Harvatek Surface Mount LED Data Sheet
HT-B259 Series

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LIFE SUPPORT POLICY

HARVATEK's products are not authorized for use as critical components in life support devices or systems without the express written approval of the President of HARVATEK or HARVATEK INTERNATIONAL. As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and (c) whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury of the user.

2. A critical component in any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

Product Specifications

Product	Emission Color	Technology	Test Current I_F (mA)	Luminous Intensity I_V (mcd)	Forward Voltage V_F (V)	Orderable Part Number
HT-B2591NG	Green	InGaN	20	450 typ.	3.3 typ.	HT-2591NG
HT-B2592USD/NG	Red / Green	AlInGaP / InGaN	20	360/450 typ.	1.9/3.3 typ.	HT-B2592USD/NG

	Specification	Material	Quantity
Resin	diffused	Epoxy resin	
Carrier tape	Per EIA 481-1A specs	Conductive black tape	2000pcs per reel
Reel	Per EIA 481-1A specs	Conductive black	
Label	HT standard	Paper	
Packing bag	220x240mm	Aluminum laminated bag/ no-zipper	One reel per bag
Carton	HT standard	Paper	

Others:

Each immediate box consists of 5 reels. The 5 reels may not necessarily have the same lot number or the same bin combinations of Iv, λ_D and Vf. Each reel has a label identifying its specification; the immediate box consists of a product label as well.

Compliance and Certification

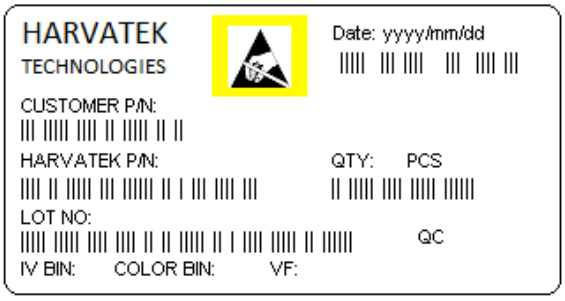
RoHS compliant and IS9002, QS9000 and ISO14001 certified.

ATTENTION: Electrostatic Discharge (ESD) protection

The symbol to the left denotes that ESD precaution is needed. ESD protection for GaP and AlGaAs based chips is necessary even though they are relatively safe in the presence of low static-electric discharge. Parts built with AlInGaP, GaN, or/and InGaN based chips are **STATIC SENSITIVE devices**. ESD precaution must be taken during design and assembly.

If manual work or processing is needed, please ensure the device is adequately protected from ESD during the process.

Label Specifications



■ Harvatek P/N:

H T - B 2 5 9 X Y YY- ZZZZ

Series Name	Chip Number	Emitting Color	Customer Code
HT-B259 **HT: Harvatek** **B259: Top Mount with 1.6mm Dome Lens** **3.2 (L) x 1.6 (W) x 2.55 (H) mm**	**1: Single Chip** **2: Dual Chip**	**YYY** **USD: Red** **NG: Pure Green**	**ZZZZ** **Customer Product Code**

■ Lot P/N:

1	2	3	4	5	6	7	8	9	10
E	1	A	1	A	2	2	L	1	2
Code 1 2		Code 3	Code 4	Code 5	Code 6	Code 7	Code 8	Code 9	Code 10
		Mfg. Year	Mfg. Month	Mfg. Date	Consecutive number		Special code		
Internal Tracing Code		2010-A 2011-B 2012-C 2013-D . .	1:Jan. 2:Feb. .... A:Oct. B:Nov. C:Dec.	1:A 2:B 3:C ... 26:Z 27:7 28:8 29:9 30:3 31:4	01~ZZ		000~ZZZ		

■ Luminous Intensity (Iv) Bin:

Color	Bin	Luminous Intensity Range (mcd)	
		Minimum	Maximum
Red	S	180.0	285.0
	T	285.0	360.0
	U	360.0	450.0
Pure Green	T	285.0	360.0
	U	360.0	450.0
	V	450.0	560.0
	W	560.0	715.0

@20mA / Ta=25^{O} C, Tolerance : ± 10%

■ Wavelength (λ_D) Bin:

Bin	Wavelength Range (nm)			
	Red (USD)		Pure Green (NG)	
	Min	Max	Min	Max
-	615.0	630.0	-	-
A	-	-	515	520
B	-	-	520	525
C	-	-	525	530
D	-	-	530	535

@20mA / Ta=25^{O} C, Tolerance: ± 0.5nm

■ Forward Voltage (V_F) Bin:

Color	Bin Code	Spec. Range
Ultra Bright (USD)	-	2.4 V max
Pure Green (NG)	-	3.9V max

@20mA / Ta=25℃, Tolerance: ± 0.05 V

Product Characteristics

Absolute Maximum Ratings

Product	Emission Color	P_d (mW)	I_F (mA)	I_{FP}* (mA)	V_R (V)	T_{OP} (°C)	T_{ST} (°C)
HT-B2591NG	Green	117	30	100	5	-30°C~+85°C	-40°C~+85°C
HT-B2592USD/NG	Red / Green	72/117	30	100	5	-30°C~+85°C	-40°C~+85°C

* Condition for I_{FP} is pulse of 1/10 duty and 0.1msec width

**Remarks: This product should be operated in forward bias. If a reverse voltage is continuously applied to the product, such operation can cause migration resulting in LED damage.

Electro-Optical Characteristics

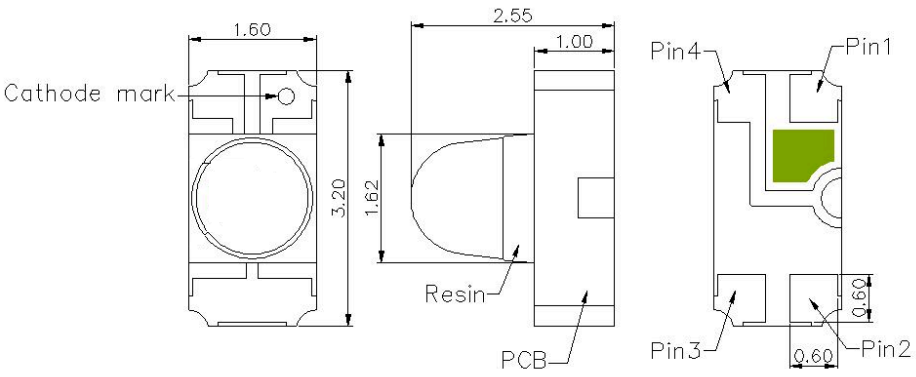
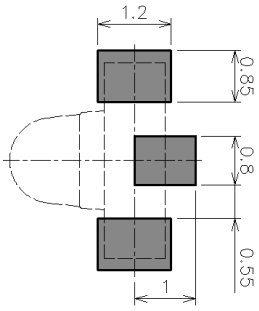
(T_a = 25°C)

Product	Emission Color	I_F(mA)	V_F(V)		λ(nm)			I^*_V(mcd)		V.A. (°)
			typ	max	λ_D	λ_P	$\triangle\lambda$	min	typ	$2\theta_{1/2}$
HT-B2591NG	Green	20	3.3	3.9	527	520	40	285	450	120
HT-B2592USD/NG	Red / Green	20	1.9/3.3	2.4/3.9	622/527	636/520	17/40	180/285	360/450	120

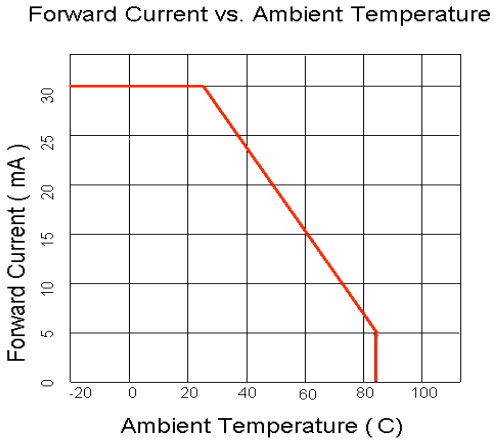
- Per NIST standards

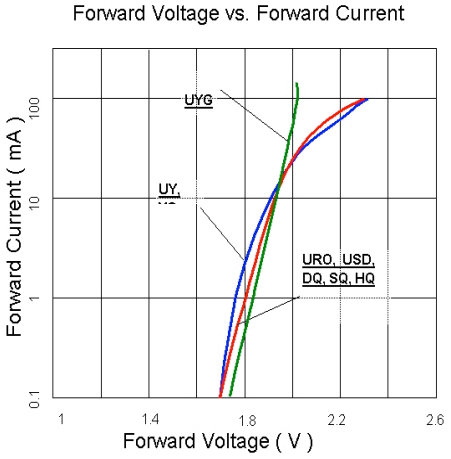
Package Outline Dimension Recommended Soldering Pattern for Reflow Soldering

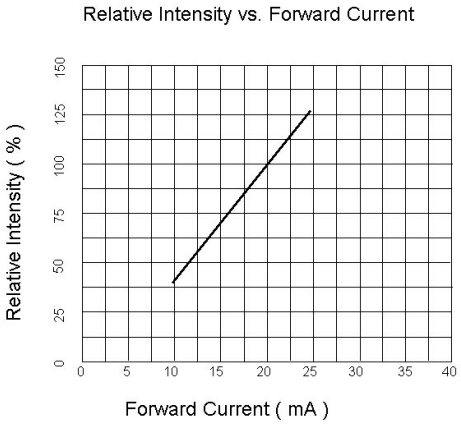
Unit: mm Tolerance: +/-0.1

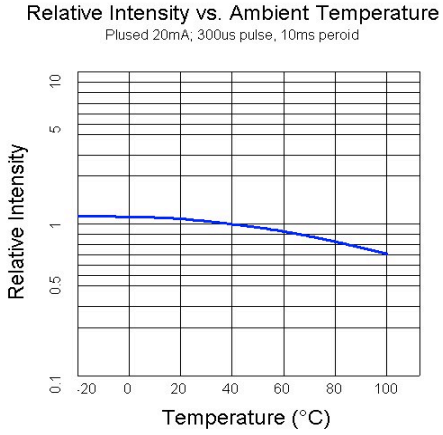
Outline Dimension	Solder Pattern
	
Soldering terminals may shift in the x, y direction.	Unit: mm

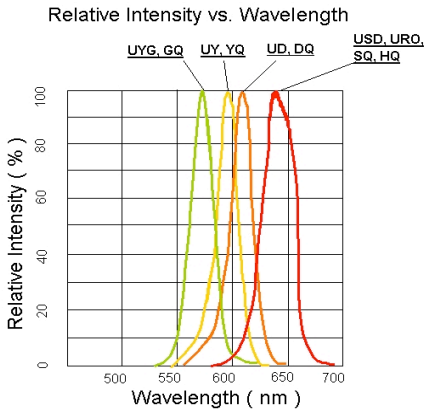
Characteristic Curves for USD





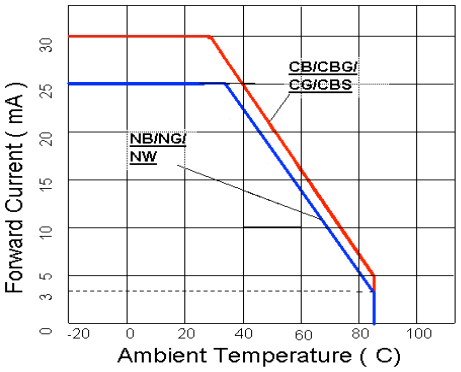




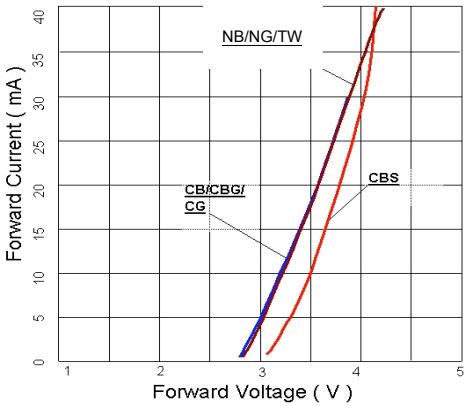


Characteristic Curves for NG

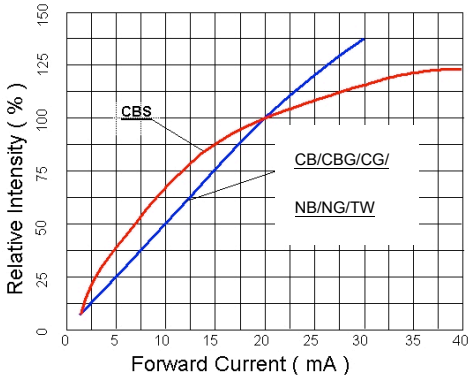
Forward Current vs. Ambient Temperature



Forward Voltage vs. Forward Current

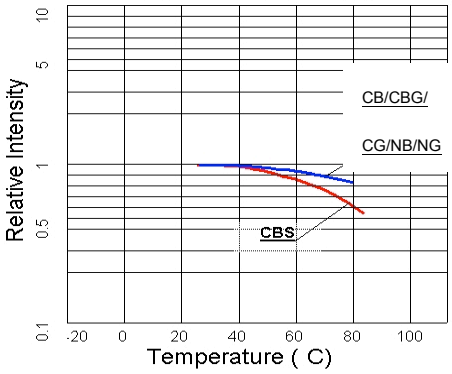


Relative Intensity vs. Forward Current



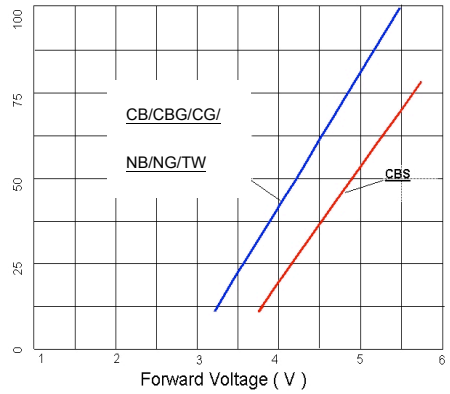
Relative Intensity vs. Ambient Temperature

Plused 20mA; 300us pulse, 10ms peroid

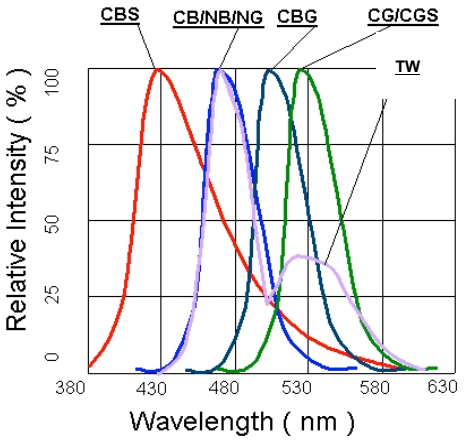


Peak Forward Voltage vs. Forward Current

100's test pulse, 1% duty cycle

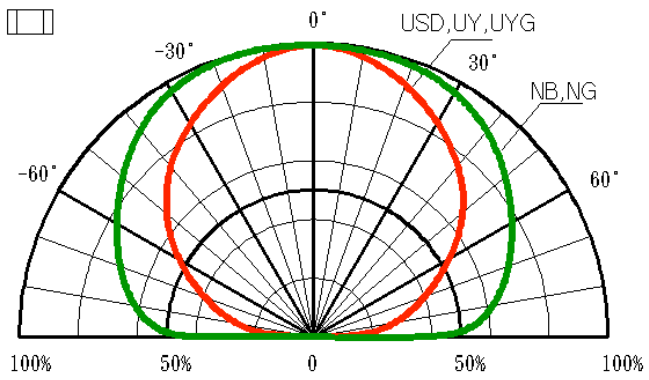


Relative Intensity vs. Wavelength

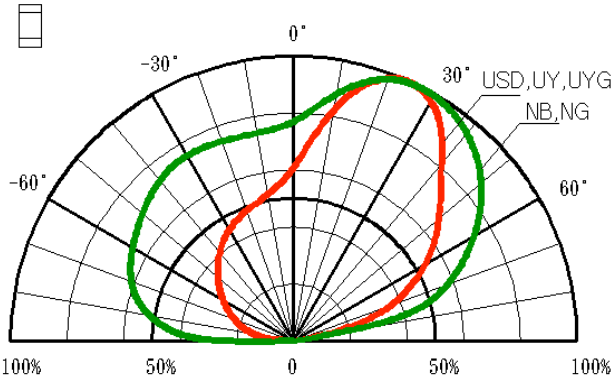


Characteristic Curves (Radiation Pattern)

Directive Characteristics

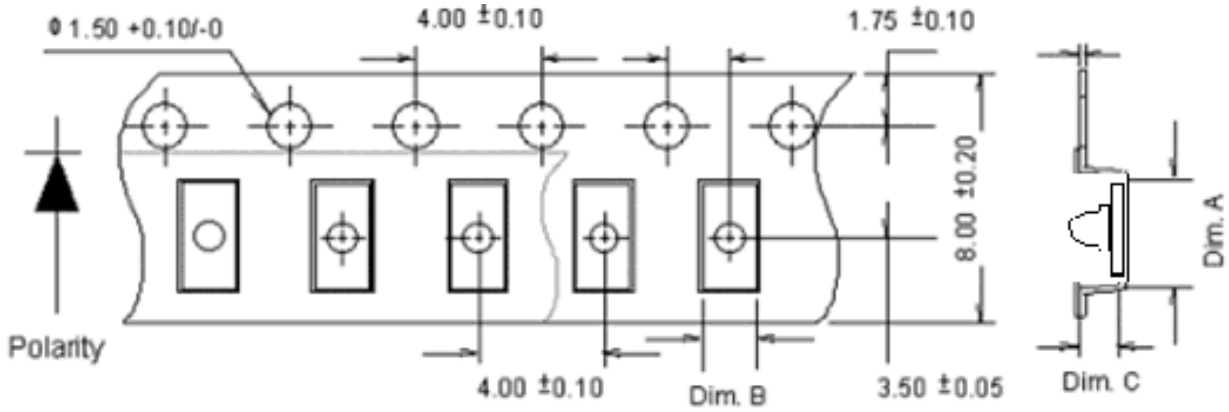


Directive Characteristics



Packaging

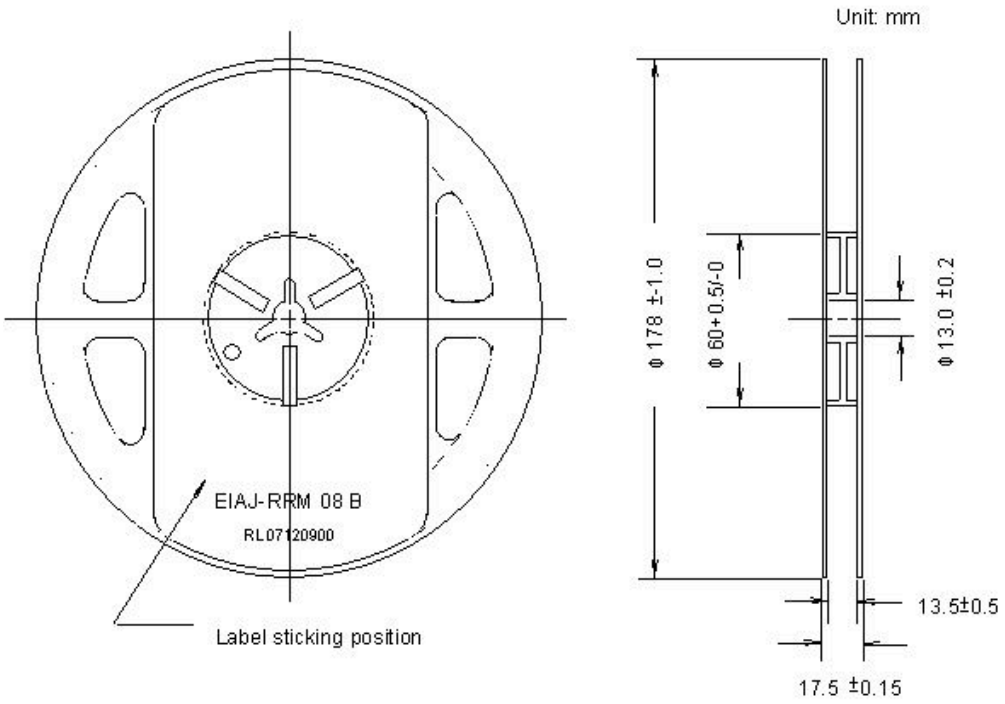
Tape Dimension



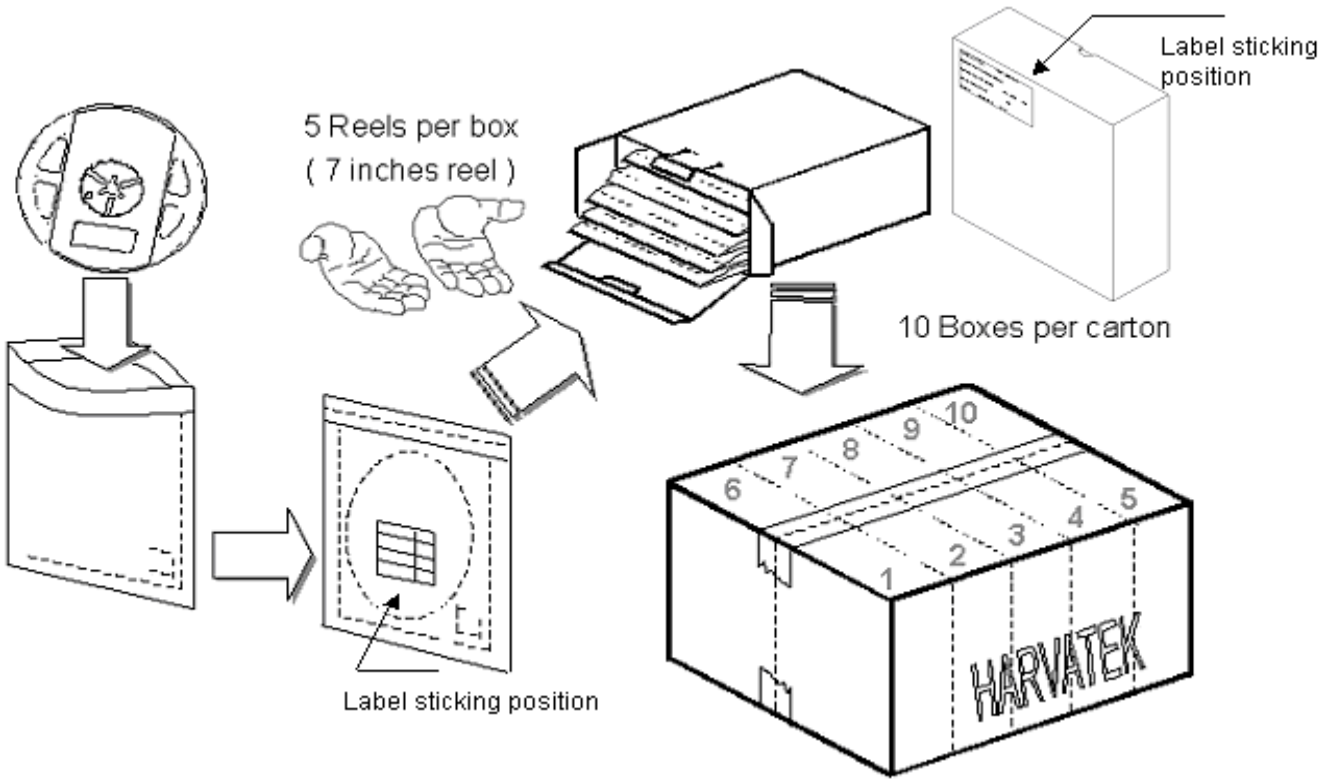
Part No.	Dim. A	Dim. B	Dim. C	Q'ty/Reel
HT-B259	3.30± 0.10	1.70± 0.10	2.2±0.10	2K

Unit: mm

Reel Dimension



Packing



5 boxes per carton is available depending on shipment quantity.

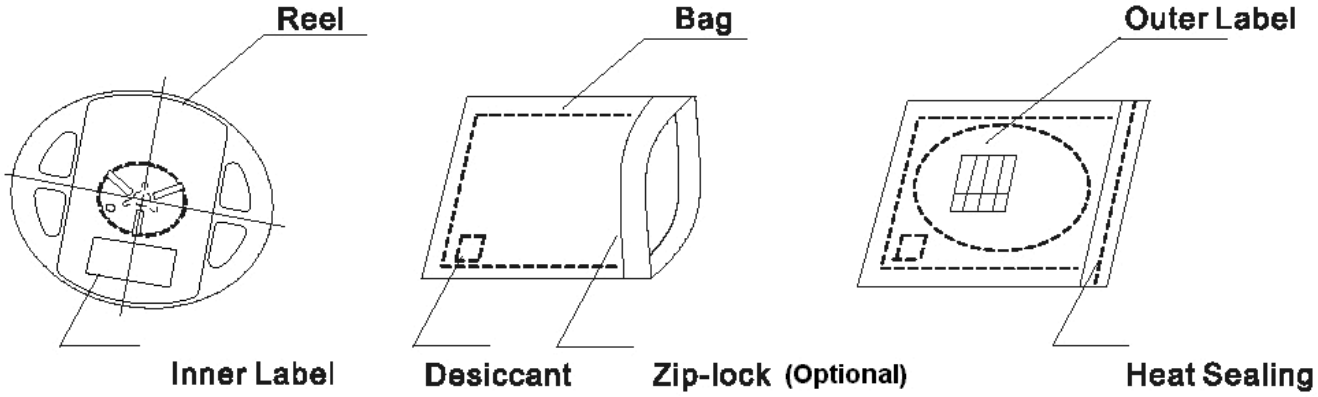
	Specification	Material	Quantity
Carrier tape	Per EIA 481-1A specs	Conductive black tape	2000pcs per reel
Reel	Per EIA 481-1A specs	Conductive black	
Label	HT standard	Paper	
Packing bag	220x240mm	Aluminum laminated bag/ no-zipper	One reel per bag
Carton	HT standard	Paper	Non-specified
Others: Each immediate box consists of 5 reels. The 5 reels may not necessarily have the same lot number or the same bin combinations of Iv, λ_D and Vf. Each reel has a label identifying its specification; the immediate box consists of a product label as well.			

Dry Pack

All SMD optical devices are **MOISTURE SENSITIVE**. Avoid exposure to moisture at all times during transportation or storage. Every reel is packaged in a moisture protected anti-static bag. Each bag is properly sealed prior to shipment.

Upon request, a humidity indicator will be included in the moisture protected anti-static bag prior to shipment.

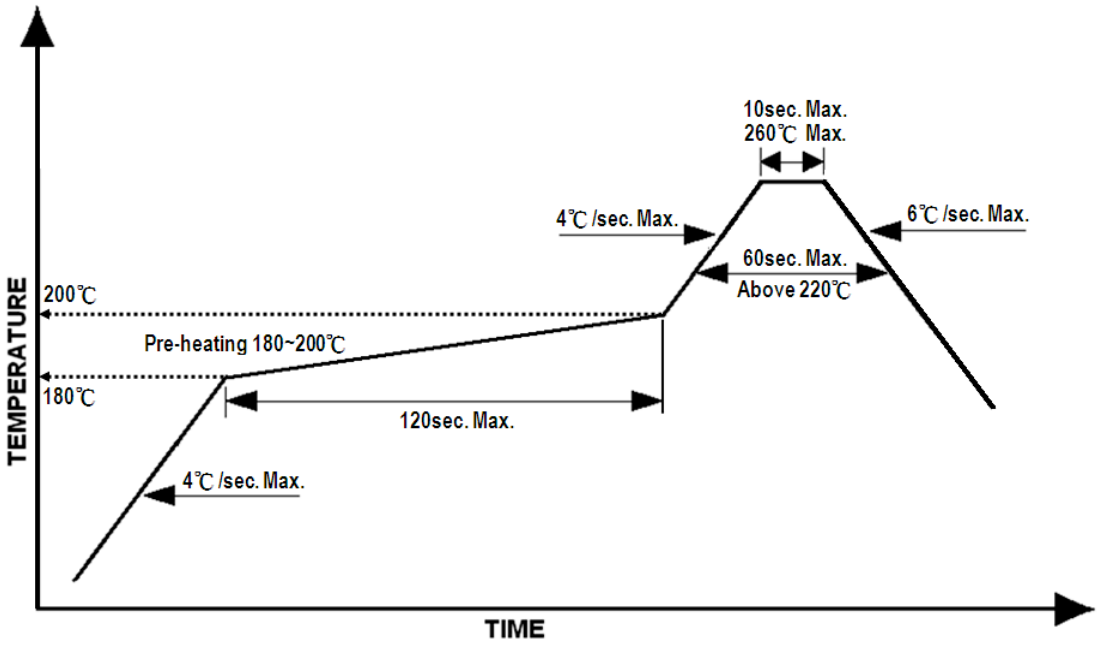
The packaging sequence is as follows:



Reflow Soldering

- Recommended tin glue specifications: melting temperature in the range of 178~192 ^{O}C
- The recommended reflow soldering profile is as follows (temperatures indicated are as measured on the surface of the LED resin):

Lead-free Solder Profile



Precautions

1. Avoid exposure to moisture at all times during transportation or storage.
2. Anti-Static precaution must be taken when handling GaN, InGaN, and AlInGaP products.
3. It is suggested to connect the unit with a current limiting resistor of the proper size. Avoid applying a reverse voltage.
4. Avoid operation beyond the limits as specified by the absolute maximum ratings.
5. Avoid direct contact with the surface through which the LED emits light.
6. If possible, assemble the unit in a clean room or dust-free environment.

Reworking

- Rework should be completed within 5 seconds under 260 ^{O}C.
- The iron tip must not come in contact with the copper foil.
- Twin-head type is preferred.

Cleaning

Following are cleaning procedures after soldering:

- An alcohol-based solvent such as isopropyl alcohol (IPA) is recommended.
- Temperature x Time should be 50^{o}C x 30sec. or <30^{o}C x 3min
- Ultra sonic cleaning: < 15W/ bath; bath volume ≤ 1liter
- Curing: 100 ^{O}C max, <3min

Cautions of Pick and Place

- Avoid stress on the resin at elevated temperature.
- Avoid rubbing or scraping the resin by any object.
- Electro-static may cause damage to the component. Please ensure that the equipment is properly grounded. Use of an ionizer fan is recommended.

Revision History

Changes since last revision	Page	Version No.	Revision Date
Initial Release		1.0	06-22-2013