

**Harvatek Surface Mount CHIP LED Data Sheet  
HT-193URO**

Official Product	HT Part No. HT-193URO	Customer Part No.		Data Sheet No.
Tentative Product	*****	*****		
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**DISCLAIMER**..... 3

**PRODUCT SPECIFICATIONS**..... 4

**ATTENTION: ELECTROSTATIC DISCHARGE (ESD) PROTECTION** .....4

**LABEL SPECIFICATIONS**..... 5

**PRODUCT SPECIFICATIONS**..... 6

**PRODUCT FEATURES** ..... 7

**ELECTRO-OPTICAL CHARACTERISTICS**.....7

**PACKAGE OUTLINE DIMENSION AND RECOMMENDED SOLDERING PATTERN FOR REFLOW**

**SOLDERING** .....7

**ABSOLUTE MAXIMUM RATINGS** .....7

**PRECAUTION FOR USE** .....8

**CHARACTERISTICS OF HT-193 SERIES**.....9

**PACKAGING** ..... 10

**TAPE DIMENSION** .....10

**REEL DIMENSION**.....11

**PACKING**.....11

**DRY PACK**..... 12

**PRECAUTIONS**..... 12

**REFLOW SOLDERING** ..... 13

**REWORKING**.....13

**CLEANING**.....13

**REVISE HISTORY**.....14

Official Product	HT Part No. HT-193URO	Customer Part No.		Data Sheet No.
Tentative Product	*****	*****		
Specifications are subject to change without notice. Data and drawings herein are copyrighted.		02/07/2013	Version 1.0	Page 2/14

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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.

Official Product	HT Part No. HT-193URO	Customer Part No.		Data Sheet No.
Tentative Product	*****	*****		
Specifications are subject to change without notice. Data and drawings herein are copyrighted.		02/07/2013	Version 1.0	Page 3/14

## Product Specifications

	Specification	Material	Quantity
Iv	28.5-112.5 mcd @20mA/ Ta= 25 <sup>o</sup> ;Tolerance: ± 10%		
λ <sub>D</sub>	625.0-650.0 nm @20mA/ Ta= 25 <sup>o</sup> C;Tolerance: ± 0.5nm		
Vf	1.6-2.4 V @20mA/ Ta= 25 <sup>o</sup> C ;Tolerance: ± 0.05V		
Ir	< 100 μA @ V <sub>R</sub> = 5 V		
Resin	Diffused	Epoxy resin	
Carrier tape	EIA 481-1A specs	Conductive black tape	4000pcs 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<sub>D</sub> 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

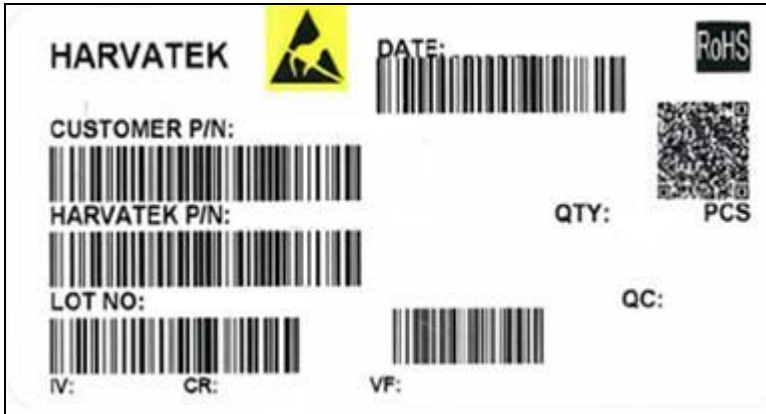


The symbol to the left denotes that ESD precaution is needed. ESD protection for GaP and AlGaAs based chips is necessary even though they are relatively safe in the presence of low static-electric discharge. Parts built with AlInGaP, GaN, or/and InGaN based chips are **STATIC SENSITIVE devices**. ESD 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.

Official Product	HT Part No. HT-193URO	Customer Part No.	Data Sheet No.
Tentative Product	*****	*****	
Specifications are subject to change without notice. Data and drawings herein are copyrighted.		02/07/2013	Version 1.0
			Page 4/14

## Label Specifications



■ Customer P/N: To Be Defined:

    H  T - 1  9  3    -    U  R  O    

Series Name	Emitting Color
HT-193 1.6(L)x0.8(W)x0.4(H) mm	URO Ultra Bright Super Red @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		

Official Product	HT Part No. HT-193URO	Customer Part No.		Data Sheet No.
Tentative Product	*****	*****		
Specifications are subject to change without notice. Data and drawings herein are copyrighted.		02/07/2013	Version 1.0	Page 5/14

**Product specifications**

■ **Luminous Intensity (Iv) Bin:**

Color	Bin Code	Spec. Range
Ultra Bright Super Red	N	28.5-45.0 mcd
	P	45.0-71.5 mcd
	Q	71.5-112.5 mcd

■ **Dominant Wavelength ( $\lambda_D$ ) Bin:**

Color	Bin Code	Spec. Range
Ultra Bright Super Red	--	625.0-650.0 nm

■ **Forward Voltage (Vf) Bin:**

Color	Bin Code	Spec. Range
Ultra Bright Super Red	--	1.6-2.4 V

Official Product	HT Part No. HT-193URO	Customer Part No.	Data Sheet No.
Tentative Product	*****	*****	
Specifications are subject to change without notice. Data and drawings herein are copyrighted.		02/07/2013	Version 1.0
			Page 6/14

### Product Features

#### Electro-Optical Characteristics

( $I_F$  @ 20mA,  $T_a$  25 °C)

Code for parts	Lighting Color		$V_F$ (V)		$\lambda$ (nm)			$I_V$ (mcd)
			typ	max	$\lambda_D$	$\lambda_P$	$\Delta \lambda$	Typical
HT-193URO	Ultra Bright Super Red	AllnGaP	1.9	2.4	632	645	22	45.0

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

Unit: mm Tolerance: +/-0.1

Outline Dim.	Soldering Pattern
<p>Cathode side</p> <p>LED Die</p> <p>0.8</p> <p>1.6</p> <p>0.40</p> <p>1.00</p> <p>0.40</p> <p>0.75</p> <p>0.38</p> <p>0.40</p> <p>Cathode side</p> <p>Resin</p> <p>PCB</p> <p>Polarity</p>	<p>0.8</p> <p>0.75</p> <p>0.80</p> <p>0.80</p> <p>0.80</p> <p>Polarity</p>
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)
HT-193URO	20	80	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.

Official Product	HT Part No. HT-193URO	Customer Part No.	Data Sheet No.
Tentative Product	*****	*****	
Specifications are subject to change without notice. Data and drawings herein are copyrighted.		02/07/2013	Version 1.0
			Page 7/14

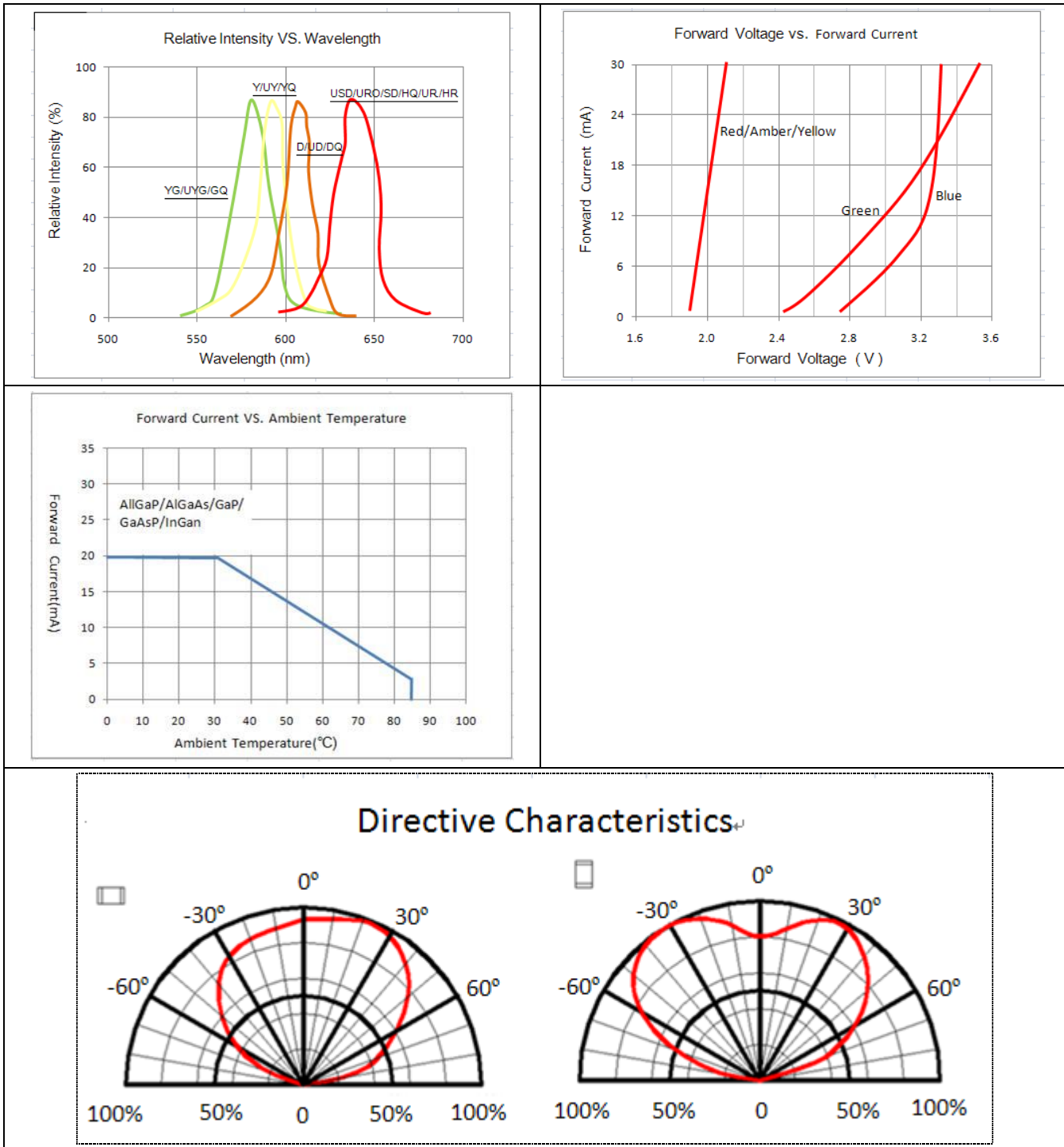
**Precaution for Use**

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.

Official Product	HT Part No. HT-193URO	Customer Part No.		Data Sheet No.
Tentative Product	*****	*****		
Specifications are subject to change without notice. Data and drawings herein are copyrighted.		02/07/2013	Version 1.0	Page 8/14

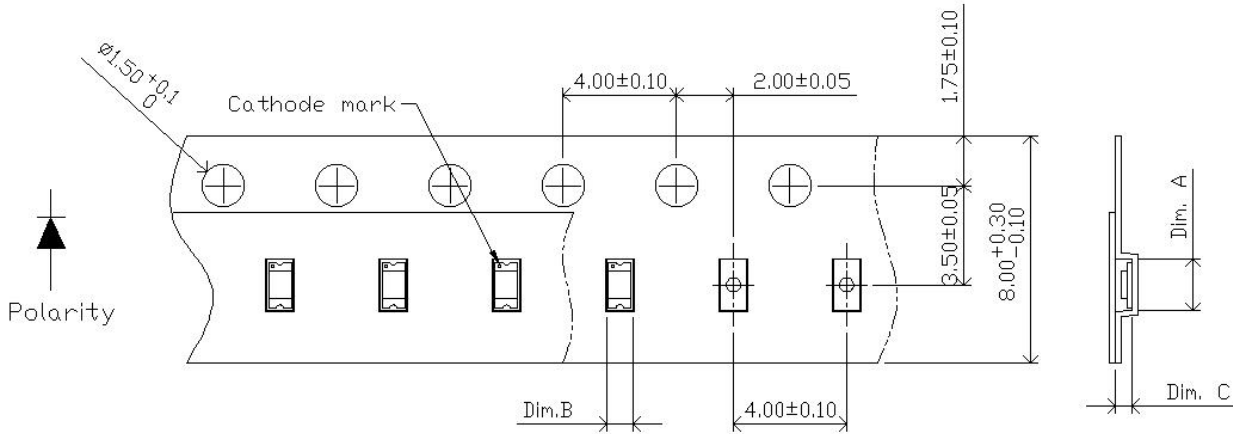


## Characteristics of HT-193 Series



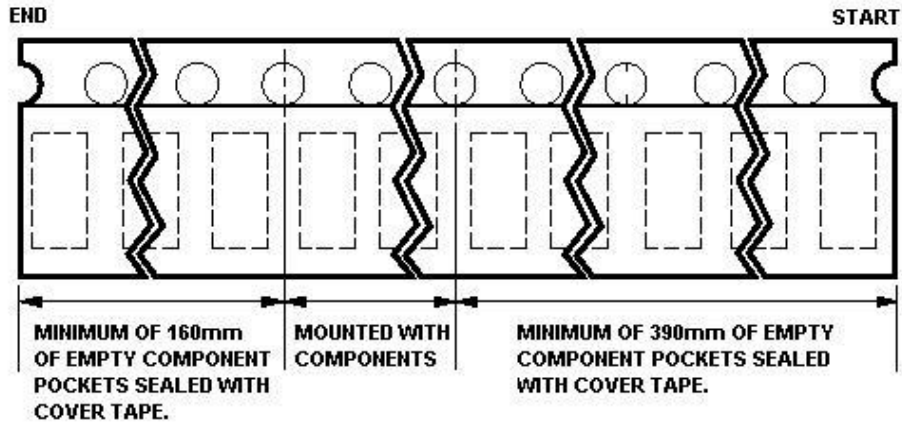
Official Product	HT Part No. HT-193URO	Customer Part No.	Data Sheet No.
Tentative Product	*****	*****	
Specifications are subject to change without notice. Data and drawings herein are copyrighted.		02/07/2013	Version 1.0
			Page 9/14

**Packaging**  
**Tape Dimension**



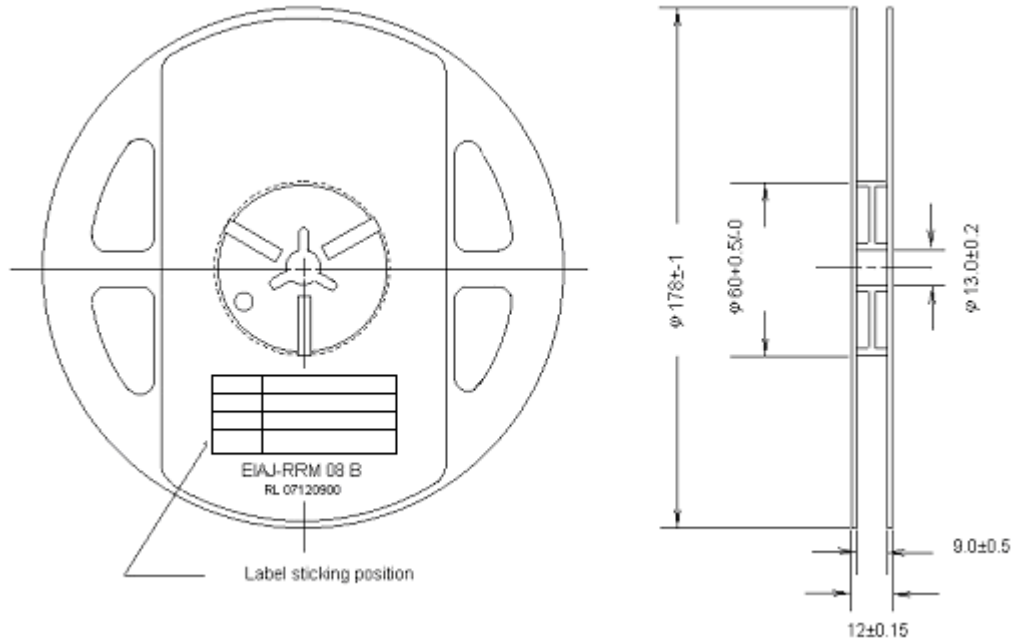
Part No.	Dim. A	Dim. B	Dim. C	Q'ty/Reel
HT-193	$1.80 \pm 0.50$	$0.94 \pm 0.50$	$0.60 \pm 0.50$	4K

Unit: mm

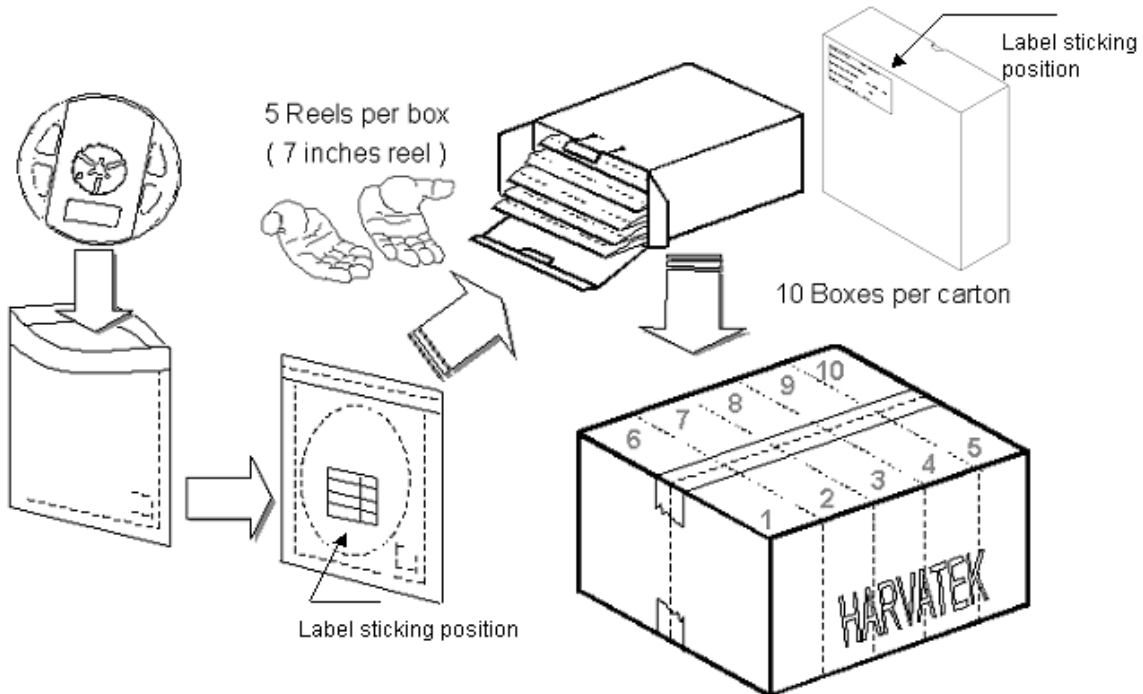


Official Product	HT Part No. HT-193URO	Customer Part No.	Data Sheet No.
Tentative Product	*****	*****	
Specifications are subject to change without notice. Data and drawings herein are copyrighted.		02/07/2013	Version 1.0
			Page 10/14

## Reel Dimension



## Packing



5 boxes per carton is available depending on shipment quantity.

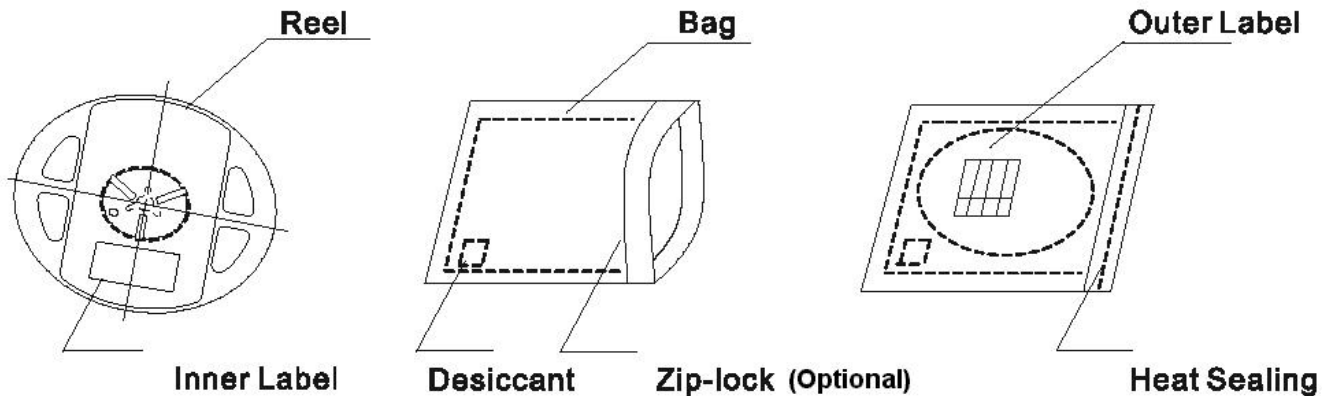
Official Product	HT Part No. HT-193URO	Customer Part No.	Data Sheet No.
Tentative Product	*****	*****	
Specifications are subject to change without notice. Data and drawings herein are copyrighted.		02/07/2013	Version 1.0
			Page 11/14

## 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.

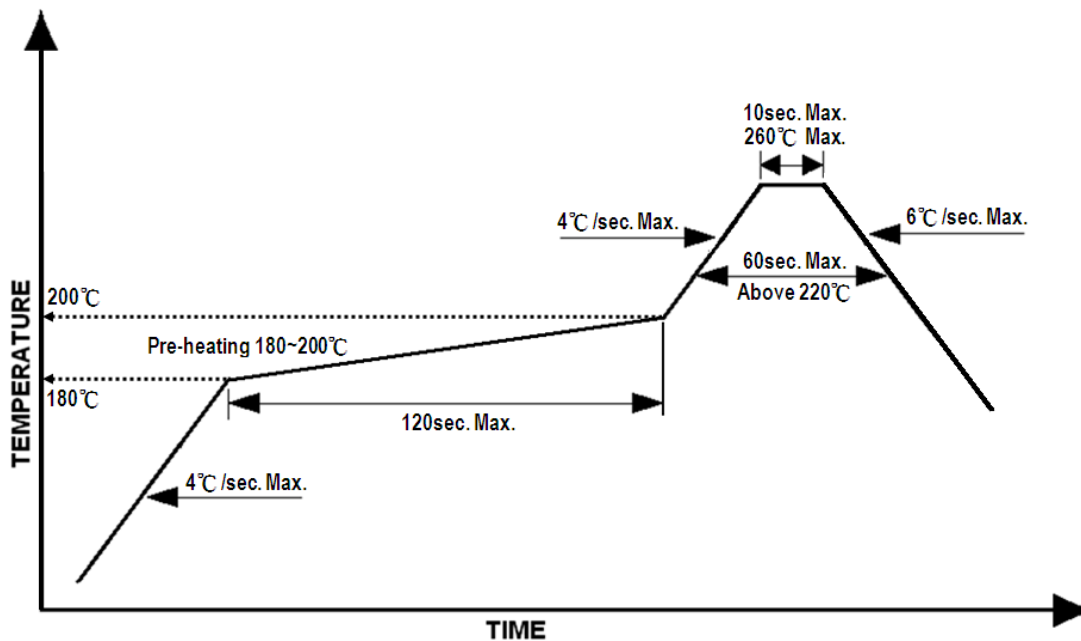
Official Product	HT Part No. HT-193URO	Customer Part No.	Data Sheet No.
Tentative Product	*****	*****	
Specifications are subject to change without notice. Data and drawings herein are copyrighted.		02/07/2013	Version 1.0
			Page 12/14

## Reflow Soldering

Recommend soldering paste specifications:

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

Official Product	HT Part No. HT-193URO	Customer Part No.	Data Sheet No.
Tentative Product	*****	*****	
Specifications are subject to change without notice. Data and drawings herein are copyrighted.		02/07/2013	Version 1.0 Page 13/14

### 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	NEW	02/07/2013	-

Official Product	HT Part No. HT-193URO	Customer Part No.		Data Sheet No.
Tentative Product	*****	*****		
Specifications are subject to change without notice. Data and drawings herein are copyrighted.		02/07/2013	Version 1.0	Page 14/14