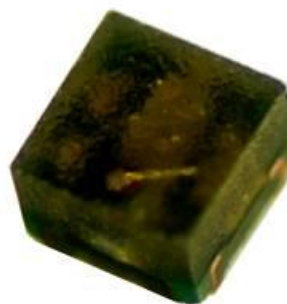


## B36H3RGB-F6

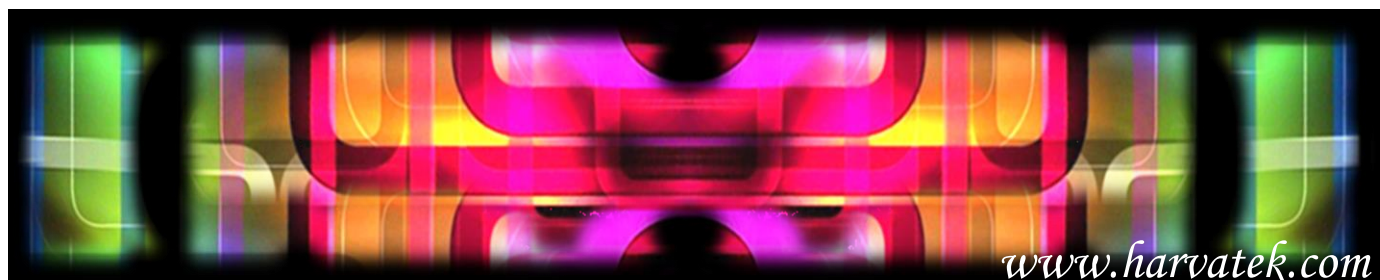


### Features

- Package: RGB 3 in 1 package/4pin Polarity
- Anti-Reflection resin
- View angle :  $\geq 120^\circ$  (min 50% brightness)
- Component solder able surface finish is gold
- High contrast

### Main Applications

- Indoor display
- Full color display
- Fine pitch application



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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.

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### Product Specifications

	Specification	Material	Quantity
Luminous Intensity(Iv)	Red : 32 mcd typical Green : 46 mcd typical Blue : 8 mcd typical R@5mA;G/B@2mA/ Ts= 25° C; Tolerance ±10%		
Wavelength	Red : 621 nm typical Green : 530 nm typical Blue : 470 nm typical R@5mA;G/B@2mA/ Ts= 25° C;Tolerance ± 0.5nm		
Vf	Red : 2.4 V maximum Green : 3.1 V maximum Blue : 3.1 V maximum R@5mA;G/B@2mA/ Ts= 25° C;Tolerance ± 0.05V		
Ir	< =1 µA @ V <sub>R</sub> = 5 V		
Resin	Dark	Epoxy	
Carrier tape	EIA 481-1A specs	Conductive black tape	24000pcs/reel
Reel	EIA 481-1A specs	Conductive black	
Label	HT standard	Paper	
Packing bag	250x230mm	Aluminum laminated bag/ no-zipper	One reel per bag
Carton	HT standard	Paper	Non-specified

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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.

Note :This is shipped test conditions

※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.

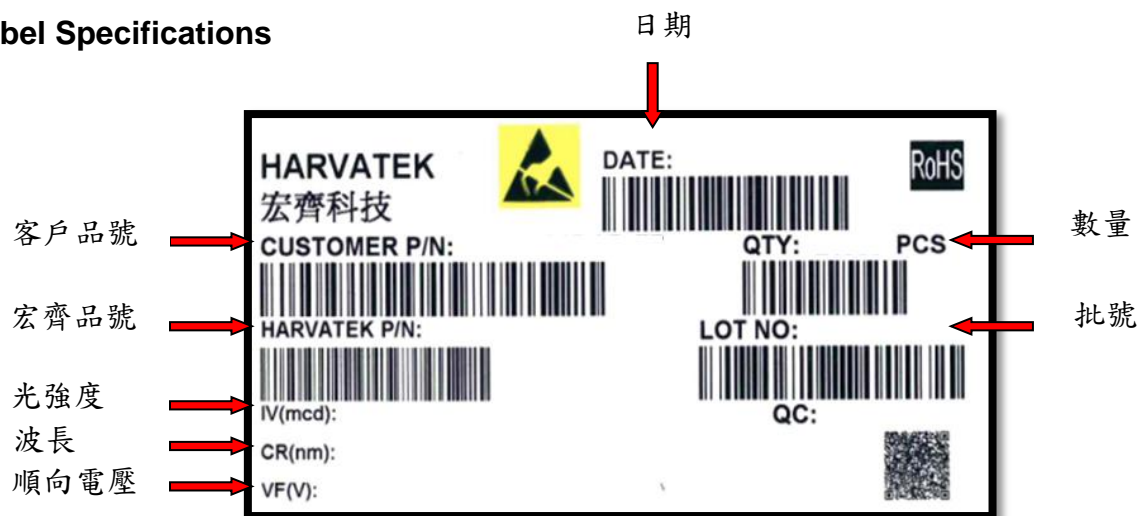
### ATTENTION: Electrostatic Discharge (ESD) protection



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.

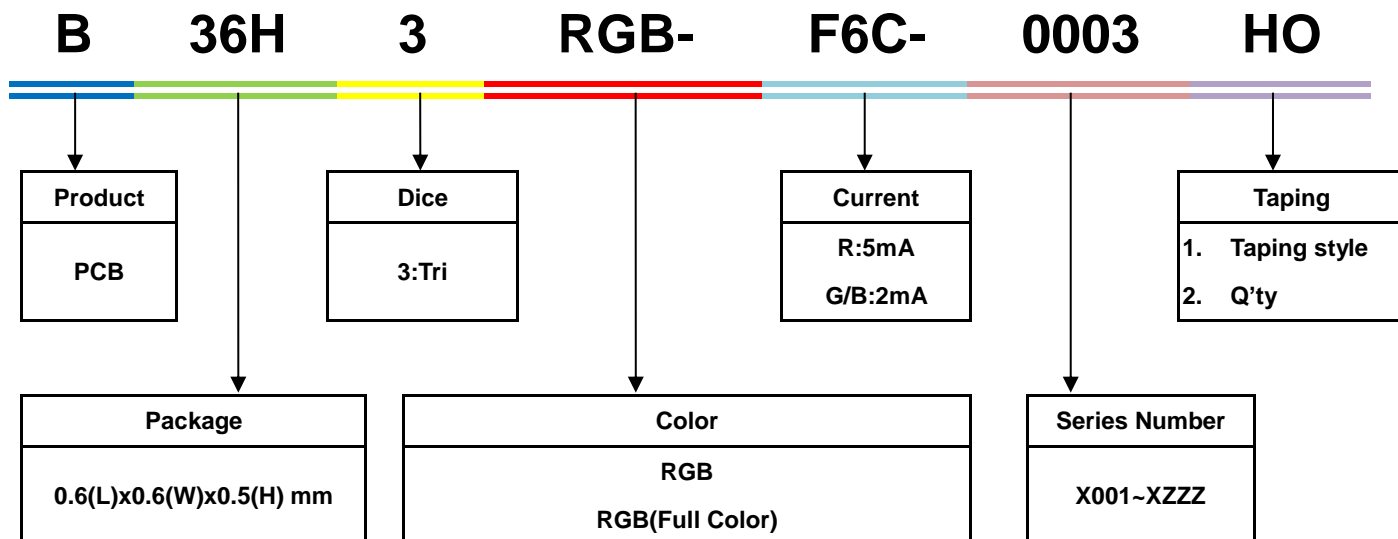
If manual work or processing is needed, please ensure the device is adequately protected from ESD during the process.

### Label Specifications



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■ Harvatek P/N:



■ Lot No.

1	2	3	4	5	6	7	8	9	10
1	7	N	E	4	1	L	N	1	1
Code 1 2		Code 3	Code 4	Code 5	Code 6	Code 7	Code 8	Code 9	Code 10
			Mfg.Year	Mfg.Month	Consecutive number		Special code		
Internal Tracing Code		Mixing Lot No.	2010-A		01~ZZ		000~ZZZ		
			2011-B	1:Jan					
			2012-C	2:Feb					
			2013-D	.....					
			2014-E	A:Oct					
			.	B:Nov					
			.	C:Dec					
			.						

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## Specifications Range

### ■ Luminous Intensity (Iv) Bin:

Luminous Intensity (Iv) Bin: R@5mA;G/B @2mA

B36H3RGB Series								
IV								
Red			Green			Blue		
TE3	18	23.5	TF3	26.9	35	TB2	4.8	6.3
TF1	20.7	26.9	TG1	30.4	39.5	TB3	5.5	7.2
TF2	23.5	30.4	TG2	35	45.5	TC1	6.3	8.2
TF3	26.9	35	TG3	39.5	51.4	TC2	7.2	9.4
TG1	30.4	39.5	TH1	45.5	59.2	TC3	8.2	10.7
TG2	35	45.5	TH2	51.4	66.8	TD1	9.4	12.2

Note: It maintains a tolerance of  $\pm 10\%$  on Luminous Intensity

### Dominant Wavelength ( $\lambda_D$ ) Bin: R@5mA;G/B @2mA

B36H3RGB Series								
WD								
Red			Green			Blue		
RT2	618	623	GT1	527	531	BT2	466	470
RT3	620	625	GT2	529	533	BT3	468	472
			GT3	531	535	BT4	470	474
			GT4	533	537	BT5	472	476
			GT5	535	539			

Note: It maintains a tolerance of  $\pm 0.5\text{nm}$  on Color Bin

### Forward Voltage (Vf) Bin: R@5mA;G/B @2mA

B36H3RGB Series								
Vf								
Red			Green			Blue		
E18	1.6	2.4	F2A	2.1	3.1	F2A	2.1	3.1

Note: It maintains a tolerance of  $\pm 0.05\text{V}$  on forward voltage measurements

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### Product Features

#### Electro-Optical Characteristics

(I<sub>F</sub> Red@5mA, Green & Blue@2mA, T<sub>s</sub> 25 °C)

Part number	Emitting Color	Forward Voltage(VF)		Wavelength (nm) typ.			I <sub>v</sub> (mcd)	Viewing Angle 2θ1/2
		typ.	max.	λD	λp	Δλ		
B36H3RGB-F6	Ultra Bright Red	1.9	2.4	621	628	11	32	140
	Green	2.5	3.1	530	521	28	46	140
	Blue	2.5	3.1	469	465	16	8	140

#### Package Outline Dimension and Recommended Soldering Pattern for Reflow Soldering

Unit: mm Tolerance: +/-0.1

Outline Dim.	Soldering Pattern
Soldering terminals may shift in the x, y direction.	

#### Absolute Maximum Ratings

(T<sub>s</sub> 25 °C)

Series	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)
Color	Power Dissipation	Forward Current	Pulse Forward Current	Reverse Voltage	Operation Temperature	Storage Temperature
Red	24.4	5	20	5	-30~+80	-40~85
Blue/Green		2				

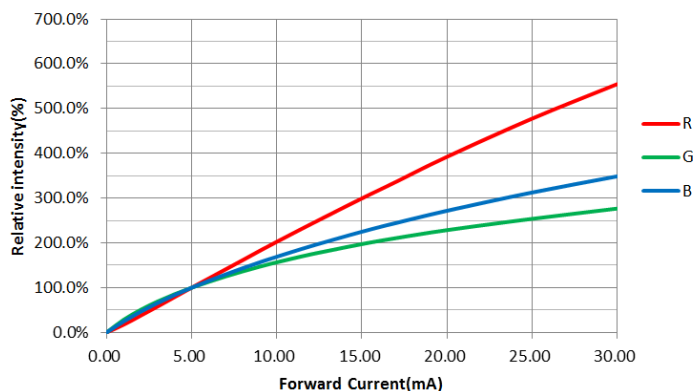
\*\* Condition for I<sub>FP</sub> is pulse of 1/10 duty and 0.1msec width

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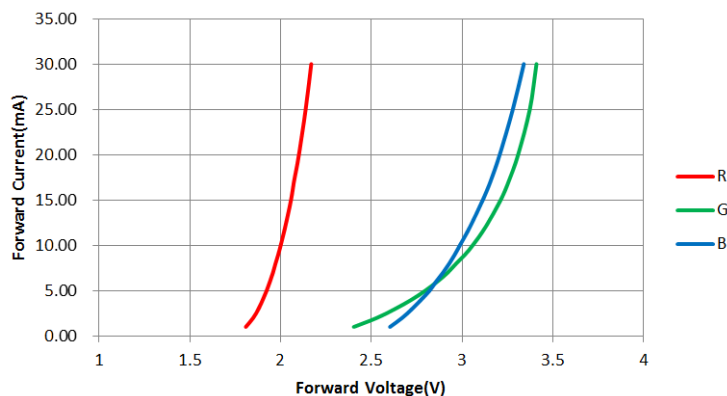


### Characteristics of B36H3RGB-F6

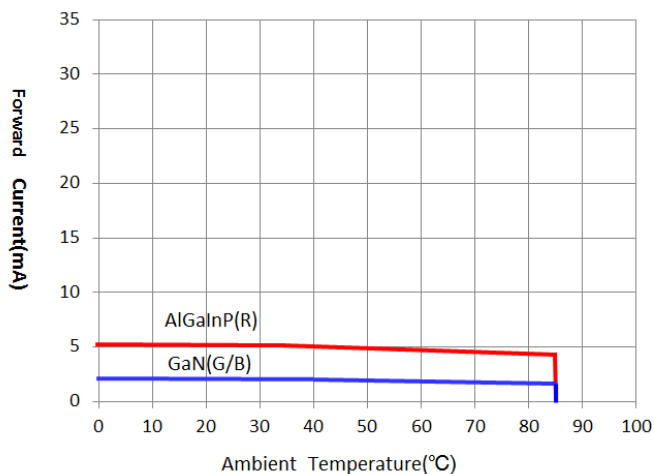
Relative Intensity vs. Forward Current



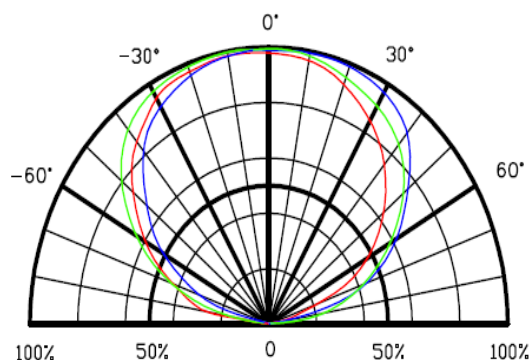
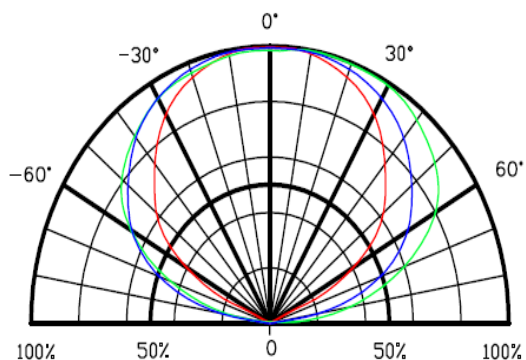
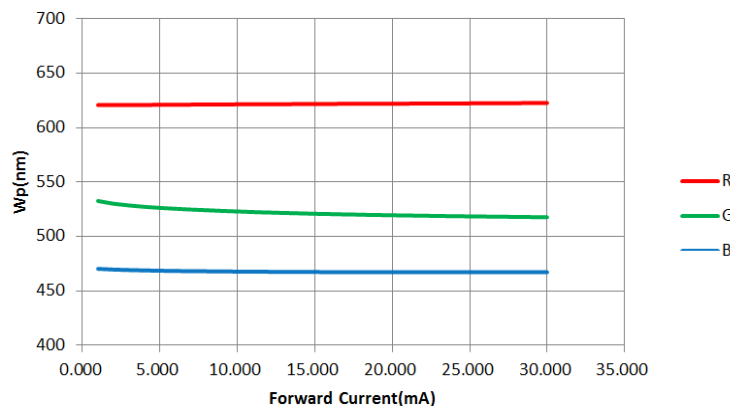
Forward Voltage vs. Forward Current



Forward Current vs. Ambient Temperature



Wavelength vs. Forward Current



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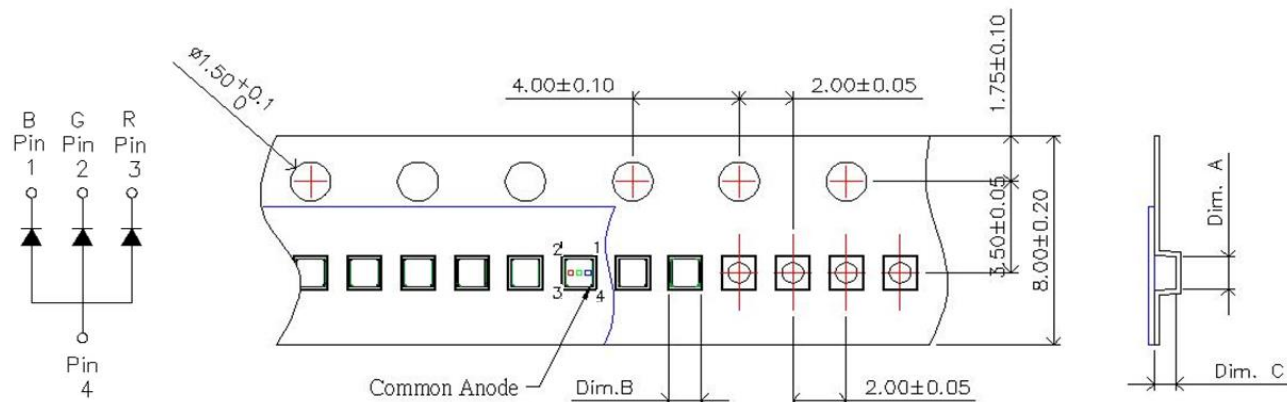
**Precaution for Use**

1. The chips should not be used directly in any type of fluid such as water, oil, organic solvent, etc.
2. When the LEDs are illuminating, the maximum ambient temperature should be first considered before operation.
3. LEDs must be stored in a clean environment. A sealed container with a nitrogen atmosphere is necessary if the storage period is over 3 months after shipping.
4. The LEDs must be used within seven days after unpacked. Unused products must be repacked in an anti-electrostatic package, folded to close any opening and then stored in a dry and cool space.
5. The appearance and specifications of the products may be modified for improvement without further notice.
6. The LEDs are sensitive to the static electricity and surge. It is strongly recommended to use a grounded wrist band and anti-electrostatic glove when handling the LEDs. If a voltage over the absolute maximum rating is applied to LEDs, it will damage LEDs. Damaged LEDs will show some abnormal characteristics such as remarkable increase of leak current, lower turn-on voltage and getting unlit at low current.

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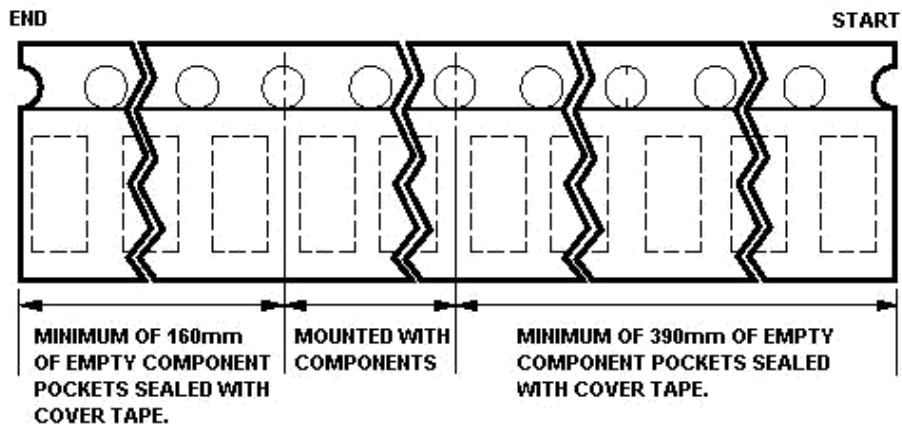
## Packaging

## Tape Dimension



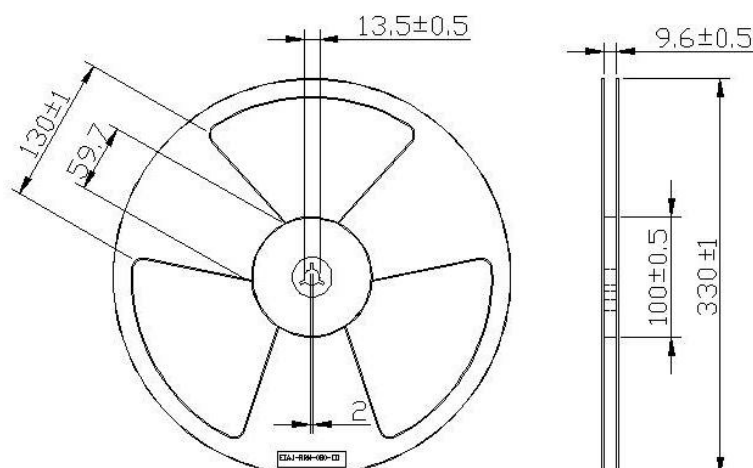
Dim. A	Dim. B	Dim. C	Q'ty/Reel
0.78±0.05	0.78±0.05	0.55±0.05	24K

**nit: mm**

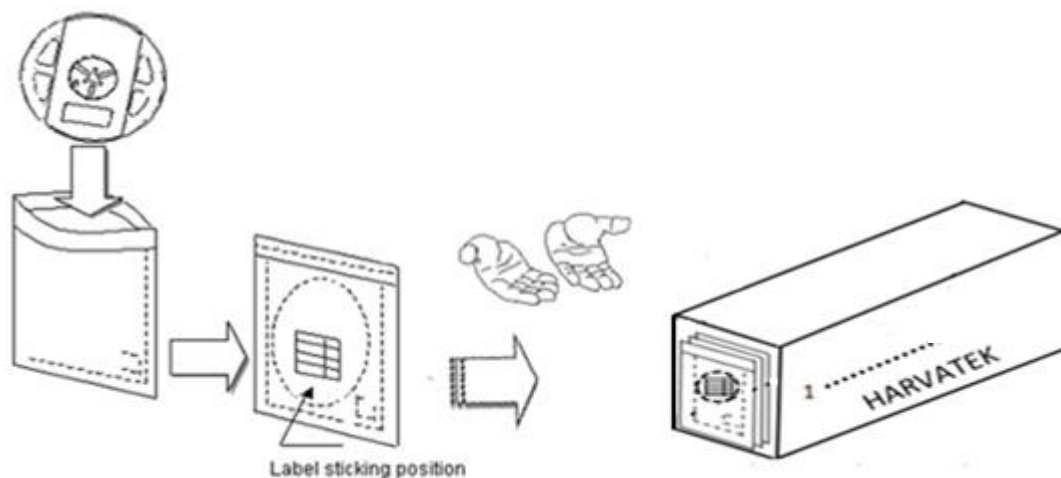


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### Reel Dimension



### Packing



28 boxes per carton is available depending on shipment quantity.

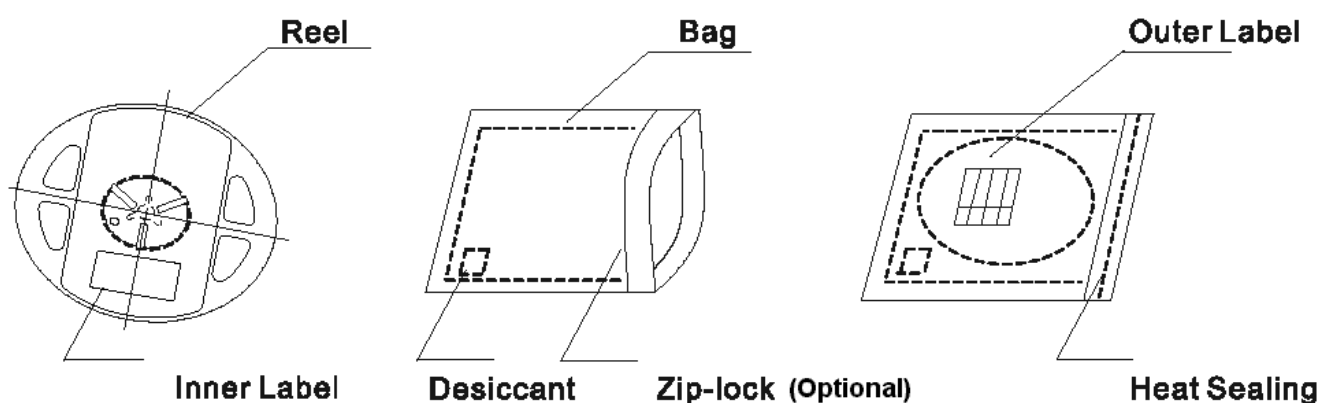
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### Dry Pack

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:



### Baking

Baking before soldering is recommended when the package has been unsealed for 72hours.

The conditions are as followings:

1.  $60\pm3^{\circ}\text{C} \times (12\sim 24\text{hrs})$  and  $<5\%\text{RH}$ , taped reel type.
2.  $100\pm3^{\circ}\text{C} \times (45\text{min}\sim 1\text{hr})$ , bulk type.
- 130 $\pm 3^{\circ}\text{C} \times (15\text{min}\sim 30\text{min})$ , bulk type.

### PRECAUTIONS

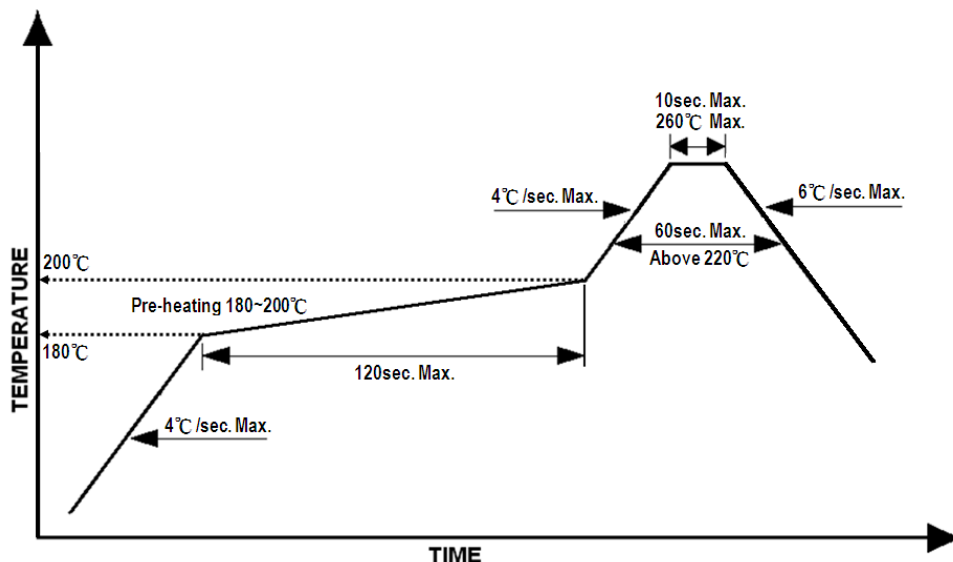
1. Avoid exposure to moisture at all times during transportation or storage.
2. Anti-Static precaution must be taken when handling GaN, InGaN, and AlInGaP products.
3. It is suggested to connect the unit with a current limiting resistor of the proper size. Avoid applying a reverse voltage beyond the 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.

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## Reflow Soldering

Recommend soldering paste specifications:

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



## 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

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**Cautions of Pick and Place**

- Avoid stress on the resin at elevated temperature.
- Avoid rubbing or scraping the resin by any object.
- Electric-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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