

**Harvatek Surface Mount LED Data Sheet  
HT-U16DSWH**

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			HT-U16DSWH
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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.

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## Product Specifications

Product	Emission Color	Technology	Test Current $I_F$ (mA)	Luminous Intensity (mcd)	Forward Voltage $V_F$ (V)	Orderable Part Number
HT-U16DSWH	White	InGaN	150	11250 minimum	3.3 typ	HT-U16DSWH

	Specification	Material	Quantity
ESD	2000V (HBM)		
Resin	Water clear	Silicone	
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  $I_V$ ,  $\lambda_D$  and  $V_f$ . Each reel has a label identifying its specification; the immediate box consists of a product label as well. All raw materials used in the construction of this device comply with UL 94V-0

### 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.

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## Label Specifications

<b>HARVATEK</b>		Date: yyyy/mm/dd 
CUSTOMER P/N: 		
HARVATEK P/N: 	QTY: PCS 	
LOT NO: 		QC
IV BIN:    COLOR BIN:    VF:		

### Harvatek P/N:

**H T - U16D SWH - xxxx**

Series Name	Emitting Color	Customer Code
<b>HT-U16D</b> HT: Harvatek U16D: Mid-power series 3.5 (L) x 2.8 (W) x 1.3 (H) mm	<b>SWH</b> White @ 150mA	<b>xxxx</b> Customer Product Code

### Lot No.:

1	2	3	4	5	6	7	8	9	10
<b>P</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>0</b>	<b>A</b>	<b>-</b>	<b>D</b>	<b>T</b>

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Code 1	Code 2	Code 3	Code 4, 5	Code 6, 7	Code 9	Code 10
	Mfg. Year	Mfg. Month	Mfg. Date	Lots	Resin Color	Packaging
Internal Tracing Code	Z: 2000 1: 2001 2: 2002 3: 2003 .....	1: Jan. 2: Feb. .... 9: Sep. A: Oct. B: Nov. C: Dec.	1~31/ (30)	01~99, A,B,C...	D: Diffused C: Clear	T: Tape & Reel

### ■ Luminous Intensity Bin:

Rank Code	Symbol	Condition	Min.	Typ.	Max.	Unit
AK1	Iv	I <sub>F</sub> =150mA	11250	-	12500	mcd
AK2			12500	-	14000	
AL1			14000	-	15600	

@150mA / Ta=25° C, Tolerance: ± 10%

### ■ Luminous Flux Bin:

Rank Code	Symbol	Condition	Min.	Typ.	Max.	Unit
PP2	ΦV	I <sub>F</sub> =150mA	26.8	-	30.6	lm
PQ1			30.6	-	34.9	

@150mA / Ta=25° C, Tolerance: ± 10% (Note : Luminous Flux Bin table for reference)

### ■ Forward Voltage (V<sub>F</sub>) Bin:

Bin Code	Spec. Range
H6	3.0-3.2 V
J5	3.2-3.4 V
J6	3.4-3.6 V
K5	3.6-3.8 V

@150mA / Ta=25°C, Tolerance: ± 0.05 V

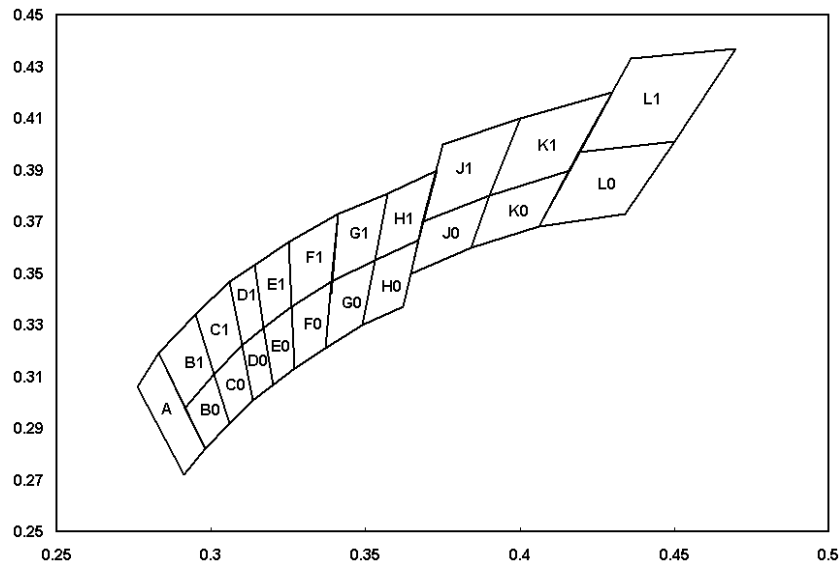
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## Correlated Color Temperature Rank for White

Color	Condition	Bin Code	Min.	Typ.	Max.
Warm White	$I_F=150\text{mA}$	K1	3,250	3,500	3,750
		K0	3,250	3,500	3,750
		J1	3,750	4,000	4,250
		J0	3,750	4,000	4,250

Tolerance:  $\pm 5\%$

## Correlated Color Temperature and Chromaticity Correlation (for White)



@150mA /  $T_a=25^\circ\text{C}$ , Tolerance:  $\pm 0.01$

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### Product Characteristics

#### Absolute Maximum Ratings

Product	Emission Color	P <sub>d</sub> (mW)	I <sub>F</sub> (mA)	I <sub>FP</sub> * (mA)	V <sub>R</sub> (V)	T <sub>OP</sub> (°C)	T <sub>ST</sub> (°C)
HT-U16DSWH	White	570	180	200	5	-40~+100	-40~+100

\* Condition for I<sub>FP</sub> is pulse of 1/10 duty and 0.1msec width

#### Electro-Optical Characteristics

(T<sub>a</sub> = 25 °C)

Product	Emission Color	I <sub>F</sub> (mA)	V <sub>F</sub> (V)		λ(nm)			I <sub>v</sub> (mcd)	
			typ	max	λ <sub>D</sub>	λ <sub>P</sub>	Δλ	min	typ
HT-U16DSWH	White	150	3.3	3.9	X=0.38 Y=0.37			11250	14000

\* Per NIST standard

#### Package Outline Dimension and Recommended Soldering Pattern

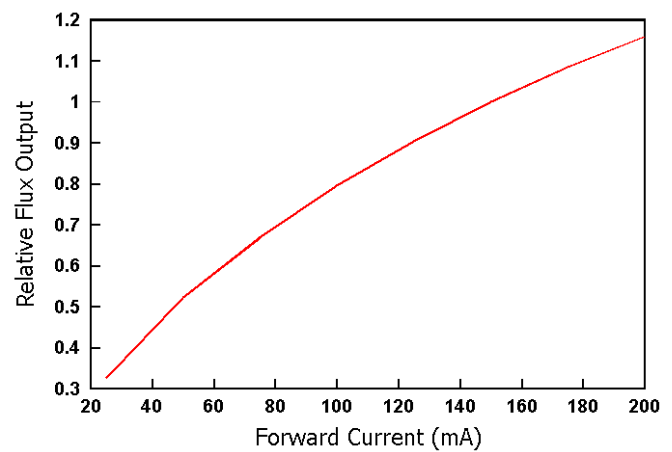
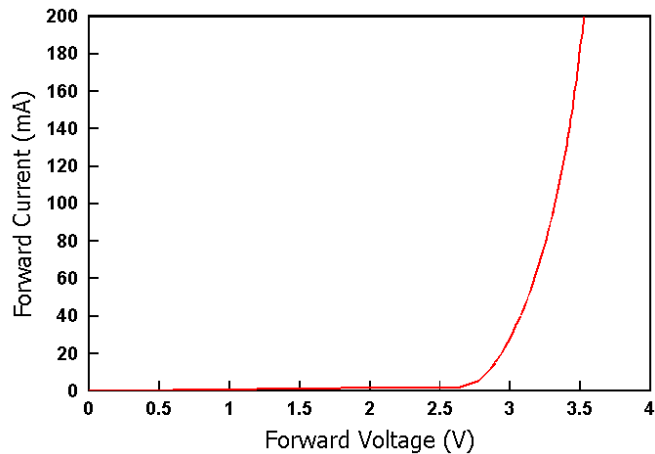
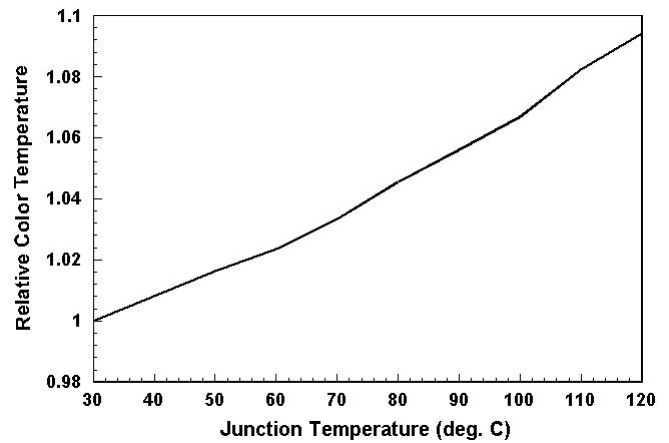
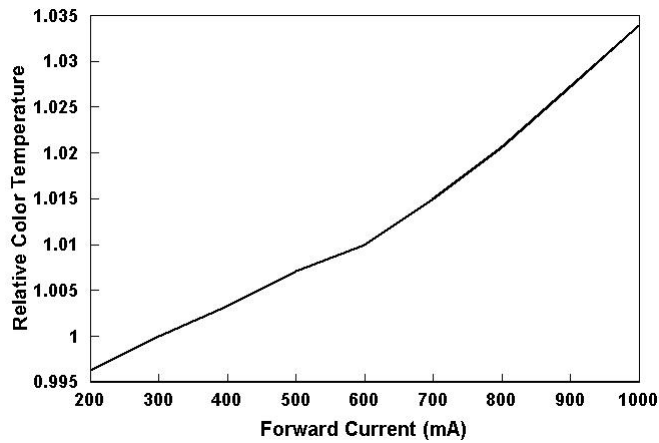
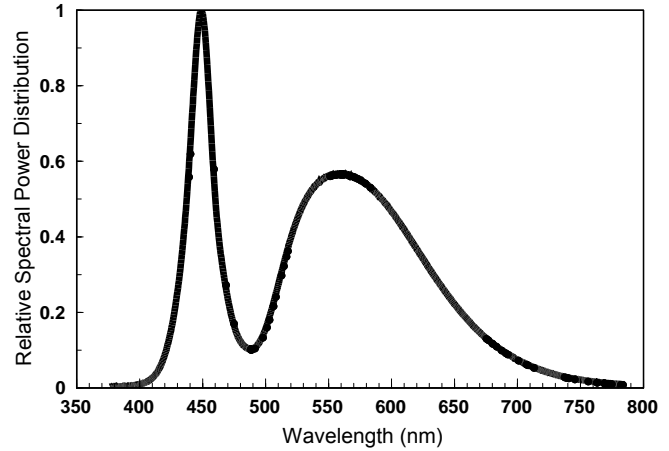
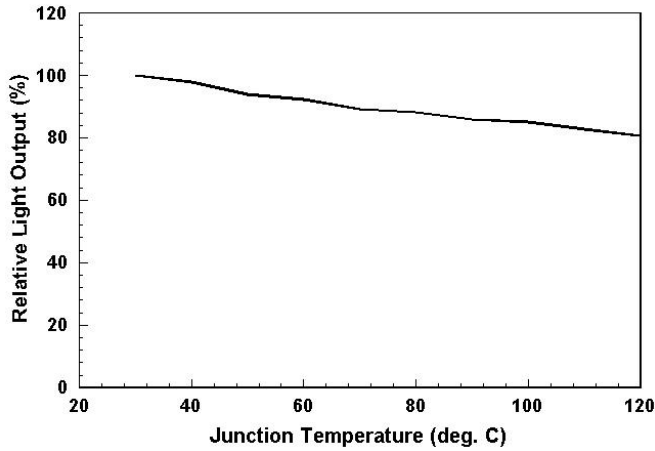
Unit: mm Tolerance: +/-0.1

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

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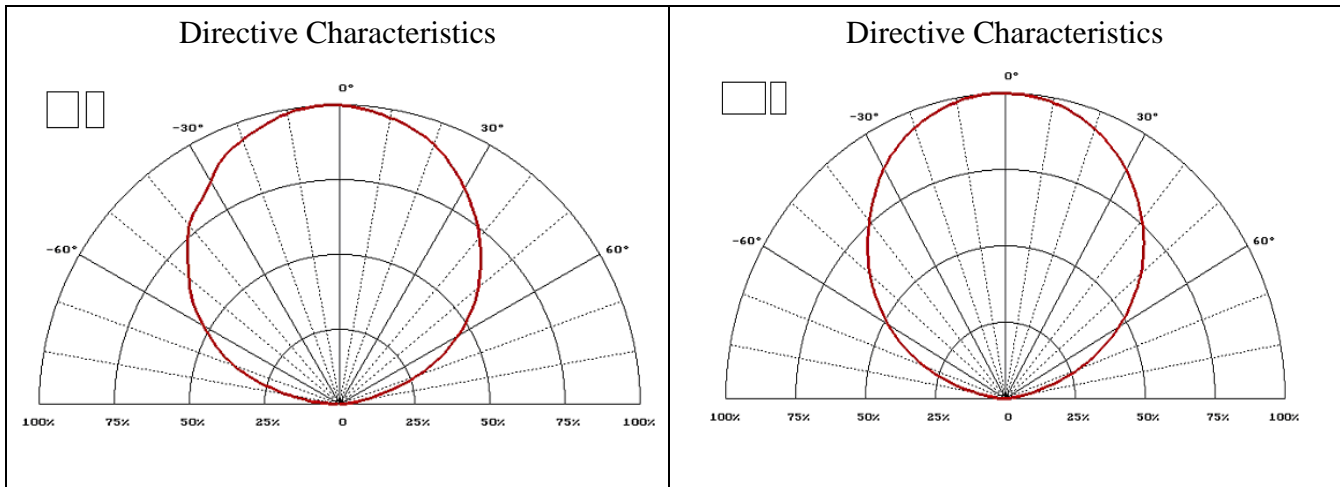


### Characteristic Curves



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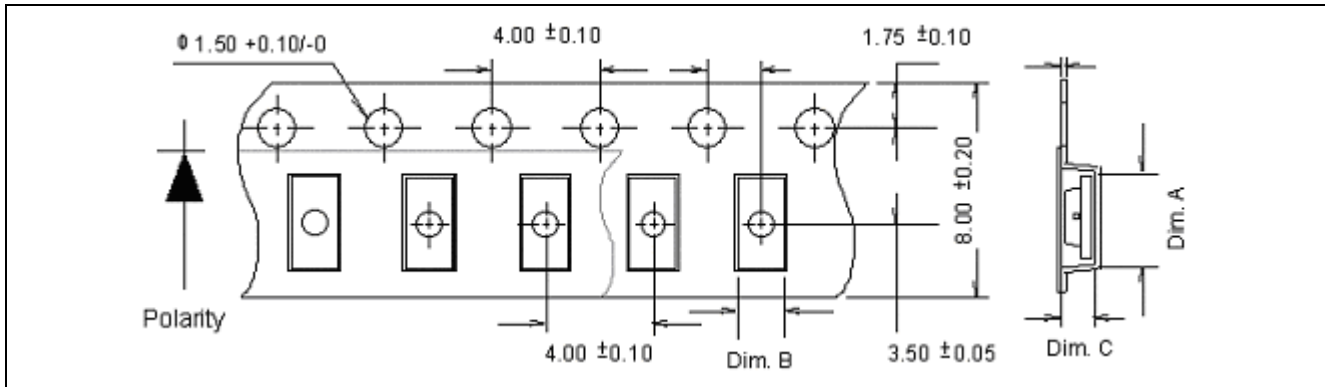
## Radiation Pattern



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## Packaging

### Tape Dimension

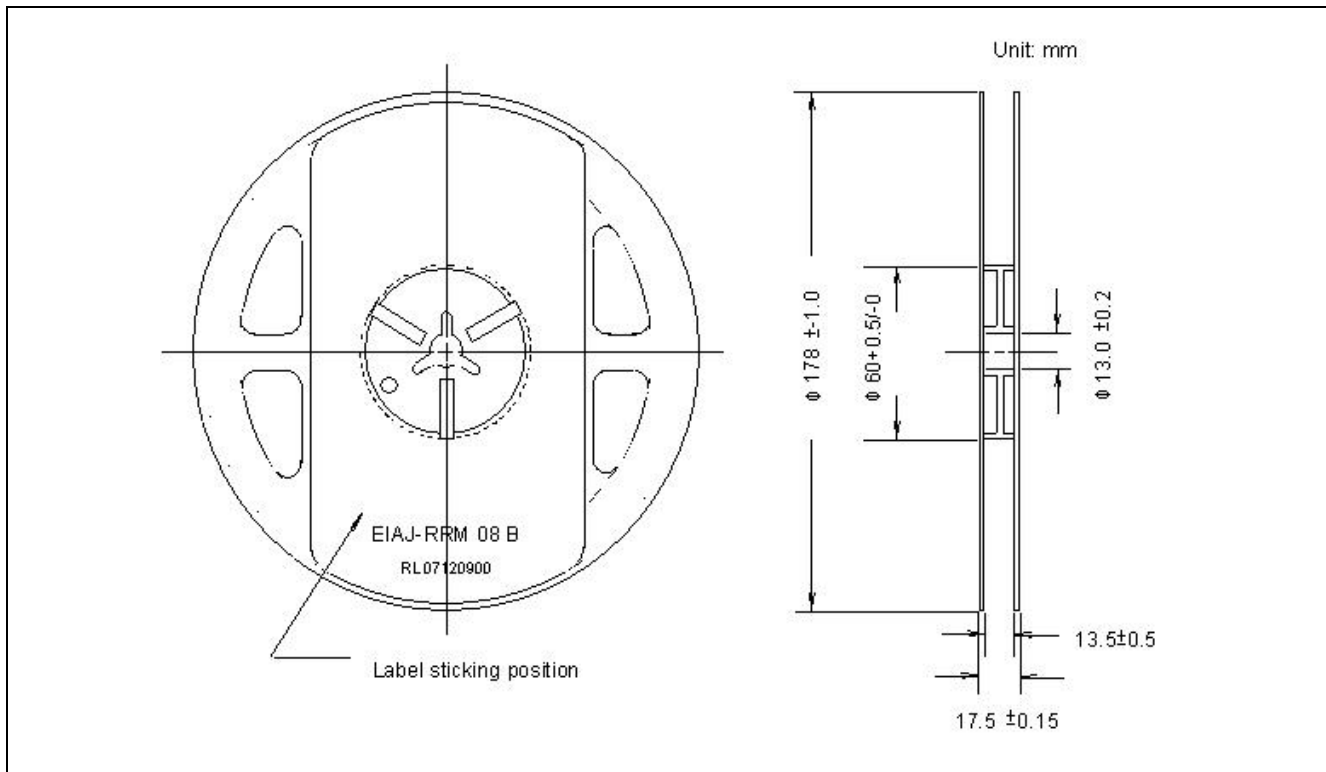


Part No.	Dim. A	Dim. B	Dim. C	Q'ty/Reel
HT-U16D	3.7+/-0.1	3.0+/-0.1	1.5+/-0.1	2K

Unit: mm

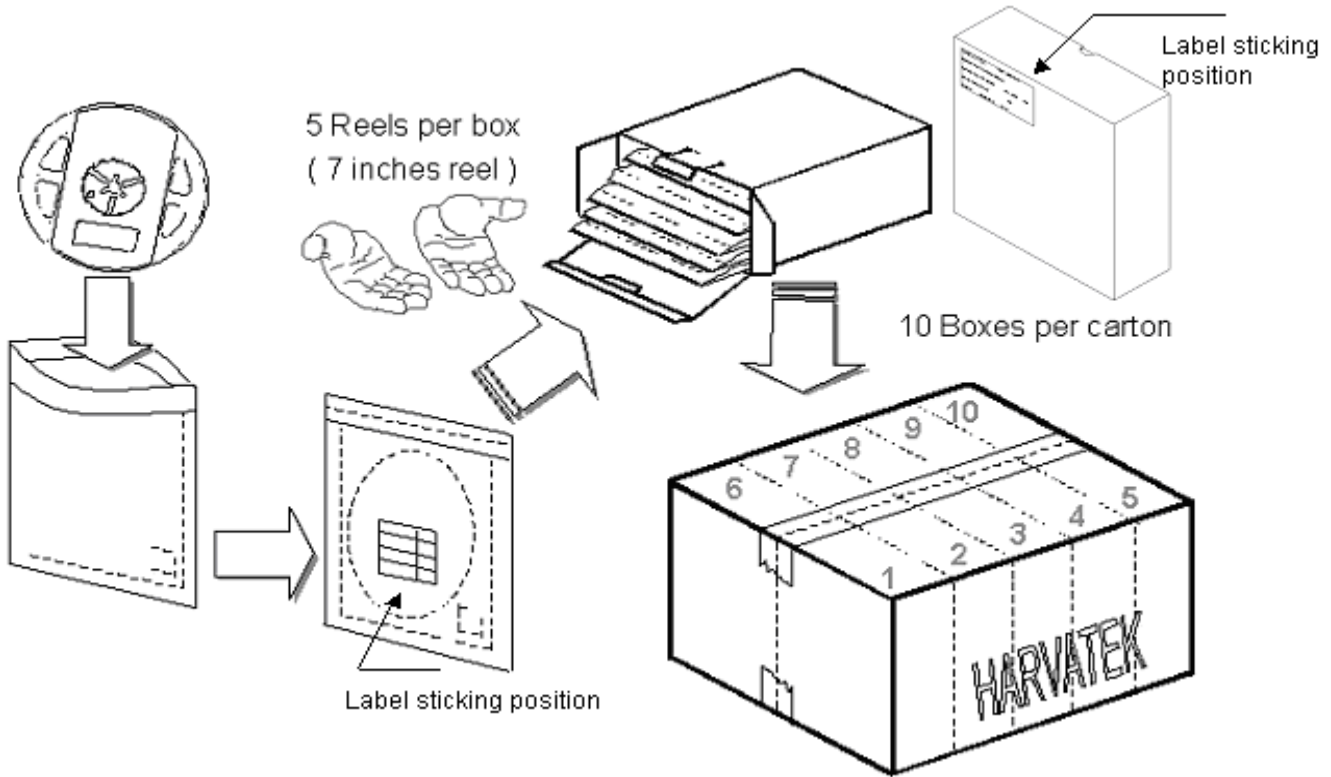
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## Reel Dimension



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## 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, λD and Vf. Each reel has a label identifying its specification; the immediate box consists of a product label as well.

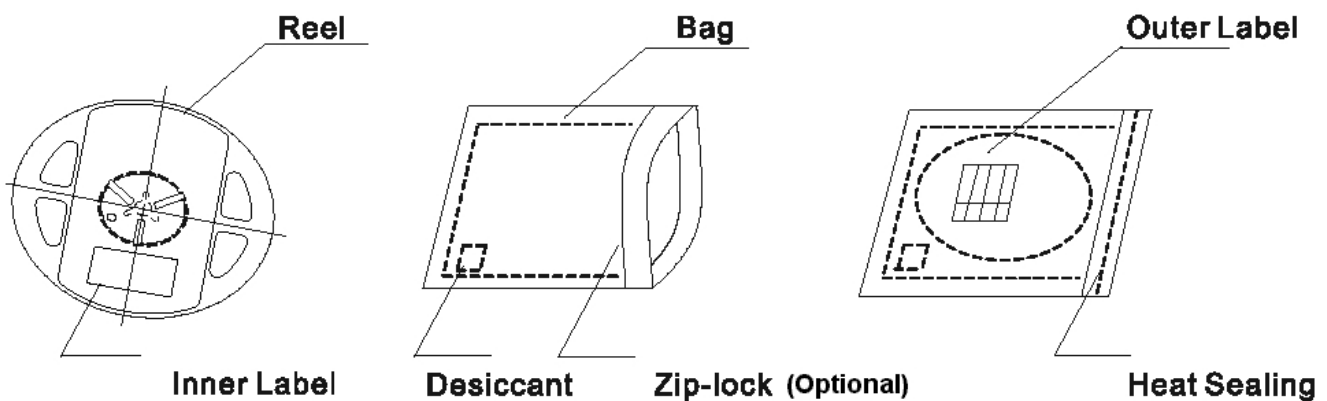
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## Dry Pack

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:

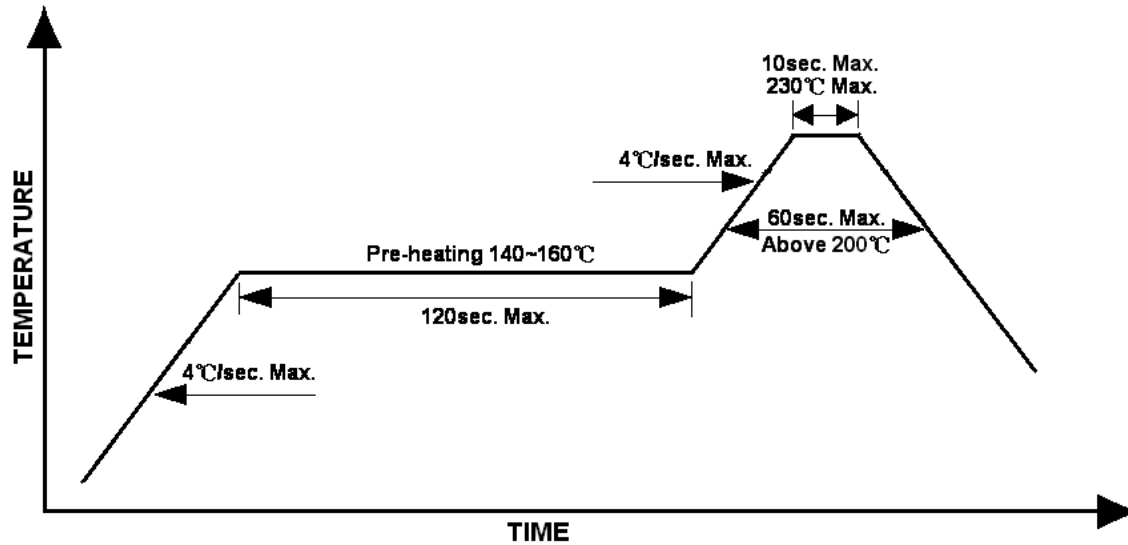


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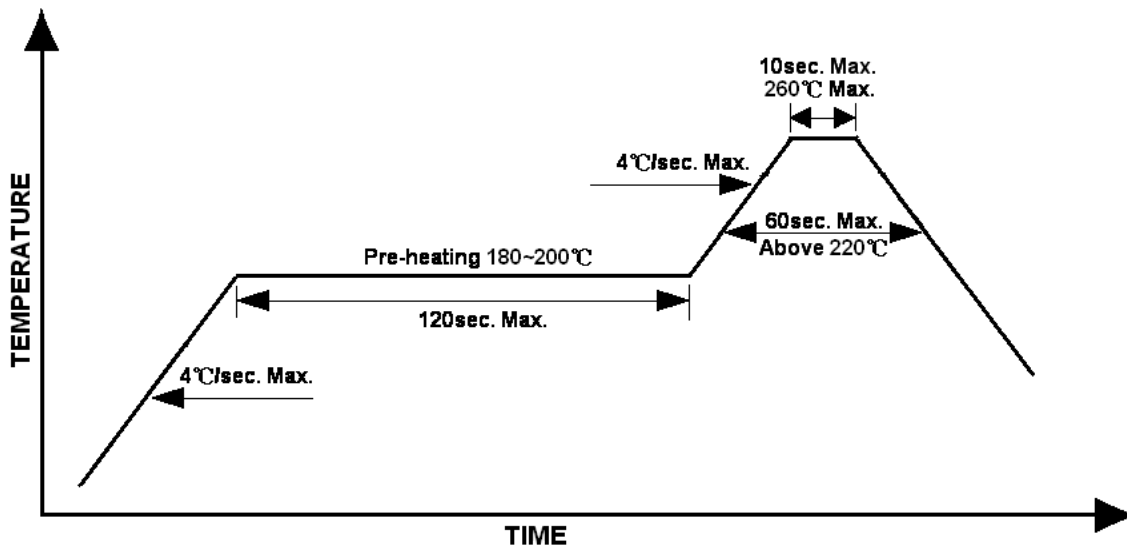
## Reflow Soldering

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

Lead Solder Profile



Lead-free Solder Profile



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**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 beyond the specified limit.
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 °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°C x 30sec. or <30°C x 3min
- Ultra sonic cleaning: < 15W/ bath; bath volume ≤ 1liter
- Curing: 100 °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.

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**Revision History**

<b>Changes since last revision</b>	<b>Page</b>	<b>Version No.</b>	<b>Revision Date</b>
New Format		1.0	3/4/2008
Amend Brightness Range		1.1	11/7/2008

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