

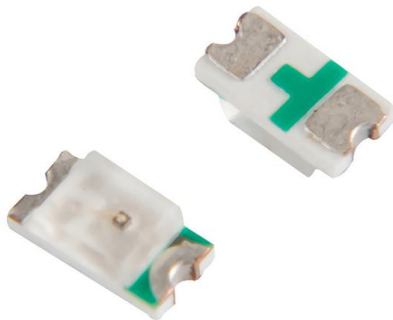


Product Data Sheet

PN:0603URC



1608SMD LED-Red LED



ATTENTION

OBSERVE PRECAUTIONS FOR HANDLING
ELECTROSTATIC DISCHARGE
SENSITIVE DEVICES

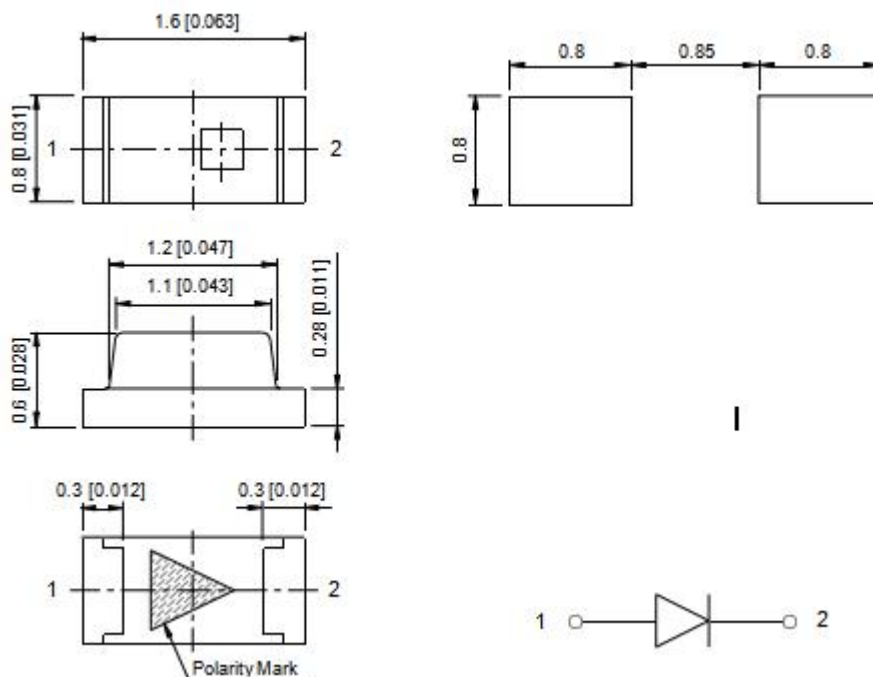
Features

- Dimensions: 1.6mm×0.8mm×H0.6mm
- Color :620nm LED
- Lens: Water Clear Epoxy
- Chip Material:AlInGaP
- Chip Dimension:205um*205um
- Number of Chips:1pcs
- High reliability,High radiant intensity
- Low forward voltage
- Meet ROHS, Green Product

Applications

- Ideal for backlight
- Medical appliances
- Indicator Light

Package Dimensions



Notes:

- 1.All dimensions are in millimeters ;
- 2.Tolerance is ± 0.10 mm unless otherwise noted.
- 3.The green mark is cathode.

Absolute Maximum Ratings (Tc=25°C)

Parameter	Symbol	Rating	Unit
Power Dissipation	Pd	68	mW
Pulse Forward Current	IFP	100	mA
Forward Current	IF	30	mA
Reverse Voltage	VR	5	V
Junction Temperature	Tj	100	°C
Operating Temperature	Topr	-40 ~ +80	°C
Storage Temperature Range	Tstg	-40 ~ +100	°C
Soldering Temperature	Tsol	260	°C
Electro-Static-Discharge(HBM)	ESD	1000	V
Service life under normal conditions	Time	80000	H
Warranty	Time	5	Years
Antistatic bag	Piece	4000	Bag

*Pulse Forward Current Condition:Duty 1% and Pulse Width=10us.

*Soldering Condition:Soldering condition must be completed with 3 seconds at 260°C

Electrical Optical Characteristics(Tc=25°C)

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Forward Voltage	VF	1.5	1.8	2.2	V	IF=5mA
		1.8	2.0	2.4		IF=20mA
Luminous Intensity	IV	20		50	mcd	IF=5mA
		100		210		IF=20mA
Peak Wavelength	λP		635		nm	IF=20mA
Dominant Wavelength	λd	620	625	630	nm	IF=20mA
Half Width	$\Delta\lambda$		18		nm	IF=20mA
Viewing Half Angle	$2\theta_{1/2}$		130		deg	IF=20mA
Reverse Current	IR			5	uA	VR=5V

*Luminous Intensity is measured by ZWL600.

* $\theta_{1/2}$ is the off-axis angle at which the luminous intensity is half the axial luminous intensity.

Bin code definition**● IV Rank@IF=20mA**

Rank	Min	Max	Unit
IV	100	130	mcd
	130	160	
	160	190	
	190	210	

● VF Rank@IF=20mA

Rank	Min	Max	Unit
VF	1.8	2.0	V
	2.0	2.2	
	2.2	2.4	

● WD Rank@IF=20mA

Rank	Min	Max	Unit
WD	620	625	nm
	625	630	

*Tolerance::±15%

Typical Electrical-Optical Characteristics Curves

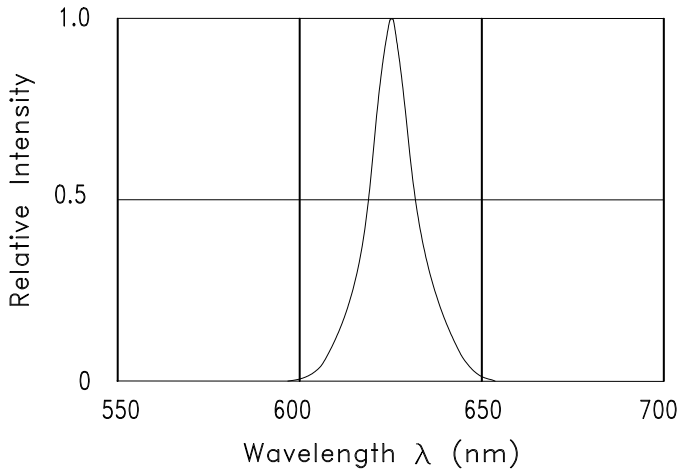


Fig.1 RELATIVE INTENSITY VS. WAVELENGTH

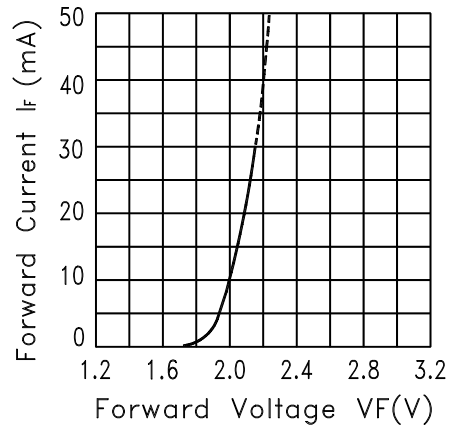


Fig.2 FORWARD CURRENT VS. FORWARD VOLTAGE

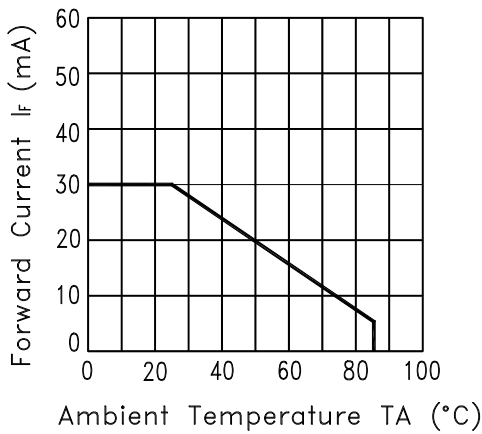


Fig.3 FORWARD CURRENT DERATING CURVE

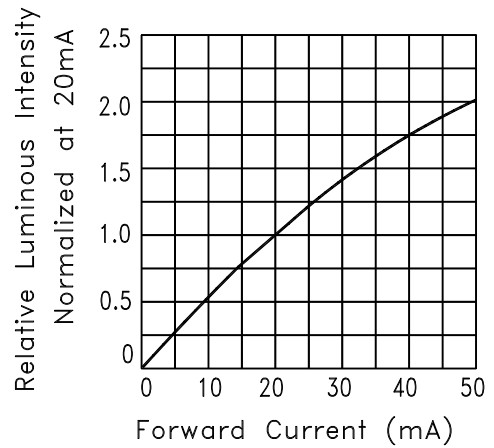


Fig.4 RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT

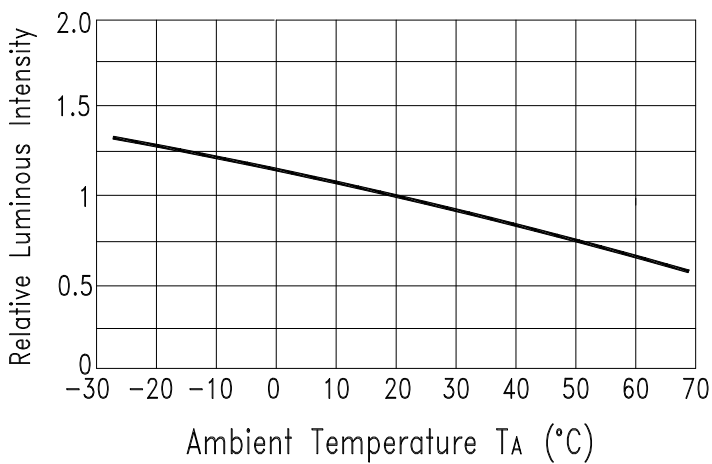


Fig.5 Luminous Intensity vs.Ambient Temperature

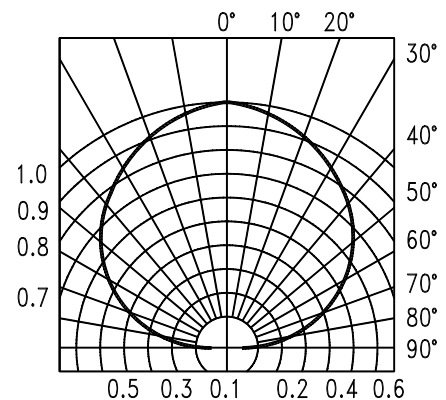
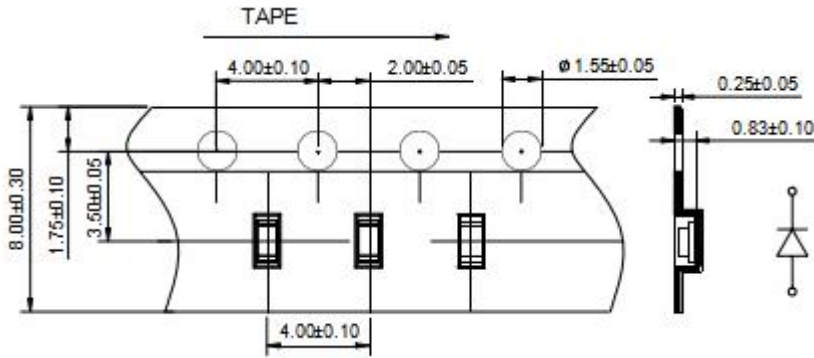
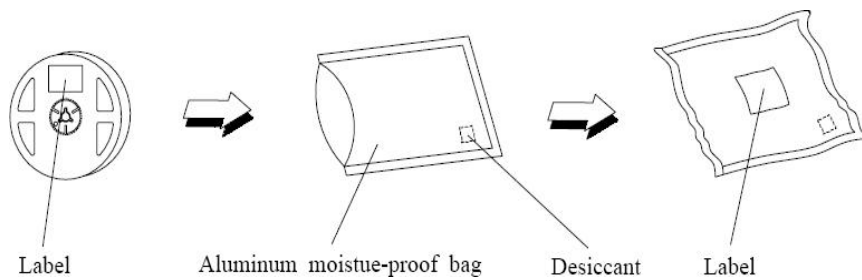


Fig.6 SPATIAL DISTRIBUTION

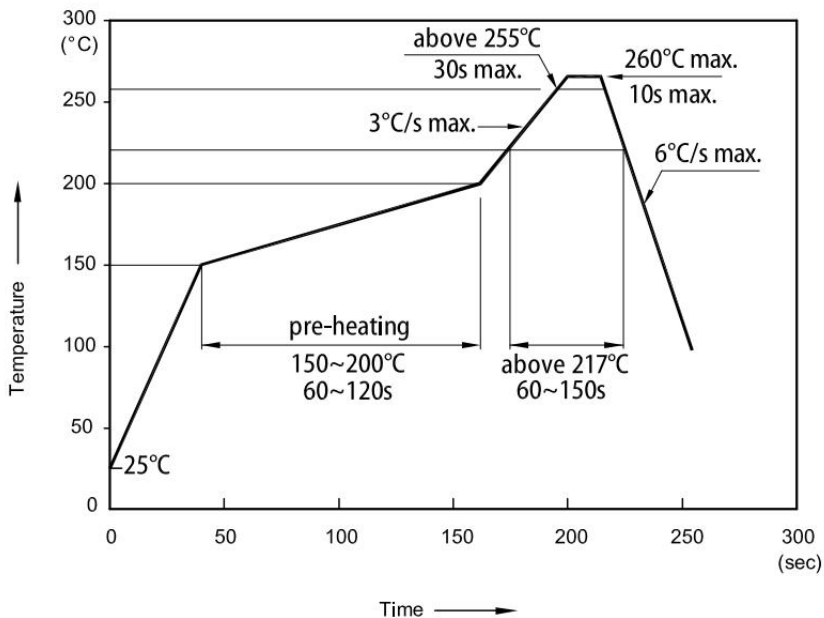
Tape specifications (Units:mm)



Moisture Resistant Packaging



Reflow soldering profile for LEAD-FREE SMD process



Notes:

1. Don't cause stress to the LEDs while it is exposed to high temperature.
2. The maximum number of reflow soldering passes is 2 times
3. Reflow soldering is recommended. Other soldering methods are not recommended as they might cause damage to the product

Reliability Test Items and Conditions

Test Item	Reference	Test Conditions	Time	Quantity	Criterion
Thermal Shock	JIS-C7021 A-4	100°C±5°C 15min ↓ ↑ -40°C±5°C 15min	200cycles	22	0/22
High Temperature Storage	JEITA ED- 4701 200 201	Ta=100°C	1000h	22	0/22
Low Temperature Storage	JEITA ED- 4701 200 202	Ta=-40°C	1000h	22	0/22
High Temperature High Humidity Storage	JIS-C7021 B-11	Ta=85°C, RH=85%	1000h	22	0/22
Resistance to Soldering Heat	GB/T 4937	Tsol*=(260±5)°C 10secs.	2times	22	0/22
Life Test	JESD22-A108	Ta=25°C±5°C IF=5mA	1000h	22	0/22
High Temperature Life Test	JESD22-A108	Ts=55°C±5°C	1000h	22	0/22

*Note:Tsol-Temperature of tin liquid

Criteria for Judging the Damage

Item	Symbol	Test Condition	Failure Criteria	
			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*0.7	---

*Note:1.USL:Upper Specification Level

2.LSL:Lower Specification Level

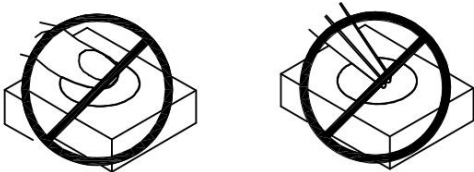
HANDLING PRECAUTIONS

Compare to epoxy encapsulant that is hard and brittle, silicone is softer and flexible. Although its characteristic significantly reduces thermal stress, it is more susceptible to damage by external mechanical force. As a result, special handling precautions need to be observed during assembly using silicone encapsulated LED products. Failure to comply might lead to damage and premature failure of the LED.

1. Handle the component along the side surfaces by using forceps or appropriate tools.



2. Do not directly touch or handle the silicone lens surface. It may damage the internal circuitry.



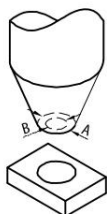
3. Do not stack together assembled PCBs containing exposed LEDs. Impact may scratch the silicone lens or damage the internal circuitry.



4. 4-A The inner diameter of the SMD pickup nozzle should not exceed the size of the LED to prevent air leaks
4-B A pliable material is suggested for the nozzle tip to avoid scratching or damaging the LED surface during pickup

4-C The dimensions of the component must be accurately programmed in the pick-and-place machine to insure precise pickup and avoid damage during production

4-D As silicone encapsulation is permeable to gases, some corrosive substances such as H₂S might corrode silver plating of leadframe. Special care should be taken if an LED with Silicone encapsulation is to be used near such substances.



5. Avoid continued exposure to the condensing moisture environment and keep the product away from rapid transitions in ambient temperature.

6. Product in the original sealed package is recommended to be assembled within 8-12 hours of opening.