



0.5W Mudum Power Thin Series Datasheet



Features:

- PLCC-2 package.
- Silicone resin.
- GaN technology Chip Material.
- High luminous Intensity and high efficiency.
- High Color rendering index.
- Low Color Tolerance Adjustment.
- 120°Wide viewing angle.
- Compatible with automatic placement equipment.
- Compatible with reflow solder process.
- Suitable for all SMT assembly methods.
- Doesn't contain restriction Substance, comply ROHS standard.

Typical Application:

- Indoor Displays.
- Backlighting (illuminated advertising, general lighting).
- Substitution of fluorescent lamps.
- Interior Automotive Lighting.
- Signal and Symbol Luminaire.

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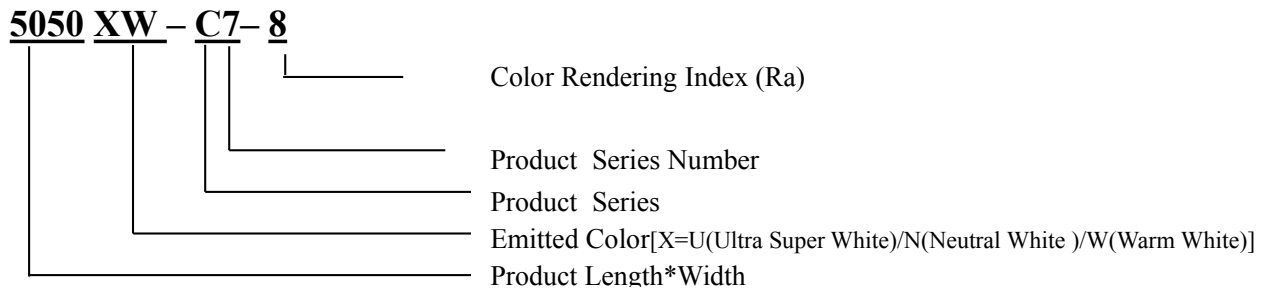
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Customer confirm	Approved by	Checked by	Issued by

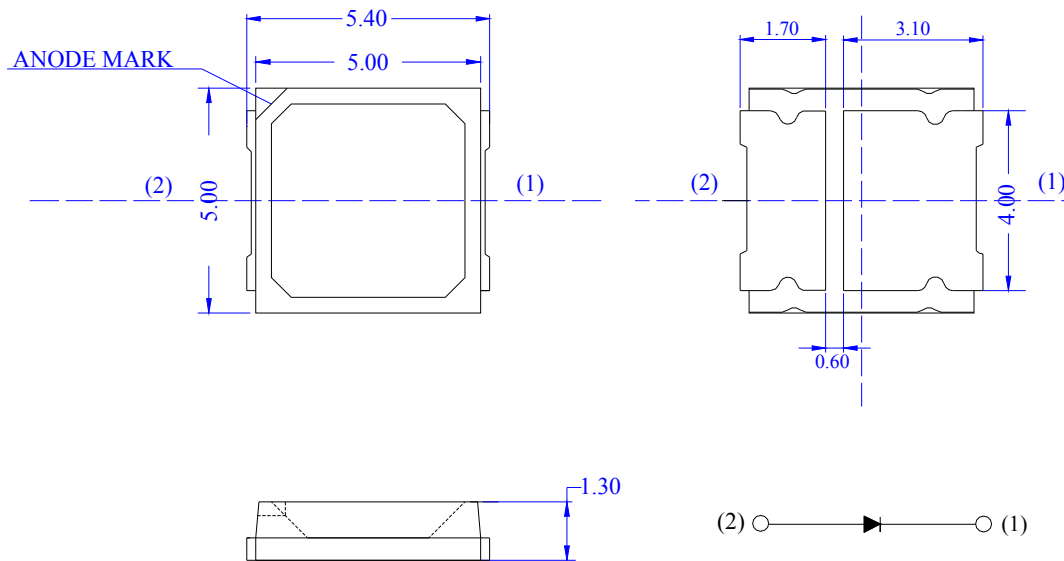
◆ **General Information**

Product Nomenclature

The following table describes the available color, color rendering index (Ra) and product series. For more flux and forward voltage information, please consult the Bin range of Chromaticity Coordinates and Chromaticity Coordinates & Bin grading diagram.



◆ **Package Dimensions**



Unit: mm

Figure: 0.5W mudum power thin series circuit diagram

Tolerance: ±0.2mm unless otherwise noted

Electrodes: Ag Plating Copper Alloy

Encapsulating Resin: Silicon Resin

Package: Heat-Resistant Polymer

◆ **Absolute Maximum Rating (Ta=25°C)**

The following table describe absolute maximum ratings of 0.5W medium power thin series.

Parameter	Symbol	Max.	Unit
Power Dissipation	Pd	600	mW
Pulse Forward Current*	I _{FP}	180	mA
DC Forward Current	I _F	150	mA
Reverse Voltage	V _R	5	V
Operating Temperature Range	Topr	-30°C ~ 80°C	°C
Storage Temperature Range	Tstg	-40°C ~ 100°C	°C

● I_{FP} condition: pulse width ≤0.1ms, duty cycle ≤1/10.

◆ **Electrical and Optical Characteristics (Ta=25°C)**

Luminous intensity characteristics at Ta=25°C for 0.5W medium power thin series.

Part Name	TC /K	Ra	Luminous Flux / lm		Luminous intensity/mcd	I _R (V _R =10V) / uA	Typ. Δλ / nm	2θ _{1/2} /°	Test Condition
		Typ.	Min	Max.					
5050WW-C7-8	2580-2870K	80	48	52	15000-20000	<10	129	120	150 mA
	2870-3220K								
	3220-3710K								
5050NW-C7-8	3710-4260K	80	52	56	20000-25000	<10	25	120	
	4260-4745K								
5050UW-C7-8	4745-5311K	80	56	60	25000-30000	<10	25	120	
	5310-6020K								
	6020-7040K								

Note: 1. Tolerance of Luminous Intensity ±10%.

2. Tolerance of Forward voltage ±0.05V.

3. Luminous Flux is measured by WENRUN's equipment on bare chips, which is only for your reference, not 100% test value. The manufacturer do not guarantee this value.

◆ **BIN range**Forward voltage (tolerance is $\pm 0.05\text{V}$ @ $I_F=150\text{ mA}$):

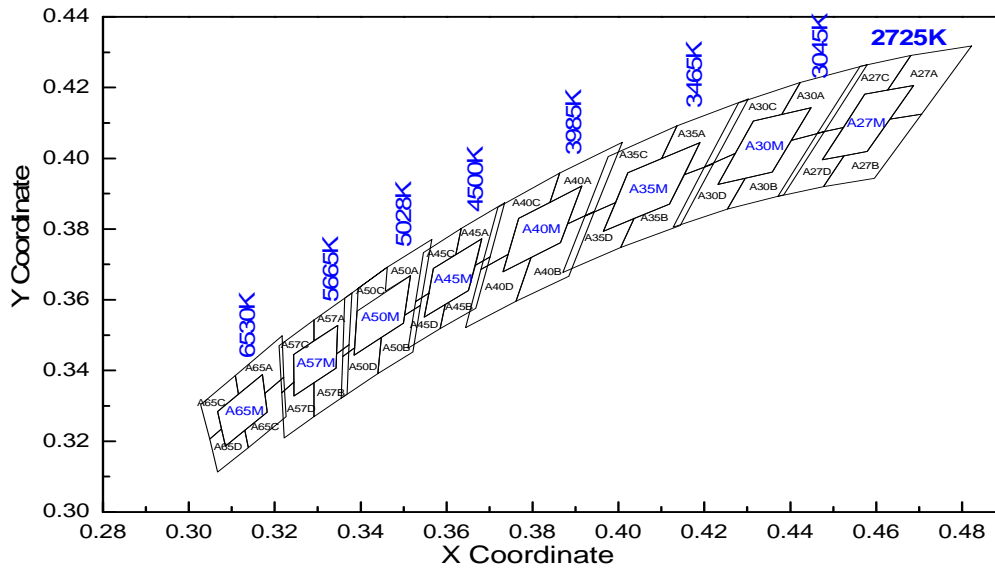
BIN CODE	Min.(V)	Max. (V)
S	2.9	3.0
T	3.0	3.1
U	3.1	3.2
V	3.2	3.3
W	3.3	3.4
X	3.4	3.5

Luminous intensity (tolerance is $\pm 10\%$ @ $I_F=150\text{ mA}$):

BIN CODE	Min. (mcd)	Max. (mcd)
B13	12000	16000
B14	16000	20000
B15	20000	25000
B16	25000	30000

◆ **Bin grading diagram & Chromaticity Coordinates**

- Please refer to CIE 1931 Chromaticity diagram

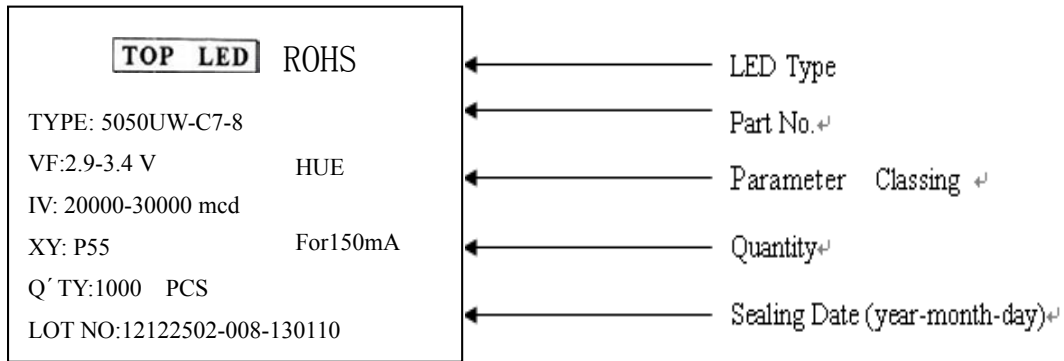


Bin range of Chromaticity Coordinates (tolerance is ± 0.01 @ $I_f = 150$ mA):

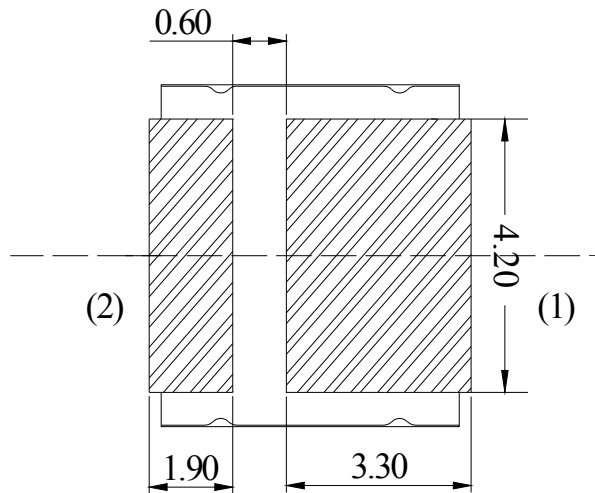
ANSI 分光标准													
CCT	code	x1	y1	x2	y2	x3	y3	x4	y4	x5	y5	x6	y6
2580-2725K	A27A	0.4822	0.4318	0.4706	0.4125	0.4632	0.4111	0.4687	0.4206	0.4627	0.41927	0.4681	0.4291
	A27B	0.4706	0.4125	0.4632	0.4111	0.4579	0.4019	0.45249	0.4007	0.4477	0.392	0.4596	0.3943
2725-2870K	A27C	0.4681	0.4291	0.4627	0.41927	0.4574	0.4181	0.4524	0.4087	0.4464	0.4071	0.4563	0.426
	A27D	0.4524	0.4087	0.4464	0.4071	0.4371	0.3892	0.4477	0.392	0.45249	0.4007	0.4475	0.3996
2660-2790K	A27M	0.4687	0.4206	0.4579	0.4019	0.4475	0.3996	0.4574	0.4181				
2870-3045K	A30A	0.4579	0.4265	0.4479	0.4075	0.4402	0.4051	0.4448	0.4143	0.438	0.41237	0.4423	0.4215
	A30B	0.4479	0.4075	0.4402	0.4051	0.4358	0.3961	0.42952	0.39436	0.4254	0.3856	0.4385	0.3897
3045-3220K	A30C	0.4423	0.4215	0.438	0.41237	0.4314	0.4105	0.4272	0.4014	0.4201	0.3975	0.4279	0.4156
	A30D	0.4272	0.4014	0.4201	0.3975	0.4127	0.3805	0.4254	0.3856	0.42952	0.39436	0.4232	0.3926
2950-3150K	A30M	0.4448	0.4143	0.4358	0.3961	0.4232	0.3926	0.4314	0.4105				
3220-3465K	A35A	0.4302	0.4168	0.4221	0.3984	0.4154	0.3954	0.419	0.4044	0.41007	0.39993	0.4136	0.4092
	A35B	0.4221	0.3984	0.4154	0.3954	0.4119	0.3871	0.40363	0.383	0.4005	0.3748	0.4144	0.381
3465-3710K	A35C	0.4136	0.4092	0.41007	0.39993	0.4022	0.3959	0.3993	0.3875	0.3922	0.3837	0.3976	0.4005
	A35D	0.3993	0.3875	0.3922	0.3837	0.3871	0.3677	0.4005	0.3748	0.40363	0.383	0.3965	0.3794
3325-3605K	A35M	0.419	0.4044	0.4119	0.3871	0.3965	0.3794	0.4022	0.3959				
3710-3985K	A40A	0.4009	0.4045	0.3944	0.385	0.3882	0.3814	0.3915	0.3922	0.384	0.3875	0.3863	0.3958
	A40B	0.3944	0.385	0.3882	0.3814	0.3865	0.3761	0.37961	0.37189	0.3762	0.3596	0.3884	0.3666
3985-4260K	A40C	0.3863	0.3958	0.384	0.3875	0.3768	0.383	0.3743	0.3728	0.368	0.3686	0.3719	0.3862
	A40D	0.3743	0.3728	0.368	0.3686	0.3644	0.3521	0.3762	0.3596	0.37961	0.37189	0.3731	0.3679

3830-4130K	A40M	0.3915	0.3922	0.3865	0.3761	0.3731	0.3679	0.3768	0.383				
	A45A	0.3735	0.3874	0.3701	0.3721	0.3667	0.3698	0.3682	0.3772	0.36211	0.37273	0.3634	0.3802
4260-4500K	A45B	0.3701	0.3721	0.3667	0.3698	0.3651	0.3626	0.35969	0.35866	0.3585	0.3519	0.3668	0.3576
	A45C	0.3634	0.3802	0.36211	0.37273	0.3569	0.3689	0.3559	0.3619	0.3528	0.3595	0.3546	0.3734
4500-4745K	A45D	0.3559	0.3619	0.3528	0.3595	0.351	0.3463	0.3585	0.3519	0.35969	0.35866	0.3548	0.3551
4350-4650K	A45M	0.3682	0.3772	0.3651	0.3626	0.3548	0.3551	0.3569	0.3689				
	A50A	0.3565	0.377	0.3539	0.3584	0.3502	0.3556	0.3516	0.3668	0.34574	0.36243	0.3462	0.3692
4745-5028K	A50B	0.3539	0.3584	0.3502	0.3556	0.3499	0.3534	0.34485	0.34933	0.344	0.3391	0.3521	0.3452
	A50C	0.3462	0.3692	0.33941	0.36323	0.3391	0.3568	0.3386	0.3464	0.3358	0.344	0.3363	0.3605
5028-5311K	A50D	0.3386	0.3464	0.3358	0.344	0.3355	0.3322	0.344	0.3391	0.34485	0.34933	0.3385	0.3443
4820-5236K	A50M	0.3516	0.3668	0.3499	0.3534	0.3385	0.3443	0.3391	0.3568				
5410-5920K	A57M	0.3346	0.3528	0.3343	0.3407	0.3245	0.3328	0.3244	0.3445				
	A57A	0.3379	0.3619	0.3373	0.3473	0.3344	0.3447	0.3346	0.3528	0.3291	0.34843	0.3291	0.3543
5310-5665K	A57B	0.3373	0.3473	0.3344	0.3447	0.3343	0.3407	0.3291	0.33657	0.3291	0.327	0.3368	0.3333
	A57C	0.3291	0.3543	0.3291	0.34843	0.3244	0.3445	0.3245	0.3367	0.3216	0.3337	0.321	0.347
5665-6020K	A57D	0.3245	0.3367	0.3216	0.3337	0.3222	0.321	0.3291	0.327	0.3291	0.33657	0.3245	0.3328
5410-5920K	A57M	0.3346	0.3528	0.3343	0.3407	0.3245	0.3328	0.3244	0.3445				
	A65A	0.3217	0.3498	0.3221	0.3381	0.3177	0.3335	0.3171	0.3389	0.31156	0.33331	0.3108	0.3386
6020-6530K	A65B	0.3221	0.3381	0.3177	0.3335	0.3182	0.3282	0.31872	0.32312	0.3138	0.3182	0.3226	0.327
	A65C	0.3108	0.3386	0.31156	0.33331	0.3067	0.3284	0.3076	0.3235	0.3048	0.3206	0.3027	0.3304
6530-7040K	A65D	0.3076	0.3235	0.3048	0.3206	0.3067	0.3113	0.3138	0.3182	0.31304	0.32309	0.3085	0.3186
6220-6840K	A65M	0.3171	0.3389	0.3182	0.3282	0.3085	0.3186	0.3067	0.3284				

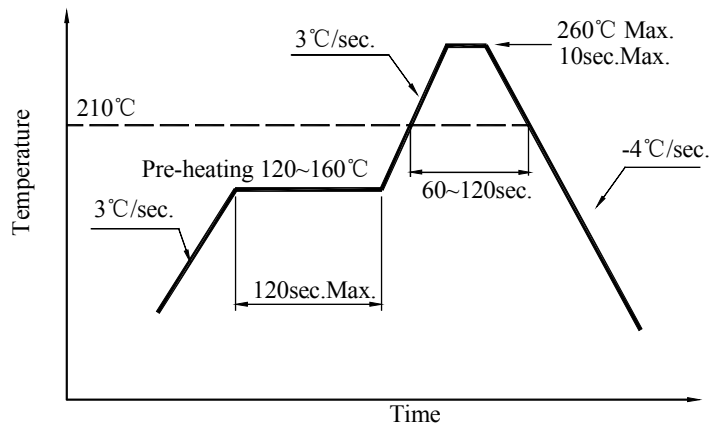
◆ **Package Label: (For example)**



◆ **Soldering Pad Dimensions**



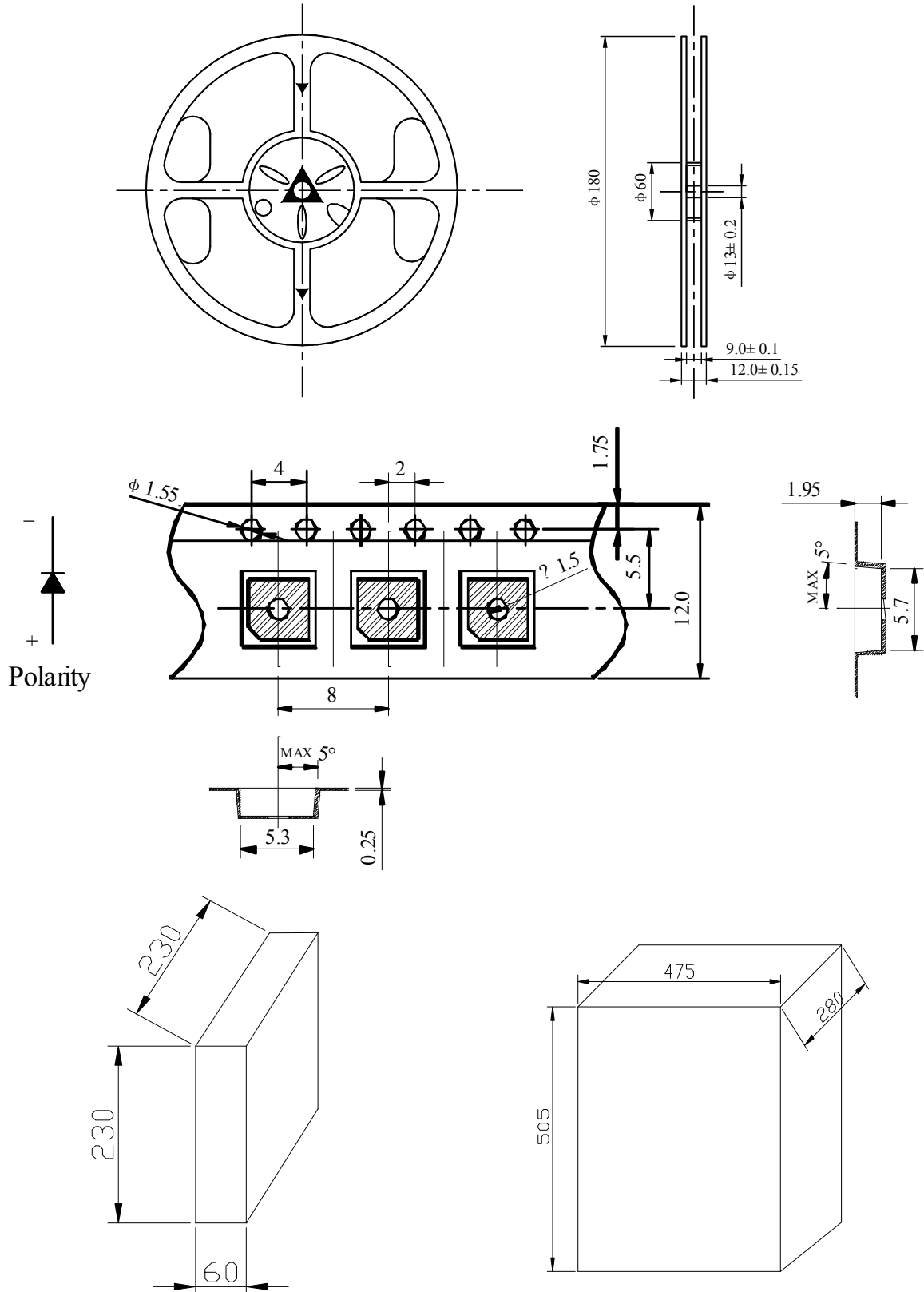
◆ **Soldering Conditions (Maximum allowable soldering conditions)**



- Reflow soldering should not be done more than two times.
- Do not stress its resin while soldering.

- After soldering, do not warp the circuit board.
- Pay attention to electrostatic (ESD).

◆ **Package Tape Specifications (1000pcs/Reel)**

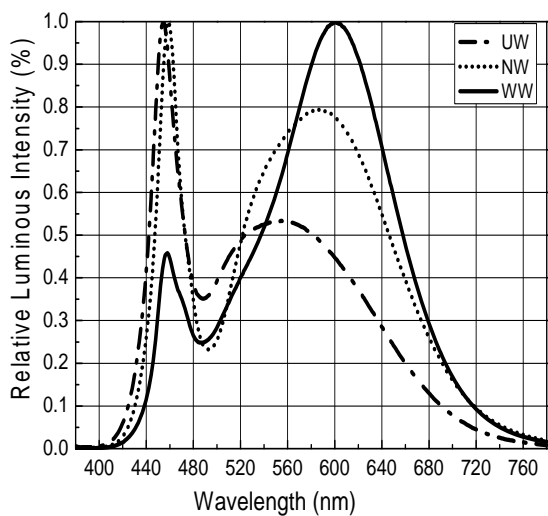


4 Reels in one Box

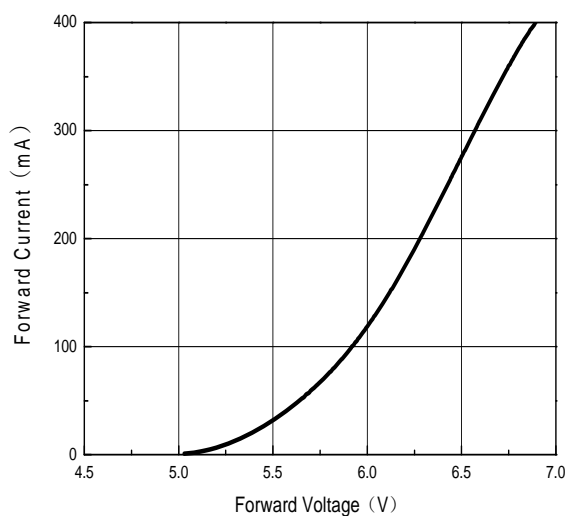
16 Boxes in one Carton

◆ **Typical Electro-Optical Characteristics Curves:**

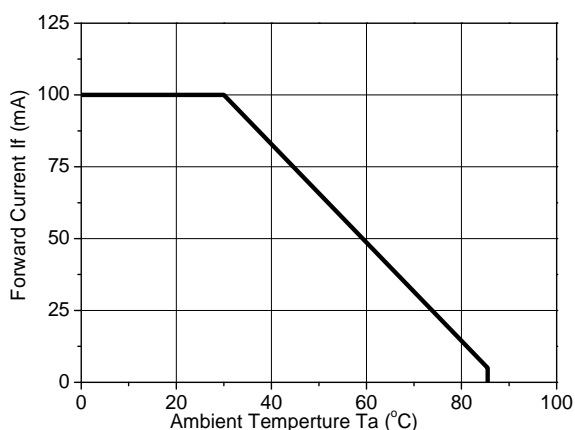
Relative Luminous Intensity Vs. Wavelength



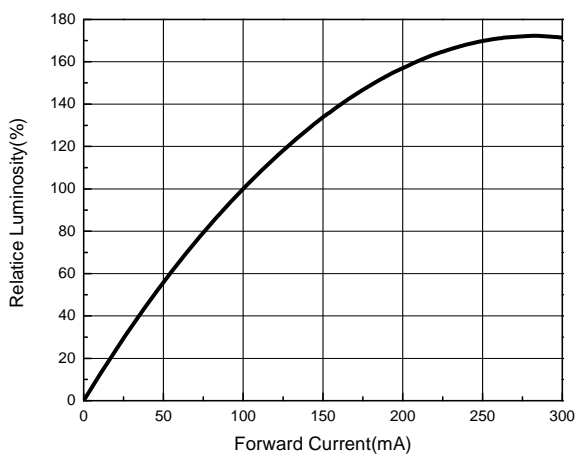
Forward Current vs Forward Voltage at Ta=25°C



Forward Current Vs. Ambient Temperature

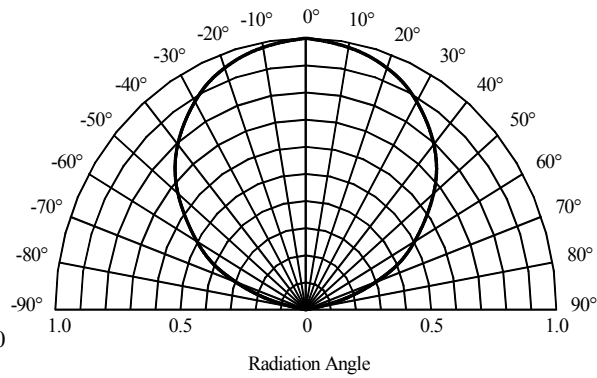
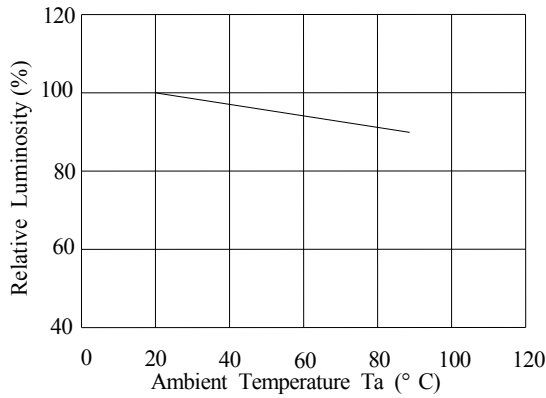


Forward Current Vs. Relative Luminosity Ta=25°C



Relative Luminosity Vs. Ambient Temperature

Radiation diagram



◆ Storage and application notices

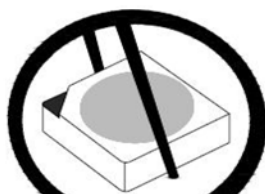
1. Storage

1. Calculated shelf life in sealed bag: 12 months at $<30^{\circ}\text{C}$ and $<90\%$ relative humidity (RH)
- 2.1 TOP LED: After bag is opened, devices that will be subjected to reflow solder or other high temperature process must be:
 - a) Mounted within: 168 hours of factory conditions $\leq 30^{\circ}\text{C}/150\%$ RH, or
 - b) Stored at ambient of $<20\%$ RH
- 2.2 CHIP LED: After bag is opened, devices that will be subjected to reflow solder or other high temperature process must be:
 - a) Mounted within: one year of factory conditions $\leq 30^{\circ}\text{C}/150\%$ RH, or
 - b) Stored at ambient of $<20\%$ RH.
3. Device require bake, before mounting, if:
 - a) Humidity indicator Card reads $>10\%$ when read at $25\pm 5^{\circ}\text{C}$
 - b) Above conditions are not met

Baking condition: 24 hours at $150\pm 3^{\circ}\text{C}$ and $<5\%$ RH
4. The internal and esterand boxes can not be contacted with ground to prevent absorption of moisture;
5. No acid, alkali, salt, corrosive and explosive gas; away from sunlight and keep the environment clean;

2. Application

1. Do not use any unknown chemical liquid to clean LED, it will damage the LED resin surface; use the alcohol under the room temperature if necessary but less than 1 min, or use the ultrasonic cleaning with proper characters, such as correct power, frequency ,etc.
2. Do not touch the epoxy resin area when carrying LEDs by tweezers (as the following pictures), especially after the soldering process, the epoxy resin will turn to soft, the internal instruction will



be damaged by the tweezers which cause the electric character's failure; nozzle is recommended by using SMT mounting.

Correct

Incorrect

3. Soldering iron: double-side soldering iron with power of less than 25W; soldering temperature: less than 300°C; soldering time: less than 3sec.; 1 time completed is recommended, if the 2nd soldering process is requested, 3mins must be left to ensure the high temperature status can return to room temperature.
 - a. REFLOW soldering: set and test the temperature of the different area of REFLOW equipment in advance.
 - b. To set the peak temperature according to different SMDs, but the actual peak temperature should be less than 2150 °C ,processing time should be less than 10sec, only 1 time is allowed.
4. SMDs should be soldered at the coordinated position on the PCB.
5. Note of Electrical matter:
 - ① One-way conduction, LED does not allow the reverse driving.
 - ② LED is a kind of constant current component which can not be lighted by the constant voltage mode; a smaller voltage fluctuation can cause the large current fluctuation which causes the failure of LED.

Each LED should be drove under constant current mode if in a parallel circuit design, otherwise, the colour and brightness will be nonuniform; When the environmental temperature rising, the LED junction temperature will rise, internal resistance will decrease, so the current will be increased by the constant voltage power which short the life span.
 - ③ If the brightness of lighting source can meet the requirement, we recommend using the driving current less than the rated current, in order to improve the product's reliability.
6. LED is a kind of electrostatic sensitive devises, anti-static measures have to be processed during storage and operation:
 - ① LED production workshop should lay anti-static floor and ground connection, the work table have to use the anti-static materials and cover a table mater with the surface resistance of

$10^6-10^9\Omega$.

- ② Production machine: REFLOW, SMT equipment, electric iron, test equipment; all the equipments must be well grounded, and the grounding alternating current impedance should be less than 1.0Ω . A fan need to be installed on the equipments and production processes that easy to generate static electricity; the operators must wear anti-static clothing, shoes, wristband, and gloves, etc. in the process.
- ③ LEDs must be contained in the anti-static box, and all the package material should be the anti-static materials.

7. The details electronic characters can refer to our product specification.

◆ **Notes:**

1、Above specification may be changed without notice. We will reserve authority on material change for above specification.

2、When using this product, please observe the absolute maximum ratings and the instructions for the specification sheets. We assume no responsibility for any damage resulting from use of the product which does not comply with the instructions included in the specification sheets.