

Harvatek Surface Mount CHIP LEDs Data Sheet B31B3BGR-20C0003L4E0118

Official Product	HT Part No. B31B3BGR-20C0003L4E0118	Customer Part No.	Data Sheet No.
Tentative Product	*****	*****	
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DISCLAIMER

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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

Item	Specification	Material	Quantity
Luminous Intensity(Iv)	R : 285-900 mcd G : 450-1140 mcd B : 71.5-450 mcd @20mA/ T _S = 25°C;Tolerance: ± 10%		
Wavelength	R : 615.0-630.0 nm G : 515.0-530.0 nm B : 460.0-475.0 nm @20mA/ T _S = 25°C;Tolerance: ± 0.5nm		
Vf	R : 1.6-2.4 V G : 2.6-3.4 V B : 2.6-3.4 V @20mA/ T _S = 25°C ;Tolerance: ± 0.05V		
Ir	< 1 μA @ V _R = 5V		
Resin	Clear	Epoxy	
Carrier tape	EIA 481-1A specs	Conductive black tape	4000ea/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

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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 , λ_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 AlGaInP, 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



Harvatek P/N:

B 31B 3 BGR- 20C- 0003 L4

Product	Package	Dice Qty	Color	Current	Series Number	Taping
PCB	2.0(L)x1.4(W)x0.9(H) mm	3:Tri	BGR : RGB(Full Color)	20mA	X001~XZZZ	1.Taping style 2. Qty

Lot No.:

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		1:A	01~ZZ		000~ZZZ		
		2011-B		2:B					
		2012-C	1:Jan.	3:C					
		...	2:Feb.	...					
		2018-I/J	...	26:Z					
		2019-K	A:Oct.	27:7					
		...	B:Nov.	28:8					
		2022-N	C:Dec.	29:9					
		2023-P		30:3					
		...		31:4					

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Specifications Range

■ Luminous Intensity (Iv) Bin:

Luminous Intensity (Iv) Bin:R/G/B@20mA

HT-B31B3BGR Series								
IV								
Red			Green			Blue		
T	285	360	V	450	560	Q	71.5	112.5
U	360	450	W	560	715	R	112.5	180
V	450	560	X	715	900	S	180	285
W	560	715	Y	900	1125	T	285	360
X	715	900	Z	1125	1440	U	360	450

Note: It maintains a tolerance of $\pm 10\%$ on luminous intensity

Dominant Wavelength (λD) Bin:

HT-B31B3 BGR Series								
WD								
Red			Green			Blue		
A	615	620	A	515	520	AA	460	465
B	620	625	B	520	525	AB	465	470
C	625	630	C	525	530	AC	470	475

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

Forward Voltage (Vf) Bin:

HT-B31B3BGR Series								
VF								
Red			Green			Blue		
E18	1.6	2.4	G38	2.6	3.4	G38	2.6	3.4

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

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Product Features

Electro-Optical Characteristics

(T_{Soldering}, 25 °C)

Series	Emitting Color	Material	V _F (V)		Wavelength λ(nm)			I _v (mcd)	Viewing Angle 2θ _{1/2}
			typ	max	λ _D	λ _P	Δλ	Typical	
B31B3BGR	Red	AllnGaP	2.0	2.4	620	630	20	420	X=120 Y=104
	Green	InGaN	2.8	3.4	520	525	30	750	X=109 Y=111
	Blue	InGaN	2.8	3.4	464	474	40	130	X=113 Y=113

Package Outline Dimension and Recommended Soldering Pattern for Reflow Soldering

(Unit:mm Tolerance: +/-0.1)

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

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(T_{Soldering} 25 °C)

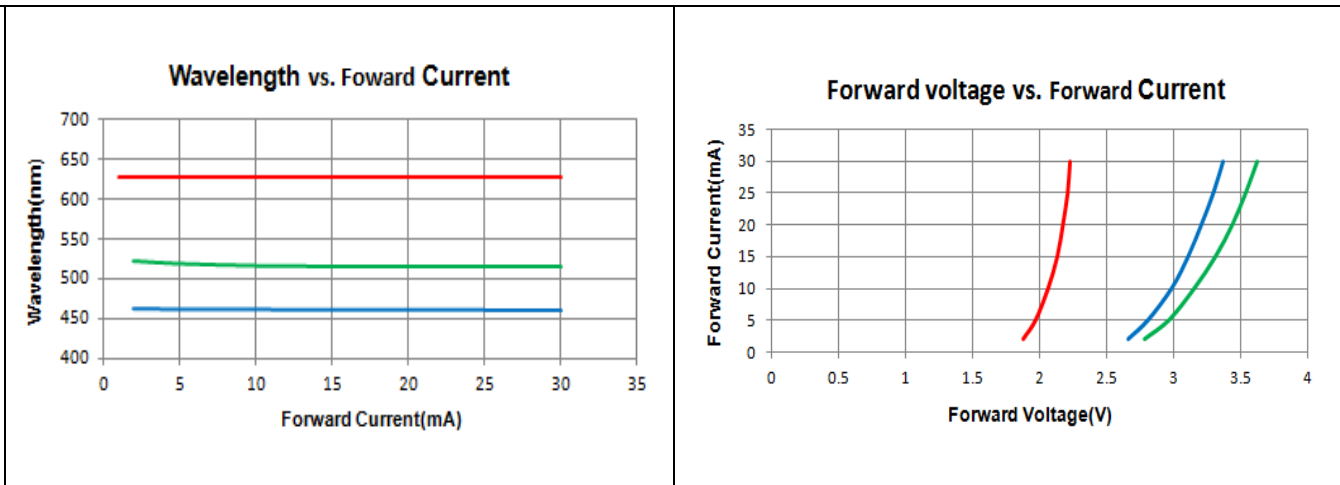
Absolute Maximum Ratings

Series	P _D (mW)	V _R (V)	I _F (mA)	I _{FP} (mA)*	Top(°C)
Color	Power Dissipation	Reverse Voltage	Forward Current	Pulse Forward Current	Operating Temperature
Red	45	5	20	≤ 40	-40~85
Green	60	5	20	≤ 30	
Blue	60	5	20	≤ 30	

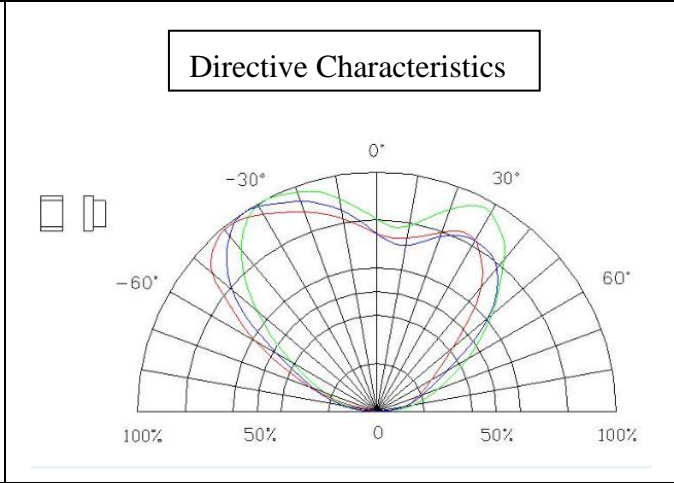
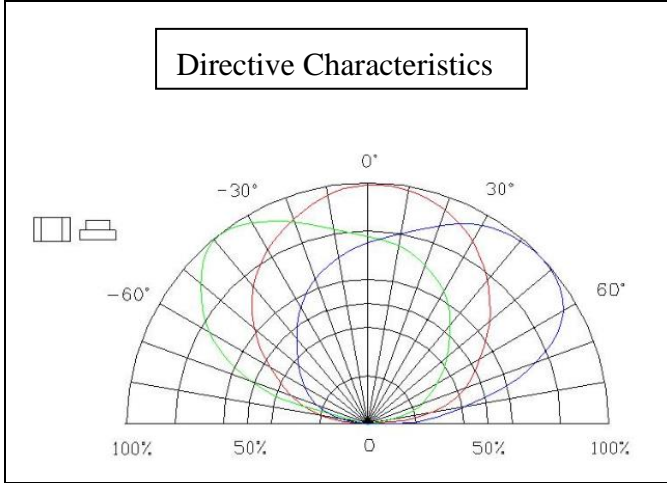
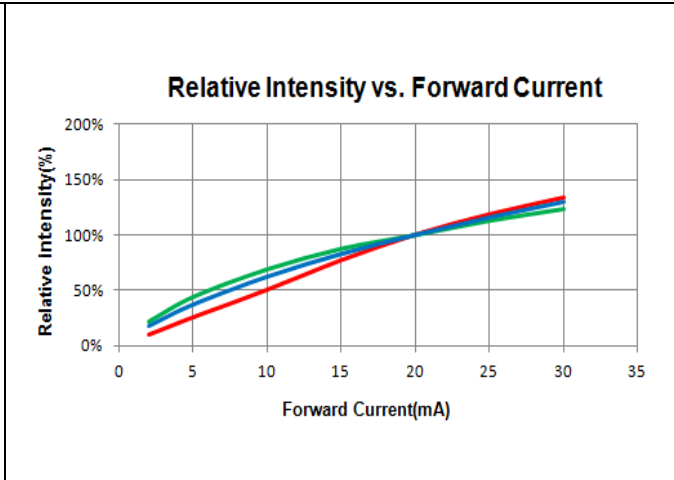
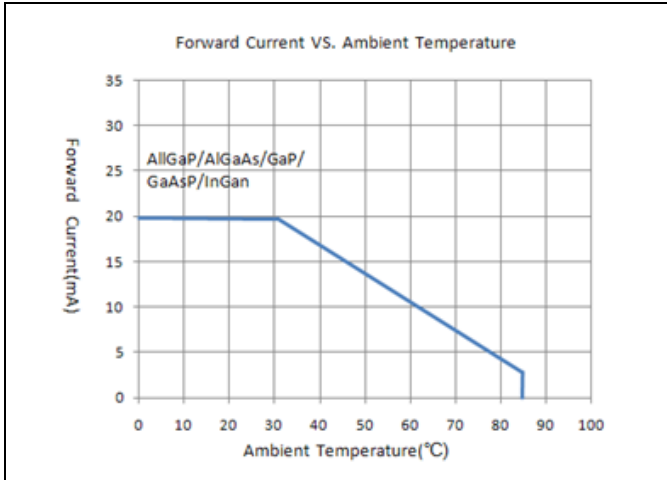
*Condition for I_{FP} is pulse of 1/10 duty and 0.1msec width

*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.

Characteristics of B31B3BGR



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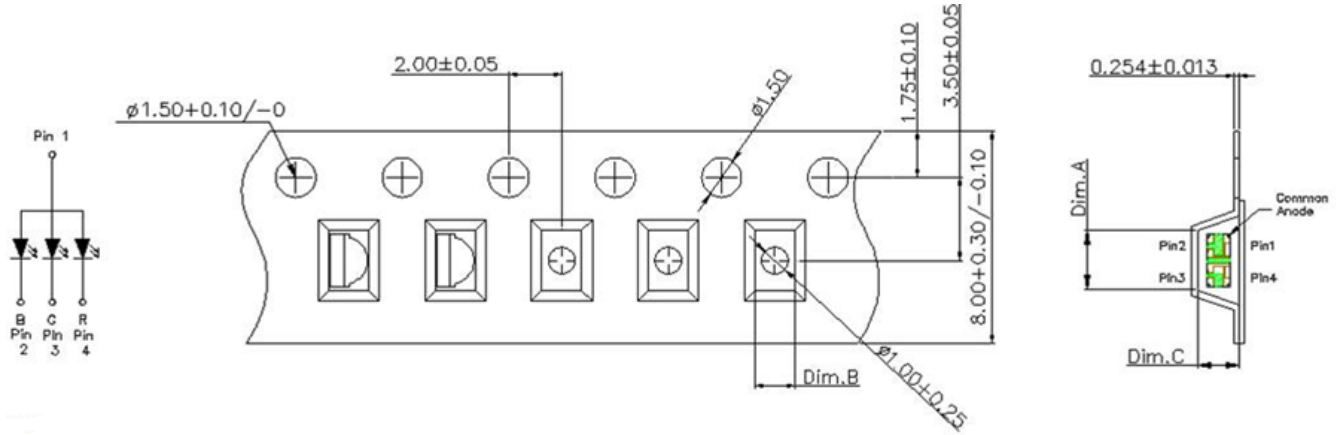
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Precaution for Use

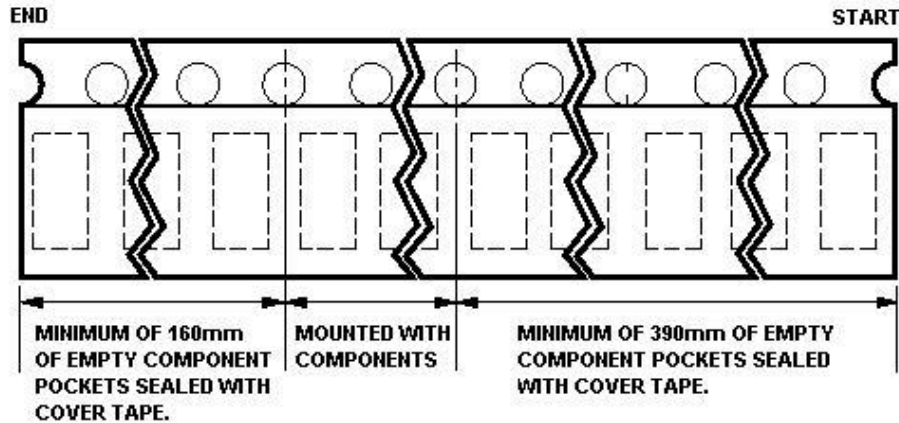
1. The chips should not be used directly in any type of fluid such as water, oil, organic solvent, etc.
2. When the LEDs are illuminating, the maximum ambient temperature should be first considered before operation.
3. LEDs must be stored in a clean environment. A sealed container with a nitrogen atmosphere is necessary if the storage period is over 3 months after shipping.
4. The LEDs must be used within 72 hours 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

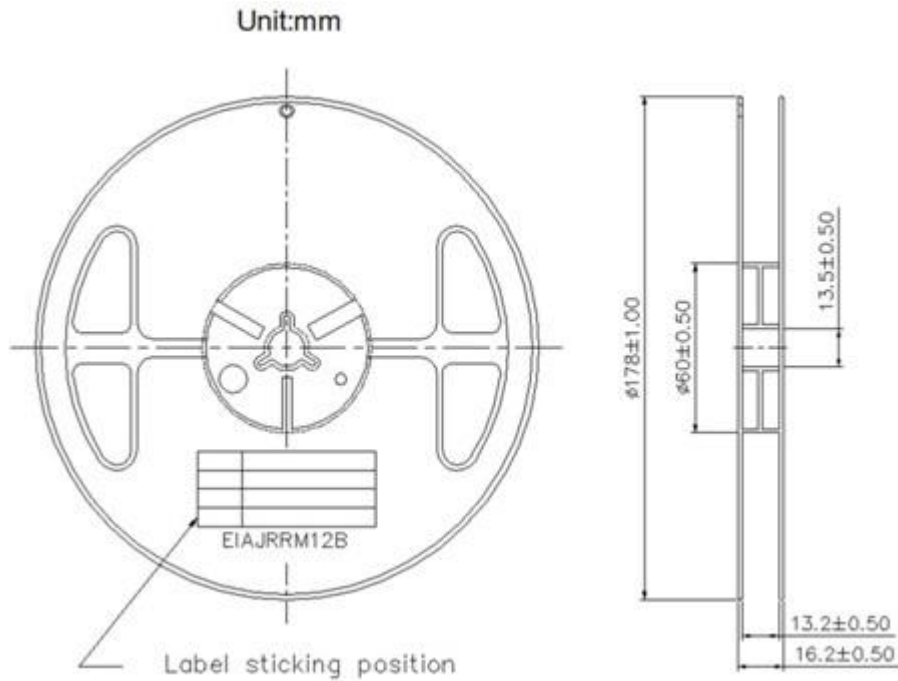


Dim. A	Dim. B	Dim. C	Qty/Reel
2.25±0.1	1.5±0.1	1.15±0.1	4K

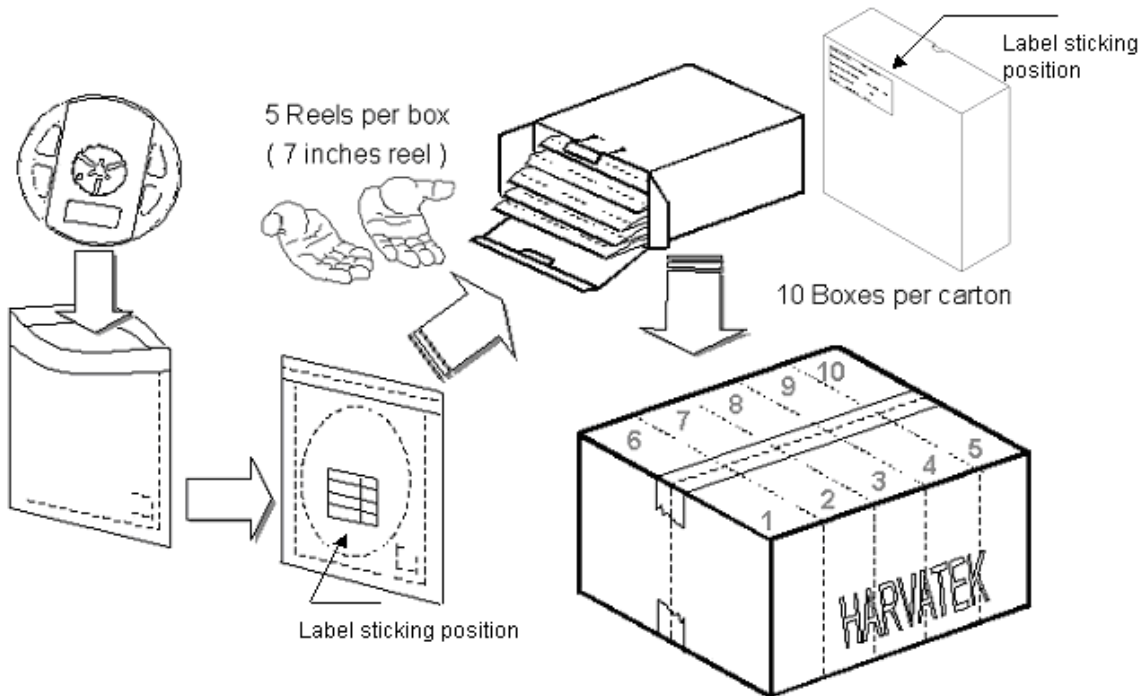


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Reel Dimension



Packing



5 boxes per carton is available depending on shipment quantity.

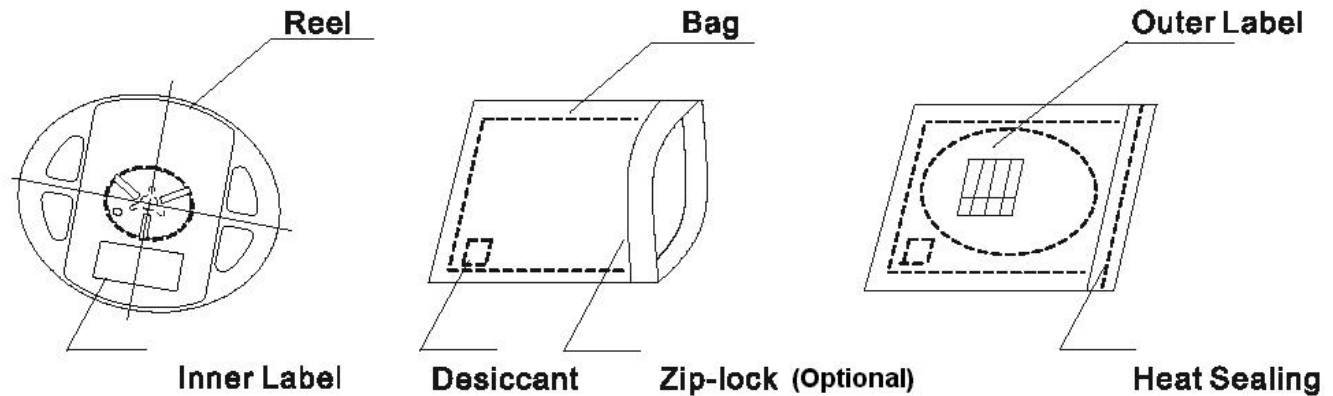
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Dry Pack

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.

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 72 hours.

The conditions are as followings:

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

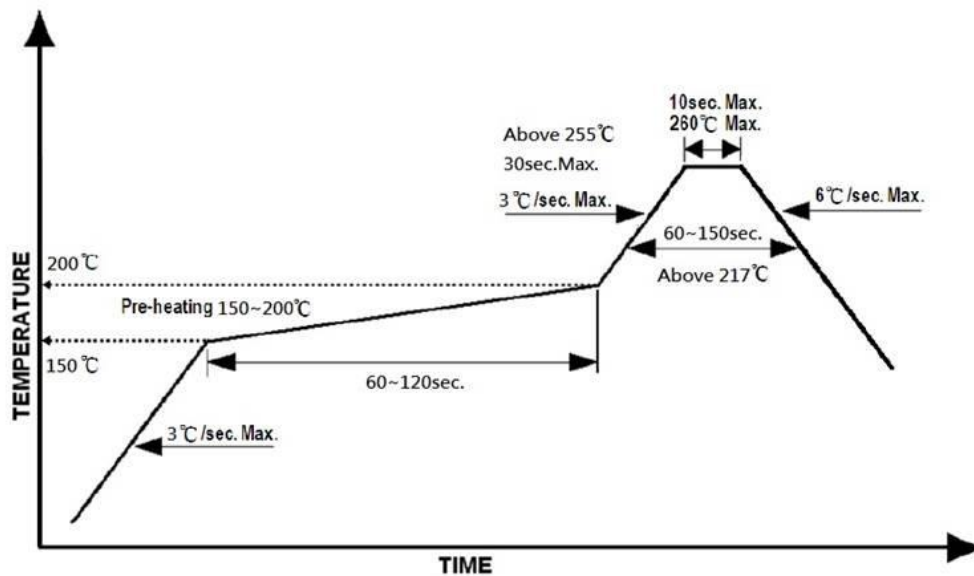
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Reflow Soldering

Recommend soldering paste specifications:

1. Operating temp.: Above 217 °C ,60~150 sec.
2. Peak temp.:260 °CMax.,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



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
- Ultrasonic cleaning: < 15W/ bath; bath volume ≤ 1liter
- Curing: 100 °C max, <3min

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