版本 1.0
2021/09/18

凸式电极抗硫化厚膜晶片排列电阻-FA 系列
Convex Termination Anti-Sulfur Thick Film Chip Resistors Array

鼎声微电
GiantOhm

产品规格书
PRODUCTS DATASHEET

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产品特性 FEATURE

- 符合 RoHS 相关条款性能要求 RoHS Complaint
- 高可靠性 High Reliability
- 满足通用抗硫化性能指标
  General Anti-Sulfur performance purpose
- 产品应用 Applications:
  手机、平板、电脑等等一般电子产品。
  Smart phone, pad, PC, etc.

标准料号 PART NO SYSTEM

举例 For example: FA0202 5% 100KΩ

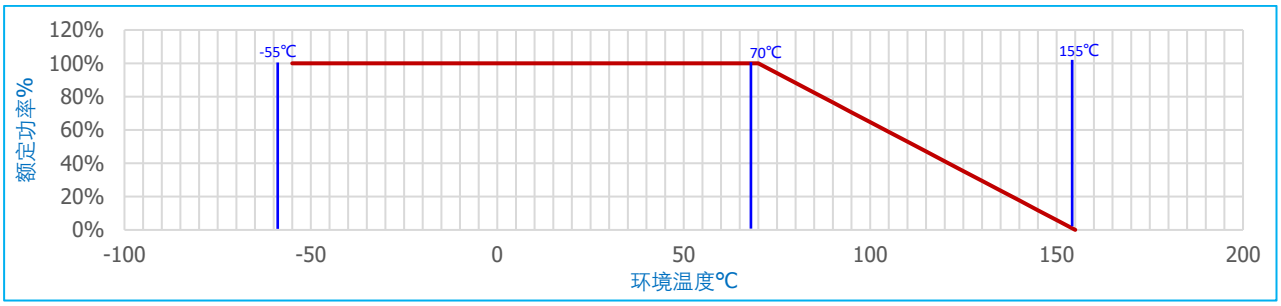
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
F	A	0	2	0	2	J	1	0	0	K		T	5	G	0	0

产品系列 Series	封装尺寸，长×宽 Size, Length × Width	精度 Tol.	产品阻值 Resistance Value	包装方式 Packing	包装数量 SPQ	特性 Feature	温度系数 TCR
FA: 凸式电极抗硫化厚膜晶片排列电阻 Convex Termination Anti-Sulfur Thick Film Chip Resistors Array	0202-0402×2 0204-0402×4 0304-0603×4	F:±1% J:±5%	• 10R: 10Ω，10 欧姆 • 4K7: 4.7KΩ，4.7 千欧 • 100K: 100KΩ，100 千欧 • 1M: 1MΩ，1 兆欧 注:不论精度，阻值表达一致 Value code is same even if different tolerance. • R-Radix，小数点	T: 卷装 Reel	5-5K A-10K	G: 标准品 Std. S: 订制品 custo mized	00: 详见参数表 Details in sheet.

产品规格 SPECIFICATION

型别 Type	额定功率 Power rating	最高额定电压 Max Voltage Rating	最高过负荷电压Max Voltage Overload	±1% & ±5%阻值范围 Value Range	跳线额定电流 Jumper Current Rating	跳线最大电流 Jumper Max Current	跳线阻值 Jumper Value Range
FA0202 0402×2	1/16W	50V	100V	10Ω-1MΩ	1A	2.5A	50mΩ MAX.
FA0204 0402×4	1/16W	50V	100V	10Ω-1MΩ	1A	2.5A	50mΩ MAX.
FA0304 0603×4	1/16W	50V	100V	10Ω-1MΩ	1A	2.5A	50mΩ MAX.
使用温度范围 Working Temperature			-55℃ ~ +155℃				

功率衰减曲线 POWER DERATING



额定电压 VOLTAGE RATING

对于额定功率之直流或交流(rms)电压。可用以下公式计算，如果计算的值超过产品规格表内的最高额定电压时，则以最高额定电压为其额定电压。

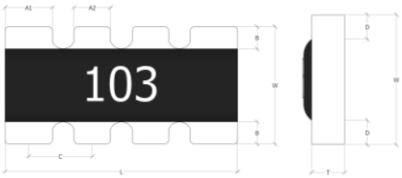
Voltage rating can be calculated by formula as below, and the result calculated higher than the max voltage rating listed in table, the max voltage rating is the certain voltage rating of this value resistor.

公式如下 Formula:

$$E = \sqrt{P \times R}$$

E=额定电压 Voltage rating (V)
P=额定功率 Power rating (W)
R=阻值 Resistance value (Ω)

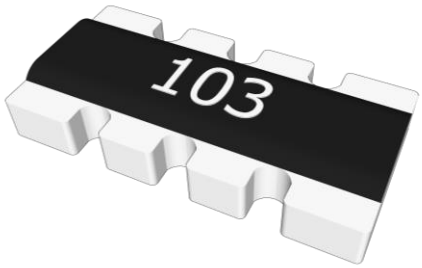
产品尺寸 DIMENSIONS

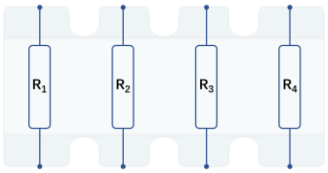


单位 Unit: 毫米 mm

型别	L	W	H	A	B
FA0202 0402×2	1.00±0.10	1.00±0.10	0.30±0.05	0.15±0.10	0.25±0.10
FA0204 0402×4	2.00±0.10	1.00±0.10	0.40±0.10	0.20±0.10	0.25±0.10
FA0304 0603×4	3.2±0.20	1.60±0.15	0.50±0.10	0.30±0.15	0.30±0.15

产品结构 STRUCTURE





注：$R_1=R_2=R_3=R_4$

信赖性测试 RELIABILITY

项目 Item	测试条件 Conditions	指标 Specifications	
		电阻 Resistors	跳线 Jumper
温度系数 Temperature Coefficient of Resistance (T.C.R.)	$TCR(PPM/℃)=\frac{(R_2-R_1)}{R_1\times(T_2-T_1)}\times10^6$ R_1:室温下量测之阻值(Ω) Value in room temperature R_2:-55℃ 或+125℃下量测之阻值(Ω) Value in test temperature T_1:室温之温度(℃) Room temperature T_2:-55℃ 或+125℃之温度(℃)。 Test temperature **依据 Reference: JIS-C5201-1 4.8**	1Ω ≤ R ≤ 10Ω: ±200ppm/℃ 10Ω<R ≤10MΩ: ±100ppm/℃	NA
短时间过负荷 Short Time Overload	2.5 倍的额定电压。时间：5 秒，放置 30 分钟以上再量测阻值变化率。 Voltage: 2.5 times of voltage rating within 5 seconds. Test the change rate after testing 30 minutes. **依据 Reference: JIS-C5201-1 4.13**	1%：△R=±1.0% 5%：△R=±2.0%	参考产品规格表 More detail in Product Spec. (0Ω)
焊锡性 Solderability	将电阻浸于 235±5℃之炉中 2 秒后取出置于显微镜下观察焊锡面积。 Hold resistors in a furnace at 235 ± 5 ℃ for 2 seconds, take it out and observe the solder area under a microscope. **依据 Reference: JIS-C5201-1 4.17**	导体吃锡面积应大于 95% Coverage must be over 95%	

耐焊接热 Resistance to Soldering Heat	260℃ 锡炉中浸入 10 秒，取出静置 60 分钟，量测阻值变化率。 Hold resistors in 260 ℃ tin furnace for 10 seconds, take it out and stand for 60 minutes, and measure the change rate. **依据 Reference: JIS-C5201-1 4.18**	△R%=±1.0%	参考产品规格表 More detail in Product Spec. (0Ω)
Leaching	锡炉 260°C、浸入 30 秒，取出观察电阻外观。 Hold resistor the tin furnace at 260 ° C for 30 seconds, take it out and observe the appearance of the resistance. **依据 Reference: JIS-C5201-1 4.18**	无可见损坏 No visible damage.	
弯折测试 Board Flex/ Bending	将电阻焊于弯折性测试板中，置于弯折测试机上，在测试板中央施力下压，于负荷下量测阻值变化率。 The resistance is welded in PCB, placed on the bending test machine, pressed in the center of PCB, and the change rate of resistance value is measured under load. 下压深度 Pressing depth (D): 0402、 0603、 0805=5mm 0201、 1206、 1210=3mm 2010、 2512=2mm **依据 Reference: JIS-C5201-1 4.33**	△R=±1.0%	参考产品规格表 More detail in Product Spec. (0Ω)
耐热性试验 High Temperature Exposure	最高温度下存放 1000 小时，不通电，取出静置 60 分钟，测变化率。 Store at the maximum temperature for 1000 hours without power, take it out and stand for 60 minutes, and then measure the change rate. **依据 Reference: JIS-C5201-1 4.25**	1%：△R=±1.0% 5%：△R=±2.0%	参考产品规格表 More detail in Product Spec. (0Ω)
冷热冲击 Thermal Shock	将产品放置在冷热冲击箱中，温度为-55℃、15 分钟，+125℃、15 分钟，共计循环 300 次后取出，静置 60 分钟再量测阻值变化率。 Place the product in the cold and hot shock box at - 55 ℃ for 15 minutes and + 125 ℃ for 15 minutes. Take it out after 300 cycles, stand for 60 minutes, and then measure the resistance change rate. **依据 Reference: MIL-STD-202 Method 107G**	△R=±1.0%	参考产品规格表 More detail in Product Spec. (0Ω)
耐湿负荷 Loading Life in Moisture	置于 40℃，90~95%相对湿度的恒温恒湿箱中，施加额定电压，90 分钟 ON，30 分钟 OFF，共 1,000 小时。取出静置 60 分，再测阻值变化率。 Place it in a constant temperature and humidity box with a temperature of 40 ℃ and a relative humidity of 90 ~ 95%, and apply the rated voltage, on for 90 minutes and off for 30 minutes, a total of 1000 hours. Take it out and stand for 60 minutes, and then measure the change rate **依据 Reference: JIS-C5201-1 4.24**	1%：△R=±1.0% 5%：△R=±2.0%	参考产品规格表 More detail in Product Spec. (0Ω)
负荷寿命 Load Life	置于 70℃之烤箱中施加额定电压， 90 分钟 ON， 30 分钟 OFF，共 1,000 小时。取出静置 60 分钟再量测阻值变化率。 Place in an oven at 70 ℃ and apply the rated voltage for 90 minutes on and 30 minutes off for 1000 hours. Take it out and stand for 60 minutes, and then measure the change rate of resistance value. **依据 Reference: JIS-C5201-1 4.25**	1%：△R=±1.0% 5%：△R=±3.0%	参考产品规格表 More detail in Product Spec. (0Ω)
抗硫化测试 FOS	将测试样品置于 105±2℃的硫化蒸汽中 750 小时。 Put the tested resistor in sulfur vapor, at a temperature of 105±2℃ for 750hrs. **依据 Reference: ASTM-B-809-95**	△R=±4.0%	参考产品规格表 More detail in Product Spec. (0Ω)

使用建议 SUGGESTION

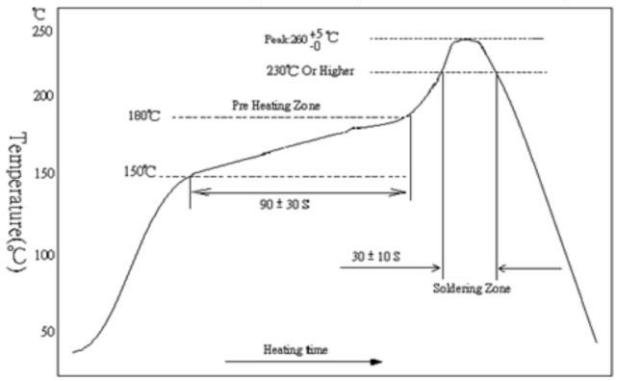
FA 系列的产品是属于一般消费类电子用途，本系列产品适用的消费电子应用领域，包括但不限于如下所示，如有其他应用需与鼎声微电进行确认是否适用。

FA series products are only for general purpose, used to consumer electronics fields. Please contact GiantOhm sales or FAE if products applied in another scene besides listed as below:

- 手机、平板、电脑等等一般电子产品。Smart phone, Pad, PC, and so on.

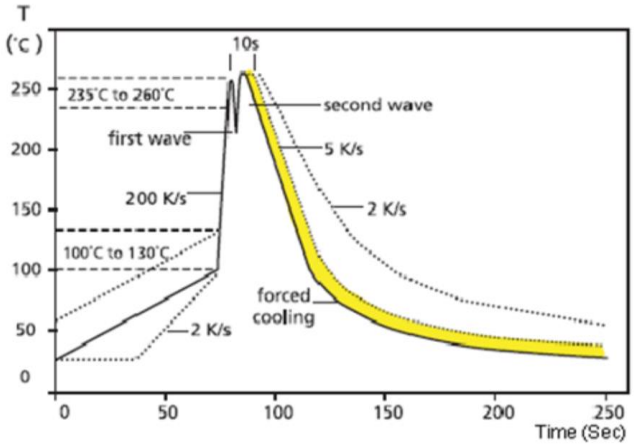
焊锡条件 SOLDERING

- 无铅回流焊工艺 Lead Free IR Reflow Soldering Profile (符合 J-STD-020D)



备注:零件最高耐温 260 +5/-0 ℃ ,10 秒。Note: the max. temperature resistance is 260+5/-0℃ within 10 sec.

- 无铅波峰焊工艺 Lead Free Double-Wave Soldering Profile



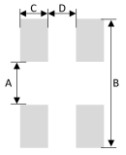
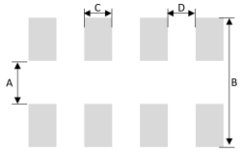
备注：烙铁焊锡方法:350±10℃ 3 秒之内。Note: Manual soldering in 350±10℃ within 3 sec.

推荐焊盘尺寸 ELECTRODE PAD

电阻贴片焊接，焊后的电阻值根据焊接区域的大小和焊接量的不同而稍有变化。设计电路时，有必要考虑其电阻值降低或增加的影响。

Resistance value would be lower than nominal value because of joint with soldering material, so designing circuit should adjust the pad size.

Dimension(mm)

图示 Figure	型别 Series	A	B	C	D
	FA0202 0402×2	0.50	2.00	0.33	0.34
	FA0204 0402×4	0.50	2.00	0.28	0.22
	FA0304 0603×4	1.00	2.60	0.40	0.40

使用环境 WORKING ENVIRONMENT

如果客户端有意在特殊环境或状态下使用本公司产品(包括但不限于如下所示)，则需针对下列或其他运用环境个别承认产品特性及信赖性。If user intends to use products in special environments or states (including but not limited to the following), it is necessary to approve special characteristics and reliability for the following or other application environments.

A. 运用于高温高湿之环境。High temperature.
B. 于接触海风或运用于其他腐蚀性气体之环境: Cl_2、 H_2S、 NH_3、 SO_2及 NO_2。Near the sea, or corrosive gas, such as Cl_2、 H_2S、 NH_3、 SO_2 and NO_2, etc.
C. 于非验证过液体中使用，包括水、油、化学品及有机溶剂。Unverified liquids, such as water, oil, chemical or organic solvent.
D. 使用非验证过的树脂或其他涂层材料来封合或涂层本公司产品。Unverified resin or paint to cover products.
E. 于焊锡后的清洗，需使用水溶性清洁剂清洗残留于产品助焊剂，虽然使用免洗助焊剂仍建议清洗。Products should be washed with water soluble cleaner even if non cleaning flux.

存储/搬运条件 STORAGE/CARRY

A. 在储存环境 25±5℃ 、 60±15%RH 之条件下可储存一年。Storage in 25±5℃ 、 60±15%RH in 1 year.
B. 存储时请避开如下恶劣环境，以免影响产品性能及焊锡连接性：海风、 Cl_2、 H_2S、NH_3、 SO_2及 NO_2等腐蚀性气体的场所，阳光直射、结露场所。Please avoid the following harsh environments for storing product, such as sea wind, Cl_2, H_2S, NH_3, SO_2, NO_2, and so on.
C. 产品搬运、存储时，确保箱体正确朝向，严禁摔落、挤压箱体，否则可能造成产品电极或本体受损。Please hold box correct orientation when storing and carrying. It is strictly prohibited to fall or squeeze the box, otherwise the product electrode or body may be damaged.

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