Harvatek Surface Mount CHIP LEDs Approval Sheet
B2972USNB20D-000114

DISCLAIMER

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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.

Product Specification

	Specification	Material	Quantity
Iv	USD:45-180mcd NB: 28.5-180.0 mcd @20mA/ Ta= 25^{O} C Tolerance±10%		
Lambda (λ_D)	USD: 615.0-630.0 nm NB: 464.0-480.0 nm @20mA/ Ta= 25^{O} C Tolerance±0.5nm		
Vf	USD: 1.6-2.4V NB: 2.7-3.9V (0.2V/Bin) @20mA/ Ta= 25^{O} C		
Ir	HT standard		
Resin	Diffused	Epoxy Resin	
Carrier tape	According to EIA 481-1A specs	Conductive black tape	4000pcs per reel
Reel	According to EIA 481-1A specs	Conductive black	
Label	HT standard	Paper	
Packing bag	220x240mm	Aluminum laminated bag/ no-zipper	One reel one bag
Carton	HT standard	Paper	Non-specified

Others:

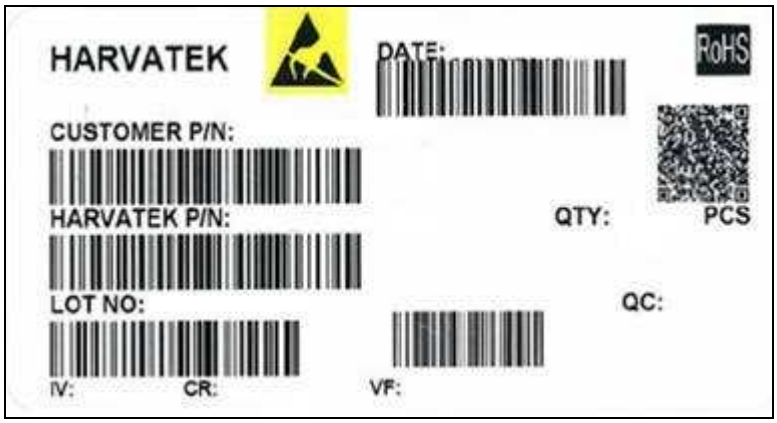
Each immediate box consists of 5 reels. The 5 reels may not necessarily have the same lot number or the same bin combinations of Iv, λ_D and Vf. Each reel has a label identifying its specification; the immediate box consists of a product label as well.

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 Spec.:



■ Harvatek P/N

B	2 9 7	2	USNB	20

Product	Package	Dice	Color	Current
PCB	1.6(L)x0.8(W)x0.5(H)mm	2: Bi	USD: Ultra Bright Red NB: Blue	20 mA

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		

■ Luminous Intensity (Iv) Bin:

Color	Bin Code	Spec. Range
Ultra Bright Red	P	45-71.5 mcd
	Q	71.5-112.5 mcd
	R	112.5-180 mcd
Blue	N	28.5-45 mcd
	P	45-71.5 mcd
	Q	71.5-112.5 mcd
	R	112.5-180 mcd

■Dominant Wavelength (λ_D) Bin:

Color	Bin Code	Spec. Range
Ultra Bright Red	-	615-630 nm
Blue	B	464-468 nm
	C	468-472 nm
	D	472-476 nm
	E	476-480 nm

■ Forward Voltage (Vf) Bin:

Color	Bin Code	Spec. Range
Ultra Bright Red	-	1.6-2.4 V
Blue	G8	2.7-2.9 V
	H7	2.9-3.1 V
	H8	3.1-3.3 V
	J7	3.3-3.5 V
	J8	3.5-3.7 V
	K7	3.7-3.9 V

Product Feature

Electro-Optical Characteristics

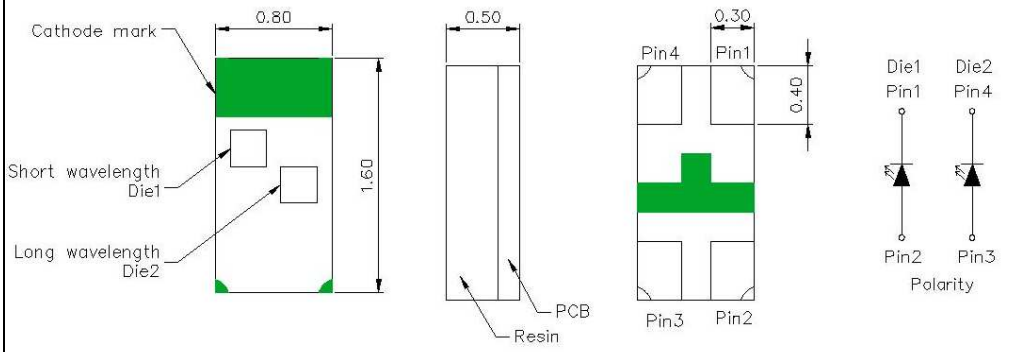
(I_F @ 20mAT_a 25°C)

Code for parts	Lighting Color	Material	V_F(V)		λ(nm)			I^*_V(mcd)
			typ	max	λ_D	λ_P	△λ	Typical
B2972USNB20	Ultra Bright Red	AlInGaP	2.0	2.4	624	632	20	71.5
	Blue	InGaN	3.3	3.9	470	468	40	71.5

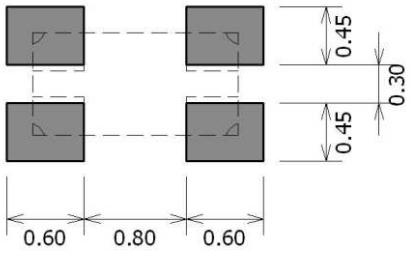
Package Outline Dimension and Recommended Soldering Pattern for Reflow Soldering

Unit: mm Tolerance: +/-0.1

Outline Dim.



Soldering Pattern



1. Soldering terminal may shift in x, y direction.
2. LED die 1 and LED die 2 can be the same chips.
3. Both dices in the package need to be either P side-up or N side-up.

Absolute Maximum Ratings

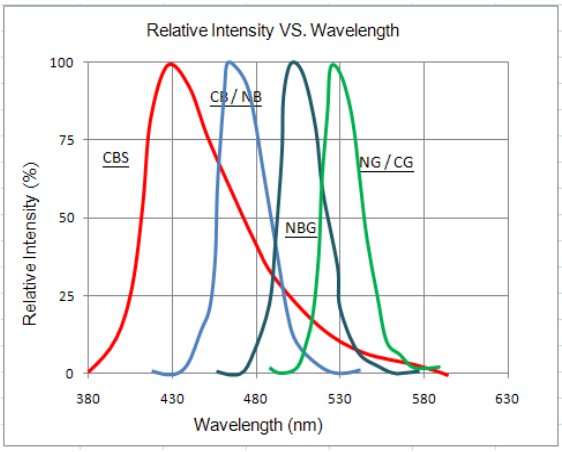
(T_a 25°C)

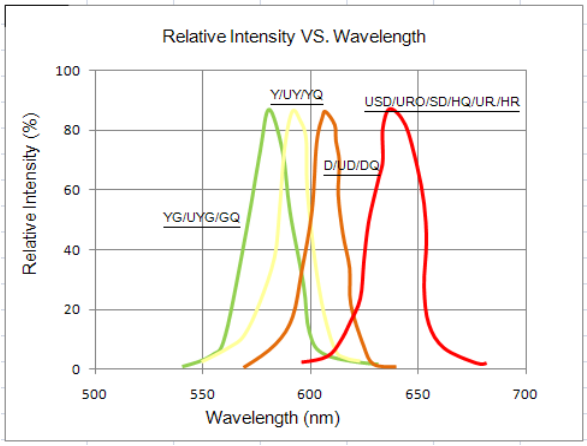
Series	I_F (mA)	I_{FP} (mA)	V_R (V)	I_R (uA)	T_{OP} (°C)	T_{ST} (°C)
Ultra Bright Red	20	100	5	<100@ V_R = 5	-30~+80	-40~+85
Blue	20	100				

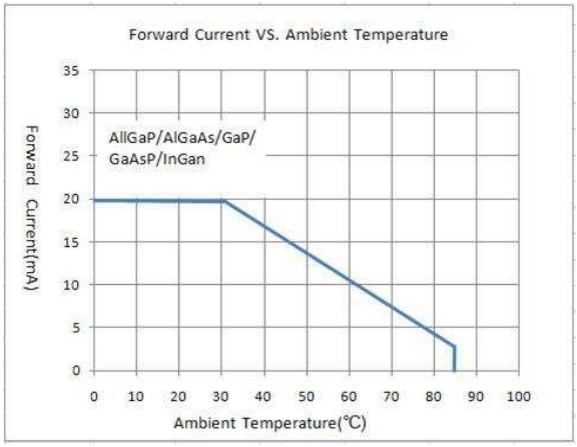
** Condition for I_{FP} is pulse of 1/10 duty and 0.1msec width

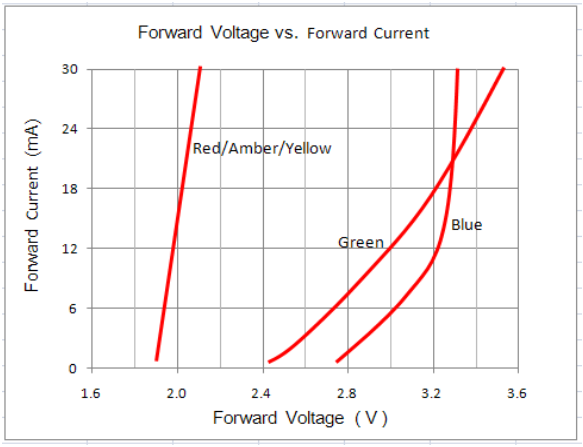
Remarks:This product should be operated in forward bias.If a reverse voltage is continuously applied to the product, such operation can cause migration resulting in LED damage.

Characteristics of HT-297 Series

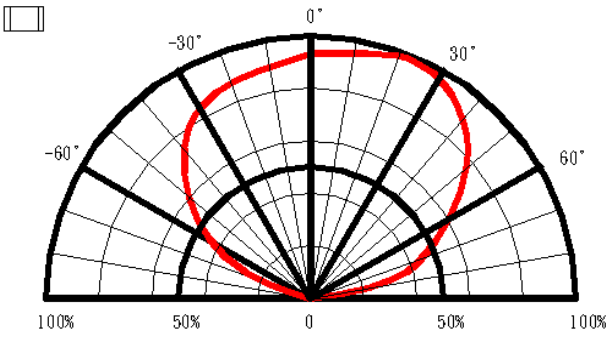




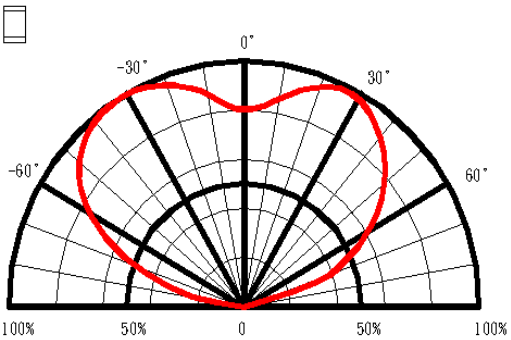




Directive Characteristics

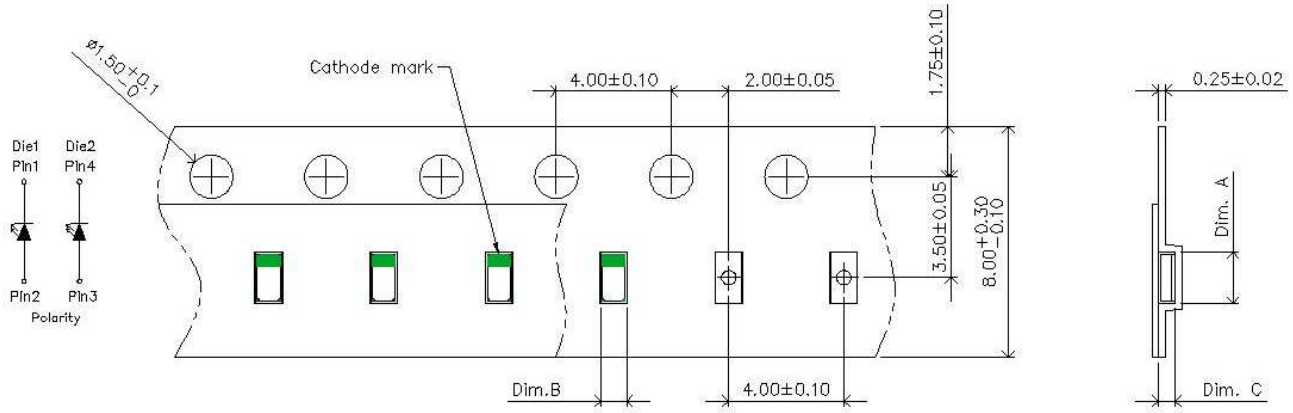


Directive Characteristics



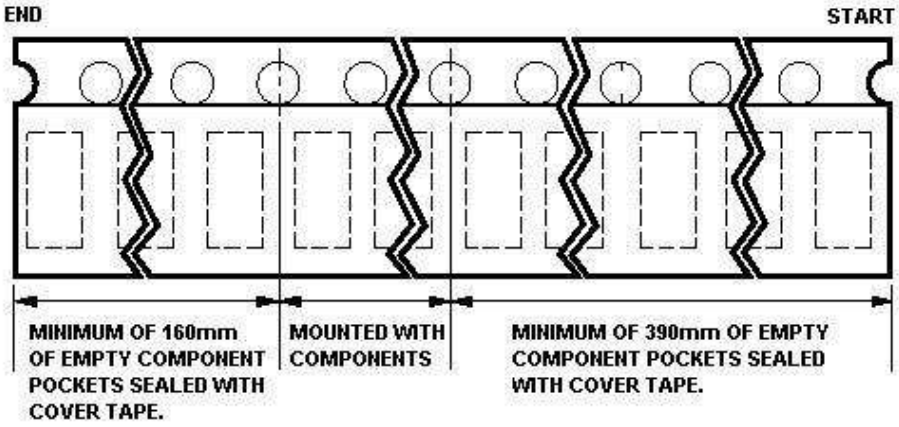
Packaging

Tape Dimension

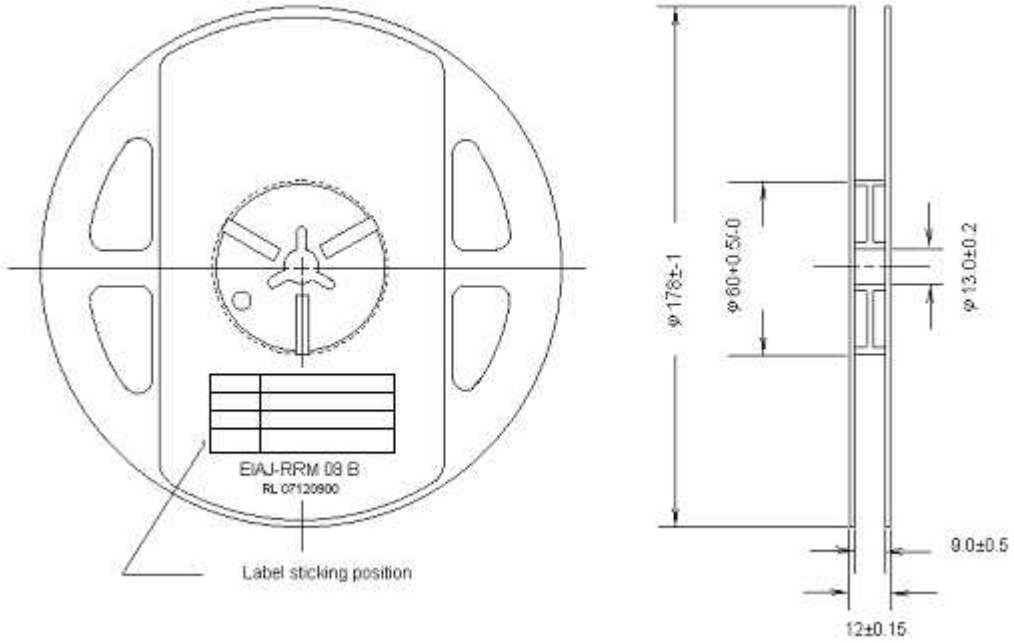


Part No.	Dim. A	Dim. B	Dim. C	Q'ty/Reel
HT-297	1.75±0.10	0.90±0.10	0.60±0.10	4K

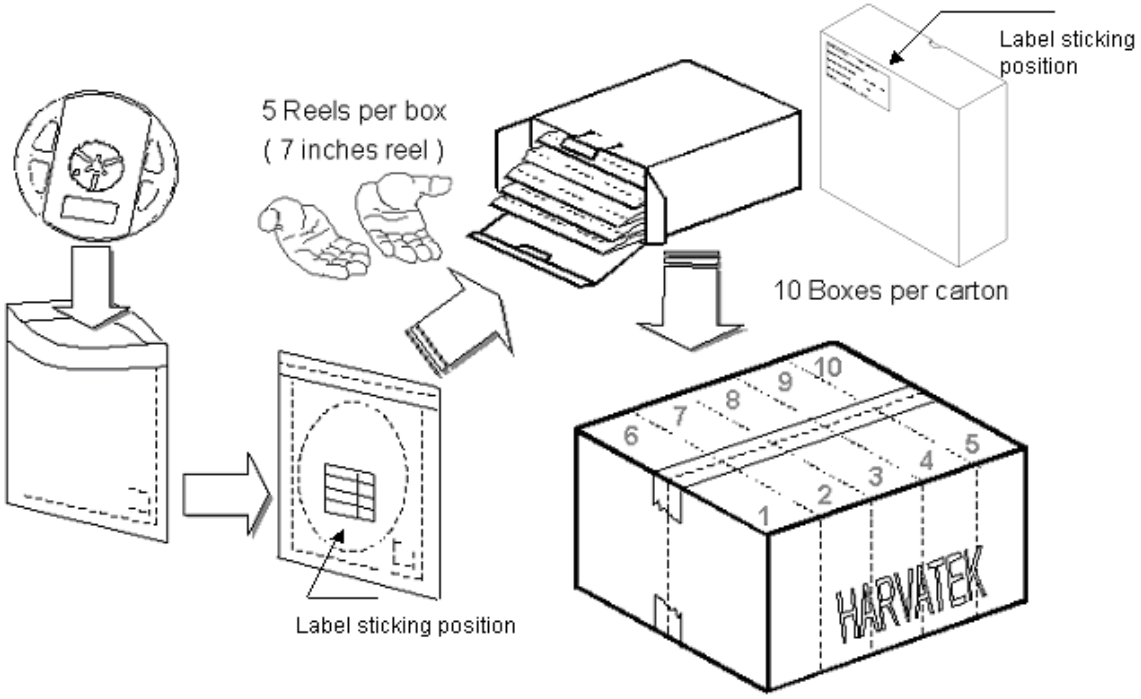
Unit: mm



Reel Dimension



Packing



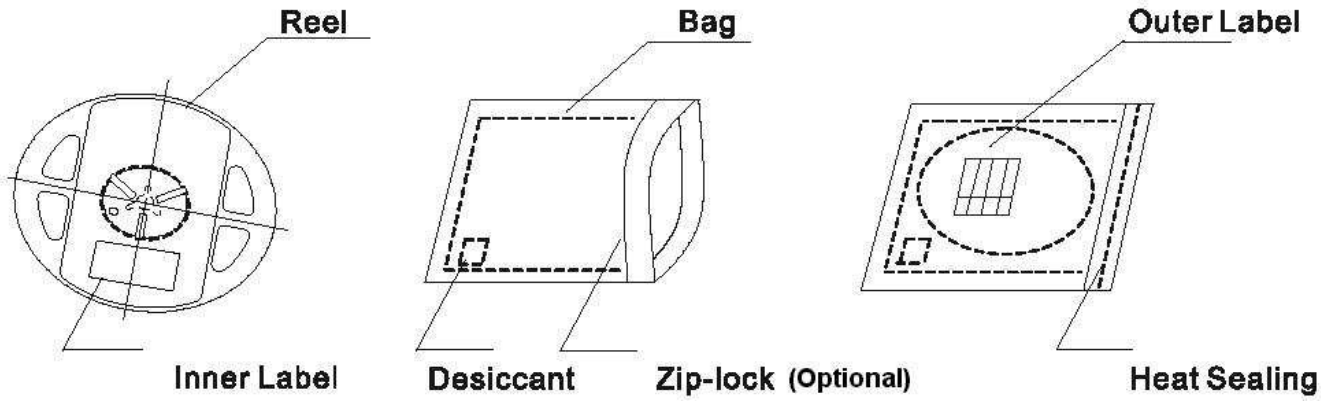
5 boxes per carton is available depending on shipment quantity.

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:



PRECAUTIONS

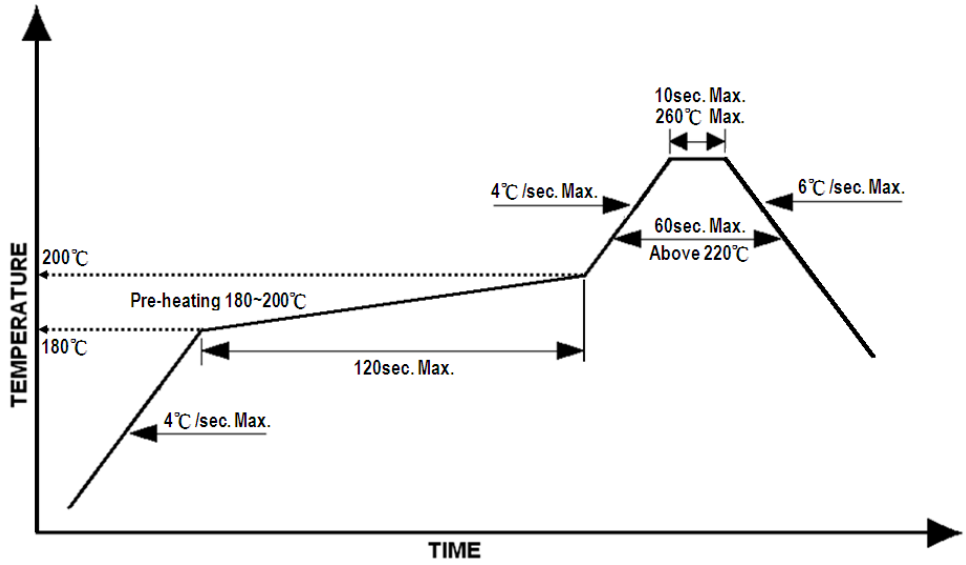
1. Avoid exposure to moisture at all times during transportation or storage.
2. Anti-Static precaution must be taken when handling GaN, InGaN, and AlInGaP products.
3. It is suggested to connect the unit with a current limiting resistor of the proper size. Avoid applying a reverse voltage beyond the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

Reflow Soldering

Recommend soldering paste specifications:

1. Operating temp.: Above 220 ^{O}C ,60 sec.
2. Peak temp.:260 ^{O}CMax.,10sec Max.
3. Never attempt next process until the component is cooled down to room temperature after reflow.
4. 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 ^{O}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^{o}C x 30sec. or <30^{o}C x 3min
- Ultrasonic cleaning: < 15W/ bath; bath volume ≤ 1liter
- Curing: 100 ^{O}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.

Revise History

Rev.	Descriptions	Date	Page
1.0	-	06/13/2013	-