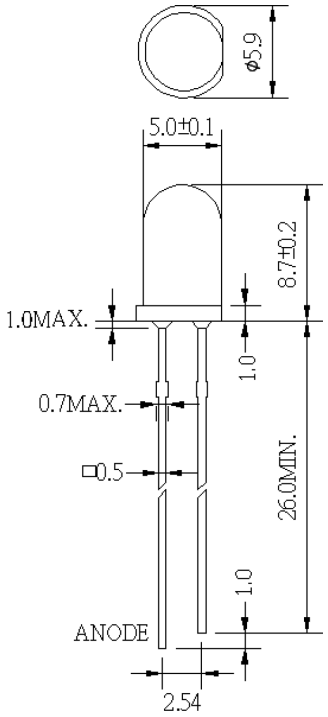
5mm (T-1 3/4) Round LED - Red

RoHS Compliant

Features

Dice Material	: AlInGaP
Peak Wave Length (nm)	: 653
Emitted Colour	: Super Red
Viewing Angle (deg)	: 45
Lens Colour	: Red Diffused
IV (mcd)	: 180



Electrical / Optical Characteristics at Ta = 25°C

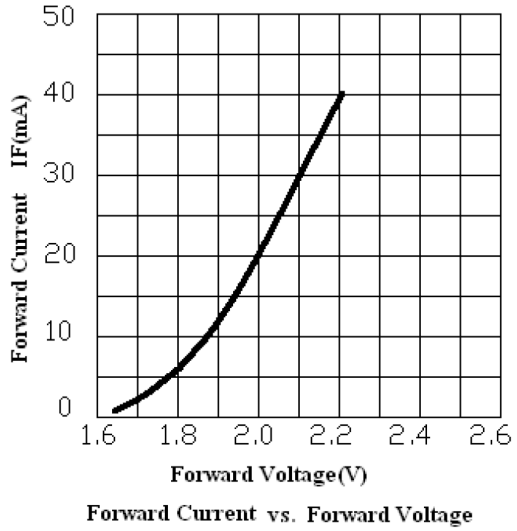
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test
Luminous Intensity	IV	120	180	250	mcd	IF = 20mA
Viewing Angle	2θ1/2		45		deg	
Peak Emission Wavelength	λp		653		nm	
Dominant Wavelength	λD	632	637	643	nm	
Spectral Line Half-Width	Δλ		19		nm	
Forward Voltage	VF	1.7	1.9	2.4	V	
Power Dissipation	Pd	-	-	85	mW	
Peak Forward current (Duty1/10@ 1KHz)	IF (Peak)			100	mA	
Recommended Operating Current	IF (Rec)			30	mA	

Absolute Maximum Ratings: (Ta = 25°C)

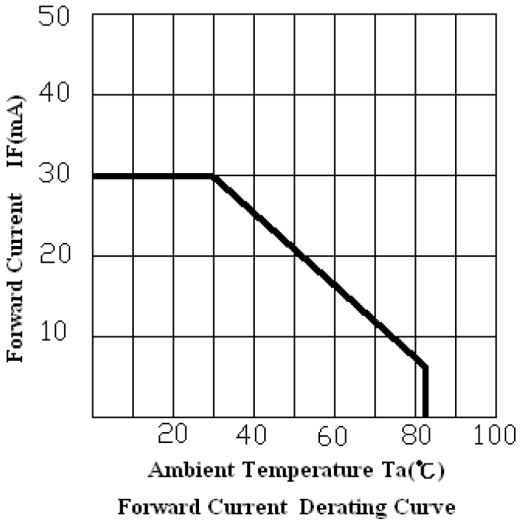
Reverse Voltage	: 5 Volt
Reverse Current	: 10 uA (V_R = 5V)
Operating Temperature Range	: -40°C to +85°C
Storage Temperature Range	: -40°C to +100°C
Lead Soldering Temperature Range (1.6 mm (1/16 inch) from body)	: 260°C for 5 sec.

Typical Electro-Optical Characteristics Curves

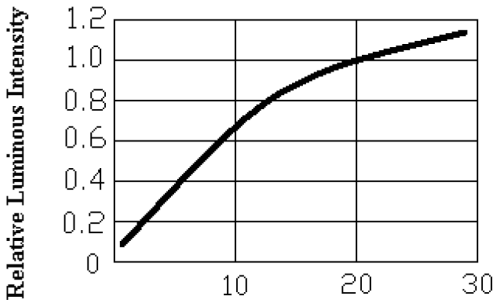
Ultra Red(AlInGaP λP=653nm)



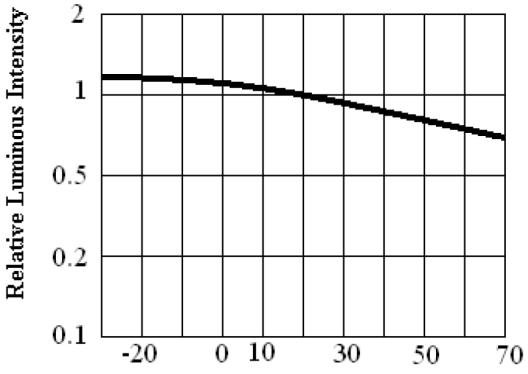
Forward Current vs. Forward Voltage



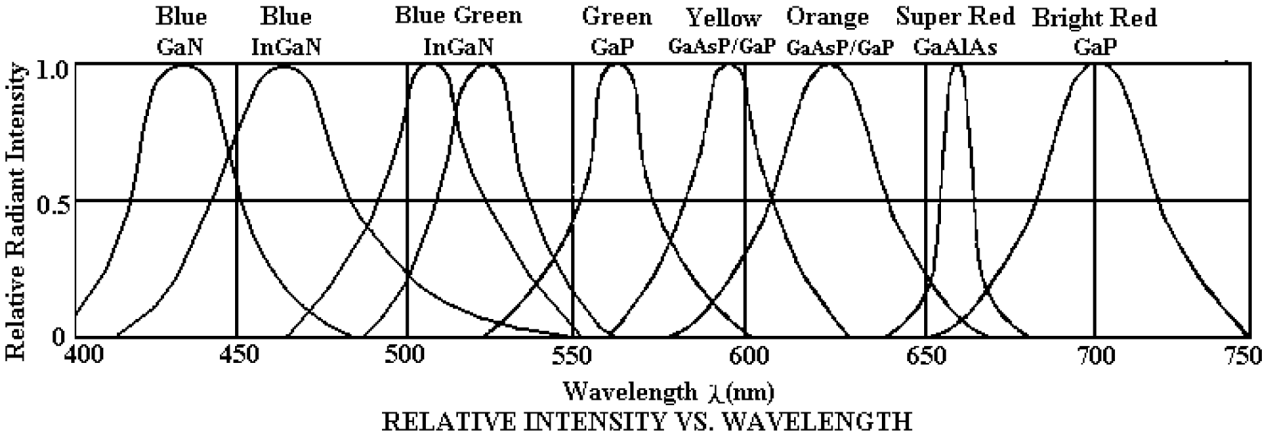
Forward Current Derating Curve



Luminous Intensity vs. Forward current



Luminous Intensity vs. Ambient Temperature



RELATIVE INTENSITY VS. WAVELENGTH

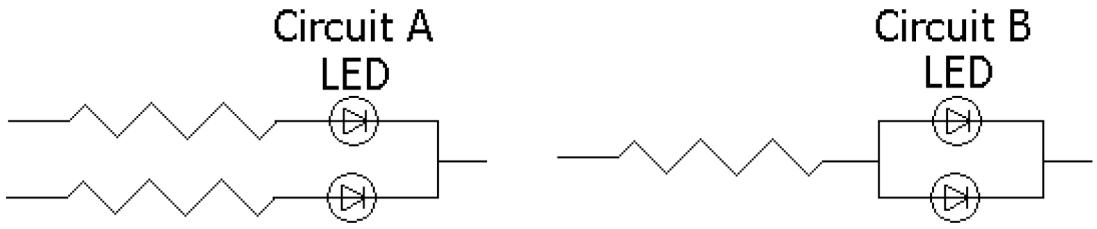
Reliability Test

NO.	Item	Test Conditions	Test Time/ Cycle	Sample Size	Ac/Re
1	DC Operating Life	Temperature:25°C IF:20mA	1000 HRS	20 PCS	0/1
2	High Temperature High Humidity	Temperature:85°C 85%RH			
3	High Temperature Storage	Temperature:100°C			
4	Low Temperature Storage	Temperature:-40°C			
5	Temperature Cycling	85°C~ 25°C~-35°C 15min~ 5min~ 15min	15 Cycles		
6	Thermal Shock	85°C~ 25°C~-10°C 5min~ 10sec~ 5min			
7	Solder Heat	Temperature:260°C±5°C	10 sec.		

Precautions for Using LED

1. Drive Method

LED is current-operated device. In order to ensure intensity uniformity on multiple LEDs connected in parallel in an application, it is recommended that a current limiting resistor be incorporated in the drive circuit



(a) Circuit A: it is recommended circuit.

(b) Circuit B: the brightness of each LED might appear different due to the differences in the I-V characteristics of those LEDs.

2. Over-current-proof

Customer must apply resistors for protection, otherwise slight voltage shift will cause big current change (Burn out will happen).

3. Storage

The Storage Temperature and RH are: 5°C ~ 30°C, RH 60% or less.

Once the package is opened, the products should be used within a week. Otherwise, they should be kept in moisture proof package with moisture absorbent material (silica gel).

We suggest our customers to use the products within a year.

If the moisture absorbent material (silica gel) has faded or the LEDs exceeded the storage time, baking treatment should be performed using the following conditions:

Baking treatment: more than 24 hours at 60°C ±5°C.

4. Electrostatic Discharge (ESD)

Static electricity or surge voltage will damage the LEDs Suggestions to prevent ESD damage:
Use of a conductive wrist band or ante-electrostatic glove while handing the LEDs.
All devices, equipment, and machinery must be properly grounded.
Work tables storage racks, etc. should be properly grounded.
In the events of manual working in process, make sure the devices are well protected from ESD at any time.

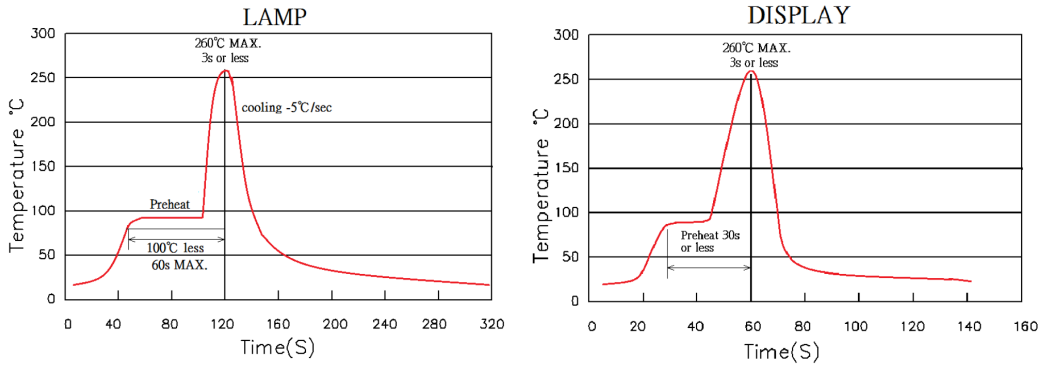
5. Others

(a) If you want to have the uniform luminance and Colour, please use the same binning number, and components from mixed bins will cause the differences of luminance and Colours.
(b) The appearance and specifications of the product may be modified for improvement without prior notice.

6. Soldering

Recommended soldering condition as shown below:

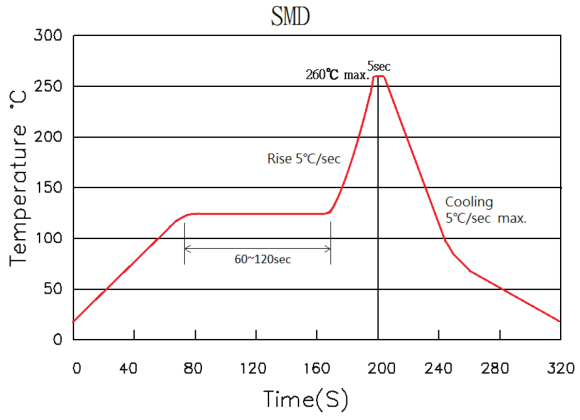
- **Soldering heat (DIP)**



Soldering Iron

Temperature at tip of iron: 350°C Max.
Soldering Time: 3 sec. ± 1 sec. (one time only)
If temperature is higher, time should be shorter.

- **Reflow Temp./Time (SMD)**



Part Number Table

Description	Part Number
5mm Round LED, Red, 653nm, 45°, 180mcd, Through hole	MP006837