

## Inolux Surface Mount LEDs Data Sheet IN-150UF5

Official Product	IN-150UF5	Your Part No.		Data Sheet No.
		*****		IN-150UF5
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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 Specification

	Specification	Material	Quantity
Iv	Iv=35mcd typ. @5mA/ Ts= 25°C; Tolerance: ±11%		
Chromaticity Coordinate	X: 0.41, Y: 0.20 @5mA/ Ta= 25O C; Tolerance: ±0.005		
Vf	Vf=2.7-3.3V @5mA/ Ts= 25°C; Tolerance: ±0.02V		
Ir	< 100 µA @ VR = 5 V		
Resin	Diffused	Epoxy Resin	
Carrier tape	EIA 481-1A specs	Conductive black tape	3000pcs/reel
Reel	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

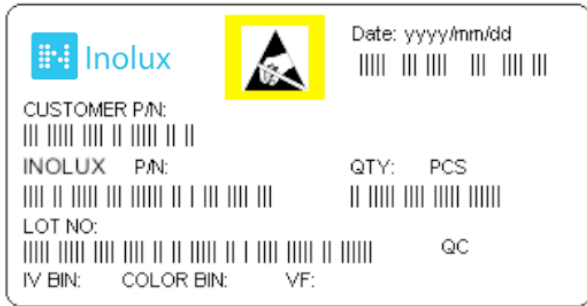
### ATTENTION: Electricstatic Discharge (ESD) protection



The symbol shown on the page herein to introduce 'Electro-Optical Characteristics'. ESD protection for GaP and AlGaAs based chips is still necessary even though they are safe in low static-electric discharge. Parts built with AlInGaP, GaN, or/and InGaN based chips are **STATIC SENSITIVE devices**. ESD protection has to considered and taken in the initial design stage. If manual work/process is needed, please ensure the device is well protected from ESD during all the process.

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**Label Spec.**



**■ Inolux P/N**

**I N - 1 5 0 U F 5 - X X X X**

Series Name	Emitting Color	Custom code
IN-150: 3.2x1.5x1.1mm	UF: Pink 5: @5mA	XXXX Customer product code

**■ Lot No.**

1	2	3	4	5	6	7	8	9	10
<b>E</b>	<b>1</b>	<b>A</b>	<b>1</b>	<b>A</b>	<b>2</b>	<b>2</b>	<b>L</b>	<b>1</b>	<b>2</b>
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		

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**Intensity Bin (Iv)**

Bin	Min.	Max.	Unit	Condition
H1	28.5	35.0	mcd	If=5mA
H2	35.0	45.0		
J1	45.0	56.0		

Notes: Tolerance of Luminous Intensity:  $\pm 11\%$

**Forward Voltage Bin (Vf)**

Bin	Min.	Max.	Unit	Condition
5B	2.7	2.8	V	If=5mA
6A	2.8	2.9		
6B	2.9	3.0		
7A	3.0	3.1		
7B	3.1	3.2		
8A	3.2	3.3		

Notes: Tolerance of Forward Voltage:  $\pm 0.02V$

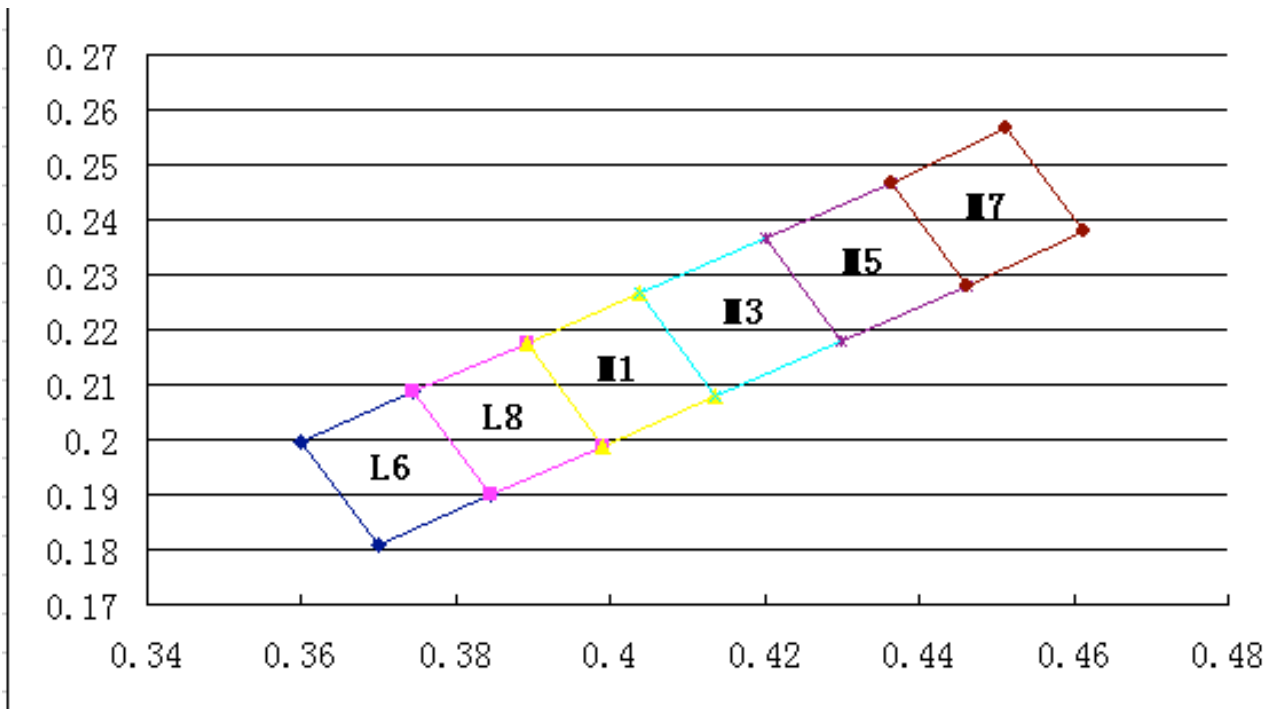
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**Color Bin**

L6	0.3599	0.1996	L8	0.3745	0.2086
	0.3699	0.1808		0.3845	0.1898
	0.3845	0.1898		0.3991	0.1988
	0.3745	0.2086		0.3891	0.2176
	0.3599	0.1996		0.3745	0.2086
M1	0.3891	0.2176	M3	0.4037	0.2266
	0.3991	0.1988		0.4137	0.2078
	0.4137	0.2078		0.43	0.2178
	0.4037	0.2266		0.42	0.2366
	0.3891	0.2176		0.4037	0.2266
M5	0.42	0.2366	M7	0.4363	0.2466
	0.43	0.2178		0.4463	0.2278
	0.4463	0.2278		0.4613	0.2378
	0.4363	0.2466		0.4513	0.2566
	0.42	0.2366		0.4363	0.2466

Notes: Tolerance of  $\pm 0.007$

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**Chromaticity Coordinate**


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**Product Characteristics**

**Electro-Optical Characteristics**

( $I_F @ 5mA, T_a 25^\circ C$ )

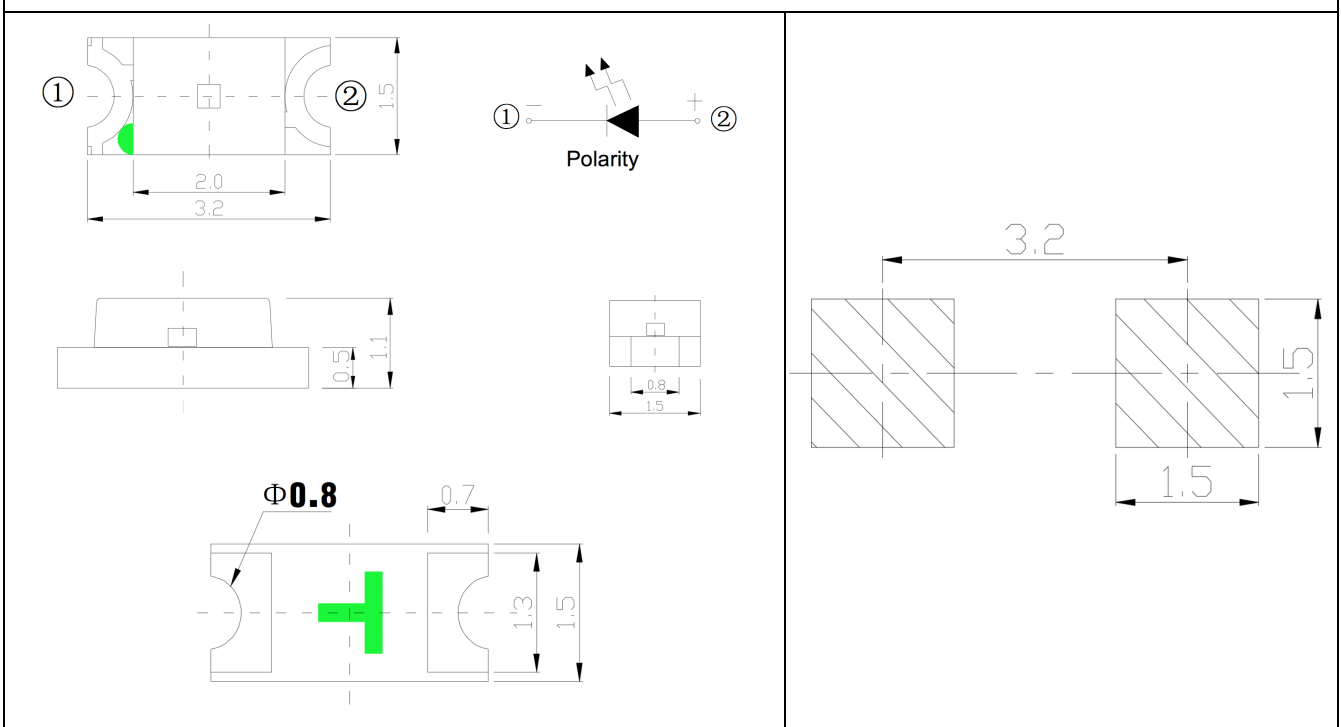
Product No.	Color	$V_F(V)$		Chromaticity Coordinate X, Y	$I^*_V(mcd)$			Viewing Angle 2 $\theta$ 2/1
		Min.	max		Min	Typ.	Max.	
IN-150UF5	Pink	2.7	3.3	X: 0.41 , Y: 0.20	28.5	35	56	120

\* Per NIST standards

**Package Outline Dimension**

Unit: mm Tolerance: +/-0.01

Outline Dimension :



**Absolute Maximum Ratings**

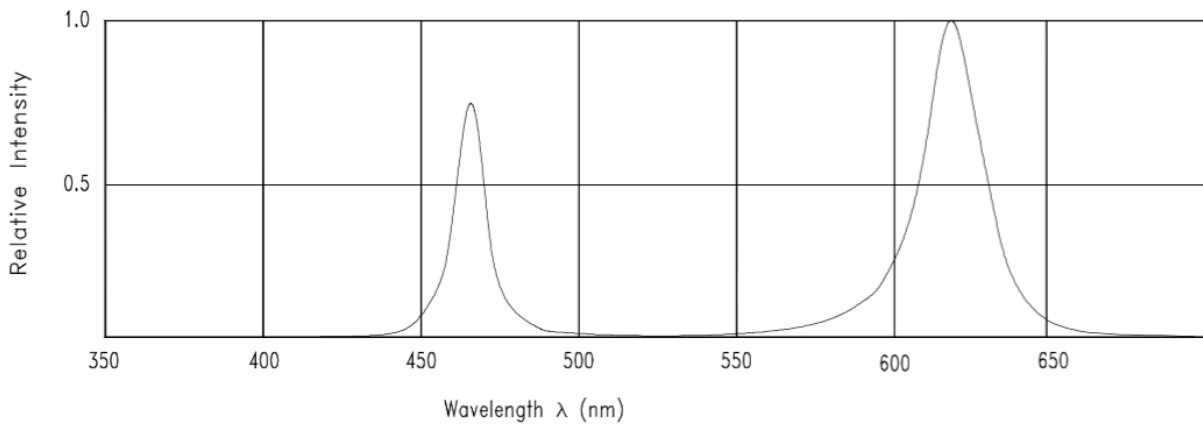
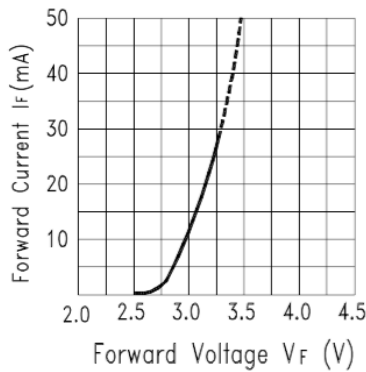
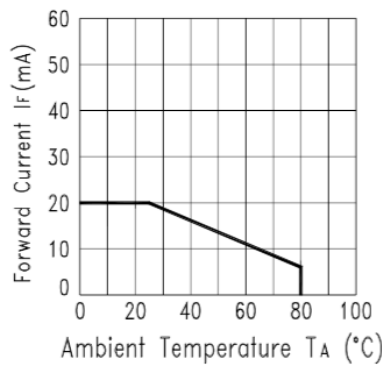
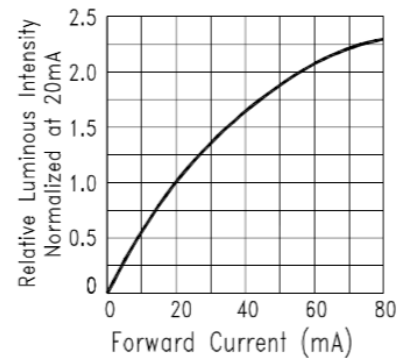
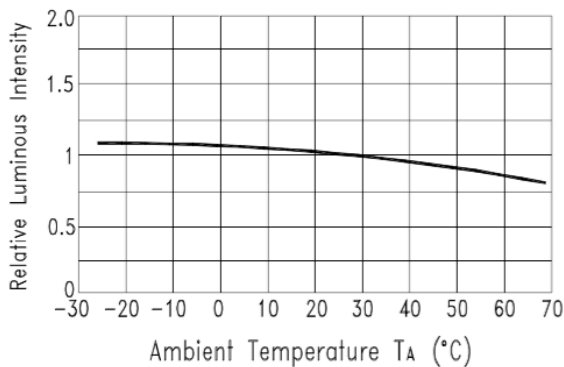
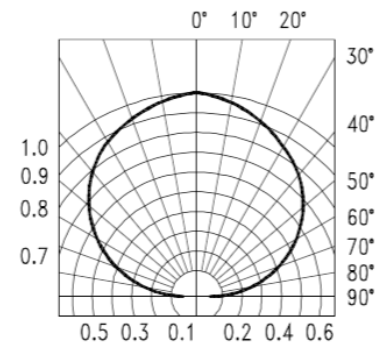
( $T_a 25^\circ C$ )

Series	$P_d$ (mW)	$I_F$ (mA)	$I_{FP}$ (mA)	$V_R$ (V)	$T_{OP}$ ( $^\circ C$ )	$T_{ST}$ ( $^\circ C$ )
IN-150UF5	75	25	100	5	-30~+85	-40~+90

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

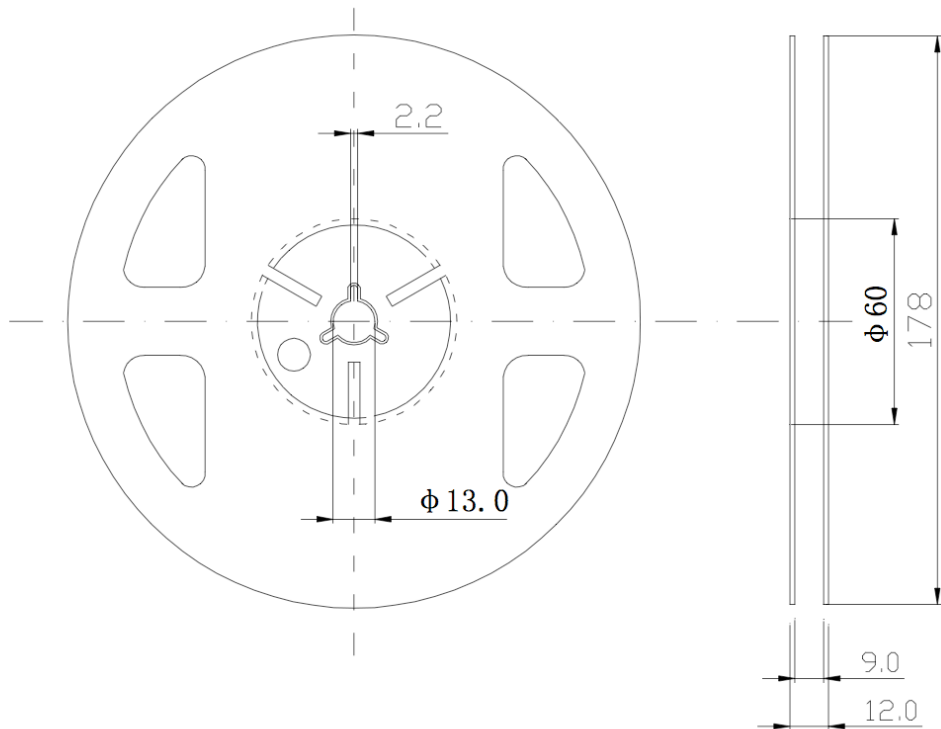
\*\*Remarks: This product should be operated in forward bias. If a reverse voltage is continuously applied to the product, such operation can cause migration resulting in LED damage.

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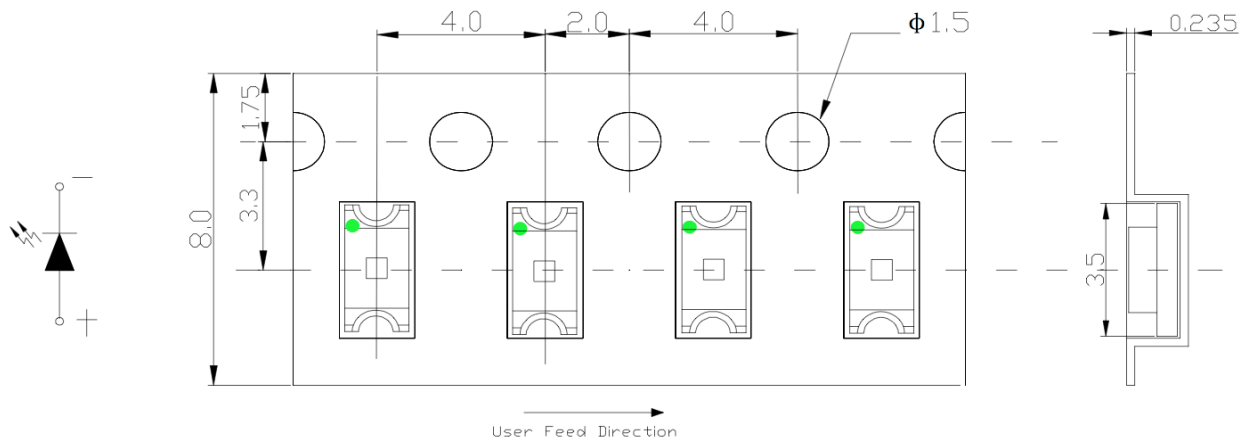
**Characteristics Curves**

**Fig.1 Relative Intensity vs. Wavelength**

**Fig.2 Forward Current vs. Forward Voltage**

**Fig.3 Forward Current Derating Curve**

**Fig.4 Relative Luminous Intensity vs. Forward Current**

**Fig.5 Luminous Intensity vs. Ambient Temperature**

**Fig.6 Spatial Distribution**

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**Packaging Tape, Reel, and Packing Model  
Tape Dimension**

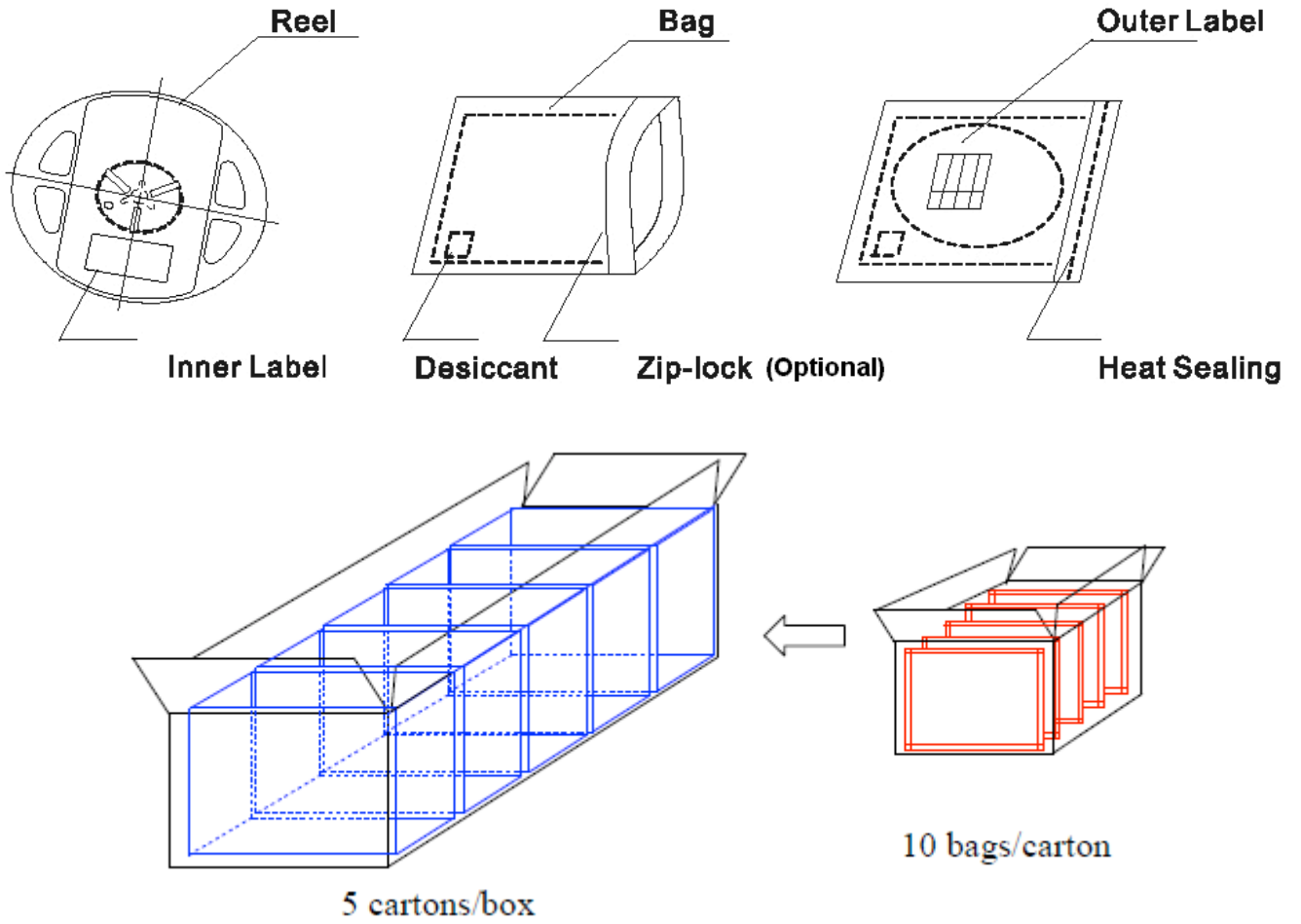


**Reel Dimension**



Unit: mm Tolerance: +/-0.15 mm

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**Packing Model**


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## Precaution of Application

### Designing 1: Soldering pattern

The dimensions of the recommended soldering pattern may not meet every user. Please confirm and study first before designing the soldering pattern in order to obtain the best performance of soldering.

### Designing 2: Circuit layout

Due to the circuit design is not available, assuming the circuit is in parallel and a resistor that is put in series in the circuit, it cannot provide an effective current-limiting function to the LEDs due to each LED had a different inherent resistance. In general, the LEDs usually have a different inherent resistance. Different inherent resistance will cause different current, the LED on the different path would be driven at different power, and the result was the LED with a higher resistance would be dimmer than the other. To solve this situation, a suitable resistor is put in series with each LED to limit the current disparity through the LED will be very useful.

### Designing 3: Max Rating

Any application should refer to the specifications of absolute maximum ratings.

### Dry Pack

Any SMD optical device, like this chip LED, is **MOISTURE SENSITIVE device**. Avoid absorbing moisture at any time during transportation or storage. Every reel will be packaged in the moisture barrier anti-static bag (Specific bag material will depend upon customers' requirement or option). And the bag is well sealed before shipment. By customer's requirement, we will put a humidity indicator in each moisture barrier anti-static bag before shipment.

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### Storage

It's recommended to store the products in the following conditions: Humidity: 60 %RH Max.  
Temperature: 5°C ~30°C (41°F~86°F)

1. Shelf life in sealed bag: 12 month at <40°C and <90%RH. (Base on aluminum laminated moisture barrier bag.)
2. After the bag is opened, devices that will be subjected to infrared reflow, vapor-phase reflow, or equivalent processing must be:
  - 2.1 Mounted within 72 hours at factory conditions of  $\leq 30^{\circ}\text{C} / 60\% \text{ RH}$ , or
  - 2.2 Stored at  $\leq 20\% \text{ RH}$  with zip-lock sealed.

### Baking

It's recommended to bake before soldering once the pack is unsealed open & re-sealed after 72 hours. The conditions are as followings: 60  $\pm 3^{\circ}\text{C} \times (12 \sim 24 \text{ hrs})$  and < 5% RH, taped reel type 100 $\pm 3^{\circ}\text{C} \times (45 \text{ min} \sim 1 \text{ hr})$ , bulk type 130 $\pm 3^{\circ}\text{C} \times (15 \sim 30 \text{ min})$ , bulk type

### Soldering

Manual soldering (We do not recommend this method strongly.)

Soldering wire: 63/37 Sn/Pb, flux contained.

To prevent cracking, please bake before manual soldering, if the device is subject to moisture.

Temperature at tip of soldering tool: 300°C $\pm 5^{\circ}\text{C}$  Max.(25W)

It's banned to load any stress on the resin during soldering.

Soldering time: 3 $\pm 1$ sec

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### Handling of Silicone Resin LEDs

#### Handling Indications

During processing, mechanical stress on the surface should be minimized as much as possible. Sharp objects of all types should not be used to pierce the sealing compound.



Figure 1

In general, LEDs should only be handled from the side. By the way, this also applies to LEDs without a silicone sealant, since the surface can also become scratched.

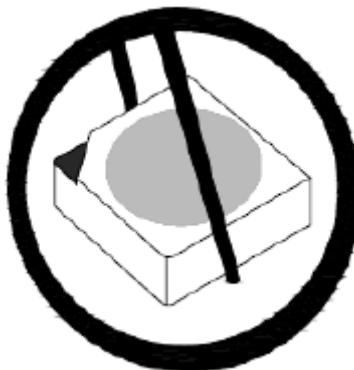


Figure 2

When populating boards in SMT production, there are basically no restrictions regarding the form of the pick and place nozzle, except that mechanical pressure on the surface of the resin must be prevented.

This is assured by choosing a pick and place nozzle which is large than LEDs reflector area.

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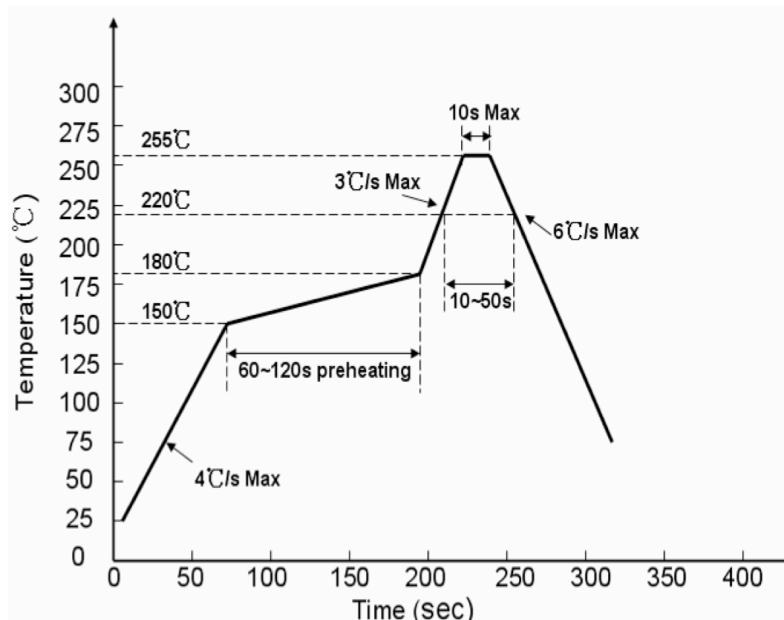
### Reflow Soldering

Recommend soldering paste specifications:

1. Operating temp.: Above 220°C, 60 sec.
2. Peak temp.:260°C Max., 10sec Max.
3. Reflow soldering should not be done more than two times.
4. Never attempt next process until the component is cooled down to room temperature after reflow.
5. The recommended reflow soldering profile (measured on the surface of the LED terminal) is as following:

Lead-free Solder Profile

### Recommended Reflow Profile



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### 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.

### Revision History

Changes since last revision	Page	Version No.	Revision Date
Initial Release IN-150UF5		V1.0	05/07/2014
Format Adjustment		V1.1	02/24/2016

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