

产品描述 Product description

红外线发射二极管（KEL-704G）是高强度的二极管，使用绿色透明的外胶封装，此器件可普用于光电晶体管、光电二极管以及红外发射接收模块

Infrared Emitting Diode (KEL-704G) is a high intensity diode , molded in a green transparent package.The device is spectrally matched with phototransistor , photodiode and infrared receiver module.

产品特征Features

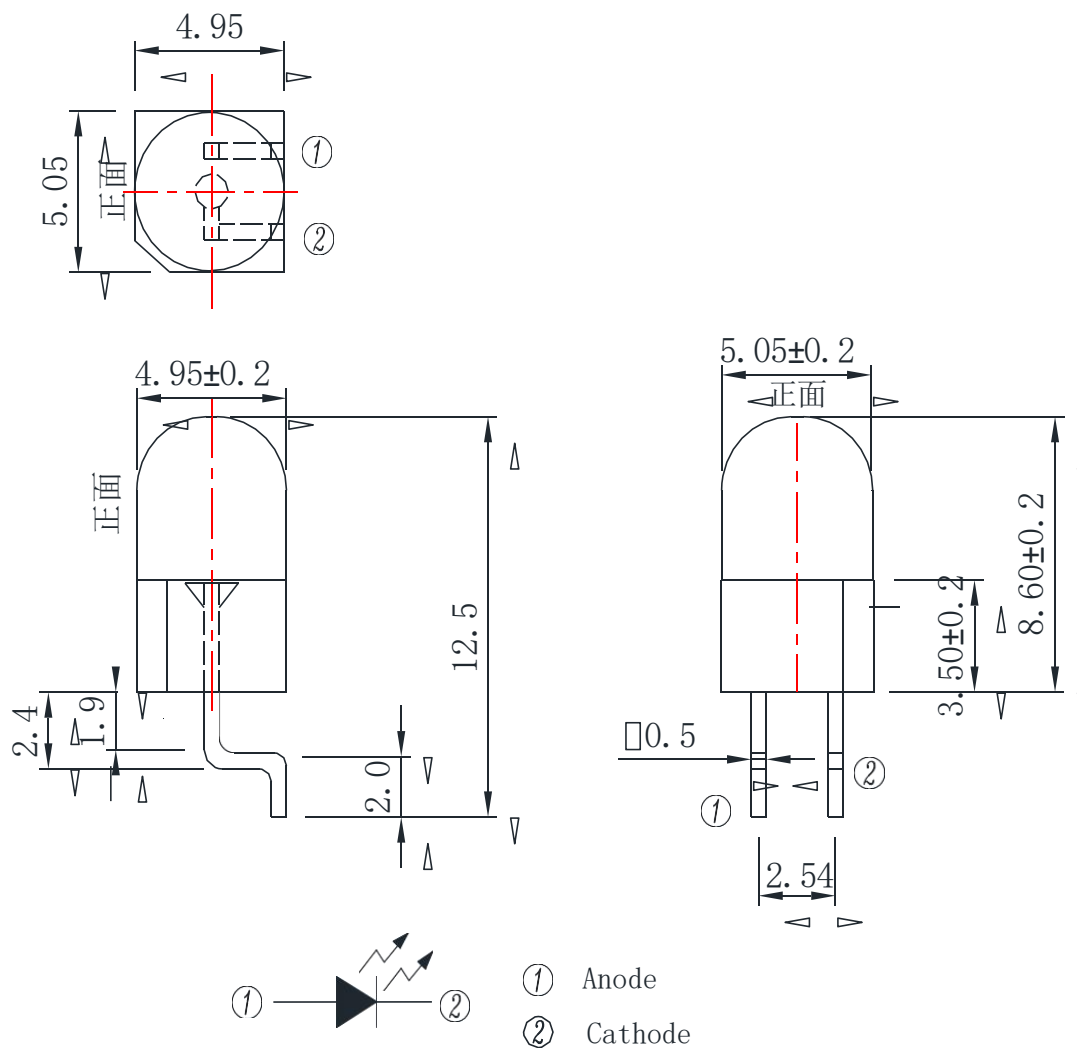
- 发光峰值波长 $\lambda_p=940\text{nm}$
- 2.54mm 支架间距
- 5mm 红外 LED
- 高可靠性
- 高光效
- 低功耗
- 无铅
- 符合 RoHS 环保要求
- Peak wavelength $\lambda_p=940\text{nm}$
- 2.54mm Lead spacing
- 5mm Infrared LED
- High reliability
- High radiant intensity
- Low forward voltage
- Pb Free
- This product itself will remain within RoHS compliant version.

产品用途Applications

- 信号传输系统
- 红外遥控控制模组
- 烟雾侦测器
- 红外应用系统
- transmission system
- Infrared remote control units
- Smoke detector
- Infrared applied system

产品指南 Device Selection Guide

晶片材质 Chip Materials	胶体颜色 Resin Color
砷化铝镓 GaAlAs	绿色透明 green clear

PACKAGE DIMENSIONS**NOTES:**

1. All dimensions are in millimeters (inches).
2. Tolerance is $\pm 0.25\text{mm}(.010")$ unless otherwise noted.
3. Lead spacing is measured where the leads emerge from the package.

极限参数（温度=25℃）Absolute Maximum Ratings (Ta=25℃)

参数项目 Parameter	标识 Symbol	极限值 Absolute Maximum Rating	单位 Unit
顺向电流 Continuous Forward Current	I _F	100	mA
脉冲电流 Peak Forward Current(*1)	I _{FP}	1.0	A
反向电压 Reverse Voltage	V _R	5	V
工作温度 Operating Temperature	T _{opr}	-25 ~ +85	℃
储存温度 Storage Temperature	T _{stg}	-25 ~ +85	℃
焊接温度 Soldering Temperature	T _{sol}	260	℃
消耗功率 Power Dissipation	P _d	150	mW

*1. 脉冲条件：工作宽度 Pulse width $\leq 100\mu\text{s}$, 占空比 Duty cycle=1%, 工作时间 $t_w=100\mu\text{sec.}$, 周期 $T=10\text{ msec.}$

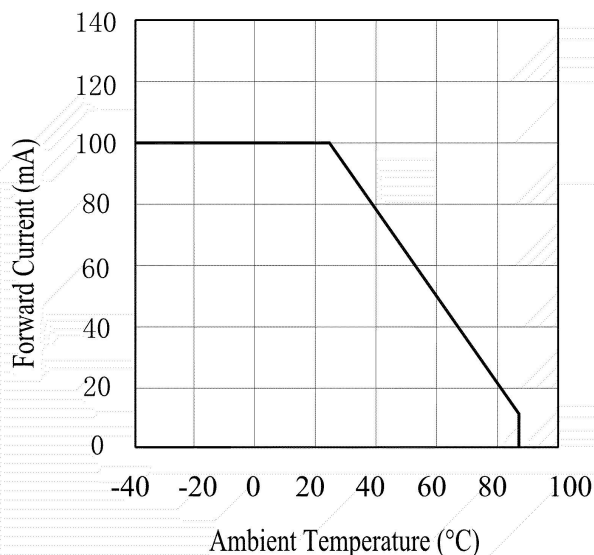
光电性能 Electro-Optical Characteristics (Ta=25℃)

参数项目 Parameter	标识 Symbol	Min.	Typ.	Max.	单位 Unit	条件 Condition
光辐射功率 Radiant Intensity	I _e	----	42	----	mW/sr	I _F =50mA
		----	75	----		I _F =100mA (Pulse Width $\leq 100\mu\text{s}$, Duty $\leq 1\%$)
峰值波长 Peak Wavelength	λ_p	----	940	----	nm	I _F =20mA
宽波宽度 Spectral Bandwidth	$\Delta\lambda$	----	45	----	nm	I _F =20mA
顺向电压 Forward Voltage	V _F	----	1.2	1.5	V	I _F =20mA
		----	1.4	1.8		I _F =100mA (Pulse Width $\leq 100\mu\text{s}$, Duty $\leq 1\%$)
反向漏电流 Reverse Current	I _R	----	----	10	uA	V _R =5V
角度 View Angle	θ		30		deg	I _F =20mA

产品典型特性曲线图 Typical Electro-Optical Characteristics Curves

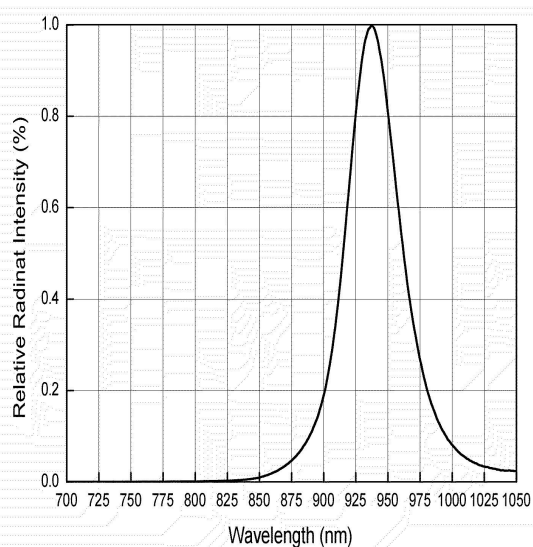
正向电流与环境温度曲线

Forward Current vs. Ambient Temperature



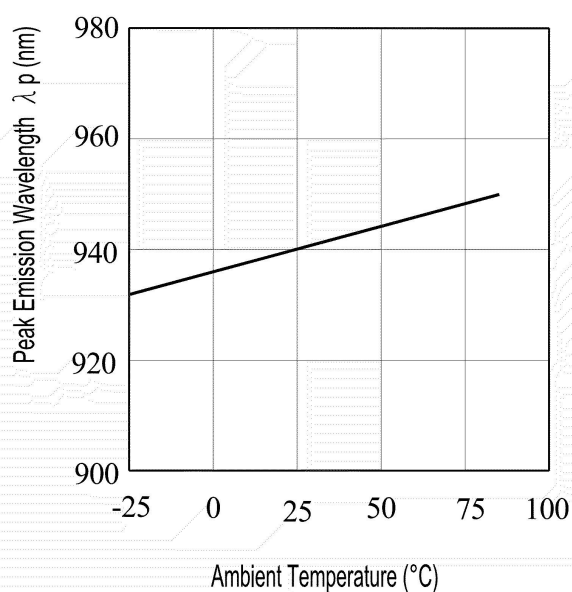
光谱分布特性曲线

Spectral Distribution



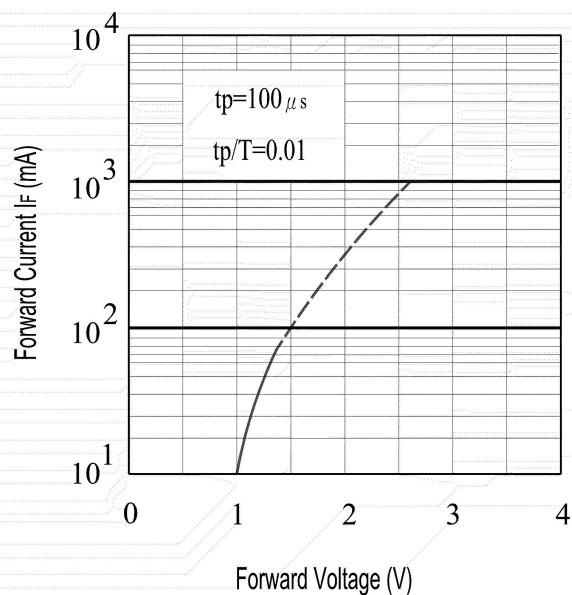
环境温度与峰值波长特性曲线

Peak Emission Wavelength vs. Ambient Temperature



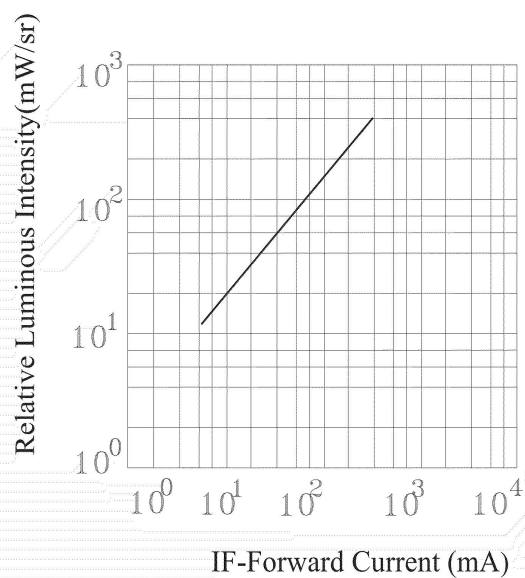
正向伏安特性曲线

Forward Current vs. Forward Voltage



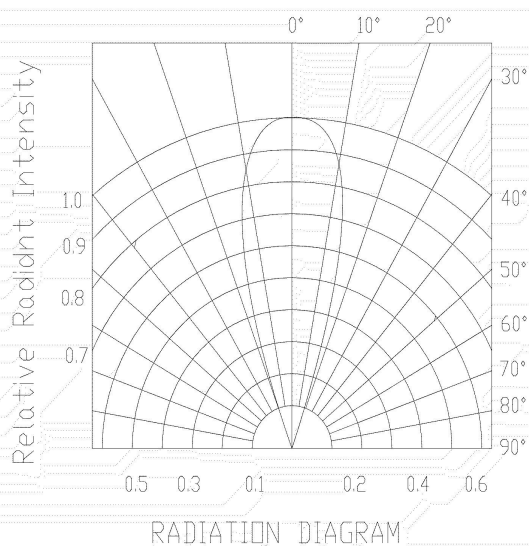
顺向电流与辐射功率特性曲线

Radiant Intensity vs. Forward Current



辐射强度与发射角度分布曲线

Relative Radiant Intensity vs. Angular Displacement

**等级 Rank**

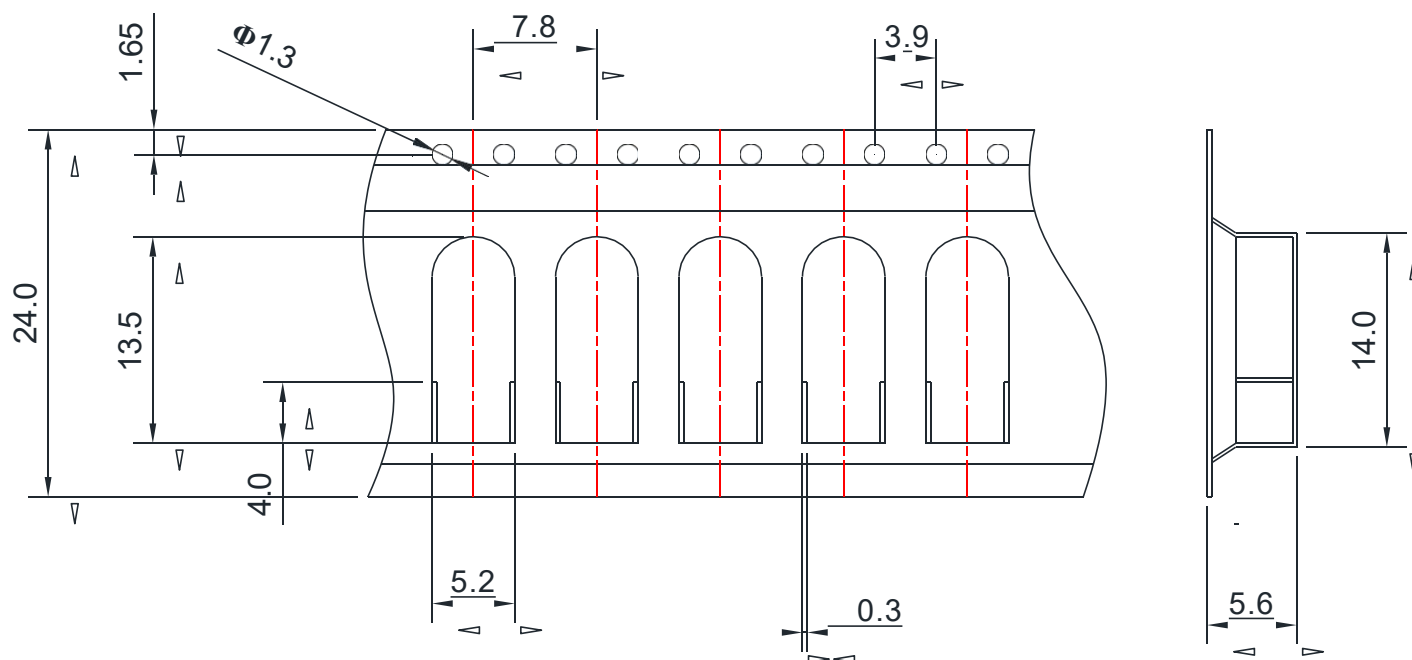
测试条件 Test Condition : IF=50mA

单位 Unit: mW/sr

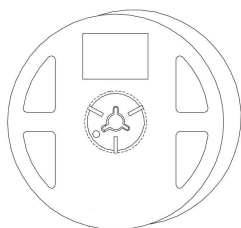
等级 Rank	L	M
MIN	35.0	60.0
MAX	60.0	80.0

备注：分光测试误差为±20%

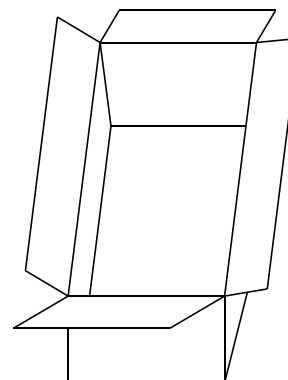
Note: Tolerances unless Radiant Intensity ±20%

编带尺寸 Taping Dimension**包装规范 Packing Specification**

■ 卷轴 The Tape



■ 外盒 Outside Carton



Reliability Test Item And Condition

The reliability of products shall be satisfied with items listed below.

Confidence level : 90%

LTPD : 10%

NO.	Item	Test Conditions	Test Hours/ Cycles	Sample Sizes	Failure Judgement Criteria	Ac/Re
1	Solder Heat	TEMP. : $260^{\circ}\text{C} \pm 5^{\circ}\text{C}$	10secs	22pcs	$I_R \geq U \times 2$ $E_e \leq L \times 0.8$ $V_F \geq U \times 1.2$ U : Upper Specification Limit L : Lower Specification Limit	0/1
2	Temperature Cycle	H : $+100^{\circ}\text{C}$ 15mins \updownarrow 5mins L : -40°C 15mins	300Cycles	22pcs		0/1
3	Thermal Shock	H : $+100^{\circ}\text{C}$ 5mins \updownarrow 10secs L : -10°C 5mins	300Cycles	22pcs		0/1
4	High Temperature Storage	TEMP. : $+100^{\circ}\text{C}$	1000hrs	22pcs		0/1
5	Low Temperature Storage	TEMP. : -40°C	1000hrs	22pcs		0/1
6	DC Operating Life	$I_F = 20\text{mA}$	1000hrs	22pcs		0/1
7	High Temperature/ High Humidity	85°C / 85% R.H	1000hrs	22pcs		0/1

Packing Quantity Specification

1. 2000Pcs/1Tape,10 Tape/1Carton

Label Form Specification

製品名 PRODUCT	
コードNo. CODE No.	
数 量 Q'TY	
ロットNo. LOT No.	
備 考 REMARKS	
SIVAGO [®] SEMICONDUCTOR	

- PRODUCT: Part Number
- CODE NO.: Product Serial Number
- QTY: Packing Quantity
- LOT No: Lot Number
- REMARKS:Remarks

Notes**Lead Forming**

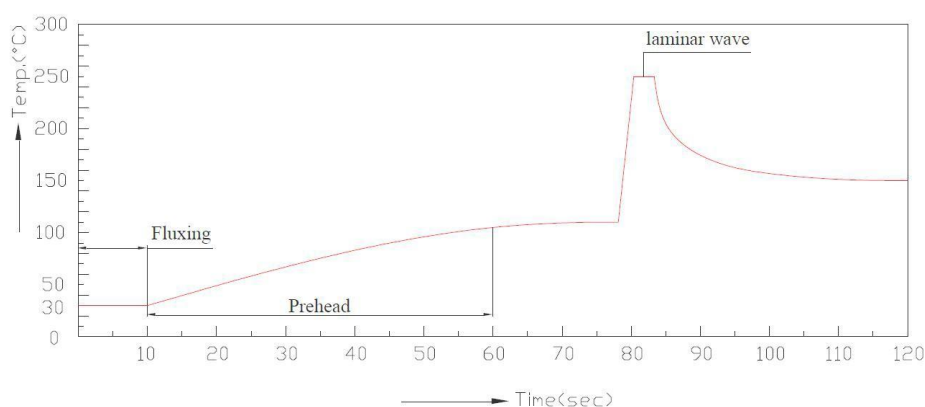
1. During lead formation, the leads should be bent at a point at least 3mm from the base of the epoxy bulb.
2. Lead forming should be done before soldering.
3. Avoid stressing the LED package during leads forming. The stress to the base may damage the LED's characteristics or it may break the LEDs.
4. Cut the LED lead frames at room temperature. Cutting the lead frames at high temperatures may cause failure of the LEDs.
5. When mounting the LEDs onto a PCB, the PCB holes must be aligned exactly with the lead position of the LED. If the LEDs are mounted with stress at the leads, it causes deterioration of the epoxy resin and this will degrade the LEDs.

Soldering

1. Careful attention should be paid during soldering. When soldering, leave more than 3mm from solder joint to epoxy bulb, and soldering beyond the base of the tie bar is recommended.
2. Recommended soldering conditions:

Hand Soldering		DIP Soldering	
Temp. at tip of iron	300°C Max. (30W Max.)	Preheat temp.	100°C Max. (60 sec Max.)
Soldering time	3 sec Max.	Bath temp. & time	260 Max., 5 sec Max
Distance	3mm Min.(From solder joint to epoxy bulb)	Distance	3mm Min. (From solder joint to epoxy bulb)

3. Recommended soldering profile



4. Avoiding applying any stress to the lead frame while the LEDs are at high temperature particularly when soldering.
5. Dip and hand soldering should not be done more than one time
6. After soldering the LEDs, the epoxy bulb should be protected from mechanical shock or vibration until the LEDs return to room temperature.
7. A rapid-rate process is not recommended for cooling the LEDs down from the peak temperature.
8. Although the recommended soldering conditions are specified in the above table, dip or hand soldering at the lowest possible temperature is desirable for the LEDs.
9. Wave soldering parameter must be set and maintain according to recommended temperature and dwell time in the solder wave.

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