

LED 厚膜晶片电阻
Thick Chip Resistor Product FOR LED
FRD Series



应用 (Application)

- Soft Circuit board
- Soft lamp circuit
- 软性电路板
- 软灯条电路

特性 (Features)

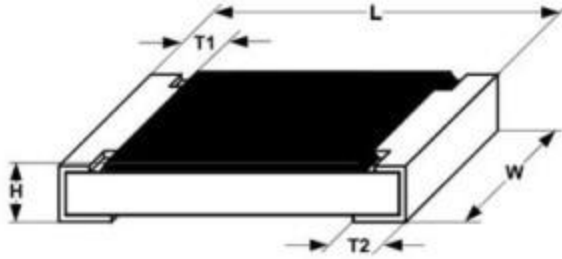
- Small size and light weight
- Reliability, high quality
- Stenghtened terminals &Suitable for Special Flexible PCB
- 体积小，重量轻
- 可靠性，高质量
- 电极强化，更符合柔性线路板应用

料号说明 (Parts Number Explanation)

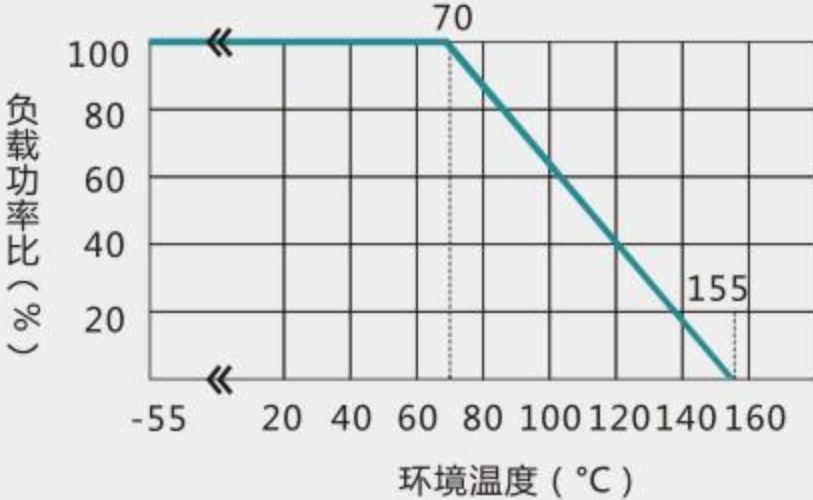
示例 Example: FRD1206J331 TS

E 公司名	R 产品别	D 功能别	1206 型别	J 公差	331 字码	I 包装别	S 端电极	特殊型
FOJAN	R:Resistor	D: LED	0805 1206	B:±0.1% C:±0.25% D:±0.5% F:±1% J:±5% P : Jumper	±5%:E24 3-digits+blank 102=1KΩ 1R0=1Ω ±1%&Below : E24+E96 : 4-digits 1001=1KΩ 1R00=1Ω	T: 7 inch reel Q:10 inch reel R:13 inch reel B:Bulk	S : Sn C : Cu A : Au	N:Normal D : LED
Company code	Type code	Functional code	Size code	Tolerance code	Resistance code	Packaging code	Termination code	Special code

■尺寸 (Dimension)

尺寸 dimension						单位 (unit) : mm
型别 (Type)	L	W	H	T1	T2	
0805	2.00±0.10	1.25±0.10	0.50±0.10	0.35±0.20	0.40±0.20	
1206	3.10±0.10	1.60±0.10	0.55±0.10	0.45±0.20	0.45±0.20	

■功率衰减曲线 (Derating Curve)

使用 温度范围	-55℃~+155℃
说明	周围温度若超过70℃至155℃之间,功率可照下图曲线予以修订
功率衰减曲线图	

■电气特性 (Electrical characteristics)

型别 Type	0805	1206
绝缘耐压 Dielectric Withstanding Voltage	300V	500V
零欧姆阻值 ±1% Resistance Value of Jumper ±1%	<30mΩ	<30mΩ
零欧姆阻值 ±5% Resistance Value of Jumper ±5%	<50mΩ	<50mΩ
零欧姆额定电流 Rated Current of Jumper	2A	2A
零欧姆电阻最大电流 Max Current of Jumper	5A	10A

■电性规格 (Standard Electrical Specifications)

型别 Type	额定功率 (Power Rating at 70℃)	最高工作电压 Max. RCWV	最大过负荷 电压 Max. Overload Voltage	T.C.R. (PPM/℃)	阻值范围 Resistance Range
0805	1/8W	150V	300V	± 400	1Ω~10Ω
				± 200	10 MΩ~22 MΩ
				± 100	10Ω~10MΩ
1206	1/4W	200V	400V	± 400	1Ω~10Ω
				± 200	10 MΩ~22 MΩ
				± 100	10Ω~10MΩ

如有非标准品的需求,请联系我们的业务部门 For non-standard parts, please contact our sales dept.

■性能 (Performance Specifications)

内容 Item	测试方法 Test Methods	测试条件 Test Conditions	规格 Specification
温度系数 Temperature Coefficient	JIS C 5201 4.8	$TCR = (R - R_0) / (t - t_0) R_0 \times 10^6 \text{ (ppm)}$ R_0 电阻在室温下的阻值(resistance at room temperature) R 电阻在 125℃或-55℃下的阻值(resistance at 125℃ or -55℃) t_0 室温(room temperature) t 测试温度 (test temperature 125℃ or -55℃)	$1\Omega \leq R \leq 10\Omega$: ±400 PPM/℃ $10\text{ M}\Omega \sim 22\text{ M}\Omega$ ±200 PPM/℃ $10\Omega < R \leq 10\text{M}\Omega$: ±100 PPM/℃

内容 Item	测试方法 Test Methods	测试条件 Test Conditions	规格 Specification
短时间过负荷 Short-time overload	JIS C 5201 4.13	加载 2.5 倍的额定电压，时间 5 秒后测量试验前后的阻值变化率。 Applied 2.5 times of rated voltage for 5 second. Measure the variation of resistance.	$\pm(1.00\% + 0.05\Omega)$
焊锡性 Solderability	JIS C 5201 4.17	沾助焊剂后浸入锡炉，锡炉温度 $245\pm 5^{\circ}\text{C}$ ，时间 3 ± 0.5 秒。 Dip the terminal in a flux and then dip into a soldering bath at $245\pm 5^{\circ}\text{C}$ for $3\pm 0.5\text{sec}$.	> 95%面积上锡 (> 95% coverage)
抗焊锡热 Resist to soldering heat	JIS C 5201 4.18	沾助焊剂后浸入锡炉，锡炉温度 $260\pm 5^{\circ}\text{C}$ ，时间 10 ± 0.5 秒，测量试验前后的阻值变化率。 Dip the terminal in a flux and then dip into a soldering bath at $260\pm 5^{\circ}\text{C}$ for $10\pm 0.5\text{sec}$. Measure the variation of resistance.	$\pm(1.00\% + 0.05\Omega)$
绝缘电阻 Insulation resistance	JIS C 5201 4.6	电阻本体上加载绝缘耐压 60 ± 5 秒后，测量绝缘阻抗。 Applied the dielectric withstanding voltage on the center of body for $60\pm 5\text{seconds}$. Then measure insulation resistance.	> $10\text{G}\Omega$
绝缘耐压 Dielectric withstanding voltage	JIS C 5201 4.7	电阻本体上加载绝缘耐压 60 ± 5 秒。 Applied the dielectric withstanding voltage on the center of body for $60\pm 5\text{seconds}$.	无击穿、飞弧及可见机械性损伤 No evidence of flashover, mechanical damage arcing or insulation breakdown
端子弯曲 Terminal bending	JIS C 5201 4.33	电阻焊接在测试板上进行弯折，弯折保持时间 20 ± 1 秒，1206(含) 以下的尺寸弯曲 $5+0.2/0\text{ mm}$ ；1206 以上的尺寸弯曲 $2+0.2/0\text{ mm}$ ；量测试前后阻值变化率 Specimen shall be mounted on test board, then bend the board and maintained for $20\pm 1\text{s}$. the distance of bending is $5+0.2/0\text{ mm}$ for resistors which size no larger than 1206 or $2+0.2/0\text{ mm}$ which size larger than 1206. Measure the variation of resistance.	$\pm(1.00\% + 0.05\Omega)$

内容 Item	测试方法 Test Methods	测试条件 Test Conditions	规格 Specification
温度循环 Temperature Cycling	JIS C 5201 4.19	电阻放入温度循环机中，温度 $155\pm 2^{\circ}\text{C}$ 至 $-55\pm 3^{\circ}\text{C}$ ，共 5 个循环。量测试验前后阻值变化率。 Put specimen in a chamber which temperature can be changed to $155\pm 2^{\circ}\text{C}$ or $-55\pm 3^{\circ}\text{C}$, repeated 5 times. Measure the variation of resistance.	$\pm(2.00\% + 0.05\Omega)$
耐湿特性 Humidity	JIS C 5201 4.24	电阻放入恒温恒湿箱，温度 $40\pm 2^{\circ}\text{C}$ ，湿度 90~95 %RH; 通电额定电压 1.5 小时，断电 0.5 小时；重复通断电至试验时间 $1000^{+48}/_{-0}$ 小时。量测试验前后阻值变化率。 Put the specimen in a chamber at $40\pm 2^{\circ}\text{C}$ temperature and 90~95% relative humidity, then applied rated voltage for 1.5H and rested for 0.5H repeatedly till total test time is $1000^{+48}/_{-0}$ H. Measure the variation of resistance.	$\pm(2.00\% + 0.05\Omega)$
负荷寿命 Load life	JIS C 5201 4.25.1	电阻放入恒温箱中，温度 $70\pm 2^{\circ}\text{C}$ ，ON TIME:1.5H，OFF TIME:0.5H，通电额定电压 $1000^{+24}/_{-0}$ 小时，量测试验前后阻值变化率。 Put the specimen in a chamber at $70\pm 2^{\circ}\text{C}$ temperature, ON TIME:1.5H，OFF TIME:0.5H，and applied rated voltage for $1000^{+24}/_{-0}$ H. Measure the variation of resistance.	$\pm(2.00\% + 0.05\Omega)$
温湿循环 Moisture resistance	MIL-STD-202 METHOD 106	25°C~65°C,90~100%RH, 2.5 小时; 65°C 90~100%RH, 3 小时; 65°C~25°C,80~100%RH,2.5 小时,10 个循环,试验结束 24 ± 4 小时后进行测试。 25°C~65°C,90~100%RH, 2.5H; 65°C 90~100%RH, 3H; 65°C~25°C 80~100%RH, 2.5H, 10 cycles, Measurement at 24 ± 4 hours after test conclusion.	$\pm(2.00\% + 0.05\Omega)$