Harvatek Surface Mount CHIP LED Data Sheet
HT-311FCH

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 Specifications

	Specification	Material	Quantity
Iv	Red : 100mcd typ. Green : 250mcd typ. Blue : 60mcd typ. @20mA/ Ta= 25^{O} C		
λ_D	Red : 615-630 nm Green : 515-540 nm Blue : 470-485 nm @20mA/ Ta= 25^{O} C		
Vf	Red : 1.7-2.4 V Green : 2.9-3.9 V Blue : 2.0-3.9 V @20mA/ Ta= 25^{O} C		
Ir	< 100 μA @ V_R = 5 V		
Resin	Diffused	Epoxy resin	
Carrier tape	EIA 481-1A specs	Conductive black tape	1000pcs per 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

Others:

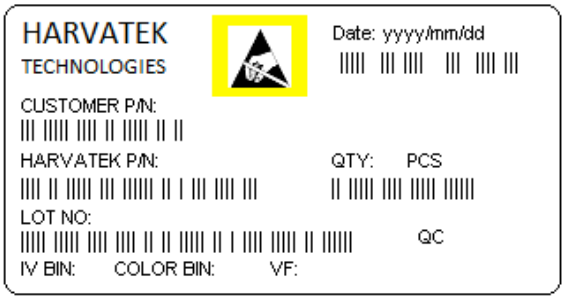
Each immediate box consists of 5 reels. The 5 reels may not necessarily have the same lot number or the same bin combinations of Iv, λ_D and Vf. Each reel has a label identifying its specification; the immediate box consists of a product label as well.

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 Specifications



■ Harvatek P/N:

H T - 3 1 1 FCH

Series Name	Emitting Color
HT-311 3.2x1.5x1.0mm	FCH Full Color (RGB) @ 20mA

■ 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:

Bin	Luminous Intensity Range (mcd)		Bin	Luminous Intensity Range (mcd)	
	Minimum	Maximum		Minimum	Maximum
N1	28.5	36.0	N2	36.0	45.0
P1	45.0	57.0	P2	57.0	71.5
Q1	71.5	90.0	Q2	90.0	112.5
R1	112.5	142.0	R2	142.0	180.0
S1	180.0	227.0	S2	227.0	285.0
T1	285.0	360.0	T2	360.0	450.0
U1	450.0	570.0	U2	570.0	715.0

@20mA / Ta=25^{O} C, Tolerance: $\pm$ 10%

■ Dominant Wavelength (λ_D) Bin:

Color	Bin Code	Spec. Range
Red	-	615-630 nm
Green	AB	515-525 nm
	CD	525-535 nm
	E	535-540 nm
Blue	C	470-475 nm
	D	475-480 nm
	E	480-485 nm

■ Forward Voltage (Vf) Bin:

Color	Bin Code	Spec. Range
Red	-	1.7-2.4 V
Green	-	2.9-3.9 V
Blue	-	2.9-3.9 V

Product Feature

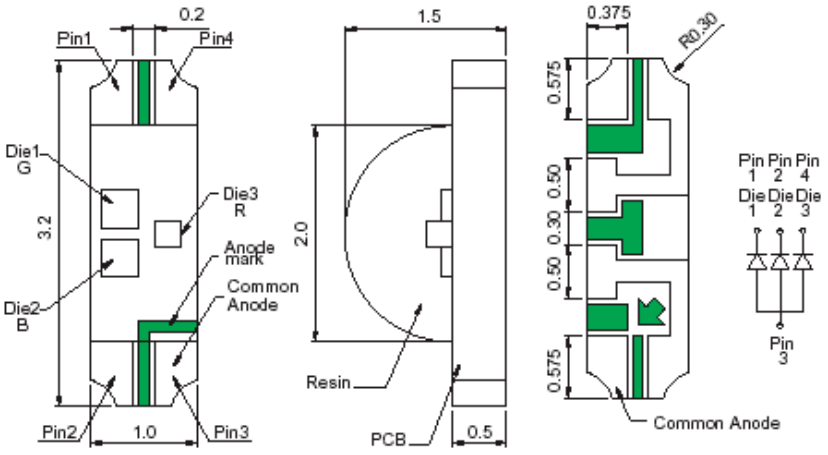
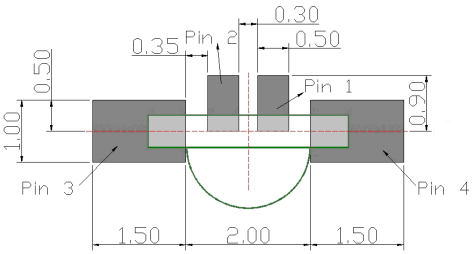
Electro-Optical Characteristics

Code for parts	Lighting Color			V_F(V)		λ (nm)			I^*_V(mcd)
				typ	max	λ_D	λ_P	△λ	Typical
HT-311FCH	Die3	Ultra Bright Red	USD	1.9	2.4	622	636	17	100
	Die1	Green	NG	3.3	3.9	527	520	40	250
	Die2	Blue	NB	3.3	3.9	470	468	26	60

* Per NIST standards

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.

-Common anode.

Absolute Maximum Ratings

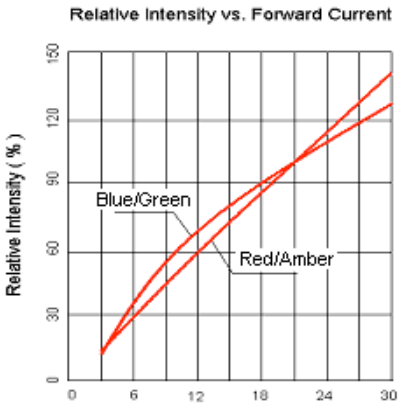
(T_a 25 °C)

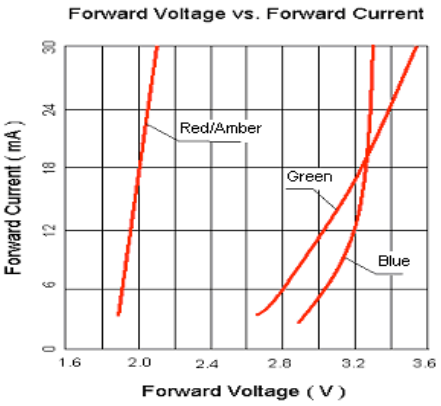
Series	P_d (mW)	I_F (mA)	I_{FP} (mA)	V_R (V)	I_R (uA)	T_{OP} (^oC)	T_{ST} (^oC)
Red	46	20	100	5	<100@ V_R = 5	-30~+80	-40~+85
Blue/Green	74	20	80				

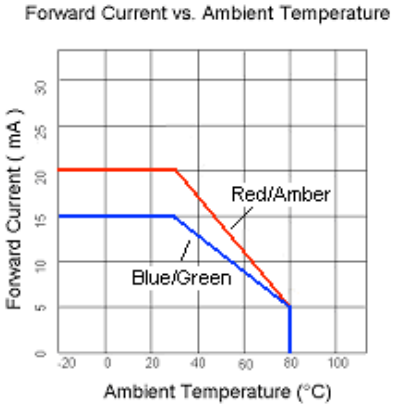
* Condition for I_{FP} is pulse of 1/10 duty and 0.1msec width

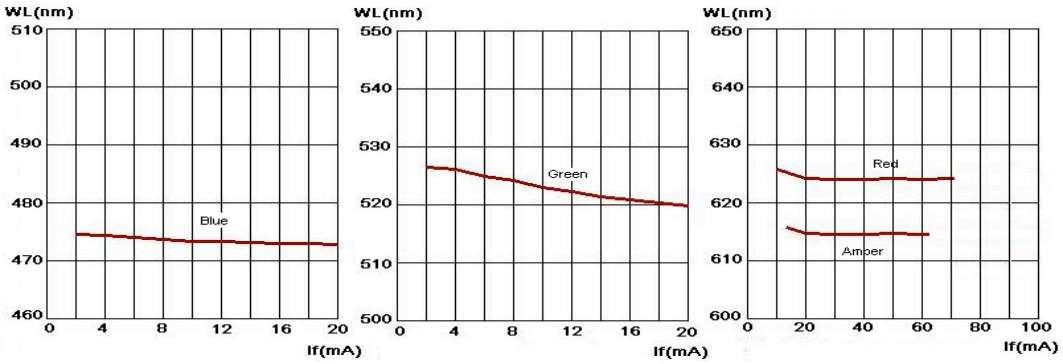
**Remarks: This product should be operated in forward bias. If a reverse voltage is continuously applied to the product, such operation can cause migration resulting in LED damage.

Characteristics of HT-311FCH



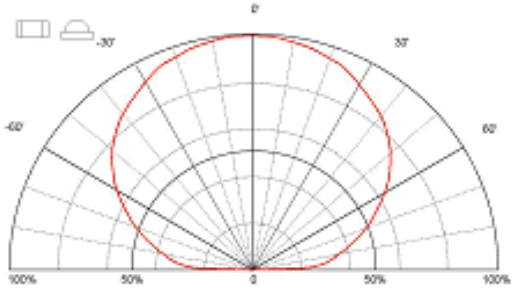




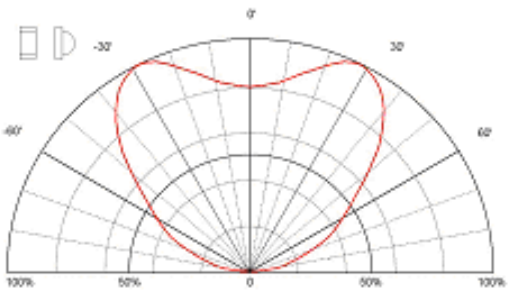


Wavelength vs. Forward Current

Directive Characteristics



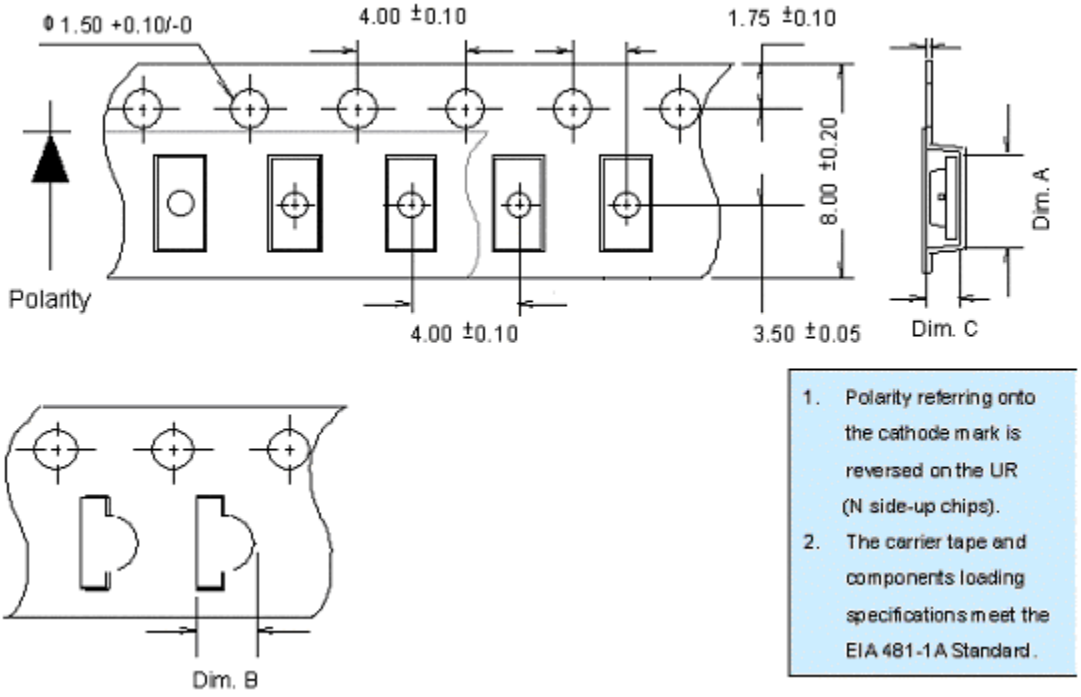
Directive Characteristics



Official Product	HT-311FCH	Customer Part No.		Data Sheet No.
Tentative Product	**********	**********		HT-311FCH
Specifications are subject to change without notice. Data and drawings herein are copyrighted.		June 19, 2013	Version of 1.0	Page 9/16

Packaging

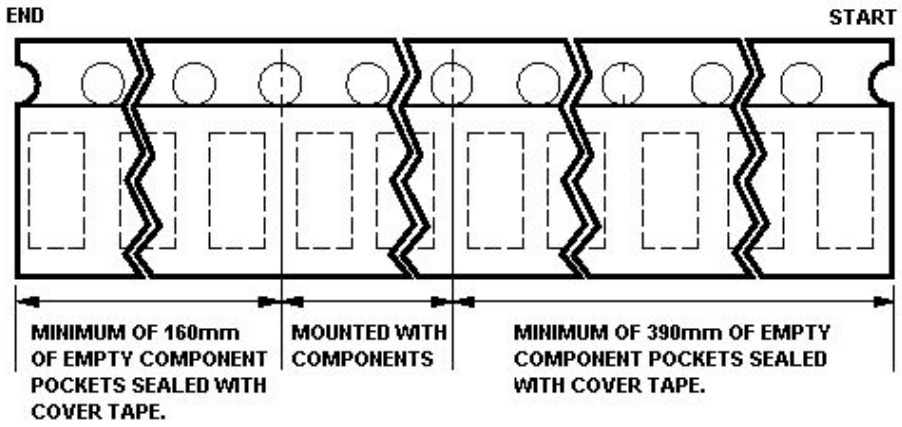
Tape Dimension



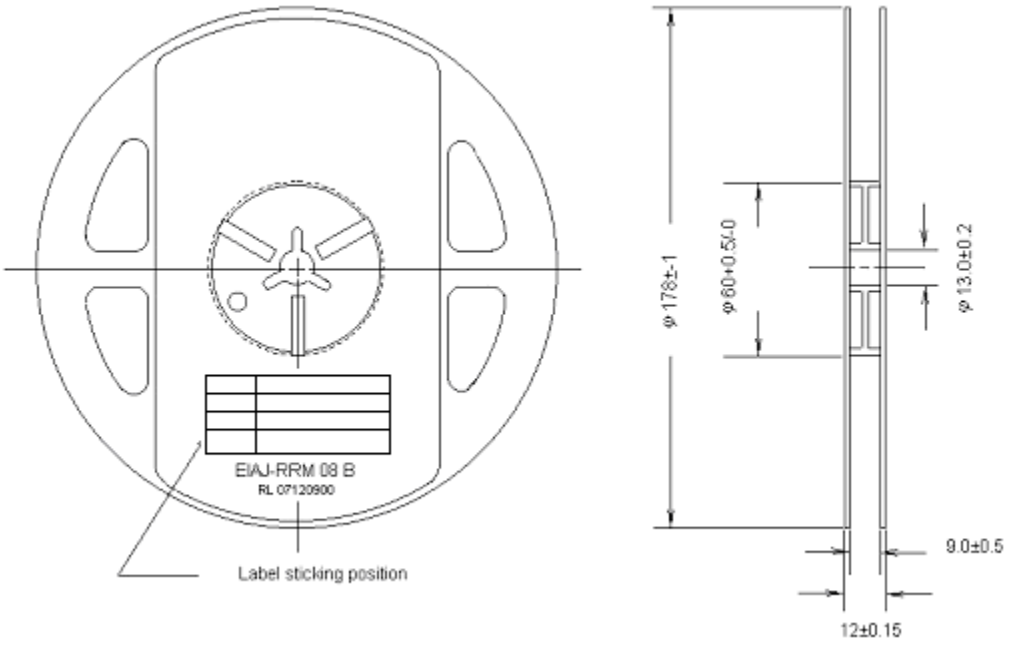
1. Polarity referring onto the cathode mark is reversed on the UR (N side-up chips).
2. The carrier tape and components loading specifications meet the EIA 481-1A Standard.

Part No.	Dim. A	Dim. B	Dim. C	Q'ty/Reel
HT-311	3.40± 0.10	1.70± 0.10	1.20± 0.10	1K

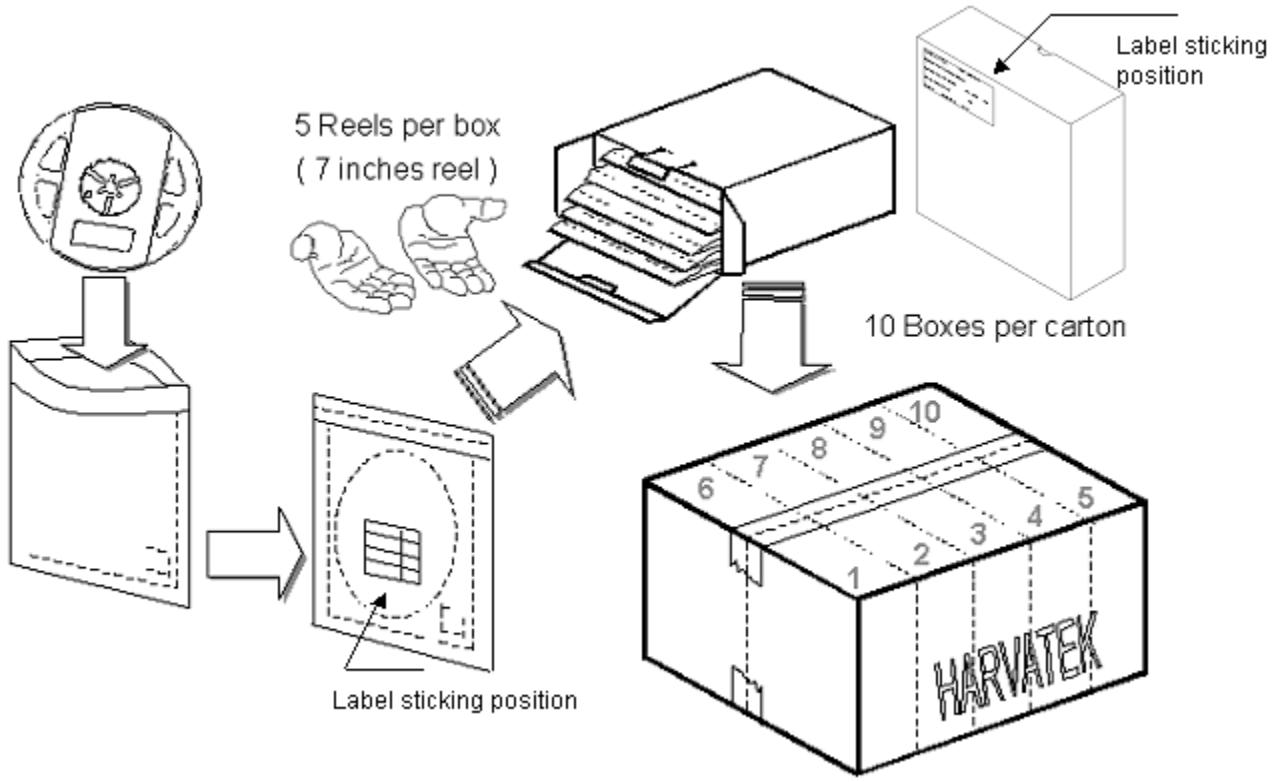
Unit: mm



Reel Dimension



Packing



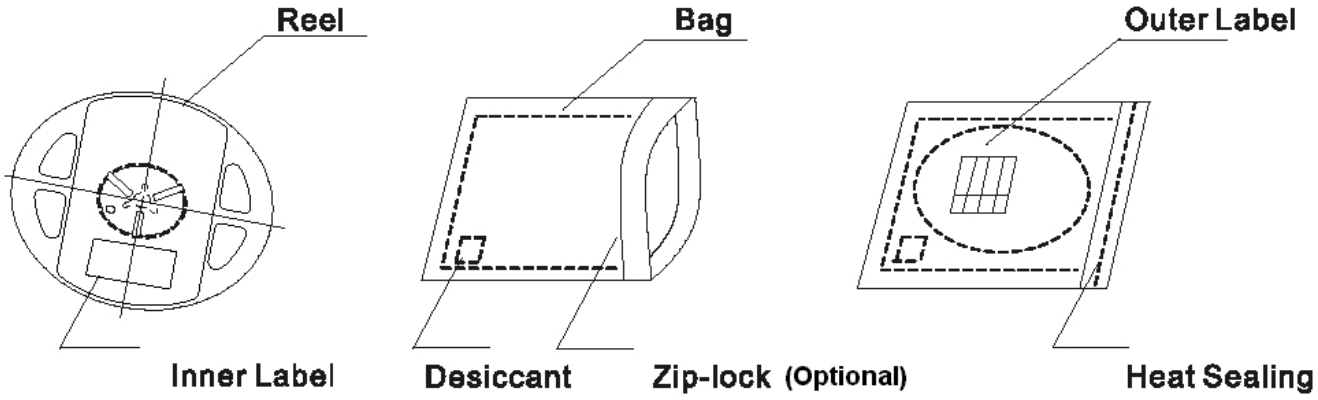
5 boxes per carton is available depending on shipment quantity.

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:



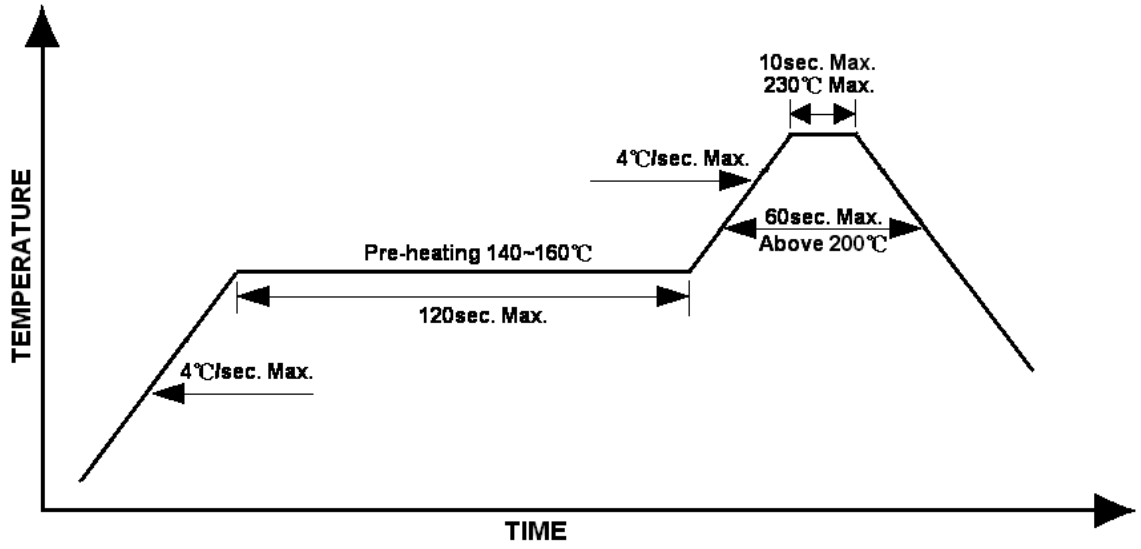
PRECAUTIONS

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.
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.

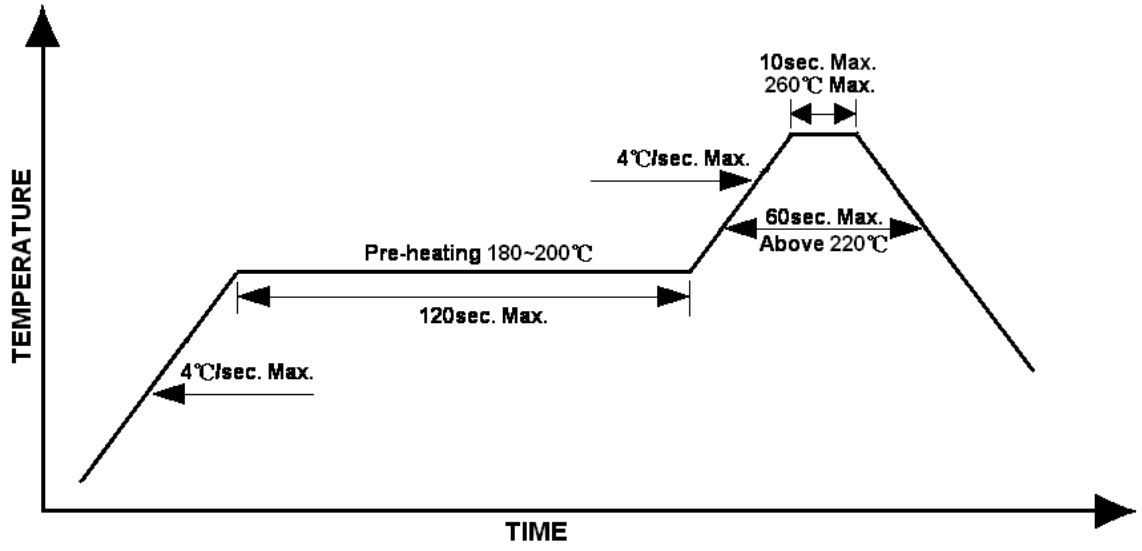
Reflow Soldering

- Recommended tin glue specifications: melting temperature in the range of 178~192 ^{O}C
- The recommended reflow soldering profile is as follows (temperatures indicated are as measured on the surface of the LED resin):

Lead Solder Profile



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
- Ultra sonic 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.**

Revision History

Changes since last revision	Page	Version No.	Revision Date
Initial Release		1.0	06-19-2013