

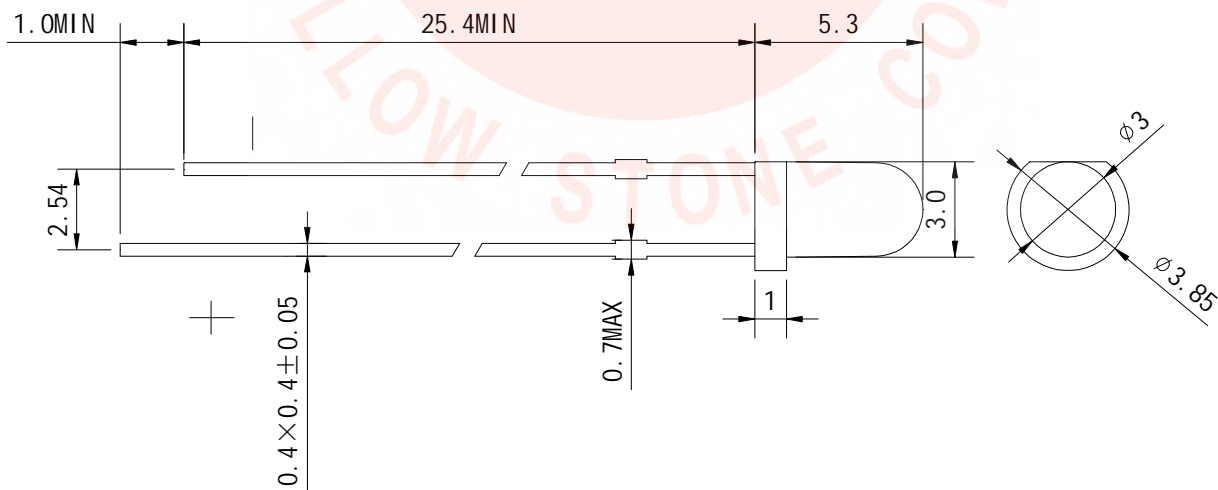
◆ Features

- I 3mm Round LED Lamps
- I Emitting Color: Red
- I Lens Color: White diffused
- I Material: AlGaInP
- I Low power consumption
- I Excellent product quality and reliability
- I Lead-free device

◆ Applications

- I Electronic signs and signals
- I Bright ambient lighting conditions
- I Backlight
- I General purpose indicators

◆ Package Dimensions



Notes:

1. All dimensions are in millimeters.
2. Tolerance is  $\pm 0.25$  unless otherwise noted.
3. Specifications are subject to change without notice.

### ◆ Absolute Maximum Ratings at TA=25°C

Parameter	Symbol	Value	Unit
Power Dissipation	PD	60	mW
Forward Current	IF	25	mA
Peak Forward Current*1	IFP	60	mA
Reverse Voltage	VR	5	V
Electrostatic Discharge (HBM)	ESD	3000	V
Operating Temperature	Topr	-40°C To +85°C	
Storage Temperature	Tstg	-40°C To +85°C	
Soldering Temperature*2	Tsol	260°C For 5 Seconds	

Notes:

\*1: Pulse width≤0.1ms, Duty cycle≤1/10

\*2: ΔAt the position of 3mm below package base.

\*3: ▲Plese refer to the curve of forward current vs.temperature

### ◆ Electrical / Optical Characteristics at TA=25°C

Parameter	Symbol	Min	Typ	Max	Unit	Test Conditions
Forward Voltage	VF	1.8	2.0	2.4	V	IF=20mA
Reverse Current	IR	—	—	10	μA	VR=5V
Dominant Wavelength	λd	618	—	628	nm	IF=20mA
Peak Wavelength	λP	—	630	—	nm	IF=20mA
Spectral line Half-width	Δλ	—	17	—	nm	IF=20mA
Luminous Intensity	IV	300	580	1010	mcd	IF=20mA
Power Angle	2θ1/2	—	45	—	Deg.	IF=20mA

Remarks:

If special sorting is required (e.g. binning based on forward voltage, luminous intensity, or dominant wavelength), the typical accuracy of the sorting process is as follows:

- 1.Dominant Wavelength: +/-1nm
- 2.Chromatic Coordinates: +/-0.01
3. Luminous Intensity: +/-15%
4. Forward Voltage: +/-0.1V

◆ VF Rank

Rank	VF(V)		Condition
	Min	Max	
B	1.8	2.0	IF=20mA
C	2.0	2.2	
D	2.2	2.4	

Tolerance:±0.1V

◆ λD Rank

Rank	λD(nm)		Condition
	Min	Max	
R7	618	623	IF=20mA
R8	623	628	

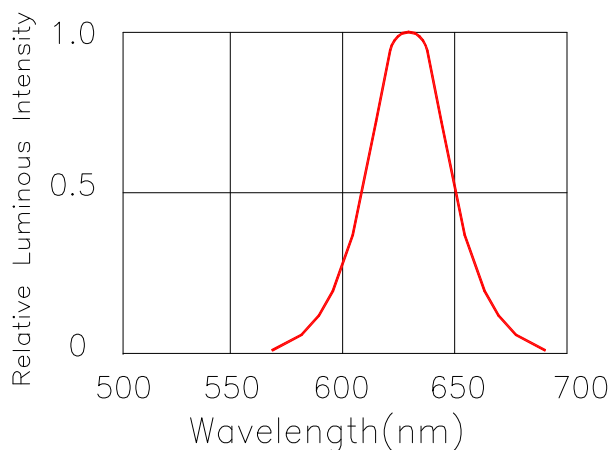
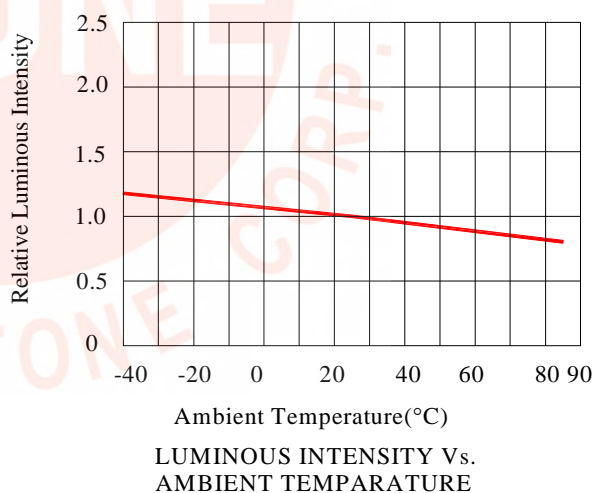
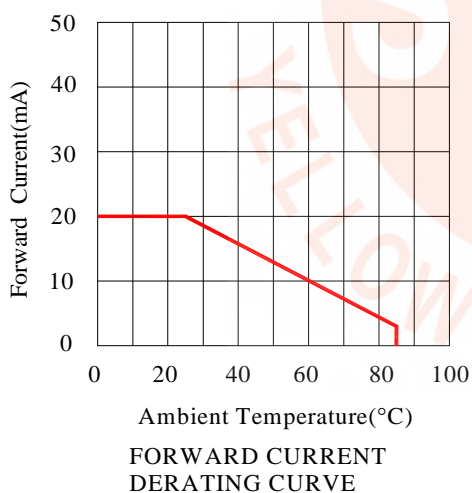
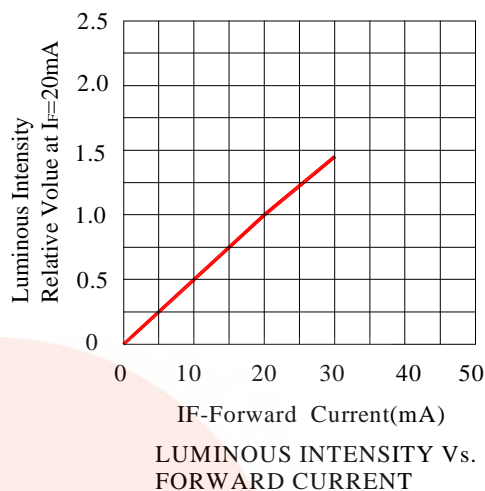
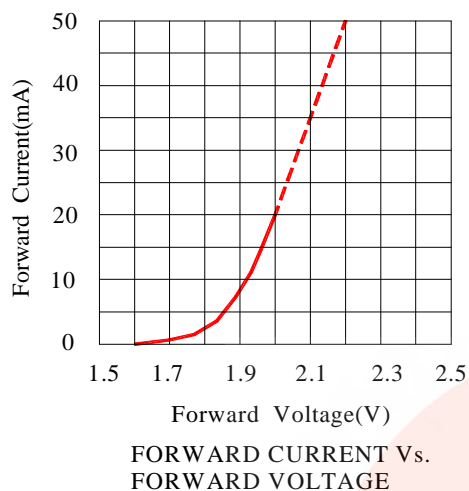
Tolerance:±1nm

◆ IV Rank

Rank	IV(mcd)		Condition
	Min	Max	
J	300	450	IF=20mA
K	450	675	
L	675	1010	

Tolerance:±15%

## ◆ Typical Electrical/Optical Characteristics Curves



### ◆Reliability Test Items and Conditions

Test Classification	Test Item	Test Conditions	Test Duration	Sample Size	AC/RE
Life Test	Room Temperature DC Operating Life Test	Ta=25°C±5°C, If=20mA	1000hrs	22pcs	0/1
Environment Test	Thermal Shock Test	100°C±5°C 15min ↓↑ -40°C±5°C 15min	20 cycles	22pcs	0/1
	Temperature Cycle Test	100°C±5°C 30min ↓↑5min -40°C±5°C 30min	20 cycles	22pcs	0/1
	High Temperature & High Humidity Test	85°C±5°C /85% RH	1000hrs	22pcs	0/1
	High Temperature Storage	Ta=100°C±5°C	1000hrs	22pcs	0/1
	Low temperature Storage	Ta=-40°C±5°C	1000hrs	22pcs	0/1
Mechanical Test	Resistance to Soldering Heat	Temp=260°C ±5°C T=5s max	2 times	22pcs	0/1

### ◆Criteria for Judging the Damage

Item	Symbol	condition	Criteria for Judgement	
			MIN.	MAX.
Forward Voltage	VF ( V )	IF=20mA	---	U.S.L*1.1
Reverse Current	IR ( uA )	VR=5V	---	10uA
Luminous Intensity	IV ( mcd )	IF=20mA	L.S.L*0.5	---

【Note】 1.USL: Upper Specification Level      2.LSL: Lower Specification Level

## ◆ CAUTIONS:

### 1. Lead Forming & Assembly

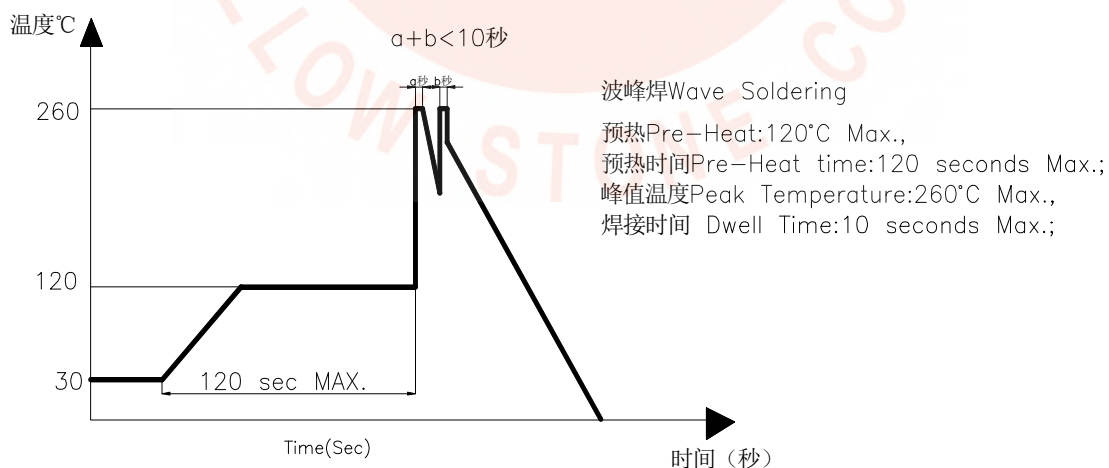
- Lead forming or bending must be done before soldering, at normal temperature.
- During lead forming, the leads should be bent at a point at least 3mm from the base of LED lens.
- Do not use the base of the lead frame as a fulcrum during lead forming.
- Avoid bending the leads at the same point more than once.
- During assembly on PCB, use minimum clinch force possible to avoid excessive mechanical stress.

### 2. LED Mounting Method

- The lead pitch of the LED must match the pitch of the mounting holes on the PCB during component placement. Lead-forming may be required to insure the lead pitch matches the holes pitch..
- When soldering wire to the LED. Use individual heat-shrink tubing to insulate the exposed leads to prevent accidental contact short-circuit.
- Use stand-offs or spacers to securely position the LED above the PCB.

### 3. Soldering

- When soldering, the soldering iron needs to be at least 3mm away from the epoxy edge. After soldering, allow at least 3 minutes for LEDs to cool back to normal temperature. DO not apply any pressure to the epoxy encapsulation or the lead frame during the soldering process.



- When using soldering iron, please solder once for less than 5 seconds at a maximum Temperature of 300°C. When soldering a row of LED on a PCB. Please do not solder both Leads of a LED in sequence. (Solder all the positive lead first, then all the negative leads).
- Do not dip the epoxy encapsulation part of LED into any soldering paste liquid.
- After soldering, do not adjust the location of the LED anymore.

- When attaching electronic parts to a PCB with LEDs .the curing time for the whole PCB

Should be less than 60 seconds .at less than a temperature of 120°C.

#### **4.Cleaning:**

- Use alcohol-based cleaning solvents such as isopropyl alcohol to clean the LEDs if necessary.

#### **5.Storage**

- The storage ambient for the LEDs should not exceed 30°C temperature or 70% relative humidity.
- It is recommended that LEDs out of their original packaging are used within three months. For extended storage out of their original packaging, it is recommended that the LEDs be stored in a sealed container with appropriate desiccant or in desiccators with nitrogen ambient.

#### **6.ESD ( Electrostatic Discharge)**

Static Electricity or power surge will damage the LED.

Suggestions to prevent of ESD damage.

- All devices, equipment, and machinery must be properly grounded.
- Use a conductive wrist band or anti-electrostatic glove when handling these LEDs.
- Maintain a humidity level of 50% or higher in production areas.
- Use anti-static packaging for transportation and storage.

#### **7.Recommended Usage Guidelines**

- Please only use 20mA(Lamp LED) of forward current to drive LEDs whether one LED or multiple LEDs are being used.
- Sudden surge could damage the LED interior connections.please design circuit with care to no sudden voltage surge or current surge will show when turning the circuit on or off.