

Harvatek Surface Mount CHIP LEDs Data Sheet
V1181TW--05P000132U1930

Official Product	HT Part No. V1181TW--05P000132E0099			
Tentative Product	*****	*****		
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DISCLAIMER

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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.

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Product Specifications

Item	Specification	Material	Quantity
Luminous Intensity(Iv)	360.0-715.0 mcd @5 mA/ T _S = 25°C ;Tolerance: ±10%		
Chromaticity Coordinate	As page 6 & 7 @5 mA/ T _S = 25°C ;Tolerance: ± 0.007		
Vf	2.5-3.5 V @5 mA/ T _S = 25°C ;Tolerance: ± 0.05V		
Vr	0.5-1.5V @ 20mA		
HBM	8KV		
Resin	Yellow	Epoxy	
Carrier tape	EIA 481-1A specs	Conductive black tape	
Reel	EIA 481-1A specs	Conductive black	
Label	HT standard	Paper	
Packing bag	250x230mm	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, 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

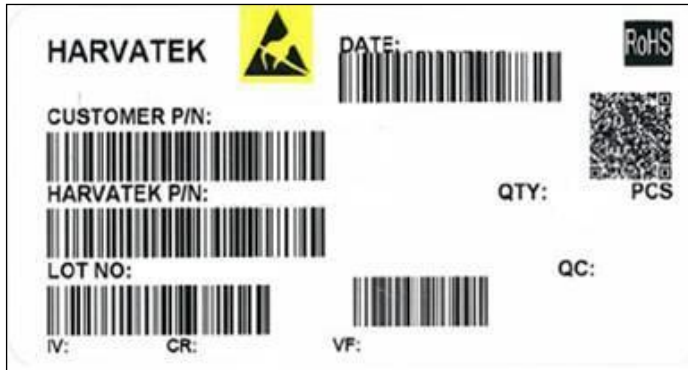


The symbol to the left denotes that ESD precaution is needed. ESD protection for GaP and AlGaAs based chips is necessary even though they are relatively safe in the presence of low static-electric discharge. Parts built with AlGaInP, GaN, or/and InGaN based chips are **STATIC SENSITIVE devices**. ESD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

V 118 1 TW-- 05P- 0001 32

Product	Package	Dice Qty	Color	Current	Series Number	Taping
L/F+Zener	3.2(L)x1.1(W)x0.8(H) mm	1:Single	TW:White	5mA	X001~XZZZ	1. Taping style 2. Qty

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

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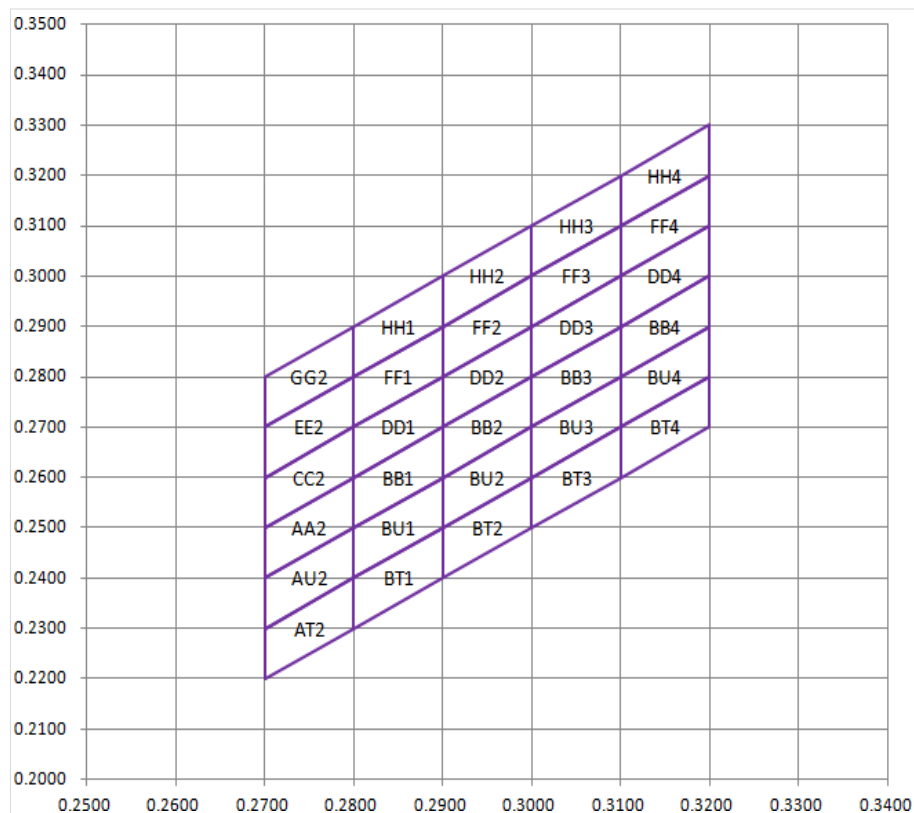
Specifications Range

■ Luminous Intensity (Iv) Bin:

Color	Bin Code	Spec. Range
TW	U	360.0-450.0 mcd
	V	450.0-560.0 mcd
	W	560.0-715.0 mcd

Note: It maintains a tolerance of $\pm 10\%$ on Luminous Intensity (Iv)

■ Chromaticity Coordinate



■ Forward Voltage (Vf) Bin:

Color	Bin Code	Spec. Range	Bin Code	Spec. Range
TW	G7	2.5-2.7 V	H8	3.1-3.3 V
	G8	2.7-2.9 V	J7	3.3-3.5 V
	H7	2.9-3.1 V		

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

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■ Color Bin:

Color	AT2		BT1		BT2		BT3		BT4	
TW	0.2700	0.2200	0.2800	0.2300	0.2900	0.2400	0.3000	0.2500	0.3100	0.2600
	0.2700	0.2300	0.2800	0.2400	0.2900	0.2500	0.3000	0.2600	0.3100	0.2700
	0.2800	0.2400	0.2900	0.2500	0.3000	0.2600	0.3100	0.2700	0.3200	0.2800
	0.2800	0.2300	0.2900	0.2400	0.3000	0.2500	0.3100	0.2600	0.3200	0.2700
	AU2		BU1		BU2		BU3		BU4	
	0.2700	0.2300	0.2800	0.2400	0.2900	0.2500	0.3000	0.2600	0.3100	0.2700
	0.2700	0.2400	0.2800	0.2500	0.2900	0.2600	0.3000	0.2700	0.3100	0.2800
	0.2800	0.2500	0.2900	0.2600	0.3000	0.2700	0.3100	0.2800	0.3200	0.2900
	0.2800	0.2400	0.2900	0.2500	0.3000	0.2600	0.3100	0.2700	0.3200	0.2800
	AA2		BB1		BB2		BB3		BB4	
	0.2700	0.2400	0.2800	0.2500	0.2900	0.2600	0.3000	0.2700	0.3100	0.2800
	0.2700	0.2500	0.2800	0.2600	0.2900	0.2700	0.3000	0.2800	0.3100	0.2900
	0.2800	0.2600	0.2900	0.2700	0.3000	0.2800	0.3100	0.2900	0.3200	0.3000
	0.2800	0.2500	0.2900	0.2600	0.3000	0.2700	0.3100	0.2800	0.3200	0.2900
	CC2		DD1		DD2		DD3		DD4	
	0.2700	0.2500	0.2800	0.2600	0.2900	0.2700	0.3000	0.2800	0.3100	0.2900
	0.2700	0.2600	0.2800	0.2700	0.2900	0.2800	0.3000	0.2900	0.3100	0.3000
	0.2800	0.2700	0.2900	0.2800	0.3000	0.2900	0.3100	0.3000	0.3200	0.3100
	0.2800	0.2600	0.2900	0.2700	0.3000	0.2800	0.3100	0.2900	0.3200	0.3000
	EE2		FF1		FF2		FF3		FF4	
	0.2700	0.2600	0.2800	0.2700	0.2900	0.2800	0.3000	0.2900	0.3100	0.3000
	0.2700	0.2700	0.2800	0.2800	0.2900	0.2900	0.3000	0.3000	0.3100	0.3100
	0.2800	0.2800	0.2900	0.2900	0.3000	0.3000	0.3100	0.3100	0.3200	0.3200
	0.2800	0.2700	0.2900	0.2800	0.3000	0.2900	0.3100	0.3000	0.3200	0.3100
	GG2		HH1		HH2		HH3		HH4	
	0.2700	0.2700	0.2800	0.2800	0.2900	0.2900	0.3000	0.3000	0.3100	0.3100
	0.2700	0.2800	0.2800	0.2900	0.2900	0.3000	0.3000	0.3100	0.3100	0.3200
	0.2800	0.2900	0.2900	0.3000	0.3000	0.3100	0.3100	0.3200	0.3200	0.3300
	0.2800	0.2800	0.2900	0.2900	0.3000	0.3000	0.3100	0.3100	0.3200	0.3200

Note: It maintains a tolerance of x,y ± 0.007

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Product Features

Electro-Optical Characteristics

(T_{Soldering}, 25°C)

Series	Emitting Color	Material	V _F (V)		Chromaticity Coordinate x,y	I _V (mcd) Typical	Viewing Angle 2θ _{1/2}
			typ	max			
V1181TW--05	TW	InGaN	2.8	3.5	x=0.2950,y=0.2750	480	120

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.	

Absolute Maximum Ratings

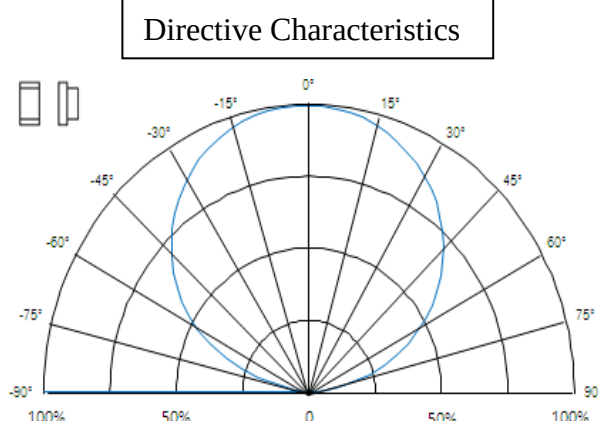
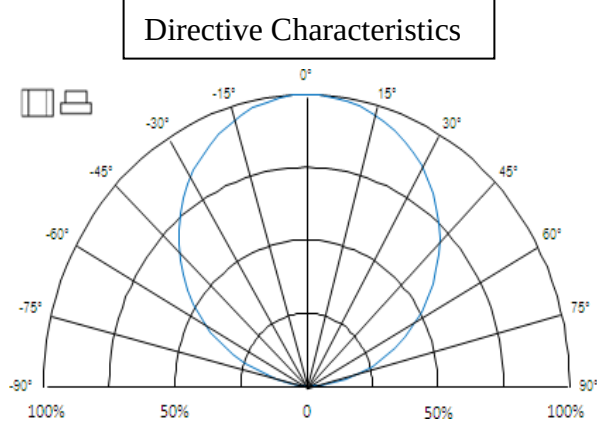
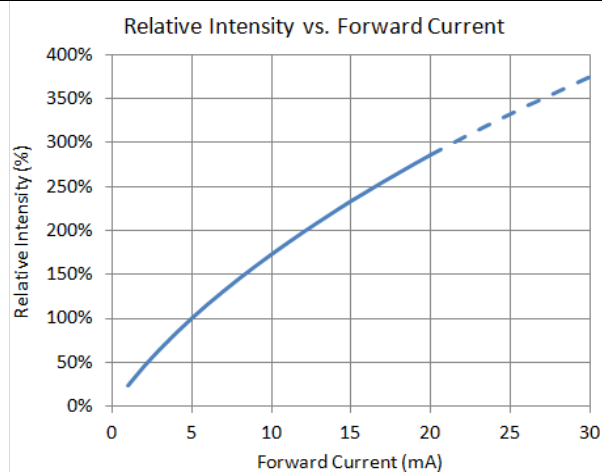
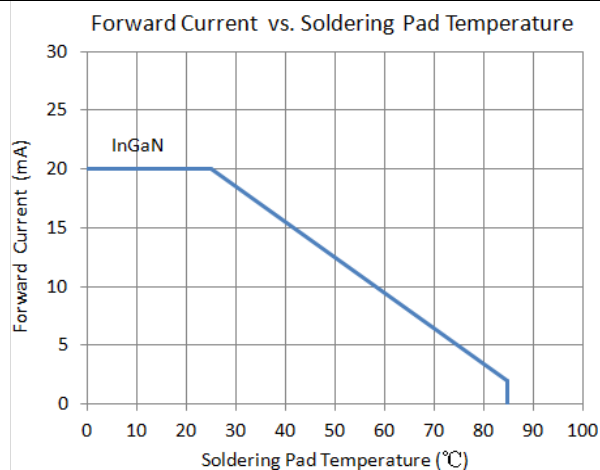
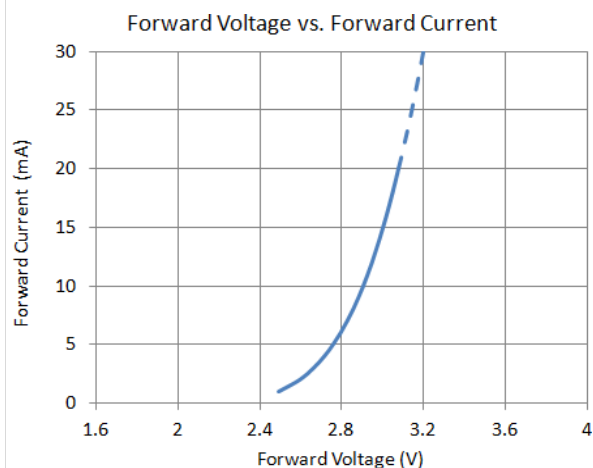
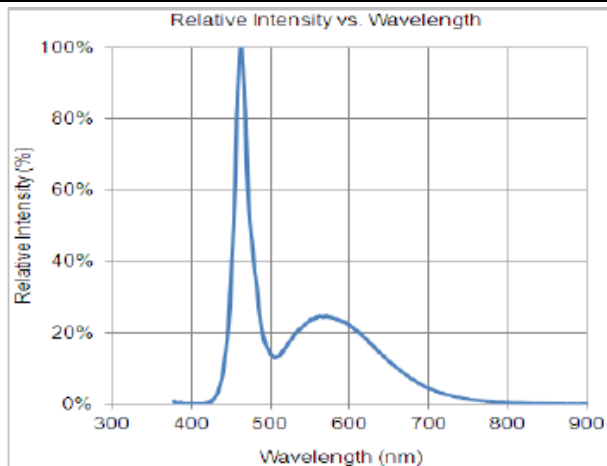
(T_{Soldering}, 25°C)

Series	P _D (mW)	I _F (mA)	I _{FP} (mA)*	T _{OP} (°C)	T _{ST} (°C)
Color	Power Dissipation	Forward Current	Pulse Forward Current	Operating Temperature	Storage Temperature
TW	70	20	80	-40~+85	-40~+100

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

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Characteristics of V1181TW



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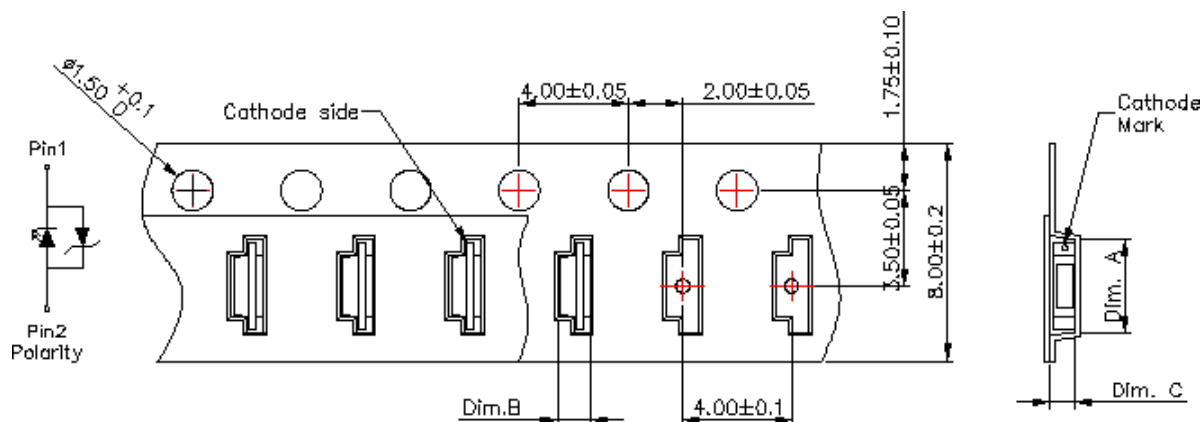
Precaution for Use

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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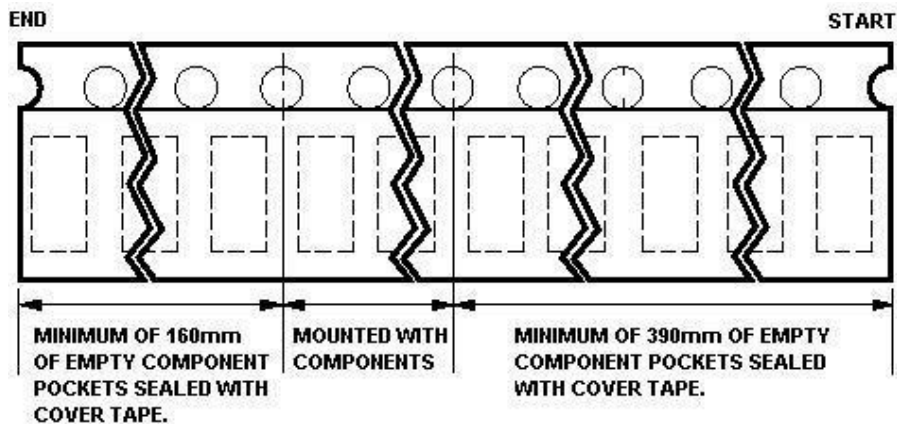
Packaging

Tape Dimension



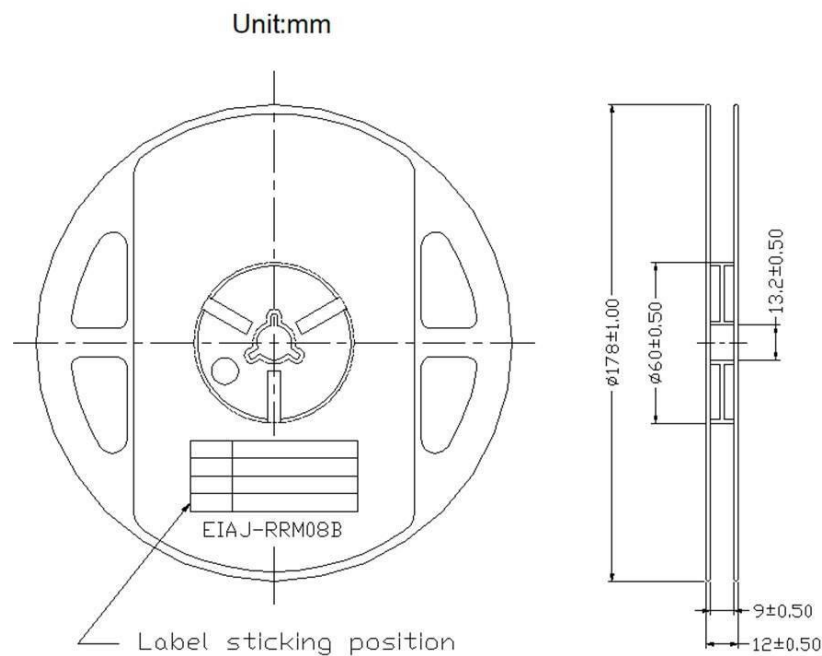
Dim. A	Dim. B	Dim. C	Qty/Reel
3.40±0.10	1.20±0.05	0.95±0.10	2K

Unit: mm

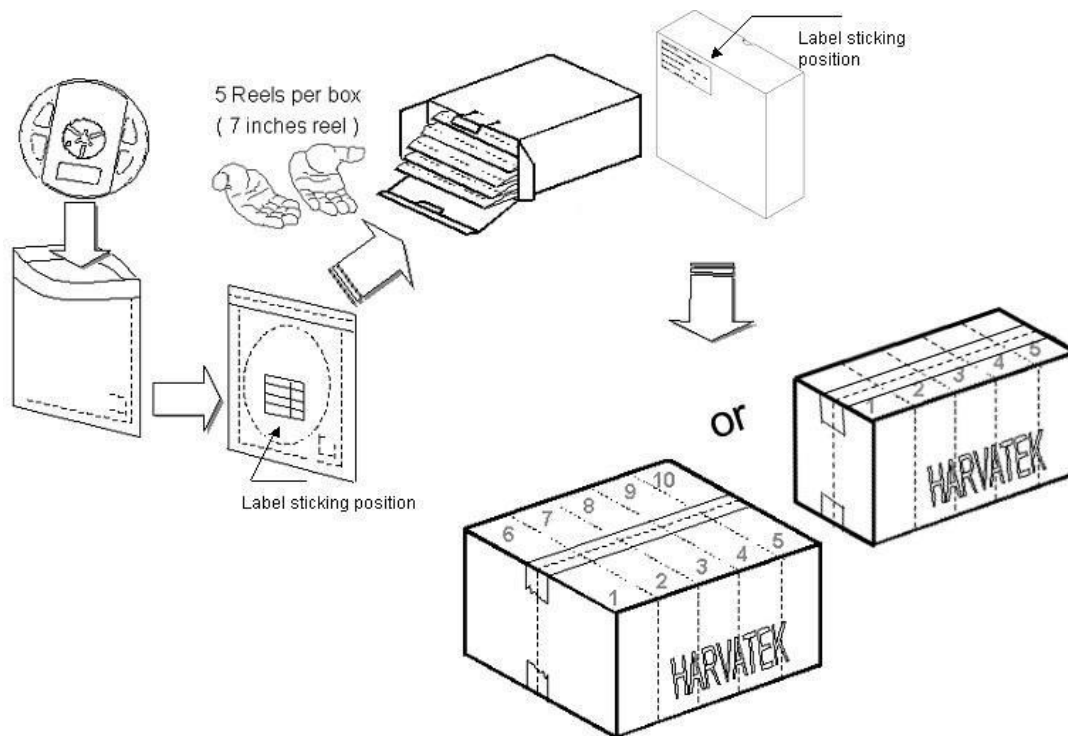


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Reel Dimension



Packing



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

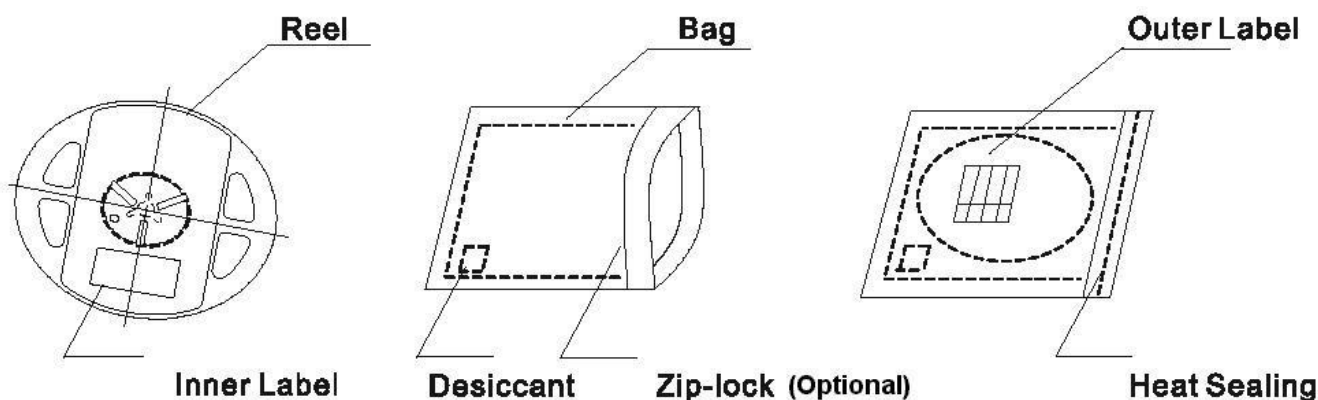
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Dry Pack

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

The packaging sequence is as follows:



Baking

Baking before soldering is recommended when the package has been unsealed for 4 weeks.

The conditions are as followings:

1. $60\pm3^{\circ}\text{C} \times (12\sim 24\text{hrs})$ and $<5\%\text{RH}$, taped reel type.
2. $100\pm3^{\circ}\text{C} \times (45\text{min}\sim 1\text{hr})$, bulk type.
3. $130\pm3^{\circ}\text{C} \times (15\text{min}\sim 30\text{min})$, 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.

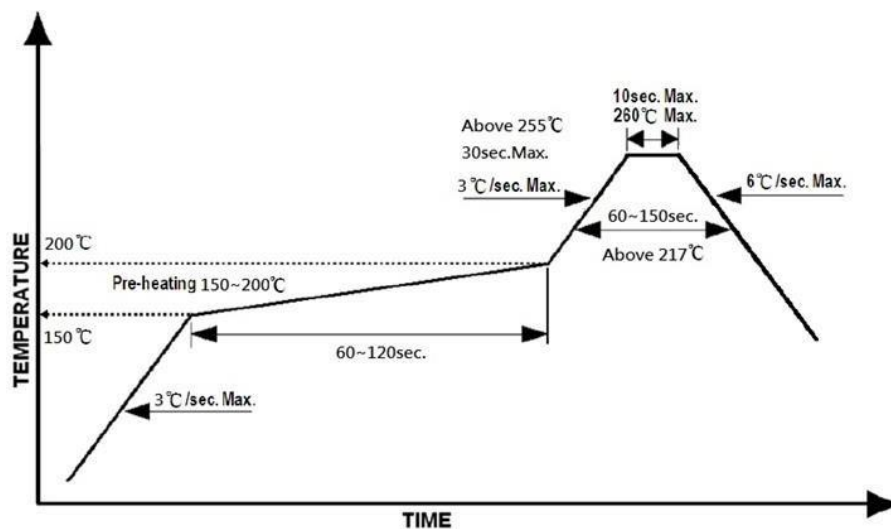
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Reflow Soldering

Recommend soldering paste specifications:

1. Operating temp.: Above 217°C ,60~150 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



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

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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	Official Version	03/20/2020	-
1.1	Renew Form	09/26/2022	-
1.2	Add Customer & Renew Form	01/11/2023	8,11

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