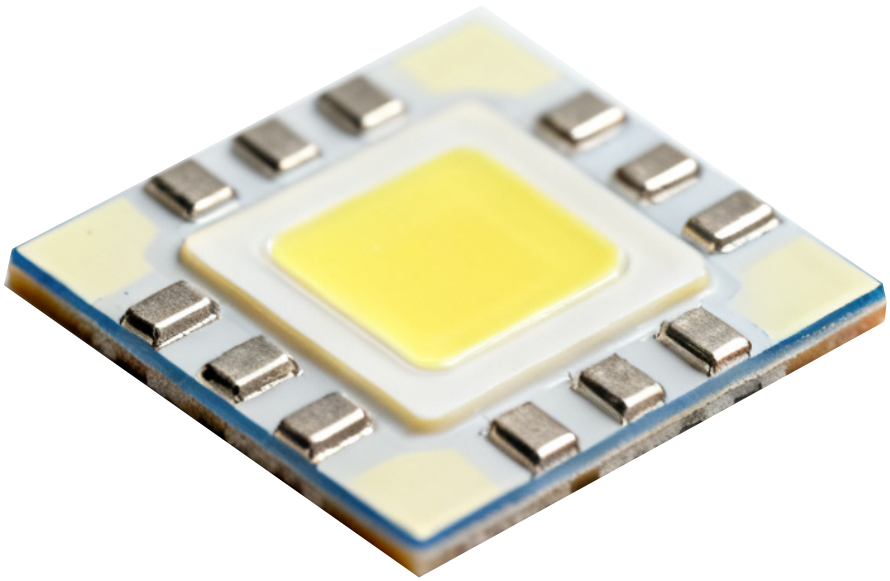
5050 5W EMC 6V LED - High Efficacy Data Sheet

iinno Lighting delivers certified, high-performance solutions for commercial, municipal, and industrial use, trusted by developers worldwide for quality, scale, and long-term reliability.



Part No. Description

① Company ③CCT ⑤Power

M R1 X M -N X

②Specification of Lead Frame

④CRI/Ra

⑥Luminous Flux Class

Encoding rules of Part No.:

序号	1	2	3	4	5	6	7	8
Meaning of Code	Company	Specification of Lead Frame		CCT	Ra	Blank Space	Power	Luminous Flux Class
Example	M	R	1	X	M	-	N	X

② The 2st&3nd code: Dimension

Code	Dimension
R1	EMC5.0*5.0*0.7

③The 4th code: CCT

Code	CCT
W	2700K
V	3000K
T	4000K
R	5000K
Q	5700/6000K
P	6200/6500/7000/7500K
C	9000/9500/10000K

④The 5th code: CRI/Ra

Code	CRI/Ra	Code	CRI/Ra
N	70	L	70
E	75	M	80
F	85	H	90
G	95	K	97
Y	98		

⑤The 6th code: Power

A	0.2W 3V/60mA	B	0.3W 3V/100mA	C	0.5W 3V/150mA
D	0.5W 9V/60mA	E	0.5W 18V/30mA	N	4w 6V/640mA
F	1W 6V/150mA	G	1W 9V/100mA	H	1W 18V/60mA
J	1W 36V/30mA	K	1W 54V/20mA	L	1W 12V/75mA

⑦The 7th code: Luminous Flux Class

Luminous Flux Class	Luminous Flux Range	Luminous Flux Class	Luminous Flux Range
C	530-580	G	630-680
D	550-600	H	650-700
E	580-630	I	680-730
F	600-650	J	700-750

Features

- Package Size: 5.0 (L) ×5.0(W) × 0.7(T) mm
- Silicone Packed
- Suitable for different working environment
- Anti UV
- White colors are available in (2600K- 7000K)
- Wide viewing angle (2θ1/2=120°)

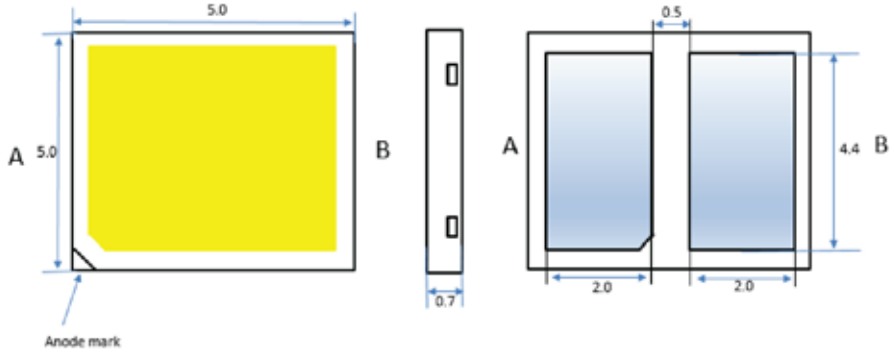
Device Selection Guide

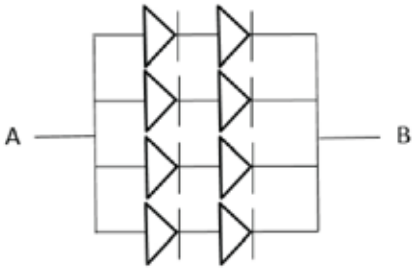
ITEM	MATERIALS
Resin	Silicone
Lens Color	Yellow
Dice	GaN

Applications

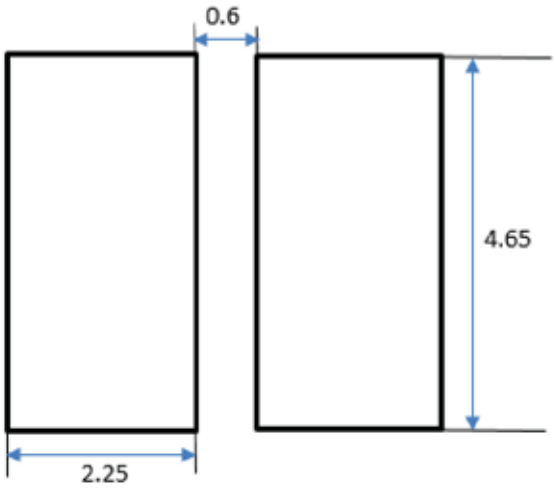
- **Indoor lighting**: Fluorescent lamp, tub,bulb
- **Commercial illumination and displays**: Advertising words, light box
- **Decorative lighting**: light strip
- **Automotive interior auxiliary lighting**
- **Other illumination and displays**

Package Outline Dimensions





Recommended solder pad for 5050 series



Note: 1. UNIT: MM [INCH].
2. The tolerances unless mentioned is ±0.1 mm.

Absolute Maximum Ratings

Parameter	Symbol	Rating	Unit
Forward Current	I_F	880	mA
Peak Pulsed Forward Current (Duty 1/10,pulse width 10ms)	I_{FP}	1320	mA
Operating ambient temperature	Topr	-40 ～ +100	℃
Storage Temperature	Tstg	-40 ～ +100	℃
Junction Temperature	Tj	150	℃
ESD(HBM)	/	2000	V
Power Dissipation	Pd	5940	mW

Electro-Optical Characteristics （Ta=25℃）

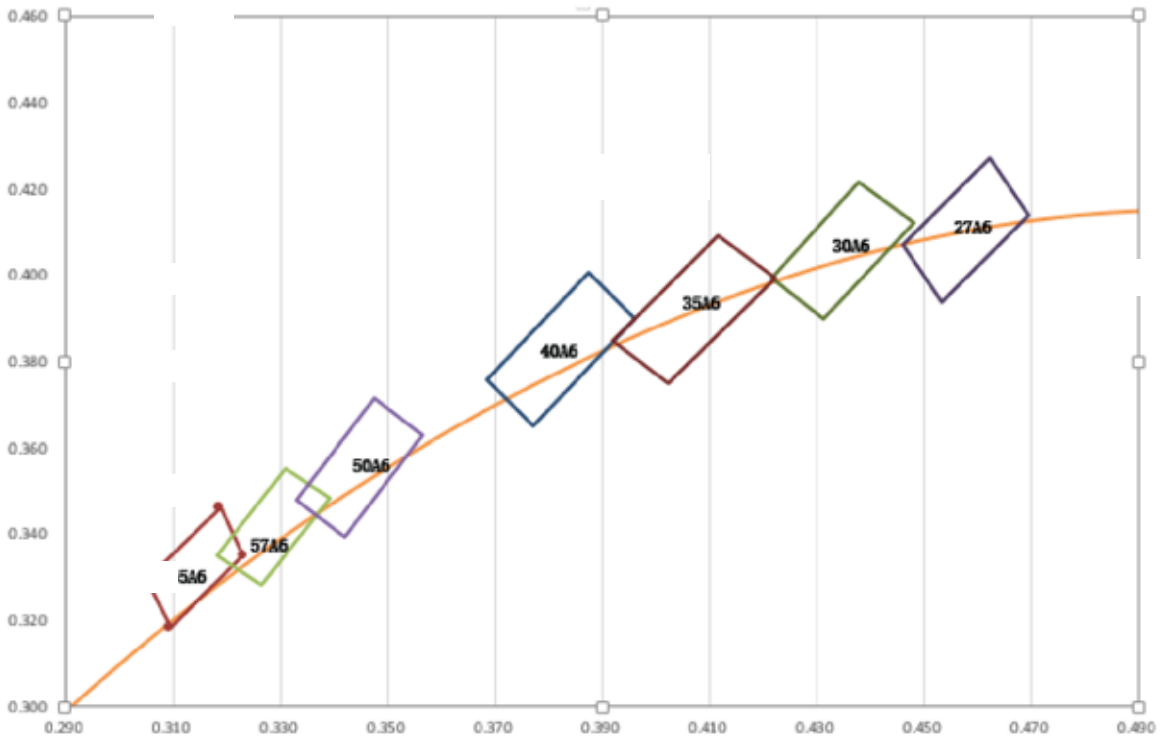
Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Viewing Angle	2θ1/2	-----	120	------	deg	I_F=640mA
Thermal Resistance (junction to solder point)	Rthj-s	-----	3	-----	℃/W	I_F=640mA
Ra	Ra	-----	80-82	-----	-----	I_F=640mA

Bin Code of Luminous Flux

Part NO.	Luminous Flux Range (lm)			CCT（K（typ）	Current (mA)
	Min.	Typ	Max.		
MR1WM-NC	530	>545	580	2700	640
MR1WM-ND	550	>565	600		
MR1VM-NE	580	>595	630	3000	640
MR1VM-NF	600	>615	650		
MR1TM-NG	630	>645	680	4000	640
MR1TM-NH	650	>665	700		
MR1RM-NG	630	>645	680	5000	640
MR1RM-NH	650	>665	700		
MR1QM-NG	630	>645	680	5700	640
MR1QM-NH	650	>665	700		
MR1PM-NG	630	>645	680	6500	640
MR1PM-NH	650	>665	700		

Note: Tolerance of Luminous Flux is ±5%.

White Bin Code of CIE1931



Color coordinates

Code	X	Y	Code	X	Y	Code	X	Y
27A6 (2680-2770K)	0.4623	0.4273	30A6 (2990-3110K)	0.4379	0.4215	40A6 (3830-4170K)	0.3876	0.4006
	0.4460	0.4070		0.4215	0.3994		0.3686	0.3758
	0.4533	0.3937		0.4314	0.3900		0.3770	0.3649
	0.4696	0.4140		0.4480	0.4120		0.3960	0.3897
50A6 (4860-5370K)	0.3476	0.3714	65A6 (6020-6860K)	0.3189	0.3462			
	0.3331	0.3479		0.3053	0.3294			
	0.3419	0.3393		0.3096	0.3183			
	0.3564	0.3628		0.3232	0.3350			

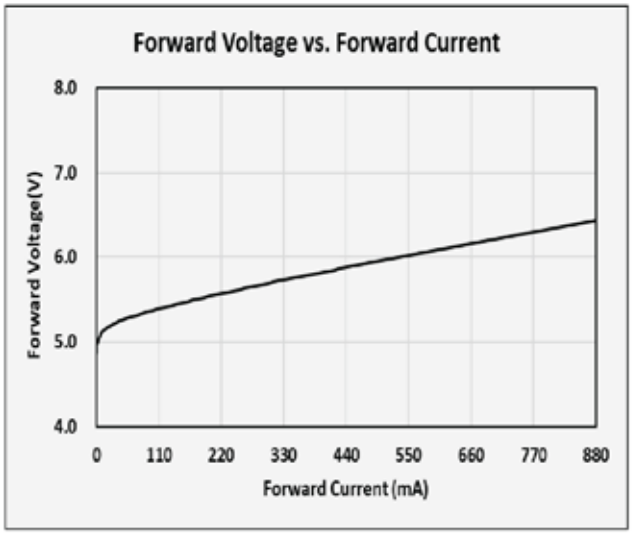
Note: Tolerance of Color coordinates is ±0.003.

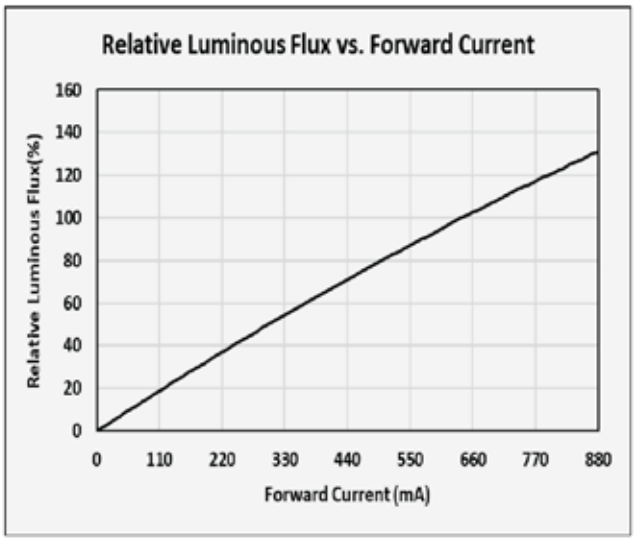
Bin Range of Forward Voltage

Min VF(V)	Max VF(V)
5.8	6.0
6.0	6.2
6.2	6.4

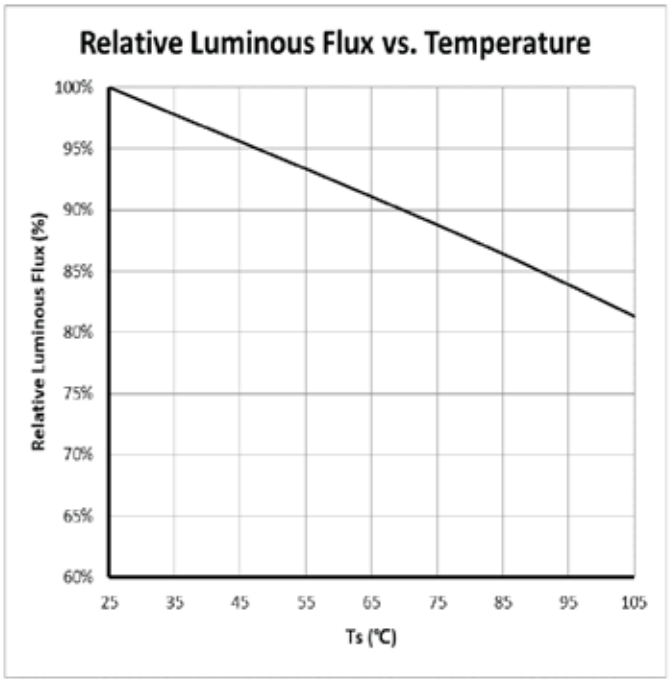
Note: Tolerance of Forward Voltage is ±0.1V.

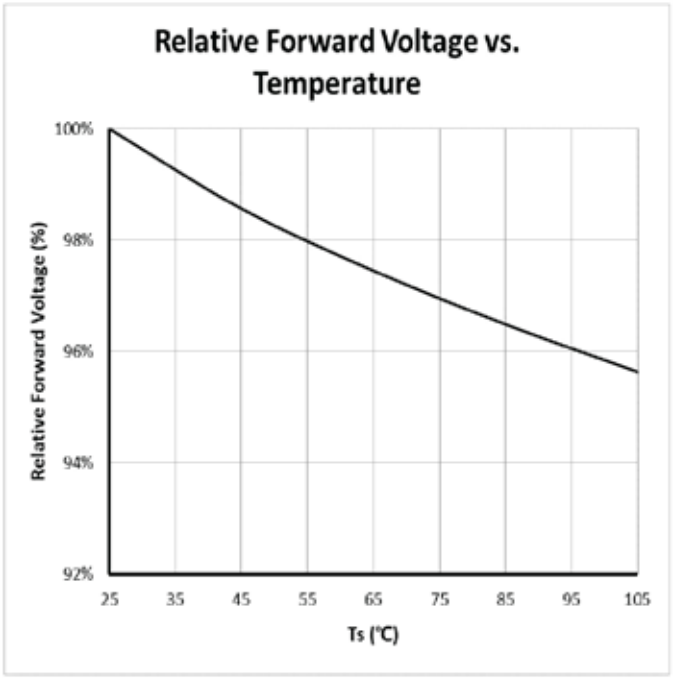
Electrical Characteristics



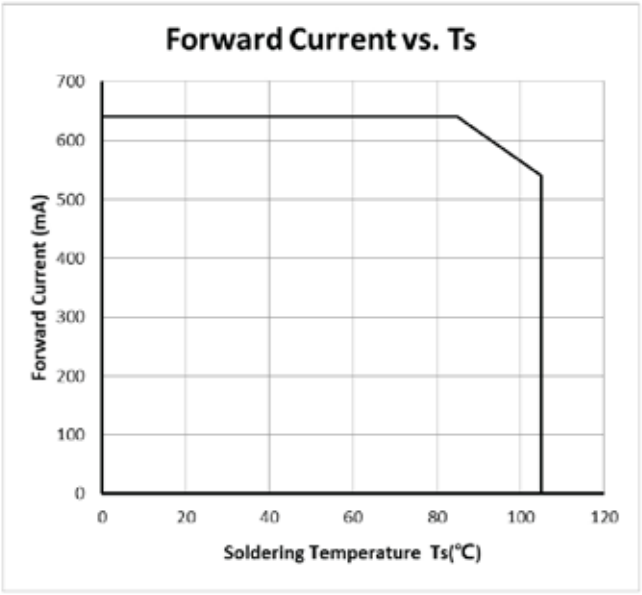


Temperature Characteristics (IF = 640 mA)

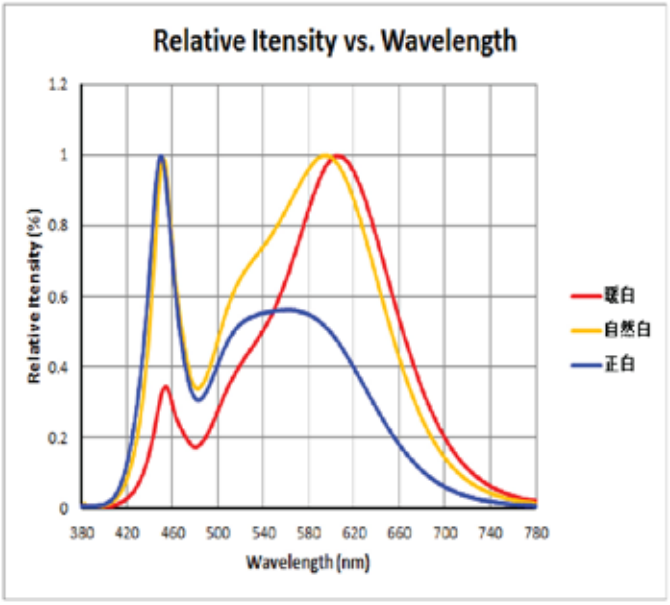




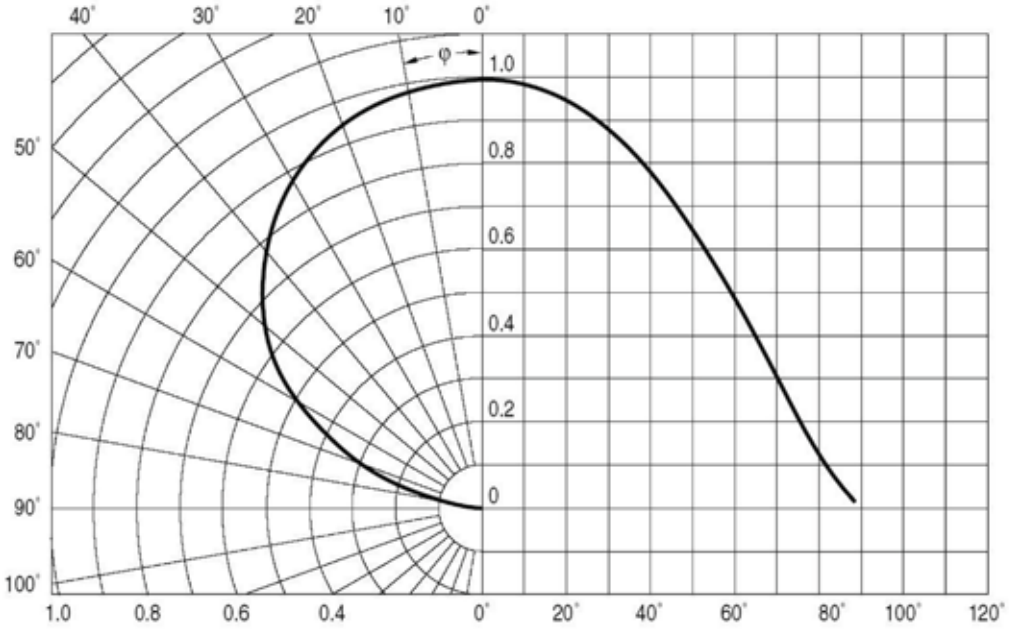
Soldering Temperature vs Forward Current



Spectrum Distribution (IF = 640 mA, Ts = 25 °C)



Viewing Angle



Guideline for Soldering

Handing of an SMD LED should be done only when the package has been cooled down to below 40℃ or less. This is to prevent SMD LED failures due to thermal-mechanical stress during handing.

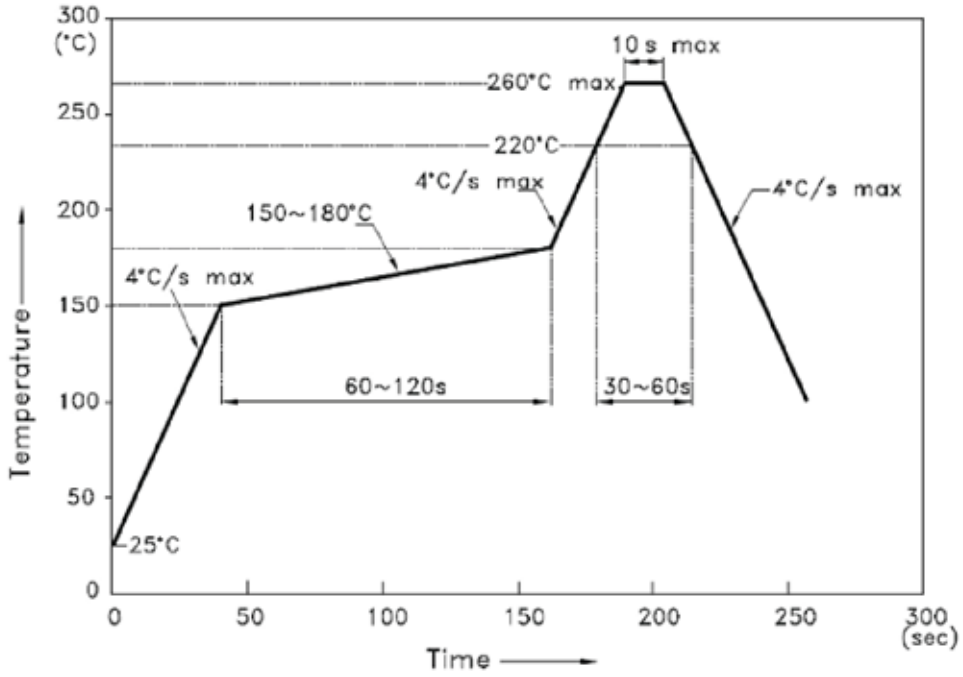
1. Hand Soldering

A soldering iron of less than 20W is recommended to be used in Hand Soldering. Please keep the temperature of the soldering iron under 300℃ while soldering. Each terminal of the LED is to go for less than 3 second and for one time only.

Be careful because the damage of the product is often started at the time of the hand soldering.

2. Reflow Soldering

Recommended reflow soldering condition（Lead-free solder）



Note: 1. We recommend the reflow temperature 245℃(+/-5℃).The maximum soldering temperature should be limited to 260℃.

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

3. When soldering, do not put stress on the LEDs during heating.

Test items and results of reliability

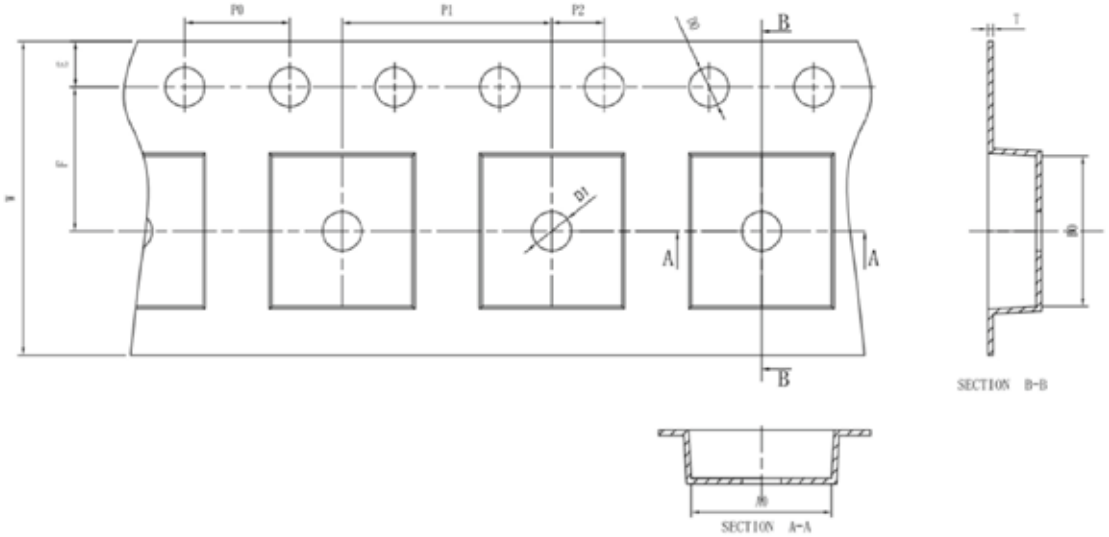
Test Item	Test conditions	Test Duration	Sample NO.
Room Temperature Life Test	25℃, DC 640mA	1000h	0/22
High Temperature Life Test	105℃, DC 640mA	1000h	0/22
High Temperature Humidity Life Test	105℃, 85 % RH, DC 640mA	1000h	0/22
Temperature cycling	-40℃(30min) ~25℃(5min) ~100℃(30min)	200cycle	0/50
High Temperature Storage	Ta=100℃±3℃	1000 hrs	0/11
Low Temperature Storage	Ta=-40℃±3℃	1000 hrs	0/11

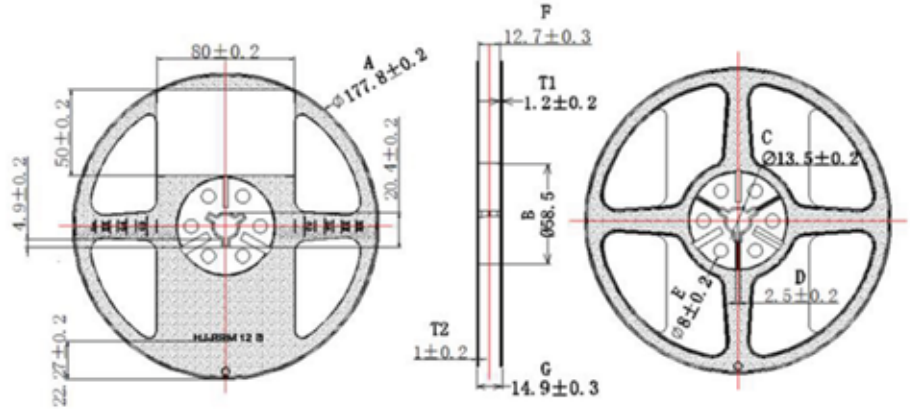
CRITERIA FOR JUDGING THE DAMAGE

Item	Symbol	condition	Criteria for Judgment	
			MIN	MAX
Forward Voltage	V_F	I_F=640 mA	/	Init.Value*1.1
Luminous Flux	I_v	I_F=640 mA	Init.Value*0.7	/

Tape and Reel （2K/Reel）

ITEM	W	A0	B0	K0	E	F	D0	D1	P0	P1	P2	T		
DIM	12.00	5.40	5.20	0.95	1.75	5.50	1.50	1.50	4.00	4.00	2.00	0.20	LENGTH	PCS/REEL
5.35	+0.10 −0.10	+0.05 −0.05	+0.05 −0.05	+0.05 −0.05	+0.10 −0.10	+0.10 −0.10	+0.10 −0.00	+0.10 −0.00	+0.10 0.00	+0.10 −0.10	+0.10 −0.10	+0.05 −0.05	m	PCS



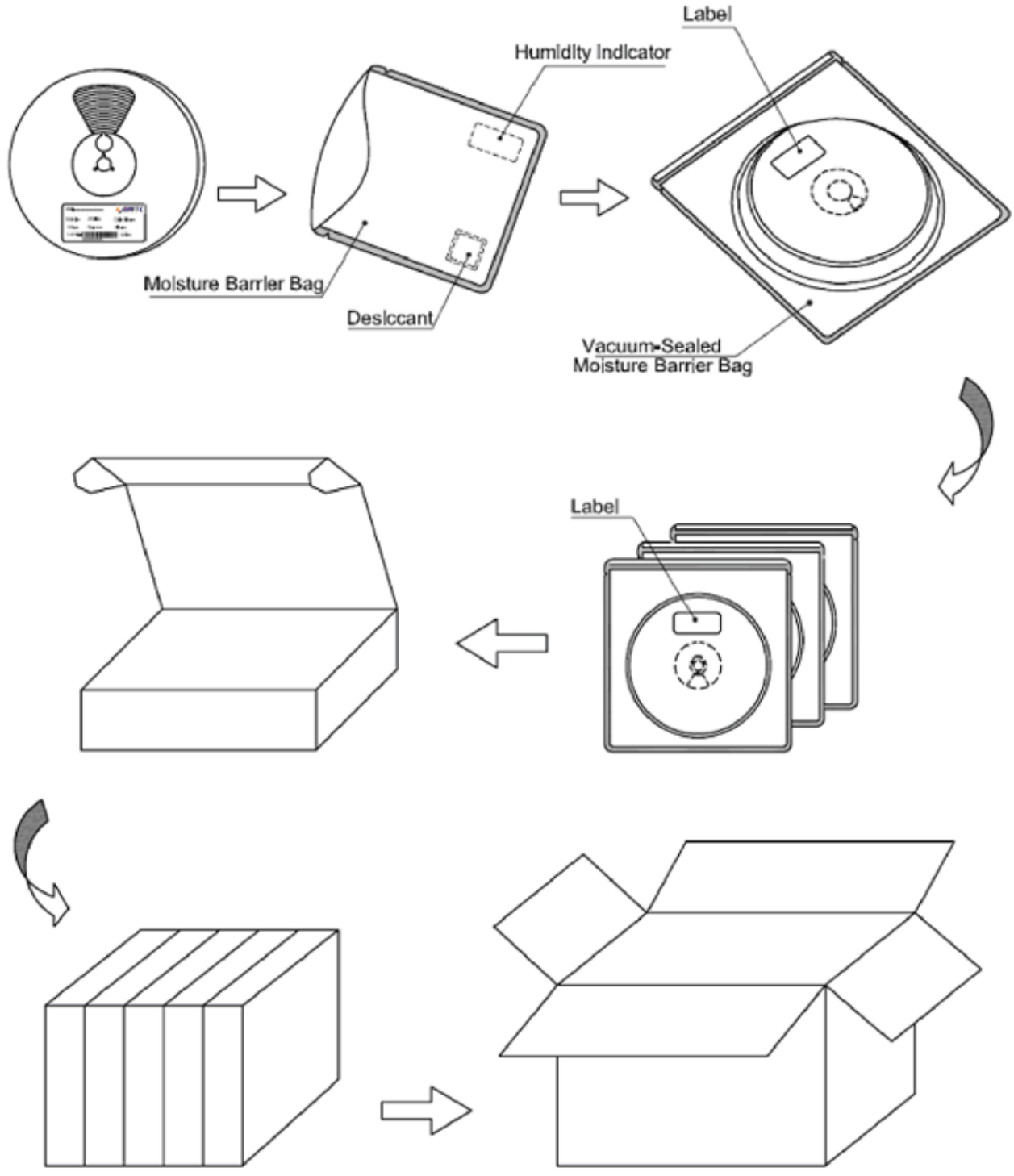


A±0.2	B±0.2	C±0.2	D±0.2	E±0.2	F±0.3	G±0.3	T1±0.2	T2±0.2
ø177.8	ø58.5	ø13.5	2.5	ø8	12.7	14.9	1.2	1

Note:

1. The number of loaded products in the reel is 4000ea. 2000pcs。
2. All dimensions are in millimeters (tolerance: ±0.2).
3. Scale: None.

Dry Packaging and Packaging



Chemicals Tested as Harmful

Based on testing insights, the following chemicals have been identified as potentially harmful to LEDs. It is strongly recommended to avoid using these substances in any part of the LED system. Even minimal exposure to fumes from these chemicals can result in damage to the LEDs.

- Sulfur，bromide，iodine ，chloride
- Volatile organic compounds (e.g., toluene, xylene, para-dichlorobenzene,ethylbenzene,styrene, formaldehyde,acetaldehyde, butadiene)
- Beach, Cleaner spray, activator, thread locker, Superglue

ESD Protection During Production

Static electricity or surge voltage damages the LEDs. Damaged LEDs will show some unusual characteristics such as the forward voltage becomes lower, or the LEDs do not light at the low current., even not light.

All devices, equipment and machinery must be properly grouded. At the same time, it is recommended that wrist bands or anti-electrostatic gloves, anti-electrostatic containers be used when dealing with the LEDs.

Safety Advice For Human Eyes

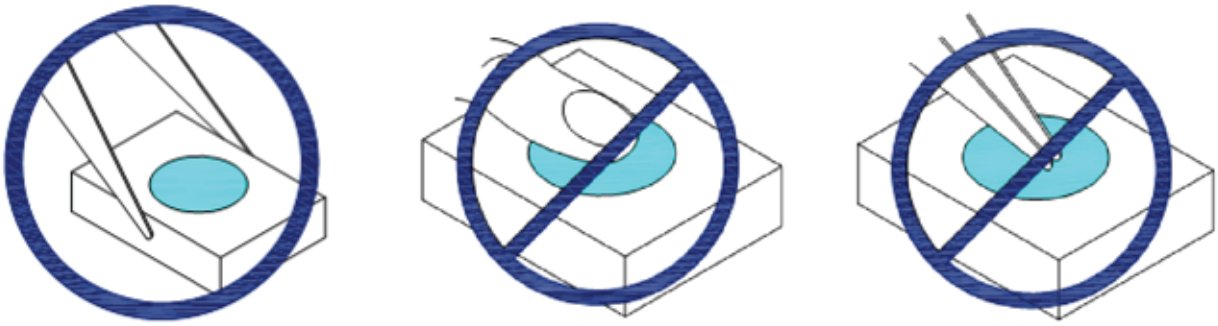
Users should be cautioned not to stare at the light of this LED product. The bright light can damage the eye.

Handling Precautions

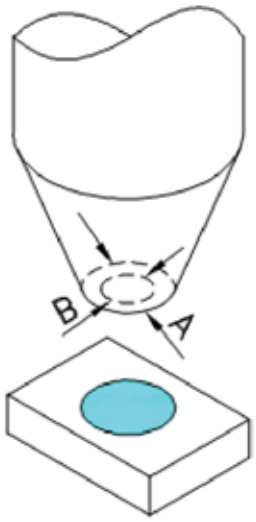
1. Operating

Silicone is softer and flexible, although its characteristics significantly reduces reduces thermal stress, it si more susceptible to damage by external mechanical force. As a result, special handling precaustions need to be observed during assembly using silicone encapsulated LED products. Failure to comply might lead to damage and premature failure of the LED.

1.1 Handle the component along the side surface by using forceps or appropriate tools; do not directly touch or Handle the silicone lens surface, it may damage the internal circuitry.



1.2 The outer diameter of the SMD pickup nozzle should not exceed the size of the LED to prevent air leaks. The inner diameter of the nozzle should be as large as possible. A pliable material is suggested for the nozzle tip to avoid scratching or damaging the LED surface during pickup.



1.3 Do not stack together assembled PCBs containing exposed LEDs. Impact may scratch the silicone lens or damage the internal circuitry.

2. Storage

2.1 Don't open moisture proof bag before the products are ready to use.

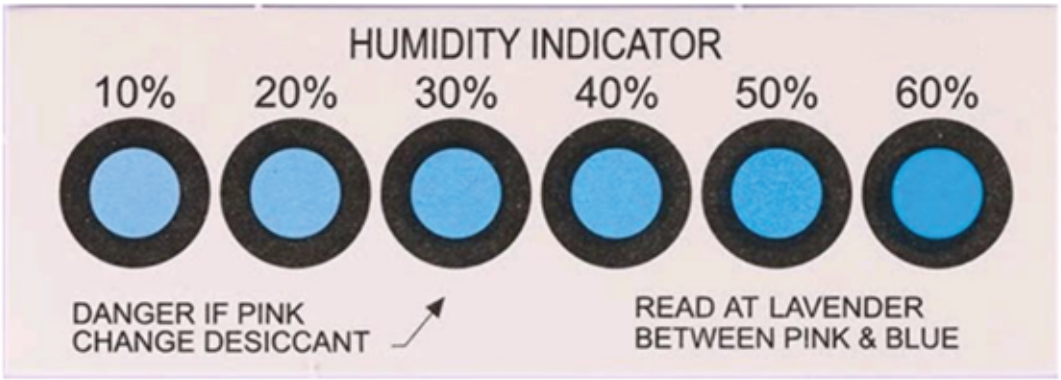
2.2 Before opening the package: The LEDs should be kept at 30℃ or less and 90%RH or less.

2.3 After opening the package: The LED's floor life is 24 hours under 30℃ or less and 70% RH or less. If unused LEDs remain, it should be stored in moisture proof packages.

2.4 After the moisture barrier bag is opened, make sure that Humidity Indicator Card does not become red at 30%RH. Otherwise, Devices require baking again. The conditions are as followings:

2.4.1 65 ± 3℃ x (24hrs) and ＜5%RH, taped reel type

2.4.2 100 ± 3℃ x (4hrs), bulk type



connect

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