

DATA SHEET

Revise History

Rev.	Descriptions	Date	Page
1.0	-	23-10-2009	-
2.0	Renew form	15-12-2015	-
2.1	Renew form	10-11-2018	-
2.2	Renew form	27-12-2021	-
2.3	Renew form	23-10-2023	-
2.4	Renew form	10-12-2024	-



Features

- Long operating life.
- Low Power Consumption.
- RoHS Compliant.
- Moisture sensitivity level: 5a.

Application

- Backlight, Status indicator, Home and smart appliances, display screen.

Part Number	Dice Material	Emitted Color	Lens Color
IE-5050R-HB-BF-CE	AlGaInP	Ultra Red	Water Clear

Electro-Optical Characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Forward Voltage	V _F	1.80	2.00	2.40	V	IF=3*20mA
Luminous Intensity *1	I _V	1000	1500	2500	mcd	
Radiation Bandwidth	Δλ	-	20	-	nm	
Color Rendering Index	R _a	-	-	-	-	
CIE Coordinates	x,y	-				
Peak Wavelength	λ _p	-	630	-	nm	
Dominant Wavelength	λ _d	616	620	628	nm	
Viewing Angle *2	2θ _{1/2}	-	120	-	deg	
Reverse Current	I _R	-	-	10	uA	VR=5V

Notes

1.A Luminous Intensity is measured with a light sensor and filter combination that approximates the CIE eye-response curve.

2.2θ_{1/2} is the o-axis angle where the luminous intensity is 1/2 the peak intensity.

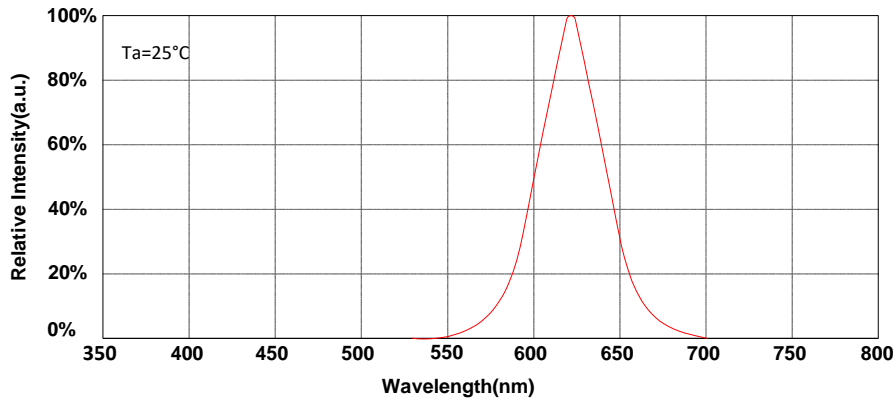
Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Max	Unit
		Ultra Red	
Power Dissipation	P _d	100	mW
Peak Forward Current *1	I _{FP}	100*3	mA
Forward Current	I _F	30*3	mA
Human Body Model	ESD	2000	V
Operating Temperature Range	T _{opr}	-40to+85	°C
Storage Temperature Range	T _{stg}	-40to+90	°C
Reflow Soldering	T _{slid}	260°C for 5 secs	

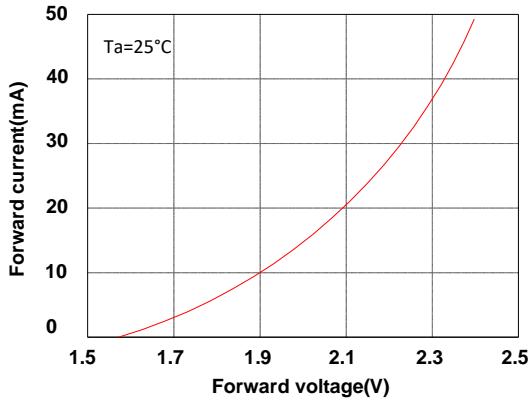
Notes : 1.Duty Factor=10%, Frequency=1kHz.

Optical & Electrical Characteristics Curves

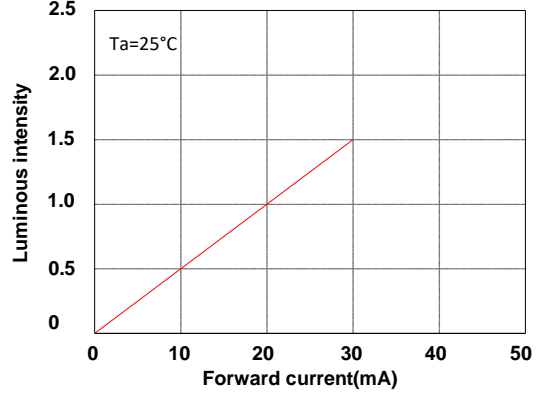
Relative Intensity vs.Wavelength



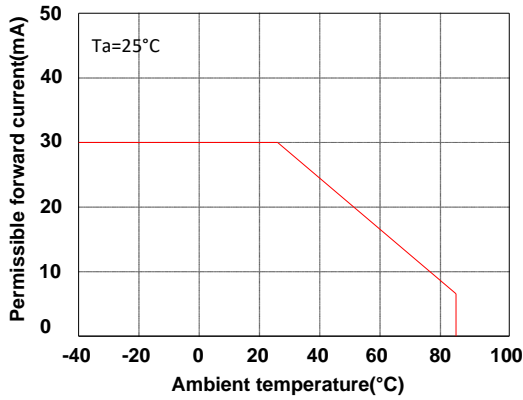
Forward Current vs.Forward Voltage



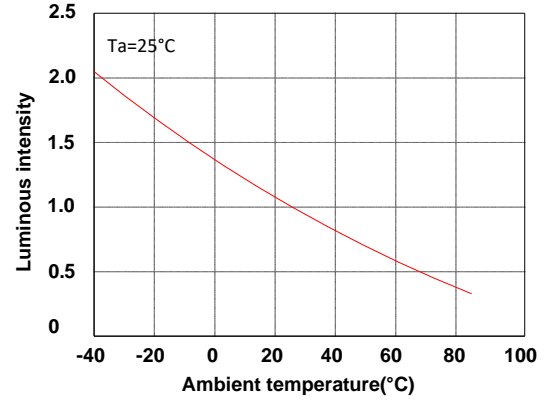
Luminous Intensity vs. Forward Current



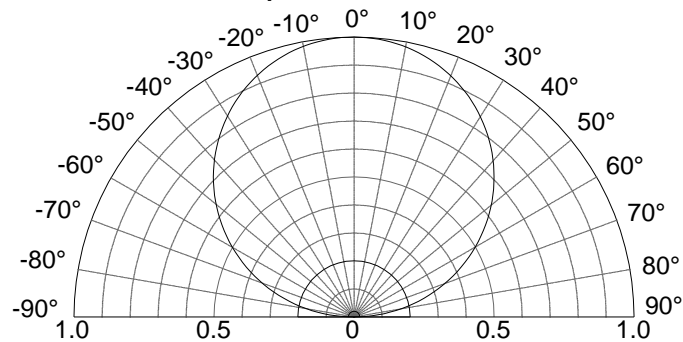
Forward Current Derating Curve



Luminous Intensity vs.Ambient Temperature



Spatial Distribution



Electro-Optical Characteristics Bin Limits

Bin Range Of Wavelength

Bin Code	Min.	Max.	Condition
R1	615	620	IF=20mA*3
R2	620	625	
R3	-	-	
R4	-	-	
R5	-	-	

Bin Range Of Luminous Intensity

Bin Code	Min.	Max.	Condition
L1	1000	1500	IF=20mA*3
L2	1500	2000	
L3	2000	2500	
L4	-	-	
L5	-	-	

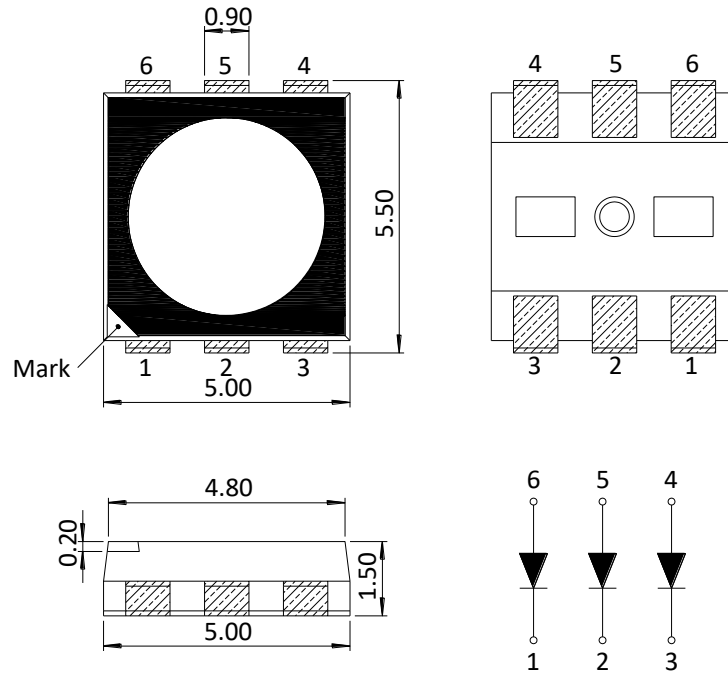
Bin Range Of Forward Voltage

Bin Code	Min.	Max.	Condition
V1	1.8	2.0	IF=20mA*3
V2	2.0	2.2	
V3	2.2	2.4	
V4	-	-	
V5	-	-	
V6	-	-	
V7	-	-	
V8	-	-	

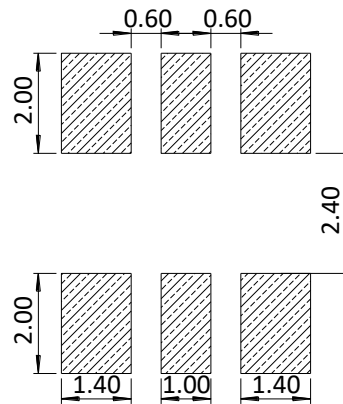
Notes

- 1.Luminous Intensity measurement tolerance: $\pm 10\%$.
- 2.Wavelength measurement tolerance: $\pm 1\text{nm}$.
- 3.Forward voltage measurement tolerance: $\pm 0.1\text{V}$.

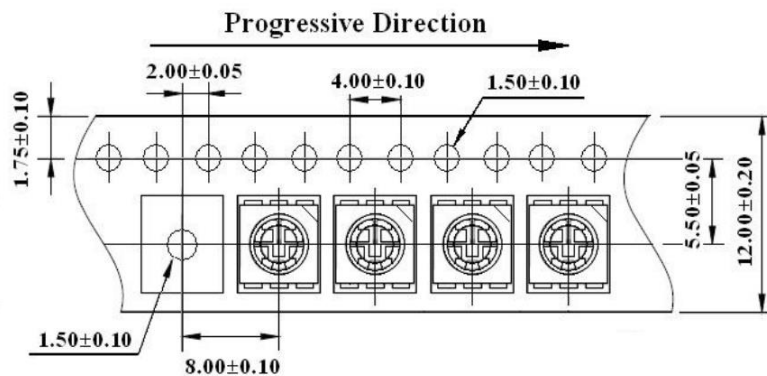
Package Dimension (Unit:mm,Tolerance:±0.20mm)



Recommended Soldering Pad Design (Unit:mm,Tolerance:±0.10mm)

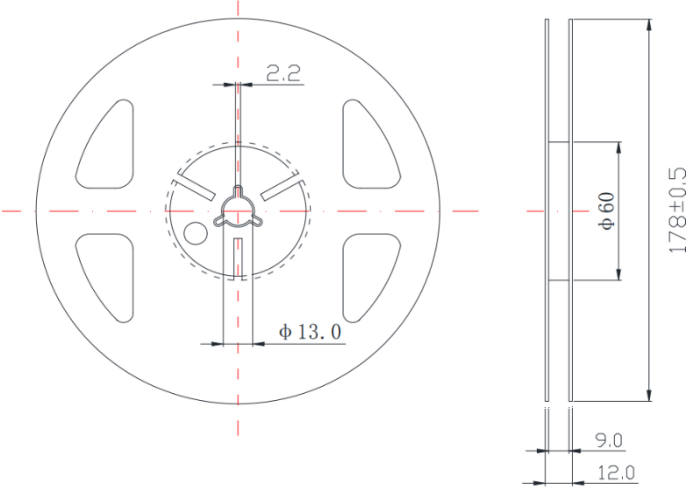


Carrier Tape Dimensions (Unit:mm,Tolerance:±0.10mm)

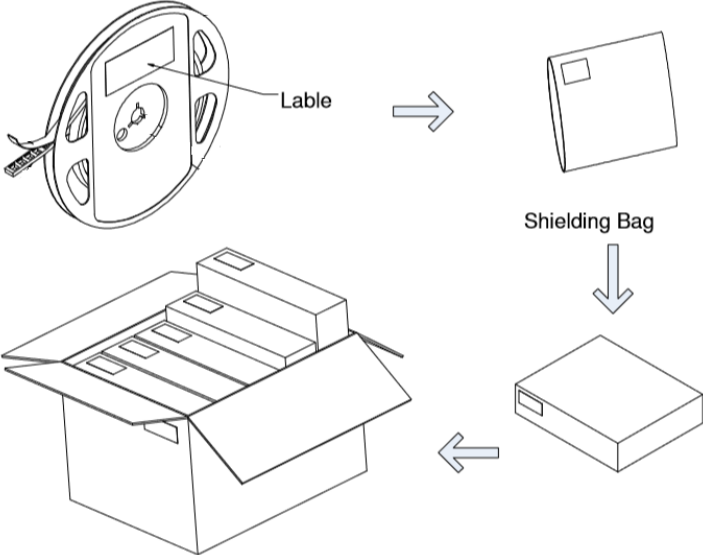


●Loaded quantity 1000 pcs per reel.

Reel Dimensions(Unit:mm,Tolerance: ±0.25mm)

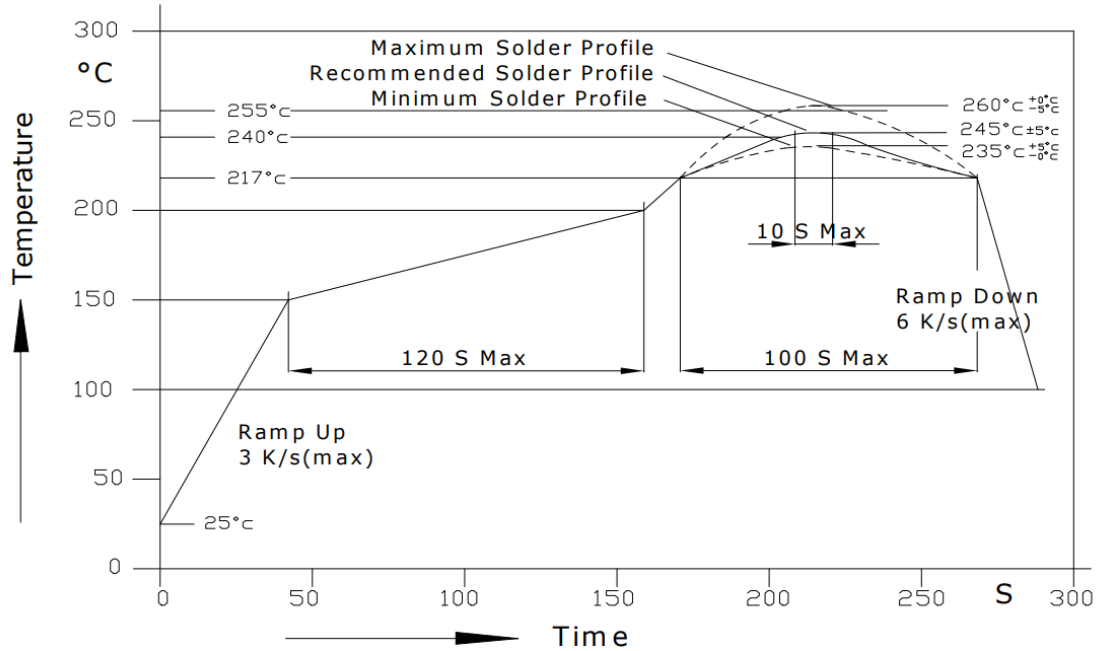


Packaging method



SMT Reflow Soldering Instructions

Pb-free solder temperature profile



- Reflow soldering should not be done more than two times.
- When soldering, do not put stress on the LEDs during heating.
- After soldering, do not warp the circuit board.
- Recommended soldering conditions:

Reflow soldering		Soldering iron	
Pre-heat	150~200°C	Temperature	300°C Max.
Pre-heat time	120 sec. Max.	Soldering time	3 sec. Max.
Peak temperature	260°C Max.		(one time only)
Soldering time	10 sec. Max.(Max. two times)		

Precautions

1. Storage :

- Moisture proof and anti-electrostatic package with moisture absorbent material is used, to keep moisture to a minimum.
- Before opening the package, the product should be kept at 30°C or less and humidity less than 60% RH, and be used within a year.
- After opening the package, the product should be stored at 30°C or less and humidity less than 10%RH. It is recommended that the product be operated at the workshop condition of 30°C or less and humidity less than 60%RH.
- If the moisture absorbent material has faded away or the LEDs have exceeded the storage time, baking treatment should be performed based on the following condition: (70±5) °C for 24 hours.

2. Static Electricity :

- Static electricity or surge voltage damages the LEDs. Damaged LEDs will show some unusual characteristics such as the forward voltage becoming lower, or the LEDs do not light at the low current. All devices, equipment and machinery must be properly grounded. At the same time, it is recommended that wrist bands or anti-electrostatic gloves, anti-electrostatic containers be used when dealing with the LEDs.

3. Vulcanization :

- LED curing is due to sulfur being in brackets and the +1 price of silver in the chemical reaction generated Ag₂S in the process. It will lead to the capacity of reflecting of silver layer reducing, light color temperature drift and serious decline, seriously affecting the performance of the product. So we should take corresponding measures to avoid vulcanization, such as to avoid using sulphur volatile substances and keeping away from high sulphur content of the material.

4. Handling Precautions :

- Handle the component along the side surfaces by using forceps or appropriate tools.
- Do not directly touch or handle the epoxy resin lens surface. It may damage the internal circuitry.
- Do not stack together assembled PCBs containing exposed LEDs. Impact may scratch the epoxy resin lens or damage the internal circuitry.