0.14	0.12	0.12	0.10	0.07
		Ø12.5	0.28	0.24	0.20	0.16	0.14	0.14	0.12	0.08
		When the capacitance exceed 1,000μF, the value of tanδ is increased by 0.02 for each increment of 1,000μF or its fraction.								
耐 久 性 Ø4~ Ø6.3: 2000 小时 Ø8~ Ø12.5: 3000 小时 105℃加载额定电压	ENDURANCE Ø4~ Ø6.3: 2000hrs Ø8~ Ø12.5: 3000hrs APPLICATION OF RATED VOLTAGE AT 105℃	CAPACITANCE CHANGE : LESS THAN 30% OF THE INITIAL MEASURED VALUE. DISSIPATION FACTOR : LESS THAN 300% OF THE INITIAL SPECIFIED VALUE. LEAKAGE CURRENT : LESS THAN THE INITIAL SPECIFIED VALUE.								
低 温 特 性 阻 抗 比 最 大 值 (120Hz)	LOW TEMPERATURE STABILITYRATIO OF IMPEDANCE AT COLD TOTHTAT AT 20℃, 120Hz. MAX.VALUE	W.V	6.3	10	16	25	35	50	63	100
		-25℃/+20℃	4	3	2	2	2	2	2	2
		-55℃/+20℃	8	5	4	3	3	3	3	3

■尺寸图/DIAGRAM OF DIMENSIONS



(单位: mm)

D+0.5MAX	L	W±0.3	H±0.2	C±0.2	R	P±0.2
4	5.7±0.3	4.3	4.3	5.0	0.5~0.8	1.0
5	5.7±0.3	5.3	5.3	6.0	0.5~0.8	1.4
6.3	5.7±0.3	6.6	6.6	7.3	0.5~0.8	2.0
6.3	7.7±0.3	6.6	6.6	7.3	0.5~0.8	2.0
8	10.5±0.3	8.3	8.3	9.0	0.7~1.2	3.1
10	10.5±0.3	10.3	10.3	11.0	0.7~1.2	4.7
12.5	13.5±0.5	12.8	12.8	13.5	0.7~1.2	4.7

■额定纹波补正系数/ FREQUENCY CORRECTION FACTOR

纹波频率与标准一览表不同时, 请参考下表中的补正系数。

When the ripple frequency differs from the specification shown in the list of standard products, multiply the value with the coefficient shown below, and use the products under the obtained value.

Cap	F	50Hz	120Hz	1kHz	10kHz	100KHz
C ≤ 100μF		0.35	0.5	0.7	0.9	1.00
100μF < C ≤ 10000μF		0.40	0.65	0.85	0.95	1.00

■料号表示方法/HOW TO SPECIFY ITEM NUMBER

详细请参考第 5 页的“产品编码标准称呼方式”。

For more details, please refer to “HOW TO BASIC SPECIFY ITEM NUMBER” on page 5.

■ 尺寸表 (ØD×L) SIZE TABLE (ØD×L)

uF \ WV	6.3V (0J)			10V (1A)			16V (1C)			25V (1E)			35V (1V)			50V (1H)			63V (2H)			100V (2A)		
4.7 (4R7)													4x5.7	1.80	80	4x5.7	2.90	60	5x5.7	1.90	70	6.3x5.7	2.4	65
													5x5.7	1.52	85									
10 (100)										4x5.7	1.80	80	4x5.7	1.80	80	5x5.7	1.52	85	5x5.7	1.90	70	6.3x7.7	1.80	75
										5x5.7	0.76	150	6.3x5.7	0.88	165	6.3x5.7	1.20	130						
22 (220)				4x5.7	1.80	80	4x5.7	1.80	80	4x5.7	1.80	80	5x5.7	0.76	150	6.3x5.7	0.88	165	6.3x5.7	1.20	130	8x10.5	1.30	130
				5x5.7	0.76	150	5x5.7	0.76	150	5x5.7	0.76	150	6.3x5.7	0.44	230	6.3x7.7	0.68	185	6.3x7.7	0.90	150			
33 (330)				4x5.7	1.80	80	4x5.7	1.80	80	4x5.7	1.80	80	5x5.7	0.76	150	6.3x5.7	0.88	165	6.3x7.7	0.90	150	8x10.5	1.30	130
				5x5.7	0.76	150	5x5.7	0.76	150	5x5.7	0.76	150	6.3x5.7	0.44	230	6.3x7.7	0.68	185	8x10.5	0.50	280	10x10.5	0.70	200
47 (470)	4x5.7	1.80	80	4x5.7	1.80	80	5x5.7	0.76	150	5x5.7	0.76	150	6.3x5.7	0.44	230	6.3x7.7	0.68	185	8x10.5	0.50	280	10x10.5	0.70	200
				5x5.7	0.76	150	6.3x5.7	0.44	230	6.3x5.7	0.44	230	6.3x5.7	0.44	230	6.3x7.7	0.68	185	8x10.5	0.50	280	10x10.5	0.70	200
56 (560)	5x5.7	0.76	150	4x5.7	1.80	80	5x5.7	0.76	150	6.3x5.7	0.44	230	6.3x5.7	0.44	230	6.3x7.7	0.68	185	8x10.5	0.50	280	10x10.5	0.70	200
				5x5.7	0.76	150	6.3x5.7	0.44	230	6.3x5.7	0.44	230	6.3x5.7	0.44	230	6.3x7.7	0.68	185	8x10.5	0.50	280	10x10.5	0.70	200
68 (680)	5x5.7	0.76	150	5x5.7	0.76	150	5x5.7	0.76	150	6.3x5.7	0.44	230	6.3x5.7	0.44	230	6.3x7.7	0.68	185	8x10.5	0.50	280	10x10.5	0.70	200
				6.3x5.7	0.44	230	6.3x5.7	0.44	230	6.3x5.7	0.44	230	6.3x7.7	0.34	280	8x10.5	0.34	350						
100 (101)	5x5.7	0.76	150	5x5.7	0.76	150	6.3x5.7	0.44	230	6.3x5.7	0.44	230	6.3x7.7	0.34	280	8x10.5	0.34	350	10x10.5	0.25	450	12.5x13.5	0.52	450
				6.3x5.7	0.44	230	6.3x7.7	0.34	280	6.3x7.7	0.34	280	6.3x7.7	0.34	280	8x10.5	0.34	350	10x10.5	0.25	450			
150 (151)	5x5.7	0.76	150	6.3x5.7	0.44	230	6.3x5.7	0.44	230	6.3x7.7	0.34	280	6.3x7.7	0.34	280	10x10.5	0.18	670	10x10.5	0.25	450			
	6.3x5.7	0.44	230	6.3x7.7	0.34	280	6.3x7.7	0.34	280	8x10.5	0.17	600	8x10.5	0.17	600	10x10.5	0.18	670	12.5x13.5	0.16	700			
220 (221)	6.3x5.7	0.44	230	6.3x5.7	0.44	230	6.3x7.7	0.34	280	8x10.5	0.17	600	8x10.5	0.17	600	10x10.5	0.18	670	12.5x13.5	0.16	700			
				6.3x7.7	0.34	280	6.3x7.7	0.34	280	8x10.5	0.17	600	10x10.5	0.09	820	10x10.5	0.18	670						
330 (331)	6.3x5.7	0.44	230	6.3x7.7	0.34	280	6.3x7.7	0.34	280	8x10.5	0.17	600	10x10.5	0.09	820	10x10.5	0.18	670						
	6.3x7.7	0.34	280	6.3x7.7	0.34	280	8x10.5	0.17	600	10x10.5	0.09	820	10x10.5	0.09	820	12.5x13.5	0.14	800						
470 (471)	6.3x7.7	0.34	280	6.3x7.7	0.34	280	8x10.5	0.17	600	10x10.5	0.09	820	10x10.5	0.09	820	12.5x13.5	0.14	800						
				8x10.5	0.17	600	8x10.5	0.17	600	10x10.5	0.09	820	12.5x13.5	0.07	980									
680 (681)	8x10.5	0.17	600	8x10.5	0.17	600	8x10.5	0.17	600	10x10.5	0.09	820	12.5x13.5	0.07	980									
				10x10.5	0.09	820	10x10.5	0.09	820	12.5x13.5	0.08	830												
1000 (102)	8x10.5	0.17	600	8x10.5	0.17	600	10x10.5	0.09	820	12.5x13.5	0.08	830												
				10x10.5	0.09	820	12.5x13.5	0.08	830															
1500 (152)	8x10.5	0.17	600	12.5x13.5	0.07	980	12.5x13.5	0.07	980				ØD X L			Ripple current (mA r.m.s) (100kHz, 105°C)								
	10x10.5	0.09	820																					
2200 (222)	12.5x13.5	0.07	980	12.5x13.5	0.07	980										Impedance (Ω) MAX. at 100kHz, 20°C								
3300 (332)	12.5x13.5	0.07	980																					

●纵型贴片长寿命低阻抗品

EC-LX 系列

JIS C5101
CE-32
(耐洗净品)

●VERTICAL CHIP LOW IMPEDANCE LONG LIFE

TYPE EC-LX

JIS C5101
CE-32
(Washable product)

■特 征

- 长寿命低阻抗品
- 符合 AEC-Q200

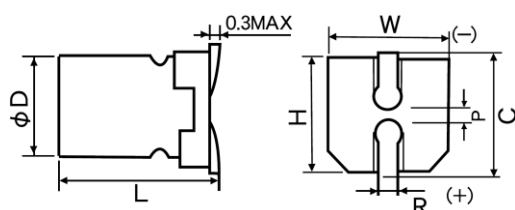
■FEATURES

- This series is long load life with low impedance.
- AEC-Q200 qualified

■性 能/PERFORMANCE SPECIFICATIONS

工 作 温 度 范 围	CATEGORY TEMPERATURE RANGE	-55℃~+105℃								
静 电 容 量 容 许 误 差	STANDARD CAPACITANCE	-20% ~+20% (120Hz)								
漏 电 流 (最 大 值)	LEAKAGE CURRENT (MAX. VALUE)	I=0.01CV OR 3μA WHICHEVER IS THE GREATER (after 2 minutes)								
损 失 角 正 切 值 (最 大 值) (tan δ)	DISSIPATION FACTOR (MAX. VALUE)	W.V	6.3	10	16	25	35	50	63	100
		Ø4~ Ø10	0.24	0.20	0.16	0.14	0.12	0.12	0.10	0.07
		Ø12.5	0.28	0.24	0.20	0.16	0.14	0.14	0.12	0.08
		When the capacitance exceed 1,000μF, the value of tanδ is increased by 0.02 for each increment of 1,000μF or its fraction.								
耐 久 性 Ø4~ Ø6.3: 3000 小时 Ø8~ Ø12.5: 5000 小时 105℃加载额定电压	ENDURANCE Ø4~ Ø6.3: 3000hrs Ø8~ Ø12.5: 5000hrs APPLICATION OF RATED VOLTAGE AT 105℃	CAPACITANCE CHANGE : LESS THAN 30% OF THE INITIAL MEASURED VALUE.								
		DISSIPATION FACTOR : LESS THAN 300% OF THE INITIAL SPECIFIED VALUE.								
低 温 特 性 阻 抗 比 最 大 值 (120Hz)	LOW TEMPERATURE STABILITYRATIO OF IMPEDANCE AT COLD TOT THAT AT 20℃, 120Hz. MAX.VALUE	LEAKAGE CURRENT : LESS THAN THE INITIAL SPECIFIED VALUE.								
		W.V	6.3	10	16	25	35	50	63	100
		-25℃/+20℃	4	3	2	2	2	2	2	2
		-55℃/+20℃	8	5	4	3	3	3	3	3

■尺寸图/DIAGRAM OF DIMENSIONS



(单位: mm)

D+0.5MAX	L	W±0.3	H±0.2	C±0.2	R	P±0.2
4	5.7±0.3	4.3	4.3	5.0	0.5~0.8	1.0
5	5.7±0.3	5.3	5.3	6.0	0.5~0.8	1.4
6.3	5.7±0.3	6.6	6.6	7.3	0.5~0.8	2.0
6.3	7.7±0.3	6.6	6.6	7.3	0.5~0.8	2.0
8	10.5±0.3	8.3	8.3	9.0	0.7~1.2	3.1
10	10.5±0.3	10.3	10.3	11.0	0.7~1.2	4.7
12.5	13.5±0.5	12.8	12.8	13.5	0.7~1.2	4.7

■额定纹波修正系数/ FREQUENCY CORRECTION FACTOR

纹波频率与标准一览表中不同时, 请参考下表中的修正系数。

When the ripple frequency differs from the specification shown in the list of standard products, multiply the value with the coefficient shown below, and use the products under the obtained value.

Cap	F	50Hz	120Hz	1kHz	10kHz	100KHz
C ≤ 100μF		0.35	0.5	0.7	0.9	1.00
100μF < C ≤ 10000μF		0.40	0.65	0.85	0.95	1.00

■料号表示方法/HOW TO SPECIFY ITEM NUMBER

详细请参考第 5 页的“产品编码标准称呼方式”。

For more details, please refer to “HOW TO BASIC SPECIFY ITEM NUMBER” on page 5.



■尺寸表 (∅D×L) SIZE LABEL (∅D×L)

WV uF	6.3v(0J)			10v(1A)			16v(1C)			25v(1E)			35v(1V)			50v(1H)			63V (1J)			100V (2A)		
4.7 (4R7)													4x5.7	1.8	80	4x5.7	2.9	60	5x5.7	1.9	70			
																5x5.7	1.52	85						
10 (100)										4x5.7	1.8	80	4x5.7	1.8	80	5x5.7	1.52	85	6.3x5.7	1.2	130	6.3x7.7	1.8	75
													5x5.7	0.76	150	6.3x5.7	0.88	165	6.3x7.7	0.9	150			
22 (220)				4x5.7	1.8	80	4x5.7	1.8	80	4x5.7	1.8	80	5x5.7	0.76	150	6.3x5.7	0.88	165	6.3x7.7	0.9	150	8x10.5	1.3	130
										5x5.7	0.76	150												
33 (330)				4x5.7	1.8	80	4x5.7	1.8	80	5x5.7	0.76	150	6.3x5.7	0.44	230	6.3x7.7	0.68	185	6.3x7.7	0.9	150	8x10.5	1.3	130
							5x5.7	0.76	150										8x10.5	0.5	280	10x10.5	0.7	200
47 (470)	4x5.7	1.8	80	5x5.7	0.76	150	5x5.7	0.76	150	6.3x5.7	0.44	230	6.3x5.7	0.44	230	6.3x7.7	0.68	185	8x10.5	0.50	280	10x10.5	0.7	200
							6.3x5.7	0.44	230															
56 (560)	5x5.7	0.76	150	5x5.7	0.76	150	6.3x5.7	0.44	230	6.3x5.7	0.44	230	6.3x5.7	0.44	230	6.3x7.7	0.68	185	8x10.5	0.50	280	10x10.5	0.7	200
68 (680)	5x5.7	0.76	150	5x5.7	0.76	150	6.3x5.7	0.44	230	6.3x5.7	0.44	230	6.3x7.7	0.34	280	8x10.5	0.34	350	8x10.5	0.50	280	12.5x13.5	0.52	450
100 (101)	5x5.7	0.76	150	6.3x5.7	0.44	230	6.3x5.7	0.44	230	6.3x7.7	0.34	280	6.3x7.7	0.34	280	8x10.5	0.34	350	10x10.5	0.25	450	12.5x13.5	0.52	450
							6.3x5.7	0.44	230															
150 (151)	6.3x5.7	0.44	230	6.3x5.7	0.44	230	6.3x7.7	0.34	280	6.3x7.7	0.34	280	8x10.5	0.17	600	8x10.5	0.17	600	10x10.5	0.25	450			
										8x10.5	0.17	600							12.5x13.5	0.16	700			
220 (221)	6.3x5.7	0.44	230	6.3x7.7	0.34	280	6.3x7.7	0.34	280	8x10.5	0.17	600	8x10.5	0.17	600	8x10.5	0.17	600	10x10.5	0.18	670	12.5x13.5	0.16	700
													10x10.5	0.09	820									
330 (331)	6.3x7.7	0.34	280	6.3x7.7	0.34	280	8x10.5	0.17	600	8x10.5	0.17	600	8x10.5	0.17	600	10x10.5	0.09	820	12.5x13.5	0.14	800			
										10x10.5	0.09	820												
470 (471)	6.3x7.7	0.34	280	8x10.5	0.17	600	8x10.5	0.17	600	10x10.5	0.09	820	10x10.5	0.09	820	12.5x13.5	0.07	830						
680 (681)	8x10.5	0.17	600	8x10.5	0.17	600	10x10.5	0.09	820	10x10.5	0.09	820	12.5x13.5	0.07	830	12.5x13.5	0.07	830						
										10x10.5	0.09	820												
1000 (102)	8x10.5	0.17	600	10x10.5	0.09	820	10x10.5	0.09	820	12.5x13.5	0.07	830												
							12.5x13.5	0.07	830															
1500 (152)	10x10.5	0.09	820	12.5x13.5	0.07	830	12.5x13.5	0.07	830															
2200 (222)	12.5x13.5	0.07	830	12.5x13.5	0.07	830																		

∅D X L

Ripple current (mA r.m.s)
(100kHz, 105°C)Impedance (Ω)
MAX. at 100kHz, 20°C

●纵型贴片 105℃品

EC-LH 系列

JIS C5101
CE-32
(耐洗净品)

●VERTICAL CHIP TYPE 105℃ USE

TYPE EC-LH

JIS C5101
CE-32
(Washable product)

■特 征

- 105℃、3000~5000 小时品
- 符合 AEC-Q200

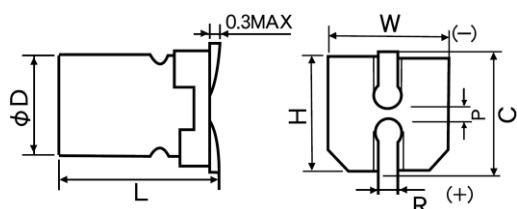
■FEATURES

- It is guaranteed for 105℃ as well as 3,000~5,000 hours.
- AEC-Q200 qualified

■性 能/PERFORMANCE SPECIFICATIONS

工 作 温 度 范 围	CATEGORY TEMPERATURE RANGE	-55℃~+105℃								
静 电 容 量 容 许 误 差	STANDARD CAPACITANCE	-20% ~+20% (120Hz)								
漏 电 流 （ 最 大 值 ）	LEAKAGE CURRENT (MAX. VALUE)	I=0.01CV OR 3μA WHICHEVER IS THE GREATER (after 2 minutes)								
损 失 角 正 切 值 （ 最 大 值 ） (tan δ)	DISSIPATION FACTOR (MAX. VALUE)	W.V	6.3	10	16	25	35	50	63	100
		tan δ	0.30	0.24	0.20	0.18	0.16	0.14	0.14	0.14
		When the capacitance exceed 1,000μF, the value of tanδ is increased by 0.02 for each increment of 1,000μF or its fraction.								
耐 久 性 Ø4~ Ø6.3: 3000 小时 Ø 8~Ø12.5: 5000 小时 105℃加载额定电压	ENDURANCE Ø4~ Ø6.3: 3000hrs Ø 8~Ø12.5: 5000 小时 APPLICATION OF RATED VOLTAGE AT 105℃	CAPACITANCE CHANGE : LESS THAN 30% OF THE INITIAL MEASURED VALUE. DISSIPATION FACTOR : LESS THAN 300% OF THE INITIAL SPECIFIED VALUE. LEAKAGE CURRENT : LESS THAN THE INITIAL SPECIFIED VALUE.								
低 温 特 性 阻 抗 比 最 大 值 (120Hz)	LOW TEMPERATURE STABILITYRATIO OF IMPEDANCE AT COLD TOT THAT AT 20℃, 120Hz. MAX.VALUE	W.V	6.3	10	16	25	35	50	63	100
		-25℃/+20℃	5	4	3	2	2	2	2	2
		-55℃/+20℃	10	8	6	4	3	3	3	3

■尺寸图/DIAGRAM OF DIMENSIONS



(单位: mm)

D+0.5MAX	L	W±0.3	H±0.2	C±0.2	R	P±0.2
4	5.7±0.3	4.3	4.3	5.0	0.5~0.8	1.0
5	5.7±0.3	5.3	5.3	6.0	0.5~0.8	1.4
6.3	5.7±0.3	6.6	6.6	7.3	0.5~0.8	2.0
6.3	7.7±0.3	6.6	6.6	7.3	0.5~0.8	2.0
8	10.5±0.3	8.3	8.3	9.0	0.7~1.2	3.1
10	10.5±0.3	10.3	10.3	11.0	0.7~1.2	4.7
12.5	13.5±0.5	12.8	12.8	13.5	0.7~1.2	4.7

■额定纹波修正系数/ FREQUENCY CORRECTION FACTOR

纹波频率与标准一览表中不同时, 请参考下表中的修正系数。

When the ripple frequency differs from the specification shown in the list of standard products, multiply the value with the coefficient shown below, and use the products under the obtained value.

Cap (uF) \ F (Hz)	50	120	1k	10k up
Under 100	0.70	1.00	1.35	1.50
100 ~ 2200uF	0.80	1.00	1.20	1.30

■料号表示方法/HOW TO SPECIFY ITEM NUMBER

详细请参考第 5 页的“产品编码标准称呼方式”。

For more details, please refer to “HOW TO BASIC SPECIFY ITEM NUMBER” on page 5.



■尺寸表 (ØD×L) SIZE LABEL (ØD×L)

WV uF	6.3V (0J)	10V (1A)	16V (1C)	25V (1E)	35V (1V)	50V (1H)	63V (1V)	100V (2A)
1.0 (010)						4x5.7 7	4x5.7 7	4x5.7 7
2.2 (2R2)						4x5.7 11	4x5.7 11	4x5.7 9 5x5.7 11
3.3 (3R3)					4x5.7 13	4x5.7 13	5x5.7 13	5x5.7 14
4.7 (4R7)				4x5.7 13	4x5.7 14	4x5.7 13 5x5.7 16	5x5.7 16	6.3x5.7 21
6.8 (6R8)				4x5.7 14	4x5.7 14	4x5.7 14 5x5.7 17	5x5.7 17	6.3x5.7 21
10 (100)			4x5.7 18	4x5.7 14 5x5.7 20	4x5.7 14 5x5.7 21	5x5.7 18 6.3x5.7 24	6.3x5.7 24	6.3x7.7 50
22 (220)		4x5.7 20 5x5.7 25	4x5.7 20 5x5.7 27	4x5.7 19 5x5.7 25	5x5.7 30 6.3x5.7 38	6.3x5.7 42 6.3x7.7 51	6.3x7.7 49	8x10.5 84
33 (330)	4x5.7 22	4x5.7 22 5x5.7 30	4x5.7 22 5x5.7 28	5x5.7 29	6.3x5.7 42	6.3x5.7 45 6.3x7.7 60	6.3x7.7 53 8x10.5 112	8x10.5 90 10x10.5 133
47 (470)	4x5.7 25 5x5.7 33	4x5.7 25 5x5.7 30	5x5.7 31 6.3x5.7 48	6.3x5.7 48	6.3x5.7 50 6.3x7.7 70	6.3x7.7 63	8x10.5 119	10x10.5 140
68 (680)	4x5.7 25 5x5.7 33	5x5.7 30	6.3x5.7 48	6.3x5.7 48	6.3x7.7 70	8x10.5 120	8x10.5 125	
100 (101)	5x5.7 39 6.3x5.7 50	6.3x5.7 53	6.3x5.7 60	6.3x7.7 91	6.3x7.7 84 8x10.5 120	8x10.5 140	10x10.5 195	
150 (151)	6.3x5.7 55	6.3x5.7 62	6.3x5.7 65 6.3x7.7 95	6.3x7.7 100	8x10.5 155	10x10.5 170		
220 (221)	6.3x5.7 67 6.3x7.7 105	6.3x7.7 105	6.3x7.7 110	8x10.5 175	10x10.5 220			
330 (331)	6.3x7.7 105	6.3x7.7 130	8x10.5 195	8x10.5 220 10x10.5 240	10x10.5 245			
470 (471)	6.3x7.7 120 8x10.5 210	8x10.5 210	8x10.5 230	10x10.5 280				
680 (681)	8x10.5 210	8x10.5 240 10x10.5 270	10x10.5 315					
1000 (102)	8x10.5 230 10x10.5 300	10x10.5 315						
1500 (152)	10x10.5 315 10x12.5 450				ØD X L	Ripple current (mA r.m.s) (120kHz, 105°C)		

●纵型贴片长寿命低阻抗品

EC-LL 系列

JIS C5101
CE-32
(耐洗净品)

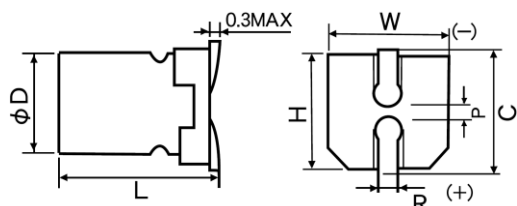
■特 征

- 长寿命低阻抗品
- 符合 AEC-Q200

■性 能/PERFORMANCE SPECIFICATIONS

工 作 温 度 范 围	CATEGORY TEMPERATURE RANGE	-55°C~+105°C							
静 电 容 量 容 许 误 差	STANDARD CAPACITANCE	-20% ~ +20% (120Hz)							
漏 电 流 (最 大 值)	LEAKAGE CURRENT (MAX. VALUE)	I=0.01CV OR 3μA WHICHEVER IS THE GREATER (after 2 minutes)							
损 失 角 正 切 值 (最 大 值) (tan δ)	DISSIPATION FACTOR (MAX. VALUE)	W.V	6.3	10	16	25	35	50	63
		tan δ	0.26	0.18	0.16	0.14	0.12	0.10	0.10
		When the capacitance exceed 1,000μF, the value of tanδ is increased by 0.02 for each increment of 1,000μF or its fraction.							
耐 久 性 Ø4~ Ø6.3: 7000 小时 Ø8~ Ø12.5: 10000 小时 105°C加载额定电压	ENDURANCE Ø4~ Ø6.3: 7000hrs Ø8~ Ø12.5: 10000hrs APPLICATION OF RATED VOLTAGE AT 105°C	CAPACITANCE CHANGE : LESS THAN 30% OF THE INITIAL MEASURED VALUE. DISSIPATION FACTOR : LESS THAN 300% OF THE INITIAL SPECIFIED VALUE. LEAKAGE CURRENT : LESS THAN THE INITIAL SPECIFIED VALUE.							
低 温 特 性 阻 抗 比 最 大 值 (120Hz)	LOW TEMPERATURE STABILITYRATIO OF IMPEDANCE AT COLD TOT THAT AT 20°C, 120Hz. MAX.VALUE	W.V	6.3	10	16	25	35	50	63
		-25°C/+20°C	4	3	2	2	2	2	2
		-55°C/+20°C	8	5	4	3	3	3	3

■尺寸图/DIAGRAM OF DIMENSIONS



D	L	W±0.3	H±0.2	C	R	P
4	7.0	4.3	4.3	5.0	0.5-0.8	1.0
5	7.0	5.3	5.3	6.0	0.5-0.8	1.5
6.3	7.0	6.6	6.6	7.3	0.5-0.8	2.0
6.3	8.7	6.6	6.6	7.3	0.5-0.8	2.0
8	10.5	8.3	8.3	9.0	0.7-1.2	3.1
10	10.5	10.3	10.3	11.0	0.7-1.2	4.7

■额定纹波修正系数/ FREQUENCY CORRECTION FACTOR

纹波频率与标准一览表中不同时，请参考下表中的修正系数。

When the ripple frequency differs from the specification shown in the list of standard products, multiply the value with the coefficient shown below, and use the products under the obtained value.

Cap \ F	50Hz	120Hz	1kHz	10kHz	100KHz
C ≤ 100μF	0.35	0.5	0.7	0.9	1.00
100μF ~ 2200μF	0.40	0.65	0.85	0.95	1.00

■料号表示方法/HOW TO SPECIFY ITEM NUMBER

详细请参考第 5 页的“产品编码标准称呼方式”。

For more details, please refer to “HOW TO BASIC SPECIFY ITEM NUMBER” on page 5.



■尺寸表 (ØD×L) SIZE TABLE (ØD×L)

uF \ WV	6.3v(0J)			10v(1A)			16v(1C)			25v(1E)			35v(1V)			50v(1H)		
	ΦD×L	Imp.	R.C.	ΦD×L	Imp.	R.C.	ΦD×L	Imp.	R.C.	ΦD×L	Imp.	R.C.	ΦD×L	Imp.	R.C.	ΦD×L	Imp.	R.C.
1																4x7	5.0	30
1.5																4x7	5.0	30
2.2																4x7	5.0	30
3.3													4x7	3.0	60	4x7 5x7	5.0 3.0	30 50
4.7													4x7	3.0	60	4x7 5x7	5.0 3.0	30 50
10										4x7	3.0	60	4x7 5x7	3.0 1.8	60 95	5x7 6.3x7	3.0 2.0	50 70
15							4x7	3.0	60	4x7	3.0	60	5x7	1.8	95	6.3x7	2.0	70
22				4x7	3.0	60	4x7 5x7	3.0 1.8	60 95	4x7 5x7	3.0 1.8	60 95	5x7	1.8	95	6.3x7	2.0	70
33				4x7	3	60	4x7 5x7	3 1.8	60 95	5x7	1.8	95	6.3x7	1.0	140	6.3x8.7	1.1	120
47	4x7	3.0	60	5x7	1.8	95	5x7	1.8	95	6.3x7	1.0	140	6.3x7	1.0	140	6.3x8.7	1.1	120
56	5x7	1.8	95	5x7	1.8	95	6.3x7	1.0	140	6.3x7	1.0	140	6.3x7 6.3x8.7	1.0 0.6	140 230	6.3x8.7	1.1	120
68	5x7	1.8	95	5x7	1.8	95	6.3x7	1.0	140	6.3x7	1.0	140	6.3x8.7	0.6	230	8x10.5	0.6	300
100	5x7	1.8	95	6.3x7	1.0	140	6.3x7	1.0	140	6.3x8.7	0.6	230	6.3x8.7	0.6	230	8x10.5 10x10.5	0.6 0.3	300 500
150	6.3x7	1.0	140	6.3x7	1.0	140	6.3x7 6.3x8.7	1.0 0.6	140 230	6.3x8.7 8x10.5	0.6 0.3	230 450	8x10.5	0.3	450	10x10.5	0.3	500
220	6.3x7	1.0	140	6.3x8.7	0.6	230	6.3x8.7	0.6	230	8x10.5	0.3	450	8x10.5 10x10.5	0.3 0.15	450 670	10x12.5	0.3	500
330	6.3x8.7	0.6	230	6.3x8.7	0.6	230	8x10.5	0.3	450	10x10.5	0.15	670	10x10.5	0.15	670			
470	6.3x8.7	0.6	230	8x10.5	0.3	450	8x10.5	0.3	450	10x10.5	0.15	670						
680	8x10.5	0.3	450	8x10.5	0.3	450	10x10.5	0.15	670									
1000	8x10.5	0.3	450	10x10.5	0.15	670	ØD x L			Ripple Current (mA r.m.s) (100kHz, 105°C)								
1500	10x10.5	0.15	670							Impedance (Ω) at 100kHz, 20°C								

●纵型贴片低阻抗品

EC-ZX 系列

JIS C5101
CE-32
(耐洗净品)

●VERTICAL CHIP LOW IMPEDANCE

TYPE EC-ZX

JIS C5101
CE-32
(Washable product)

■特 征

- EC-ZX 系列是 EC-KX 系列的小型化品
- ESR 降低 30-50%
- 符合 AEC-Q200

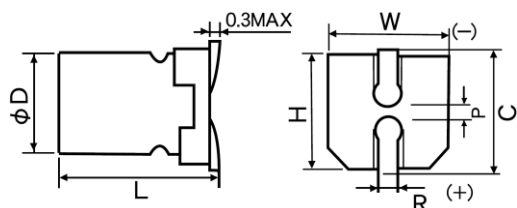
■FEATURES

- 30% to 50% less ESR than EC -KX series at high frequencies.
- AEC-Q200 qualified

■性 能/PERFORMANCE SPECIFICATIONS

工 作 温 度 范 围	CATEGORY TEMPERATURE RANGE	-55℃~+105℃						
静 电 容 量 容 许 误 差	STANDARD CAPACITANCE	-20% ~+20% (120Hz)						
漏 电 流 (最 大 值)	LEAKAGE CURRENT (MAX. VALUE)	I=0.01CV OR 3μA WHICHEVER IS THE GREATER (after 2 minutes)						
损 失 角 正 切 值 (最 大 值) (tan δ)	DISSIPATION FACTOR (MAX. VALUE)	W.V	6.3	10	16	25	35	50
		Ø4~ Ø10	0.26	0.19	0.16	0.14	0.12	0.10
		When the capacitance exceed 1,000μF, the value of tanδ is increased by 0.02 for each increment of 1,000μF or its fraction.						
耐 久 性 2000 小时 105℃加载额定电压	ENDURANCE 2000hrs APPLICATION OF RATED VOLTAGE AT 105℃	CAPACITANCE CHANGE : LESS THAN 30% OF THE INITIAL MEASURED VALUE. DISSIPATION FACTOR : LESS THAN 300% OF THE INITIAL SPECIFIED VALUE. LEAKAGE CURRENT : LESS THAN THE INITIAL SPECIFIED VALUE.						
低温特性 阻抗比最大值(120Hz)	LOW TEMPERATURE STABILITYRATIO OF IMPEDANCE AT COLD TOT THAT AT 20℃. 120Hz. MAX.VALUE	W.V	6.3	10	16	25	35	50
		-25℃/+20℃	4	3	2	2	2	2
		-55℃/+20℃	8	5	4	3	3	3

■尺寸图/DIAGRAM OF DIMENSIONS



(单位: mm)

D+0.5MAX	L	W±0.3	H±0.2	C±0.2	R	P±0.2
4	5.7±0.3	4.3	4.3	5.0	0.5~0.8	1.0
5	5.7±0.3	5.3	5.3	6.0	0.5~0.8	1.4
6.3	5.7±0.3	6.6	6.6	7.3	0.5~0.8	2.0
6.3	7.7±0.3	6.6	6.6	7.3	0.5~0.8	2.0
8	10.5±0.3	8.3	8.3	9.0	0.7~1.2	3.1
10	10.5±0.3	10.3	10.3	11.0	0.7~1.2	4.7

■额定纹波修正系数/ FREQUENCY CORRECTION FACTOR

纹波频率与标准一览表中不同时, 请参考下表中的修正系数。

When the ripple frequency differs from the specification shown in the list of standard products, multiply the value with the coefficient shown below, and use the products under the obtained value.

Cap	F	50Hz	120Hz	1kHz	10kHz	100KHz
C ≤ 100μF		0.45	0.65	0.85	0.95	1.00
100μF ~ 2200μF		0.50	0.70	0.90	0.95	1.00

■料号表示方法/HOW TO SPECIFY ITEM NUMBER

详细请参考第 5 页的“产品编码标准称呼方式”。

For more details, please refer to “HOW TO BASIC SPECIFY ITEM NUMBER” on page 5.

■尺寸表 (∅D×L) SIZE TABLE (∅D×L)

uF \ WV	6.3V (0J)			10V (1A)			16V (1C)			25V (1E)			35V (1V)			50V (1H)		
10 (100)																4x5.7	2.30	85
																5x5.7	0.88	165
22 (220)													4x5.7	1.00	160	5x5.7	0.88	165
33 (330)													5x5.7	0.36	240	6.3x5.7	0.68	195
39 (390)										4x5.7	1.00	160	5x5.7	0.36	240	6.3x5.7	0.68	195
47 (470)										5x5.7	0.36	240	5x5.7	0.36	240	6.3x5.7	0.68	195
56 (560)							4x5.7	1.00	160	5x5.7	0.36	240	6.3x5.7	0.26	300	6.3x7.7	0.34	350
68 (680)				4x5.7	1.00	160	5x5.7	0.36	240	5x5.7	0.36	240	6.3x5.7	0.26	300	6.3x7.7	0.34	350
100 (101)				5x5.7	0.36	240	5x5.7	0.36	240	6.3x5.7	0.26	300	6.3x5.7	0.26	300	6.3x7.7	0.34	350
120 (121)	4x5.7	1.00	160	5x5.7	0.36	240	6.3x5.7	0.26	300	6.3x5.7	0.26	300	6.3x7.7	0.16	600	8x10.5	0.18	670
150 (151)	5x5.7	0.36	240	5x5.7	0.36	240	6.3x5.7	0.26	300	6.3x7.7	0.16	600	6.3x7.7	0.16	600	8x10.5	0.18	670
220 (221)	5x5.7	0.36	240	6.3x5.7	0.26	300	6.3x5.7	0.26	300	6.3x7.7	0.16	600	8x10.5	0.08	850	8x10.5	0.18	670
330 (331)	5x5.7	0.36	240	6.3x5.7	0.26	300	6.3x7.7	0.16	600	8x10.5	0.08	850	8x10.5	0.08	850	10x10.5	0.12	900
390 (391)	6.3x5.7	0.26	300	6.3x7.7	0.16	600	6.3x7.7	0.16	600	8x10.5	0.08	850	8x10.5	0.08	850			
470 (471)	6.3x5.7	0.26	300	6.3x7.7	0.16	600	8x10.5	0.08	850	8x10.5	0.08	850	10x10.5	0.06	1190			
560 (561)	6.3x7.7	0.16	600	6.3x7.7	0.16	600	8x10.5	0.08	850	8x10.5	0.08	850	10x10.5	0.06	1190			
680 (681)	6.3x7.7	0.16	600	8x10.5	0.08	850	8x10.5	0.08	850	10x10.5	0.06	1190	10x10.5	0.06	1190			
820 (821)	8x10.5	0.08	850	8x10.5	0.08	850	8x10.5	0.08	850	10x10.5	0.06	1190						
1000 (102)	8x10.5	0.08	850	8x10.5	0.08	850	10x10.5	0.06	1190	10x10.5	0.06	1190						
1200 (122)	8x10.5	0.08	850	8x10.5	0.08	850	10x10.5	0.06	1190									
1500 (152)	8x10.5	0.08	850	10x10.5	0.06	1190												
1800 (182)	10x10.5	0.06	1190	10x10.5	0.06	1190												
2200 (222)	10x10.5	0.06	1190															
Impedance (Ω) MAX. at 100kHz, 20°C																		

●纵型贴片 125℃品

EC-PC 系列

JIS C5101
CE-32
(耐洗净品)

●VERTICAL CHIP 125℃ TYPE

TYPE EC-PC

JIS C5101
CE-32
(Washable product)

■特 征

- ・125℃1000~2000 小时品
- ・符合 AEC-Q200

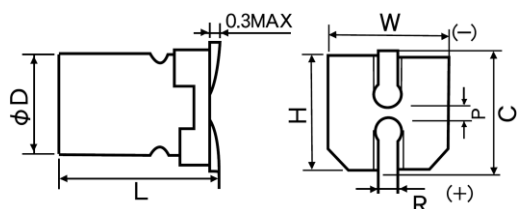
■FEATURES

- ・EC-PC series is 125℃(1000 to 2000hrs).
- ・AEC-Q200 qualified

■性 能/PERFORMANCE SPECIFICATIONS

工 作 温 度 范 围	CATEGORY TEMPERATURE RANGE	-40℃~+125℃							
静 电 容 量 容 许 误 差	STANDARD CAPACITANCE TOLERANCE	-20% ~+20% (120Hz)							
漏 电 流 （ 最 大 值 ）	LEAKAGE CURRENT (MAX. VALUE)	I=0.01CV OR 3μA WHICHEVER IS THE GREATER (after 2 minutes)							
损 失 角 正 切 值 （ 最 大 值 ） (tan δ)	DISSIPATION FACTOR (MAX. VALUE)	W.V	10	16	25	35	50	63	100
		tan δ	0.24	0.20	0.16	0.14	0.14	0.12	0.10
		When the capacitance exceed 1,000μF, the value of tanδ is increased by 0.02 for each increment of 1,000μF or its fraction.							
耐 久 性 Ø4~ Ø6.3: 1000 小时 Ø8~ Ø12.5: 2000 小时 125℃加载额定电压	ENDURANCE Ø4~ Ø6.3: 1000hrs Ø8~ Ø12.5: 2000hrs APPLICATION OF RATED VOLTAGE AT 125℃	CAPACITANCE CHANGE : LESS THAN 30% OF THE INITIAL MEASURED VALUE. DISSIPATION FACTOR : LESS THAN 300% OF THE INITIAL SPECIFIED VALUE. LEAKAGE CURRENT : LESS THAN THE INITIAL SPECIFIED VALUE.							
低温特性 阻抗比最大值(120Hz)	LOW TEMPERATURE STABILITYRATIO OF IMPEDANCE AT COLD TOT THAT AT 20℃, 120Hz. MAX.VALUE	W.V	10	16	25	35	50	63	100
		-25℃/+20℃	3	2	2	2	2	2	2
		-40℃/+20℃	6	4	4	3	3	3	3

■尺寸图/DIAGRAM OF DIMENSIONS



(单位: mm)

D+0.5MAX	L	W±0.3	H±0.2	C±0.2	R	P±0.2
4	5.7±0.3	4.3	4.3	5.0	0.5~0.8	1.0
5	5.7±0.3	5.3	5.3	6.0	0.5~0.8	1.4
6.3	5.7±0.3	6.6	6.6	7.3	0.5~0.8	2.0
6.3	7.7±0.3	6.6	6.6	7.3	0.5~0.8	2.0
8	10.5±0.3	8.3	8.3	9.0	0.7~1.2	3.1
10	10.5±0.3	10.3	10.3	11.0	0.7~1.2	4.7
12.5	13.5±0.5	12.8	12.8	13.5	0.7~1.2	4.7

■额定纹波修正系数/ FREQUENCY CORRECTION FACTOR

纹波频率与标准一览表中不同时, 请参考下表中的修正系数。

When the ripple frequency differs from the specification shown in the list of standard products, multiply the value with the coefficient shown below, and use the products under the obtained value.

Cap \ F	50Hz	120Hz	1kHz	10kHz	100KHz
C ≤ 10μF	0.46	0.66	0.86	0.93	1.00
22μF < C ≤ 470μF	0.72	0.93	0.97	1.00	1.00
470μF < C ≤ 1000μF	0.40	0.60	0.87	0.95	1.00

■料号表示方法/HOW TO SPECIFY ITEM NUMBER

详细请参考第 5 页的“产品编码标准称呼方式”。

For more details, please refer to “HOW TO BASIC SPECIFY ITEM NUMBER” on page 5.

■尺寸表 (ØD×L) SIZE TABLE (ØD×L)

uF \ WV	10V (1A)			16V (1C)			25V (1E)			35V (1V)			50V (1H)			63V (2H)			100V (2A)		
10 (100)										6.3x5.7	1.60	69	6.3x5.7	2.80	51	6.3x7.7	2.00	60	8x10.5	0.75	70
22 (220)										6.3x5.7	1.60	69	6.3x7.7	2.00	83	8x10.5	0.68	100	8x10.5	0.75	70
																			10x10.5	0.55	115
33 (330)							6.3x5.7	1.60	69	6.3x7.7	0.90	110	6.3x7.7	2.00	83	8x10.5	0.7	100	10x10.5	0.55	115
													8x10.5	0.7	110	10x10.5	0.5	170			
47 (470)				6.3x5.7	1.60	69	6.3x7.7	0.90	110	6.3x7.7	0.90	110	8x10.5	0.68	110	8x10.5	0.7	100			
																10x10.5	0.5	170			
100 (101)	6.3x7.7	0.90	110	6.3x7.7	0.90	110	6.3x7.7	0.90	110	8x10.5	0.4	220	10x10.5	0.5	245						
							8x10.5	0.4	220	10x10.5	0.3	295									
220 (221)	6.3x7.7	0.90	110	8x10.5	0.4	220	8x10.5	0.4	220	10x10.5	0.30	295									
	8x10.5	0.4	220	10x10.5	0.3	295	10x10.5	0.3	295												
330 (331)	8x10.5	0.4	220	10x10.5	0.30	295	10x10.5	0.30	295	ØD X L						Ripple current (mA r.m.s) (100kHz, 105°C)					
	10x10.5	0.3	295																		
470 (471)	10x10.5	0.30	295										Impedance (Ω) at 100kHz, 20°C								

●纵型贴片 125℃ 缩小品

EC-PW 系列

JIS C5101
CE-32
(耐洗净品)

●VERTICAL CHIP 125℃ DOWN SIZE TYPE

TYPE EC-PW

JIS C5101
CE-32
(Washable product)

■特 征

- ・125℃2000 小时长寿命品
- ・符合 AEC-Q200

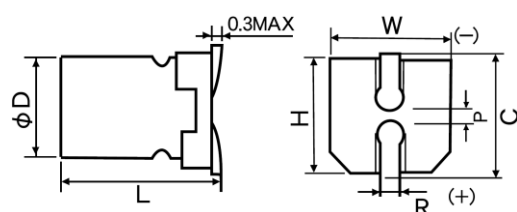
■FEATURES

- ・EC-PW series is 125℃ 2000hrs.
- ・AEC-Q200 qualified

■性 能/PERFORMANCE SPECIFICATIONS

工 作 温 度 范 围	CATEGORY TEMPERATURE RANGE	-40℃~+125℃					
静 电 容 量 容 许 误 差	STANDARD CAPACITANCE TOLERANCE	-20% ~+20% (120Hz)					
漏 电 流 （ 最 大 值 ）	LEAKAGE CURRENT (MAX. VALUE)	I=0.01CV OR 3μA WHICHEVER IS THE GREATER (after 2 minutes)					
损 失 角 正 切 值 （ 最 大 值 ） (tan δ)	DISSIPATION FACTOR (MAX. VALUE)	W.V	10	16	25	35	50
		tan δ	0.24	0.20	0.18	0.16	0.14
		When the capacitance exceed 1,000μF, the value of tanδ is increased by 0.02 for each increment of 1,000μF or its fraction.					
耐 久 性 2000 小时 125℃加载额定电压	ENDURANCE 2000hrs APPLICATION OF RATED VOLTAGE AT 125℃	CAPACITANCE CHANGE : LESS THAN 30% OF THE INITIAL MEASURED VALUE. DISSIPATION FACTOR : LESS THAN 300% OF THE INITIAL SPECIFIED VALUE. LEAKAGE CURRENT : LESS THAN THE INITIAL SPECIFIED VALUE.					
低 温 特 性 阻 抗 比 最 大 值 (120Hz)	LOW TEMPERATURE STABILITYRATIO OF IMPEDANCE AT COLD TOT THAT AT 20℃, 120Hz. MAX.VALUE	W.V	10	16	25	35	50
		-25℃/+20℃	4	3	2	2	2
		-40℃/+20℃	12	8	6	4	4

■尺寸图/DIAGRAM OF DIMENSIONS



(单位: mm)

D+0.5MAX	L	W±0.3	H±0.2	C±0.2	R	P±0.2
6.3	5.7±0.3	6.6	6.6	7.3	0.5~0.8	2.0
6.3	7.7±0.3	6.6	6.6	7.3	0.5~0.8	2.0
8	10.5±0.3	8.3	8.3	9.0	0.7~1.2	3.1
10	10.5±0.3	10.3	10.3	11.0	0.7~1.2	4.7

■额定纹波修正系数/ FREQUENCY CORRECTION FACTOR

纹波频率与标准一览表中不同时, 请参考下表中的修正系数。

When the ripple frequency differs from the specification shown in the list of standard products, multiply the value with the coefficient shown below, and use the products under the obtained value.

Cap \ F	120Hz	300Hz	10kHz	100kHz
Coefficient	0.93	0.97	1.00	1.00

■料号表示方法/HOW TO SPECIFY ITEM NUMBER

详细请参考第 5 页的“产品编码标准称呼方式”。

For more details, please refer to “HOW TO BASIC SPECIFY ITEM NUMBER” on page 5.

■尺寸表 (ØD×L) SIZE TABEL (ØD×L)

WV uF	10V (1A)			16V (1C)			25V (1E)			35V (1V)			50V (1H)		
47 (470)				6.3x5.7	1.2	110	6.3x5.7	1.2	110	6.3x5.7	1.2	110	6.3x7.7	1.5	110
100 (101)	6.3x5.7	1.2	110	6.3x5.7	1.2	110	6.3x7.7	0.6	220	6.3x7.7	0.6	220	8x10.5	0.6	220
220 (221)	6.3x7.7	0.6	220	6.3x7.7	0.6	220	8x10.5	0.3	295	8x10.5	0.3	295	10x10.5	0.4	265
330 (331)	6.3x7.7	0.6	220	8x10.5	0.3	295	8x10.5	0.3	295	10x10.5	0.2	440			
	8x10.5	0.3	295				10x10.5	0.2	440						
470 (471)	8x10.5	0.3	295	8x10.5	0.3	295	10x10.5	0.2	440						
				10x10.5	0.2	440									
680 (681)	8x10.5	0.3	295	10x10.5	0.2	440									
	10x10.5	0.2	440												

ØD x L

Ripple current (mA r.m.s)
(100kHz, 125°C)Impedance (Ω)
MAX. at 100kHz, 20°C

●纵型贴片 125℃长寿命品

EC-PH 系列

JIS C5101
CE-32
(耐洗净品)

●VERTICAL CHIP 125℃ LONG LIFE TYPE

TYPE EC-PH

JIS C5101
CE-32
(Washable product)

■特 征

- 125℃ 4000 小时长寿命品
- 符合 AEC-Q200

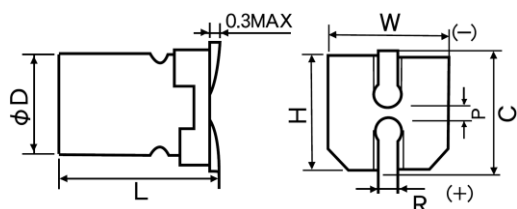
■FEATURES

- EC-PC series is 125℃ long life (4000hrs).
- AEC-Q200 qualified

■性 能/PERFORMANCE SPECIFICATIONS

工 作 温 度 范 围	CATEGORY TEMPERATURE RANGE	-40℃~+125℃									
静 电 容 量 容 许 误 差	STANDARD CAPACITANCE TOLERANCE	-20% ~+20% (120Hz)									
漏 电 流 （ 最 大 值 ）	LEAKAGE CURRENT (MAX. VALUE)	I=0.01CV OR 3μA WHICHEVER IS THE GREATER (after 2 minutes)									
损 失 角 正 切 值 （ 最 大 值 ） (tan δ)	DISSIPATION FACTOR (MAX. VALUE)	W.V	10	16	25	35	50	63	80	100	
		tan δ	0.24	0.20	0.16	0.14	0.14	0.12	0.12	0.10	
		When the capacitance exceed 1,000μF, the value of tanδ is increased by 0.02 for each increment of 1,000μF or its fraction.									
耐 久 性 4000 小时 125℃加载额定电压	ENDURANCE 4000hrs APPLICATION OF RATED VOLTAGE AT 125℃	CAPACITANCE CHANGE : LESS THAN 30% OF THE INITIAL MEASURED VALUE. DISSIPATION FACTOR : LESS THAN 300% OF THE INITIAL SPECIFIED VALUE. LEAKAGE CURRENT : LESS THAN THE INITIAL SPECIFIED VALUE.									
低 温 特 性 阻 抗 比 最 大 值 (120Hz)	LOW TEMPERATURE STABILITYRATIO OF IMPEDANCE AT COLD TOTHAT AT 20℃, 120Hz. MAX.VALUE	W.V	10	16	25	35	50	63	80	100	
		-25℃/+20℃	3	2	2	2	2	2	2	2	
		-40℃/+20℃	6	4	4	3	3	3	3	3	

■尺寸图/DIAGRAM OF DIMENSIONS



(单位: mm)

D+0.5MAX	L	W±0.3	H±0.2	C±0.2	R	P±0.2
6.3	7	6.6	6.6	7.3	0.5~0.8	2.0
6.3	8.7	6.6	6.6	7.3	0.5~0.8	2.0
8	10.5	8.3	8.3	9.0	0.7~1.2	3.1
10	10.5	10.3	10.3	11.0	0.7~1.2	4.7

■额定纹波修正系数/ FREQUENCY CORRECTION FACTOR

纹波频率与标准一览表中不同时, 请参考下表中的修正系数。

When the ripple frequency differs from the specification shown in the list of standard products, multiply the value with the coefficient shown below, and use the products under the obtained value.

Cap \ F	50Hz	120Hz	1kHz	10kHz	100KHz
Coefficient	0.35	0.50	0.83	1.00	1.00

■料号表示方法/HOW TO SPECIFY ITEM NUMBER

详细请参考第 5 页的“产品编码标准称呼方式”。

For more details, please refer to “HOW TO BASIC SPECIFY ITEM NUMBER” on page 5.

■尺寸表 (ΦD×L) SIZE LABEL (ΦD×L)

WV uF	10v(1A)			16v(1C)			25v(1E)			35v(1V)			50v(1H)		
	ΦDxL	Imp.	R.C.	ΦDxL	Imp.	R.C.	ΦDxL	Imp.	R.C.	ΦDxL	Imp.	R.C.	ΦDxL	Imp.	R.C.
10										6.3x7.0	1.2	80	6.3x7.0	2.6	65
22										6.3x7.0	1.2	80	6.3x8.7	1.0	130
33							6.3x7.0	1.2	80	6.3x8.7	0.6	175	6.3x8.7	1.0	130
47				6.3x7.0	1.2	80	6.3x8.7	0.6	175	6.3x8.7	0.6	175	8x10.5	0.5	270
100	6.3x8.7	0.6	175	6.3x8.7	0.6	175	6.3x8.7	0.6	175	8x10.5	0.3	220	10x10.5	0.4	350
220	6.3x8.7	0.9	110	8x10.5	0.3	220	8x10.5	0.3	220	10x10.5	0.2	295			
	8x10.5	0.3	220	10x10.5	0.2	295	10x10.5	0.2	295	10x10.5	0.2	295			
330	8x10.5	0.3	220	10x10.5	0.2	295	10x10.5	0.2	295						
	10x10.5	0.2	295												
470	10x10.5	0.2	295												

WV uF	63v(1J)			80v(1K)			100v(2A)		
	ΦDxL	Imp.	R.C.	ΦDxL	Imp.	R.C.	ΦDxL	Imp.	R.C.
10	6.3x8.7	2.0	60	8x10.5	0.75	70	8x10.5	0.75	70
22	8x10.5	0.70	100	8x10.5	0.75	70	8x10.5	0.75	70
				10x10.5	0.55	115	10x10.5	0.55	115
33	8x10.5	0.70	100	8x10.5	0.75	70	10x10.5	0.55	115
	10x10.5	0.50	170	10x10.5	0.55	115			
47	8x10.5	0.70	100	10x10.5	0.55	115			
	10x10.5	0.50	170						

ΦD x L(mm)

Ripple current (mA, rms)
(125°C, 100KHz)Impedance(Ω)
Max at 100KHz,20°C

●纵型贴片 135℃品

EC-PT 系列

JIS C5101
CE-32
(耐洗净品)

●VERTICAL CHIP 135℃ TYPE

TYPE EC-PT

JIS C5101
CE-32
(Washable product)

■特 征

- ・135℃ 2000 小时品
- ・符合 AEC-Q200

■FEATURES

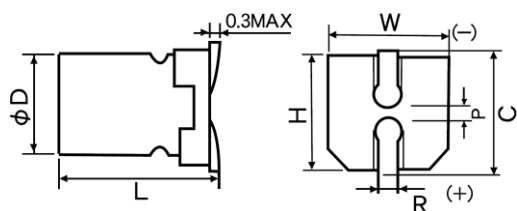
- ・EC-PT series is 135℃ 2000hrs.
- ・AEC-Q200 qualified

■性 能/PERFORMANCE SPECIFICATIONS

工 作 温 度 范 围	CATEGORY TEMPERATURE RANGE	-40℃~+135℃					
静 电 容 量 容 许 误 差	STANDARD CAPACITANCE TOLERANCE	-20% ~+20% (120Hz)					
漏 电 流 (最 大 值)	LEAKAGE CURRENT (MAX. VALUE)	I=0.01CV OR 3μA WHICHEVER IS THE GREATER (after 2 minutes)					
损 失 角 正 切 值 (最 大 值) (tan δ)	DISSIPATION FACTOR (MAX. VALUE)	W.V	10	16	25	35	50
		tan δ	0.24	0.20	0.18	0.16	0.14
		When the capacitance exceed 1,000μF, the value of tanδ is increased by 0.02 for each increment of 1,000μF or its fraction.					
耐 久 性 2000 小时 135℃加载额定电压	ENDURANCE 2000hrs APPLICATION OF RATED VOLTAGE AT 135℃	CAPACITANCE CHANGE : LESS THAN 30% OF THE INITIAL MEASURED VALUE. DISSIPATION FACTOR : LESS THAN 300% OF THE INITIAL SPECIFIED VALUE. LEAKAGE CURRENT : LESS THAN THE INITIAL SPECIFIED VALUE.					
低 温 特 性 阻 抗 比 最 大 值 (120Hz)	LOW TEMPERATURE STABILITYRATIO OF IMPEDANCE AT COLD TOT THAT AT 20℃, 120Hz. MAX.VALUE	W.V	10	16	25	35	50
		-25℃/+20℃	4	3	2	2	2
		-40℃/+20℃	12	8	6	4	4

■尺寸图/DIAGRAM OF DIMENSIONS

(单位: mm)



D+0.5MAX	L	W±0.3	H±0.2	C±0.2	R	P±0.2
8	10.5±0.3	8.3	8.3	9.0	0.7~1.2	3.1
10	10.5±0.3	10.3	10.3	11.0	0.7~1.2	4.7

■额定纹波补正系数/ FREQUENCY CORRECTION FACTOR

纹波频率与标准一览表中不同时, 请参考下表中的补正系数。

When the ripple frequency differs from the specification shown in the list of standard products, multiply the value with the coefficient shown below, and use the products under the obtained value.

Cap \ F	120Hz	300Hz	1kHz	≥10kHz
Coefficient	0.67	0.79	0.91	1.00

■料号表示方法/HOW TO SPECIFY ITEM NUMBER

详细请参考第 5 页的“产品编码标准称呼方式”。

For more details, please refer to “HOW TO BASIC SPECIFY ITEM NUMBER” on page 5.



■ 尺寸表 (ØD×L) SIZE TABLE (ØD×L)

WV uF	10V (1A)			16V (1C)			25V (1E)			35V (1V)			50V (1H)		
47 (470)										8x10.5	0.20	270	8x10.5	0.25	270
100 (101)										8x10.5	0.20	270	10x10.5	0.20	500
220 (221)							8x10.5	0.20	270	8x10.5	0.20	270	10x10.5	0.20	500
330 (331)				8x10.5	0.20	270	10x10.5	0.15	500	10x10.5	0.20	500			
470 (471)	8x10.5 10x10.5	0.20 0.15	270 500	10x10.5	0.15	500	10x10.5	0.15	500						
680 (681)	10x10.5	0.15	500	10x10.5	0.15	500									

ØD X L _____

Impedance (Ω)
MAX. at 100kHz, 20°CRipple current (mA r.m.s)
(100kHz, 135°C)

●纵型贴片 150℃品

EC-PQ 系列

JIS C5101
CE-32
(耐洗净品)

●VERTICAL CHIP 150℃ TYPE

TYPE EC-PQ

JIS C5101
CE-32
(Washable product)

■特 征

- 150℃ 1000 小时品
- 符合 AEC-Q200

■FEATURES

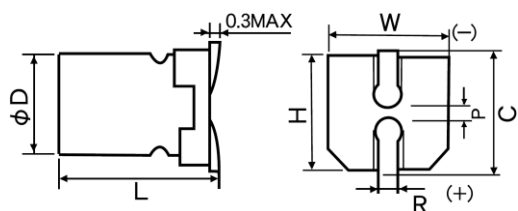
- EC-PQ series is 150℃ 1000hrs.
- AEC-Q200 qualified

■性 能/PERFORMANCE SPECIFICATIONS

工 作 温 度 范 围	CATEGORY TEMPERATURE RANGE	-40℃~+150℃					
静 电 容 量 容 许 误 差	STANDARD CAPACITANCE TOLERANCE	-20% ~+20% (120Hz)					
漏 电 流 （ 最 大 值 ）	LEAKAGE CURRENT (MAX. VALUE)	I=0.01CV OR 3μA WHICHEVER IS THE GREATER (after 2 minutes)					
损 失 角 正 切 值 （ 最 大 值 ） (tan δ)	DISSIPATION FACTOR (MAX. VALUE)	W.V	10	16	25	35	50
		tan δ	0.24	0.20	0.18	0.16	0.14
		When the capacitance exceed 1,000μF, the value of tanδ is increased by 0.02 for each increment of 1,000μF or its fraction.					
耐 久 性 1000 小时 150℃加载额定电压	ENDURANCE 1000hrs APPLICATION OF RATED VOLTAGE AT 150℃	CAPACITANCE CHANGE : LESS THAN 30% OF THE INITIAL MEASURED VALUE. DISSIPATION FACTOR : LESS THAN 300% OF THE INITIAL SPECIFIED VALUE. LEAKAGE CURRENT : LESS THAN THE INITIAL SPECIFIED VALUE.					
低 温 特 性 阻 抗 比 最 大 值 (120Hz)	LOW TEMPERATURE STABILITYRATIO OF IMPEDANCE AT COLD TOT THAT AT 20℃, 120Hz. MAX.VALUE	W.V	10	16	25	35	50
		-25℃/+20℃	4	3	2	2	2
		-40℃/+20℃	12	8	6	4	4

■尺寸图/DIAGRAM OF DIMENSIONS

(单位: mm)



D+0.5MAX	L	W±0.3	H±0.2	C±0.2	R	P±0.2
8	10.5±0.3	8.3	8.3	9.0	0.7~1.2	3.1
10	10.5±0.3	10.3	10.3	11.0	0.7~1.2	4.7

■额定纹波补正系数/ FREQUENCY CORRECTION FACTOR

纹波频率与标准一览表中不同时, 请参考下表中的补正系数。

When the ripple frequency differs from the specification shown in the list of standard products, multiply the value with the coefficient shown below, and use the products under the obtained value.

Cap \ F	120Hz	300Hz	1kHz	≥10kHz
Coefficient	0.67	0.79	0.91	1.00

■料号表示方法/HOW TO SPECIFY ITEM NUMBER

详细请参考第 5 页的“产品编码标准称呼方式”。

For more details, please refer to “HOW TO BASIC SPECIFY ITEM NUMBER” on page 5.



■ 尺寸表 (ØD×L) SIZE TABLE (ØD×L)

WV uF	10V (1A)		16V (1C)		25V (1E)		35V (1V)		50V (1H)	
33 (330)									8x10.5	70
47 (470)							8x10.5	80	10x10.5	100
100 (101)			8x10.5	80	8x10.5	80	8x10.5 10x10.5	80 120		
150 (151)			8x10.5	80	8x10.5	80	10x10.5	120		
220 (221)	8x10.5	80	8x10.5 10x10.5	80 120	10x10.5	120				
270 (271)	8x10.5 10x10.5	80 120	10x10.5	120	10x10.5	120				
330 (331)	10x10.5	120								

ØD×L Ripple current (mA r.m.s)
(100kHz, 150°C)

●纵型贴片高电压品

EC-VG 系列

JIS C5101
CE-32
(耐洗净品)

●VERTICAL CHIP HIGH VOLTAGE

TYPE EC-VG

JIS C5101
CE-32
(Washable product)

■特 征

- 高电压、高纹波电流品
- 符合 AEC-Q200

■FEATURES

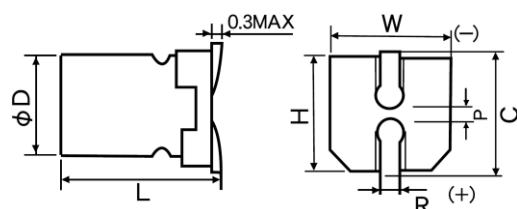
- High voltage, High ripple current
- AEC-Q200 qualified

■性 能/PERFORMANCE SPECIFICATIONS

工 作 温 度 范 围	CATEGORY TEMPERATURE RANGE	-40℃ ~ +105℃ (450V: -25℃ ~ +105℃)						
静 电 容 量 容 许 误 差	STANDARD CAPACITANCE	-20% ~+20% (120Hz)						
漏 电 流 (最 大 值)	LEAKAGE CURRENT (MAX. VALUE)	I=0.02CV+10μA (after 2 minutes)						
损 失 角 正 切 值 (最 大 值) (tan δ)	DISSIPATION FACTOR (MAX. VALUE)	W.V	160	200	250	350	400	450
		tan δ	0.15	0.15	0.15	0.20	0.20	0.20
		When the capacitance exceed 1,000μF, the value of tanδ is increased by 0.02 for each increment of 1,000μF or its fraction.						
耐 久 性 3000 小时 (Φ6.3:2000 小时) 105℃加载额定电压	ENDURANCE 3000hrs(Φ6.3:2000 小时) APPLICATION OF RATED VOLTAGE AT 105℃	CAPACITANCE CHANGE : LESS THAN 30% OF THE INITIAL MEASURED VALUE. DISSIPATION FACTOR : LESS THAN 300% OF THE INITIAL SPECIFIED VALUE. LEAKAGE CURRENT : LESS THAN THE INITIAL SPECIFIED VALUE.						
低 温 特 性 阻 抗 比 最 大 值 (120Hz)	LOW TEMPERATURE STABILITY RATIO OF IMPEDANCE AT COLD TOT THAT AT 20℃, 120Hz. MAX.VALUE	W.V	160	200	250	350	400	450
		-25℃/+20℃	2	2	2	3	3	3
		-40℃/+20℃	6	6	6	10	10	---

■尺寸图/DIAGRAM OF DIMENSIONS

(单位: mm)



D+0.5MAX	L	W±0.3	H±0.2	C±0.2	R	P±0.2
6.3	10.5	6.6	6.6	7.3	0.5~0.8	2.0
8	10.5	8.3	8.3	9.0	0.7~1.2	3.1
10	10.5	10.3	10.3	11.0	0.7~1.2	4.7

■额定纹波修正系数/ FREQUENCY CORRECTION FACTOR

纹波频率与标准一览表中不同时, 请参考下表中的修正系数。

When the ripple frequency differs from the specification shown in the list of standard products, multiply the value with the coefficient shown below, and use the products under the obtained value.

Cap	F	120Hz	1kHz	10kHz	100kHz
≤ 8.2μF		0.45	0.60	0.80	1.00
10μF ~ 22μF		0.50	0.75	0.90	1.00

■料号表示方法/HOW TO SPECIFY ITEM NUMBER

详细请参考第 5 页的“产品编码标准称呼方式”。

For more details, please refer to “HOW TO BASIC SPECIFY ITEM NUMBER” on page 5.

■尺寸表 (ØD×L) SIZE TABLE (ØD×L)

uF \ WV	160v (2C)		200v (2D)		250v (2E)		350v (2V)		400v (2G)		450v (2W)	
	ØD x L	R.C.	ØD x L	R.C.	ØD x L	R.C.	ØD x L	R.C.	ØD x L	R.C.	ØD x L	R.C.
1.0											6.3x10.5	80
1.5											6.3x10.5	90
2.2									6.3x10.5	105	6.3x10.5	100
2.7							6.3x10.5	125	6.3x10.5	125	8x10.5	115
3.3							6.3x10.5	125	8x10.5	135	8x10.5	120
3.9					6.3x10.5	135	8x10.5	130	8x10.5	140	8x10.5	135
4.7			6.3x10.5	125	6.3x10.5	135	8x10.5	140	8x10.5	140	10x10.5	160
5.6	6.3x10.5	110	6.3x10.5	125	8x10.5	140	8x10.5	140	10x10.5	220	10x10.5	190
6.8	6.3x10.5	125	8x10.5	130	8x10.5	150	10x10.5	230	10x10.5	230	10x10.5	215
8.2	8x10.5	125	8x10.5	140	8x10.5	170	10x10.5	240	10x10.5	240		
10	8x10.5	140	8x10.5	170	10x10.5	230	10x10.5	250				
12	8x10.5	150	10x10.5	230	10x10.5	240						
15	8x10.5	160	10x10.5	240	10x10.5	250						
22	10x10.5	250	10x10.5	250	ØD x L				Ripple Current (mA, r.m.s) (105°C, 100kHz)			

●纵型贴片高电压长寿命品

EC-VD 系列

JIS C5101
CE-32
(耐洗净品)

●VERTICAL CHIP HIGH VOLTAGE LONG LIFE

TYPE EC-VD

JIS C5101
CE-32
(Washable product)

■特 征

- 高电压、高纹波电流、长寿命品
- 符合 AEC-Q200

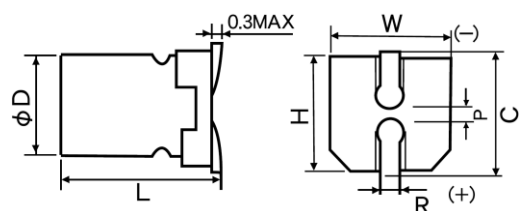
■FEATURES

- High voltage, High ripple current, Long life
- AEC-Q200 qualified

■性 能/PERFORMANCE SPECIFICATIONS

工 作 温 度 范 围	CATEGORY TEMPERATURE RANGE	-40℃ ~ +105℃ (450V: -25℃ ~ +105℃)						
静 电 容 量 容 许 误 差	STANDARD CAPACITANCE	-20% ~+20% (120Hz)						
漏 电 流 (最 大 值)	LEAKAGE CURRENT (MAX. VALUE)	I=0.02CV+10μA (after 2 minutes)						
损 失 角 正 切 值 (最 大 值) (tan δ)	DISSIPATION FACTOR (MAX. VALUE)	W.V	160	200	250	350	400	450
		tan δ	0.15	0.15	0.15	0.20	0.20	0.20
		When the capacitance exceed 1,000μF, the value of tanδ is increased by 0.02 for each increment of 1,000μF or its fraction.						
耐 久 性 7000 小时 (Φ6.3:5000 小时) 105℃加载额定电压	ENDURANCE 7000hrs(Φ6.3:5000 小时) APPLICATION OF RATED VOLTAGE AT 105℃	CAPACITANCE CHANGE : LESS THAN 30% OF THE INITIAL MEASURED VALUE.						
		DISSIPATION FACTOR : LESS THAN 300% OF THE INITIAL SPECIFIED VALUE.						
低 温 特 性 阻 抗 比 最 大 值 (120Hz)	LOW TEMPERATURE STABILITYRATIO OF IMPEDANCE AT COLD TOTHAT AT 20℃, 120Hz. MAX.VALUE	LEAKAGE CURRENT : LESS THAN THE INITIAL SPECIFIED VALUE.						
		W.V	160	200	250	350	400	450
		-25℃/+20℃	2	2	2	3	3	3
		-40℃/+20℃	6	6	6	10	10	---

■尺寸图/DIAGRAM OF DIMENSIONS



(单位: mm)

D+0.5MAX	L	W±0.3	H±0.2	C±0.2	R	P±0.2
6.3	10.5	6.6	6.6	7.3	0.5~0.8	2.0
8	10.5	8.3	8.3	9.0	0.7~1.2	3.1
10	10.5	10.3	10.3	11.0	0.7~1.2	4.7

■额定纹波修正系数/ FREQUENCY CORRECTION FACTOR

纹波频率与标准一览表中不同时, 请参考下表中的修正系数。

When the ripple frequency differs from the specification shown in the list of standard products, multiply the value with the coefficient shown below, and use the products under the obtained value.

Cap	F	120Hz	1kHz	10kHz	100kHz
$\leq 8.2\mu F$		0.45	0.60	0.80	1.00
10 μF ~ 22 μF		0.50	0.75	0.90	1.00

■料号表示方法/HOW TO SPECIFY ITEM NUMBER

详细请参考第 5 页的“产品编码标准称呼方式”。

For more details, please refer to “HOW TO BASIC SPECIFY ITEM NUMBER” on page 5.

■尺寸表 (ØD×L) SIZE TABLE (ØD×L)

WV uF	160v (2C)		200v (2D)		250v (2E)		350v (2V)		400v (2G)		450v (2W)	
	ØD x L	R.C.	ØD x L	R.C.	ØD x L	R.C.	ØD x L	R.C.	ØD x L	R.C.	ØD x L	R.C.
1.0											6.3x10.5	80
1.5											6.3x10.5	90
2.2									6.3x10.5	105	6.3x10.5	100
2.7							6.3x10.5	125	6.3x10.5	125	8x10.5	115
3.3							6.3x10.5	125	8x10.5	135	8x10.5	120
3.9					6.3x10.5	135	8x10.5	130	8x10.5	140	8x10.5	135
4.7			6.3x10.5	125	6.3x10.5	135	8x10.5	140	8x10.5	140	10x10.5	160
5.6	6.3x10.5	110	6.3x10.5	125	8x10.5	140	8x10.5	140	10x10.5	220	10x10.5	190
6.8	6.3x10.5	125	8x10.5	130	8x10.5	150	10x10.5	230	10x10.5	230		
8.2	8x10.5	125	8x10.5	140	8x10.5	170	10x10.5	250				
10	8x10.5	140	8x10.5	170	10x10.5	230						
12	8x10.5	150	10x10.5	230	10x10.5	250						
15	8x10.5	160	10x10.5	250	ØD x L						Ripple Current (mA, r.m.s) (105°C, 100kHz)	
22	10x10.5	250										

●纵型贴片高电压长寿命品

EC-VP 系列

JIS C5101
CE-32
(耐洗净品)

●VERTICAL CHIP HIGH VOLTAGE LONG LIFE

TYPE EC-VP

JIS C5101
CE-32
(Washable product)

■特 征

- 高电压、高纹波电流、长寿命品
- 符合 AEC-Q200

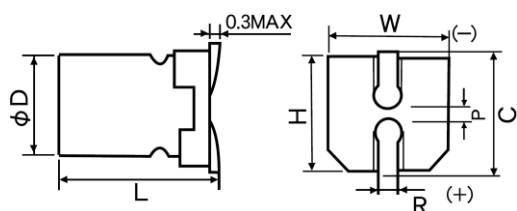
■FEATURES

- High voltage, High ripple current, Long life
- AEC-Q200 qualified

■性 能/PERFORMANCE SPECIFICATIONS

工 作 温 度 范 围	CATEGORY TEMPERATURE RANGE	-40℃ ~ +105℃ (450V: -25℃ ~ +105℃)						
静 电 容 量 容 许 误 差	STANDARD CAPACITANCE	-20% ~+20% (120Hz)						
漏 电 流 (最 大 值)	LEAKAGE CURRENT (MAX. VALUE)	I=0.02CV+10μA (after 2 minutes)						
损 失 角 正 切 值 (最 大 值) (tan δ)	DISSIPATION FACTOR (MAX. VALUE)	W.V	160	200	250	350	400	450
		tan δ	0.15	0.15	0.15	0.20	0.20	0.20
		When the capacitance exceed 1,000μF, the value of tanδ is increased by 0.02 for each increment of 1,000μF or its fraction.						
耐 久 性 10000 小时 (Φ6.3:7000 小时) 105℃加载额定电压	ENDURANCE 10000hrs(Φ6.3:7000 小时) APPLICATION OF RATED VOLTAGE AT 105℃	CAPACITANCE CHANGE : LESS THAN 30% OF THE INITIAL MEASURED VALUE. DISSIPATION FACTOR : LESS THAN 300% OF THE INITIAL SPECIFIED VALUE. LEAKAGE CURRENT : LESS THAN THE INITIAL SPECIFIED VALUE.						
低温特性 阻抗比最大值 (120Hz)	LOW TEMPERATURE STABILITYRATIO OF IMPEDANCE AT COLD TOTHAT AT 20℃, 120Hz. MAX.VALUE	W.V	160	200	250	350	400	450
		-25℃/+20℃	2	2	2	3	3	3
		-40℃/+20℃	6	6	6	10	10	---

■尺寸图/DIAGRAM OF DIMENSIONS



(单位: mm)

D+0.5MAX	L	W±0.3	H±0.2	C±0.2	R	P±0.2
6.3	10.5	6.6	6.6	7.3	0.5~0.8	2.0
8	10.5	8.3	8.3	9.0	0.7~1.2	3.1
10	10.5	10.3	10.3	11.0	0.7~1.2	4.7

■额定纹波修正系数/ FREQUENCY CORRECTION FACTOR

纹波频率与标准一览表中不同时, 请参考下表中的修正系数。

When the ripple frequency differs from the specification shown in the list of standard products, multiply the value with the coefficient shown below, and use the products under the obtained value.

Cap	F	120Hz	1kHz	10kHz	100kHz
$\leq 8.2\mu F$		0.45	0.60	0.80	1.00
10 μF ~ 22 μF		0.50	0.75	0.90	1.00

■料号表示方法/HOW TO SPECIFY ITEM NUMBER

详细请参考第 5 页的“产品编码标准称呼方式”。

For more details, please refer to “HOW TO BASIC SPECIFY ITEM NUMBER” on page 5.

■尺寸表 (ØD×L) SIZE TABLE (ØD×L)

WV uF	160v (2C)		200v (2D)		250v (2E)		350v (2V)		400v (2G)		450v (2W)	
	ΦD x L	R.C.	ΦD x L	R.C.	ΦD x L	R.C.	ΦD x L	R.C.	ΦD x L	R.C.	ΦD x L	R.C.
1.0											6.3x10.5	80
1.5									6.3x10.5	95	6.3x10.5	90
2.2							6.3x10.5	115	6.3x10.5	105	8x10.5	110
2.7							6.3x10.5	125	8x10.5	135	8x10.5	115
3.3					6.3x10.5	115	8x10.5	130	8x10.5	135	8x10.5	120
3.9			6.3x10.5	115	6.3x10.5	135	8x10.5	130	8x10.5	140	10x10.5	145
4.7			6.3x10.5	125	6.3x10.5	135	8x10.5	140	10x10.5	205	10x10.5	160
5.6	6.3x10.5	110	6.3x10.5	125	8x10.5	140	10x10.5	210	10x10.5	220	10x10.5	190
6.8	6.3x10.5	125	8x10.5	130	8x10.5	150	10x10.5	230	10x10.5	230		
8.2	8x10.5	125	8x10.5	140	8x10.5	170	10x10.5	250				
10	8x10.5	140	8x10.5	170	10x10.5	230						
12	8x10.5	150	10x10.5	230	10x10.5	250						
15	10x10.5	230	10x10.5	250	ØD x L						Ripple Current (mA, r.m.s) (105°C, 100kHz)	
22	10x10.5	250										

●纵型贴片 105℃品
EC-LD 系列

JIS C5101
CE-32
(耐洗净品)

●VERTICAL CHIP TYPE 105℃ USE
TYPE EC-LD

JIS C5101
CE-32
(Washable product)

■特 征

- 105℃、1000 小时品，耐热性优良，可以用于回流焊。
- 4.5mm 高

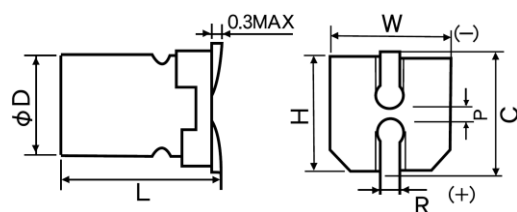
■FEATURES

- It is guaranteed for 105℃ as well as 1,000 hours, and is so excellent in heat resistance that it allows reflow soldering.
- Height 4.5mm product

■性 能/PERFORMANCE SPECIFICATIONS

工 作 温 度 范 围	CATEGORY TEMPERATURE RANGE	-40℃~+105℃									
静 电 容 量 容 许 误 差	STANDARD CAPACITANCE TOLERANCE	-20% ~+20% (120Hz)									
漏 电 流 （ 最 大 值 ）	LEAKAGE CURRENT (MAX. VALUE)	I=0.01CV OR 3μA WHICHEVER IS THE GREATER (after 2 minutes)									
损 失 角 正 切 值 （ 最 大 值 ） (tan δ)	DISSIPATION FACTOR (MAX. VALUE)	W.V	4	6.3	10	16	25	35	50		
		tan δ	0.4	0.30	0.24	0.20	0.18	0.16	0.14		
		When the capacitance exceed 1,000μF, the value of tanδ is increased by 0.02 for each increment of 1,000μF or its fraction.									
耐 久 性 105℃、1000 小时 加载额定电压	ENDURANCE 1000hrs APPLICATION OF RATED VOLTAGE AT 105℃	CAPACITANCE CHANGE : LESS THAN 30% OF THE INITIAL MEASURED VALUE. DISSIPATION FACTOR : LESS THAN 300% OF THE INITIAL SPECIFIED VALUE. LEAKAGE CURRENT : LESS THAN THE INITIAL SPECIFIED VALUE.									
低 温 特 性 阻抗比最大值(120Hz)	LOW TEMPERATURE STABILITYRATIO OF IMPEDANCE AT COLD TOT THAT AT 20℃, 120Hz. MAX.VALUE	W.V	4	6.3	10	16	25	35	50		
		-25℃/+20℃	7	4	3	2	2	2	2		
		-40℃/+20℃	15	8	5	4	3	3	3		

■尺寸图/DIAGRAM OF DIMENSIONS



(单位: mm)

D+0.5MAX	L	W±0.3	H±0.2	C±0.2	R	P±0.2
4	4.5±0.3	4.3	4.3	5.0	0.5~0.8	1.0
5	4.5±0.3	5.3	5.3	6.0	0.5~0.8	1.5
6.3	4.5±0.3	6.6	6.6	7.3	0.5~0.8	2.0

■额定纹波修正系数/ FREQUENCY CORRECTION FACTOR

纹波频率与标准一览表中不同时，请参考下表中的修正系数。

When the ripple frequency differs from the specification shown in the list of standard products, multiply the value with the coefficient shown below, and use the products under the obtained value.

Cap	F	50Hz	120Hz	1kHz	≥10kHz
Coefficient		0.70	1.00	1.3	1.40

■料号表示方法/HOW TO SPECIFY ITEM NUMBER

详细请参考第 5 页的“产品编码标准称呼方式”。

For more details, please refer to “HOW TO BASIC SPECIFY ITEM NUMBER” on page 5.

EC-LD

■尺寸表 (ØD×L) SIZE TABLE (ØD×L)

WV uF	4V (0J)		6.3V (0J)		10V (1A)		16V (1C)		25V (1E)		35V (1V)		50V (1H)	
0.47 (R47)													4x4.5	3.3
1.0 (010)													4x4.5	5.4
2.2 (2R2)													4x4.5	9.6
3.3 (3R3)													4x4.5	12
4.7 (4R7)									4x4.5	11	4x4.5	13	5x4.5	16
10 (100)							4x4.5	16	5x4.5	20	5x4.5	22	5x4.5 6.3x4.5	19 26
22 (220)			4x4.5	19	5x4.5	24	5x4.5	26	5x4.5 6.3x4.5	26 33	6.3x4.5	36		
33 (330)	4x4.5	22	5x4.5	26	5x4.5	30	5x4.5 6.3x4.5	30 35	5x4.5 6.3x4.5	30 35	6.3x4.5	45		
47 (470)	4x4.5	28	5x4.5	32	5x4.5 6.3x4.5	32 40	5x4.5 6.3x4.5	30 44	6.3x4.5	46				
100 (101)	5x4.5	44	6.3x4.5	52	5x4.5 6.3x4.5	38 56	6.3x4.5	58						
220 (221)	6.3x4.5	52	6.3x4.5	56	6.3x4.5	65	ØD X L				Ripple current (mA, r.m.s) (120Hz, 105°C)			

●低漏电流品

EC-LC 系列

JIS C5101
CE-32
(耐洗净品)

■特 征

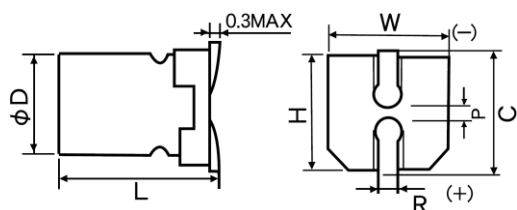
- ・105℃、1000 小时品
- ・耐热性优良，可以用于回流焊。
- ・符合 AEC-Q200

■性 能/PERFORMANCE SPECIFICATIONS

工 作 温 度 范 围	CATEGORY TEMPERATURE RANGE	-55℃~+105℃						
静 电 容 量 容 许 误 差	STANDARD CAPACITANCE TOLERANCE	-20% ~+20% (120Hz)						
漏 电 流 （ 最 大 值 ）	LEAKAGE CURRENT (MAX. VALUE)	I=0.002CV OR 0.5μA WHICHEVER IS THE GREATER (after 2 minutes)						
损 失 角 正 切 值 （ 最 大 值 ） (tan δ)	DISSIPATION FACTOR (MAX. VALUE)	W.V	6.3	10	16	25	35	50
		tan δ	0.26	0.22	0.18	0.16	0.14	0.12
		When the capacitance exceed 1,000μF, the value of tanδ is increased by 0.02 for each increment of 1,000μF or its fraction.						
耐 久 性 1000 小时 105℃加载额定电压	ENDURANCE 1000hrs APPLICATION OF RATED VOLTAGE AT 105℃	CAPACITANCE CHANGE : LESS THAN 25% OF THE INITIAL MEASURED VALUE. DISSIPATION FACTOR : LESS THAN 200% OF THE INITIAL SPECIFIED VALUE. LEAKAGE CURRENT : LESS THAN THE INITIAL SPECIFIED VALUE.						
低 温 特 性 阻 抗 比 最 大 值 (120Hz)	LOW TEMPERATURE STABILITYRATIO OF IMPEDANCE AT COLD TOT THAT AT 20℃, 120Hz. MAX.VALUE	W.V	6.3	10	16	25	35	50
		-25℃/+20℃	4	3	2	2	2	2
		-55℃/+20℃	8	6	4	4	3	3

■尺寸图/DIAGRAM OF DIMENSIONS

(单位: mm)



D+0.5MAX	L	W±0.3	H±0.2	C±0.2	R	P±0.2
4	5.7±0.3	4.3	4.3	5.0	0.5~0.8	1.0
5	5.7±0.3	5.3	5.3	6.0	0.5~0.8	1.4
6.3	5.7±0.3	6.6	6.6	7.3	0.5~0.8	2.0
6.3	7.7±0.3	6.6	6.6	7.3	0.5~0.8	2.0
8	10.5±0.3	8.3	8.3	9.0	0.7~1.2	3.1

■额定纹波修正系数/ FREQUENCY CORRECTION FACTOR

纹波频率与标准一览表中不同时，请参考下表中的修正系数。

When the ripple frequency differs from the specification shown in the list of standard products, multiply the value with the coefficient shown below, and use the products under the obtained value.

Cap \ F	50Hz	120Hz	1kHz	10kHz
C ≤ 100μF	0.7	1.0	1.36	1.5
100μF < C	0.7	1.0	1.15	1.20

■料号表示方法/HOW TO SPECIFY ITEM NUMBER

详细请参考第 5 页的“产品编码标准称呼方式”。

For more details, please refer to “HOW TO BASIC SPECIFY ITEM NUMBER” on page 5.

■尺寸表 (ØD×L) SIZE TABLE (ØD×L)

WV uF	6.3v (0J)		10v (1A)		16v (1C)		25v (1E)		35v (1V)		50v (1H)	
	ΦD x L	R.C.	ΦD x L	R.C.	ΦD x L	R.C.	ΦD x L	R.C.	ΦD x L	R.C.	ΦD x L	R.C.
0.1											4 x 5.7	1
0.22											4 x 5.7	2
0.33											4 x 5.7	2.8
0.47											4 x 5.7	4
1.0											4 x 5.7	8.4
2.2									4 x 5.7	8.4	4 x 5.7	13
3.3							4 x 5.7	10	4 x 5.7	15	4 x 5.7	17
4.7					4 x 5.7	10	4 x 5.7	16	4 x 5.7	18	6.3 x 5.7	20
10	4 x 5.7	15	4 x 5.7	23	4 x 5.7	23	4 x 5.7	27	6.3 x 5.7	29	6.3 x 5.7	33
22	4 x 5.7	28	4 x 5.7	33	5 x 5.7	37	5 x 5.7	42	6.3 x 5.7	46	6.3 x 7.7	48
33	5 x 5.7	37	5 x 5.7	41	6.3 x 5.7	49	6.3 x 5.7	52	6.3 x 7.7	58	6.3 x 7.7	66
47	5 x 5.7	45	6.3 x 5.7	52	6.3 x 5.7	58	6.3 x 7.7	65	6.3 x 7.7	75		
100	6.3 x 5.7	70	6.3 x 7.7	75	6.3 x 7.7	85	6.3 x 7.7	102				
220	6.3 x 7.7	102	6.3 x 7.7	125								
330	6.3 x 7.7	155										

ØD x L

Ripple Current (mA, r.m.s)
(105°C, 120Hz)

●无极性宽温品

EC-FN 系列

JIS C5101
CE-32
(耐洗净品)

■特 征

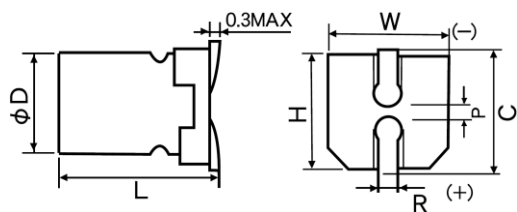
- 无极性 105℃、2000 小时品
- 耐热性优良，可以用于回流焊。
- 符合 AEC-Q200

■性 能/PERFORMANCE SPECIFICATIONS

工 作 温 度 范 围	CATEGORY TEMPERATURE RANGE	-55℃~+105℃						
静 电 容 量 容 许 误 差	STANDARD CAPACITANCE TOLERANCE	-20% ~+20% (120Hz)						
漏 电 流 （ 最 大 值 ）	LEAKAGE CURRENT (MAX. VALUE)	I=0.03CV OR 4μA WHICHEVER IS THE GREATER (after 2 minutes)						
损 失 角 正 切 值 （ 最 大 值 ） (tan δ)	DISSIPATION FACTOR (MAX. VALUE)	W.V	6.3	10	16	25	35	50
		tan δ	0.24	0.22	0.18	0.16	0.15	0.15
		When the capacitance exceed 1,000μF, the value of tanδ is increased by 0.02 for each increment of 1,000μF or its fraction.						
耐 久 性 2000 小时 105℃加载额定电压 (每 250 小时转换极性)	ENDURANCE 2000hrs APPLICATION OF RATED VOLTAGE AT 105℃ (with the polarity inverted every 250 hours)	CAPACITANCE CHANGE : LESS THAN 30% OF THE INITIAL MEASURED VALUE. DISSIPATION FACTOR : LESS THAN 300% OF THE INITIAL SPECIFIED VALUE. LEAKAGE CURRENT : LESS THAN THE INITIAL SPECIFIED VALUE.						
低 温 特 性 阻 抗 比 最 大 值 (120Hz)	LOW TEMPERATURE STABILITYRATIO OF IMPEDANCE AT COLD TOTHAT AT 20℃, 120Hz. MAX.VALUE	W.V	6.3	10	16	25	35	50
		-25℃/+20℃	4	3	2	2	2	2
		-55℃/+20℃	8	6	4	4	3	3

■尺寸图/DIAGRAM OF DIMENSIONS

(单位: mm)



D+0.5MAX	L	W±0.3	H±0.2	C±0.2	R	P±0.2
4	5.7±0.3	4.3	4.3	5.0	0.5~0.8	1.0
5	5.7±0.3	5.3	5.3	6.0	0.5~0.8	1.4
6.3	5.7±0.3	6.6	6.6	7.3	0.5~0.8	2.0
6.3	7.7±0.3	6.6	6.6	7.3	0.5~0.8	2.0
8	10.5±0.3	8.3	8.3	9.0	0.7~1.2	3.1
10	10.5±0.3	10.3	10.3	11.0	0.7~1.2	4.7
12.5	13.5±0.5	12.8	12.8	13.5	0.7~1.2	4.7

■额定纹波修正系数/ FREQUENCY CORRECTION FACTOR

纹波频率与标准一览表中不同时，请参考下表中的修正系数。

When the ripple frequency differs from the specification shown in the list of standard products, multiply the value with the coefficient shown below, and use the products under the obtained value.

Cap \ F	50Hz	120Hz	1kHz	10kHz
C ≤ 100μF	0.8	1.0	1.30	1.5
100μF < C	0.8	1.0	1.15	1.20

■料号表示方法/HOW TO SPECIFY ITEM NUMBER

详细请参考第 5 页的“产品编码标准称呼方式”。

For more details, please refer to “HOW TO BASIC SPECIFY ITEM NUMBER” on page 5.

■尺寸表 (ØD×L) SIZE TABLE (ØD×L)

WV μF	6.3 V (0 J)		10 V (1 A)		16 V (1 C)		25 V (1 E)		35 V (1 V)		50 V (1 H)	
0.1 (0 R 1)											4 × 5.7	1
0.22 (R 2 2)											4 × 5.7	2
0.33 (R 3 3)											4 × 5.7	2.8
0.47 (R 4 7)											4 × 5.7	4
1 (0 1 0)											4 × 5.7	8.4
2.2 (2 R 2)									4 × 5.7	8.4	4 × 5.7	13
											5 × 5.7	13
3.3 (3 R 3)					4 × 5.7	12	4 × 5.7	12	4 × 5.7	16	4 × 5.7	17
							5 × 5.7	12	5 × 5.7	16	5 × 5.7	17
4.7 (4 R 7)					4 × 5.7	12	4 × 5.7	16	4 × 5.7	18	5 × 5.7	20
							5 × 5.7	16	5 × 5.7	18	6.3 × 5.7	20
10 (1 0 0)	4 × 5.7	15	4 × 5.7	17	4 × 5.7	23	5 × 5.7	27	6.3 × 5.7	29	6.3 × 5.7	32
					5 × 5.7	23	6.3 × 5.7	27				
22 (2 2 0)	4 × 5.7	28	5 × 5.7	33	5 × 5.7	37	6.3 × 5.7	40	6.3 × 5.7	45	8 × 10.5	60
	5 × 5.7	32	6.3 × 5.7	37	6.3 × 5.7	37						
33 (3 3 1)	5 × 5.7	37	6.3 × 5.7	41	6.3 × 5.7	49	6.3 × 7.7	51	8 × 10.5	58	10 × 10.5	75
47 (4 7 1)	6.3 × 5.7	45	6.3 × 5.7	50	6.3 × 5.7	51	6.3 × 7.7	56	8 × 10.5	64	10 × 10.5	100
100 (1 0 1)	6.3 × 7.7	65	6.3 × 7.7	75	8 × 10.5	100	8 × 10.5	130				
220 (2 2 1)	8 × 10.5	120	8 × 10.5	150	10 × 10.5	170						
330 (3 3 1)	8 × 10.5	160	10 × 10.5	180								
470 (4 7 1)	10 × 10.5	190										
ØD × L Ripple Current (mA, r.m.s) (105°C, 120Hz)												

MEMO



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