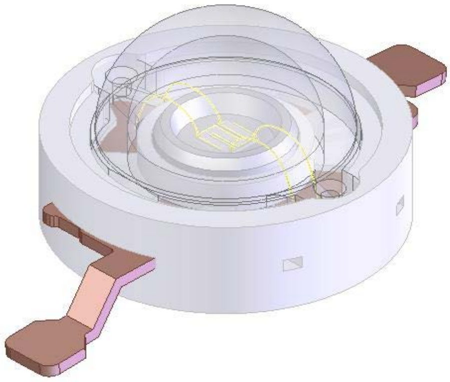
台宙晶體科技股份有限公司
Top Crystal Technology Inc.,

Power Light Source

Introduction：

TCI UV emitter is one the highest flux LEDs in the world. Due to the special design of chip and package, the TCI UV emitter is designed by particular package for high power LED.

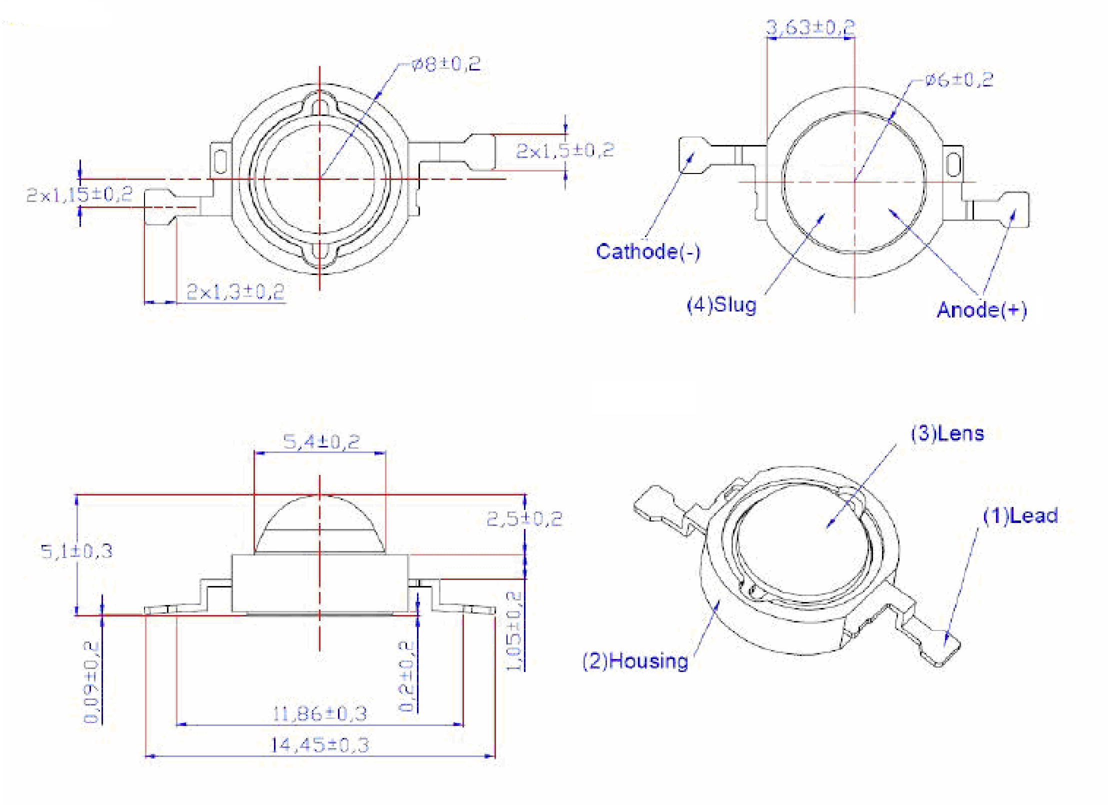


Feature：

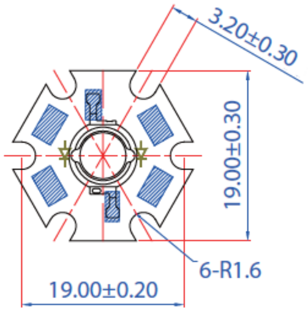
- Long operating life
- Energy efficiency
- Compact design
- Superior ESD protection
- ROHS compatibility

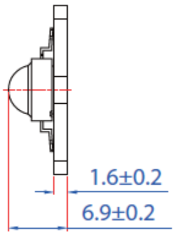
Typical Applications:

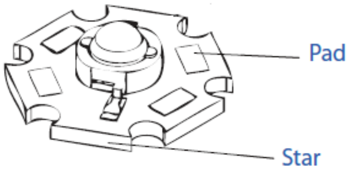
- Counterfeit currency
- Defect detection
- Medical treatment



STAR Dimension







Notes：

1. Drawings are not to scale.
2. All dimensions are in millimeter.
3. General tolerance is ±0.2mm.
4. The polarity of slug at bottom is anode.
5. It is important that the slug can’t contact aluminum surface, it is strongly recommended that there should coat a uniform electrically isolated heat dissipation film on the surface.
6. It is strongly recommended that the temperature of lead be not higher than 55℃.

Absolute Maximum Ratings

Parameter	Value
DC Forward Current (mA)	700
Peak Pulse Current (mA) (1/10 Duty Cycle at 1KHz)	800
LED Junction Temperature (℃)	120
Operating Temperature (℃)	-40℃~105℃
Storage Temperature (℃)	-40℃~120℃
Soldering Temperature	JEDEC 020c 250℃ 5sec.
Reverse Voltage	Not design to be driven in reverse bias
ESD Sensitivity	> 8,000V Human Body Model (HBM)

Flux Characteristics at 700mA (Tj=25℃)

Parameter	**Symbol**	**Minimum**	**Typical**	**Maximum**	**Unit**
Radiometric power(1)	Po	650	750	--	mW
Peak wavelength(3)	λp	365	--	375	nm
View angle	$2\Theta 1/2$	130		140	degree
Forward voltage	VF	3.8	--	4.4	V

Note:

1. The typical radiometric power of TCI will be upgraded per season.
2. Minimum radiometric power performance guaranteed within published operating conditions. TCI maintains a tolerance of ±10% on radiometric power measurements.
3. TCI maintains a tolerance of ±1nm for peak wavelength measurement.
4. TCI maintains a tolerance of±0.06V on forward voltage measurement.

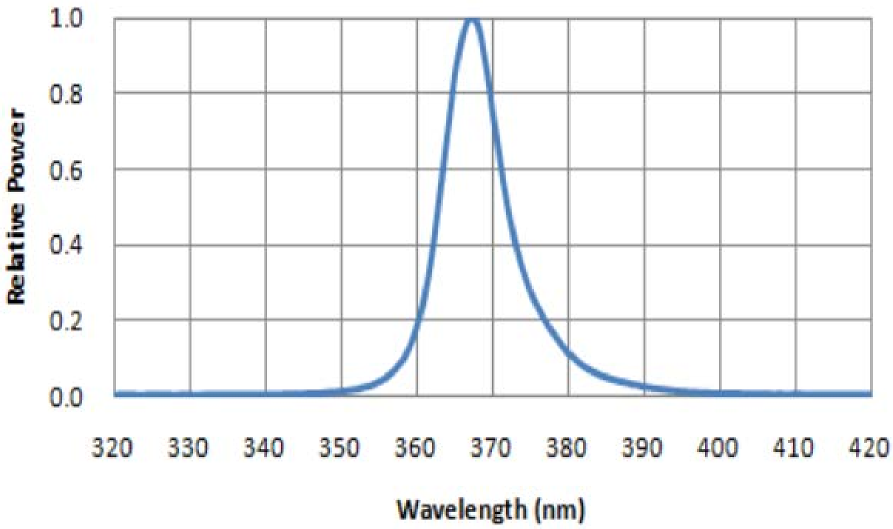
RELIABILITY ITEMS and SPECTIONS

No	Test Item	Test Conditions	Remark
1	Room Temperature Operating Life	25℃	1000 hrs
2	High Temperature Storage	Temperature：110℃	1000 hrs
3	Thermal shock	-40°C to 120°C, 20 min. dwell, <20 sec. transfer	200 cycles
4	High Temperature，High Humidity Storage	85°C/85%RH	1000 hrs
5	Low Temperature Storage	- 40℃	1000 hrs
6	Solderability	Tp = 250°C for 5 sec	3 times
7	Drop test	120 cm height，fall freely onto stainless board	3 times
8	Temperature Cycle (TMCL)	-40°C to 120°C, 30 min. dwell, <5 min. transfer	200 cycles

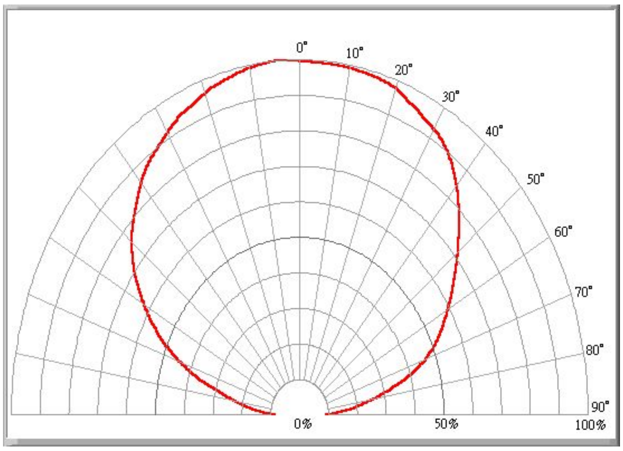
Failure Criteria：

1. Forward Voltage (VF) ≧ Initial Level x 1.1
2. Luminous Flux or Radiometric Power (ΦV) ≦ Initial Level x 0.7
3. Reverse Current (IR) ≧ 10μA
4. Resistance to Soldering Heat：No deaqd lamps or visual damage.

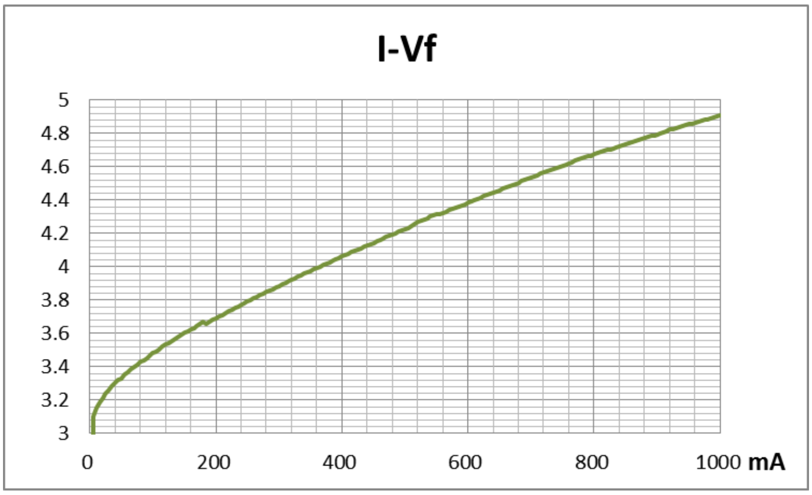
Wavelength Spectrum, Tj=25℃



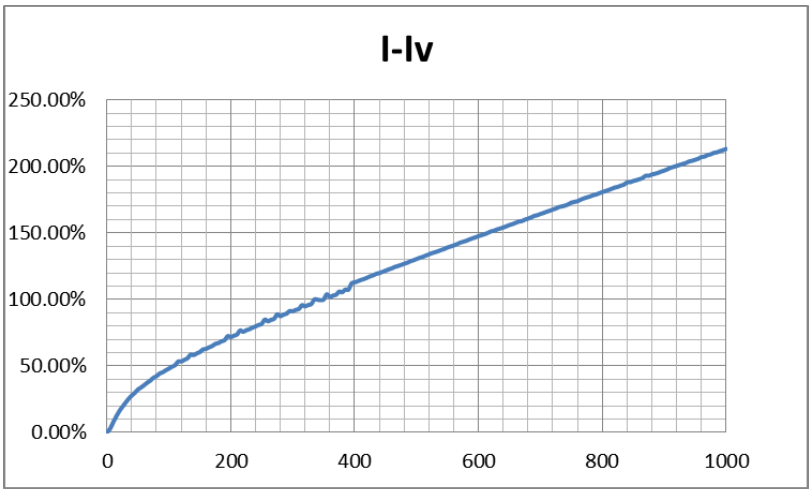
Typical Polar Radiation Pattern



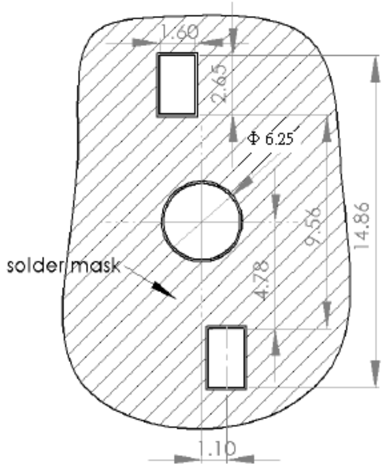
Forward Voltage vs Forward Current



Forward L-V Characteristics



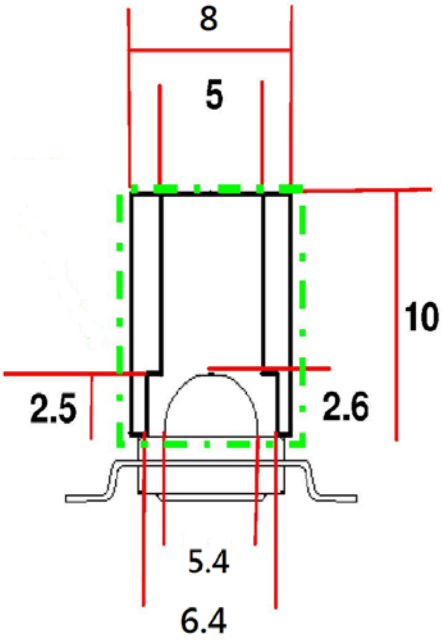
1. Recommended Solder Pad Design

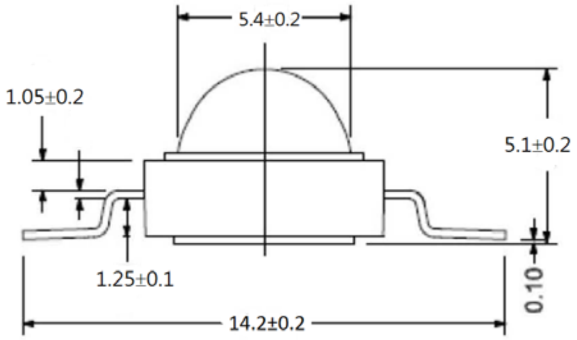


Notes :

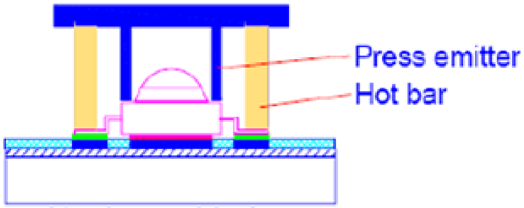
1. Drawing is not to scale
2. All dimensions are in millimeter
3. Solder pad can’t be connected to slug

2. Recommended nozzle style

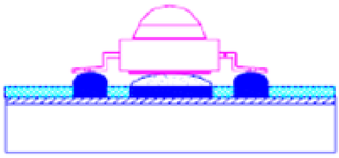




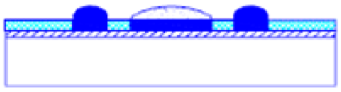
(the inner diameter of the nozzle the untouchable moliding colloidal)



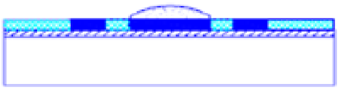
Hot bar soldering



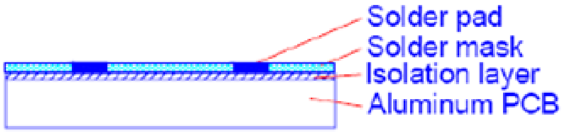
Emitter put on the glue



Dispensing Flux



Dispensing glue

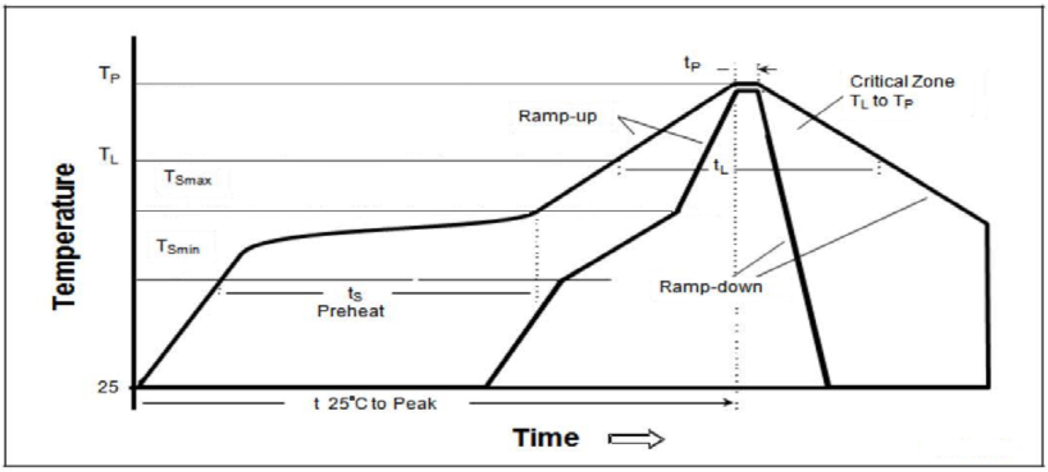


Notes:

1. Aluminum PCB material with a thermal conductivity greater than 2.0 W/mK.
2. Solder pad can't be connected to slug.
3. The thermal glue should be as thin as possible for better heat conductivity.
4. During any assembly process touching lens is avoided. This will cause pollution or scratch on the surface of lens.
5. Thermal glue with a thermal conductivity greater than 1.0 W/mK and the thickness must be less than 100um

Recommended Soldering Profile

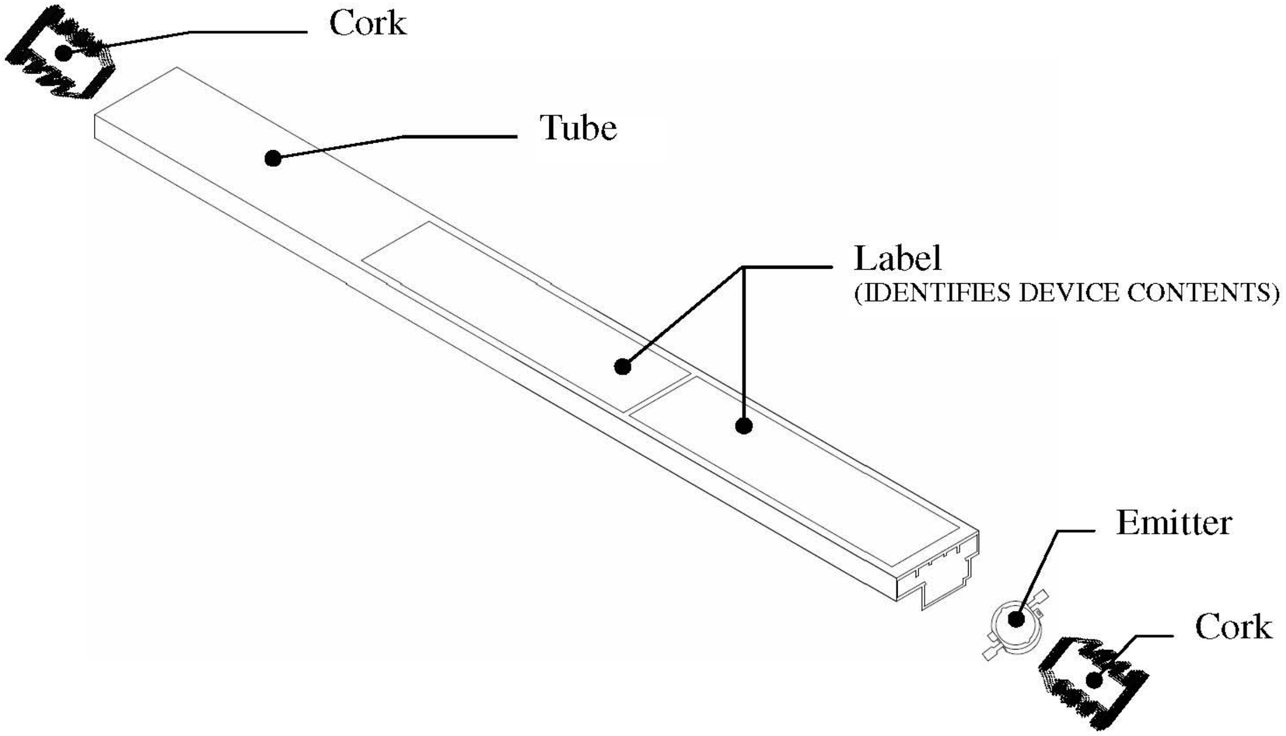
The LEDs can be soldered using the parameter listed below. As a general guideline, the users are suggested to follow the recommended soldering profile provided by the manufacturer of the solder paste. Although the recommended soldering conditions are specified in the list, reflow soldering at the lowest possible temperature is preferred for the LEDs.

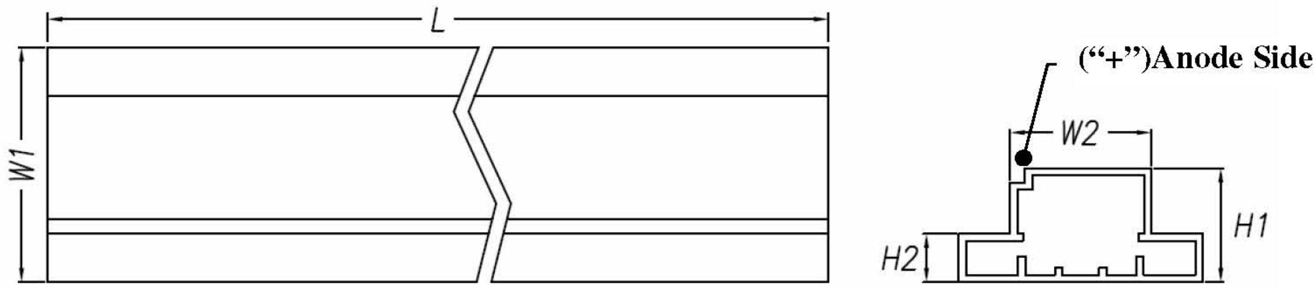


Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Average Ramp-Up Rate (T_{Smax} to T_P)	3℃ / second max.	3℃ / second max.
Preheat – Temperature Min (T_{Smin}) – Temperature Max (T_{Smax}) – Time (t_{Smin} to t_{Smax})	100℃ 150℃ 60-120 seconds	150℃ 200℃ 60-180 seconds
Time maintained above: – Temperature (T_L) – Time (t_L)	183℃ 60-150 seconds	190℃ 60-150 seconds
Peak/Classification Temperature (T_P)	230℃	250℃
Time Within 5℃ of Actual Peak Temperature (t_P)	5 seconds	5 seconds
Ramp-Down Rate	6℃/second max.	6℃/second max.
Time 25℃ to Peak Temperature	6 minutes max.	8 minutes max.

- All temperatures refer to topside of the package, measured on the package body surface.
- Repairing should not be done after the LEDs have been soldered. When repairing is unavoidable, a double-head soldering iron should be used. It should be confirmed beforehand whether the characteristics of the LEDs will or will not be damaged by repairing.
- Reflow soldering should not be done more than three times.
- When soldering, do not put stress on the LEDs during heating.
- After soldering, do not warp the circuit board.

Tube Package Specifications





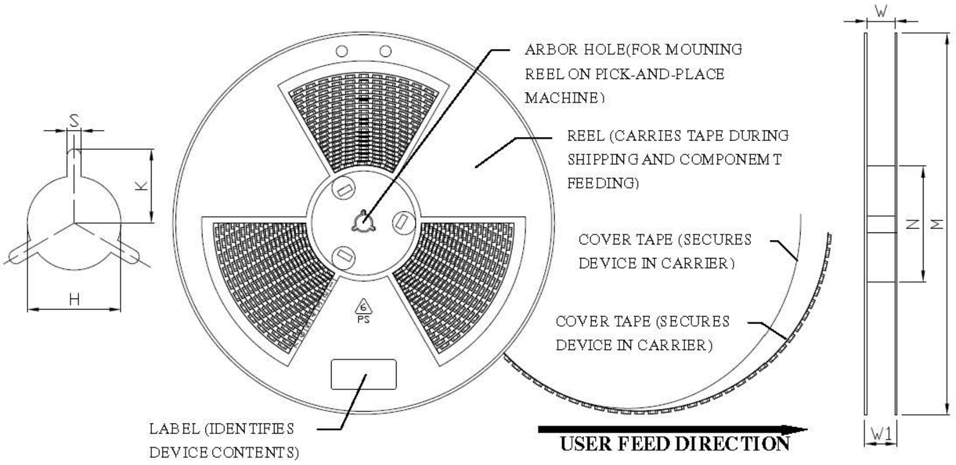
Unit：mm

W1	W2	H1	H2	L
16.5	9.6	8	3.4	424

Notes

1. There are 50pcs emitters in a tube.

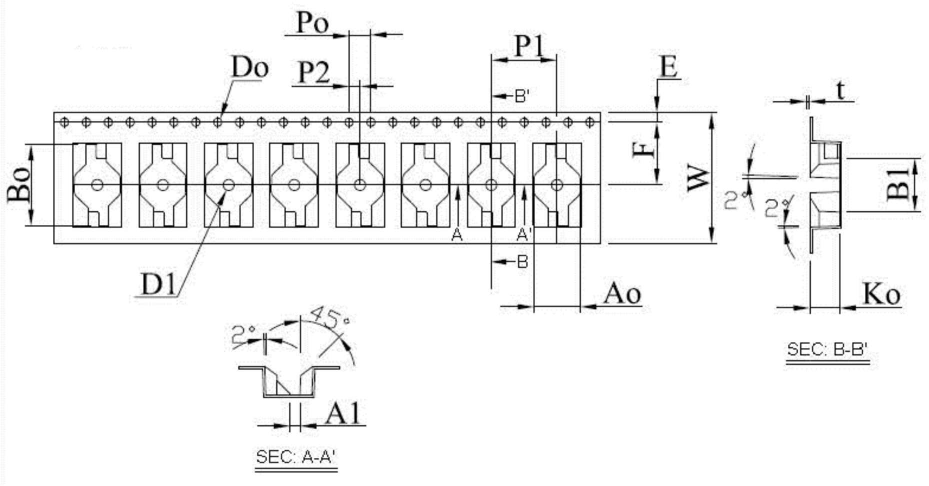
Tape and Reel Packaging Specifications



Unit：mm

M	N	W	W1	H	K	S
Φ330.0	**Φ99.5**	24.4	29	**Φ13.5**	10.75	2.5
±1.0	±1.0	±1.0	±1.0	±0.5	±0.5	±0.5

Carrier tape dimensions



Unit：mm

Item	W	E	F	D0	D1	P0	P1	P2	t	A0	B0	A1	B1
Specification	24	1.75	11.5	1.5	1.5	4	12	2	0.4	8.3	15	1.75	9.9
Tol. (+/-)	± 0.30	± 0.10	± 0.10	0.1	0.25	± 0.10	± 0.10	± 0.10	± 0.05	± 0.10	± 0.10	± 0.10	± 0.10

Notice

1. Unavailable directly touch the colloid surface and squeeze
2. Use tweezers to pick up the external sides of the housing part carefully. Do not grab, puncture or push the emitting region. Over stress on the lens may cause the gamage of component and raise the risk to break the wire inside the package.
3. In order to avoid absorption of moisture, it is recommended that the products are stored in the dry box (or desiccators) with a desiccants. Alternatively the following environment is recommended: Storage temperature : 5°C~30°C Humidity:60% HR max.
4. If the storage conditions are of high humidity the product should be dried before use. Recommended drying conditions: 12 hours at 60°C±5°C
5. Any mechanical force or any excess vibration should be avoid during the cooling process after soldering.
6. Reflow rapidly cooling should be avoided.
7. Components should not be mounted on distorted Printed Circuit Boards.
8. Devices should not contact with any types of fluid, such as water , oil , organic solvents…. etc.
9. The maximum ambient temperature should be taken into consideration when determining the operating current.

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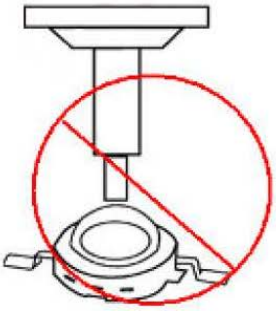

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