

## SMD ■ REFLECTOR HNA1010W-IS02

Preliminary



### Features

- Compatible with automatic placement equipment
- Various Compatible with infrared and vapor phase reflow solder process
- 4 Pins for separate control of each chip and better thermal management
- Good color fidelity and brightness uniformity across the viewing angle
- RoHS compliant.
- Compliance with EU REACH
- Compliance Halogen Free .(Br <900 ppm ,Cl <900 ppm , Br+Cl < 1500 ppm)

### Description

- The HNA1010W-IS02 SMD LED package provides a perfect solution when users need a clear view of signage Display with any size board with 3 in 1 full color SMD LEDs which offer smaller pixel pitch between two LEDs to create a high resolution and better contrast with its black surface design.

### Applications

- Indoor signage display applications
- Indicator and backlighting for all consumer electronics.
- Gaming equipment.
- General use.

## Device Selection Guide

Chip Materials	Emitted Color	Resin Color
AlGaInP	Brilliant Red	Black Surface Diffused
InGaN	Brilliant Green	
InGaN	Brilliant Blue	

## Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Rating	Unit
Reverse Voltage	V <sub>R</sub>	5	V
Forward Current	I <sub>F</sub>	R   10	mA
		G   10	
		B   10	
Peak Forward Current (Duty 1/10 @1KHz)	I <sub>FP</sub>	40	mA
Power Dissipation	P <sub>d</sub>	R   48	mW
		G   68	
		B   68	
Operating Temperature	T <sub>opr</sub>	-40 ~ +85	°C
Storage Temperature	T <sub>stg</sub>	-40 ~ +90	°C
Soldering Temperature	T <sub>sol</sub>	Reflow Soldering : 260 °C for 10 sec.	

**Electro-Optical Characteristics (Ta=25°C)**

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition	
Luminous Intensity	Iv	R	10.7	-----	30.6	mcd	IF=5mA
		G	30.6	-----	87.4		IF=5mA
		B	5.5	-----	15.6		IF=5mA
Viewing Angle	2θ <sub>1/2</sub>	-	-----	90	-----	deg	IF=5mA
Dominant Wavelength	λd	R	615	-----	630	nm	IF=5mA
		G	517		532		IF=5mA
		B	462		474		IF=5mA
Spectrum Radiation Bandwidth	Δλ	R	-----	20	-----	nm	IF=5mA
		G		35			IF=5mA
		B		25			IF=5mA
Forward Voltage	VF	R	1.6	-----	2.4	V	IF=5mA
		G	2.4		3.4		IF=5mA
		B	2.4		3.4		IF=5mA
Reverse Current	IR	-	-----	-----	10	μA	VR=5V

Note:

1. Tolerance of Luminous Intensity: ±10%
2. Tolerance of Dominant Wavelength: ±1nm
3. Tolerance of Forward Voltage: ±0.1V

**Floating Bin(Red)**  
**Bin Range of Luminous Intensity**

Bin Code	Min.	Max.	Unit	Condition
RB	10.7	13.9	mcd	$I_F = 5\text{mA}$
RC	13.9	18.1		
RD	18.1	23.5		
RE	23.5	30.6		

**Bin Range of Dominant Wavelength**

Bin Code	Min.	Max.	Unit	Condition
R1	615	620	nm	$I_F = 5\text{mA}$
R2	620	625		
R3	625	630		

**Floating Bin(Green)**  
**Bin Range of Luminous Intensity**

Bin Code	Min.	Max.	Unit	Condition
GB	30.6	39.7	mcd	$I_F = 5\text{mA}$
GC	39.7	51.7		
GD	51.7	67.2		
GE	67.2	87.4		

**Bin Range of Dominant Wavelength**

Bin Code	Min.	Max.	Unit	Condition
G1	517	520	nm	$I_F = 5\text{mA}$
G2	520	523		
G3	523	526		
G4	526	529		
G5	529	532		

**Floating Bin(Blue)**  
**Bin Range of Luminous Intensity**

Bin Code	Min.	Max.	Unit	Condition
BB	5.5	7.1	mcd	I <sub>F</sub> =5mA
BC	7.1	9.3		
BD	9.3	12		
BE	12	15.6		

**Bin Range of Dominant Wavelength**

Bin Code	Min.	Max.	Unit	Condition
B0	462	465	nm	I <sub>F</sub> =5mA
B1	465	468		
B2	468	471		
B3	471	474		

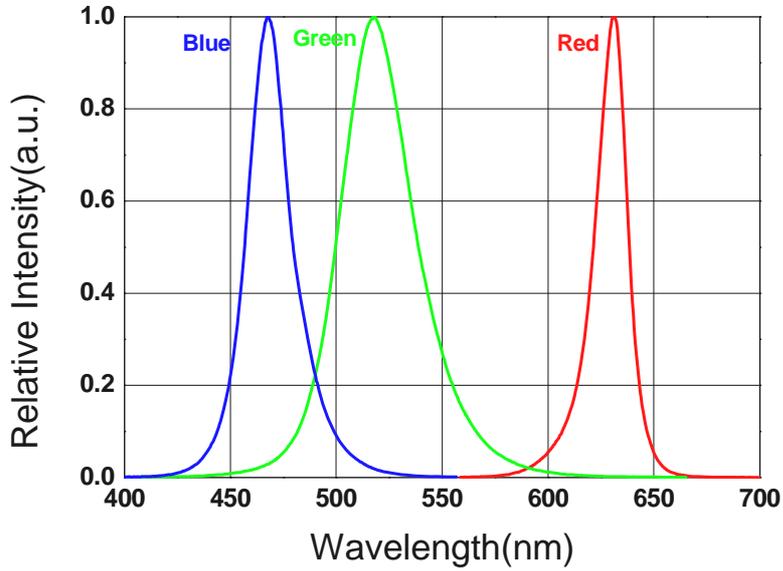
Note:

1. Tolerance of Luminous Intensity: ±10%
2. Tolerance of Dominant Wavelength: ±1nm

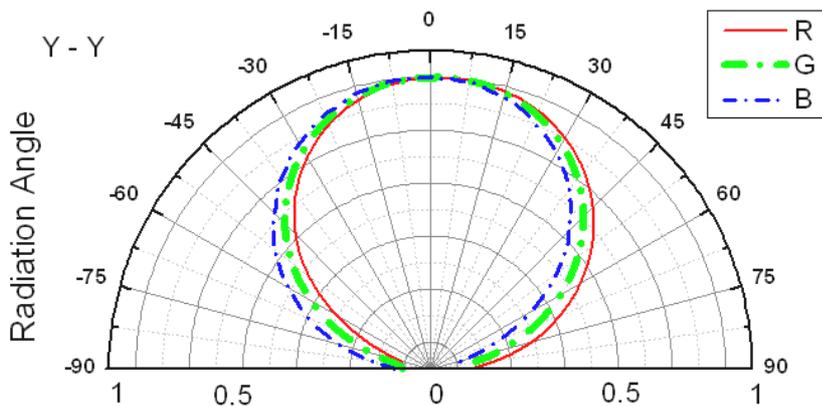
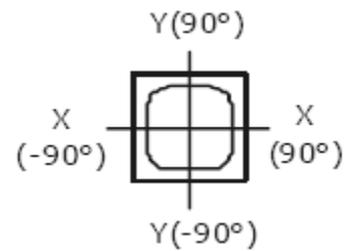
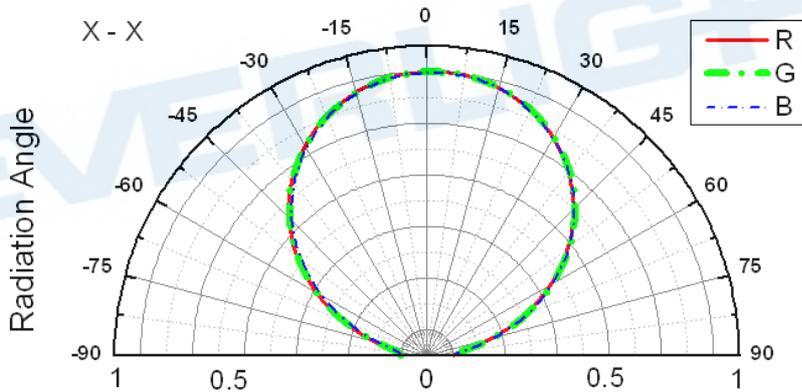
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### Typical Electro-Optical Characteristics Curves

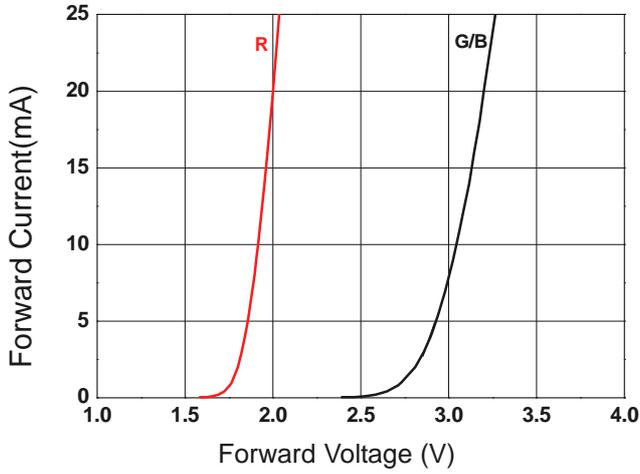
Relative Intensity vs. Wavelength (Ta=25°C)



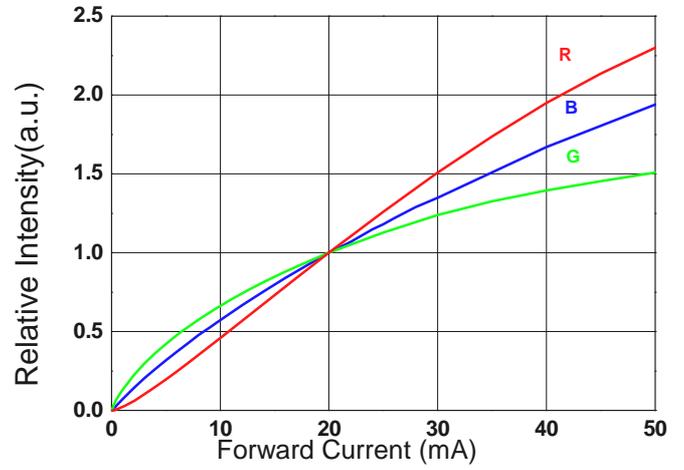
Directivity (Ta=25°C)



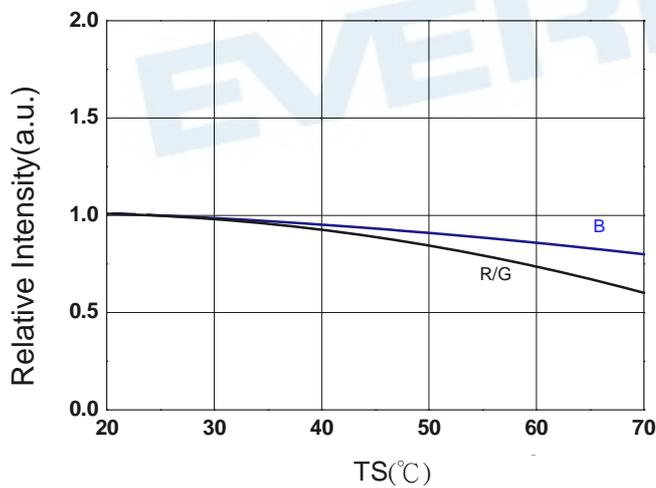
Forward Current vs. Forward Voltage (Ta=25°C)



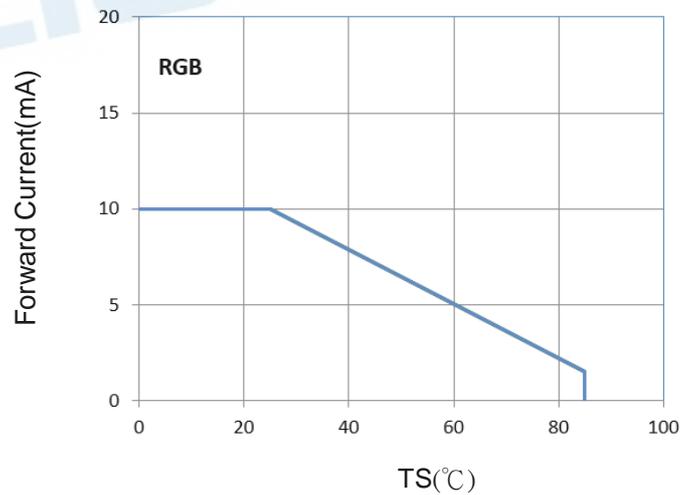
Relative Intensity vs. Forward Current (Ta=25°C)



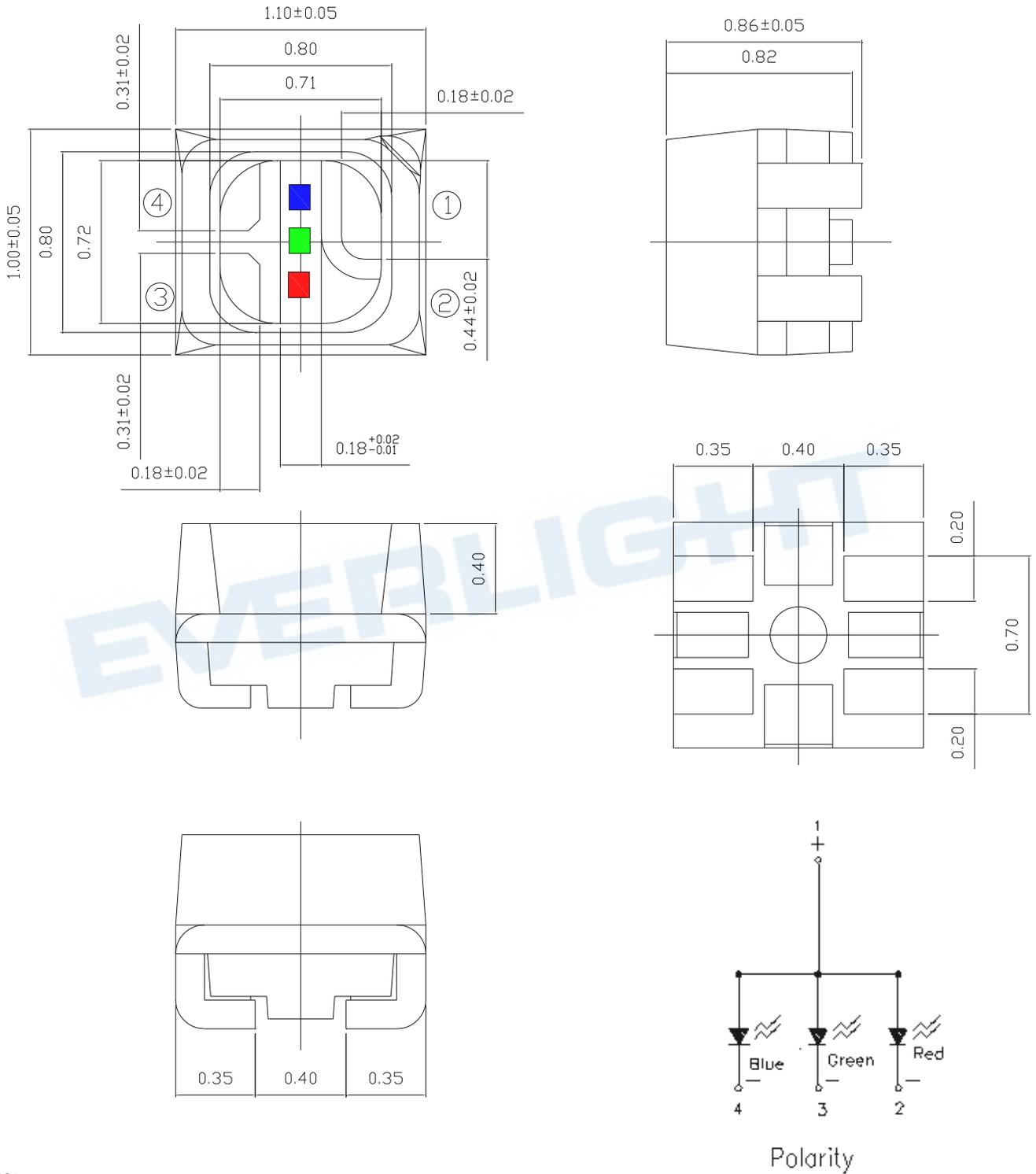
Relative Intensity vs. Ambient Temp.



Forward Current vs. Ambient Temp.



Package Dimension

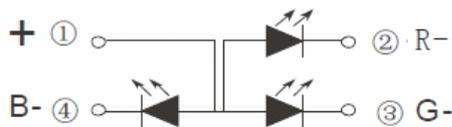
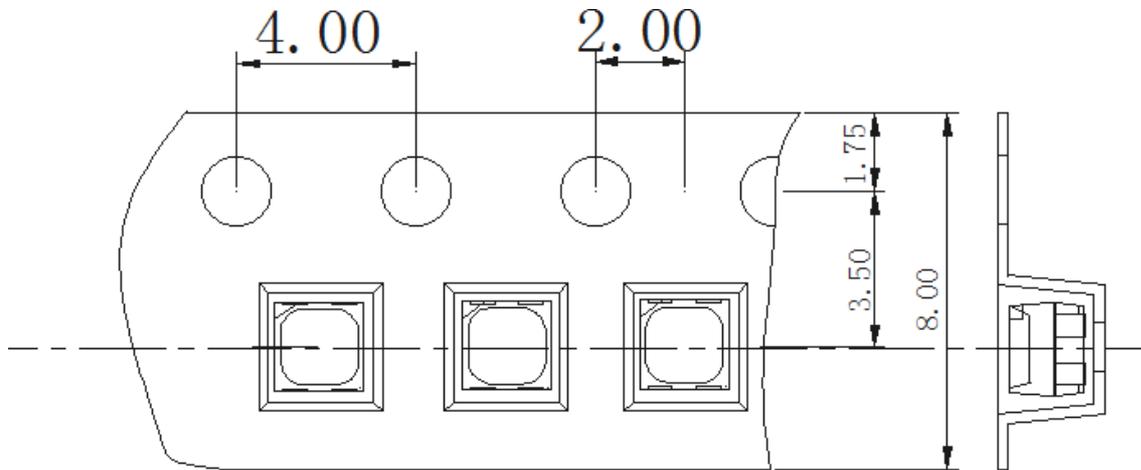


Note:

1. Dimensions are in millimeters.
2. Tolerances for fixed dimensions are ±0.1mm.

**Carrier Tape Dimensions:**

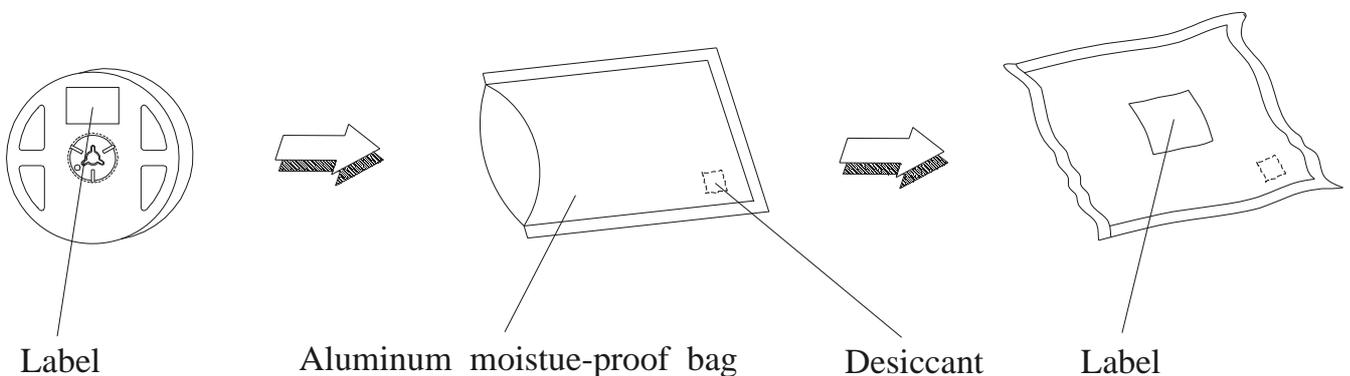
The minimum quantity of packing is 4000 pcs per reel.



Note:

1. Dimensions are in millimeters.
2. Tolerances for fixed dimensions are  $\pm 0.1\text{mm}$ .

**Moisture Resistant Packing Process**



Note:

1. Dimensions are in millimeters.
2. Tolerances for fixed dimensions are  $\pm 0.1\text{mm}$ .

## Precautions for Use

### 1. Over-current-proof

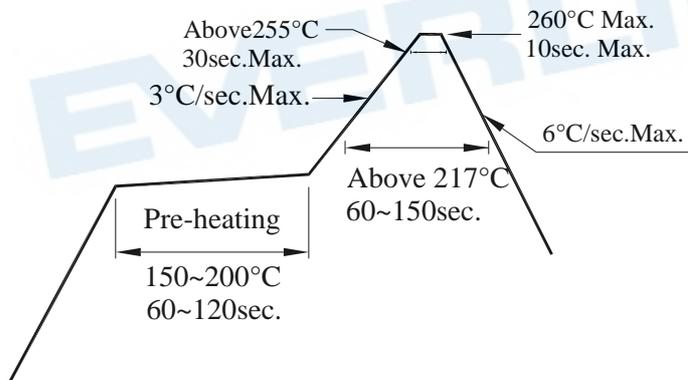
- Customer must apply resistors for protection, otherwise slight voltage shift will cause big current change ( Burn out will happen ).

### 2. Storage

- Moisture proof and anti-electrostatic package with moisture absorbent material is used, to keep moisture to a minimum.
- Before opening the package, the product should be kept at 30°C or less and humidity less than 60%RH, and be used within 2 months.
- Before opening the sealed bag, please check whether or not the bag leaked air.
- If the bag has leaked air, baking is required, baking condition:(80±5)°C for 12 hours.
- Before soldering the product must be stored under the condition <30°C and <60%RH. Under these conditions the SMD LEDs must be used (subject to reflow) in 12 hours. If the product is under the condition <30°C and <10%RH, the storage time can be extended to 48hours
- Re-baking is required when exceeding the specified time. Baking condition is as above.

### 3. Soldering Condition

- Pb -free solder temperature profile



- Reflow soldering should not be done more than two times.
- When soldering, do not put stress on the LEDs during heating.
- After soldering, do not warp the circuit board.

#### 4. ESD (Electrostatic Discharge)

- The products are sensitive to static electricity or surge voltage. ESD can damage a die and its reliability. When handling the products, the following measures against electrostatic discharge are strongly recommended:

Eliminating the charge

Grounded wrist strap, ESD footwear, clothes, and floors

Grounded workstation equipment and tools

ESD table/shelf mat made of conductive materials

- Proper grounding is required for all devices, equipment, and machinery used in product assembly. Surge protection should be considered when designing of commercial products.

- If tools or equipment contain insulating materials such as glass or plastic, the following measures against electrostatic discharge are strongly recommended:

Dissipating static charge with conductive materials

Preventing charge generation with moisture

Neutralizing the charge with ionizers.

#### 5. Directions for use

- The LEDs should be operated with forward bias. The driving circuit must be designed so that the LEDs are not subjected to forward or reverse voltage while it is off. If reverse voltage is continuously applied to the LEDs, it may cause migration resulting in LED damage.

### DISCLAIMER

1. EVERLIGHT reserves the right(s) on the adjustment of product material mix for the specification.
2. The product meets EVERLIGHT published specification for a period of twelve (12) months from date of shipment.
3. The graphs shown in this datasheet are representing typical data only and do not show guaranteed values.
4. When using this product, please observe the absolute maximum ratings and the instructions for using outlined in these specification sheets. EVERLIGHT assumes no responsibility for any damage resulting from the use of the product which does not comply with the absolute maximum ratings and the instructions included in these specification sheets.
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