

**Harvatek Surface Mount Chip LED Data Sheet  
HT-1861TX-05**

Official Product	Product: HT-1861TX-05			Data Sheet No.
Tentative Product	*****			HT-1861TX-05
Specifications are subject to change without notice. Data and drawings herein are copyrighted.		June 19, 2013	Version of 1.0	Page 1/16

**DISCLAIMER**..... 3

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

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

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

**PRODUCT CHARACTERISTICS** ..... 8

**ABSOLUTE MAXIMUM RATINGS** ..... 8

**ELECTRO-OPTICAL CHARACTERISTICS**..... 8

**PACKAGE OUTLINE DIMENSION**..... 9

**RECOMMENDED SOLDERING PATTERN FOR REFLOW SOLDERING**..... 9

**CHARACTERISTIC CURVES FOR TW** ..... 10

**PACKAGING** ..... 11

**TAPE DIMENSION** ..... 11

**REEL DIMENSION** ..... 12

**PACKING** ..... 12

**DRY PACK**..... 13

**REWORKING** ..... 15

**CLEANING** ..... 15

**REVISION HISTORY** ..... 16

Official Product	Product: HT-1861TX-05		Data Sheet No.
Tentative Product	*****		HT-1861TX-05
Specifications are subject to change without notice. Data and drawings herein are copyrighted.	June 19, 2013	Version of 1.0	Page 2/16

**DISCLAIMER**

HARVATEK reserves the right to make changes without further notice to any products herein to improve reliability, function or design. HARVATEK does not assume any liability arising out of the application or use of any product or circuit described herein; neither does it convey any license under its patent rights, nor the rights of others.

**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.

Official Product	Product: HT-1861TX-05			Data Sheet No.
Tentative Product	*****			HT-1861TX-05
Specifications are subject to change without notice. Data and drawings herein are copyrighted.	June 19, 2013	Version of 1.0	Page 3/16	

### Product Specifications

	Specification	Material	Quantity
Iv	45-285mcd @5mA / Ta=25° C, ± 10%		
XY	Refer to page 6&7 for bin range. @5mA / Ta=25° C, ± 0.07		
Vf	3.25V max @5mA / Ta=25°C, ± 0.05 V		
Ir	HT standard		
Resin	White	Epoxy resin	
Carrier tape	Per EIA 481-1A specs	Conductive black tape	2000pcs per reel
Reel	Per 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	

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**

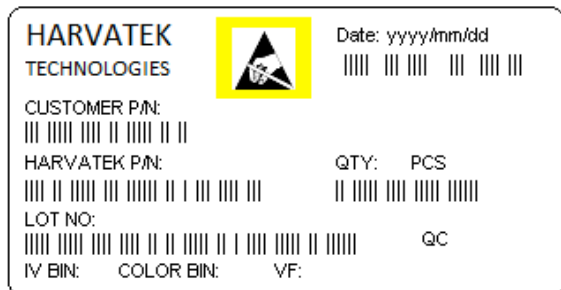


The symbol to the left denotes that ESD precaution is needed. ESD protection for GaP and AlGaAs based chips is necessary even though they are relatively safe in the presence of low static-electric discharge. Parts built with AlInGaP, GaN, or/and InGaN based chips are **STATIC SENSITIVE devices**. ESD 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	Product: HT-1861TX-05	Data Sheet No.
Tentative Product	*****	HT-1861TX-05
Specifications are subject to change without notice. Data and drawings herein are copyrighted.	June 19, 2013	Version of 1.0
		Page 4/16

**Label Specifications**



**Harvatek P/N:**

**H T - 1 8 6 1 T X - 0 5 - Y Y Y Y**

Series Name	Emitting Color	Current	Customer Code
<b>HT-1861</b> HT: Harvatek 1861: 1.0 (L) x 0.32 (W) x 0.53 (H) mm	TX: White	05: 5mA	YYYY Customer Product Code (TBD)

**Lot No.:**

1	2	3	4	5	6	7	8	9	10
<b>E</b>	<b>1</b>	<b>A</b>	<b>1</b>	<b>A</b>	<b>2</b>	<b>2</b>	<b>L</b>	<b>1</b>	<b>2</b>
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	Product: HT-1861TX-05	Data Sheet No.
Tentative Product	*****	HT-1861TX-05
Specifications are subject to change without notice. Data and drawings herein are copyrighted.	June 19, 2013	Version of 1.0
		Page 5/16

■ **Luminous Intensity (Iv) Bin:**

Bin	Luminous Intensity Range (mcd)	
	Minimum	Maximum
P	45	71.5
Q	71.5	112.5
R	112.5	180
S	180	285

@20mA / Ta=25°C, Tolerance: ± 10%

■ **Forward Voltage (V<sub>F</sub>) Bin:**

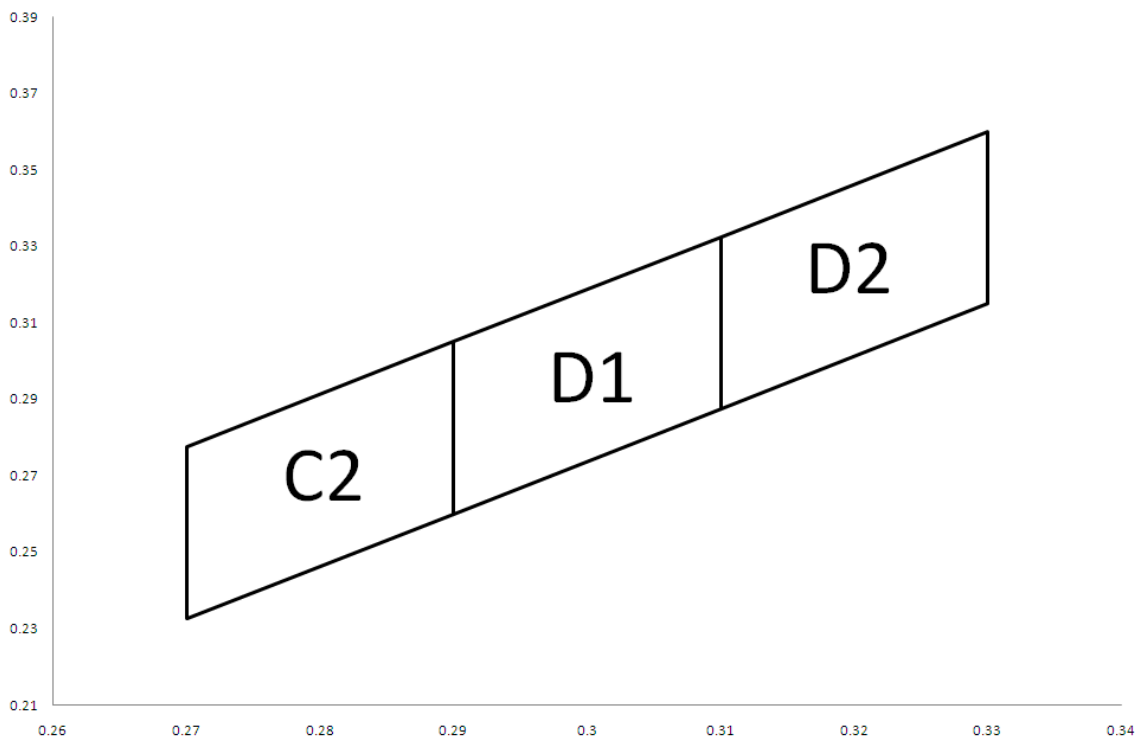
Color	Bin Code	Spec. Range
White (TW)	G2T	2.55 – 2.65V
	G3T	2.65 – 2.75V
	G4T	2.75 – 2.85V
	H1T	2.85 – 2.95V
	H2T	2.95 – 3.05V
	H3T	3.05 – 3.15V
	H4T	3.15 – 3.25V

@20mA / Ta=25°C, Tolerance: ± 0.05 V

Official Product	Product: HT-1861TX-05		Data Sheet No.
Tentative Product	*****		HT-1861TX-05
Specifications are subject to change without notice. Data and drawings herein are copyrighted.	June 19, 2013	Version of 1.0	Page 6/16

■ **Chromaticity Bin (for TW only):**

	Bin Code	Spec. Range		Bin Code	Spec. Range	
		X	Y		X	Y
White	C1	0.2500	0.2050	C2	0.2700	0.2325
		0.2500	0.2500		0.2700	0.2775
		0.2700	0.2775		0.2900	0.3050
		0.2700	0.2325		0.2900	0.2600
	D1	0.2900	0.2600	D2	0.3100	0.2875
		0.2900	0.3025		0.3100	0.3325
		0.3100	0.3325		0.3300	0.3600
		0.3100	0.2875		0.3300	0.3150



@20mA / Ta=25°C, Tolerance: ± 0.01

Official Product	Product: HT-1861TX-05	Data Sheet No.
Tentative Product	*****	HT-1861TX-05
Specifications are subject to change without notice. Data and drawings herein are copyrighted.	June 19, 2013	Version of 1.0
		Page 7/16

## Product Characteristics

### Absolute Maximum Ratings

Product	Emission Color	P <sub>d</sub> (mW)	I <sub>F</sub> (mA)	I <sub>FP</sub> * (mA)	V <sub>R</sub> (V)	T <sub>OP</sub> (°C)	T <sub>ST</sub> (°C)
HT-1861TX-05	White	78	20	80	5	-30°C~+80°C	-40°C~+85°C

\* Condition for I<sub>FP</sub> 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.

### Electro-Optical Characteristics

(T<sub>a</sub> 25 °C)

Product	Emission Color	I <sub>F</sub> (mA)	V <sub>F</sub> (V)		λ(nm)			I <sub>V</sub> (mcd)
			typ	max	λ <sub>D</sub>	λ <sub>P</sub>	Δλ	typ
HT-1861TX-05	White	20	2.9	3.25	X=0.290 Y=0.285	-	-	120

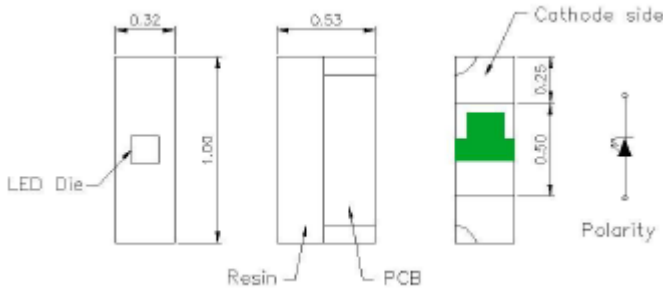
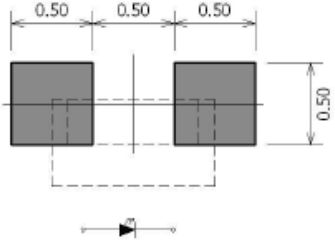
\* Per NIST standards

Official Product	Product: HT-1861TX-05		Data Sheet No.
Tentative Product	*****		HT-1861TX-05
Specifications are subject to change without notice. Data and drawings herein are copyrighted.		June 19, 2013	Version of 1.0
			Page 8/16



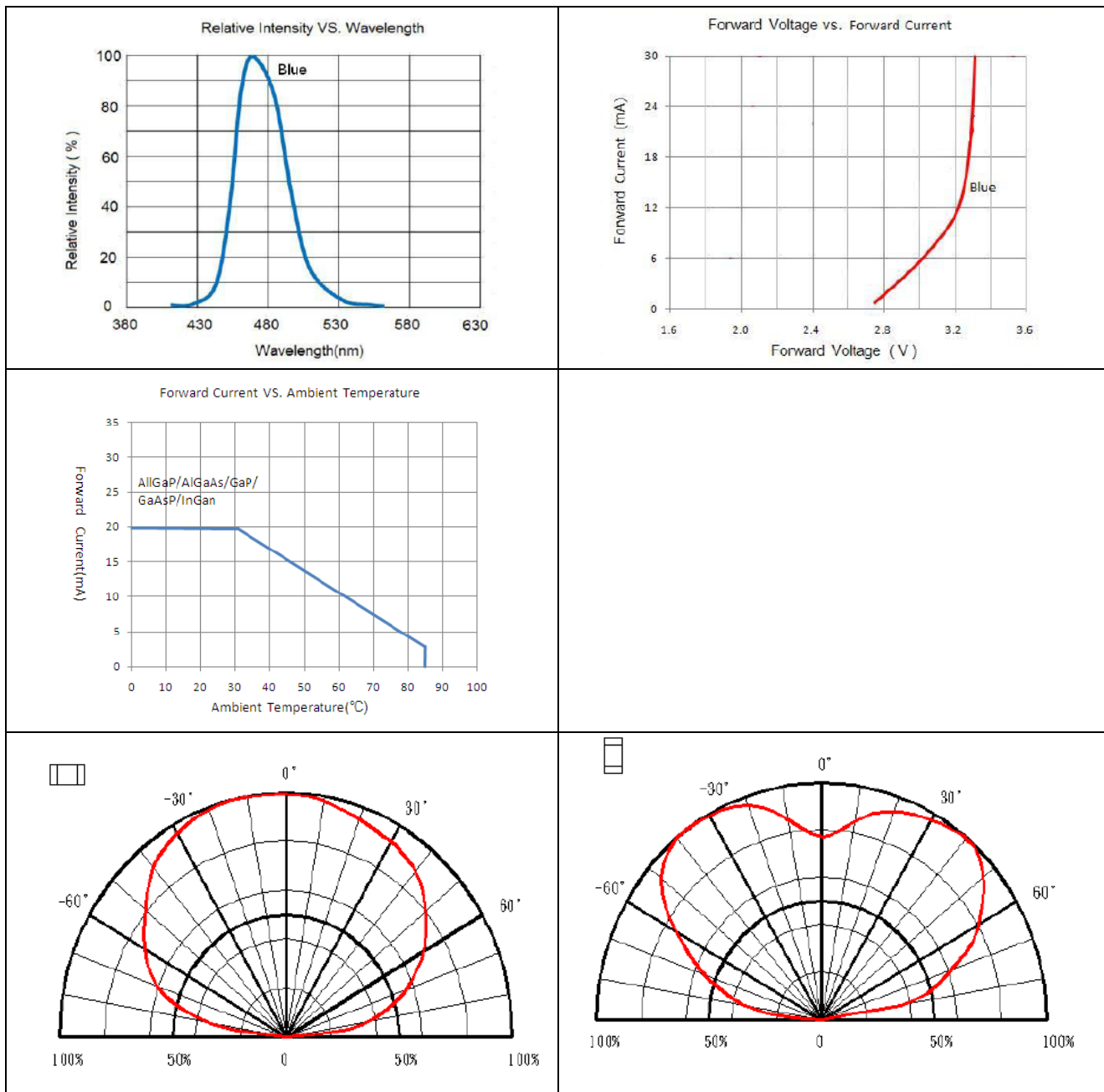
**Package Outline Dimension  
Recommended Soldering Pattern for Reflow Soldering**

Unit: mm Tolerance: +/-0.1

Outline Dimension	Solder Pattern
 <p>LED Die: 0.32 x 0.32 mm Resin: 0.53 mm wide PCB: 1.00 mm high Cathode side: 0.95 mm high Polarity: Indicated by a triangle symbol</p>	 <p>Pad dimensions: 0.50 mm x 0.50 mm Pad spacing: 0.50 mm between pads</p>
<p>Soldering terminals may shift in the x, y direction.</p>	<p>Unit: mm</p>

Official Product	Product: HT-1861TX-05		Data Sheet No.
Tentative Product	*****		HT-1861TX-05
Specifications are subject to change without notice. Data and drawings herein are copyrighted.	June 19, 2013	Version of 1.0	Page 9/16

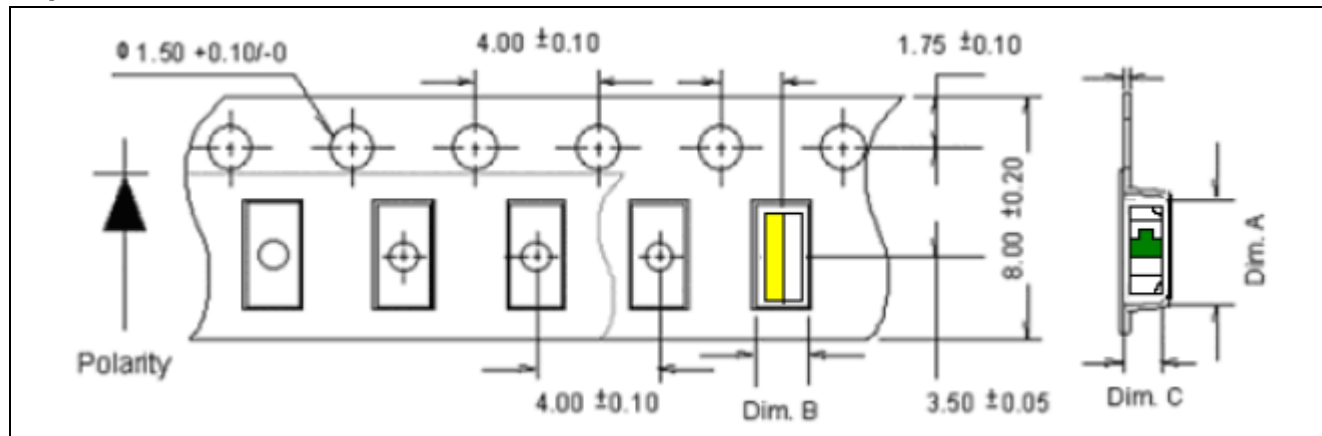
**Characteristic Curves for TW**



Official Product	Product: HT-1861TX-05	Data Sheet No.
Tentative Product	*****	HT-1861TX-05
Specifications are subject to change without notice. Data and drawings herein are copyrighted.	June 19, 2013	Version of 1.0
		Page 10/16

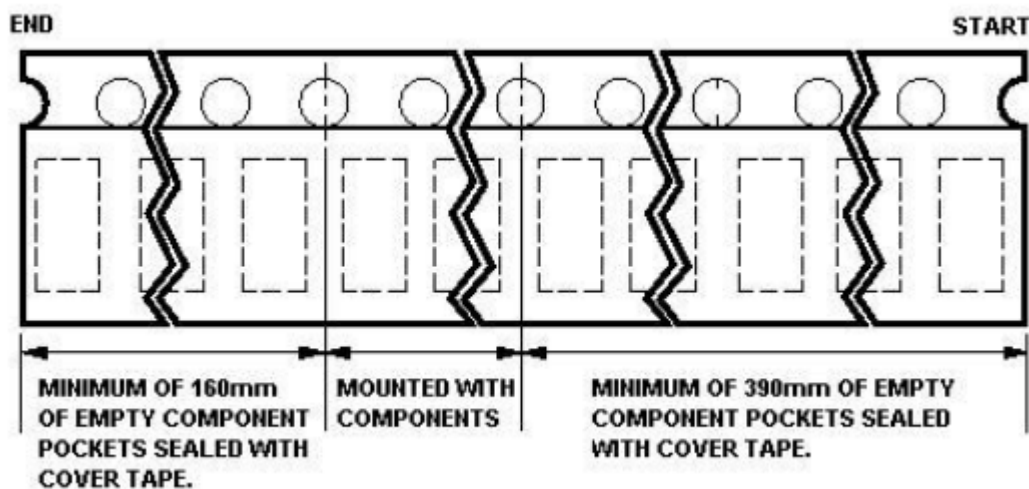
**Packaging**

**Tape Dimension**



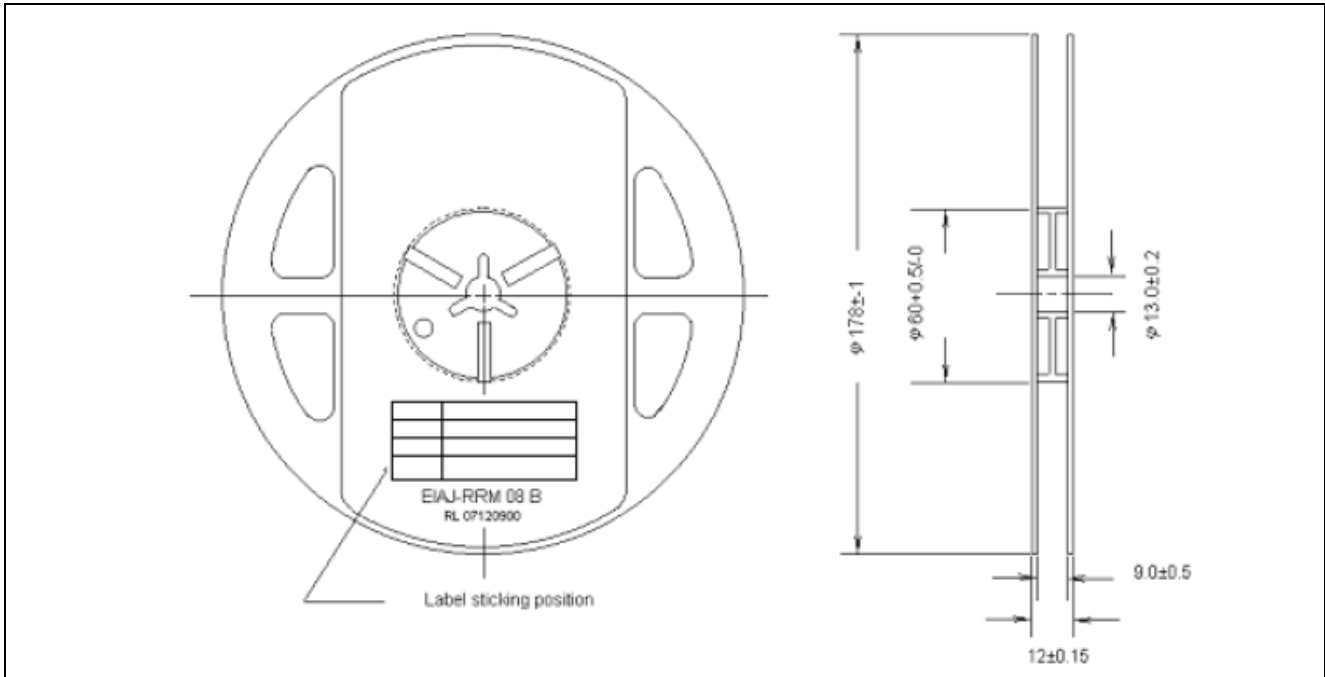
Part No.	Dim. A	Dim. B	Dim. C	Q'ty/Reel
HT-186	1.2+/-0.05	0.65+/-0.05	0.42+/-0.05	4K

**Unit: mm**

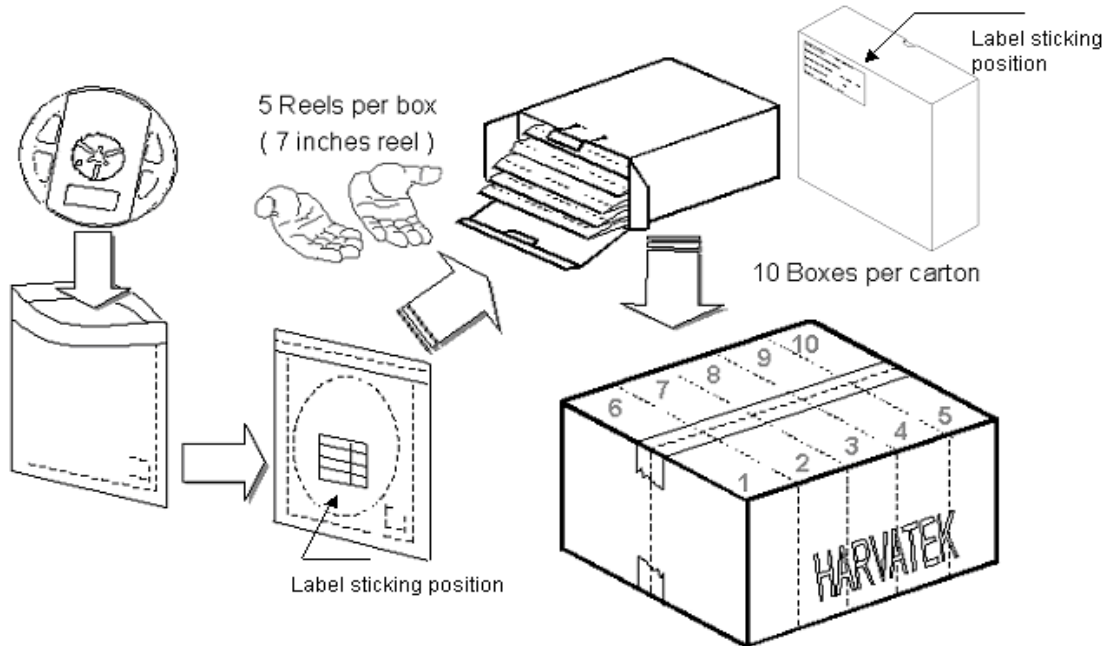


Official Product	Product: HT-1861TX-05	Data Sheet No.
Tentative Product	*****	HT-1861TX-05
Specifications are subject to change without notice. Data and drawings herein are copyrighted.	June 19, 2013	Version of 1.0
		Page 11/16

**Reel Dimension**



**Packing**



5 boxes per carton is available depending on shipment quantity.

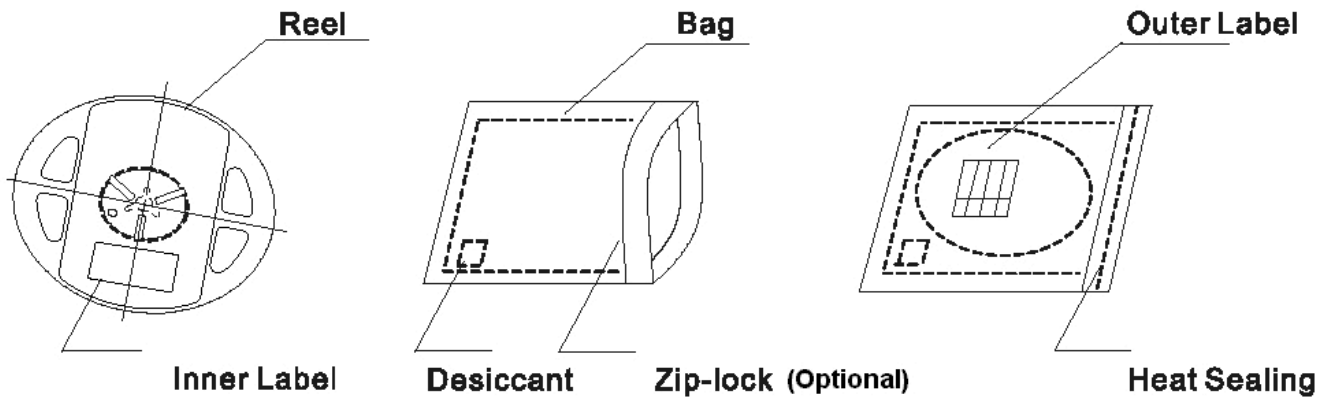
Official Product	Product: HT-1861TX-05	Data Sheet No.
Tentative Product	*****	HT-1861TX-05
Specifications are subject to change without notice. Data and drawings herein are copyrighted.	June 19, 2013	Version of 1.0
		Page 12/16

**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:



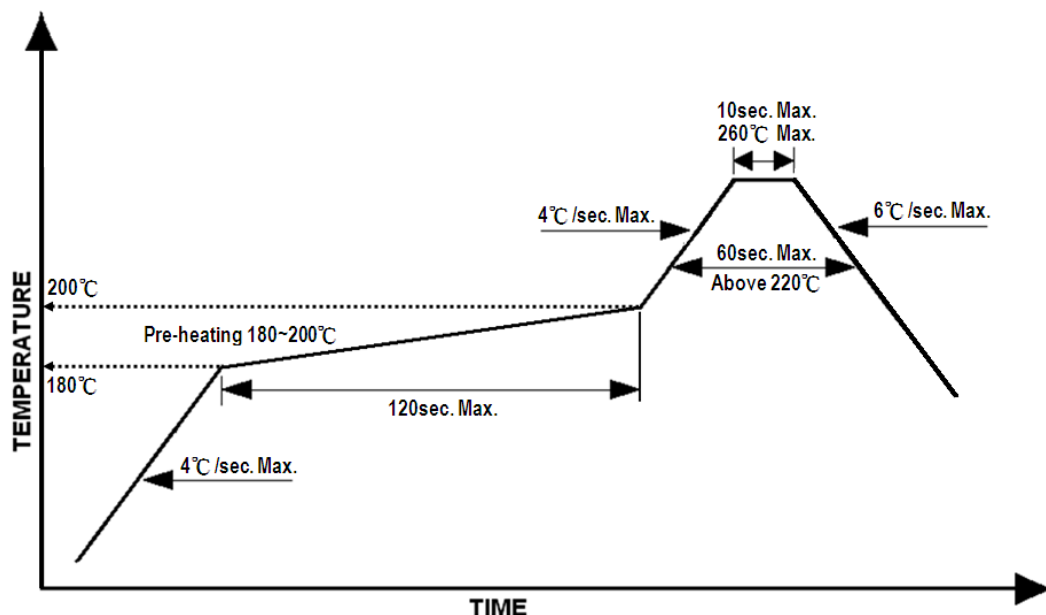
Official Product	Product: HT-1861TX-05	Data Sheet No.
Tentative Product	*****	HT-1861TX-05
Specifications are subject to change without notice. Data and drawings herein are copyrighted.	June 19, 2013	Version of 1.0
		Page 13/16

**Reflow Soldering**

Recommend soldering paste specifications:

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



Official Product	Product: HT-1861TX-05	Data Sheet No.
Tentative Product	*****	HT-1861TX-05
Specifications are subject to change without notice. Data and drawings herein are copyrighted.	June 19, 2013	Version of 1.0
		Page 14/16

**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.
- Electro-static may cause damage to the component. Please ensure that the equipment is properly grounded. Use of an ionizer fan is recommended.

Official Product	Product: HT-1861TX-05		Data Sheet No.
Tentative Product	*****		HT-1861TX-05
Specifications are subject to change without notice. Data and drawings herein are copyrighted.	June 19, 2013	Version of 1.0	Page 15/16

**Revision History**

<b>Changes since last revision</b>	<b>Page</b>	<b>Version No.</b>	<b>Revision Date</b>
Initial release		1.0	06-19-2013

Official Product	Product: HT-1861TX-05		Data Sheet No.
Tentative Product	*****		HT-1861TX-05
Specifications are subject to change without notice. Data and drawings herein are copyrighted.	June 19, 2013	Version of 1.0	Page 16/16