Harvatek Surface Mount CSP LEDs Data Sheet
S6321USD-05CA014313U1930

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

Item	Specification	Material	Quantity
Luminous Intensity(Iv)	55-125 mcd @5 mA/ T_s= 25℃;Tolerance: ±10%		
Chromaticity Coordinate	618-628 nm @5 mA/ T_S= 25℃;Tolerance: ±0.5nm		
Vf	1.7-2.1 V @5 mA/ T_S= 25℃;Tolerance:±0.05V		
Ir	$< 0.5\ \mu A$ @ $V_R = 12$ V		
Resin	Diffused	Silicon	
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

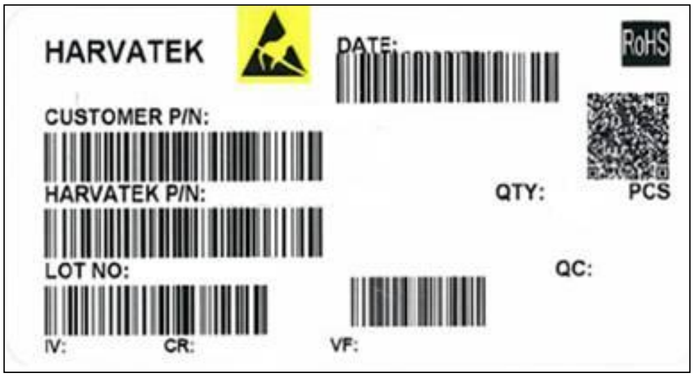
※Remarks: This product should be operated in forward bias. If a reverse voltage is continuously applied to the product, such operation can cause migration resulting in LED damage.

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.

Label Specifications


HARVATEK

DATE:

RoHS

CUSTOMER P/N:

HARVATEK P/N:

QTY: PCS

LOT NO:

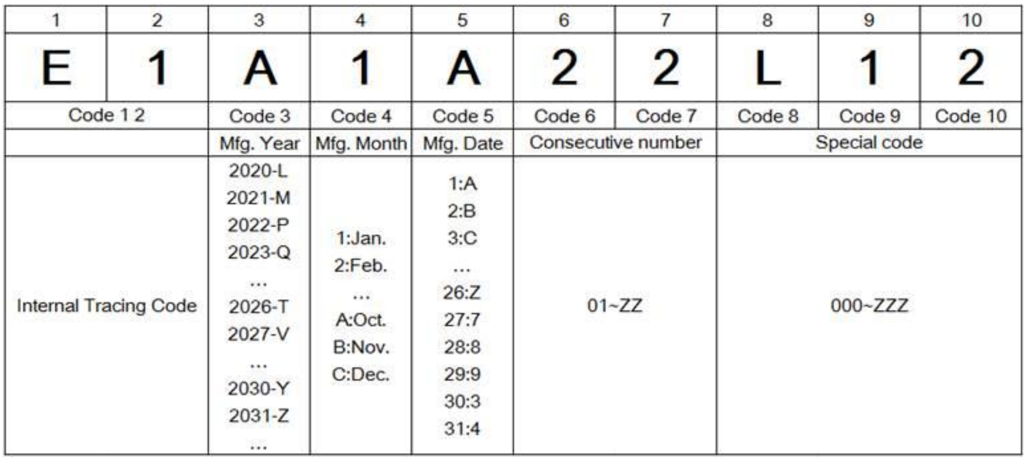
QC:

IV: CR: VF:

■Harvatek P/N:

S	632	1	USD-	05	C	A	0143	13
Product	**Package**	**Dice Q'ty**	**Color**	**Current**	**Glue color**	**Product type**	**Series Number**	**Taping**
CSP	**0.6(L)x0.3(W)x0.2(H) mm**	**1:Single**	**USD**	**5 mA**	**Transparent**	**Package type**	**X001~XZZZ**	**1.Taping style** **2. Q'ty**

■ 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 2021-M 2022-P 2023-Q ... 2026-T 2027-V ... 2030-Y 2031-Z ...	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		

Specifications Range

■Luminous Intensity (Iv) Bin:

Color	Bin Code	Spec. Range
USD	**RE3**	**55-90 mcd**
	RE4	**90-125 mcd**

Note: It maintains a tolerance of ±10% on I Luminous Intensity.

■Dominant Wavelength (Wd) Bin:

Color	Bin Code	Spec. Range
USD	**RH1**	**618-623 nm**
	RH2	**623-628 nm**

Note: It maintains a tolerance of ± 0.5nm on Wavelength Bin

■Forward Voltage (Vf) Bin:

Color	Bin Code	Spec. Range
USD	**E2**	**1.7-1.8 V**
	E3	**1.8-1.9 V**
	E4	**1.9-2.0 V**
	F1	**2.0-2.1 V**

Note: It maintains a tolerance of ±0.05V on forward voltage measurements

Product Features

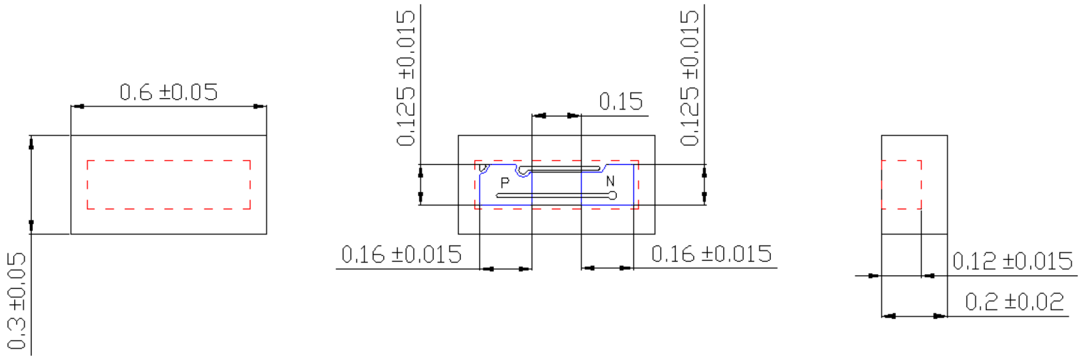
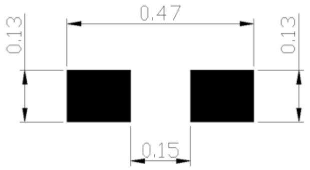
Electro-Optical Characteristics

($T_{Soldering}$, 25℃)

Series	Emitting Color	Material	V_F(V)		Wavelength λ(nm)			I_V(mcd)	Viewing Angle $2\theta\frac{1}{2}$
			min	max	λ_D	λ_P	Δλ	Typical	
S6321	USD-	AlGaInP	1.7	2.1	623	633	20	90	X：130 Y：130

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.	

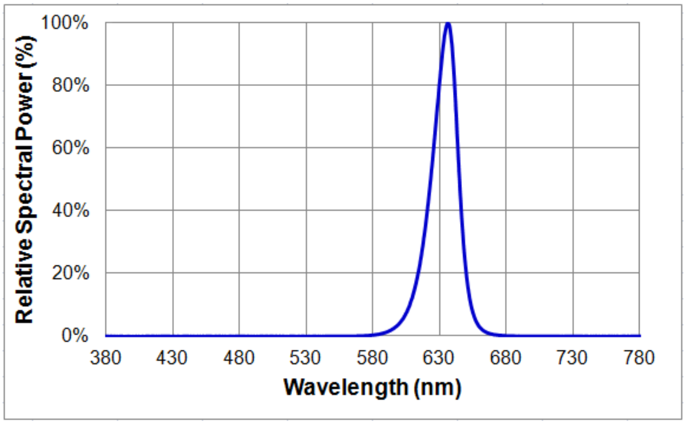
Absolute Maximum Ratings

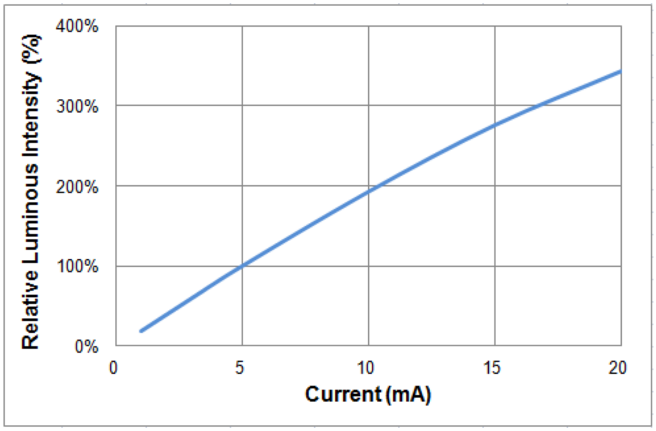
($T_{Soldering}$,25℃)

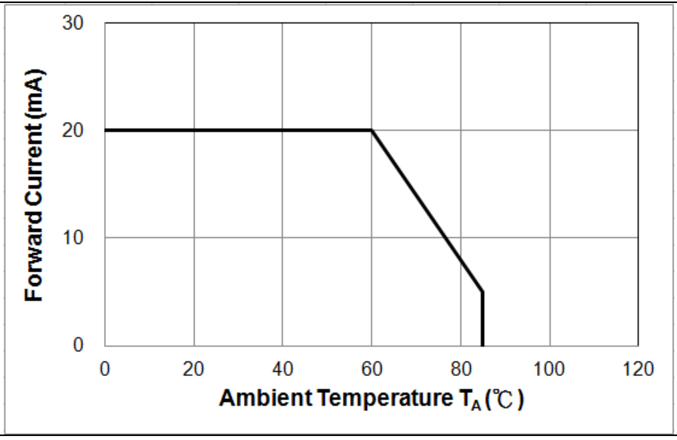
Series	P_D (mW)	I_F (mA)	I_{FP} (mA)*	T_{OP} (℃)	T_{ST} (℃)
Color	Power Dissipation	Forward Current	Pulse Forward Current	Operating Temperature	Storage Temperature
USD	43	20	80	-30~+80	-30~+85

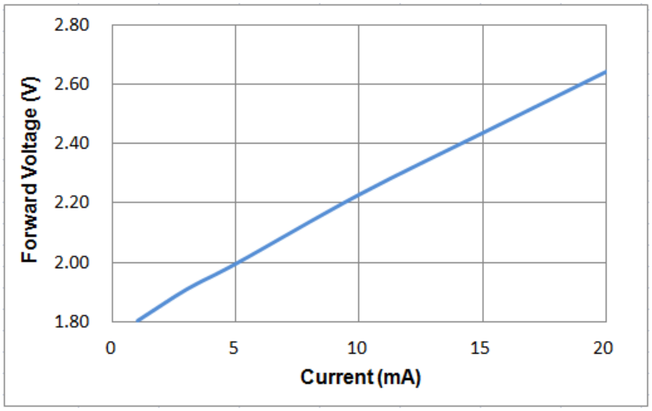
* Condition for I_{FP} is pulse of 1/10 duty and 0.1msec width

Characteristics of S6321USD-

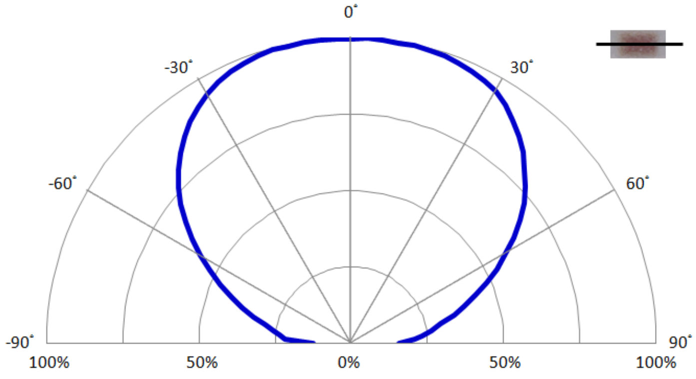




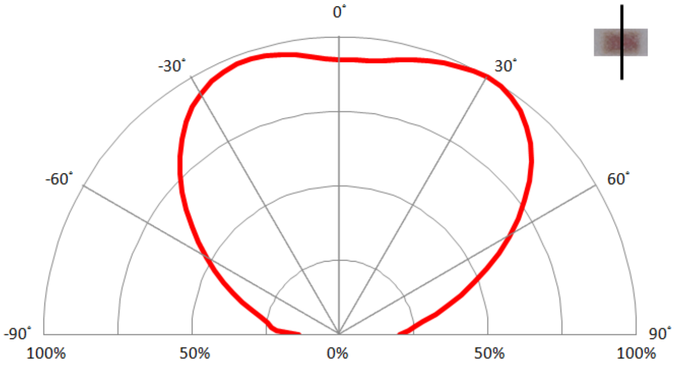




Directive Characteristics



Directive Characteristics

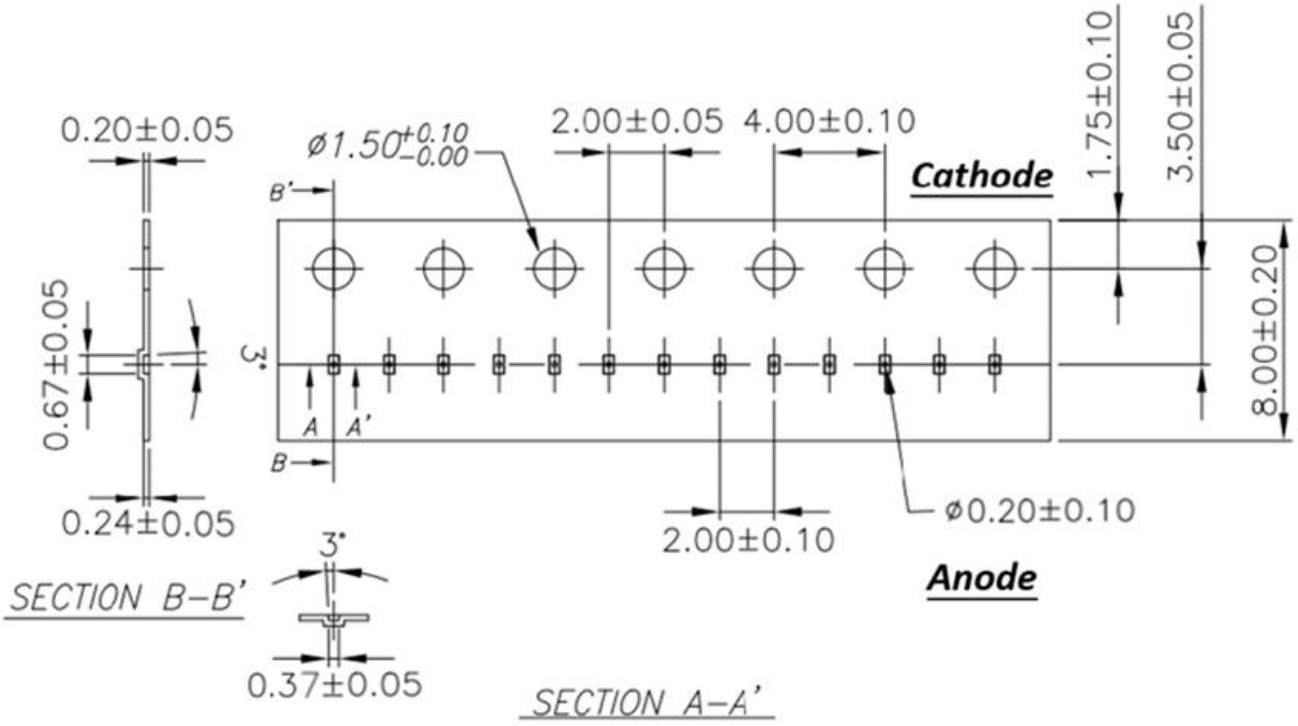


Precaution for Use

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 and a closed container with a nitrogen atmosphere is recommended. The storage period is one year after delivery.
4. The LEDs must be used within 168 hrs 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.
7. During processing, mechanical stress on the surface should be minimized as much as possible. Harvatek objects of all types should not be used to pierce the sealing compound.
8. Do not use tweezers to pick up or handle CSP LED. A vacuum pick up should only be used.
9. Silicone differs from materials conventionally used for the manufacturing of LEDs. These conditions must be considered during the handling of such devices. Compared to tandard encapsulants, silicone is generally softer, and the surface is more likely to attract dust. As mentioned previously, the increased sensitivity to dust requires special care during processing. In cases where a minimal level of dirt and dust particles cannot be guaranteed, a suitable cleaning solution must be applied to the surface after the soldering of wire.
10. Harvatek suggests using isopropyl alcohol for cleaning. In case other solvents are used, it must be assured that these solvents do not dissolve the package or resin. Ultrasonic cleaning is not recommended. Ultrasonic cleaning may cause damage to the LED.
11. Please do not mold this product into another resin (epoxy, urethane, etc) and do nothandle this product with acid or sulfur material in sealed space.
12. Avoid leaving fingerprints on silicone resin parts.

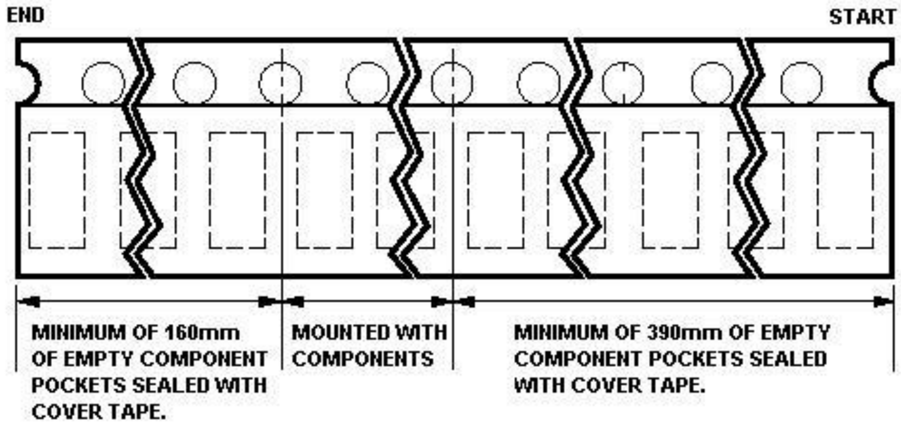
Packaging

Tape Dimension

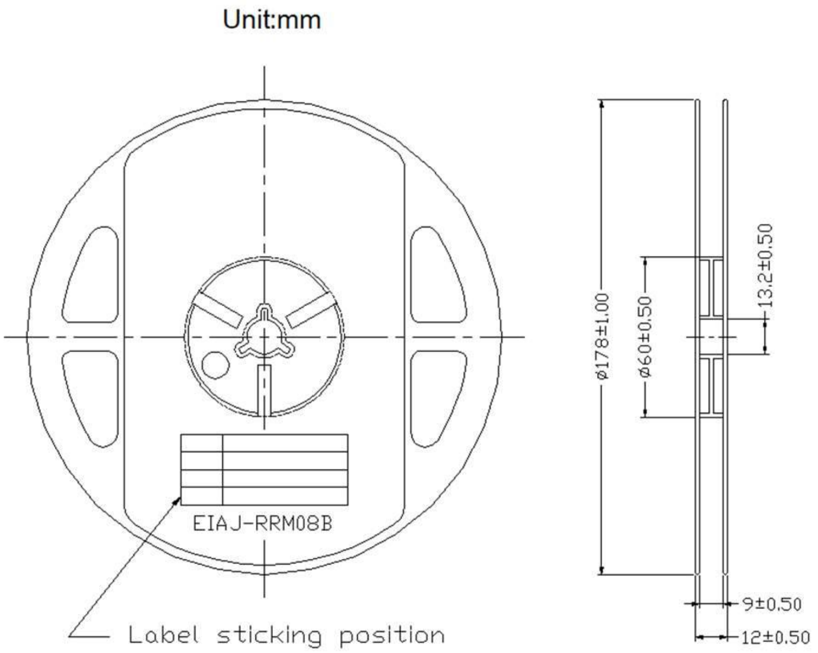


Notes:

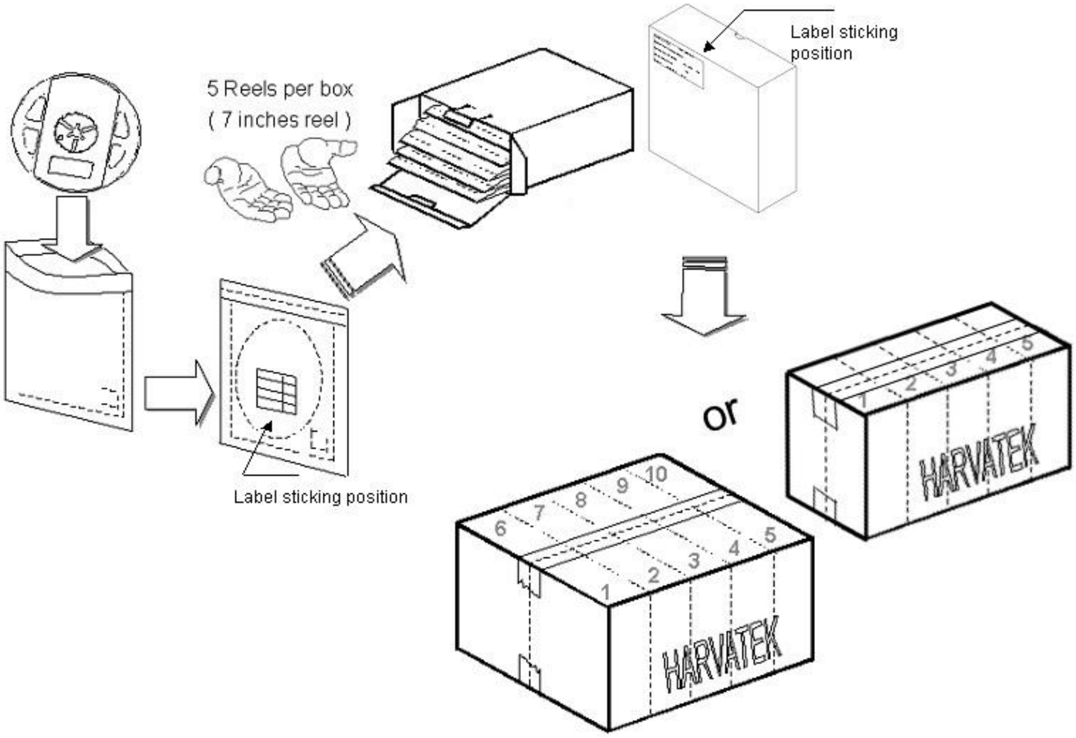
1. All dimensions are in millimeters.
2. 7 inch reel-3000 pieces per reel.
3. Minimum packing quantity is 500 pieces for remainders.



Reel Dimension



Packing



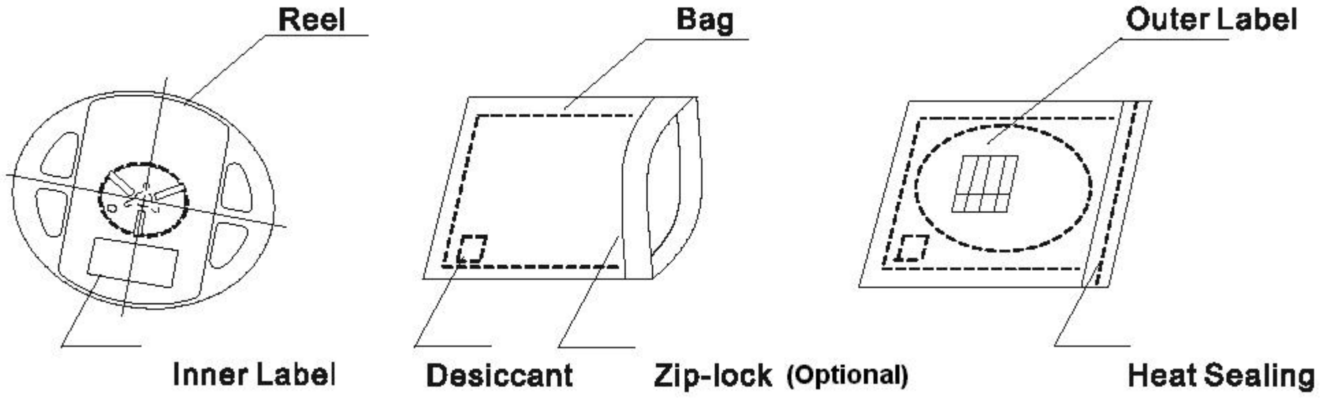
5 or 10 boxes per carton is available depending on shipment quantity.

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.

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

The packaging sequence is as follows:



Storage

It’s recommended to store the products in the following conditions:
Humidity: 60 %RH Max.
Temperature: 5℃ ~30℃ (41℉~86℉)

Precautions

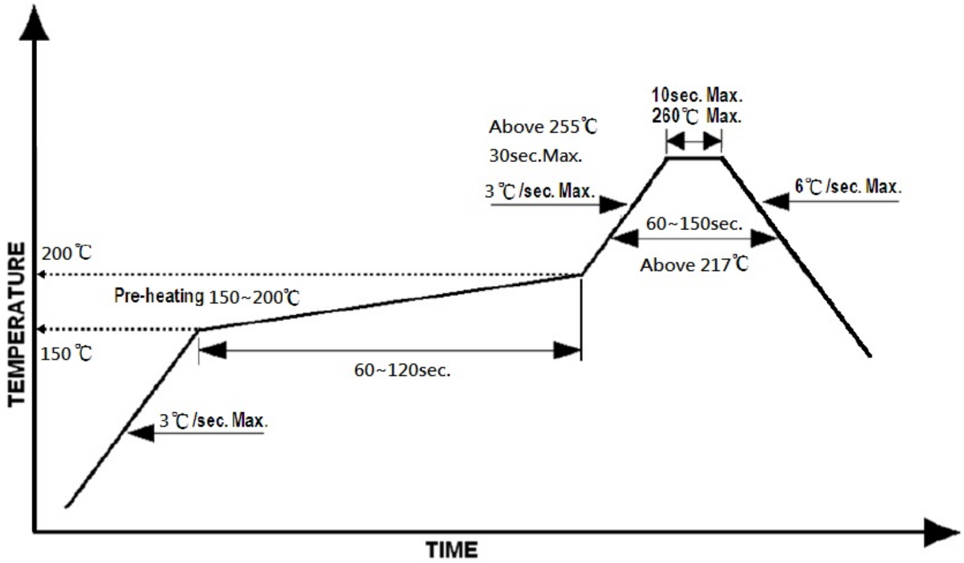
1. Avoid exposure to moisture at all times during transportation or storage.
2. Anti-Static precaution must be taken when handling GaN, InGaN, and AlGaInP products.
3. It is suggested to connect the unit with a current limiting resistor of the proper size. Avoid applying a reverse voltage beyond the 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.

Reflow Soldering

Recommend soldering paste specifications:

1. Operating temp.: Above 217℃ ,60~150sec
2. Peak temp.:260℃ Max.,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 as following:

Lead-free Solder Profile



Reworking

- Rework should be completed within 5 seconds under 260℃.

Cleaning

Following are cleaning procedures after soldering:

- An alcohol-based solvent such as isopropyl alcohol (IPA) is recommended.

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	09/26/2024	-