

SMD ■ REFLECTOR 虹(Hong) Series HN0507

Preliminary



Features

- Package in 12mm tape on 7" diameter reel
- Compatible with automatic placement equipment
- Various Compatible with infrared and vapor phase reflow solder process
- 6 Pins for separate control of each chip and better thermal management
- Good color fidelity and brightness uniformity across the viewing angle
- Pb-free
- RoHS compliant

Description

- The 虹(Hong) series HN0507 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	White Diffuse
InGaN	Brilliant Green	
InGaN	Brilliant Blue	

Absolute Maximum Ratings (Ta=25℃)

Parameter	Symbol	Rating	Unit
Reverse Voltage	VR	5	V
Forward Current	IF	R:20 G:20 B:20	mA
Peak Forward Current (Duty 1/10 @1KHz)	IFP	R:60 G:60 B:60	mA
Power Dissipation	Pd	R:60 G:60 B:70	mW
Junction Temperature	Tj	100	
Operating Temperature	Topr	-40 ~ +85	
Storage Temperature	Tstg	-40 ~ +90	
ESD (Classification acc. AEC Q101)	ESDHBM	R:2000 G:1000 B:1000	V
Soldering Temperature	Tsol	Reflow Soldering : 260 Hand Soldering : 350	for 10 sec. for 3 sec.

Electro-Optical Characteristics (Ta=25℃)

Parameter	Symbol		Min.	Typ.	Max.	Unit	Condition
Luminous Intensity	Iv	R	660	-----	1380	mcd	If=20mA
		G	1150	-----	2370		
		B	315	-----	455		
Viewing Angle	2θ _{1/2}		-----	120	-----	deg	If=20mA
Peak Wavelength	λp	R		632		nm	If=20mA
		G	-----	518	-----		
		B		468			
Dominant Wavelength	λd	R	617.0		629.0	nm	If=20mA
		G	522.0	-----	537.0		
		B	460.0		475.0		
Spectrum Radiation Bandwidth	Δλ	R		20		nm	If=20mA
		G	-----	35	-----		
		B		25			
Forward Voltage	VF	R	1.7		2.7	V	If=20Ma
		G	2.7	-----	3.7		
		B	2.7		3.7		
Reverse Current	IR		-----	-----	10	Ma	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
RA	660	800	mcd	$I_F = 20\text{Ma}$
RB	800	960		
RC	960	1150		
RD	1150	1380		

Bin Range of Dominant Wavelength

Bin Code	Min.	Max.	Unit	Condition
R1	617.0	620.0	nm	$I_F = 20\text{mA}$
R2	620.0	623.0		
R3	623.0	626.0		
R4	626.0	629.0		

Floating Bin(Green) Bin Range of Luminous Intensity

Bin Code	Min.	Max.	Unit	Condition
GA	1150	1380	mcd	$I_F = 20\text{mA}$
GB	1380	1650		
GC	1650	1980		
GD	1980	2370		

Bin Range of Dominant Wavelength

Bin Code	Min.	Max.	Unit	Condition
G1	522.0	527.0	nm	$I_F = 20\text{mA}$
G2	527.0	532.0		
G3	532.0	537.0		

Note:

- 1.Tolerance of Luminous Intensity: $\pm 10\%$
- 2.Tolerance of Dominant Wavelength: $\pm 1\text{nm}$

Floating Bin(Blue)
Bin Range of Luminous Intensity

Bin Code	Min.	Max.	Unit	Condition
BA	315	380	mcd	$I_F = 20\text{mA}$
BB	380	455		
BC	455	545		

Bin Range of Dominant Wavelength

Bin Code	Min.	Max.	Unit	Condition
B1	460.0	465.0	nm	$I_F = 20\text{mA}$
B2	465.0	470.0		
B3	470.0	475.0		

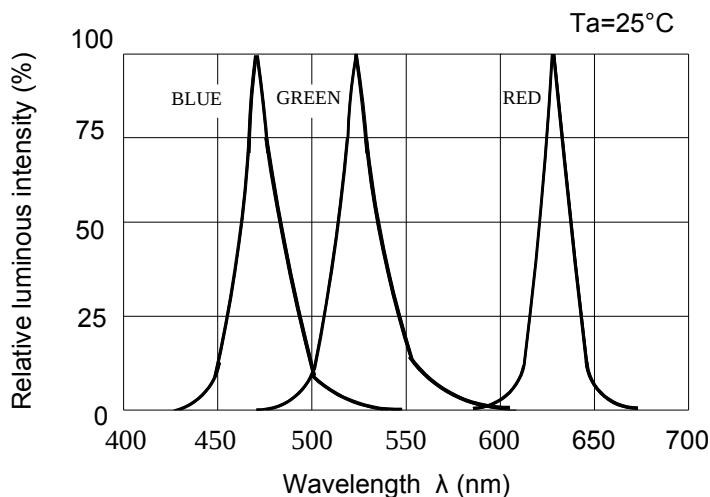
Note:

1. Tolerance of Luminous Intensity: $\pm 10\%$
2. Tolerance of Dominant Wavelength: $\pm 1\text{nm}$

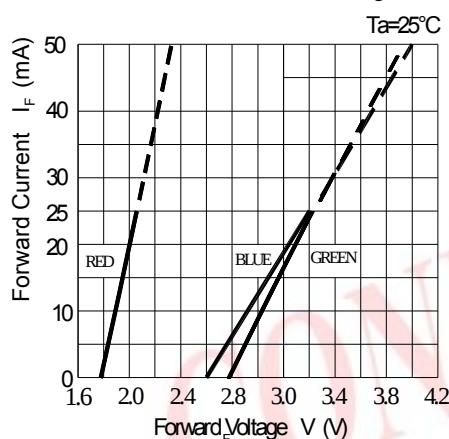
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Typical Electro-Optical Characteristics Curves

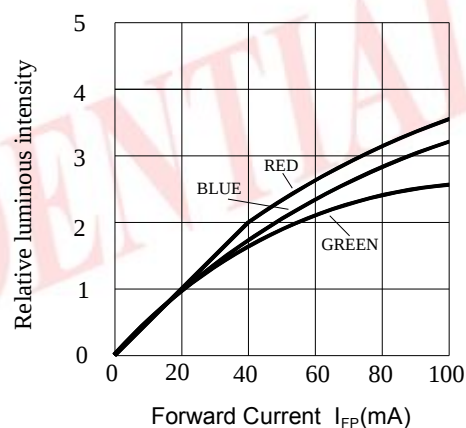
Spectrum Distribution



Forward Current vs. Forward Voltage



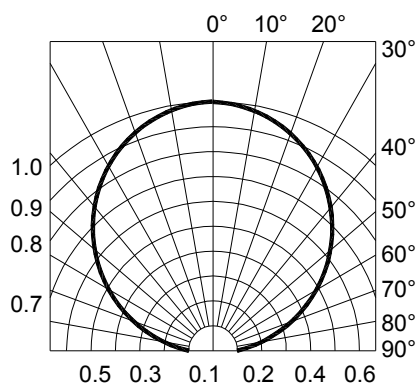
Forward Current Derating Curve



X-X

Radiation Diagram

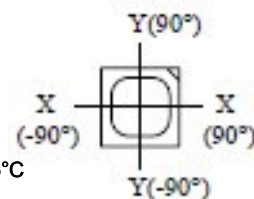
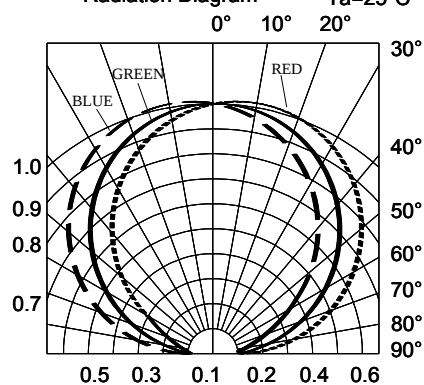
Ta=25°C



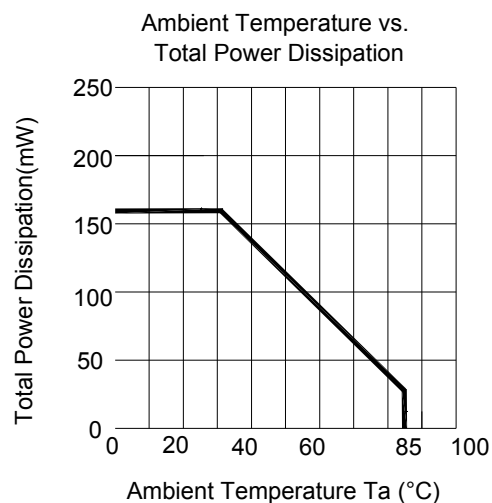
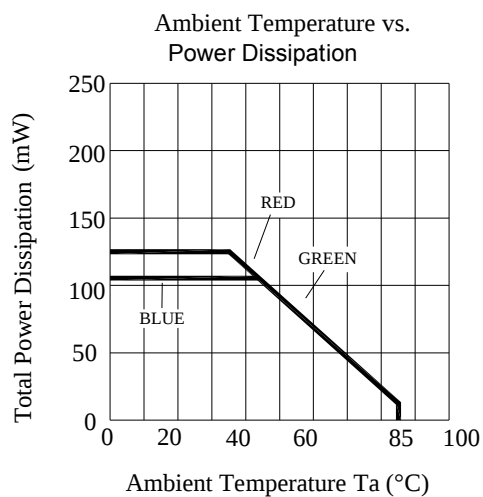
Y-Y

Radiation Diagram

Ta=25°C

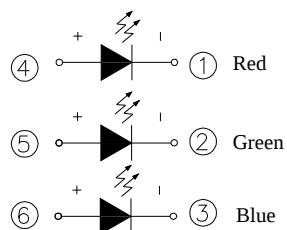
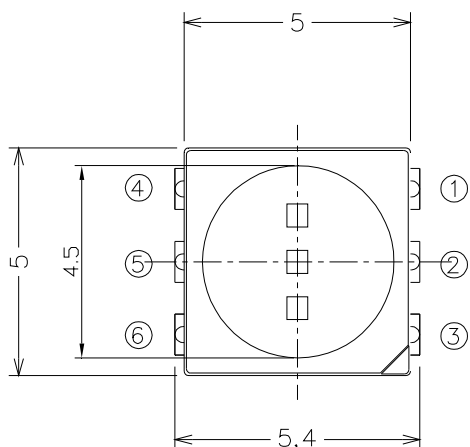


Typical Electro-Optical Characteristics Curves

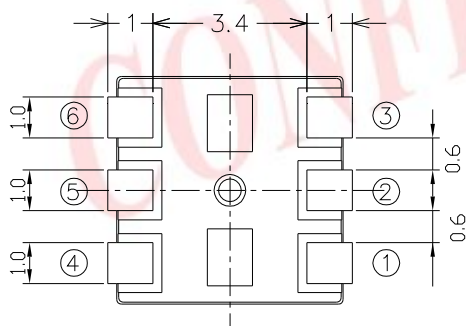
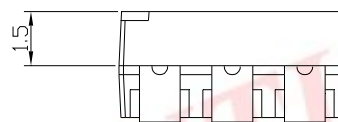
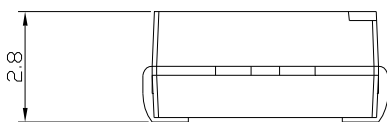


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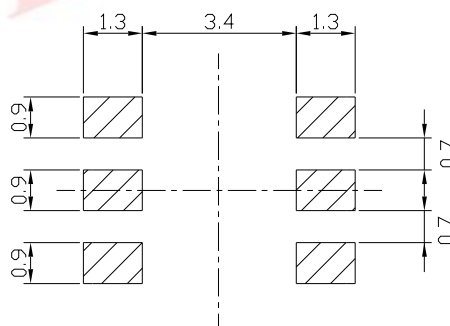
Package Dimension



Polarity



Bot. view



Soldering patterns

Note:

Tolerances unless mentioned $\pm 0.1\text{mm}$. Unit = mm

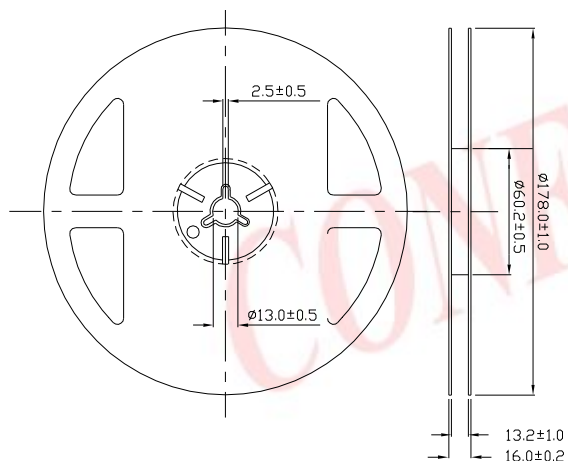
Moisture Resistant Packing Materials

Label Explanation

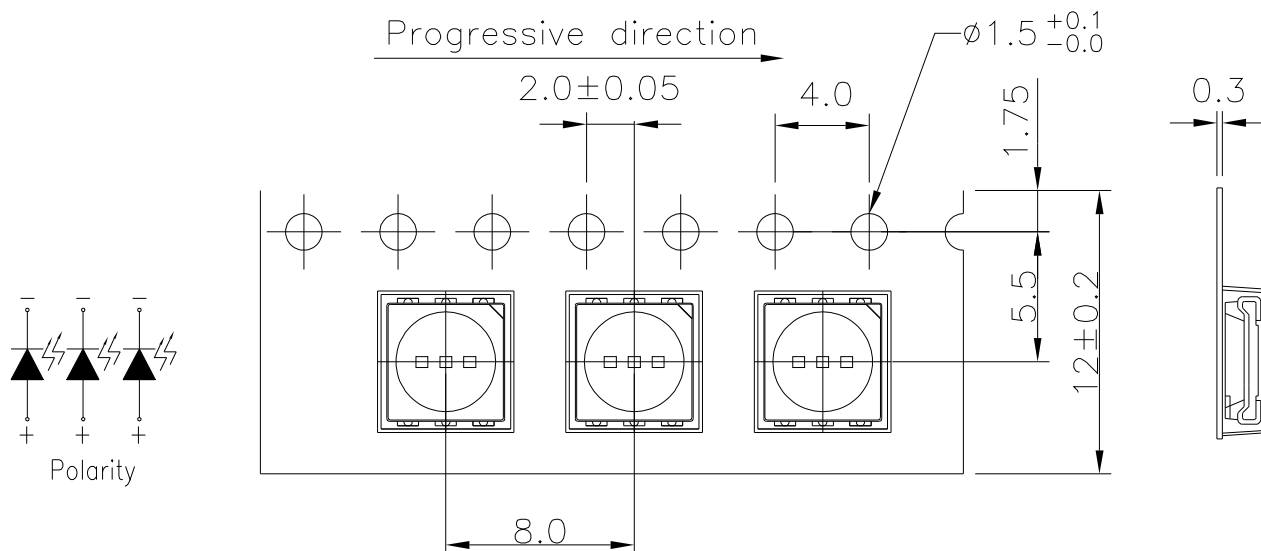


- CPN: Customer's Product Number
- P/N: Product Number
- QTY: Packing Quantity
- CAT: Luminous Intensity Rank
- HUE: Dom. Wavelength Rank
- REF: Forward Voltage Rank
- LOT No: Lot Number

Reel Dimensions

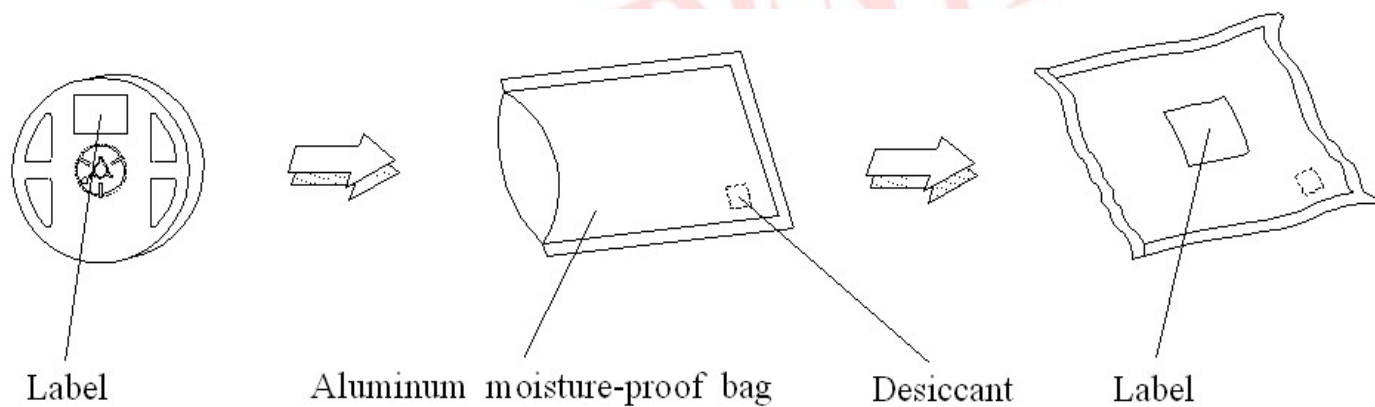


Carrier Tape Dimensions: Loaded Quantity 1000 pcs Per Reel



Note:
Tolerances unless mentioned $\pm 0.1\text{mm}$. Unit = mm

Moisture Resistant Packing Process



Note:
Tolerances unless mentioned $\pm 0.1\text{mm}$. Unit = 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

2.1 Do not open moisture proof bag before the products are ready to use.

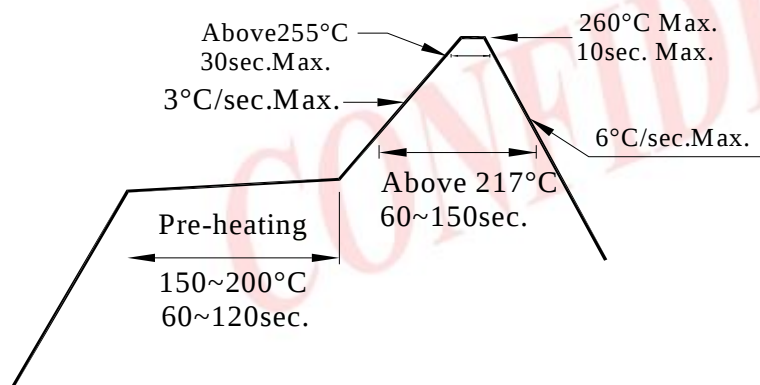
2.2 Before opening the package: The LEDs should be kept at 30 °C or less and 90%RH or less.

2.3 After opening the package: The LED's floor life is 168 hours under 30 °C or less and 60% RH or less. If unused LEDs remain, it should be stored in moisture proof packages.

2.4 If the moisture absorbent material (silica gel) has faded away or the LEDs have exceeded the storage time, baking treatment should be performed using the following conditions. Baking treatment : 60±5 °C for 24 hours.

3. Soldering Condition

3.1 Pb-free solder temperature profile



3.2. Reflow soldering should not be done more than two times.

3.3 When soldering, do not put stress on the LEDs during heating.

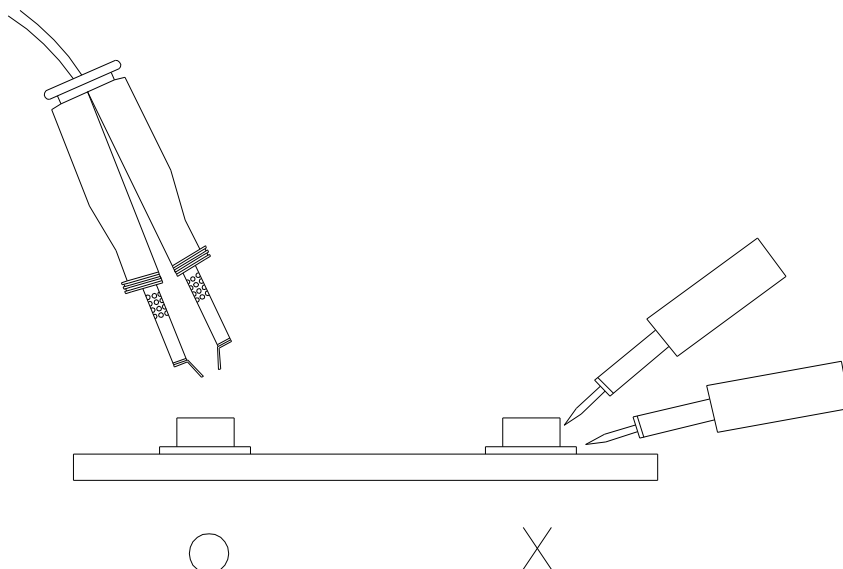
3.4 After soldering, do not warp the circuit board.

4.Soldering Iron

Each terminal is to go to the tip of soldering iron temperature less than 350 for 3 seconds within once in less than the soldering iron capacity 25W. Leave two seconds and more intervals, and do soldering of each terminal. Be careful because the damage of the product is often started at the time of the hand solder.

5.Repairing

Repair should not be done after the LEDs have been soldered. When repairing is unavoidable, a double-head soldering iron should be used (as below figure). It should be confirmed beforehand whether the characteristics of the LEDs will or will not be damaged by repairing.



6.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.

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