

**Harvatek Surface Mount CHIP LEDs Approval Sheet
Model No.: HT-T268BP – K505**

Official Product	HT Part No. HT-T268BP-K505	Your Part No.		Data Sheet No.
Tentative Product	*****	*****		HDS-T268-K505
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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 Specification

	Specification	Material	Quantity
Iv	Min. 2530mcd @40mA/ Ta= 25° C Tolerance: ± 10%		
Chromaticity Coordinates	Refer to page 6		
Vf	2.7-3.7V @40mA Ta= 25° C		
Ir	< 100 µA @ V _R = 5 V		
Resin	Yellow	Epoxy 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	Paper	
Packing bag	220x240mm	Aluminum laminated bag/ no-zipper	One reel one bag
Carton	HT standard	Paper	Non-specified

Others:

Every mid-box will be loaded 5 reels. These 5 reels can be different in lot, Iv, lambda, or Vf. Every reel will have an independent label to identify its specification and the mid-box there will have a corresponding label post on it.

ATTENTION: Electricstatic Discharge (ESD) protection



The symbol shown on the page herein to introduce 'Electro-Optical Characteristics'. ESD protection for GaP and AlGaAs based chips is still necessary even though they are safe in low static-electric discharge. Parts built with AlInGaP, GaN, or/and InGaN based chips are **STATIC SENSITIVE devices**. ESD protection has to be considered and taken in the initial design stage.

If manual work/process is needed, please ensure the device is well protected from ESD during all the process.

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Product Specification

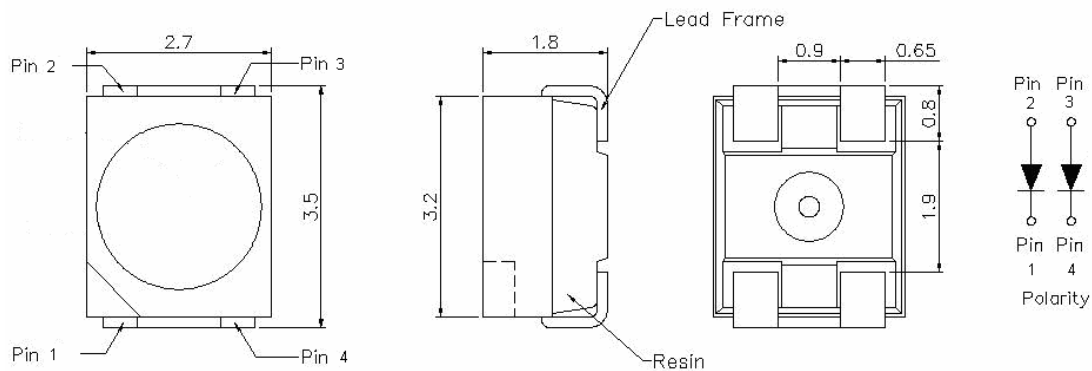
Electro-Optical Characteristics

(I_F @ 20mA each dice, T_a 25°C)

Product No.	Lighting Color	Material	V_F (V)		λ (nm)			I_V (mcd)	
			min	max	λ_D	λ_P	$\Delta\lambda$	min	max
HT-T268BP-xxxx	White	InGaN	2.7	3.7	X=0.30 Y=0.31	--	--	2530	4000

Package Outline Dimension

Outline Dimension :



Product is lead-free (Pb Free)

Note: Soldering terminals may shift in x, y direction.

Unit: mm

Absolute Maximum Ratings

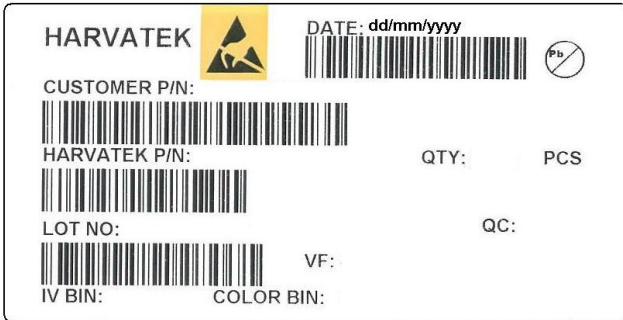
(T_a 25°C)

Series	P_d (mW)	I_F (mA)	I_{FP} (mA)	I_r (μ A) @ $V_R = 5$ V	T_{OP} (°C)	T_{ST} (°C)
HT-T268BP	74	40	90	<100 μ A	-30~+85	-40~+100

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

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Label Spec.



■ Customer P/N: To Be Defined

■ Harvatek P/N

H T - T 2 6 8 BP - K505



Series Name	Emitting Color
HT-T268: 3.2x2.7x1.8mm	BP: White @20mA each dice K505: Customer code

■ Lot No.

1 2 3 4 5 6 7 8 9 10
P 1 2 2 3 0 A - D T

Code 1	Code 2	Code 3	Code 4, 5	Code 6, 7	Code 9	Code 10
	Mfg. Year	Mfg. Month	Mfg. Date	Lots	Resin Color	Packaging
Internal Tracing Code	1: 2001 2: 2002 3: 2003 4: 2004	1: Jan. 2: Feb. 9: Sep. A: Oct. B: Nov. C: Dec.	1~31/ (30)	01~99, A,B,C...	D: Milky White	T: Taped Reel

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Bin Code.

■ **Iv Bin:**

Color	Bin Code	Spec. Range
White @40mA	AC2	2530-2850mcd
	AD1	2850-3200mcd
	AD2	3200-3600mcd
	AE1	3600-4000mcd

■ **Color Bin**

Color	A0a		A0b		A0c		A0d	
White	x	y	x	Y	x	y	x	Y
	0.28	0.248	0.288	0.262	0.272	0.258	0.281	0.274
	0.272	0.258	0.281	0.274	0.264	0.267	0.274	0.286
	0.281	0.274	0.29	0.291	0.274	0.286	0.283	0.305
	0.288	0.262	0.296	0.276	0.281	0.274	0.29	0.291
	B5a		B5b		B5c		B5d	
	x	y	x	Y	x	y	x	Y
	0.296	0.276	0.3035	0.285	0.2915	0.2855	0.3002	0.295
	0.2915	0.2855	0.3002	0.295	0.287	0.295	0.297	0.305
	0.3002	0.295	0.309	0.3045	0.297	0.305	0.307	0.315
	0.3035	0.285	0.311	0.294	0.3002	0.295	0.309	0.3045

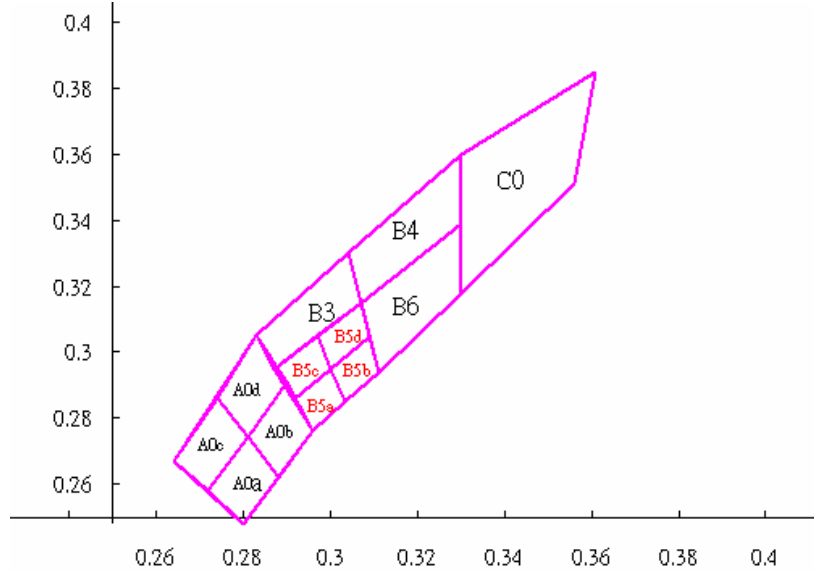
@40mA / Ta=25° C, ± 0.01

■ **Vf Bin:**

Color	Bin Code	Spec. Range
White		2.7-3.7V @40mA

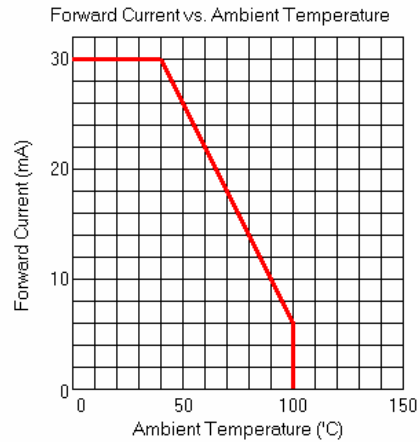
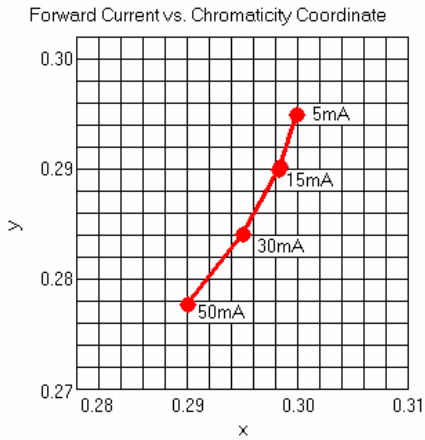
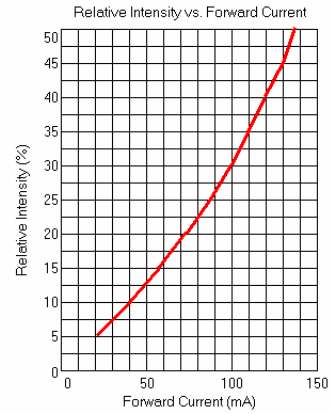
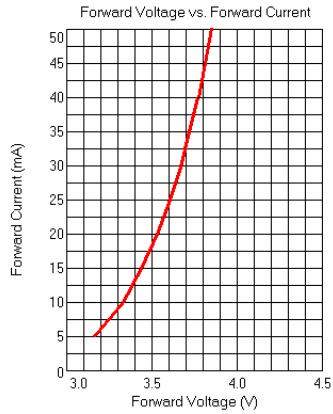
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Chromaticity diagram

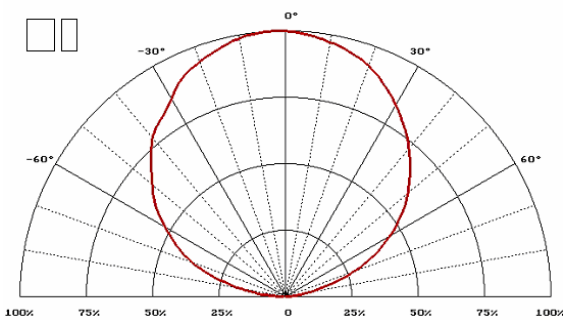


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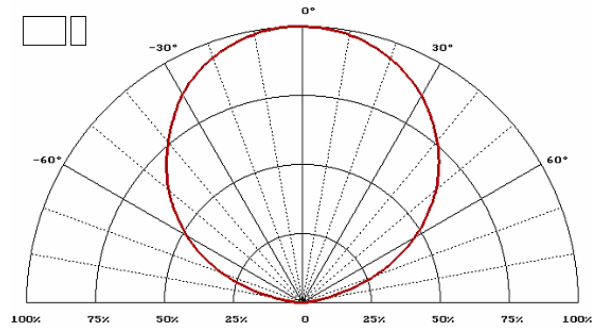
Characteristics of HT-T268BP-xxxx



Directive Characteristics



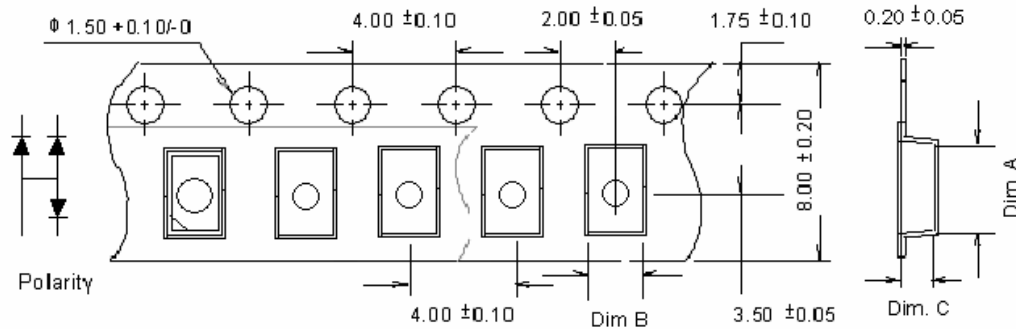
Directive Characteristics



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Packaging Tape, Reel, and Packing Model

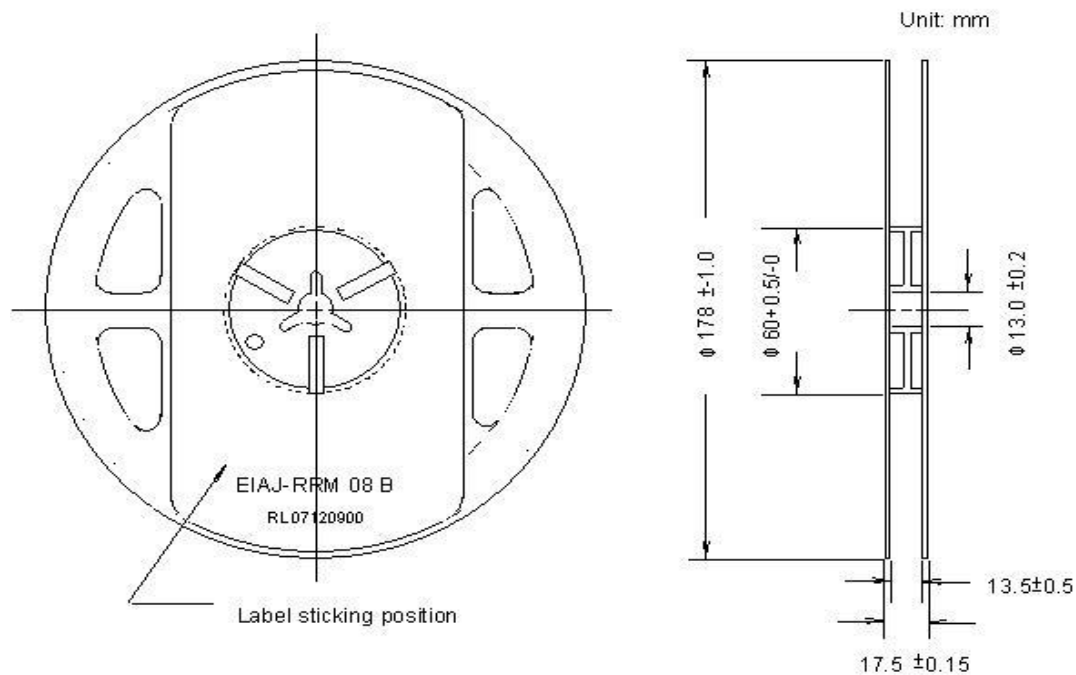
Tape Dimension



Part No.	Dim. A	Dim. B	Dim. C	Q'ty/Reel
HT-Tx68	3.73 ± 0.10	2.95 ± 0.10	2.12 ± 0.10	2K

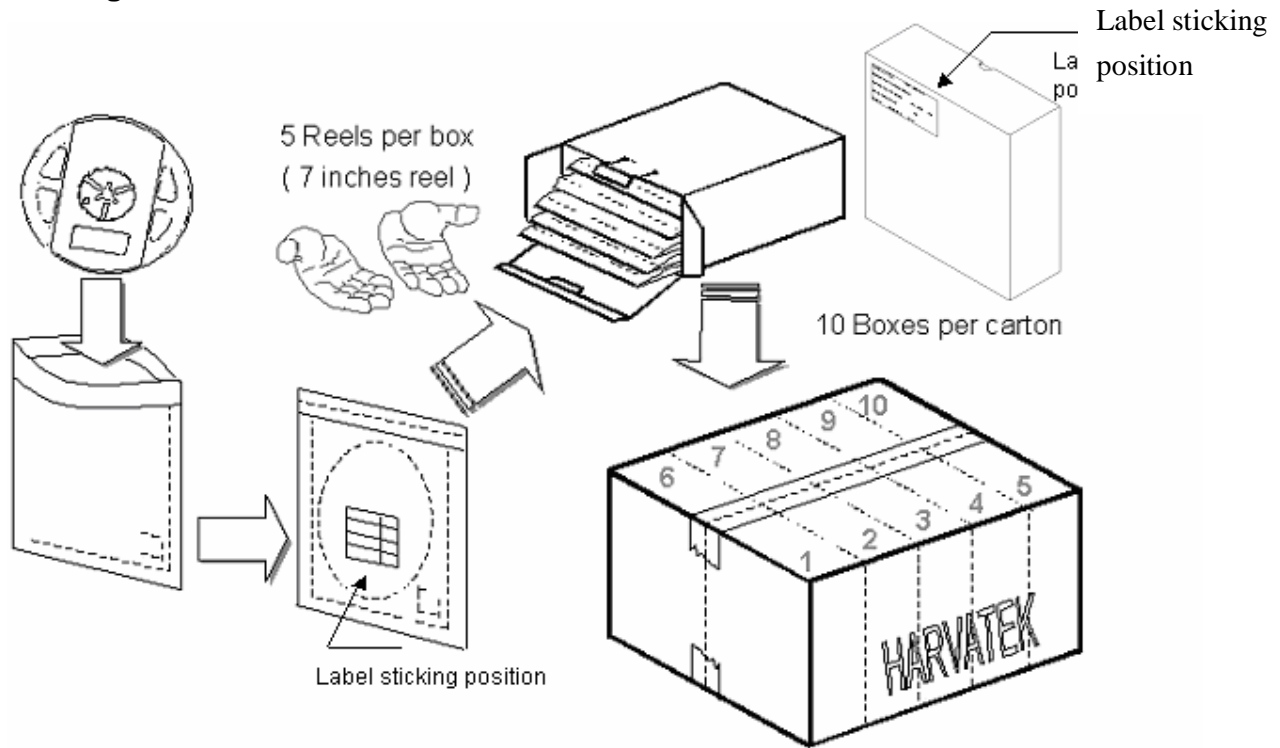
Unit: mm

Reel Dimension



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Packing Model



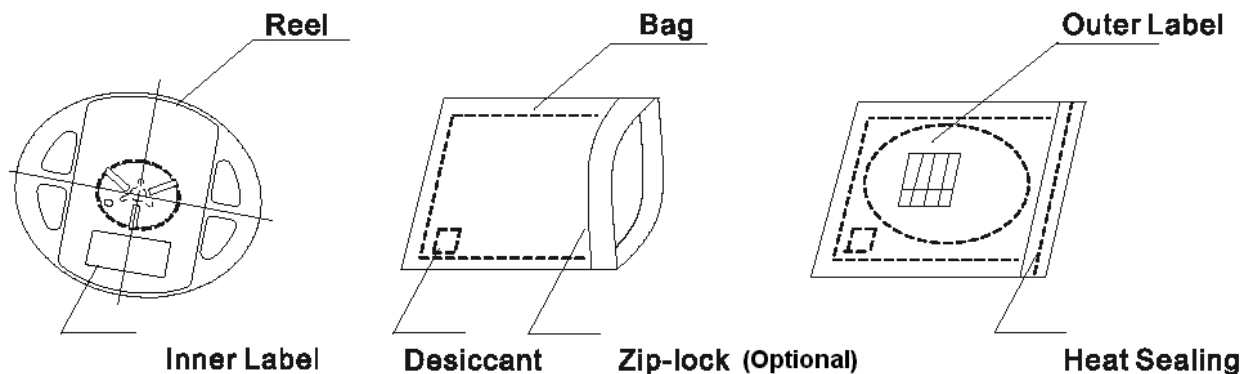
5 boxes per carton is available according to shipping quantity.

Dry Pack

Any SMD optical device, like this chip LED, is **MOISTURE SENSITIVE device**. Avoid absorbing moisture at any time during transportation or storage. Every reel will be packaged in the moisture barrier anti-static bag (Specific bag material will depend upon customers' requirement or option). And the bag is well sealed before shipment.

By customer's requirement, we will put a humidity indicator in each moisture barrier anti-static bag before shipment.

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Cautions of Pick and Place

It should be avoided to load stress on the resin during high temperature.

Avoid rubbing or scraping the resin by any object.

Electric-static may cause damage to the component. Please confirm that the equipment grounding well. Using an ionizer fan is recommended.

PRECAUTIONS

1. Avoid absorbing moisture at any time during transportation or storage.
2. Anti-Static process is needed especially when handling GaN, InGaN, and AlInGaP products.
3. It is suggested to connect the unit with a proper series current limit resistor. Avoid driving reverse voltage over the specification of LEDs when turning the unit ON/OFF.
4. Any application should refer to the specifications of absolute maximum ratings.
5. Avoid any direct contact with the viewing area.
6. If possible, assemble the unit in a clean room or dust-free environment.

Storage

It's recommended to store the products in the following conditions:

Humidity: 60 %RH Max.

Temperature: 5 °C ~30 °C (41 °F~86 °F)

- 1 Shelf life in sealed bag: 12 month at $40\text{ }^{\circ}\text{C}$ and 90%RH. (Base on aluminum laminated moisture barrier bag.)
- 2 After the bag is opened, devices that will be subjected to infrared reflow, vapor-phase reflow, or equivalent processing must be:

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- 2.1 Mounted within 72 hours at factory conditions of $\leq 30^{\circ}\text{C}$ /60% RH, or
- 2.2 Stored at $\leq 20\%$ RH with zip-lock sealed.

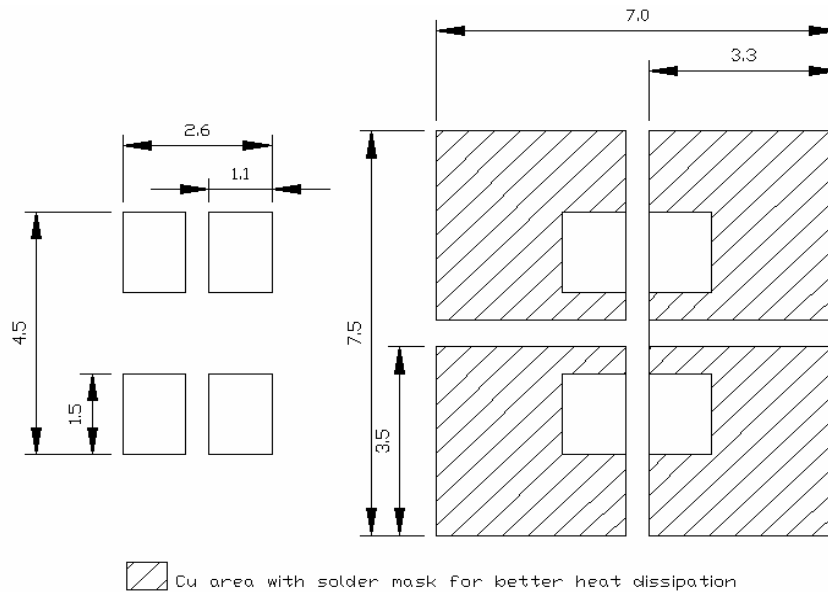
Baking

It's recommended to bake before soldering when the pack is unsealed after 15 days. The conditions are as followings:

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

Soldering pattern

The dimensions of the recommended soldering pattern may not meet every user. Please confirm and study first before designing the soldering pattern in order to obtain the best performance of soldering. Recommended soldering pattern is listed below.



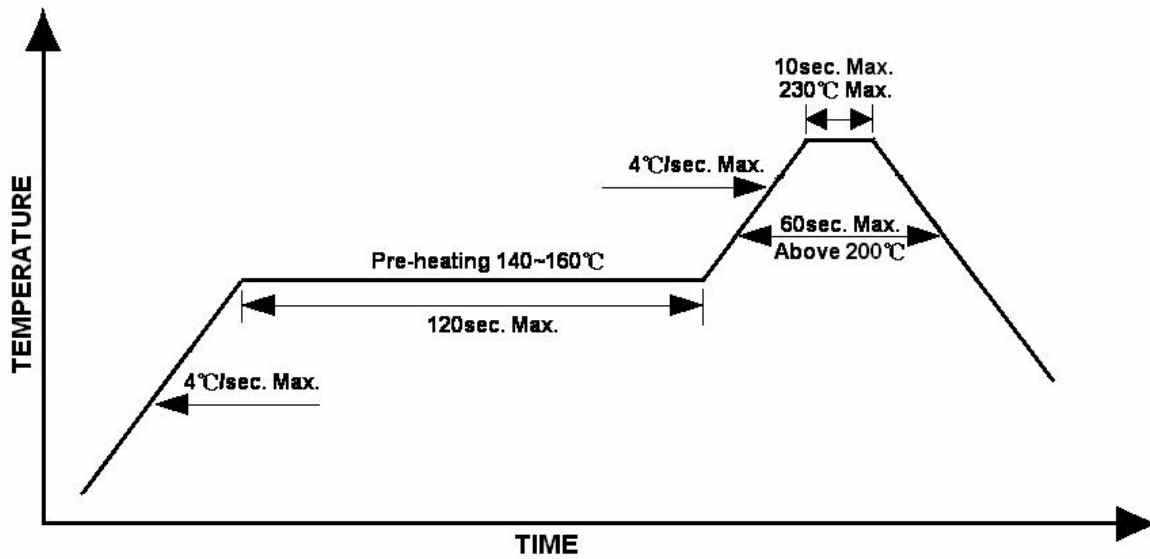
Soldering terminal may shift in x, y direction.

Re-flow Soldering

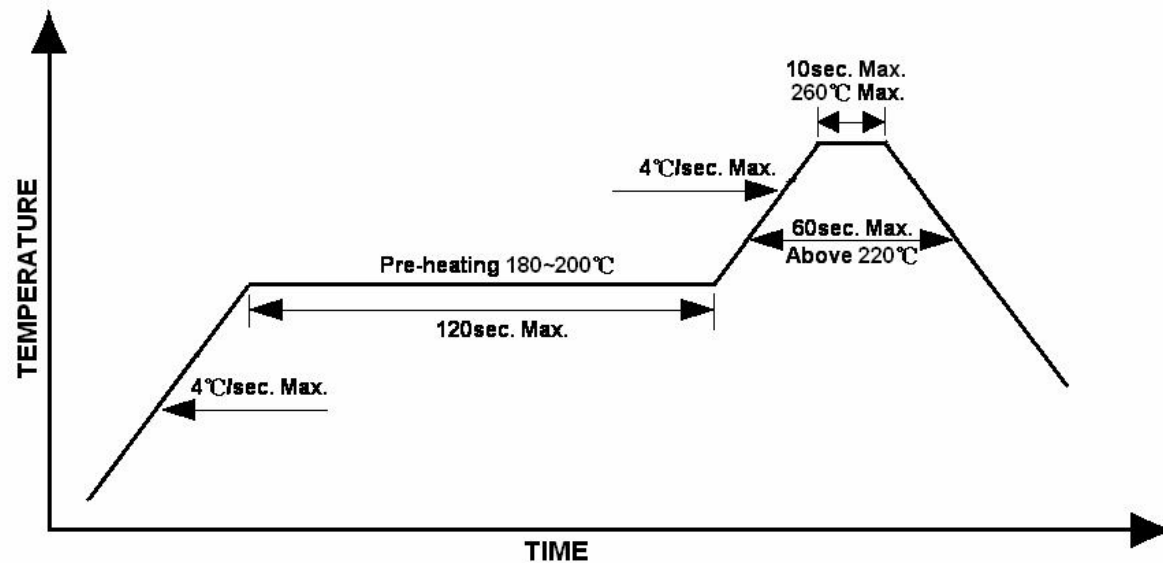
- ◆ Recommend tin glue specifications:
Melting temperature: $178\sim 192^{\circ}\text{C}$
- ◆ Never take next process until the component is cooled down to room temperature after re-flow.
- ◆ The recommended re-flow soldering profile (measuring on the surface of the LED resin) is following:

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Lead Solder



Lead-free Solder



Rework

- ◆ Customer must finish rework within 5 sec. under 260 °C.
- ◆ The head of iron cannot touch copper foil.
- ◆ Twin-head type is preferred.

Cleaning

The conditions of cleaning after soldering:

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

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Temperature×Time: <50 °C×30sec, or <30 °C×3min

Ultra sonic cleaning: < 15W/ bath; Bath volume: 1liter max.

Curing: 100 °C max, <3min

Do not contact with component on the assembly board.

Reliability Test

Item	Frequency/ lots/ samples/ failures	Standards Reference	Conditions
Precondition	For all reliability monitoring tests according to JEDEC Level 2	J-STD-020	1.) Baking at 85°C for 24hrs 2.) Moisture storage at 85°C/ 60% R.H. for 168hrs
Solderability	1Q/ 1/ 22/ 0	JESD22-B102-B And CNS-5068	Accelerated aging 155°C/ 24hrs Tinning speed: 2.5±0.5cm/s Tinning: A: 215°C/ 3±1s or B: 260°C/ 10±1s
Resistance to soldering heat		CNS-5067	Dipping soldering terminal only Soldering bath temperature A: 260+/-5°C; 10+/-1s B: 350+/-10°C; 3+/-0.5s
Operating life test	1Q/ 1/ 40/ 0	CNS-11829	1.) Precondition: 85°C baking for 24hrs 85°C/ 60%R.H. for 168hrs 2.) T _{amb} 25°C; I _f =20mA; duration 1000hrs
High humidity, high temperature bias	1Q/ 1/ 45/ 0	JESD-A101-B	T _{amb} : 85°C Humidity: 85% R.H., I _f =5mA Duration: 1000hrs
High temperature bias	1Q/ 1/ 20/ 0	HT specs.	T _{amb} : 55°C I _f =20mA Duration: 1000hrs
Pulse life test	1Q/ 1/ 40/ 0		T _{amb} 25°C, I _f =20mA, I _p =100mA, Duty cycle=0.125 (tp=125 μs, T=1sec) Duration 500hrs)
Temperature cycle	1Q/ 1/ 76/ 0	JESD-A104-A IEC 68-2-14, Nb	A cycle: -40 degree C 15min; +85 degree C 15min Thermal steady within 5 min.. 300 cycles 2 chamber/ Air-to-air type
High humidity storage test	1Q/ 1/ 40/ 0	CNS-6117	60±3°C 90+5/-10% R.H. for 500hrs
High temperature storage test	1Q/ 1/ 40/ 0	CNS-554	100±10°C for 500hrs
Low temperature storage test	1Q/ 1/ 40/ 0	CNS-6118	-40±5°C for 500hrs

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