

**Harvatek Surface Mount LEDs Data Sheet  
F10Q1TX--20P000242U1930**

Official Product	HT Part No. F10Q1TX--20P000242U1930		
Tentative Product	*****	*****	
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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 Specification

Item	Specification	Material	Quantity
Luminous Intensity(Iv)	950-1440 mcd @20mA/ T <sub>S</sub> = 25°C ;Tolerance:±10%		
Chromaticity Coordinate	As page 6 & 7 @20mA/ T <sub>S</sub> = 25°C ;Tolerance:±0.005		
Vf	2.8~3.5 V @20mA/ T <sub>S</sub> = 25°C ;Tolerance:±0.05V		
Ir	< 10 μA @ V <sub>R</sub> = 5 V		
Resin	Yellow	Silicone Resin	
Carrier tape	According to EIA 481-1A specs	Conductive black tape	2000pcs per reel
Reel	According to EIA 481-1A specs	Conductive black	
Label	HT standard		
Packing bag	250x230mm	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, CIE and Vf. Each reel has a label identifying its specification; the immediate box consists of a product label as well.

Note :This is shipped test conditions

※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.

### 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 AlGaInP, 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.

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### Label Specifications:



### Harvatek P/N

**F                    10Q                    1                    TX--                    20P-                    0001                    42**

Product	Package	Dice Qty	Color	Current	Series Number	Taping
FL	3.8(L)x1.0(W)x0.6(H) mm	1:Single	TX:White	20mA	X001~XZZZ	1.Taping style 2. Qty

### 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		2020-L		1:A	01~ZZ		000~ZZZ		
		2021-M		2:B					
		2022-P	1:Jan.	3:C					
		2023-Q	2:Feb.	...					
		...	...	26:Z					
		2026-T	A:Oct.	27:7					
		2027-V	B:Nov.	28:8					
		...	C:Dec.	29:9					
		2030-Y		30:3					
		2031-Z		31:4					
...									

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## Specifications Range.

### ■ Luminous Intensity (Iv) Bin:

Color	Bin Code	Spec. Range
TX	Y12	950-1000 mcd
	Y21	1000-1050 mcd
	Y22	1050-1125 mcd
	Z11	1125-1200 mcd
	Z12	1200-1270 mcd
	Z21	1270-1350 mcd
	Z22	1350-1440 mcd

Note: It maintains a tolerance of  $\pm 10\%$  on luminous intensity

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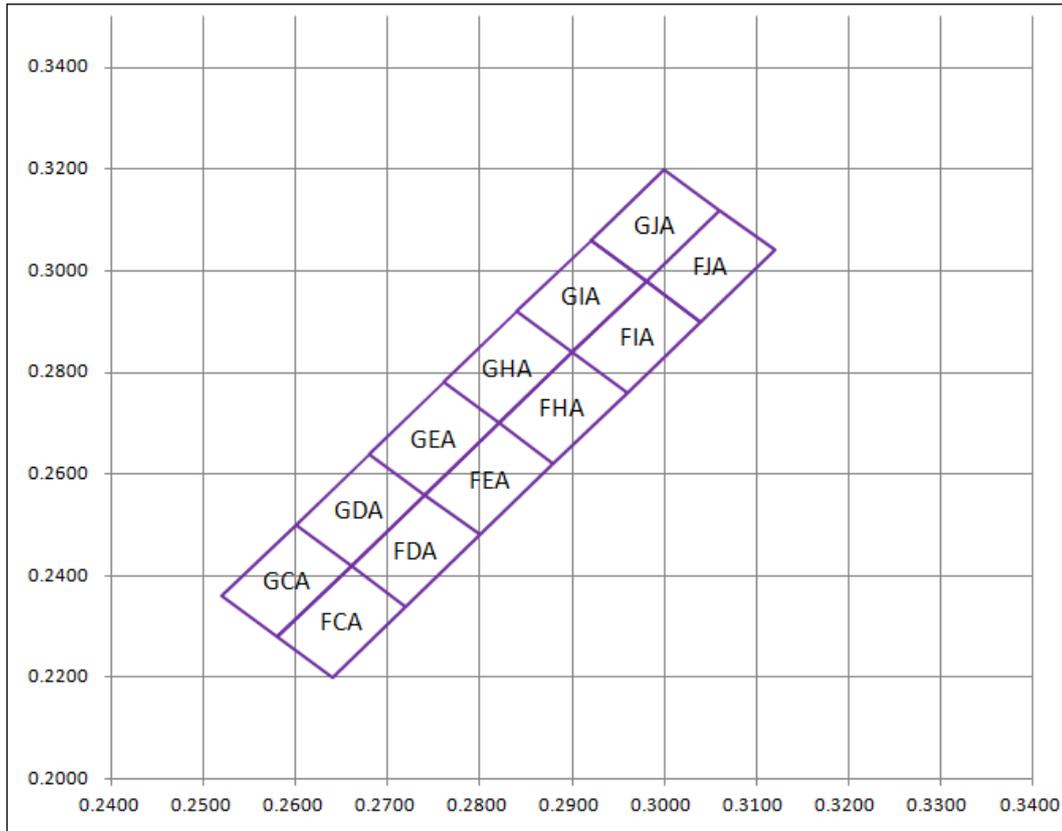
■ Color Bin:

	X	Y		X	Y
GCA	0.2600	0.2500	FCA	0.2660	0.2420
	0.2520	0.2360		0.2580	0.2280
	0.2580	0.2280		0.2640	0.2200
	0.2660	0.2420		0.2720	0.2340
GDA	0.2680	0.2640	FDA	0.2740	0.2560
	0.2600	0.2500		0.2660	0.2420
	0.2660	0.2420		0.2720	0.2340
	0.2740	0.2560		0.2800	0.2480
GEA	0.2760	0.2780	FEA	0.2820	0.2700
	0.2680	0.2640		0.2740	0.2560
	0.2740	0.2560		0.2800	0.2480
	0.2820	0.2700		0.2880	0.2620
GHA	0.2840	0.2920	FHA	0.2900	0.2840
	0.2760	0.2780		0.2820	0.2700
	0.2820	0.2700		0.2880	0.2620
	0.2900	0.2840		0.2960	0.2760
GIA	0.2920	0.3060	FIA	0.2980	0.2980
	0.2840	0.2920		0.2900	0.2840
	0.2900	0.2840		0.2960	0.2760
	0.2980	0.2980		0.3040	0.2900
GJA	0.3000	0.3200	FJA	0.3060	0.3120
	0.2920	0.3060		0.2980	0.2980
	0.2980	0.2980		0.3040	0.2900
	0.3060	0.3120		0.3120	0.3040

Note: It maintains a tolerance of x, y  $\pm 0.005$

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**Chromaticity Coordinate:**



**Forward Voltage (Vf) Bin:**

Color	Bin Code	Spec. Range
TX	H1	2.8-2.9 V
	H2	2.9-3.0 V
	H3	3.0-3.1 V
	H4	3.1-3.2 V
	J1	3.2-3.3 V
	J2	3.3-3.4 V
	J3	3.4-3.5 V

Note: It maintains a tolerance of  $\pm 0.05V$  on forward voltage measurements

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## Product Features

### Electro-Optical Characteristics

(T<sub>Soldering</sub> ,25 °C)

Series	Emitting Color	Material	V <sub>F</sub> (V)		Chromaticity Coordinate x,y	I <sub>v</sub> (mcd) Typical	Viewing Angle $2\theta \frac{1}{2}$
			typ	max			
F10Q1TX	White	InGaN	3.2	3.5	x=0.2830,y=0.2700	1020	120

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

(Unit:mm Tolerance: +/-0.1)

Outline Dim.	Suggest Soldering Pattern

Soldering terminals may shift in the x, y direction.

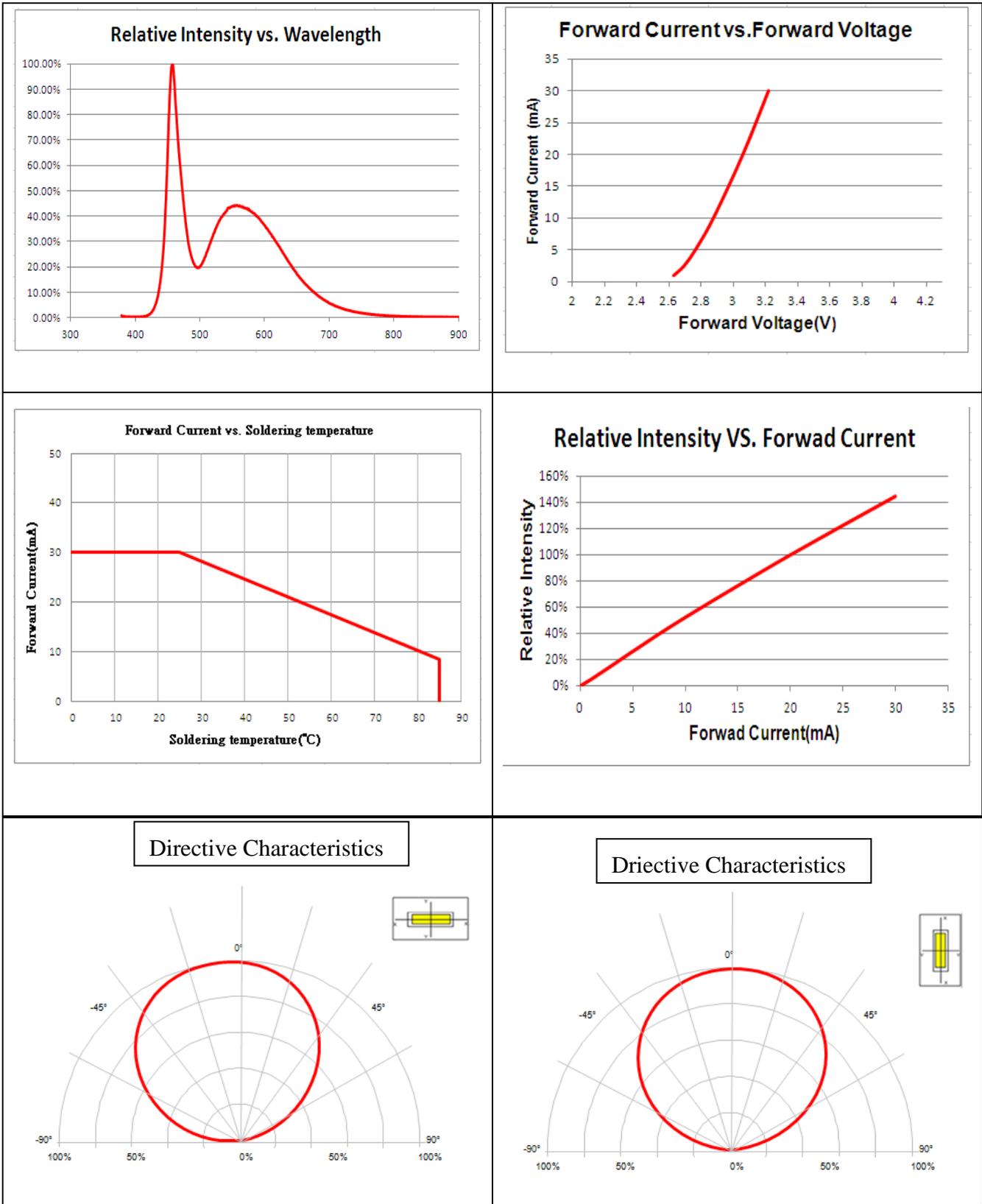
### Absolute Maximum Ratings

Series	P <sub>D</sub> (mW)	I <sub>F</sub> (mA)	I <sub>FP</sub> (mA)*	T <sub>OP</sub> (°C)	T <sub>ST</sub> (°C)
Color	Power Dissipation	Forward Current	Pulse Forward Current	Operating Temperature	Storage Temperature
TX	105	30	35	-40~+85	-40~+100

\* Condition for I<sub>FP</sub> is pulse of 1/10 duty and 0.1msec width

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## Characteristics of F10Q1TX



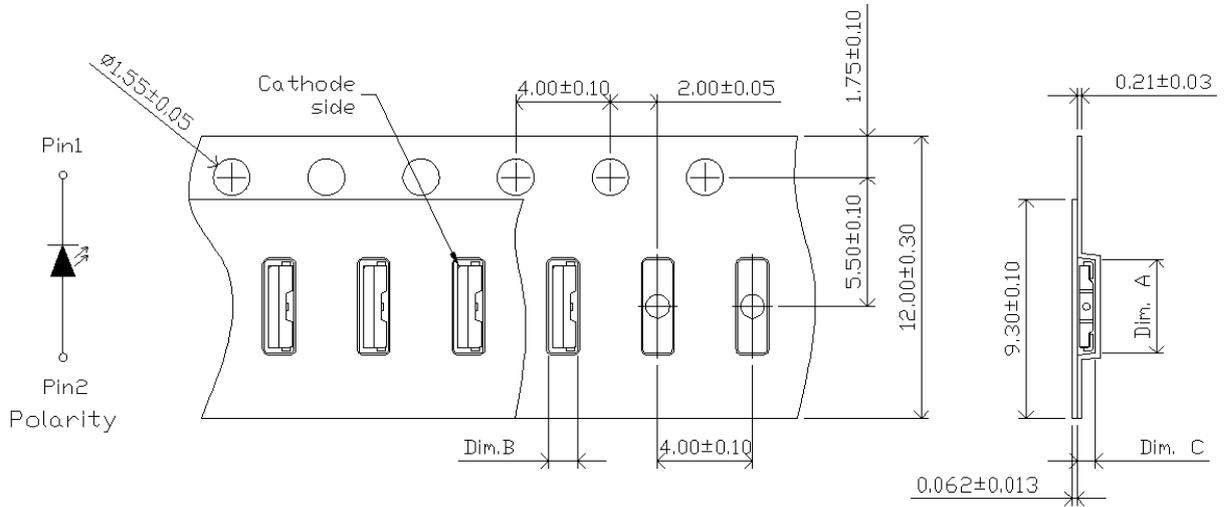
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## Precaution for Use

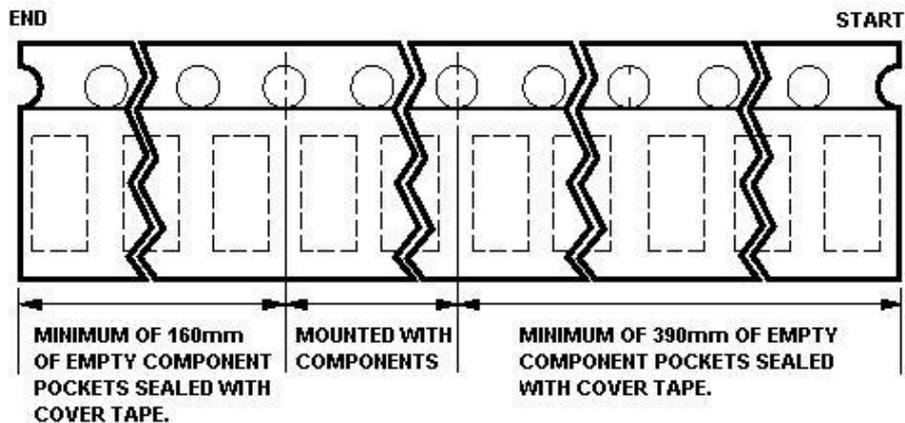
1. The chips should not be used directly in any type of fluid such as water, oil, organic solvent, etc.
2. When the LEDs are illuminating, the maximum ambient temperature should be first considered before operation.
3. LEDs must be stored in a clean environment. A sealed container with a nitrogen atmosphere is necessary if the storage period is over 3 months after shipping.
4. The LEDs must be used within 4 weeks 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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## Packaging Tape Dimension

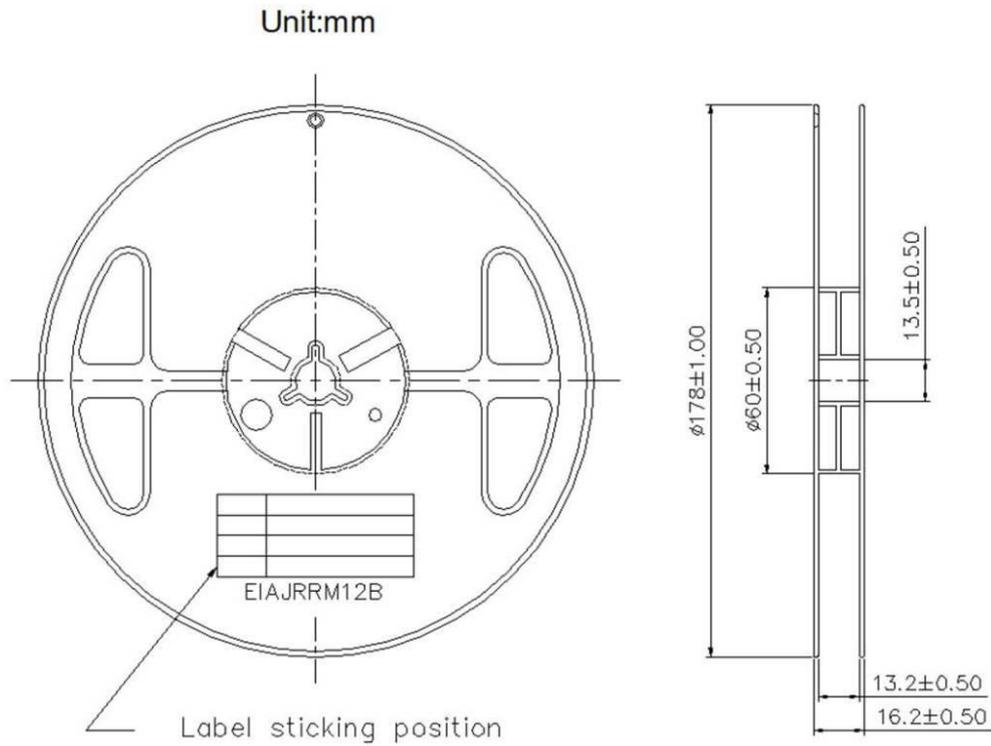


Dim. A	Dim. B	Dim. C	Qty/Reel
4.0±0.10	1.35±0.10	0.78±0.10	2K

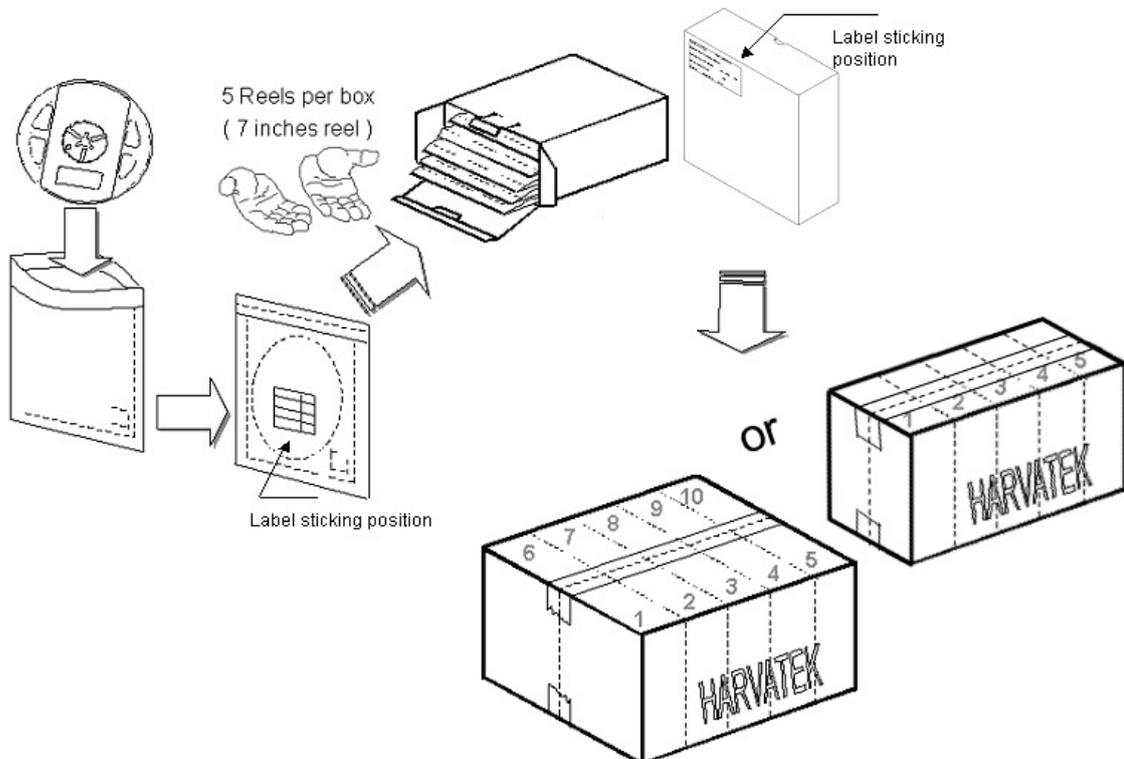


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## Reel Dimension



## Packing



5 or 10 boxes per carton is available depending on shipment quantity.

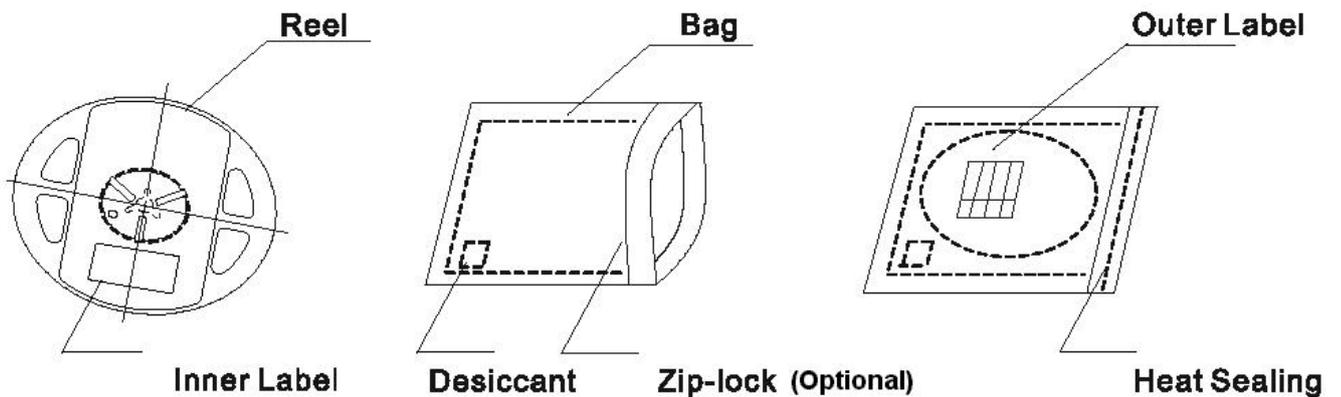
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**Dry Pack**

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.

A umidity indicator will be included in the moisture protected anti-static bag prior to shipment.

The packaging sequence is as follows:



**Baking**

It's recommended to bake before soldering once the pack is unsealed open & re-sealed after 4 weeks. The conditions are as followings:

1. 60 ±3°Cx(12~24hrs) and < 5% RH, taped reel type
2. 100±3°Cx(45min~1hr), bulk type
3. 130±3°Cx(15~30min), bulk type

**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 AlGaInP 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.

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**Handling of Silicone Resin LEDs**

Handling Indications

During processing, mechanical stress on the surface should be minimized as much as possible. Sharp objects of all types should not be used to pierce the sealing compound.



Figure 1

In general, LEDs should only be handled from the side. By the way, this also applies to LEDs without a silicone sealant, since the surface can also become scratched.

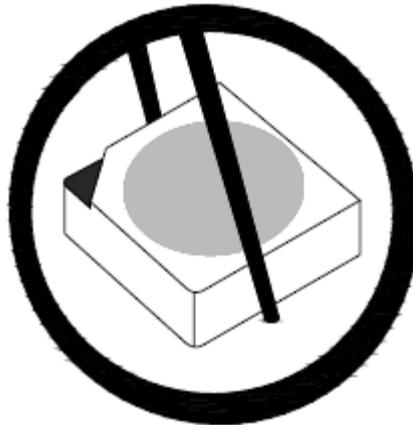


Figure 2

When populating boards in SMT production, there are basically no restrictions regarding the form of the pick and place nozzle, except that mechanical pressure on the surface of the resin must be prevented.

This is assured by choosing a pick and place nozzle which is larger than the LED's reflector area.

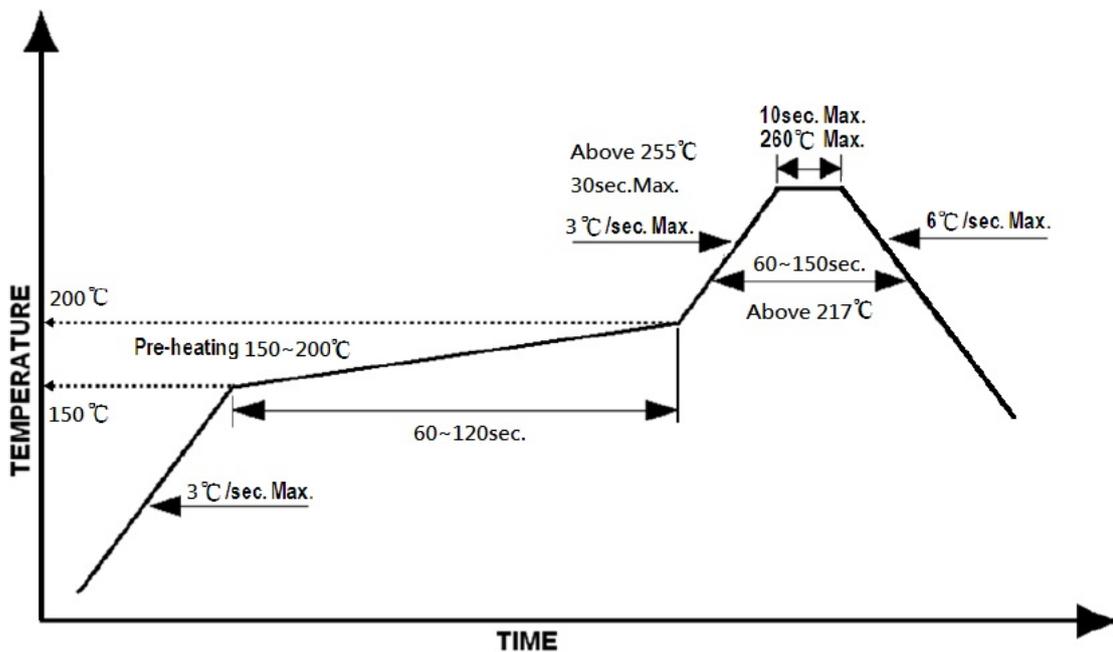
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**Reflow Soldering**

Recommend soldering paste specifications:

1. Operating temp.: Above 217 °C ,60~150sec
2. Peak temp.:260 °CMax.,10sec Max.
3. Reflow soldering should not be done more than two times.
4. Never take next process until the component is cooled down to room temperature after reflow.
5. The recommended reflow soldering profile (measuring on the surface of the LED terminal) is 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

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