SPECIFICATION FOR APPROVAL

Product Name：5050 0.2W 3V

Document Number：TY-5050LXW5E3XX-XRX

Version Number：201901

Page Number：13 Pages

SDCM：standard:（ ） other：( )

Tolerance :Based on Tenin Testing Standard

Product Application:

Customer Requirement:

ShenZhen Teng Ying Lighting.,Ltd		Customer Code ：	
Prepared		Engineering	
Checked		Quality	
Approved		Date	

Confirm result

□Approve (Please sign in the confirmation column.)

□Reject(Please write down the reason for rejecting.)

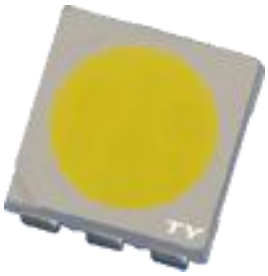
Reason:

Tel: +86-755-23072575 Cell Phone: +86-13826591311 Skype: teninlighting02 Email: censachou@teninlighting.com https://www.teninlighting.com

Add: F5,Building C, Heng Chang rong (XingHui) Technology Industry Park, Huaning West Road, Dalang, LongHua district, Shenzhen, China

SMD5050 LEDS of 0.2W

TY-5050XXWXXXXX-XXX



Features

- PPA package.
- Top view white LED.
- High luminous intensity.
- Wide viewing angle.
- ROHS and CE compliant.
- Great moisture resistance.

Description

5050 leds, an ideal LED for lighting applications, has high efficency, high Ra, low power consumption and wide viewing angle etc.

Applications

- General lighting.
- Decorative Lighting.
- Indicators.
- Illumination.
- Switch lights.
- Strip lighting.

Product number

TY-	5050X	XW	X	X	X X	X–	X	X	X
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩

① Company abbreviation.
② Dimension L×W=5.0×5.0mm and appearance.
③ Color WW,NW,DW,CW.
④ Correlated color temperature(CCT).
⑤ Power.
⑥ Forward Voltage.
⑦ Luminous flux.
⑧ Ra.
⑨ Encapsulating adhesive.
⑩ Color tolerance(SDCM).

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Absolute Maximum Ratings (Ts=25℃)

Item	Symbol	Rating	Unit
Forward Current	IF	90	mA
Peak Forward Current (Duty 1/10 @10ms)	IFP	120	mA
Power Dissipation	Pd	270	mW
Operating Temperature	Topr	-40~+85	℃
Storage Temperature	Tstg	-40~+100	℃
Thermal Resistance(Junction/Soldering point)	Rth JS	85	℃/W
Junction Temperature	T j	115	℃
Anti-static Level(HBM)	ESD	2000	V
Limit to 260℃ Reflow Soldering	Tsol	10	sec
Limit to 350℃ Hand Soldering	Tsol	3	sec

Electro-Optical Characteristics (Ts=25℃)

Item	Symbol	Min	Typ	Max	Unit	Condition
Luminous Flux	Φ	20	-----	32	lm	IF=60mA
Forward Voltage	VF	2.8	-----	3.4	V	IF=60mA
Color Rendering	Ra	80	-----	-----	-----	IF=60mA
Viewing Angle	2θ1/2	-----	120	-----	deg	IF=60mA
Reverse Current	IR	-----	-----	5	uA	VR =7V
Range of Correlated color temperature	CCT	1800		25000	K	IF=60mA

Notes:
① Tolerance of Luminous flux: ±11%.
② Tolerance of Forward Voltage: ±0.1V.
③ Tolerance of Ra: ±2.
④ The products are sensitive to Electro-Static discharge and must be carefully treated when being handled.

Bin range of Ra

Example: TY-5050LWW5E3CN-HRX

Symbol	Description
A	No Ra
B	Ra : 50 -55
C	Ra : 55 -60
D	Ra : 60 -65
E	Ra : 65 -70
F	Ra : 70 -75
G	Ra : 75 -80
H	Ra : 80 -85
I	Ra : 85 -90
J	Ra : 90 -95
K	Ra : 95 -100

Notes: Tolerance of Ra: ±2

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Bin range of luminous flux

Example: TY-5050LWW5E3CN-HRX

Bin code	min	max	Unit	Condition
L	20	22	lm	IF=60mA
M	22	24	lm	IF=60mA
N	24	26	lm	IF=60mA
P	26	28	lm	IF=60mA
Q	28	30	lm	IF=60mA
R	30	32	lm	IF=60mA

Bin range of forward voltage

Example: TY-5050LWW5E3CN-HRX

Bin code	min	max	Unit	Condition
3A	2.6	2.7	V	IF=60mA
3B	2.7	2.8	V	IF=60mA
3C	2.8	2.9	V	IF=60mA
3D	2.9	3.0	V	IF=60mA
4A	3.0	3.1	V	IF=60mA
4B	3.1	3.2	V	IF=60mA

Note:

① Tolerance of Forward Voltage: ±0.1V.

② The narrowest VF bin supporting 3 continuous bins.

Bin range of color temperature

Example: TY-5050LWW5E3CN-HRX

Bin code	min	max	Unit	Condition
WW1	1700	2000	K	IF=60mA
WW2	2000	2300	K	IF=60mA
WW3	2300	2600	K	IF=60mA
WW4	2600	2900	K	IF=60mA
WW5	2900	3200	K	IF=60mA
WW6	3200	3500	K	IF=60mA

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Bin range of Color tolerance

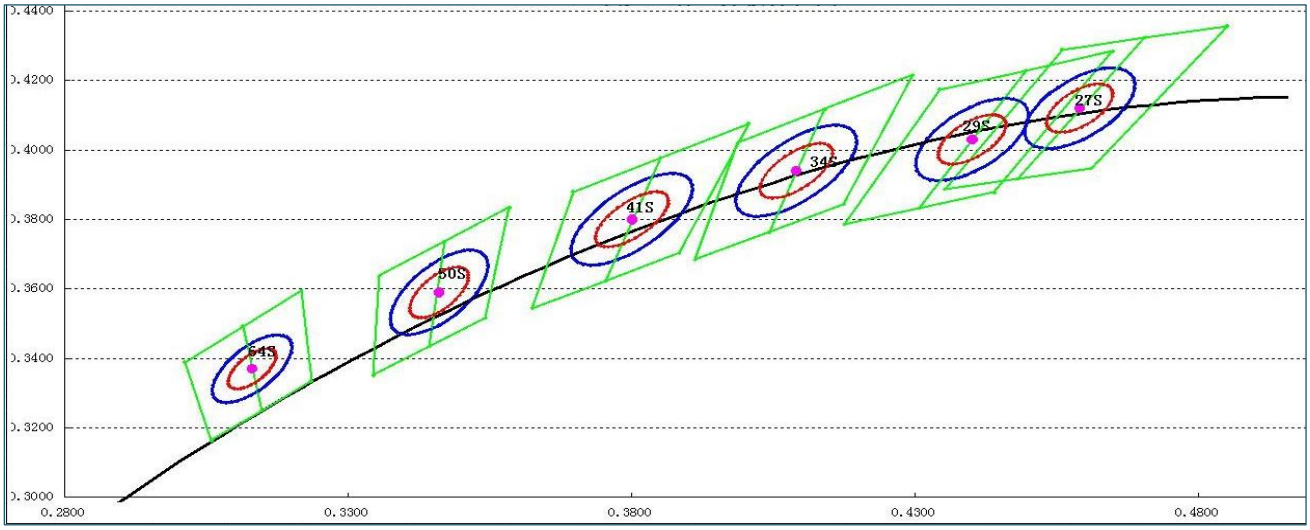
Example: TY-5050LWW5E3CN-HRX

Bin code	min	max	Unit	Condition
3	-----	3	steps	IF=60mA
5	-----	5	steps	IF=60mA
7	-----	7	steps	IF=60mA
No mark	7	-----	steps	IF=60mA

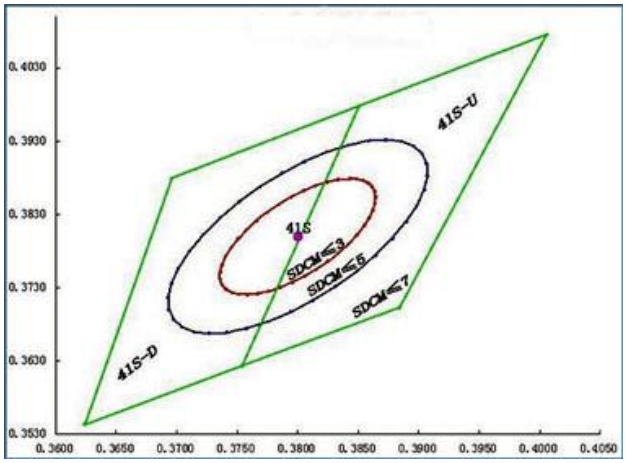
List of major production

Product number	Ra	CCTtyp(K)	Φmin(lm)	Φmax(lm)
TY-5050LWW2E3XK-HR	80-85	2200	20	22
TY-5050LWW5E3XN-HR	80-85	3000	24	26
TY-5050LWW6E3XN-HR	80-85	3300	24	26
TY-5050LWW8E3XP-HR	80-85	4200	26	28
TY-5050LWWAE3XP-HR	80-85	5300	26	28
TY-5050LWWDE3XP-HR	80-85	6500	26	28

The Corresponding diagram of SDCM on CIE1931 Chromaticity Diagram



Details of SCDM of 41S



Coordinates within ellipse in Red : SDCM ≤ 3
Coordinates within ellipse in Blue : SDCM ≤5
Coordinates within square in Green : SDCM ≤7

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Bin Range of Chromaticity Coordinates

CCT	Bin Code	CIE-X	CIE-Y	Bin Code	CIE-X	CIE-Y
27S 2700K	27S-D	0.4352	0.3887	27S-U	0.4481	0.3917
		0.4559	0.4289		0.4705	0.4323
		0.4705	0.4323		0.4850	0.4357
		0.4481	0.3917		0.4610	0.3947
		0.4352	0.3887		0.4481	0.3917
29S 3000K	29S-D	0.4175	0.3786	29S-U	0.4307	0.3832
		0.4343	0.4174		0.4496	0.4229
		0.4496	0.4229		0.4648	0.4284
		0.4307	0.3832		0.4439	0.3878
		0.4175	0.3786		0.4307	0.3832
34S 3500K	34S-D	0.3911	0.3684	34S-U	0.4043	0.3764
		0.3986	0.4020		0.4141	0.4118
		0.4141	0.4118		0.4296	0.4216
		0.4043	0.3764		0.4174	0.3843
		0.3911	0.3684		0.4043	0.3764
41S 4000K	41S-D	0.3624	0.3544	41S-U	0.3754	0.3624
		0.3696	0.3880		0.3851	0.3978
		0.3851	0.3978		0.4006	0.4076
		0.3754	0.3624		0.3884	0.3703
		0.3624	0.3544		0.3754	0.3624
50S 5000K	50S-D	0.3344	0.3352	50S-U	0.3443	0.3434
		0.3355	0.3639		0.3470	0.3737
		0.3470	0.3737		0.3584	0.3834
		0.3443	0.3434		0.3542	0.3516
		0.3344	0.3352		0.3443	0.3434
64S 6500K	64S-D	0.3058	0.3163	64S-U	0.3147	0.3249
		0.3011	0.3389		0.3114	0.3492
		0.3114	0.3492		0.3217	0.3595
		0.3147	0.3249		0.3235	0.3335
		0.3058	0.3163		0.3147	0.3249

Note:
① The above data is based on driving current of 60mA.
Tolerance of Chromaticity Coordinates: ±0.01.

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Bin Code of Macadam 3 steps to 6 steps

Color	Steps	Center color coordinates		G11	G12	G22
		Cx	Cy			
F2700 (27S)	≤3	0.4590	0.4120	40.0	-19.5	28.0
	≤4					
	≤5					
	≤6					
F3000 (29S)	≤3	0.4400	0.4030	39.0	-19.5	27.5
	≤4					
	≤5					
	≤6					
F3500 (34S)	≤3	0.4090	0.3940	38.0	-20.0	25.0
	≤4					
	≤5					
	≤6					
F4000 (41S)	≤3	0.3800	0.3800	39.5	-21.5	26.0
	≤4					
	≤5					
	≤6					
F5000 (50S)	≤3	0.3460	0.3590	56.0	-25.0	28.0
	≤4					
	≤5					
	≤6					
F6500 (64S)	≤3	0.313	0.337	86.0	-40.0	45.0
	≤4					
	≤5					
	≤6					

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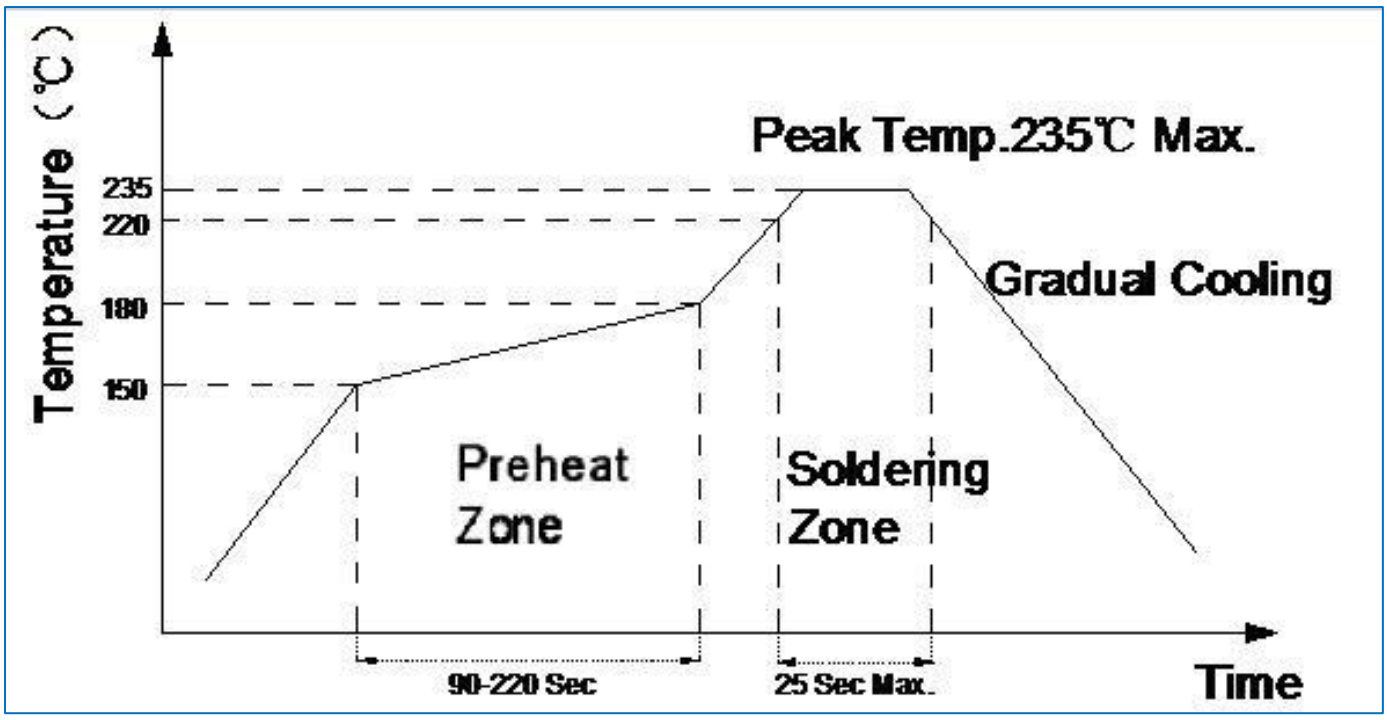
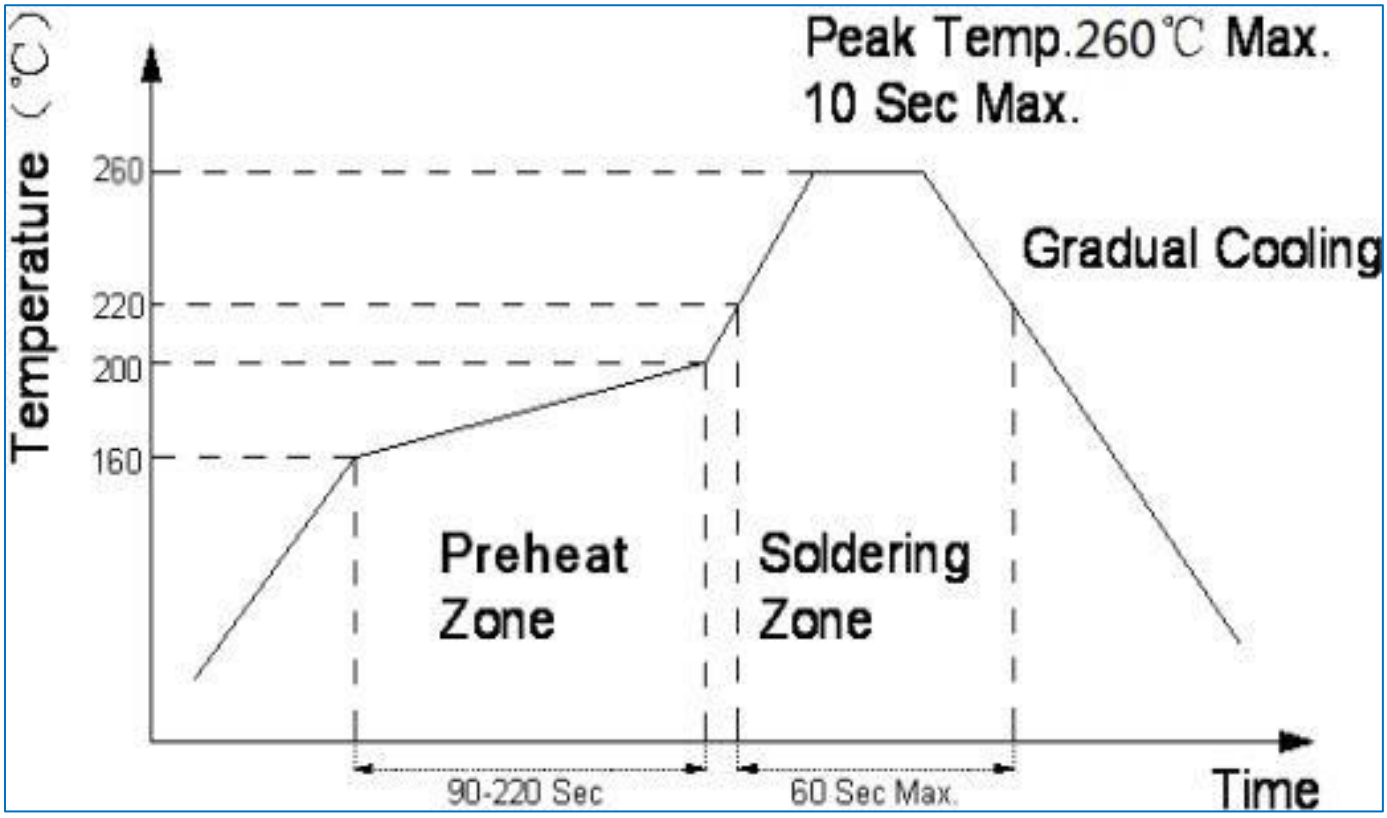
Recommendations of the conditions for reflow soldering.

Soldering with Lead tin.



Soldering with Lead-free tin.



NOTES：

① We recommend the temperature of reflow to be 255℃±5℃.

② Do not apply stress to the leds' surface while it is exposed to high temperature.

③ Reflowing Number should be less 2 times.

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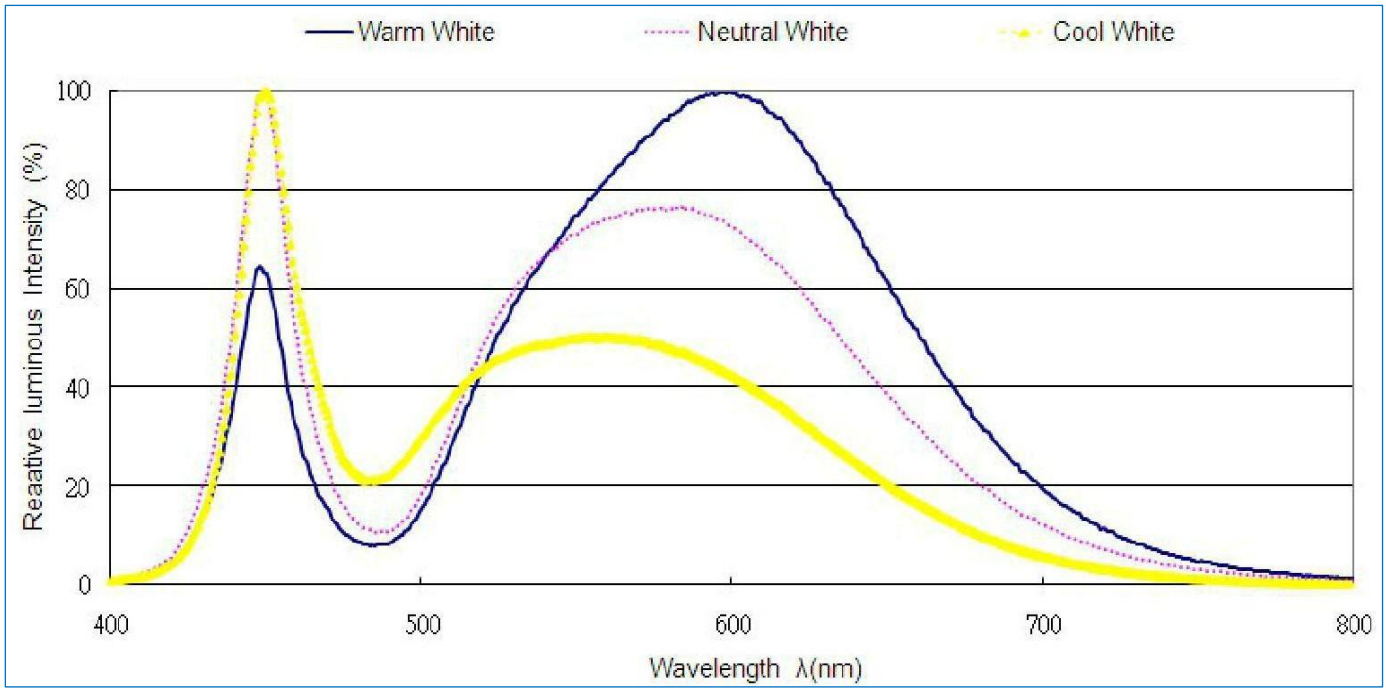
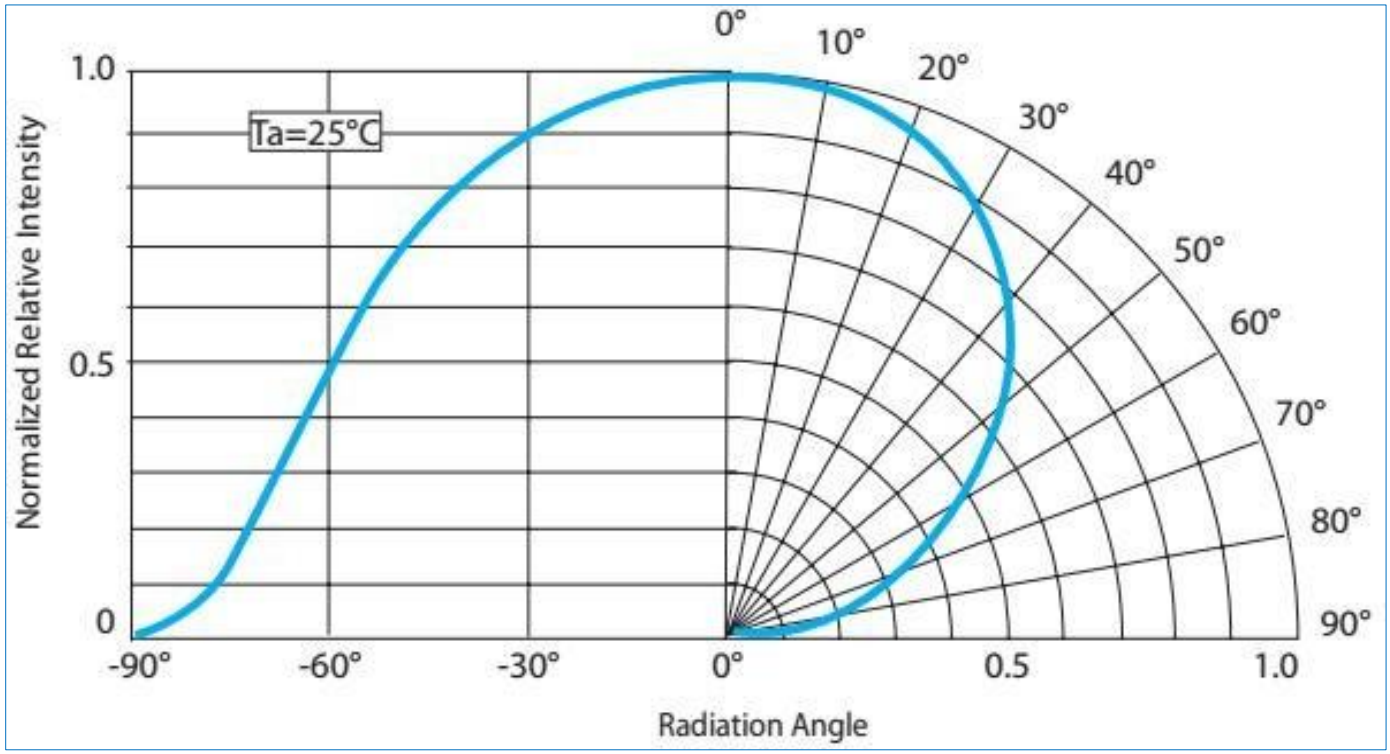
Spectrum Distribution



Typical Spectral Distribution



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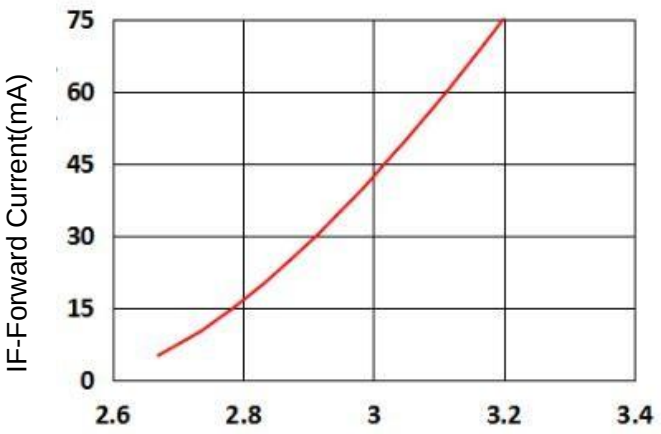
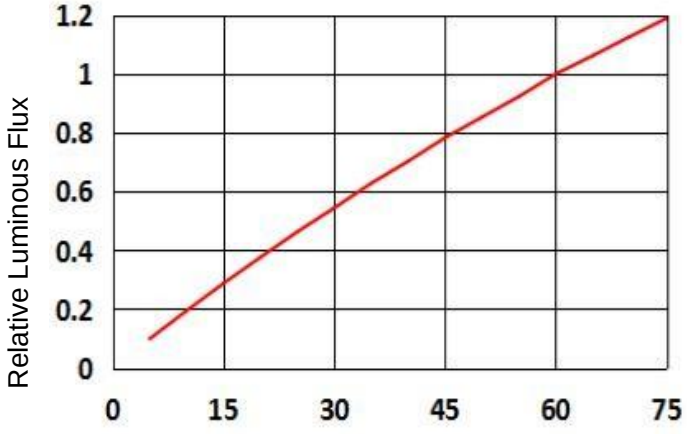
Typical Electro-Optical Characteristics Curves

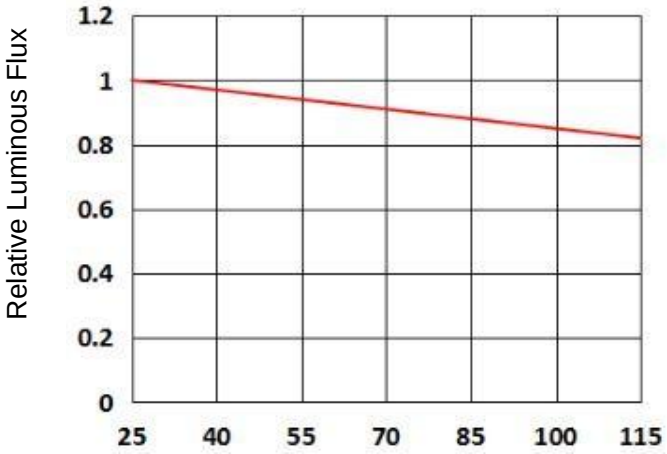
Forward Current VS Forward Voltage



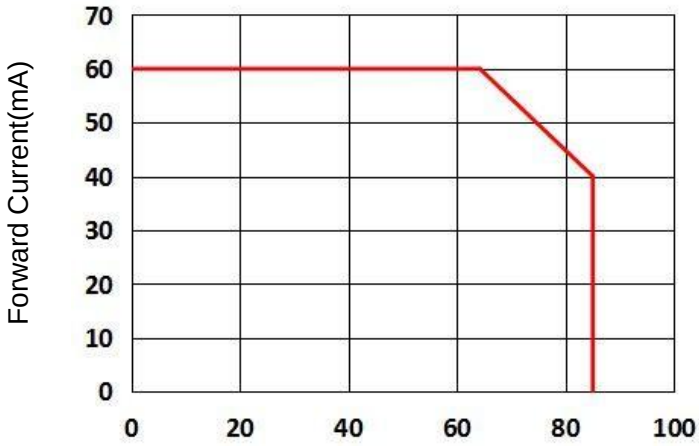
Relative Luminous Flux VS Forward Current



Relative Luminous Flux VS Junction Temperature



Forward Current VS Soldering Temperature



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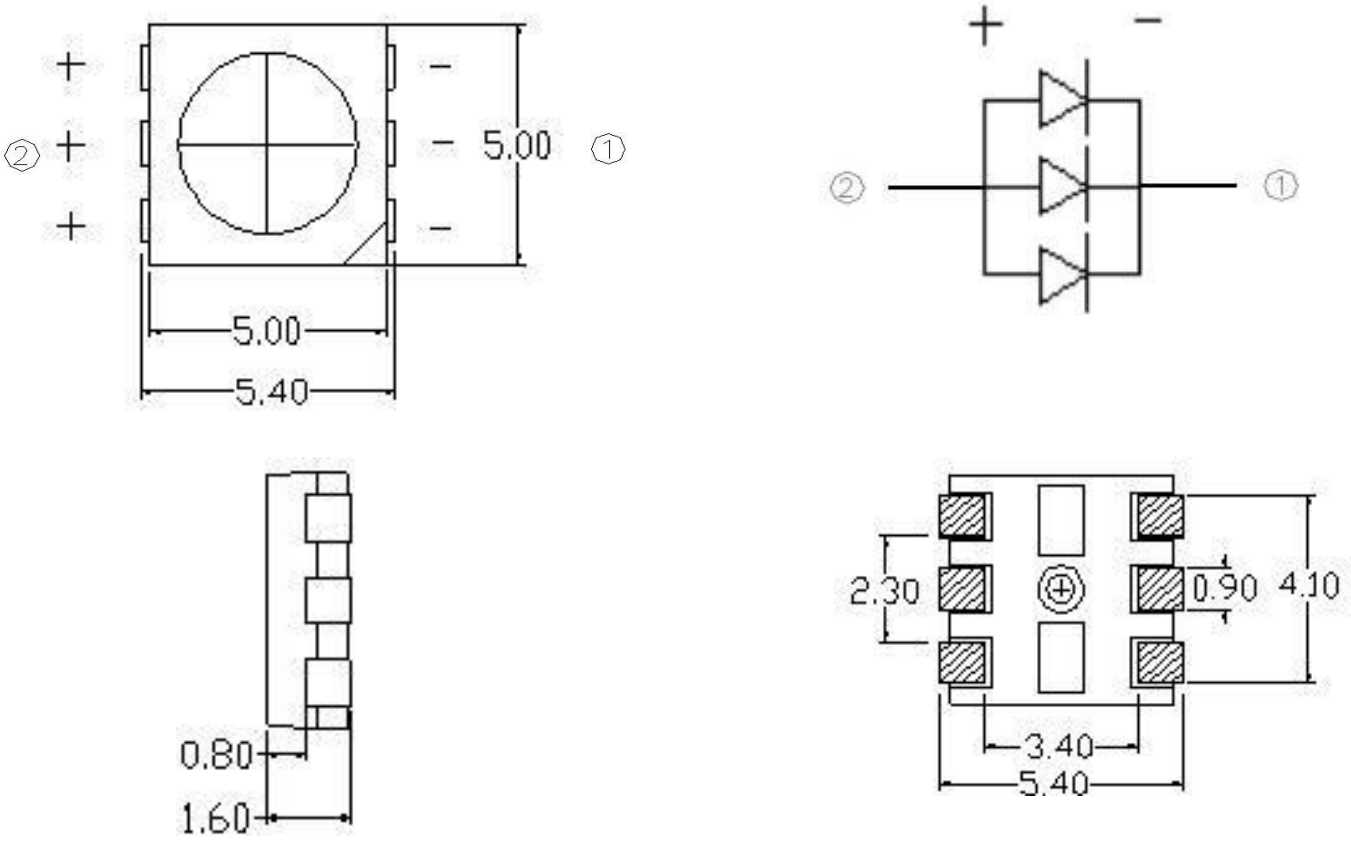
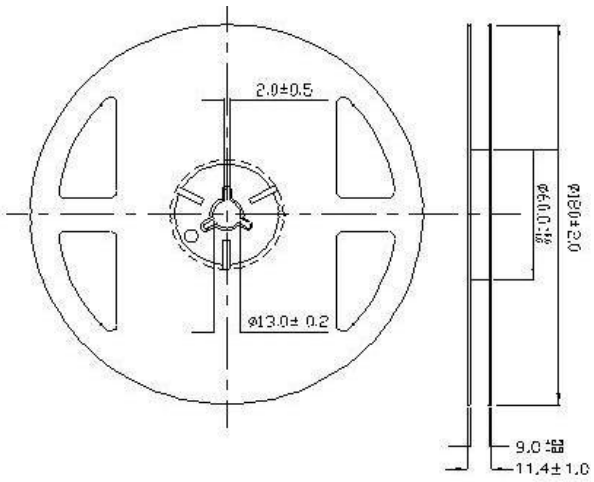
Package Dimension

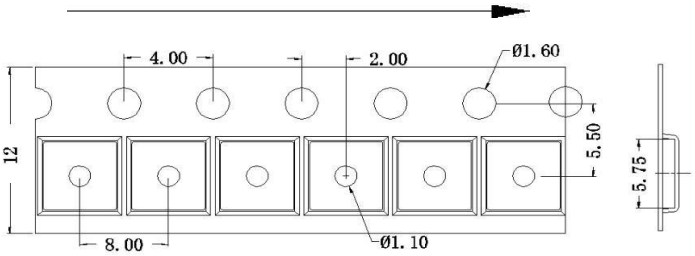


Note:
Tolerance unless mentioned is ±0.15mm; unit：mm.

Reel Dimensions



Progressive direction



Note:
① Tolerance unless mentioned is ±0.1mm; Unit = mm.
② Carrier Tape Dimensions: Loaded Quantity 1000 pcs Per Reel.

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Precautions for using leds

Thanks for using LED products of Shenzhen Teng Ying Lighting Co.,Ltd., in order to enhance your understanding of the characteristics of our products, and avoid unnecessary damage of the product that due to human factors. We are providing the corresponding instructions for handling the LEDs. The LEDs actual performance will variant because of the different application design, mode of operation and conditions of use. This Instructions can't cover all questions which may encounter during customer use process, We sincerely apologize for any inconvenience this may cause.

1、Declaration:

In order to confirm if it is right to the application， pre-study is necessary before use the product. This product presentation does not guarantee any patent. Relate to imports and exports LED product Legal liability should be responsible by customer, so please verify relevant provision about the LED product in your target market. We may change specification from time to time because of product continuous development, without prior notification or public announcement. An agreement of formal product specification is required which prior to mass production.

2、Before use：

We suggest that the same parameter products should be used together, such as BIN coordinate, Vf and luminous flux etc .

3、Package and Storage：

1)To avoid the moisture absorb, we recommend keeping LEDs in a dry box (or desiccator) with a desiccant . The recommended storage conditions are 5 to 30℃, 50% maximum humidity. You have to dehumidify LEDs if stored for more than 3 months, the re-bake condition with 70℃/24 hours.

2) Precaution of handling

The LED is SMD package, not recommended using solder dipping process, package quality may affected and the light intensity to drop.

a) Soldering should be done right after open the packing within 12 hours.
b) Remain LEDs are to seal in packing and store in 5 ~ 40℃, ≦30%RH.
c) Dehumidify LEDs at 70℃/24 hours if opened packing and exposed to the air for 24 hours or desiccant changes color from blue to pink.

3)The solder pad/metal surface is Ag-plated and can be damaged easily by corrosive substances. Need to keep LEDs away from corrosive substance and environment, in order to avoid color fade, soldering issue, or may result in failure of LED. Also, high temperature and high humidity environment will affect the LEDs performance and quality.

4、Heat Generation:

1)Thermal design of the end product is of very important. Please consider the heat generation of the LED when design the system. The overall operation temperature will increasing subject to input power, the thermal resistance of the circuit board and density of LEDs and other components placed on the board. It is necessary to avoid intense heat generation and operate within the maximum ratings given.

2)The operating current is decided by considering the ambient temperature and maximum junction of LEDs.

5、Recommended soldering:

1)Please refer to reflow recommendation and not suitable for the solder dipping process.

2)Reflow soldering should not be done more than two times.

3)Components should not be mounted on warped direction of PCB. Please avoid rapid cooling after soldering. Any mechanical force or any excess vibration shall not be accepted to apply during cooling process. After soldering, do not warp the PCB.

4)Repairing should not be done after the LEDs have been soldered. When repairing is unavoidable, a double-head/suitable soldering iron is suggested. It should bRUNLe confirmed before hand whether the characteristics of the LEDs will not be damaged by repairing.

6、Handling of Electrostatic Discharge：

These products are sensitive to electrostatic discharge. Please to provide low level electrostatic discharge environment for assembled LEDs, wearing of a wristband or anti-static gloves when handling this product. All devices, equipment and machinery must be properly grounded. It is recommended that precautions be taken against surge voltage to the equipment. When inspecting the final products in which LEDs were assembled, it is recommended to check whether the assembled LEDs are damaged by static electricity or not. It is easy to find

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ESD-damaged LEDs by a light-on test @1mA/dice（reference).

7、Cleaning：

Tenin lighting suggests using isopropyl alcohol for cleaning if necessary. 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.If have to do that, please pre-test the new cleaning method for preventing affect the LEDs quality.

8、Other caution：

1) White LEDs are devices which are packaged by combining Blue LEDs and special phosphors. Consequently, the color of the LEDs is slightly changed with different driving current. Care should be taken when using LEDs

2)Anti radioactive ray design is not considered for the products listed here in.

3)Gallium Arsenide is used in some of the products listed in this publication. These products are dangerous if they are burned or shredded in the process of disposal. It is also dangerous to drink the liquid or inhale the gas generated by such products when chemically disposed.

4)Long time exposure of sunlight or occasional UV exposure will cause lens discoloration.

5)LED electrode and lead frame are comprised of a silver plated copper alloy. The silver surface may be affected by environments which contain corrosive gases and so on. Please avoid conditions which may cause the LED to corrode, tarnish or discolor. This corrosion or discoloration might lower solder ability or might affect on optical characteristics.

6)Please do not recommend to cover the silicone resin of the LEDs with other resin (epoxy, urethane, etc)

7)When populating boards in SMT production, there are basically no restrictions regarding the form of the pick and place nozzle, except that mechanical pressure on the surface of the resin must be prevent.

8)Please be aware that this product should not come into contact with other parts in assembled status.

9)Please design a circuit that prevents any reverse voltage (excess current) from being applied to this product instantaneously when the circuit is ON or OFF.

10)Surface of Lead frame is Ag-plated and elementary substance Ag easily react with sulphur and halogen material(F, CL,Br and I), which result in change of surface and color. So you have to keep LED away from those elementary substance listed above(may contained in accessories, raw material of driver and environmental materials) to avoid LED failure(Decay, color shift and failure)

11)Avoid touching silicone resin parts especially by sharp tools such as Pincette(Tweezers)

12)This product complies with RoHS directives. This product is intended for the application in general electronic devices (such as office automation equipment, communication devices, audio-video equipment, home electrical appliances, measurement hardware and others), especially in general lighting. In cases where this product is used for the applications that requires high reliability or could directly affect human life or health due to failure or malfunction (aerospace hardware, medical equipment, atomic control equipment and others), please consult with our sales representatives beforehand. Our warranty does not cover situations where this product undergoes secondary fabrication such as changes in shape.

THE END

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