LIGHT EMITTING DIODE SPECIFICATION

CUSTOMER NAME:

DESCRIPTION: IE-2121RGB-SB-BBFO-E

REVISION: V2.2

ISSUE DATE: 2022 07 25

Features:

- ●Long operating life
- ●Low Power Consumption
- ●Wide Viewing Angle
- ●Low voltage DC operated
- ●RoHS Compliant

Application:

- ●Backlight
- ●Decoration lighting
- ●motormeter
- ●Indicator
- ●Outdoor display

Part Number	Dice Material	Emitted Color	Lens Color
IE-2121RGB-SB-BBFO-E	AlGaInP InGaN InGaN	Red Green Blue	Diffused

Electro Optical Characteristics(Ta=25℃)

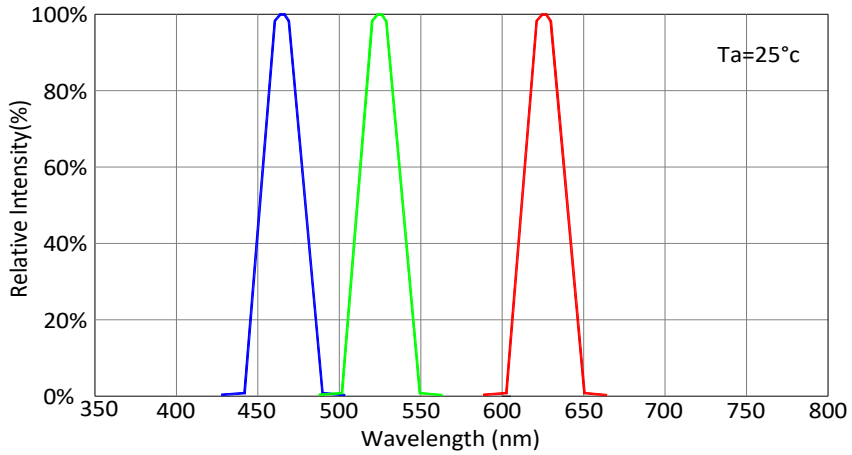
Parameter	Color	Symbol	Condition	Min.	Typ.	Max.	Unit
Luminous Intensity		IV	IF=15mA	370		481	mcd
			IF=8mA	560		806	
			IF=5mA	70		112	
Forward Voltage		VF	IF=15mA	1.90		2.40	v
			IF=8mA	2.40		3.40	
			IF=5mA	2.40		3.40	
Dominant Wavelength		λd	IF=15mA	620		625	nm
			IF=8mA	521		529	
			IF=5mA	465		475	
Viewing Angle		2θ1/2			120		deg
Reverse Current		IR	VR=10V			0.5	uA

Absolute Maximum Ratings(Ta=25℃)

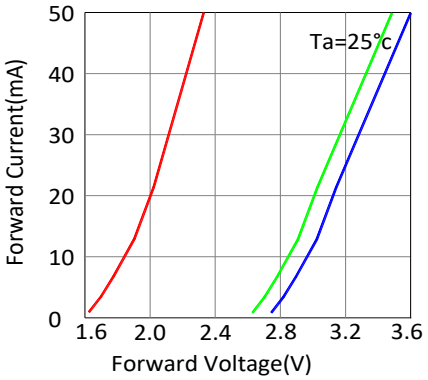
Parameter	Symbol	Max.	Unit
Peak Forward Current(1/10 Duty Cycle, 0.1ms Pulse Width)	IFP	R50,G30,B30	mA
Forward Current	IF	R30,G20,B20	mA
Reverse Voltage	VR	10	v
Electrostatic Discharge	ESD	1000	v
Operating Temperature Range	Topr	30to+85	℃
Storage Temperature Range	Tstg	40to+85	℃
Reflow Soldering	Tsld	260℃for 10secs	

Optical & Electrical Characteristics

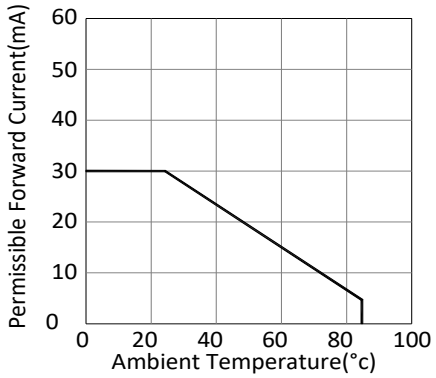
Relative Intensity vs.Wavelength



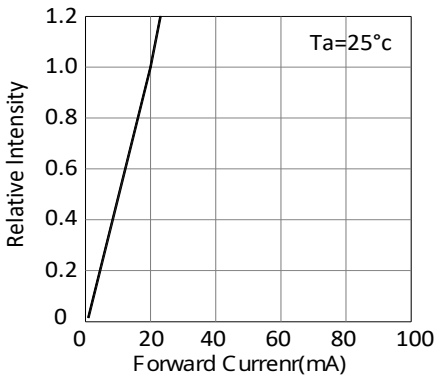
Forward Current vs.Forward Voltage



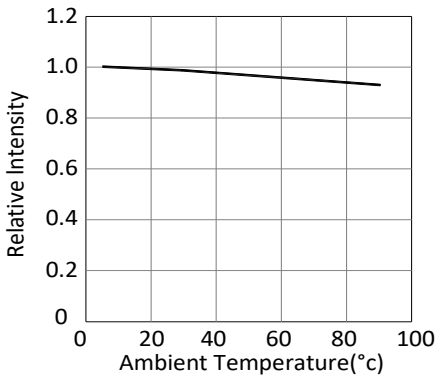
Forward Current vs.Ambient Temperature



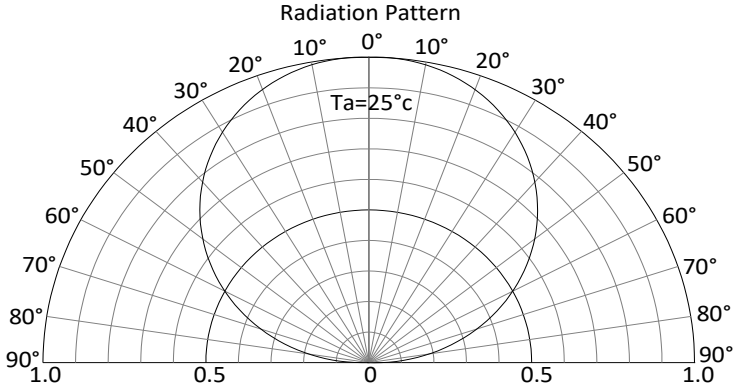
Relative Intensity vs.Forward Currenr



Relative Intensity vs.Ambient Temperature



Radiation Pattern



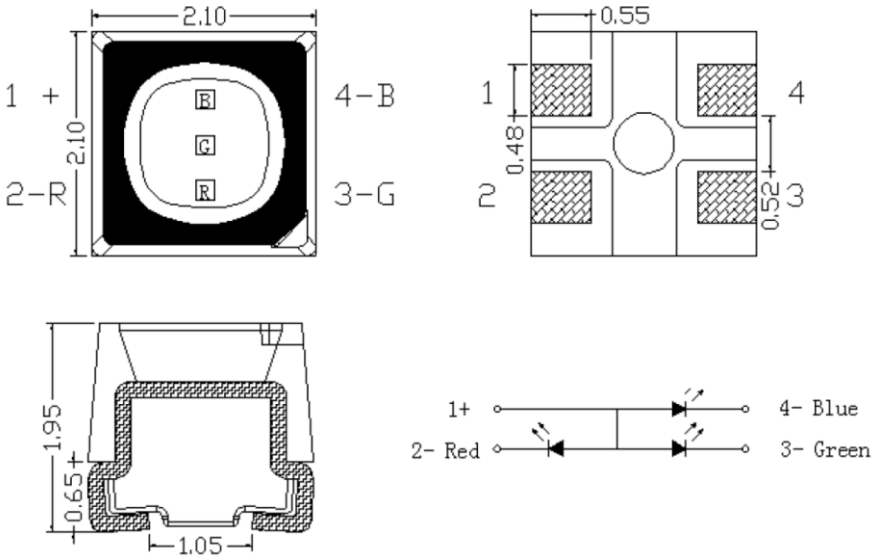
Reliability Test Items And Conditions

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)

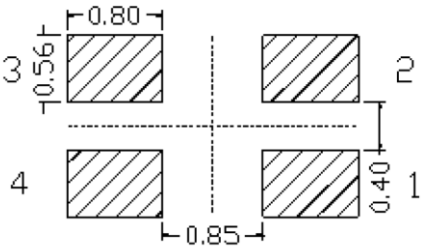


NOTES：

1. All dimensions are in millimeters (inches)

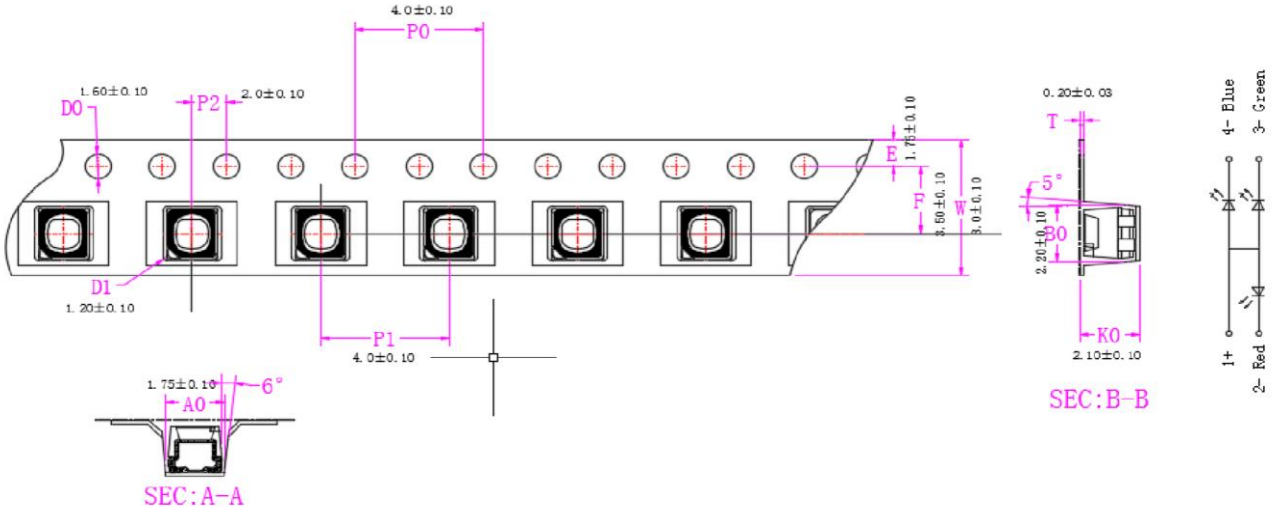
2. Tolerances are ±.2mm (0.008inch) unless otherwise noted

Recommended Soldering Pad Design (Unit:mm)

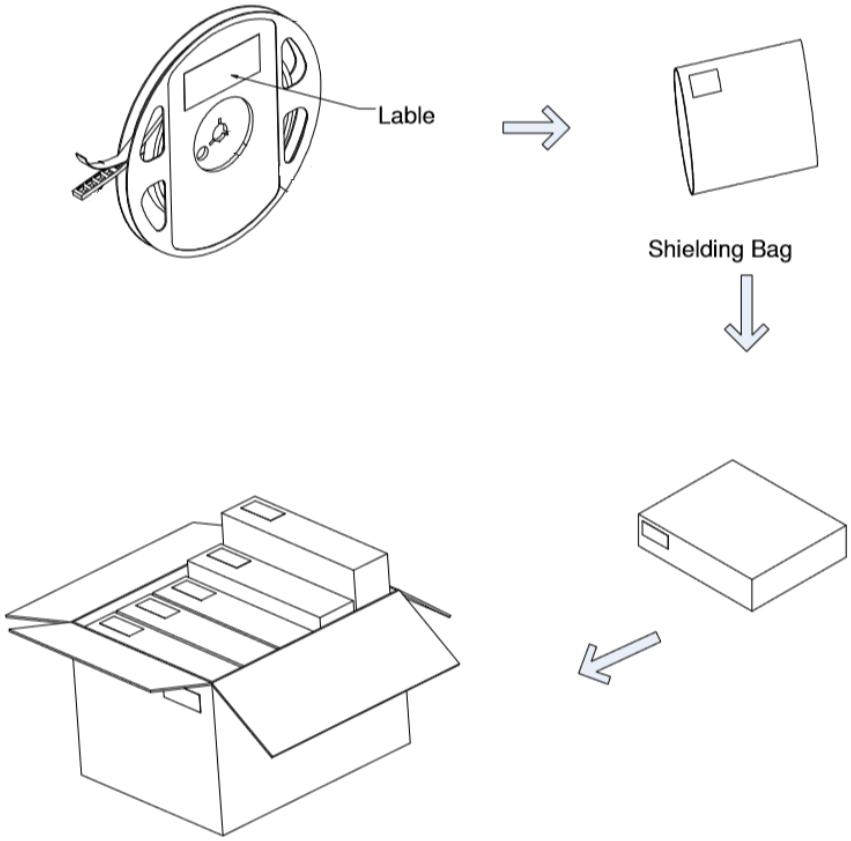


Taping and package Spec

●Tape Specification:9500pcs Per Reel



Packaging



LabelStyle

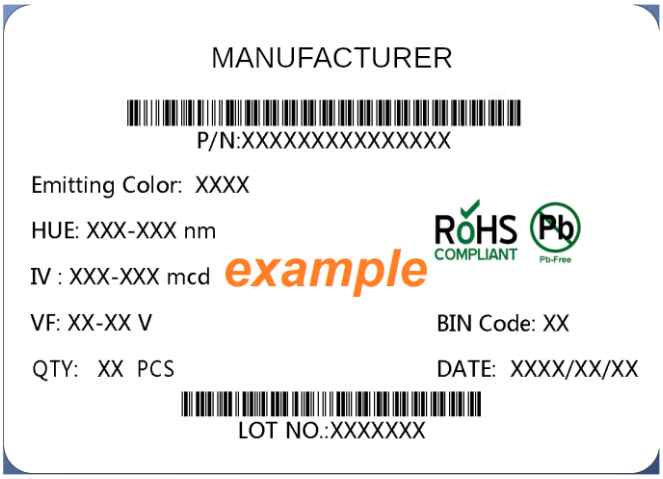
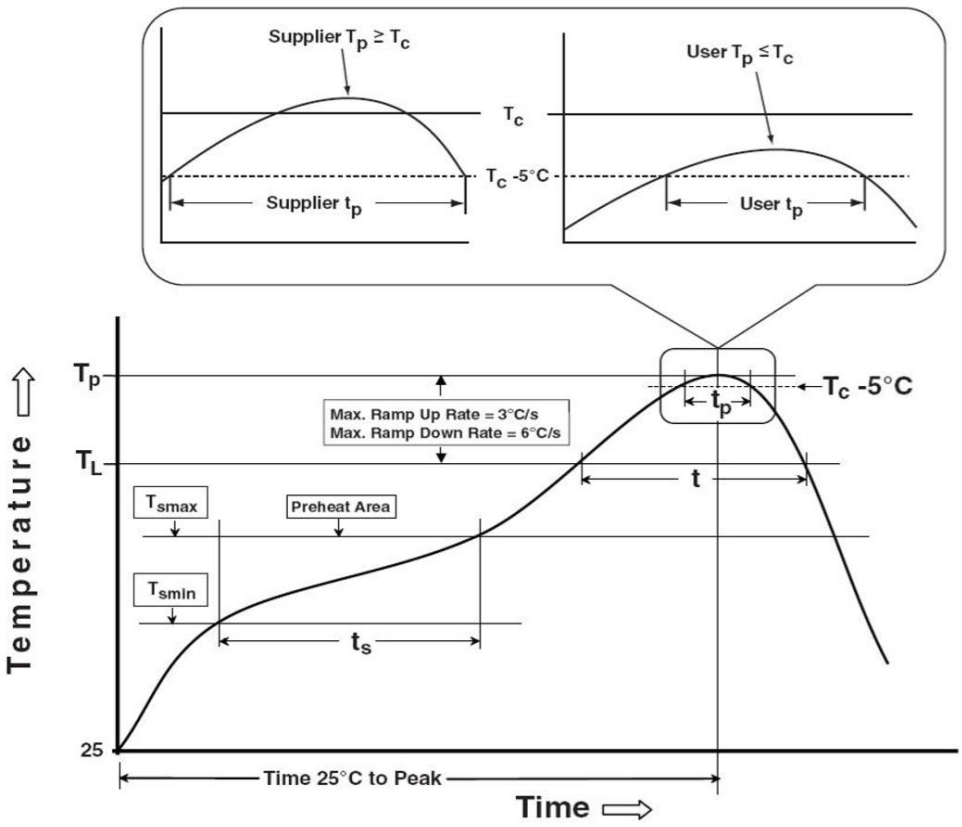


Table of Classification Reflow Profiles

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.