

**Harvatek Surface Mount CHIP LED Data Sheet
HT-B3213FCH**

Official Product	HT Part No. HT-B3213FCH	Customer Part No.		Data Sheet No.
Preliminary Product	*****	*****		HT-B3213FCH
Specifications are subject to change without notice. Data and drawings herein are copyrighted.		June 22, 2013	Version of 1.0	Page 1/16

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DISCLAIMER

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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
Iv	Red : 42 mcd typical Green : 175 mcd typical Blue : 42 mcd typical R/G/B@5mA/ Ta= 25 °C; Tolerance ±10%		
λD	Red : 620 nm typical Green : 525 nm typical Blue : 470 nm typical R/G/B@20mA/Ta= 25 °C; Tolerance ±0.5nm		
Vf	Red : 2.4 V maximum Green : 3.2 V maximum Blue : 3.2 V maximum R/G/B@20mA/ Ta= 25 °C; Tolerance ± 0.05V		
Ir	< 100 μA @ VR = 5 V		
Resin	Water clear	Epoxy	
Carrier tape	EIA 481-1A specs	Conductive black tape	3000pcs/reel(Minimum)
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 Iv, λD and Vf. Each reel has a label identifying its specification; the immediate box consists of a product label as well.

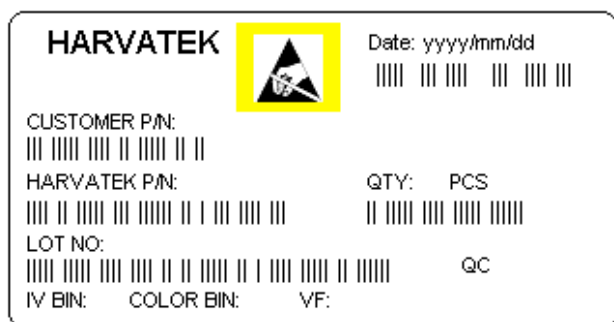
ATTENTION: Electrostatic Discharge (ESD) protection



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 3 2 1 3 F C H - Y Y Y Y

Series Name	Package	Dice	Emitting Color	Customer Code
HT= Harvatek	B321= 2.7(L) x 1.35 (W) x 0.8 (H) mm	3= Triple Dice	FCH= RGB@ 5mA	YYYY= Customer Product Code

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

HT-B3213FCH Series								
IV								
R			G			B		
CM	25.0	36.0	CR	83.0	127.0	CM	25.0	36.0
CN	36.0	54.0	CS	127.00	195.0	CN	36.0	54.0
CP	54.0	83.0	CT	195.0	292.0	CP	54.0	83.0

■ Dominant Wavelength (λ_D) Bin:

HT-B3213FCH					
IV					
R		G		B	
R	617~630	G1	520~525	B1	465~470
		G2	525~530	B2	470~475
		G3	530~535		

■ Forward Voltage (Vf) Bin:

HT-B3213FCH Series					
Vf					
R		G		B	
-	1.6~2.4	-	2.5~3.2	-	2.5~3.2

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Electro-Optical Characteristics

(I_F @ 20mA, T_a 25 °C)

Code for parts	Lighting Color	V_F (V)		λ (nm)			I_V (mcd)		I_F (mA)	Viewing Angle 2θ1/2
		typ	max	λ_D	λ_P	$\Delta\lambda$	min.	typ.		
HT-B3213FCH	Ultra Bright Red	1.9	2.4	620	628	14	25	42	5	130
	Green	2.9	3.2	532	522	30	83	175		
	Blue	2.9	3.2	470	466	18	25	42		

Package Outline Dimension & Recommended Soldering Pattern for Soldering

Unit: mm Tolerance: +/-0.1mm (height maximum is 0.20 +

0.05mm)

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

Absolute Maximum Ratings

(T_a 25 °C)

Series	I_F (mA)	I_{FP} (mA)	V_R (V)	I_R (uA)	T_{OP} (°C)	T_{ST} (°C)
Red /Blue/Green	20	100	5	<100@ $V_R = 5$	-30~+80	-40~+85

* 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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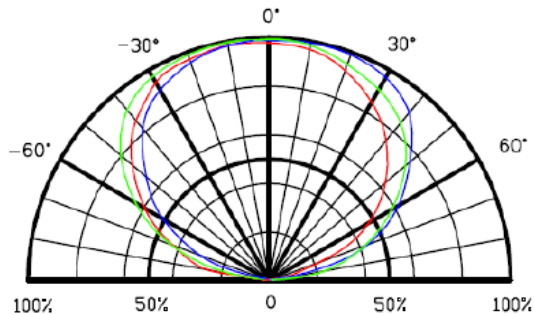
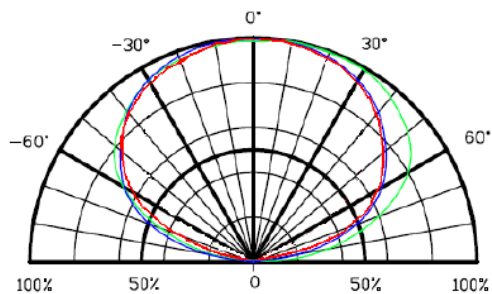
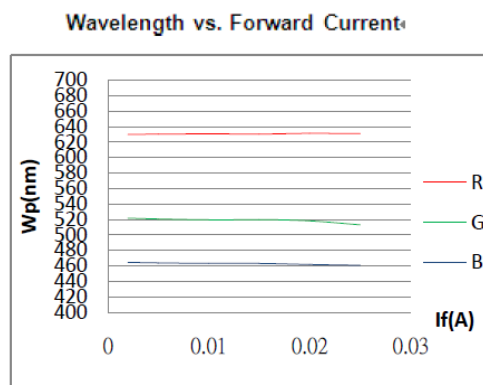
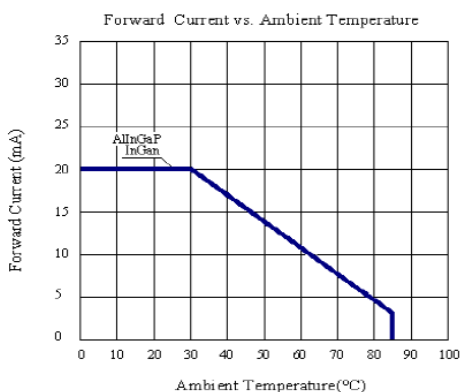
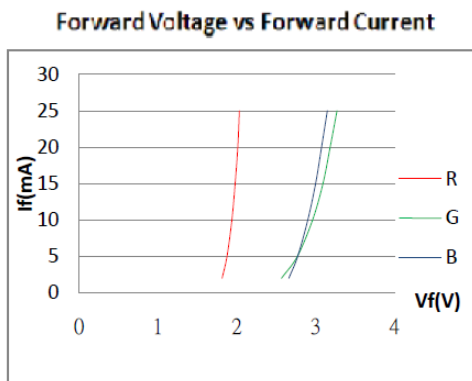
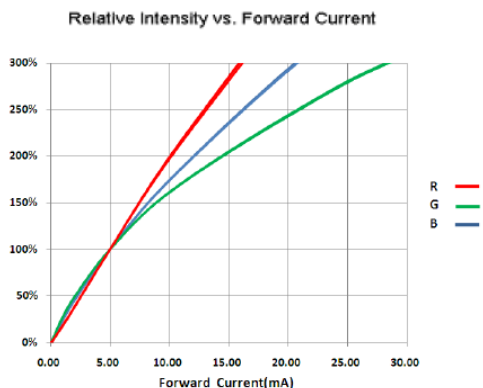
Precaution for Use

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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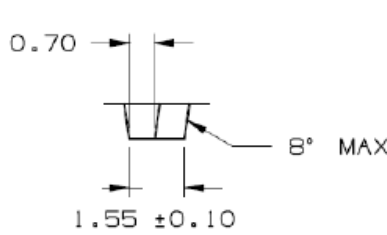
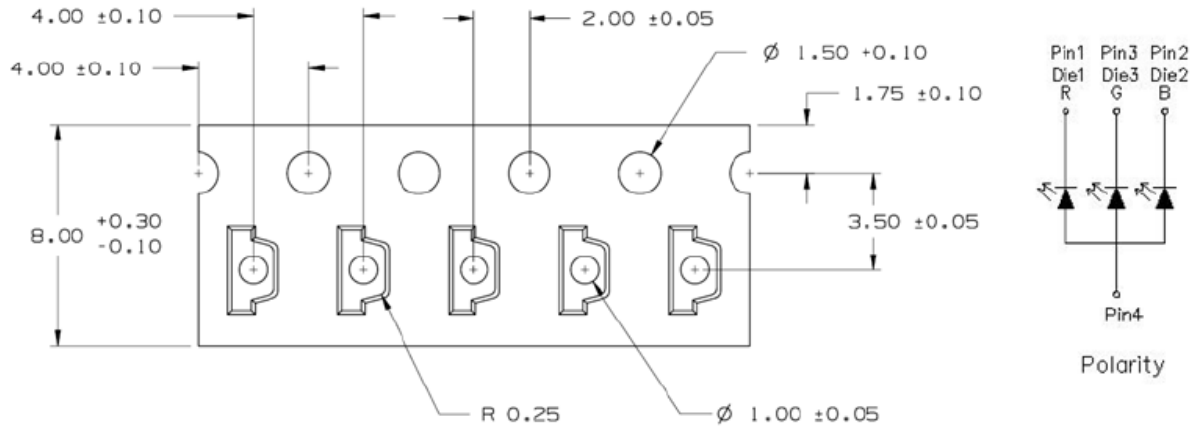
Characteristics of HT-B3213FCH Series



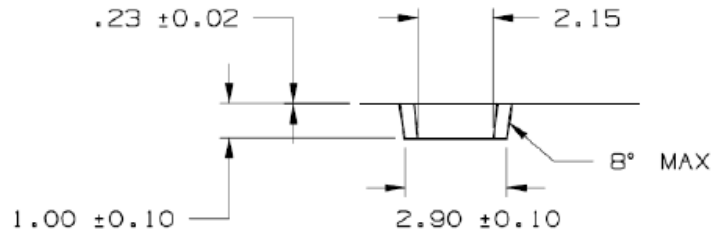
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Packaging

Tape Dimension



A₀



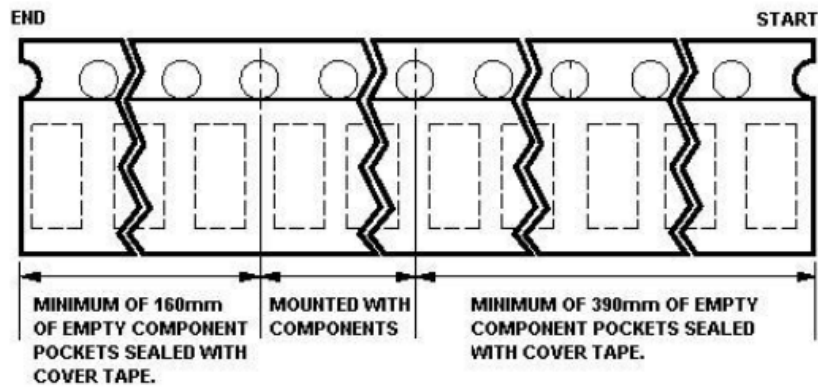
K₀

B₀

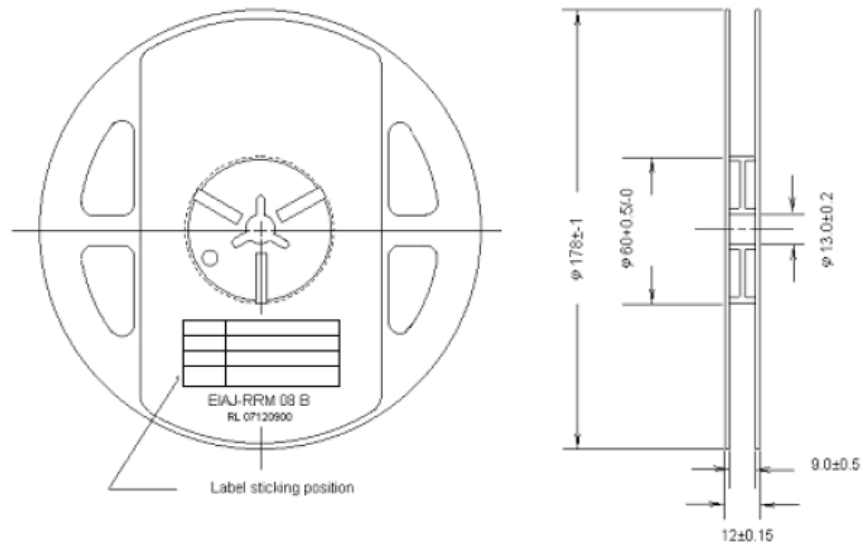
Part No.	A0	B0	K0
HT-321	1.55±0.10	2.90±0.10	1.00±0.10

Unit: mm

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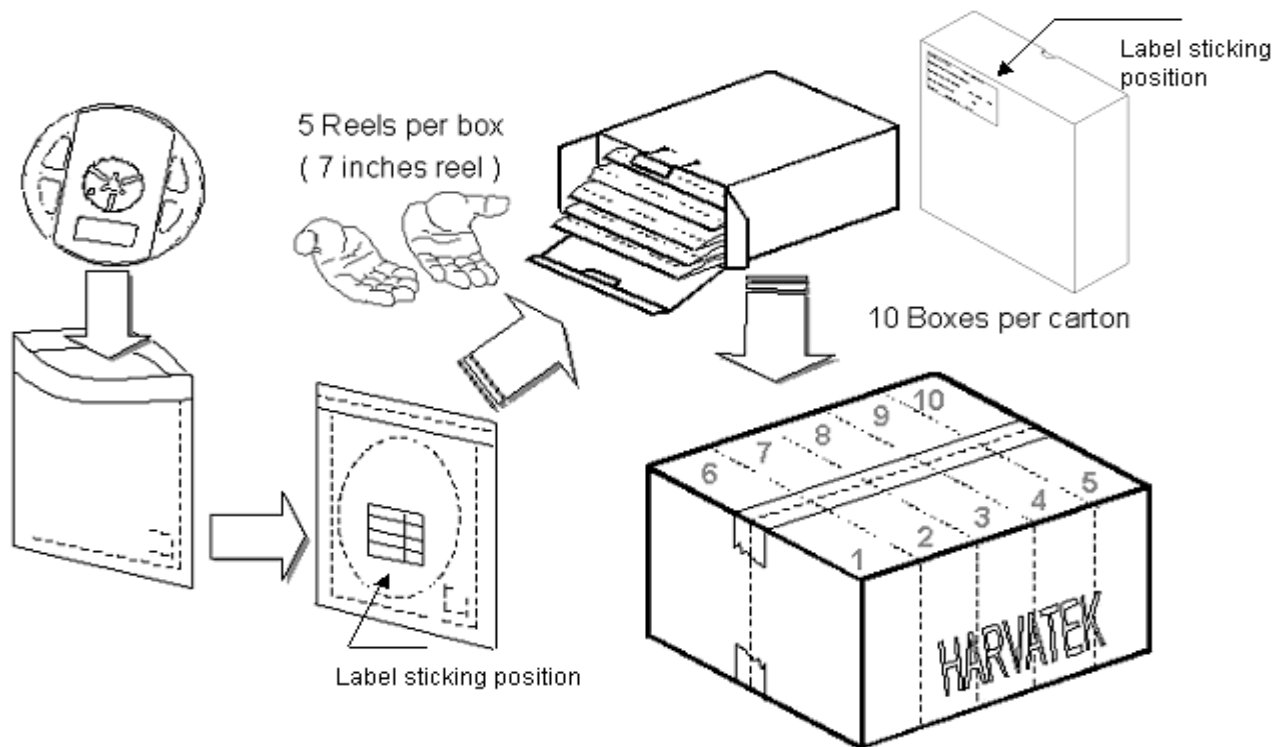


Reel Dimension



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Packing



5 boxes per carton is available depending on shipment quantity.

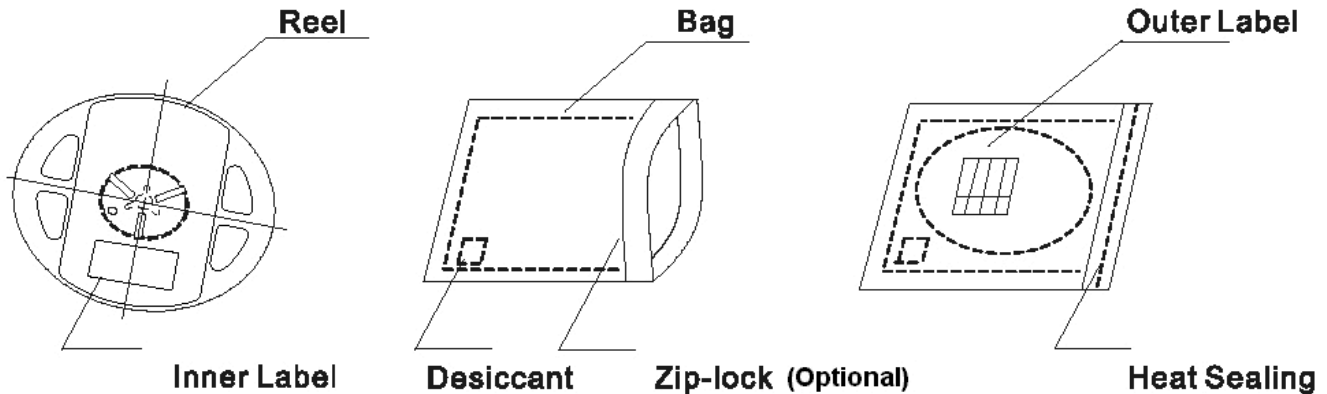
Dry Pack

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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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.

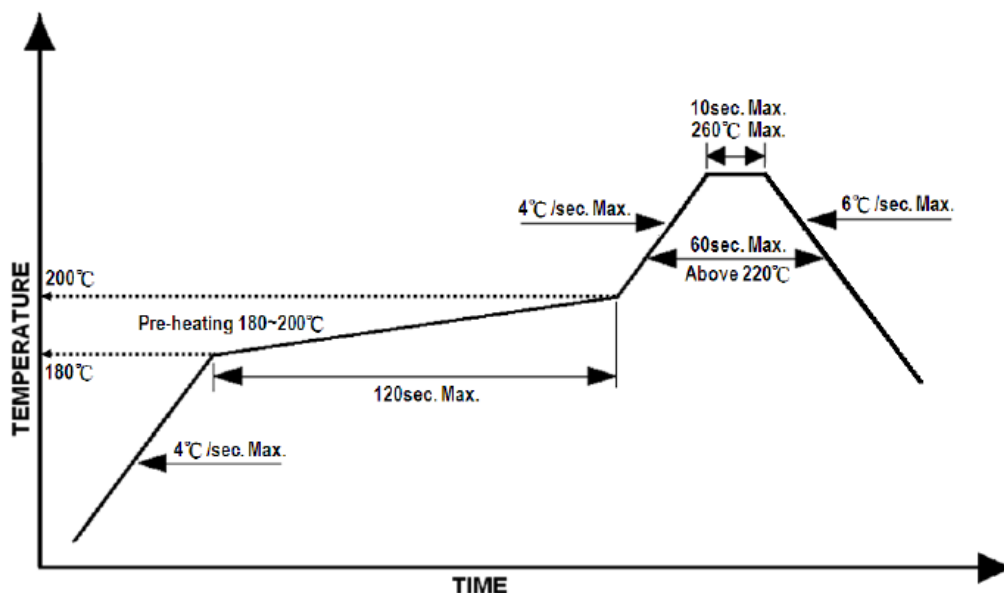
Reflow Soldering

Recommend soldering paste specifications:

1. Operating temp.: Above 220°C ,60sec
2. Peak temp.:260°C Max, 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:

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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

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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Revision History

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

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