

Surface Mounted Chip LED Specifications

Model No.: YTS-150SB-5M



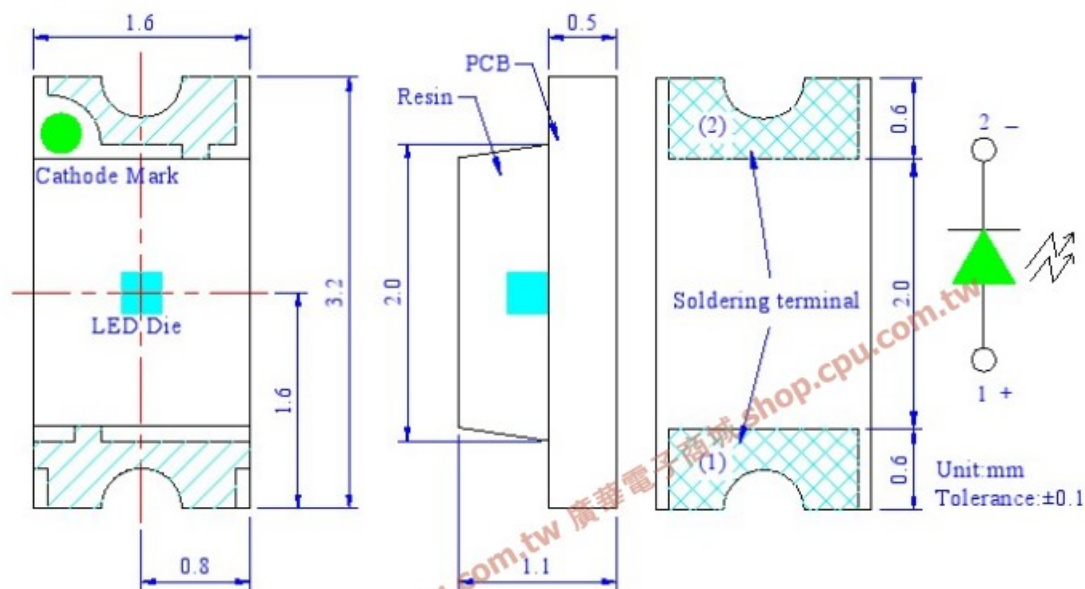
- Features:

1. Compatible with automatic Placement equipment.
2. Compatible with reflow solders process.
3. This product don't contained restriction Substance, compliance ROHS standard.

- Applications:

1. Automotive _Telecommunication.
2. Indicators.
3. LCD Back-lights.
4. Illuminations.

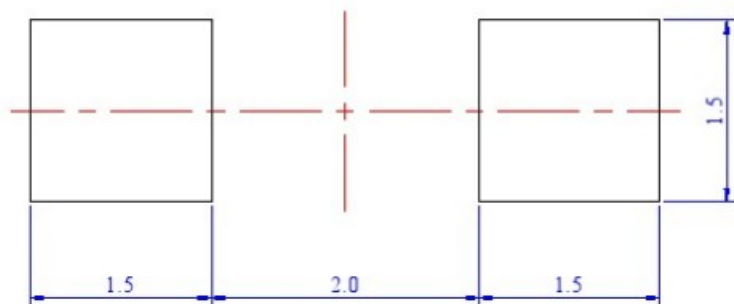
- Package Dimensions of Device



NOTES:

1. Soldering terminal may shift in x, y direction.
2. Specifications are subject to change without notice.

- Recommended Soldering Pad Dimensions



Unit:mm

Part Number	Chip		Lens Color
	Material	Emitting Color	
YTS-150SB-5M	InGaN	Blue	Water Clear

• Absolute Maximum Rating

(Ta=25°C)

Item	Symbol	Absolute Maximum Rating	Unit
Continuous Forward Current	IFmax	20	mA
Peak Forward Current (1/10 Duty Cycle 0.1ms Pulse Width)	IFP	100	mA
Power Dissipation	PD	84	mW
Reverse Voltage	VR	5	V
Derating Linear From 25 °C	/	0.4	mA/°C
Operating Temperature Range	Topr	-40°C~85°C	°C
Storage Temperature Range	Tstg	-40°C~85°C	°C

• Initial Electrical/Optical Characteristics

(Ta=25°C)

Item	Symbol	Condition	Min	Typ	Max	Unit
Forward Voltage	VF	IF=5(mA)	2.6	2.9	3.1	V
		IF=20(mA)	/	3.3	3.6	
Reverse Current	IR	VR=5(V)	/	/	10	μA
Luminous Intensity	IV	IF=5(mA)	14.5	22.5	/	mcd
		IF=20(mA)	36.0	57.0	/	
Peak Emission Wavelength	λp	IF=20(mA)	/	468	/	nm
Dominant Wavelength	λD	IF=5(mA)	465	470	475	nm
		IF=20(mA)	463	468	473	
Spectral Line Half-width	Δλ	IF=20(mA)	/	/	/	nm
Viewing Angle	2θ 1/2	IF=20(mA)	/	140	/	deg

※Luminous intensity ± 15 %;Wavelength (λD) ± 2 nm.

• Descriptions :

- (1) The Chip-LED Taping is much smaller than lead frame type components thus enable smaller board size, higher packing density, reduced storage space and finally smaller equipment to be obtained
- (2) Besides, lightweight makes them ideal for miniature application, etc

• Typical Electro-Optical Characteristic Curves:

Fig1. Forward Current vs. Forward Voltage

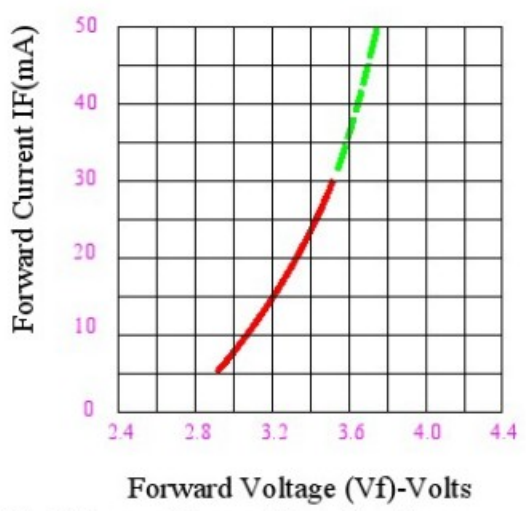


Fig2. Luminous Intensity vs. Forward Current

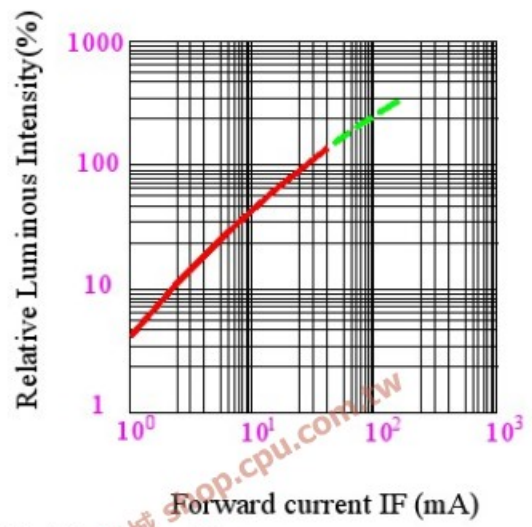


Fig3. Forward Current Derating Curve

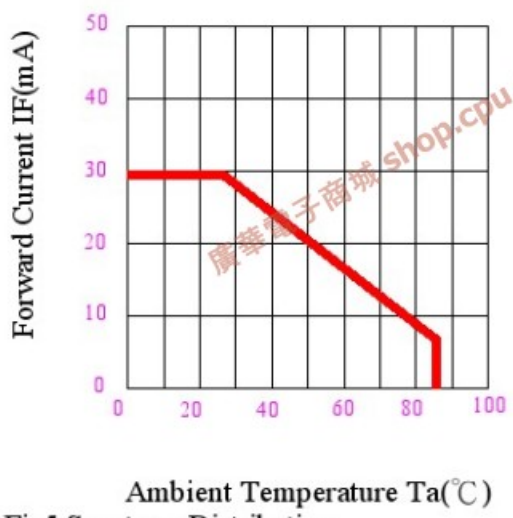


Fig4. Radiation Diagram

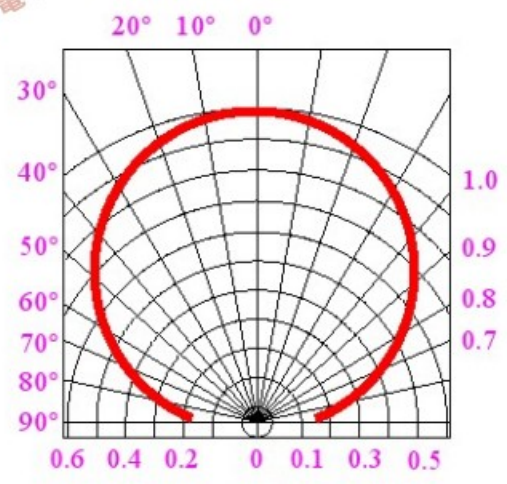
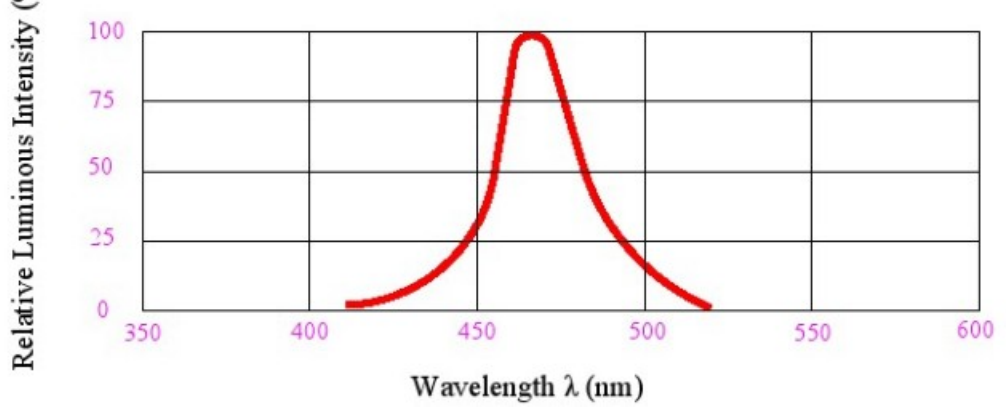


Fig5. Spectrum Distribution



• Reliability test item and condition:

NO	Item	Test Conditions	Test hr/cycle/time	Sample Q'ty	Ac/Re
1	Solder Hest	TEMP:260±5°C; 10±1 sec	2 times	30 pcs	0/1
2	Solder bility Test※	TEMP:235±5°C; 3±1 sec	1 times	5 pcs	0/1
3	Temperature Cycle	H:+85°C 30min δ 5min L:-40°C 30min	100 cycles	20 pcs	0/1
4	Thermal Shock	H:+85°C 5min δ L:-40°C 5min	50 cycles	20 pcs	0/1
5	High Temperature Storage	TEMP:85°C	1000 hrs	20 pcs	0/1
6	Low Temperature Storage	TEMP:-40°C	1000 hrs	20 pcs	0/1
7	DC Operating Life	IF=IFmax	1000 hrs	20 pcs	0/1
8	High Temperature High Humidity	85°C/90~95%R.H.	1000 hrs	20 pcs	0/1
9	Shocking test	100~2000Hz;98.1m/s ² X,Y,Z direction	2 hrs	20 pcs	0/1
10	Dropping test	Put on pallet; height: 75cm	3 times	20 pcs	0/1

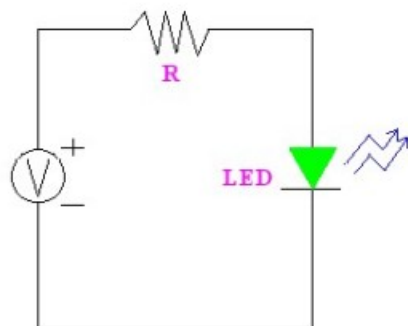
• JUDGMENT CRITERIA

Forward voltage V_F (V)	V_F max Increase <1.1x
Reverse current I_r (μ A)	I_r max Increase < I_{rmax}
Luminous intensity I_v (mcd)	I_v Decay < 40%

※ Solder ability test criteria : Coverage is not less than 95%

Note: Measurement shall be taken after the tested samples have been returned to normal ambient conditions (generally after two hours)

• Test Circuit:



• Precautions For Use:

1. Over-current-proof

Customer must apply resistors for protection; otherwise slight voltage shift will cause current change with great deal. (Burn out will happen)

2. Storage

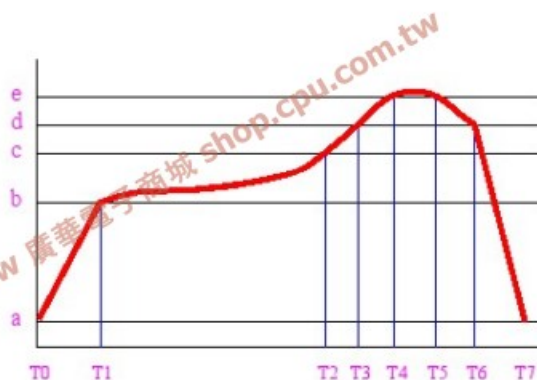
(1) The operation of temperature and R.H. are : $5^{\circ}\text{C}\sim 30^{\circ}\text{C}$, 60%R.H. Max.

(2) Once the package is opened, the products should be used within a week. Otherwise, they should be kept in a damp proof box with desiccant. Considering the tape life, we suggest our customers to use our products within 1.5 year (from production date).

(3) It's recommended to bake before soldering when the package is unsealed more than 72 hrs. The condition is : $60^{\circ}\text{C}\pm 5^{\circ}\text{C}$ for 15hrs.

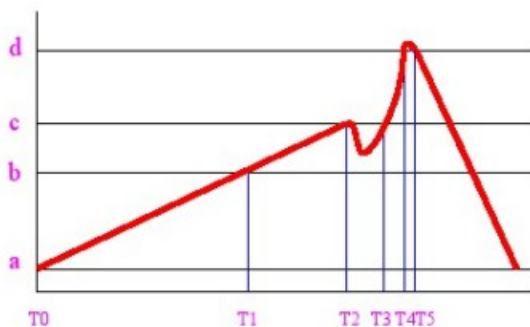
• Reflow Temp./Time:

TEMP($^{\circ}\text{C}$)		TIME(sec)	
a	25	T0~T1	$5^{\circ}\text{C}/\text{sec max}$
b	150	T1~T2	90~130
c	200	T2~T3	$5^{\circ}\text{C}/\text{sec max}$
d	230	T3~T6	60~90
e	260	T4~T5	10 ± 1
/	/	T6~T7	$-6^{\circ}\text{C}/\text{sec max}$
MSL level		Level 1	



• Flow Temp./Time

TEMP($^{\circ}\text{C}$)		TIME(sec)	
a	25	T1~T2	60 ± 30
b	130 ± 10	T4~T5	10
c	185	/	/
d	260	/	/
/	/	/	/
/	/	/	/
/	/	/	/



• Hand Soldering Iron:

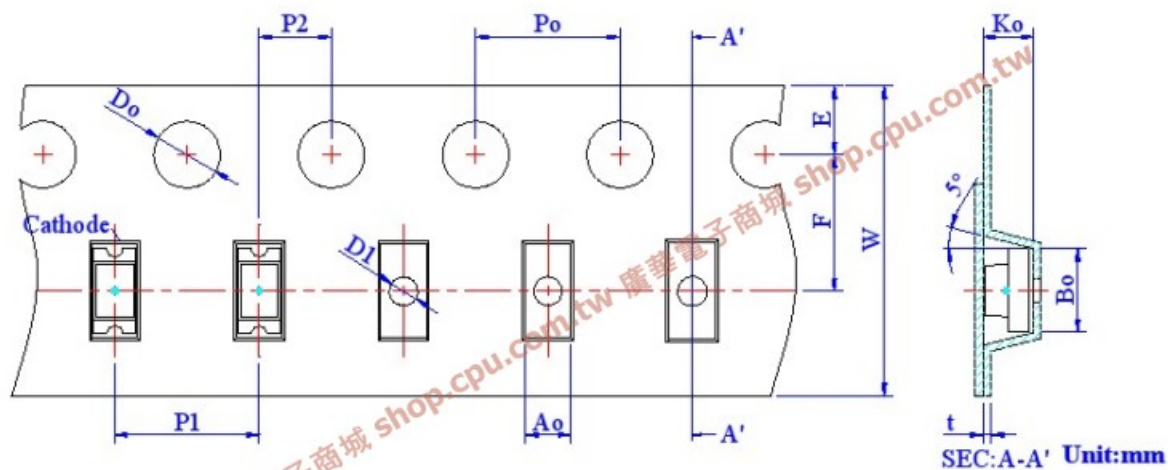
1. Temperature at tip of iron: 400°C Max. (35W Max.)

2. Soldering time: 3 ± 1 sec.

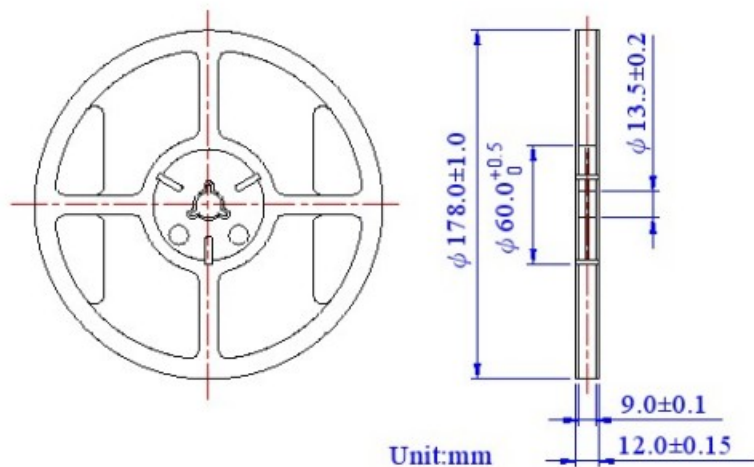
- Taping and package Spec.

※Tape Specification : 3000pcs Per Reel.

Packing Size													
Item	W	P1	E	F	Do	D1	Po	10Po	P2	Ao	Bo	Ko	t
Spec	8.00	4.00	1.75	3.50	1.50	1.00	4.00	40.00	2.00	1.88	3.50	1.27	0.23
Tolerance	±0.20	±0.10	±0.10	±0.05	+0.10 -0.00	±0.05	±0.05	±0.20	±0.05	±0.10	±0.10	±0.10	±0.05



- Package Dimensions of Reel:



- Luminous Intensity BIN Limits

Test condition: @5mA		
BIN Code	IV min (mcd)	IV max (mcd)
F2	14.5	18.0
G1	18.0	22.5
G2	22.5	28.5
H1	28.5	36.0
H2	36.0	45.0

- Dominant Wavelength BIN Limits

Test condition: @5mA		
BIN Code	λ D min (nm)	λ D max (nm)
1	465	470
2	470	475

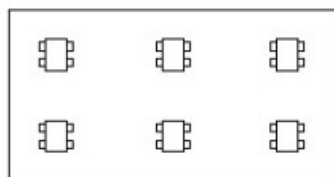
- Forward Voltage BIN Limits

Test condition: @5mA		
BIN Code	Vf min (v)	Vf max (v)
C	2.6	2.7
D	2.7	2.8
E	2.8	2.9
F	2.9	3.0
G	3.0	3.1

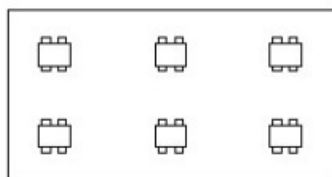
• Application Notes for LED SMD

(I) Mounting to a PCB

Design the product so that the devices will not be mounted in the same direction as the warp of the PCB.

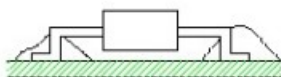


No



Yes

In manual soldering do not move the lead pins with the soldering edge.
Avoid applying excessive solder reinforcement.



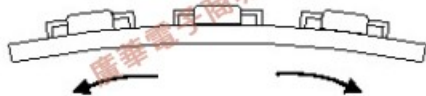
No



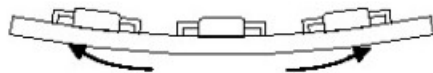
Yes

Do not try to correct the position of the devices after soldering.

Do not warp PCB after soldering.



No



Yes

(II) Cleaning

(1) Solvents

The package resin may be penetrated by solvents used in cleaning. Refer to the table below for usable solvents.

Solvent	Usable
Ethyl alcohol	Yes
Isopropyl alcohol	Yes
Chlorosen	No
Acetone	No
Trichloroethylene	No

(Notes)

- ◆ There is a world-wide movement to restrict the use of chlorofluorocarbon (CFC) based solvents and we recommend that you avoid their use. However, before using a CFC substitute solvent, carefully check that it will not penetrate the package resin.

(2) Cleaning Methods

Cleaning Method	Usable	Remarks
Solvent cleaning	Yes	Immersion up to one minute at room temperature
Ultrasonic cleaning	Yes/No	Test the cleaning under actual conditions and check for abnormalities before actual use.

(Notes)

- ◆ The affect on the device from ultrasonic cleaning differs depending on the size of the cleaning bath, ultrasonic output, duration, board size and device mounting method. Test the cleaning method under actual conditions and check for abnormalities before actual use.
- ◆ Since the device is very small, it may be damaged by excessive stress. So, pay special attention to the transport method and handling.
- ◆ Please contact our representative before using a cleaning solvent or method not given above.

(III) Warranty

- ◆ YIOW CHIE warrants that its LED's conform to the foregoing specifications and that YIOW CHIE will convey good title to all LED's sold.
- ◆ YIOW CHIE disclaims all other warranties including the implied warranties of merchantability and fitness for a particular purpose.
- ◆ In the event any LED supplied by YIOW CHIE is found not to conform to the foregoing specifications within ninety days of receipt, YIOW CHIE will repair or replace the LED, at YIOW CHIE's option, provided that User.
 - (1) Promptly notifies YIOW CHIE in writing of the details of the defect.
 - (2) Ships the LED at User's expense to YIOW CHIE for examination.
 - (3) The defect is due to the negligence of YIOW CHIE and not mishandling or misuse by User.
- ◆ YIOW CHIE cannot take any responsibility for any troubles that are caused by using the LED's at conditions exceeding our specifications.
- ◆ These specifications are applied only when a LED stands alone and it is strongly recommended that the User of the LED confirms the properties upon assembly. YIOW CHIE is not responsible for failures caused during and after assembling.
- ◆ These LED's are designed and manufactured for standard applications such as electric home appliances, communication equipment, office equipment, electronic instrumentation and so on.
- ◆ It is recommended to consult with YIOW CHIE in advance if User's application requires any particular quality or reliability which concerns human life. Examples would medical equipment, aerospace applications, traffic signals, safety system equipment and so on.