LIGHT EMITTING DIODE SPECIFICATION

CUSTOMER NAME:

DESCRIPTION: IE-3528R-SB-LUV-CE-03

REVISION: V2.2

ISSUE DATE: 2022 12 29

MSL 5a
Humidity sensitive component

3.5*2.8*2.5mm Dome Lens TOP LED IE-3528R-SB-LUV-CE-03

Features:

- ●Long operating life
- ●Low Power Consumption
- ●Low voltage DC operated
- ●RoHS Compliant
- ●Organic silicon material package, excellent weather resistance, UV resistance

Application:

- ●Status indicator
- ●Industrial control panel
- ●Sensor status indication
- ●Wearable and portable devices
- ●Traffic light, barricade light, brake light, warning sign

Part Number	Dice Material	Emitted Color	Lens Color
IE-3528R-SB-LUV-CE-03	AlGaInP	Red	Water Clear

Electro Optical Characteristics(Ta=25℃)

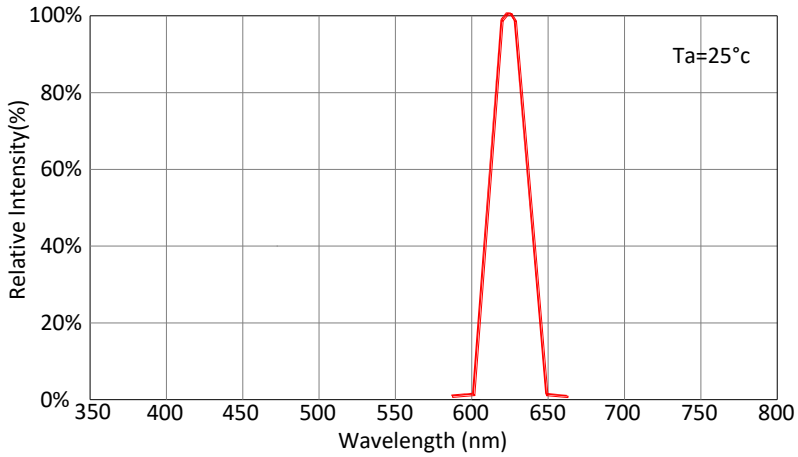
Parameter	Symbol	Min.	Typ.	Max.	Unit	condition
Luminous Intensity	IV	3500	4500	5500	mcd	IF=20mA
		4500	5000	6500		IF=30mA
Radiation Bandwidth	△λ		20		nm	IF=20mA
Forward Voltage	VF	1.90	2.00	2.40	v	
Peak Wavelength	λp		633		nm	
Dominant Wavelength	λd	617	623	629	nm	
Viewing Angle	θ		30		deg	
Reverse Current	IR			10	uA	VR=5V

Absolute Maximum Ratings(Ta=25℃)

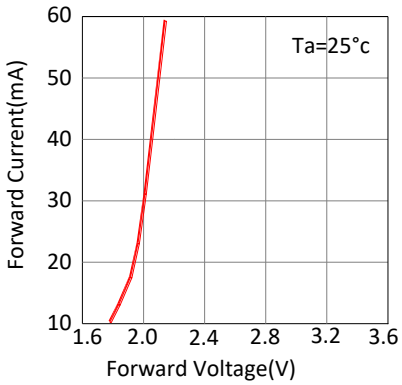
Parameter	Symbol	Max.	Unit
Peak Forward Current(1/10 Duty Cycle, 0.1ms Pulse Width)	IFP	100	mA
Forward Current	IF	30	mA
Reverse Voltage	VR	5	v
Electrostatic Discharge	ESD	2000	v
Operating Temperature Range	Topr	40to+100	°C
Storage Temperature Range	Tstg	40to+100	°C
Reflow Soldering	Tsld	260℃for 10secs	

Optical & Electrical Characteristics

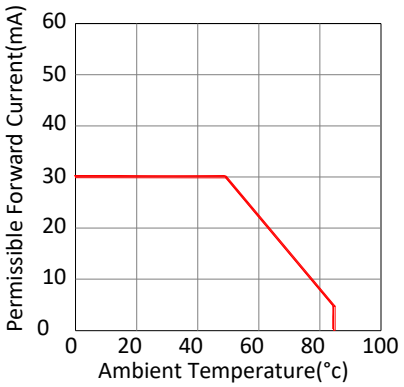
Relative Intensity vs.Wavelength



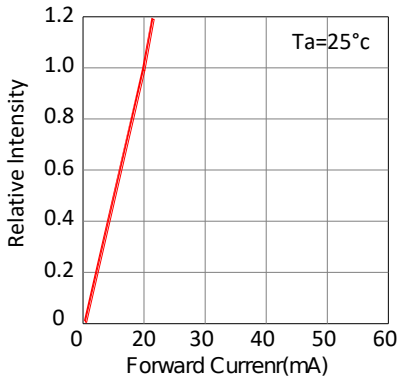
Forward Current vs.Forward Voltage



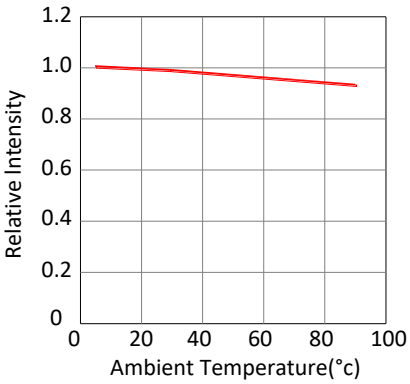
Forward Current vs.Ambient Temperature



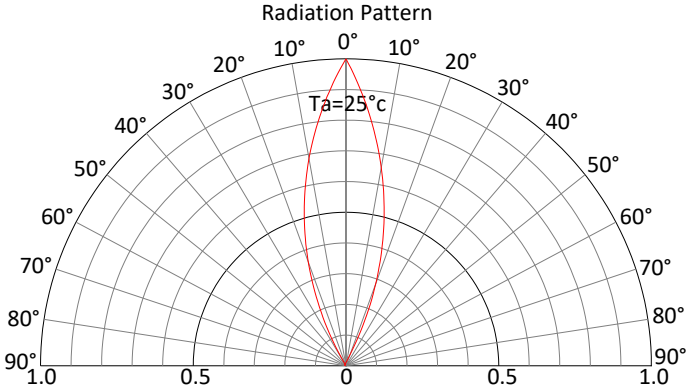
Relative Intensity vs.Forward Currenr



Maximum Currenr vs. Temperature If=f(T)



Radiation Pattern



Bin Limits

Bin Range Of Luminous Intensity (Unit:mcd)

Bin Code	Min	Max	Condition
L1	3500	4500	IF=20mA
L2	4500	5500	
L3			

Bin Range Of Forward Voltage (Unit:V)

Bin Code	Min	Max	Condition
V1	1.9	2.0	IF=20mA
V2	2.0	2.1	
V3	2.1	2.2	
V4	2.2	2.3	
V5	2.3	2.4	

Bin Range Of Wavelength (Unit:nm)

Bin Code	Min	Max	Condition
R1	617	620	IF=20mA
R2	620	623	
R3	623	626	
R4	626	629	
R5			

Notes:

1.Tolerance of Luminous Intensity ±10%

2.Tolerance of Forward Voltage ±0.1V

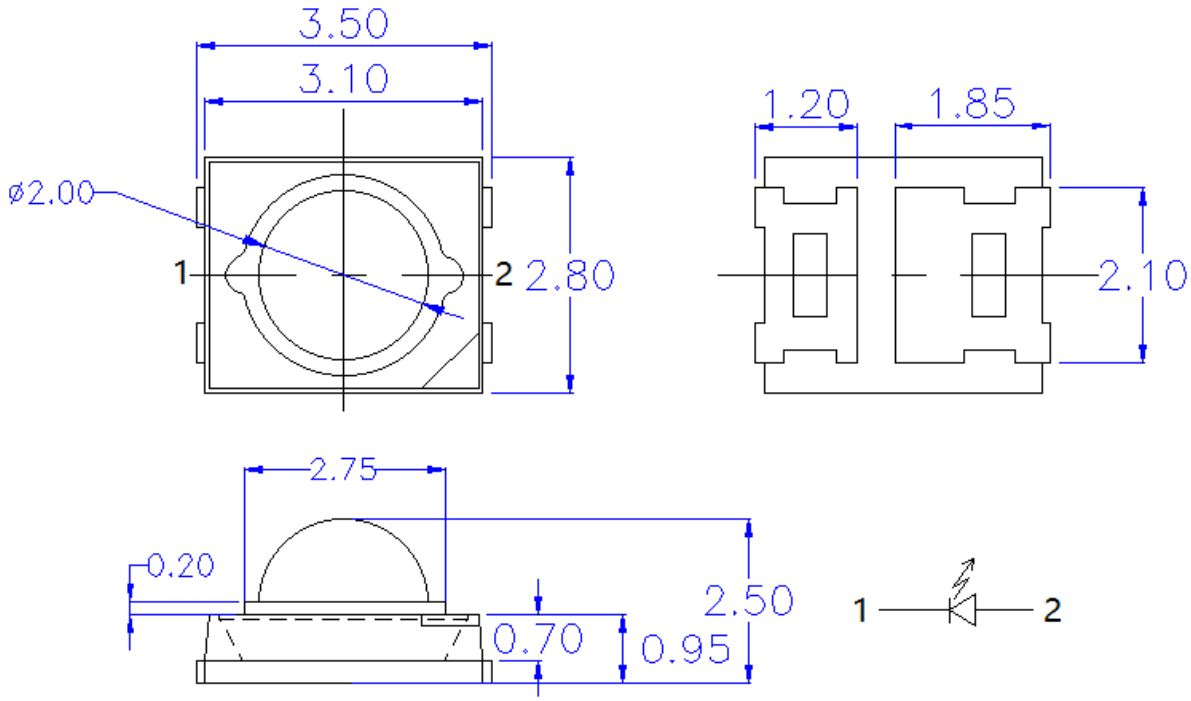
Reliability Test Items And Conditions

Test Items	Reference	Test Conditions	Time	Quantity	Criterion
Thermal Shock	MIL STD 202G	40℃（30min） 100℃(30min)	100 Cycles	22	0/22
Temperature And Humidity Cyclic	JEITA ED 4701 200 203	10℃~65℃； 0%~90%RH	10cycles	22	0/22
High Temperature Storage	JEITA ED 4071 200 201	Ta=100℃	1000H	22	0/22
Low Temperature Storage	JEITA ED 4071 200 202	Ta= 40℃	1000H	22	0/22
High Temperature High Humidity Storage	JEITA ED 4071 100 103	Ta=60℃； RH=90%	1000H	22	0/22
High Temperature Life Test	JESD22 A108D	Ta=80℃	1000H	22	0/22
Life Test	JESD22 A108D	Ta=25℃ IF=20mA	1000H	22	0/22
Resistance to Sodering Heat	GB/T 4937, Ⅱ， 2.2&2.3	Tsol*=(240±5) ℃10secs	2 times	22	0/22

Criteria For Judging Damage

Test Items	Symbol	Test Conditions	Criteria For Judging Damage
Forward Voltage	V_F	$I_F=I_{FT}$	Initial Data±10%
Recerse Current	I_R	V_R=5V	I_R≤10uA
Luminous Intensity	IV	$I_F=I_{FT}$	Average I_V degradation≤30%；Single LED I_V degradation≤50%
Resistance to Soldering Heat			Meterial without internal cracks,no meterial between stripped,no deaded light

Product size (Unit:mm)

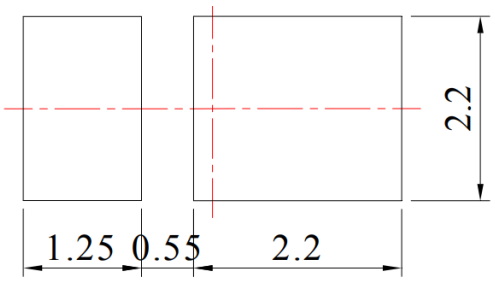


NOTES：

1. All dimensions are in millimeters (inches)

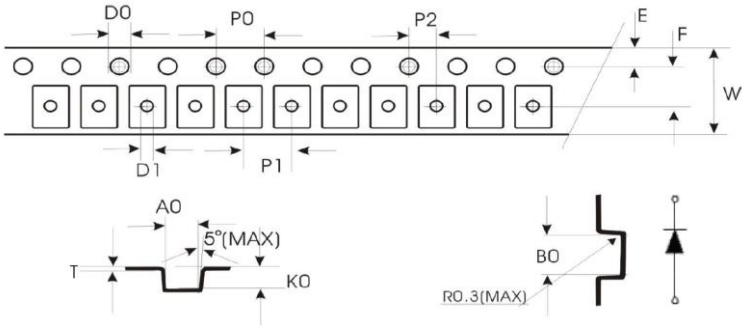
2. Tolerances are 0.2mm (0.008inch) unless otherwise noted

Recommended Soldering Pad Design (Unit:mm)

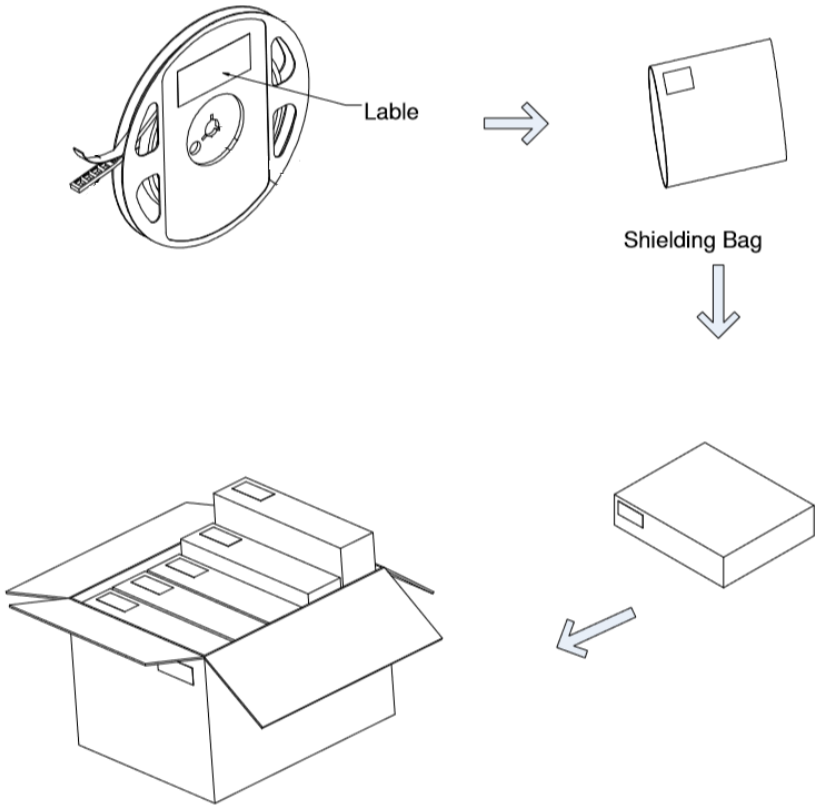


Taping and package Spec

●Tape Specification:2,000pcs Per Reel



Packaging



LabelStyle

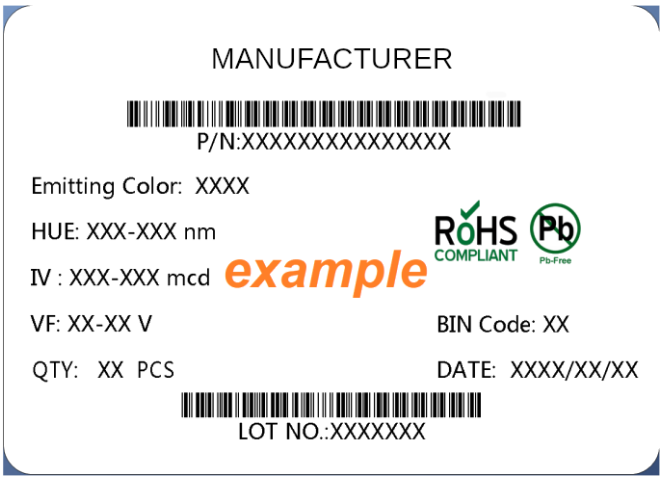
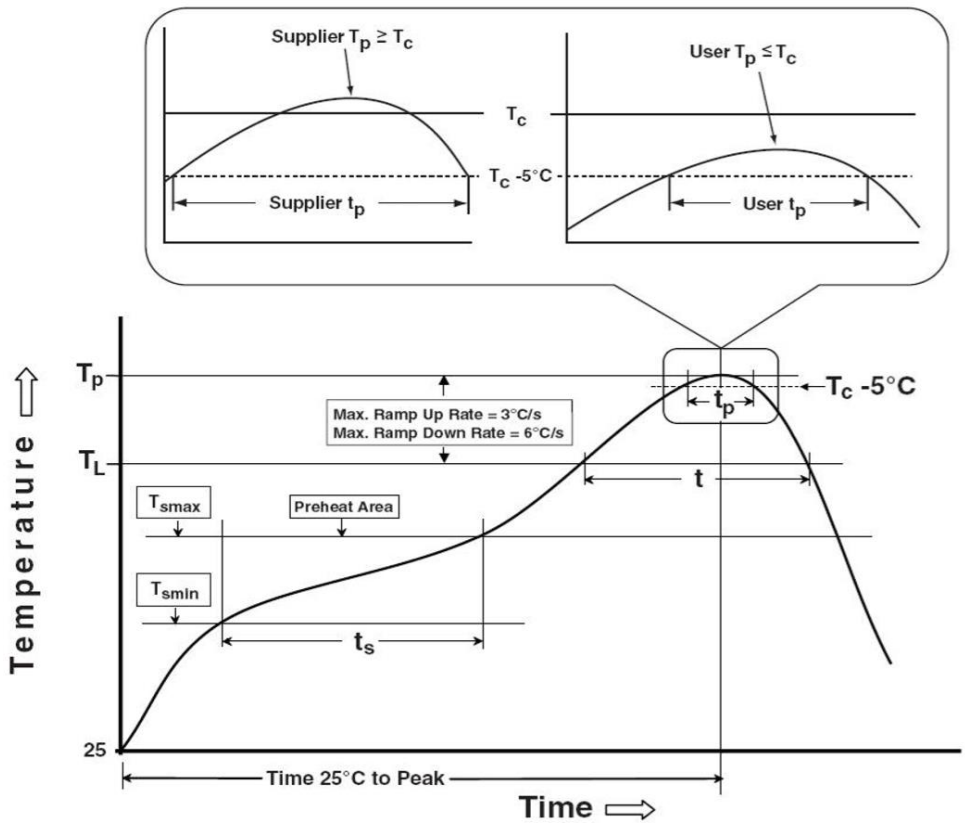


Table of Classification Reflow Profiles

Profile Feature	Sn Pb Eutectic Assembly	Pb Free Assembly
Preheat & Soak Temperature min (Tsmin) Temperature max (Tsmax) Time (Tsmin to Tsmax) (ts)	100 °C 150°C 60 120 seconds	150 °C 200 °C 60 120 seconds
Average ramp up rate (Tsmax to Tp)	3 °C/second max	3 °C/second max
Liquidous temperature (TL) Time at liquidous (tL)	183 °C 60 150 seconds	217 °C 60 150 seconds
Peak package body temperature (Tp)*	230 °C ~235 °C	255 °C ~260 °C
Classification temperature (Tc)	235 °C	260 °C
Time (tp) within 5 °C of the specified Classification temperature (Tc)	20 seconds	30 seconds
Average ramp down rate (Tp to Tsmax)	6 °C/second max	6 °C/second max
Time 25 °C to peak temperature	6 minutes max	8 minutes max

1. Tolerance for peak profile temperature (Tp) is defined as a supplier minimum and a user maximum.

2.Tolerance for time at peak profile temperature (tp) is defined as a supplier minimum and a user maximum.



Precautions

1. Storage：

●Moisture proof and anti electrostatic package with moisture absorbent material is used, to keep moisture to aminimum.

●Before opening the package, the product should be kept at 30℃ or less and humidity less than 60% RH, and beused within a year.

●After opening the package, the product should be stored at 30℃ or less and humidity less than 10%RH, and besoldered within 24 hours (1day). It is recommended that the product be operated at the workshop condition of 30℃ or less and humidity less than 60%RH.

●If the moisture absorbent material has fade away or the LEDs have exceeded the storage time, baking treatment should be performed based on the following condition: (70±5)℃ for 24 hours.


2. Static Electricity：

Static electricity or surge voltage damages the LEDs. Damaged LEDs will show some unusual characteristic such as the forward voltage becomes lower, or the LEDs do not light at the low current. even not light.

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 bracket 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 avioding vulcanization, such as to avoid using sulphur volatile substances and keeping away from high sulphur content of the material.