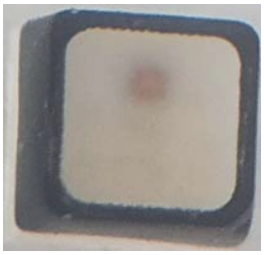
DATASHEET

HNB1515W-OS12
Hong Series



Features

- Unique packaging technology provides better moisture resistance for outdoor use.
- Various options for color mixture including white.
- Good color fidelity and brightness uniformity across the viewing angle
- Black body provides better contrast for the display.
- The product itself will remain within RoHS compliant version.
- Compliance with EU REACH.
- Compliance Halogen Free .(Br <900 ppm ,Cl <900 ppm , Br+Cl < 1500 ppm).

Description

- The HNB5151W-OS012 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 body design.

Applications

- Outdoor signage display
- Outdoor decorating and entertainment design
- Gaming equipment.
- Indicator and backlighting for all consumer electronics.

Device Selection Guide

Part No.	Chip Materials	Emitted Color
R	AlGaInP	Brilliant Red
G	InGaN	Brilliant Green
B	InGaN	Brilliant Blue

Absolute Maximum Ratings (Ta=25℃)

Parameter	Symbol	Rating		Unit
Reverse Voltage	V_R	5		V
Forward Current	I_F	R	20	mA
		G	15	
		B	15	
Peak Forward Current (Duty 1/10 @1KHz)	I_{FP}	40		mA
Power Dissipation	Pd	R	45	mW
		G	65	
		B	65	
Operating Temperature	T_{opr}	-40 ~ +85		℃
Storage Temperature	Tstg	-40 ~ +90		℃
Soldering Temperature	T_{sol}	Reflow Soldering : 260 ℃ for 10 sec.		

Electro-Optical Characteristics (Ta=25℃)

Parameter	Symbol		Min.	Typ.	Max.	Unit	Condition
Luminous Intensity	Iv	R	500	-----	900	mcd	I_F=20mA
		G	900	-----	1492		I_F=15mA
		B	212	-----	377		I_F=15mA
Viewing Angle	$2\theta_{1/2}$		-----	110	-----	deg	I_F=20mA
Dominant Wavelength	Λd	R	618	-----	626	nm	I_F=20mA
		G	520		530		I_F=15mA
		B	466		476		I_F=15mA
Spectrum Radiation Bandwidth	Δλ	R	-----	20	-----	nm	I_F=20mA
		G		35			I_F=15mA
		B		25			I_F=15mA
Forward Voltage	V_F	R	1.8	-----	2.6	V	I_F=20mA
		G	2.4		3.5		I_F=15mA
		B	2.4		3.5		I_F=15mA
Reverse Current	I_R		-----	-----	10	μA	V_R=5V

Note:
1. Tolerance of Luminous Intensity: ±10%
2. Tolerance of Dominant Wavelength: ±1nm
3. Tolerance of Forward Voltage: ±0.1V
4. RA test : R/G/B@15/8/ 5mA

Bin Range of Luminous Intensity

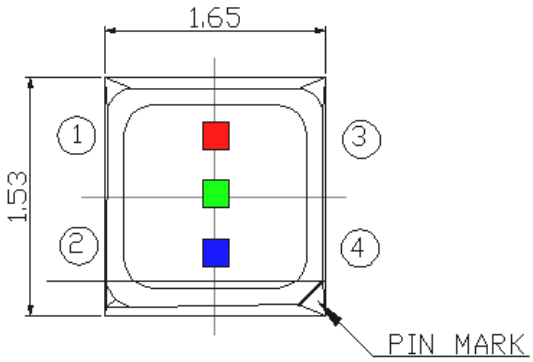
Color	Bin Code	Min.	Max.	Unit	Condition
Red	RA	500	669	mcd	I_F =20mA
	RB	529	710		
	RC	560	754		
	RD	594	800		
	RE	630	849		
	RF	669	900		
Green	GM	900	1183	mcd	I_F =15mA
	GN	949	12590		
	GO	1000	1323		
	GP	1058	1400		
	GQ	1120	1492		
Blue	BA	212	280	mcd	I_F =15mA
	BB	224	297		
	BC	237	315		
	BD	250	334		
	BE	265	355		
	BF	280	377		

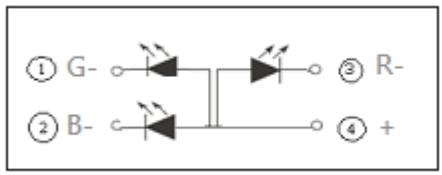
Bin Range of Dominant Wavelength

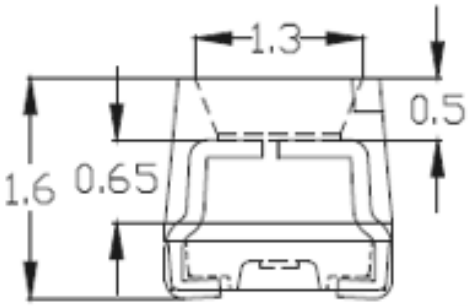
Color	Bin Code	Min.	Max.	Unit	Condition
Red	R1	618	623	nm	I_F =20mA
	R2	621	626		
Green	G1	520	523	nm	I_F =15mA
	G2	521	524		
	G3	522	525		
	G4	523	526		
	G5	524	527		
	G6	525	528		
	G7	526	529		
	G8	527	530		
Blue	B1	466	469	nm	I_F =15mA
	B2	467	470		
	B3	468	471		
	B4	469	472		
	B5	470	473		
	B6	471	474		
	B7	472	475		
	B8	473	476		

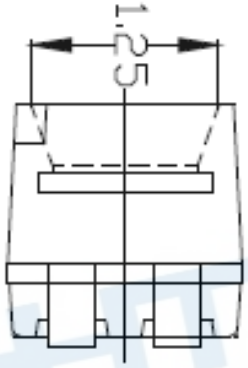
Note:
1.Tolerance of Luminous Intensity: ±10%
2.Tolerance of Dominant Wavelength: ±1nm

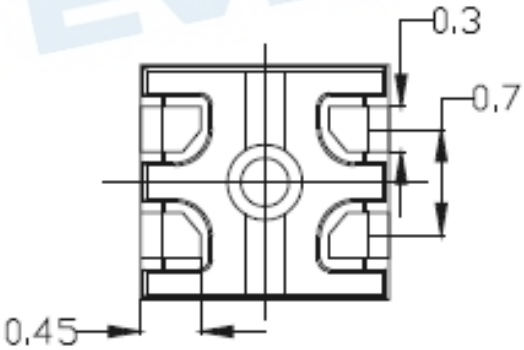
Package Dimension



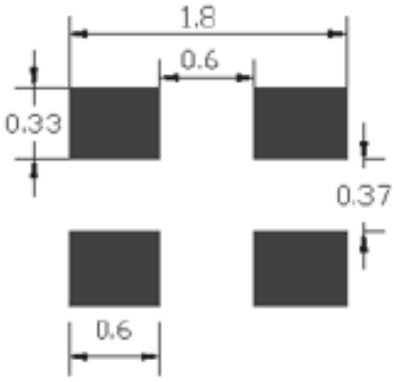








Bot. view

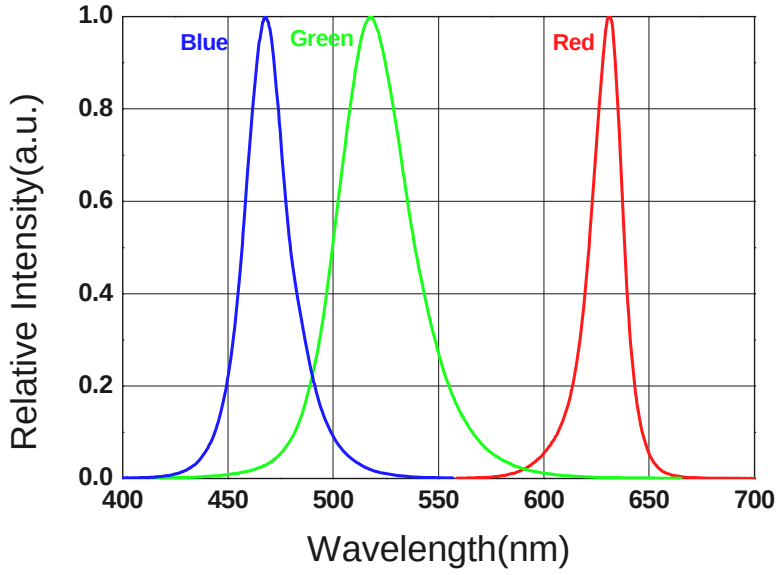


Soldering patterns

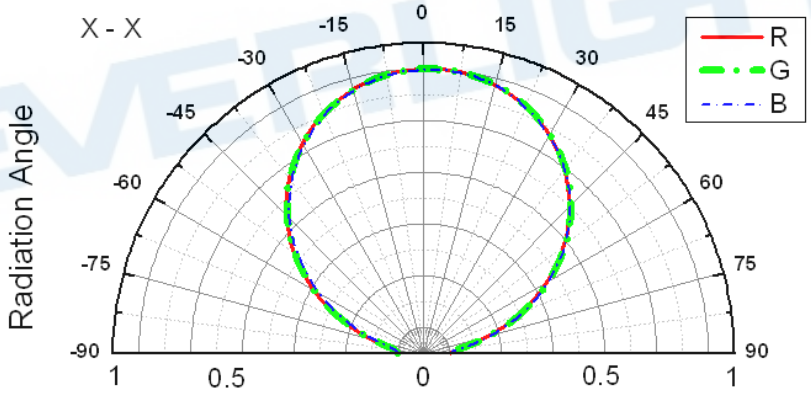
Notes:
1. Dimensions are in millimeters.
2. Tolerances for fixed dimensions are ±0.1mm.

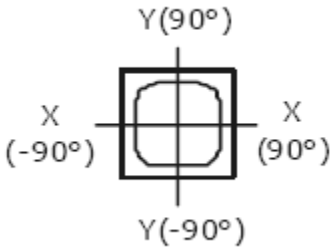
Typical Electro-Optical Characteristics Curves

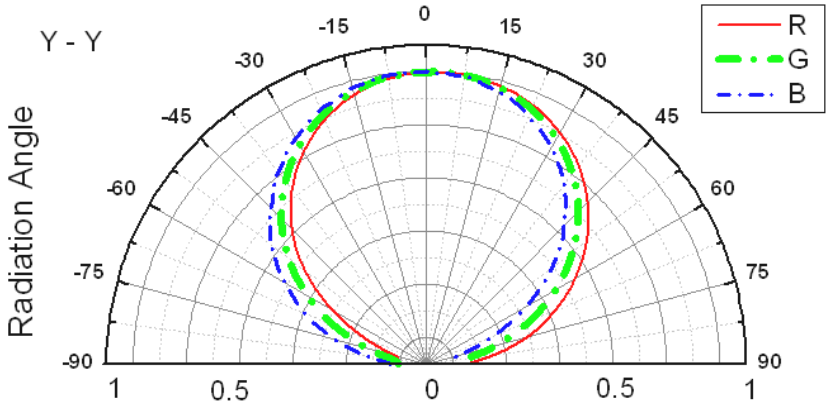
Relative Intensity vs. Wavelength (Ta=25℃)



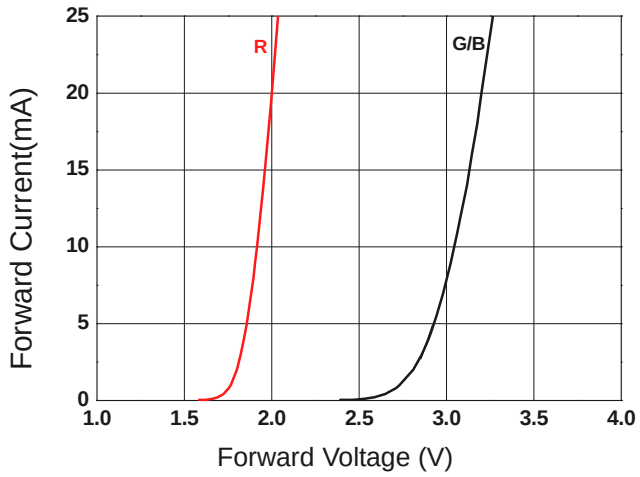
Directivity (Ta=25℃)



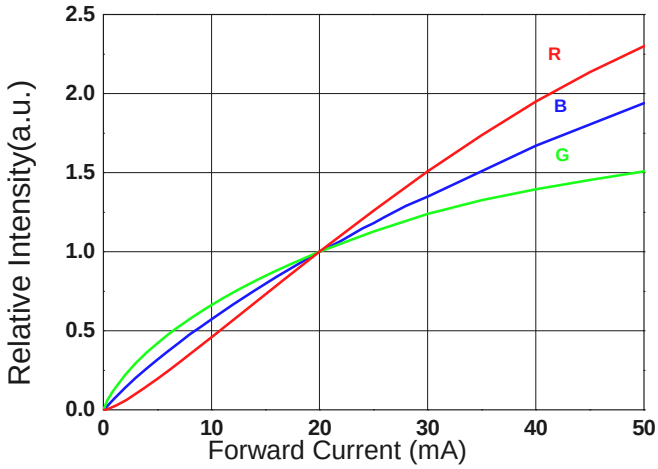




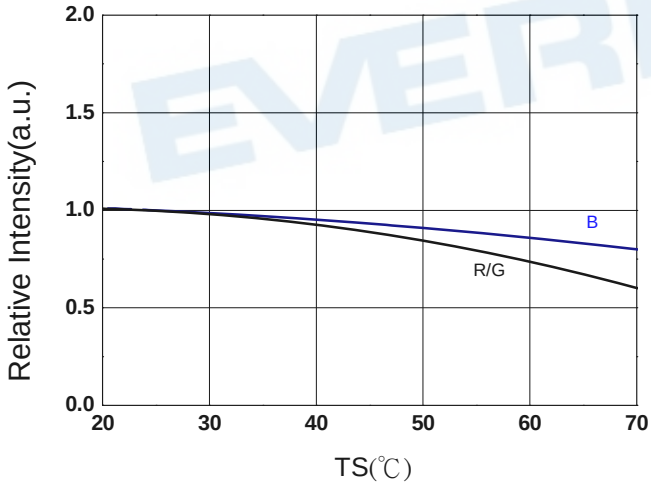
Forward Current vs. Forward Voltage (Ta=25℃)



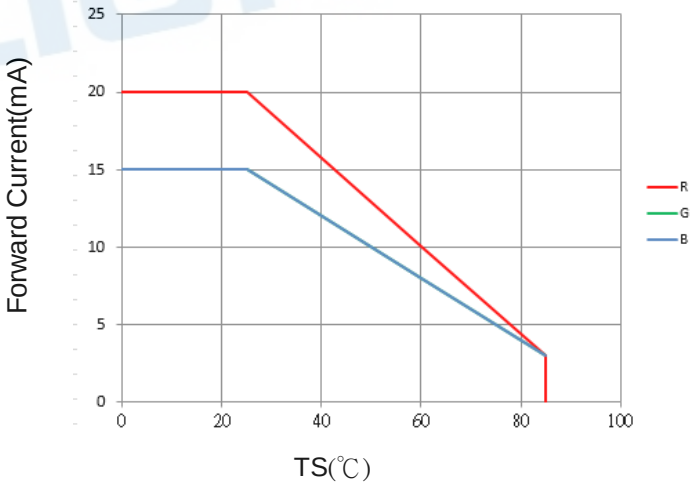
Relative Intensity vs. Forward Current (Ta=25℃)



Relative Intensity vs. Soldering Temp.



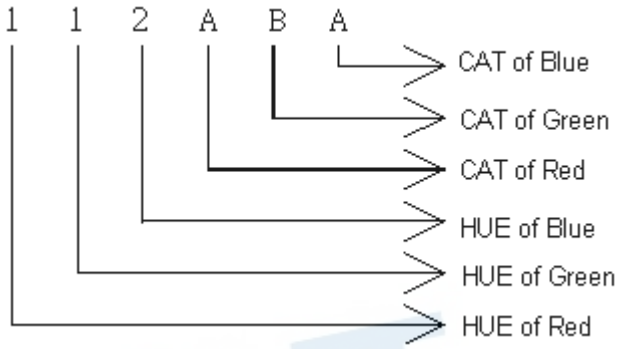
Forward Current vs. Soldering Temp.



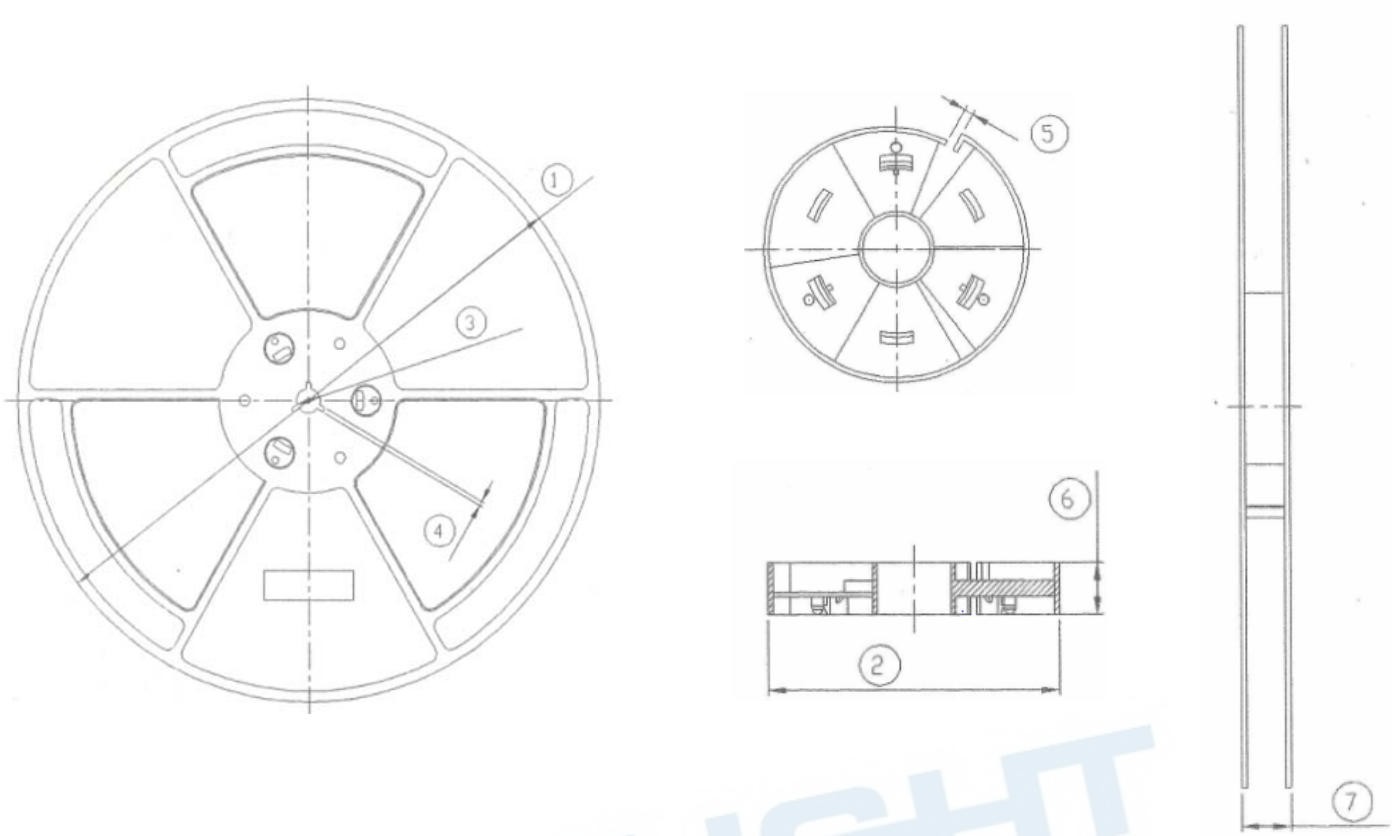
Moisture Resistant Packing Materials

Label Explanation

- CPN: Customer's Product Number
- P/N: Product Number
- QTY: Packing Quantity
- CAT: Luminous Intensity Rank
- HUE: Dom. Wavelength Rank
- REF: Forward Voltage Rank
- LOT No: Lot Number
- 1111: The date of Lot(MMDD)
- 112ABA: The second value of CAT and HUE



Reel Dimensions

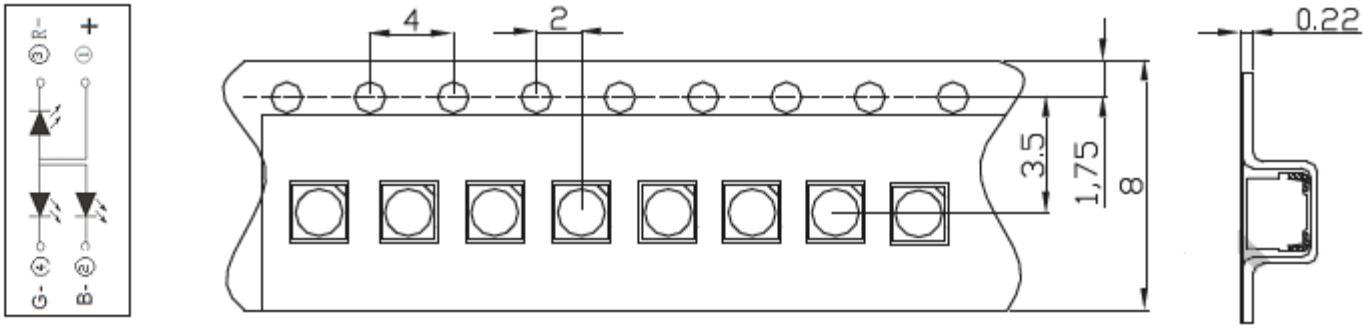


Dimensions.	1	2	3	4	5	6	7
Specification	330	99	13.5	2.5	3.5	9.4	13.4
Tolerance	±1.0	±0.5	±0.5	±0.5	±1.0	±1.0	±1.0

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

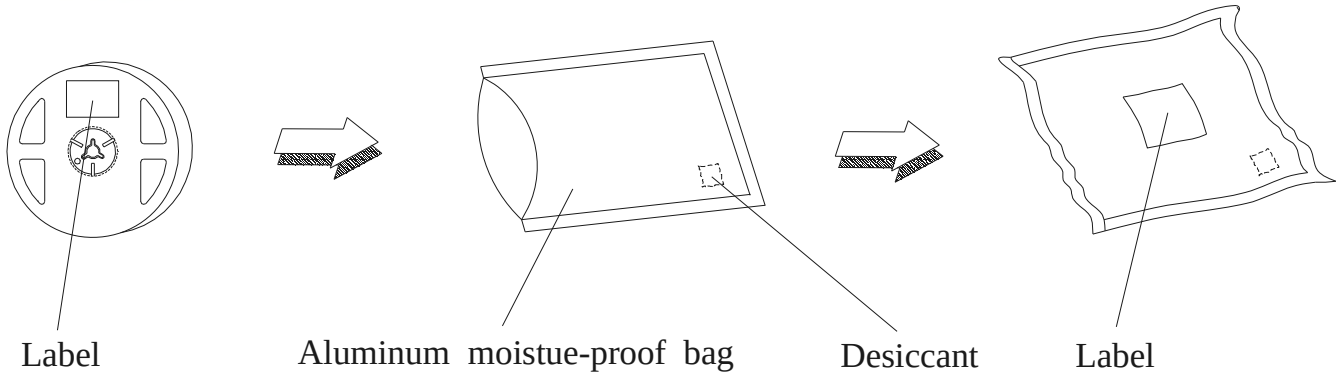
Carrier Tape Dimensions:

The minimum quantity of packing is 10000 pcs per reel. The rest quantity which could not reach 10000 pcs per reel will goes to 500 pcs per reel.



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

Moisture Resistant Packing Process



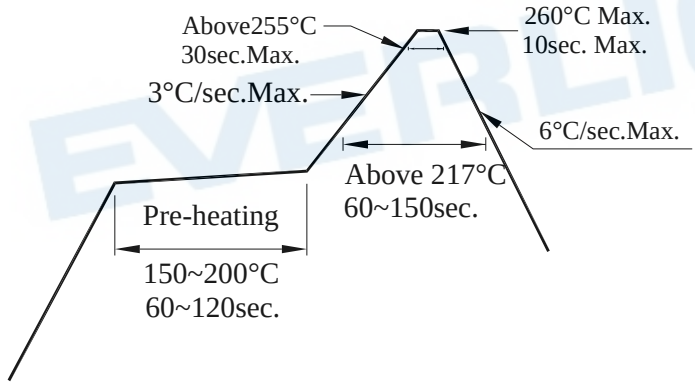
Notes:
1. Dimensions are in millimeters.
2. Tolerances for fixed dimensions are ±0.1mm

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℃ 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)℃ for 12 hours.
   - Before soldering the product must be stored under the condition <30℃ 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℃ 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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