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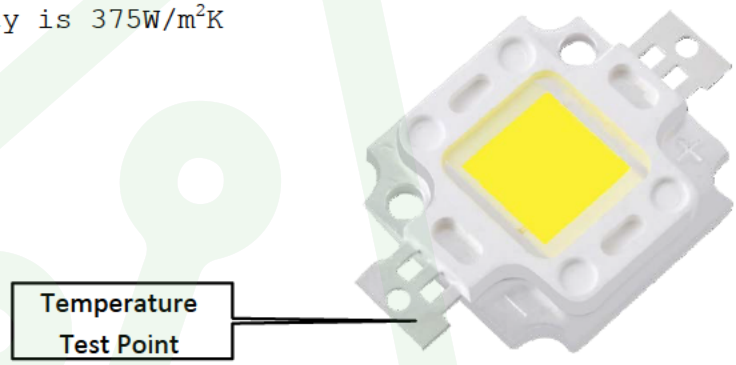
1. Application

This specification applies to COB010 LED Chips (10W).

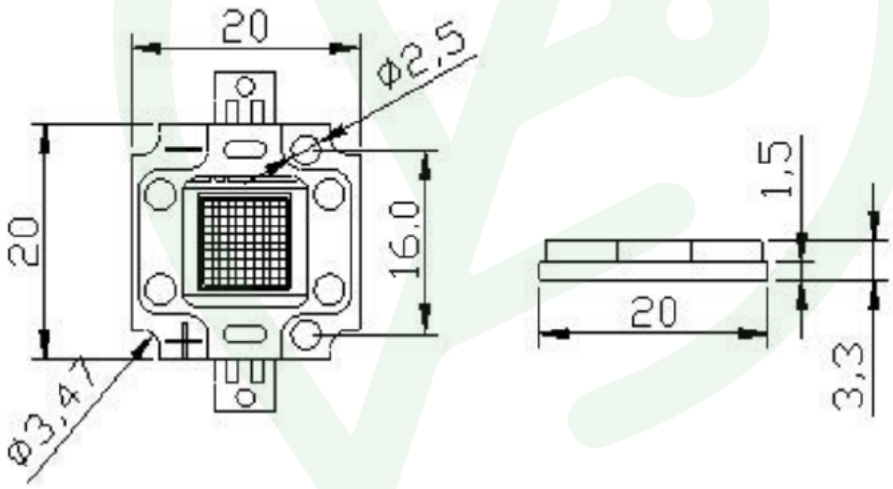
1.1 Features

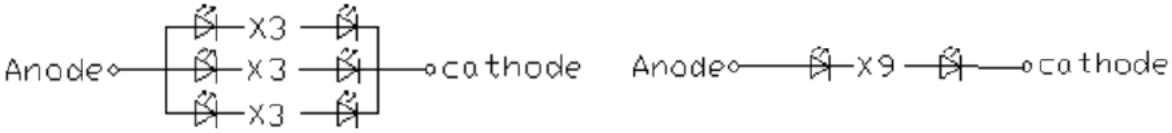
- High efficacy, high lumen, up to LM-80 standard
- 70Ra, Which is qualified for outdoor lighting, industrial lighting International standard
- Copper base thermal conductivity is 375W/m^{2}K
- Secondary packaging technology
- Beam Angle: 120°
- RoHS EN62471 Approved
- Suitable for manual welding
- Anti-sulfur



2. Main Application: Outdoor lighting, Industrial lighting

2.1 Dimension: Units:[mm], Tolerance: ±0.2mm Base material: Copper





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3. Characteristics for 3 Series 3 Parallels:

3.1 Absolute Maximum Ratings

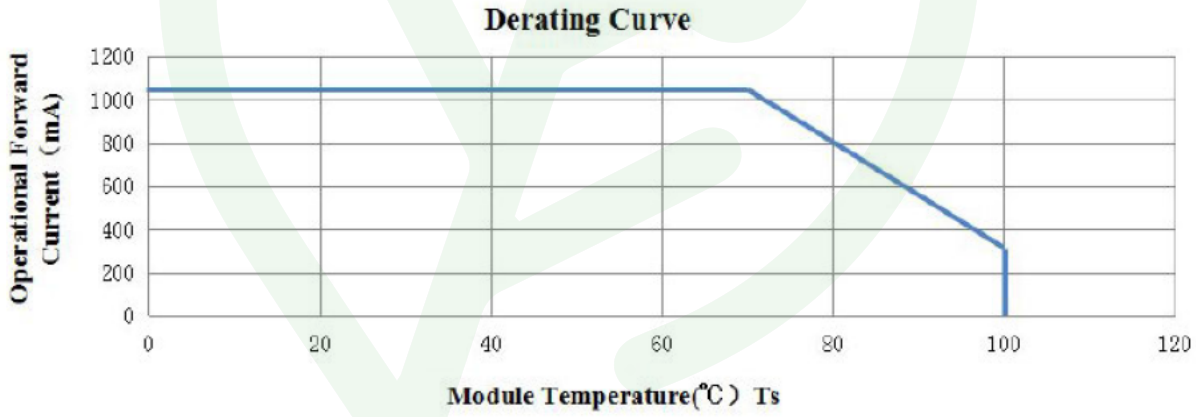
Item	symbol	Value	Unit
Max power	P	10.71	W
Forward Current	IF	1050	mA
Forward Voltage	V_f	9~10.2	V
Reverse Voltage	V_r	-15	V
Junction Temperature	T_j	130	°C
Operating Temperature	T_{OPR}	-30~60	°C
Storage Temperature	T_{STG}	-35~100	°C
Thermal Resistance	RΘJ-B	2.4	°C/W
Electrostatic Limit	ESD	2000	V
Soldering Temperature		350°C/3~5sec	

Aditional Remarks

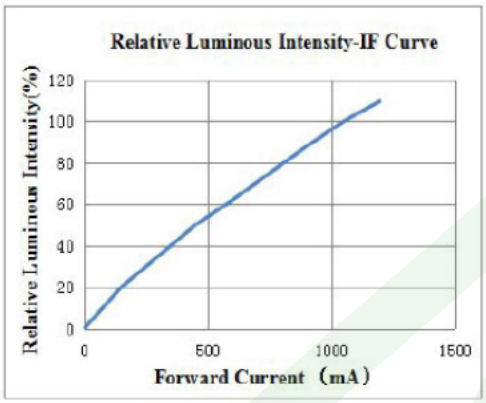
1. Max power and positive current mean the maximum setting value of the bottom temperature of led light source by using the appropriate heat sink.
2. Originally connection error and off-limits voltage may damage LED chip.
3. Different temperatures, corresponding temperature test point on the next, said LED light should operate follow derating curve on the text.
4. Test result based on testing Bridgelux 45mil

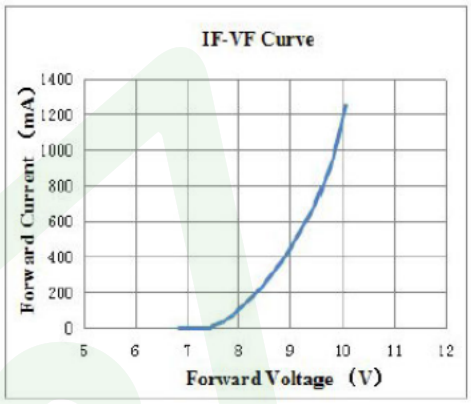
3.2 Derating Curve

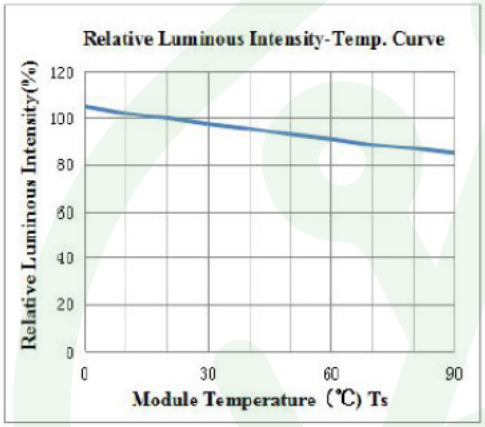
Note: In order to keep the temperature below the rated, please make sure the radiator has enough heat dissipation performance.

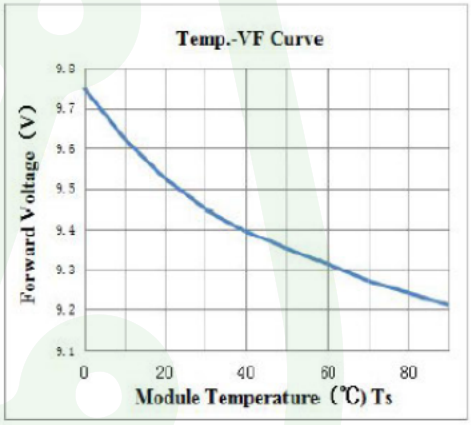


3.3 Other Optical Curves (Ta=25°C)









4. Characteristics for 9 Series 1 Parallel:

4.1 Absolut Maximum Ratings

Item	symbol	Value	Unit
Max power	P	10.71	W
Forward Current	IF	350	mA
Reverse Voltage	V_r	-45	V
Junction Temperature	T_j	120	°C
Operating Temperature	T_{OPR}	-30~60	°C
Storage Temperature	T_{STG}	-35~100	°C
Thermal Resistance	RΘJ-B	2.4	°C/W
Electrostatic Limit	ESD	2000	V
Soldering Temperature		350°C/3~5sec	

Aditional Remarks

5. Max power and positive current mean the maximum setting value of the bottom temperature of led light source by using the appropriate heat sink.

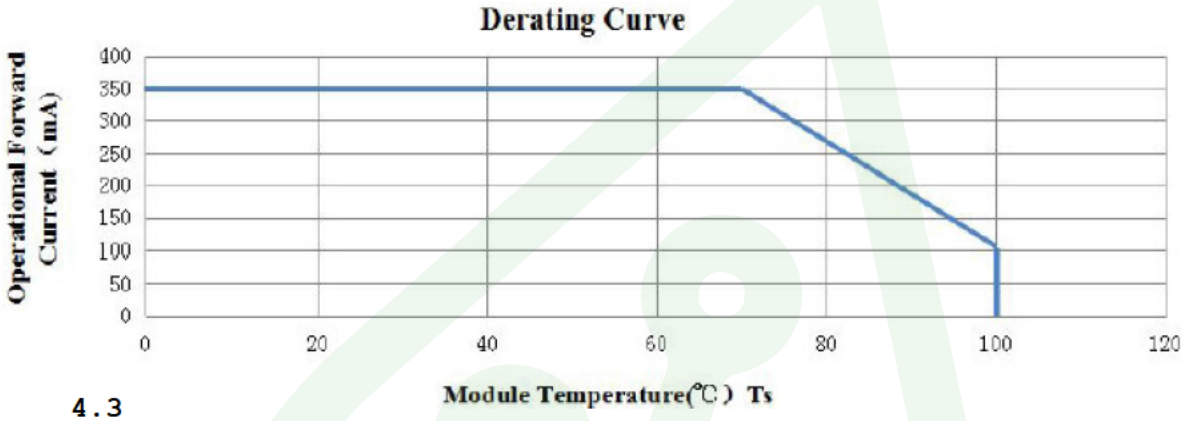
6. Originally connection error and off-limits voltage may damage LED chip.

7. Different temperatures, corresponding temperature test point on the next, said LED light should operate follow derating curve on the text.

8. Test result based on testing Bridgelux 45mil

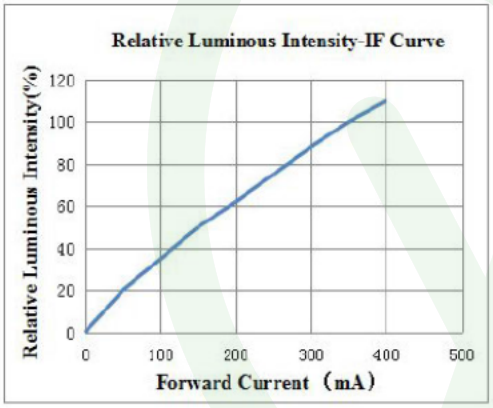
4.2 Derating Curve

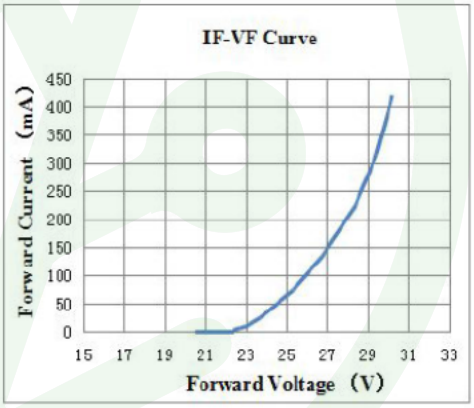
Note: In order to keep the temperature below the rated, please make sure the radiator has enough heat dissipation performance.

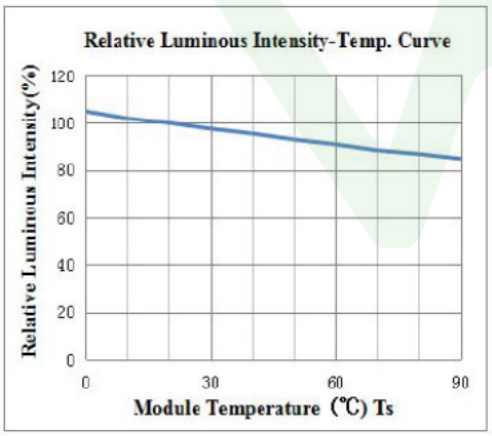


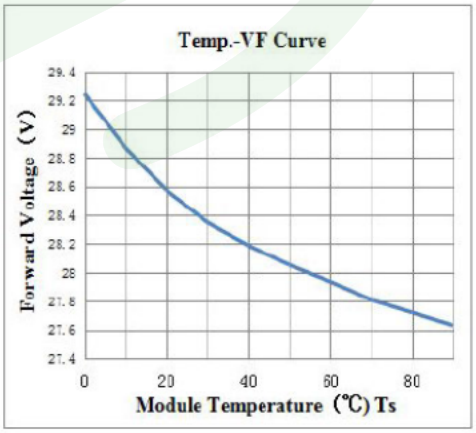
4.3

4.4 Other Optical Curves(Ta=25°C)









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5. Optical Characteristics

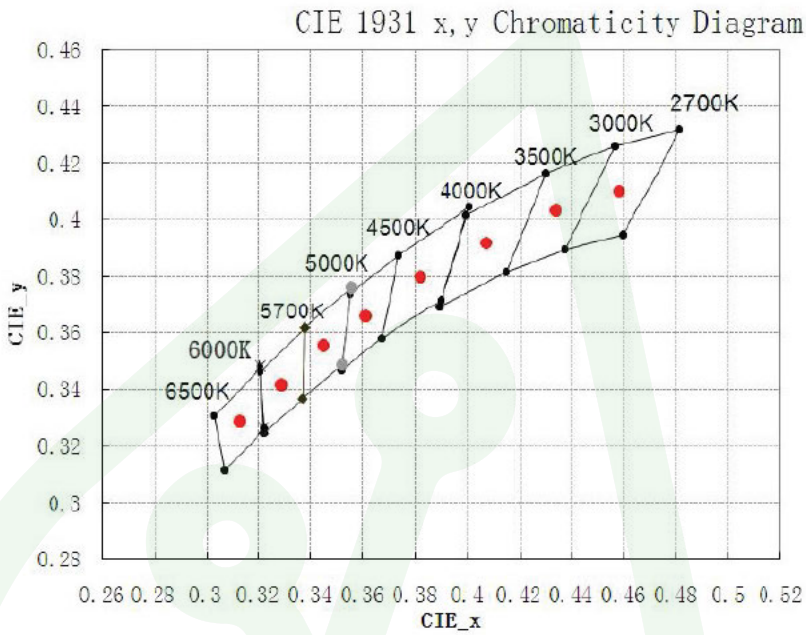
(3 Series 3 Parallels)

Parameter	Symbol	Condition	CRI	Min.	Typ.	Max.	Lm/W	Unit
Forward Voltage	VF	IF=1050mA/Ta=25°C		9	9.75	10.2		V
Luminous Flux	Bridgelux 45mil	CCT; 6000K 1050mA	Ra:70	1100	1150	1200	>105	Lm (Lm/W)
		CCT; 4000K 1050mA	Ra:70	1100	1150	1200	>105	Lm (Lm/W)
		CCT; 3000K 1050mA	Ra:70	1000	1050	1100	>100	Lm (Lm/W)
Luminous Flux	Epistar 33mil	CCT; 6000K 1050mA	Ra:70	1000	1050	1100	>100	Lm (Lm/W)
		CCT; 4000K 1050mA	Ra:70	1000	1050	1100	>100	Lm (Lm/W)
		CCT; 3000K 1050mA	Ra:70	900	950	1000	>90	Lm (Lm/W)
Luminous Flux	Sanan 35mil	CCT; 6000K 1050mA	Ra:70	1000	1050	1100	>100	Lm (Lm/W)
		CCT; 4000K 1050mA	Ra:70	1000	1050	1100	>100	Lm (Lm/W)
		CCT; 3000K 1050mA	Ra:70	900	950	1000	>90	Lm (Lm/W)

(9 Series 1 Parallel)

Parameter	Symbol	Condition	CRI	Min.	Typ.	Max.	Lm/W	Unit
Forward Voltage	VF	IF=350mA/Ta=25°C		9	9.75	10.2		V
Luminous Flux	Bridgelux 45mil	CCT; 6000K 350mA	Ra:70	1100	1150	1200	>105	Lm (Lm/W)
		CCT; 4000K 350mA	Ra:70	1100	1150	1200	>105	Lm (Lm/W)
		CCT; 3000K 350mA	Ra:70	1000	1050	1100	>100	Lm (Lm/W)
Luminous Flux	Epistar 33mil	CCT; 6000K 350mA	Ra:70	1000	1050	1100	>100	Lm (Lm/W)
		CCT; 4000K 350mA	Ra:70	1000	1050	1100	>100	Lm (Lm/W)
		CCT; 3000K 350mA	Ra:70	900	950	1000	>90	Lm (Lm/W)
Luminous Flux	Sanan 35mil	CCT; 6000K 350mA	Ra:70	1000	1050	1100	>100	Lm (Lm/W)
		CCT; 4000K 350mA	Ra:70	1000	1050	1100	>100	Lm (Lm/W)
		CCT; 3000K 350mA	Ra:70	900	950	1000	>90	Lm (Lm/W)

5.1 Color Area



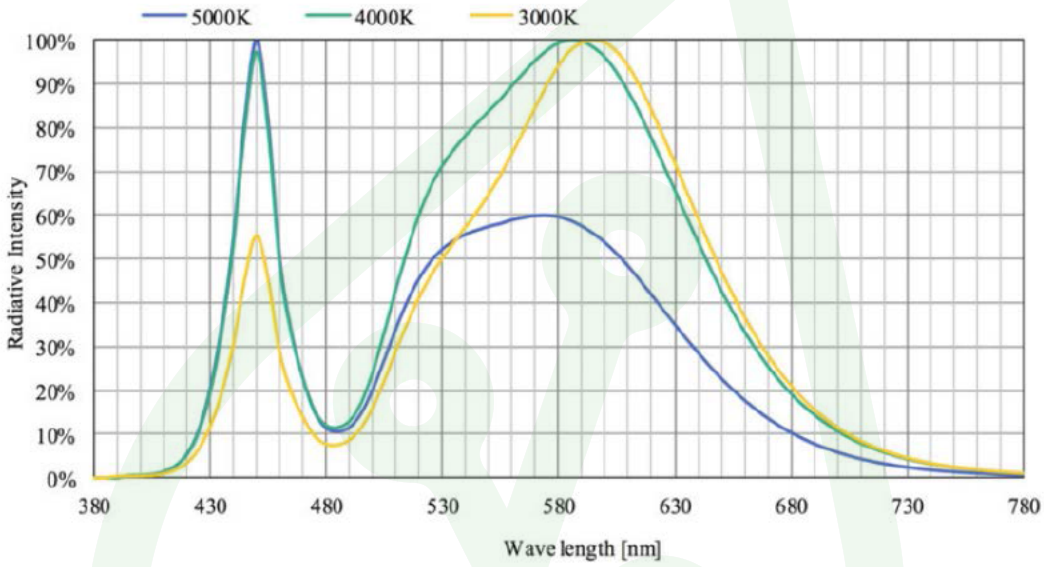
Center Color	2725K	3045K	3560K	3985K	4550K	5028K	5665K	6530K
X	0.4578	0.4338	0.4082	0.3818	0.3607	0.3447	0.329	0.3123
Y	0.4101	0.403	0.3918	0.3797	0.3675	0.3553	0.3417	0.3282

Note: Testing conditions: Ta=25°C, IF=300ms. Results may vary if the Chip is tested under different environmental conditions. Tolerances: Voltage ±3%, Lumen ±10%, CRI ±2Ra, Color coordinates ±0.005. Color area can be controlled 4-6 steps within MacAdam Ellipse. Bin of color temperature refers to ANSI C78.377-2008.

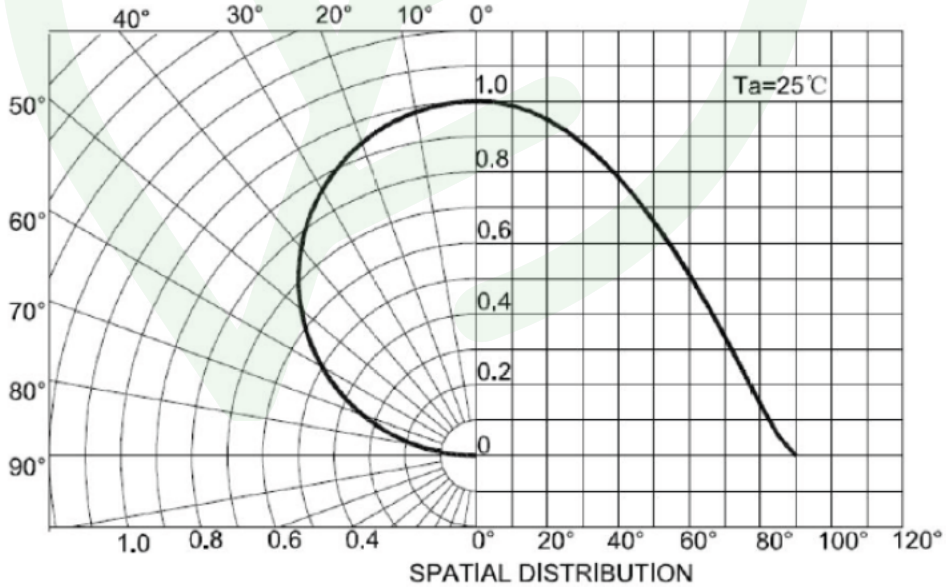
6. Characteristics Diagram (TYP)

6.1 Relative Spectral Distribution Graph

Spectrum: CRI(Ra) 70 Min.



6.2 Luminous Flux Distribution



7. Reliability

Reliability will meet the following items.

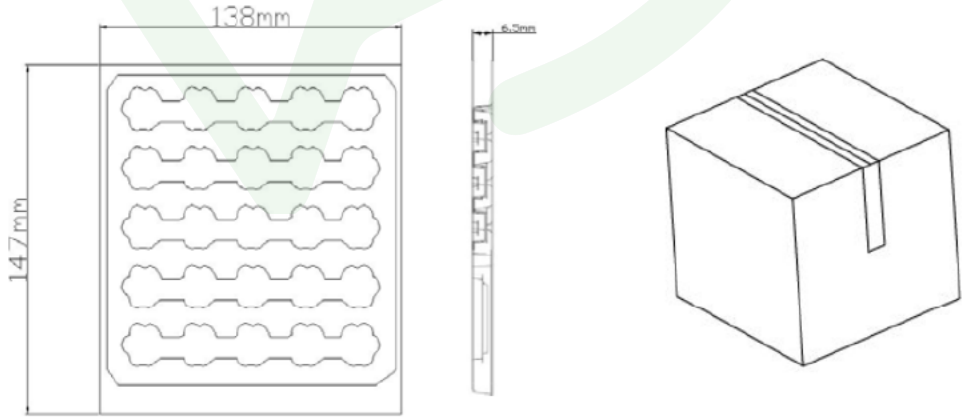
7.1 Testing Items and Testing Conditions

Serial No.	Test type	Test Condition			Sample Qty.	Fail Qty.
1	Thermal Shock	-40°C (30min) to 100°C (30 min), 100 cycles			22	0
2	High Storage Temperature	85°C, 1000h			22	0
3	Low Storage Temperature	-40°C, 1000h			22	0
4	High Temperature and Humidity Storage	T=85°C, RH>=85%, 1000h			22	0
5	High Temperature Operation	T=85°C	IF=1050/350 mA	1000h	22	0
6	Low Temperature Operation	T=40°C	IF=1050/350 mA	1000h	22	0

8. Packing Standard

8.1 Package

The product is packed in fluted plastic box with protection cover, preventing from outside force. Each one contents 1~16 pcs according to the chip size. Packed plastic box will be stored in carton and sealed.



9. Storage

To avoid moisture, before opening, temperature should be 5~30 °C, relative humidity less than 60%. After opening, the chip should be used within 15 days. For unused units, dehumidification process is required. Dehumidifying conditions 24h @ 60°C± 5°C

10. Assembly

Use thermal paste (Thermal Conductivity 3-4 m^2K/W) to ensure properly heat connection to the heatsink. The use of locking screws is strongly recommended to avoid hollow phenomena.

When welding using antistatic thermostat iron, soldering temperature control should be set to 350°C, soldering time 3-5 sec, it's forbidden to contact colloid with flux or the iron, assembly process must avoid external force on the colloid surface (pressure, friction, sharp metal nails, etc.)

Product normal operating temperature: TS point (negative pad) is less than 80°C, the colloid surface temperature less than 180℃ (Thermocouple test), or 130℃ (Thermal image test). If exceeded these requirements, reliability assessment should be done.

Selecting Power Supply: This product is to be driven using a constant current source, and the output current of the power range meets the specifications of this datasheet, for the use of a constant voltage source or other conditions, risk assessment should be performed.

ESD protection is needed. Please take adequate measures to prevent electrostatic generation, such as wearing electrostatic ring or anti-static fingerstall etc; any relative products like plant equipment, machinery, carrier and transportation units shall be connected to discharging unit/ ground. The ESD sensitivity of this product is > 2000V, after assembly the final lamp, make sure to discharge Static Electricity by proper ESD equipment.

11. Enviromental Instructions：

If the product will be used in any of the following conditions (moist, dew, salt air, corrosive gases (C1, H2S, NH3, SO2, NOX, etc.) a test to study reliability should be performed. If LED colloid surface is dirt, use alcohol to clean. Acetone or caustic cleaning solvent may damage the surface

11.1 Chemical Compatibility

The chemical composition of gas in lamps and surrounding environment of light source are essential to the lifespan of the chips. Before considering the use of any chemical, be sure to consult the product supplier or LED manufacture.

11.2 Many regular chemicals will release gaseous aromatic compounds, and even small amounts of these chemicals, the gases which they released also tend to cause Led discoloration or damage. The chemicals in test report Table 1 will cause damage of LED. Therefore, it is not recommended to use these chemicals in a solid state lighting system of Led or anywhere around the Chip.

11.3 Common chemicals with LED compatibility issues

- Chemicals removing hydrocarbon gas (such as toluene, benzene, xylene)
- Methyl acetate or ethyl acetate (such as resurrection oil)
- Cyanoacrylate (such as "glue")
- Ethylene glycol ether and dipropylene glycol monomethyl ether (such as electronic equipment cleaner)
- Formaldehyde or butadiene (such as pLIoBoND® adhesive)
- Chlorine, including detergent and sprays with bleach

12. The following table is the list of common basic materials and commercial products in electronics and electrical equipment. Some of those materials can cause serious damage or light color shift phenomenon. The results of a risk assessment related materials are as shown in the sheet:

Material Name	Type	Result
Acetic Acid	Acid	Don't use
Acetone	Manufacturing Materials	Outgassing
Acrylonitrile-butadiene-styrene (ABS)	Rubber/Plastic Sealant	Usable
Ammonia	Alkali	To be verified
Benzene	Solvent	To be verified
Butadiene Rubber	Rubber/Plastic Sealant	To be verified
Butyl Rubber	Rubber/Plastic Sealant	To be verified
Polyvinyl Chloride	Rubber/Plastic Sealant	To be verified
Chlorobutyl	Rubber/Plastic Sealant	To be verified
Chlorosulfonation Rubber	Rubber/Plastic Sealant	To be verified

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Cyanoacrylate	Sealants and Adhesives	Outgassing/Don't use
DCa SCC3	Paint/Glue	To be verified
Dichloromethane	Solvent	To be verified
Propylene Oxide	Rubber/Plastic Sealant	To be verified
Gasoline	Solvent	To be verified
Graphite Washer	Thermal grease	Usable/Outgassing
Halogenated Hydrocarbons (Including F, Cl, Br element) / Other		Outgassing/To be verified
HT902	Paint/Glue	Usable/Outgassing
Hydrochloric Acid	Acid	To be verified
Isopropanol (IPA)	Cleaner	Usable/Outgassing
MeK (Methyl Etyl Ketone)	Solvent	To be verified
MIBK (Methyl Isobutyl Ketone)	Solvent	To be verified
Mineral Oil	Solvent	To be verified
Nitric Acid	Acid	To be verified
Non-silicone Thermal Grease	Thermal Grease	Usable/Outgassing
Petroleum	Oil/Lubricants	To be verified
Polycarbonate (PC)	Structural Plastic	Usable
Polyethylene	Rubber/plastic Sealant	Usable
Polypropylene (PP)	Structural Plastic	Usable
Polystyrene (GppS)	Structural Plastic	Usable
Potassium Hydroxide	Alkali	To be verified
Silicone Oil	Oil/Lubricants	To be verified
Sodium Hydroxide	Alkali	To be verified
Sulfuric Acid	Acid	To be verified
Tetrachloromethane	Solvent	To be verified
Tetradecy Lamine		To be verified
Heat Transmission Grease (silicon)	Thermal Grease	Usable/Outgassing
Tropical Pass (with or without Adhesive)	Thermal Grease	Usable/Outgassing
Toluene	Solvent	To be verified
Trimethyl Hexamethylene Diamine		To be verified
Xylene	Solvent	To be verified