EdiPower® III

DOB Series

C290712

Datasheet

Introduction :

Compared with DC LED modules, Edison DOB(driver on board) Series module doesn't need to connect external driver so that it can help to reduce the circuit cost and the size of luminaires. It is more convenient for luminaire design with DOB Series module. Users can adjust the brightness of LED lamps easily with Smart lighting dimming system.

Description :

- 7W_120V_105lm/W
- CCT : 2700/3000/4000/5000/5700 K
- CRI(Ra) min : 80, 90
- Power Factor > 0.90
- Current THD < 30%

Feature and Benefits :

- Internal Structure: Aluminum mirror Chip on Board
- High efficiency and high power factor (PF>0.90) & Low THD
- Color consistency and is compliant with 3-step / 5-step MacAdam

EDISON
Lighting Design Manufacturing Service

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General Information

Ordering Code Format

2	D A A	C	x	x 0	1 2	0 7	x x	x x
X1	X2-X4	X5	X6	X7-X8	X9-X10	X11-X12	X13-X14	X15-X16

X1		X2-X4		X5		X6		X7-X8	
Type		Component		Dimensions		Internal code		CRI(Ra)	
2	Emitter	DAA	DOB Series	C	Circle	-	-	80	80
								90	90

X9-X10		X11-X12		X13-X14		X15-X16	
Voltage		Emitter Power		Emitting color		Serial Number	
12	120V	07	7W	27	2700K	-	-
				30	3000K		
				40	4000K		
				50	5000K		
				57	5700K		

Absolute Maximum Ratings

Parameter	Symbol	Value	Units
Maximum operation voltage	V_{op}	132	V
Power Dissipation	P_d	7.8	W
Operation temperature	T_{op}	-30~+75	°C
Storage temperature	T_{st}	-40~+100	°C
Case Temperature	T_C	85	°C
Junction Temperature	T_J	125	°C
Insulation voltage	Viso[RMS]	1.5	KV
Tolerance of Surge	Vs	1.5	KV

Note:
Need to put thermal conductive pad under the module (Size Phi 35mm) that insulation voltage can reach 3KV.

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Luminous Flux Characteristic

Order Code	CCT (K)	Luminous Flux(lm) T_C=25°C		Efficacy (lm/W)	CRI Ra	CRI R9	Vac	Watt
		Min.	Typ.	Typ.	Min.	Min.	Typ.	
2DAACN8012072705	2700	650	725	102	80	0	120	7.1
2DAACN8012073005	3000	675	750	106	80	0	120	7.1
2DAACN8012074005	4000	690	770	108	80	0	120	7.1
2DAACN8012075005	5000	700	780	110	80	0	120	7.1
2DAACN8012075705	5700	690	765	108	80	0	120	7.1
2DAACN9012072705	2700	565	630	89	90	50	120	7.1
2DAACN9012073005	3000	590	655	92	90	50	120	7.1
2DAACN9012074005	4000	600	670	94	90	50	120	7.1
2DAACN9012075005	5000	620	690	97	90	50	120	7.1
2DAACN9012075705	5700	595	665	94	90	50	120	7.1

Parameter	Symbol	Min.	Typ.	Max.	Units	Condition
Viewing Angle FWHM	2θ1/2	105	115	120	deg	Vop=120V
Operation Voltage	Vop	90	120	132	V	-
Power Dissipation	Pd	6.3	7.1	7.8	W	Vop=120V
Operation Frequency	Fop	50 / 60			Hz	Vop=120V
Power Factor	PF	Over 0.90			-	Vop=120V
Current THD	ATHD	Less than 30%			%	Vop=120V

Notes:
1. At 120Vac, Ta=25°C.
2. Edison Opto Corp. maintains luminous flux ±10%, Ra and R9±2 tolerance.

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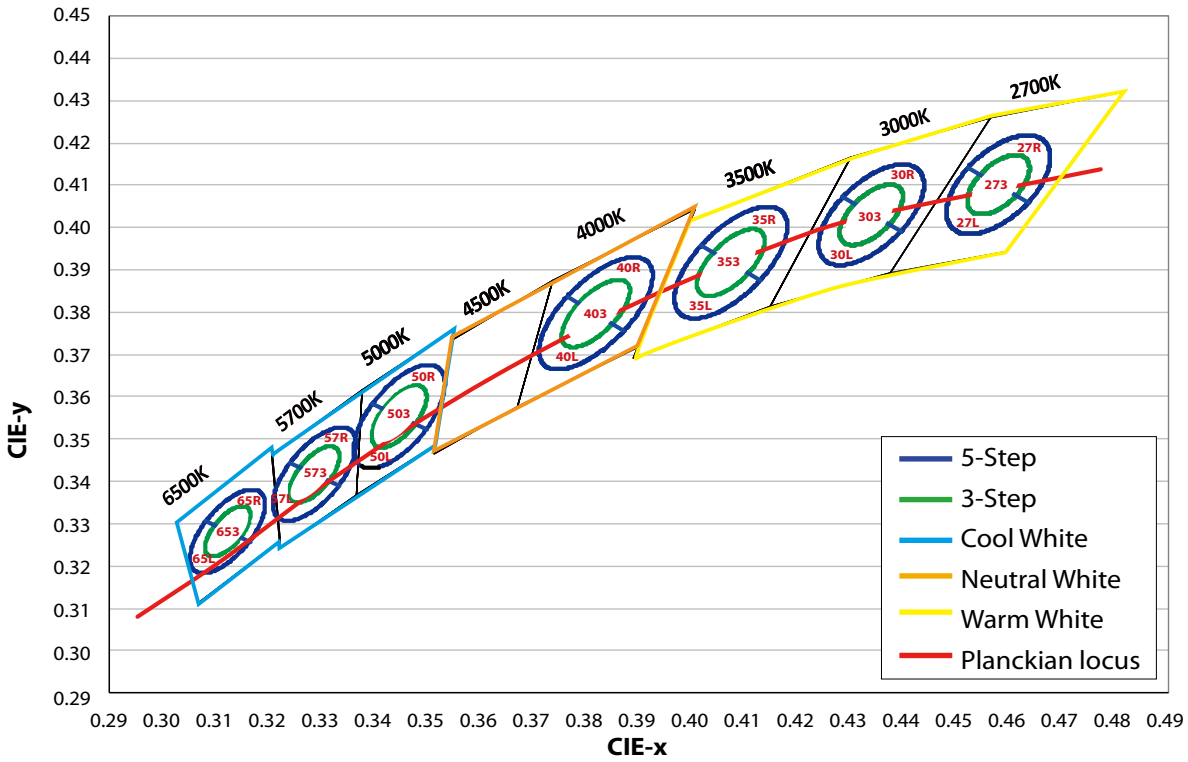
Chromaticity coordinates(T_C=25°C)

Color region stay within Macadam "3-Step/5-step" ellipse from the chromaticity center.
The chromaticity center refers to ANSI C78.377:2008.
Please refer to ANSI C78.377 for the chromaticity center.



CCT	Steps	Cx	Cy	a	b	theta
2700K	5	0.4578	0.4101	0.01350	0.00700	53.70
3000K	5	0.4338	0.4030	0.01390	0.00680	53.22
3500K	5	0.4073	0.3917	0.01545	0.00690	54.00
4000K	5	0.3818	0.3797	0.01565	0.00670	53.72
5000K	5	0.3447	0.3553	0.01370	0.00590	59.62
5700K	5	0.3287	0.3417	0.01243	0.00533	59.09
6500K	5	0.3123	0.3282	0.01115	0.00475	58.57

CCT	Steps	Cx	Cy	a	b	theta
2700K	3	0.4578	0.4101	0.00810	0.00420	53.70
3000K	3	0.4338	0.4030	0.00834	0.00408	53.22
3500K	3	0.4073	0.3917	0.00927	0.00414	54.00
4000K	3	0.3818	0.3797	0.00939	0.00402	53.72
5000K	3	0.3447	0.3553	0.00822	0.00354	59.62
5700K	3	0.3287	0.3417	0.00746	0.00320	59.09
6500K	3	0.3123	0.3282	0.00669	0.00285	58.57

Note: CIE_x,y tolerance: ±0.005.

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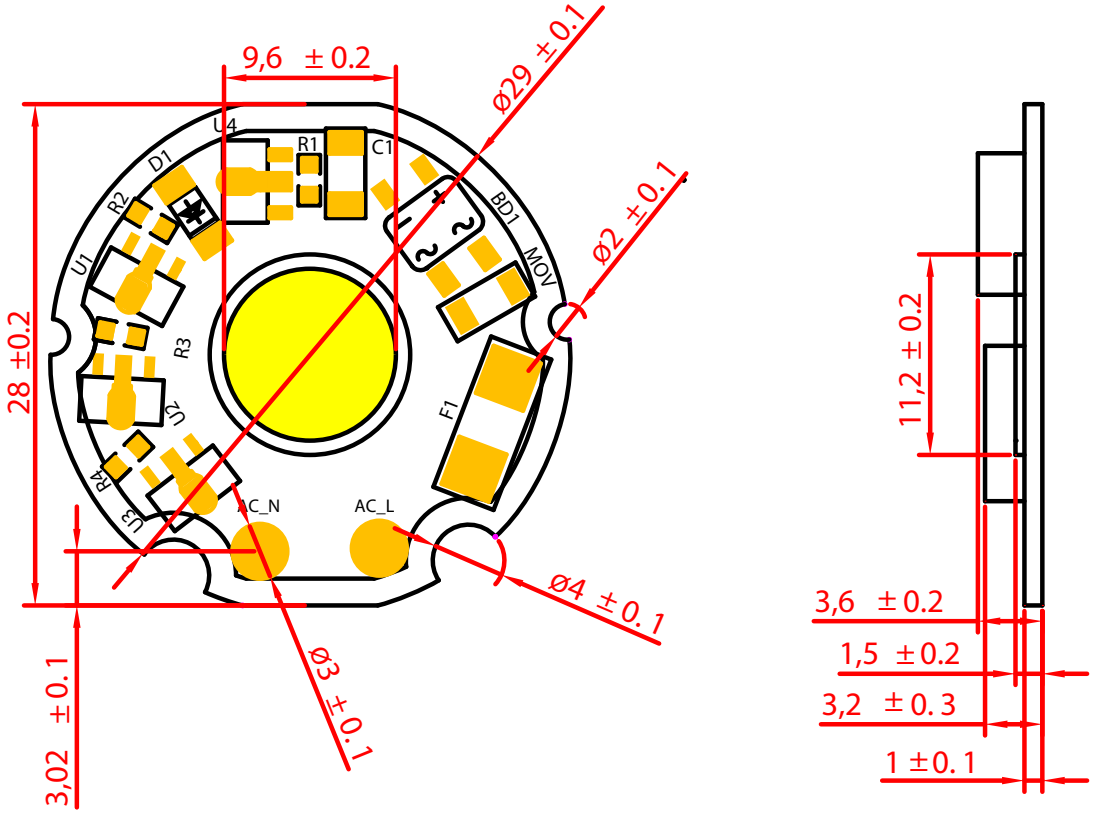
Mechanical Dimensions

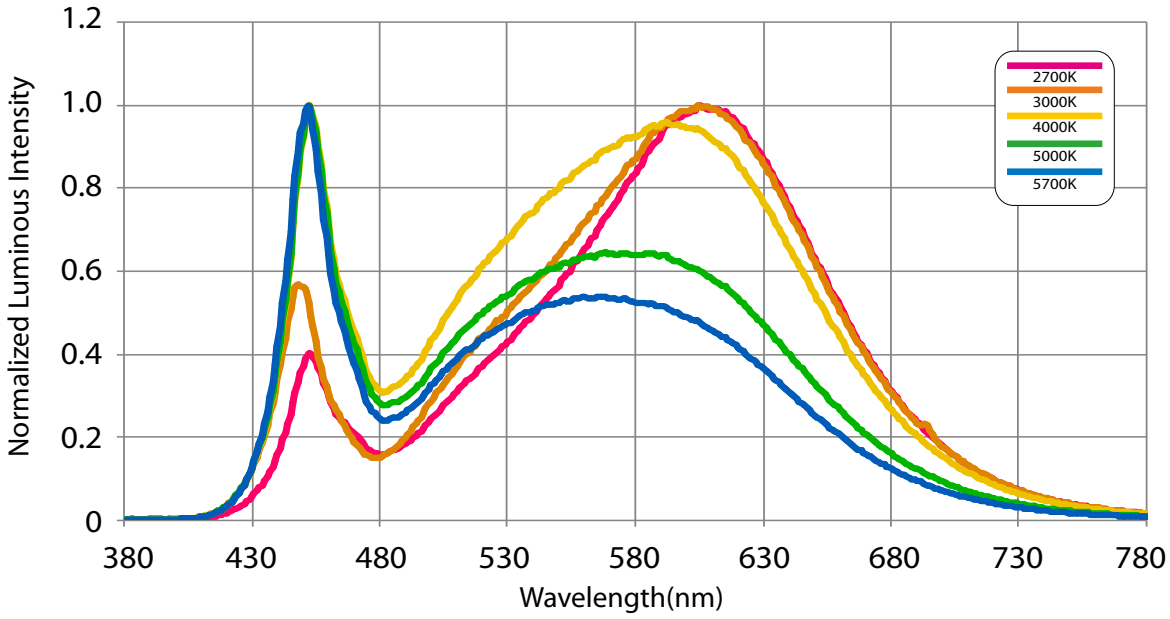
Emitter Dimensions



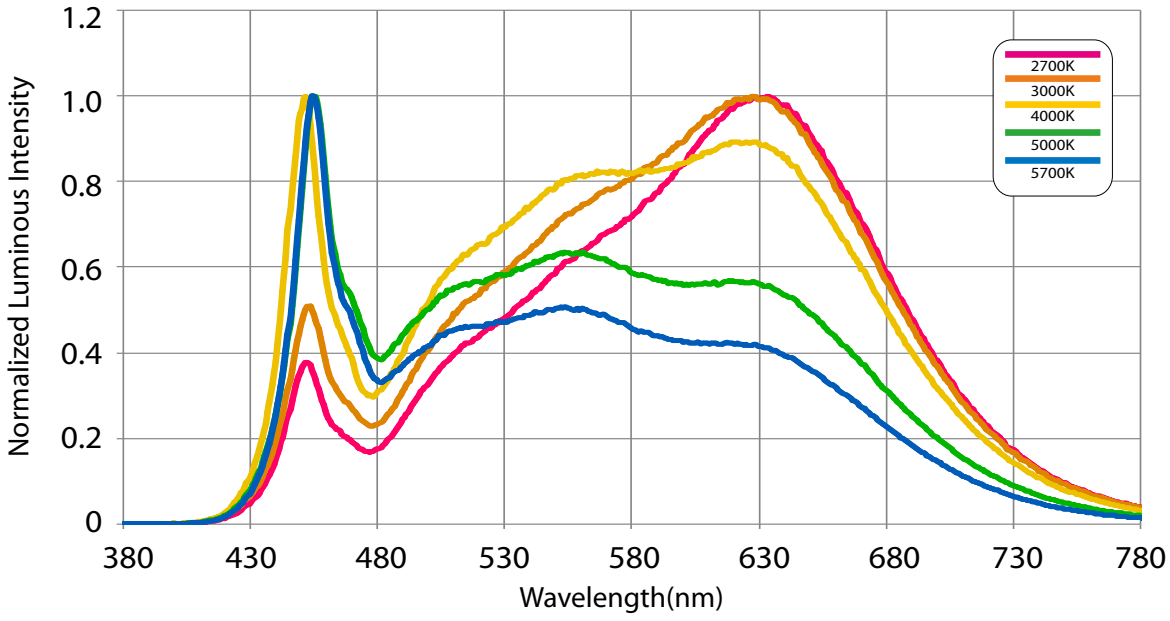
Note :
Unit : mm

Characteristic curve

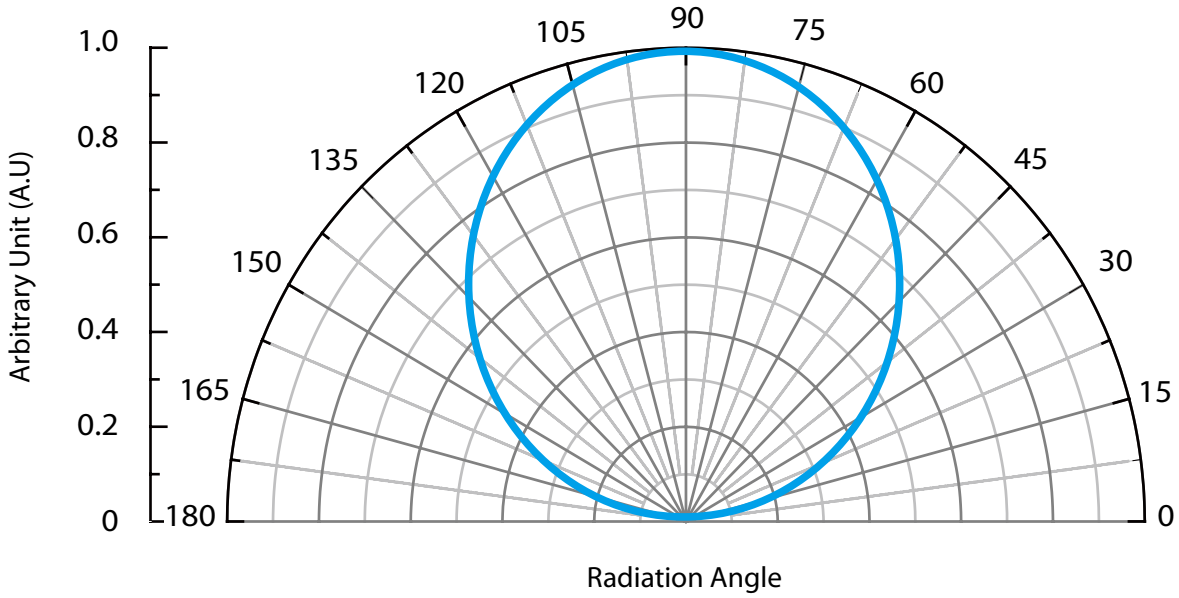
Color Spectrum(Tc=25°C,VAC=120V)_Ra 80



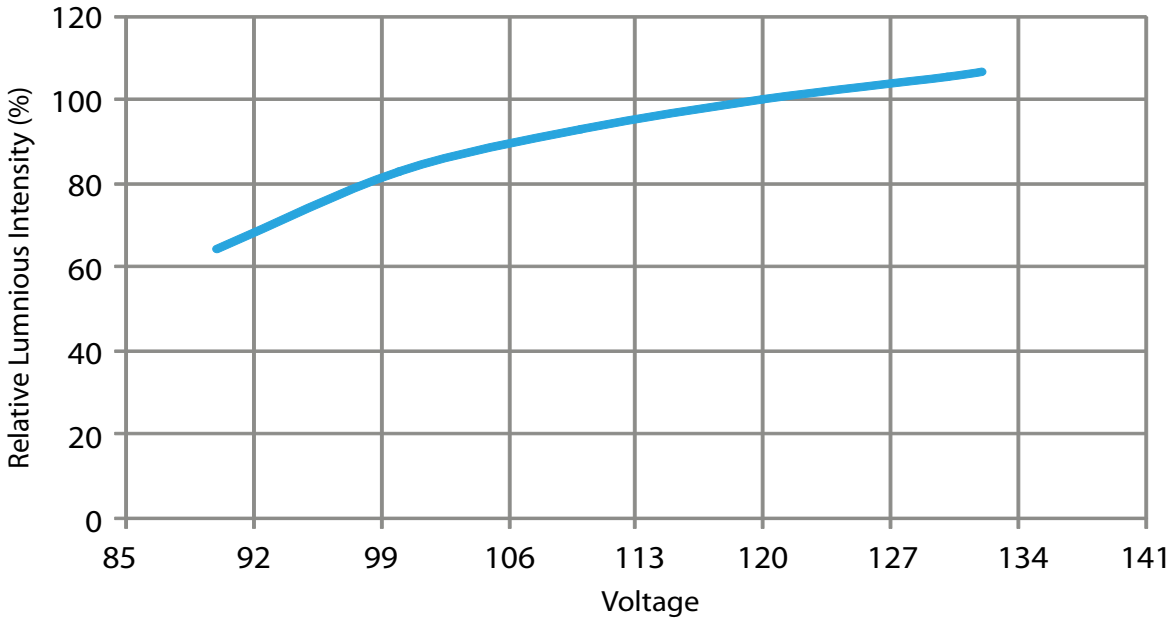
Color Spectrum(Tc=25°C,VAC=120V)_Ra 90



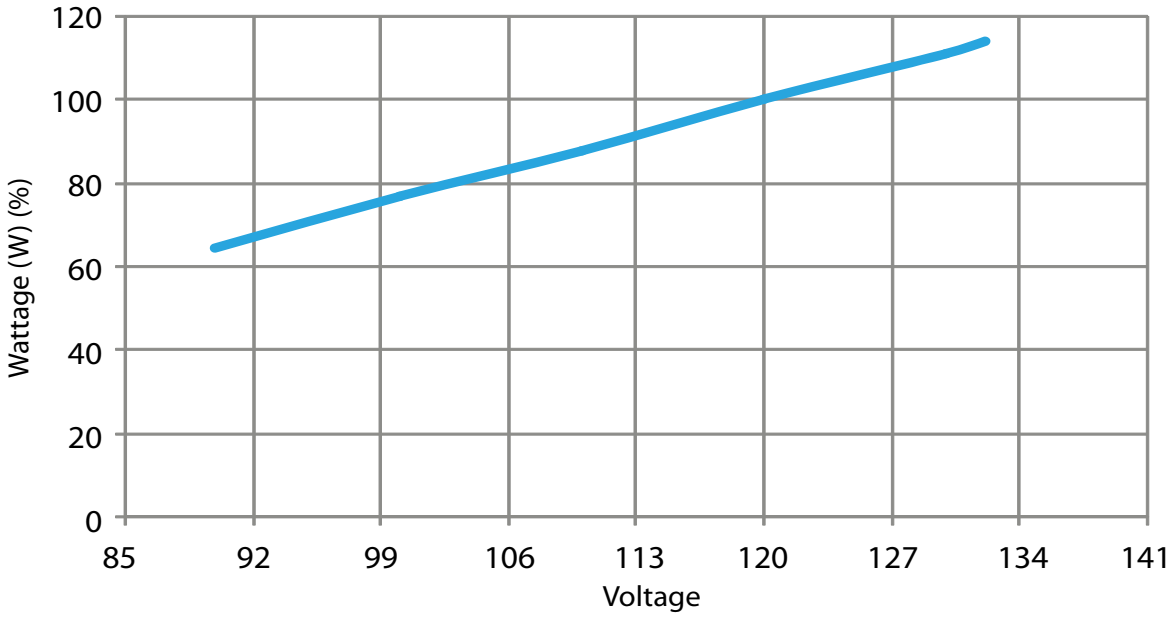
Beam Pattern



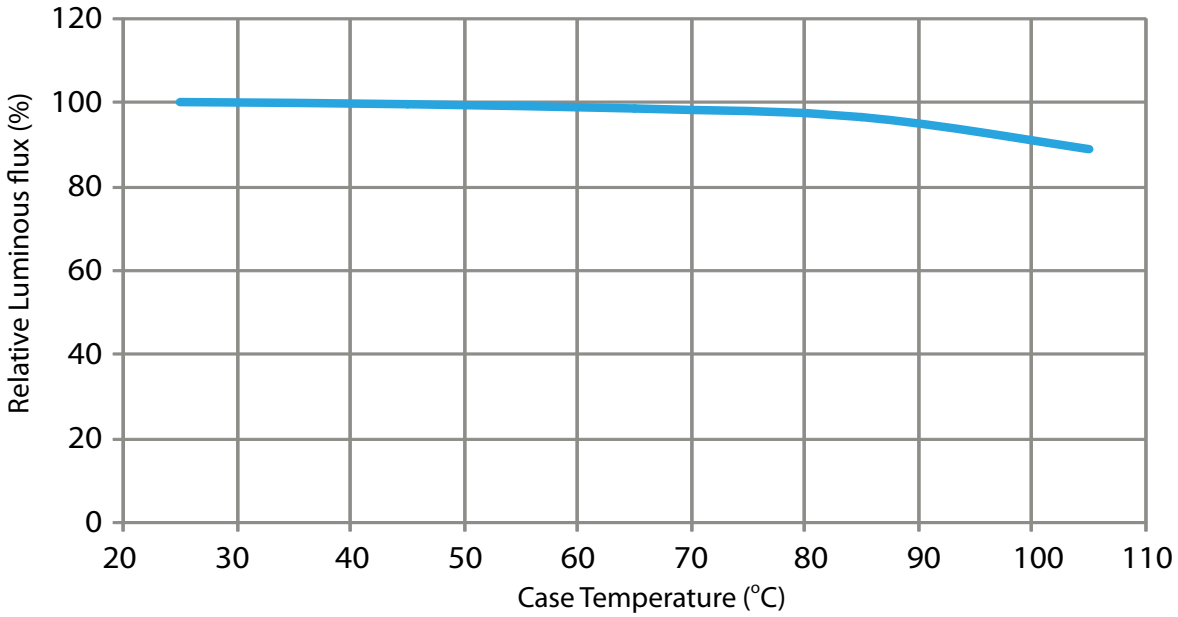
Relative luminous Intensity vs. Voltage(Tc=25°C)



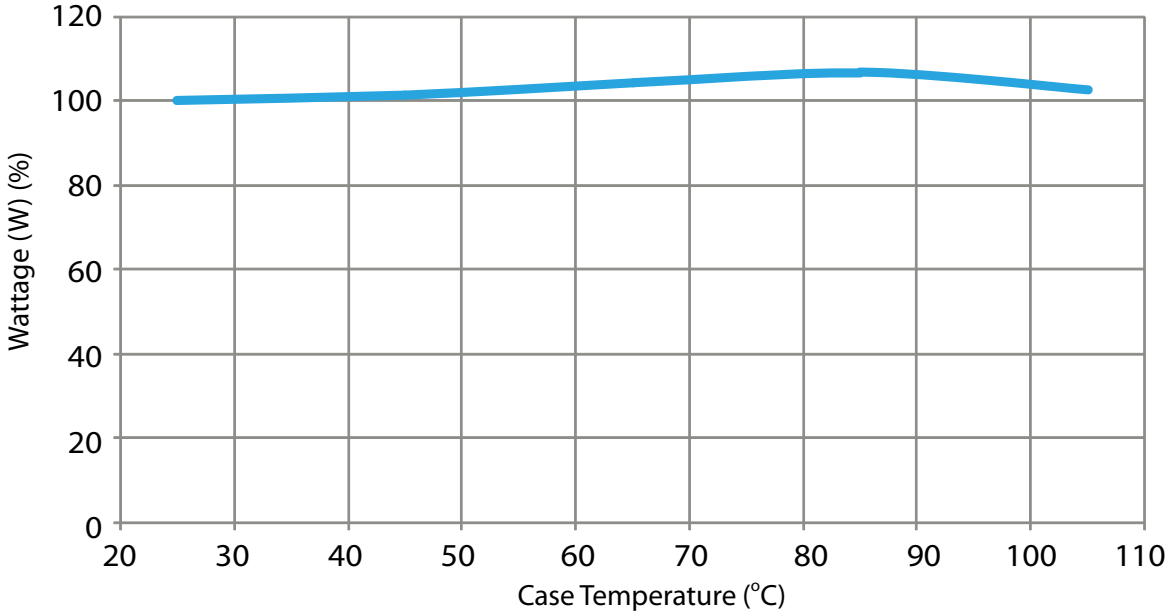
Wattage vs. Voltage(Tc=25°C)



Relative Luminous Flux vs. Case Temperature(VAC=120V)



Wattage vs. Case Temperature(VAC=120V)



Reliability

NO .	Test Item	Test Condition	Remark
1	Temperature Cycle	-40°C~100°C (30 mins / 30 mins)	100 Cycle
2	Low-Temperature Storage	Ta= -40°C	1000 hrs
3	High-Temperature Storage	Ta=105°C	1000 hrs
4	High Temperature High Humidity Life test	Ta=85°C, RH=85%	500 hrs
5	Operation Life test	Ta = 25°C	1000 hrs
6	High Temperature Operation Life test	Tc = 85°C	1000 hrs
7	ON/OFF Test	3 sec ON, 3 sec OFF	1.5W times

Failure Criteria

Item	Criteria for Judgment	
	Min.	Max.
Luminous Flux	0.85	-
Δu'v'	-	0.006
Forward Voltage	-	Initial Data x 1.1
Resistance to Soldering Heat	No dead lamps or visual damage	

Cautions

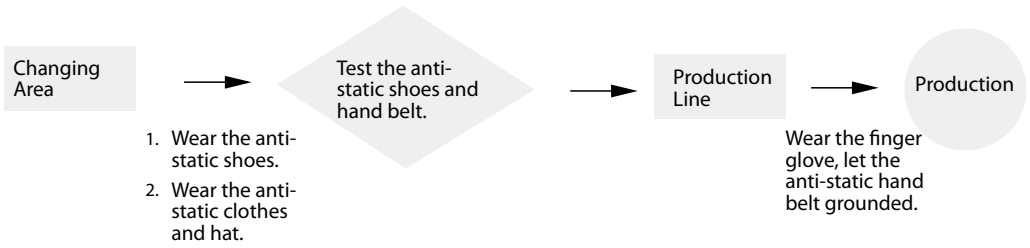
LED avoids being stored and lighted in the environment containing sulfur. Some matrrials, such as seals, printing ink, enclosure and adhesives, may contain sulfur, avoiding the exposure in acid or halogen environment.

Handling with a DOB Series

√ Both the light emitting area and white dam over the light emitting area is composed of resin materials. Please avoid the resin area from being pressed, stressed, rubbed, come into contact with sharp metal nail because the function, performance and reliability of this product are negatively impacted.

√ LED device are combine by many accurate parts which belong to static sensitive device. A human body may aware of the discharge voltage about 2-3KV, which is much larger than an electronic device may bear. Therefore, to keep the LED operation environment away from static and lower the exits static become an important issue in a LED manufacture.

1. Anti-Static Steps - All the staffs who has the possibility to contact with the LED components should follow the instructions to eliminate the static:
   - Put on the hand or finger gloves before touch a LED device. (Do not use a nylon or rubber Glove)
   - Do not do any actions that may generate the static in the protection area. Such as wipe hands or foot, put on/off the clothes.
   - Avoid any movement that may cause static damages. When remove a component from the package, please be slow and gentle.
   - Do not touch the metal part of a LED component.



2. Environmental anti-static protection
   - Use an anti-static floor and make earth. Materials such as plastic or rubber contain carbon or conductive polyester is recommended.
   - LEDs should be operated on the desk which is laid by the static discharge material.
   - Protection area with a temperature at 22±5°C and a relative humidity at 70±10%RH are recommended.
   - Layout an appropriate earth system. All the equipment should earth isolated into the ground or pillar.
   - All soldering and testing equipment should also provide earth ability.
   - Prevent the accumulation and the fractions between stuffs.

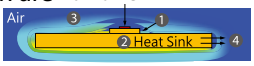
3. Anti-Static steps for package, transportation and storage.
   - Package: All the bags must have the ability of anti-static. Do not use any nylon bag, normal plastic bag or polyester bag for package. Do not open the bag if a LED is not ready to be handling. Open the bag at the protection area and put in a conductive case.
   - Transportation: The cart should install the conductive wheels. Avoid the mechanical vibration and impacts.
   - Storage: Be attention of the temperature and the relative humidity under the suggest condition.

√ Thermal Management

About 80% of input power of a LED transform into heat. A high temperature operation condition always easily causes the LEDs to decrease of flux and the life decay of LED dies. The highest operation temperature of a component is able to be found in its datasheet which is indicated as T_J.

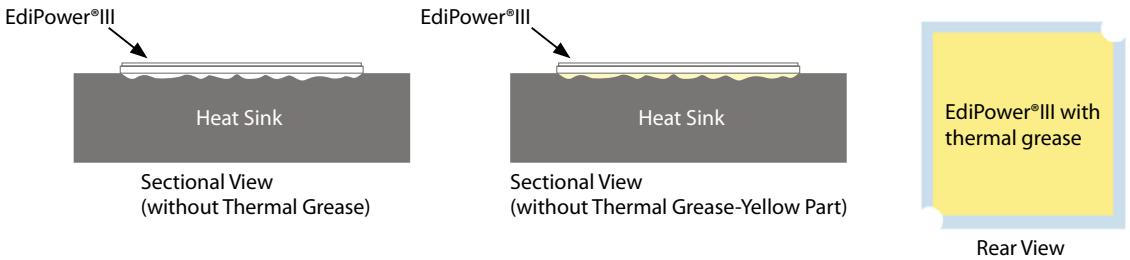
The power dissipation ability, the ambient temperature between the LED junction, environment, thermal path and its thermal resistance are the mean parameters which affect the performance of a LED device. Therefore, the limitation of the junction temperature has become an important issue when designing a LED product.

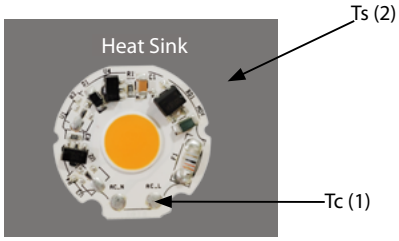
For LEDs, choose an appropriate operation environment and conduct the heat to the air after light on LEDs may maintain the better performance and lifetime. Four major thermal path are EdiPower®III



(1) From heat source (component) to heat sink. (By conduction)
(2) Conduction from within the heat sink to its surface. (By conduction)
(3) Transfer from the surface to the surrounding air. (By convection)
(4) Emit heat from the heat sink surface. (By Radiation)

Path(1): The contact surface of the component and heat sink are not perfectly flat, they are not able to meet each other completely. Air between these two materials will result high thermal resistance and reduce the effect of heat transfer. To enhance the ability of thermal conduction, one common method is applying thermal grease between the two interfaces and use the screws to enforce the adhesion between two surface.





Notes:
1. Tc : ≤85°C
2. ▵ (Tc-Ts) <10°C

Recommended thermal Grease Parameters

Characteristics	Value	Unit
Thermal Conductivity (K)	>3.0	W/m*K
Thickness	≤0.1	mm

√ DO NOT touch any of the circuit board, components or terminals with body or metal while circuit is active.
√ DO NOT add or change wires while circuit is active
√ DO NOT make any modification on module.
√ DO NOT use together with the materials containing Sulfur.
√ DO NOT exceed the values given in this specification
√ Keep cautions not to apply higher voltage above the maximum rating. Otherwise damage may occur. Pay attention not to exceed the maximum operation temperature of 85°C at the Tc Point when the modules are used in an enclosed environment.
√ DO NOT assemble in conditions of high moisture and/or oxidizing gas such as CI, H2S, NH3, SO2, NOx, etc. Damage by corrosion will not be allowed as defect claim. LED Module is recommended for Indoor use only. Long time exposure to sunlight or UV can cause the lens to discolor.
√ Storage Conditions
√ (1) Before opening the package: The LED light engines should be kept at 30°C or less and 90% RH or less. The LED light engines should be used within a year. When storing the LED light engines, moisture-proof packaging with moisture-absorbent material (silica gel) is recommended.

(2) After opening the package: The LED light engines should be kept at 30°C or less and 70% RH or less. The LEDs should be soldered within 168 hours (7 days) after opening the package. If unused LED light engines remain, they should be stored in moisture-proof packages, such as sealed containers with packages of moisture-absorbent material (silica gel). It is also recommended to return the LED light engines to the original moisture-proof bag and to reseal the moisture-proof bag again.

(3) Please avoid rapid transitions in ambient temperature, especially in high humidity environments where condensation can occur.