

EdiPower® III

DOB Series

C331423

Datasheet



Down Light



Spot Light



PAR Lamp



Bulb

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 :

- 14W_230V_>105lm/W
- CCT : 2700K/3000K/4000K/5000K/5700K
- CRI min : 80, 90
- Power Factor > 0.95
- Current THD < 20%

Feature and Benefits :

- Internal Structure: Aluminum mirror Chip on Board
- High efficiency and high power factor (PF>0.95) & Low THD
- Color consistency and is compliant with 3-step / 5-step MacAdam

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General Information

Ordering Code Format

2 D A A C x x 0 2 3 1 4 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			
2	Emitter	DAA	DOB Series	C	Circle	-	-	80	CRI 80
								90	CRI 90

X9-X10		X11-X12		X13-X14		X15-X16	
Voltage	Emitter Power	Emitting color		Serial Number			
23	230V	14	14W	27	2700K	-	-
				30	3000K		
				40	4000K		
				50	5000K		
				57	5700K		

Absolute Maximum Ratings

Parameter	Symbol	Value	Units
Maximum operation voltage	V_{op}	253	V
Power Dissipation	P_d	15.4	W
Operation temperature	T_{op}	-30~+85	°C
Storage temperature	T_{st}	-40~+100	°C
Case Temperature	T_c	70	°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 39mm) that insulation voltage can reach 3KV.

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.	
2DAACN8023142706	2700	1245	1380	101	80	0	230	13.6
2DAACN8023143006	3000	1295	1435	106	80	0	230	13.6
2DAACN8023144006	4000	1335	1480	109	80	0	230	13.6
2DAACN8023145006	5000	1345	1490	110	80	0	230	13.6
2DAACN8023145706	5700	1320	1465	108	80	0	230	13.6
2DAACN9023142706	2700	1060	1175	86	90	50	230	13.6
2DAACN9023143006	3000	1100	1220	90	90	50	230	13.6
2DAACN9023144006	4000	1135	1260	93	90	50	230	13.6
2DAACN9023145006	5000	1145	1270	93	90	50	230	13.6
2DAACN9023145706	5700	1125	1245	92	90	50	230	13.6

Parameter	Symbol	Min.	Typ.	Max.	Units	Condition
Viewing Angle FWHM	2θ1/2	105	115	120	deg	Vop=230V
Operation Voltage	Vop	198	230	253	V	-
Power Dissipation	Pd	10.9	13.6	15.4	W	Vop=230V
Operation Frequency	Fop	50/60			Hz	Vop=230V
Power Factor	PF	Over 0.95			-	Vop=230V
Current THD	ATHD	Less than 20%			%	Vop=230V

Notes:

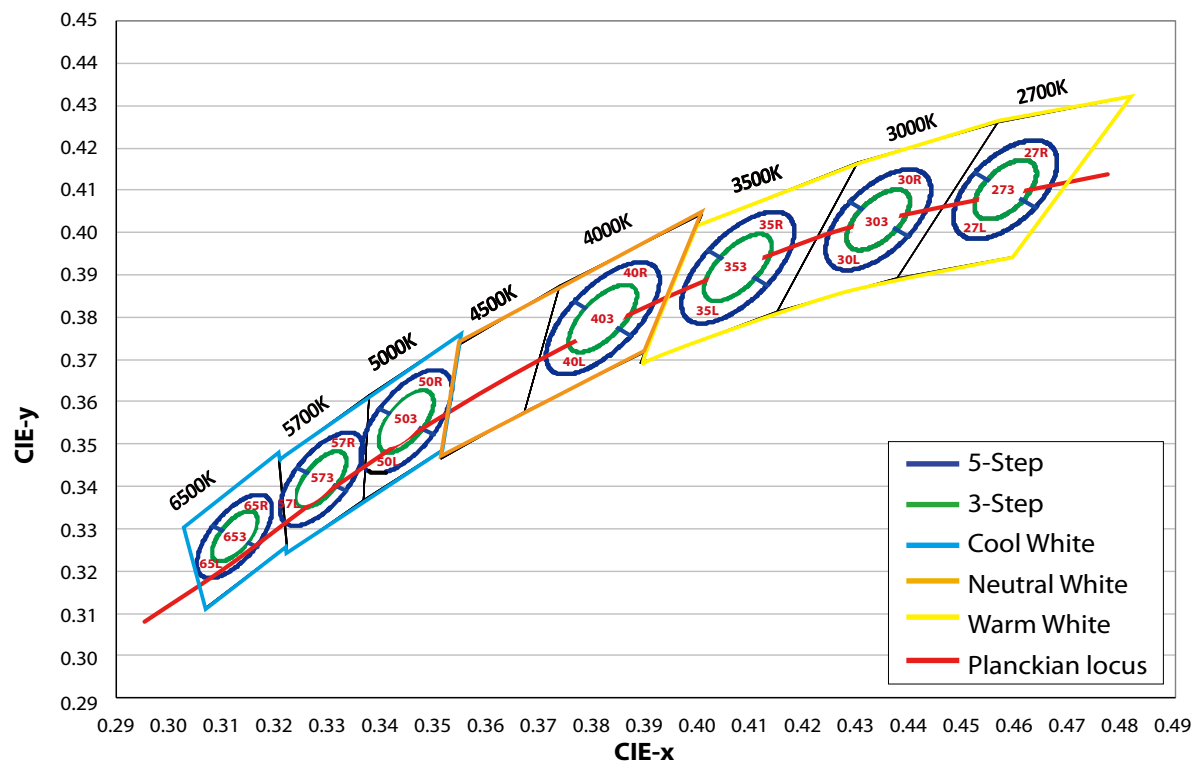
1. At 230Vac, Ta=25°C.
2. Edison Opto Corp. maintains luminous flux ±10%, Ra and R9±2 tolerance.

Chromaticity coordinates($T_c=25^\circ\text{C}$)

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.



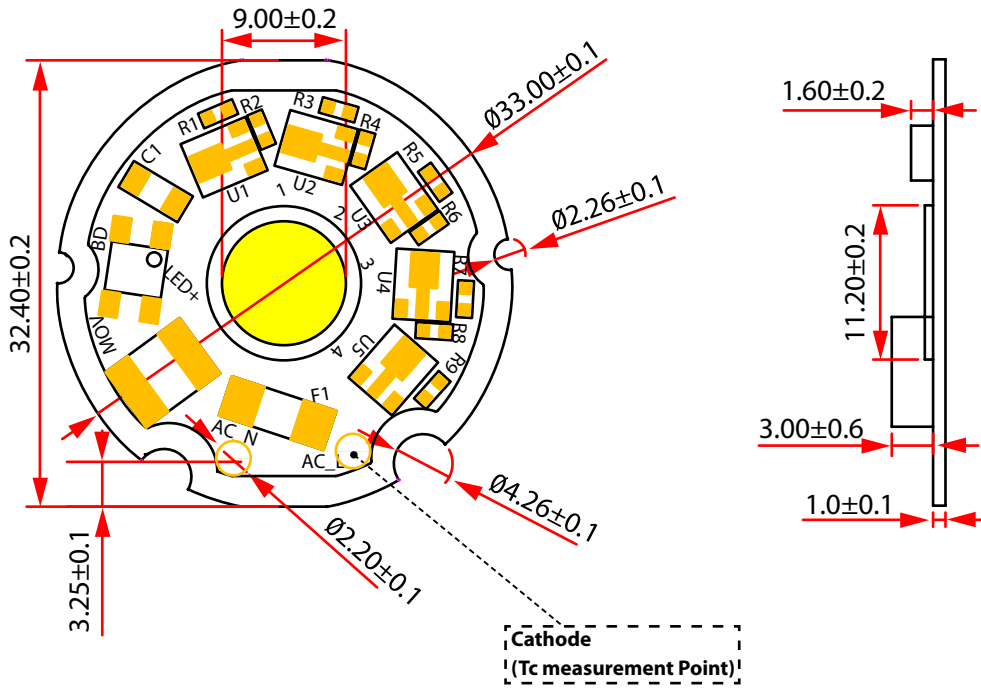
CCT	Steps	Cx	Cy	a	b	theta
2700K	5	0.4578	0.4101	0.01350	0.00700	53.70
3000K	5	0.4338	0.4030	0.01390	0.00680	53.22
3500K	5	0.4073	0.3917	0.01545	0.00690	54.00
4000K	5	0.3818	0.3797	0.01565	0.00670	53.72
5000K	5	0.3447	0.3553	0.01370	0.00590	59.62
5700K	5	0.3287	0.3417	0.01243	0.00533	59.09
6500K	5	0.3123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

Mechanical Dimensions

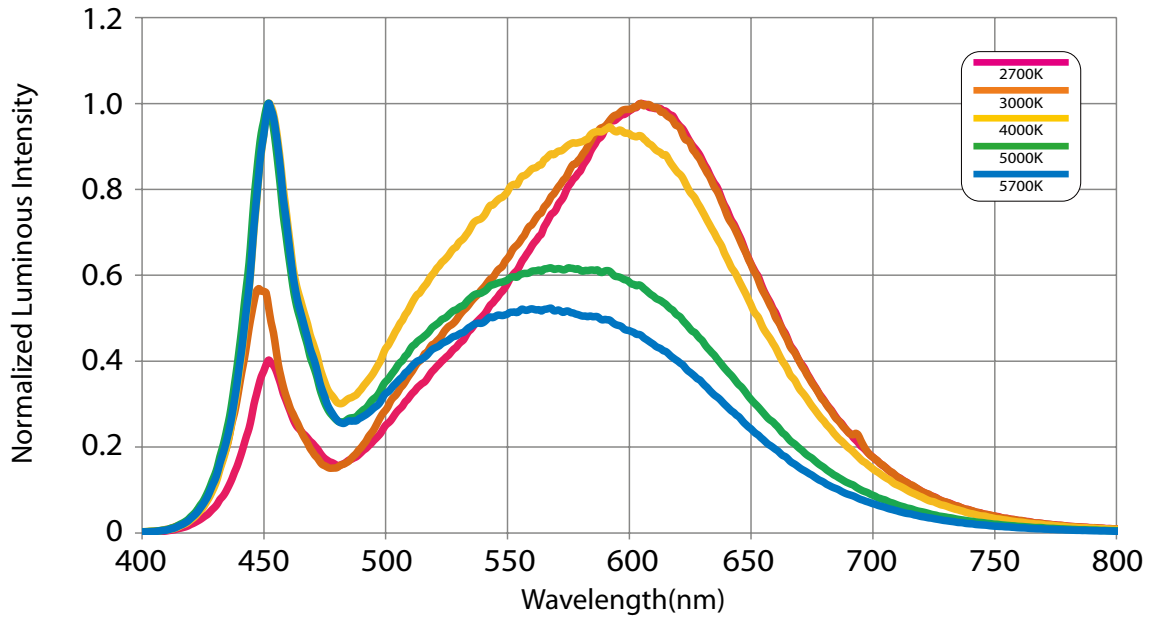
Emitter Dimensions



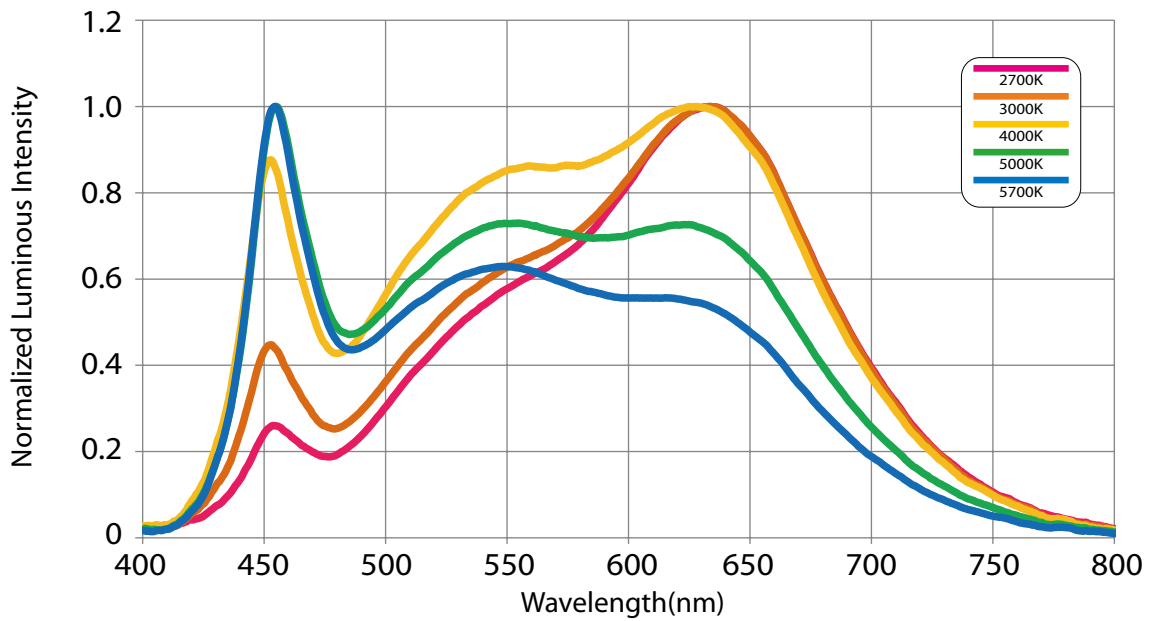
Note :
Unit : mm

Characteristic curve

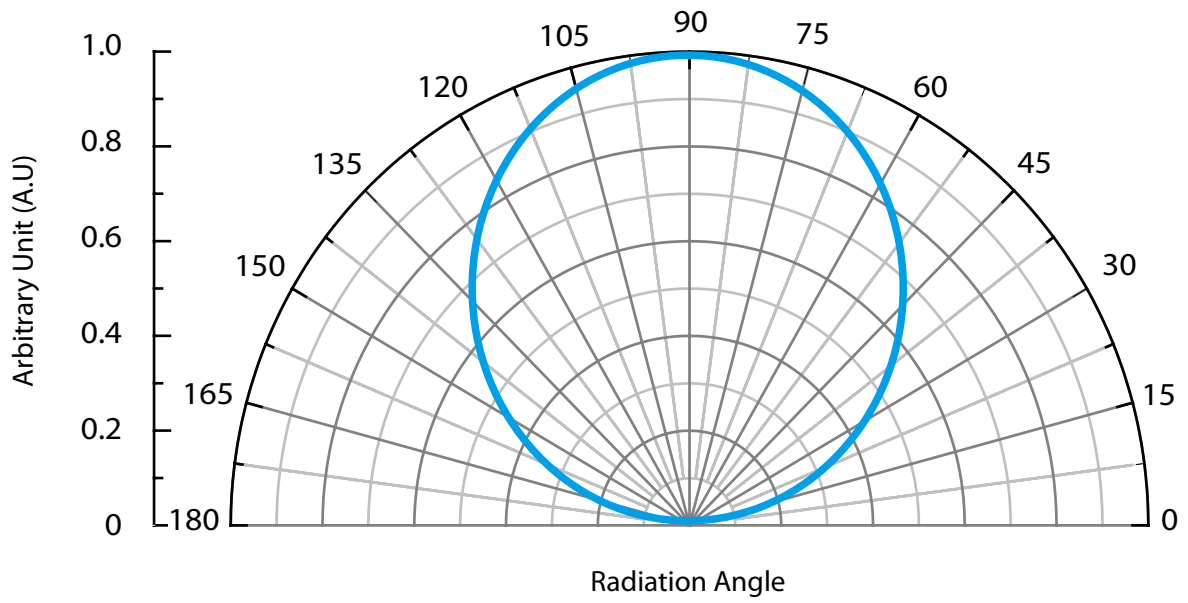
Color Spectrum (CRI80)



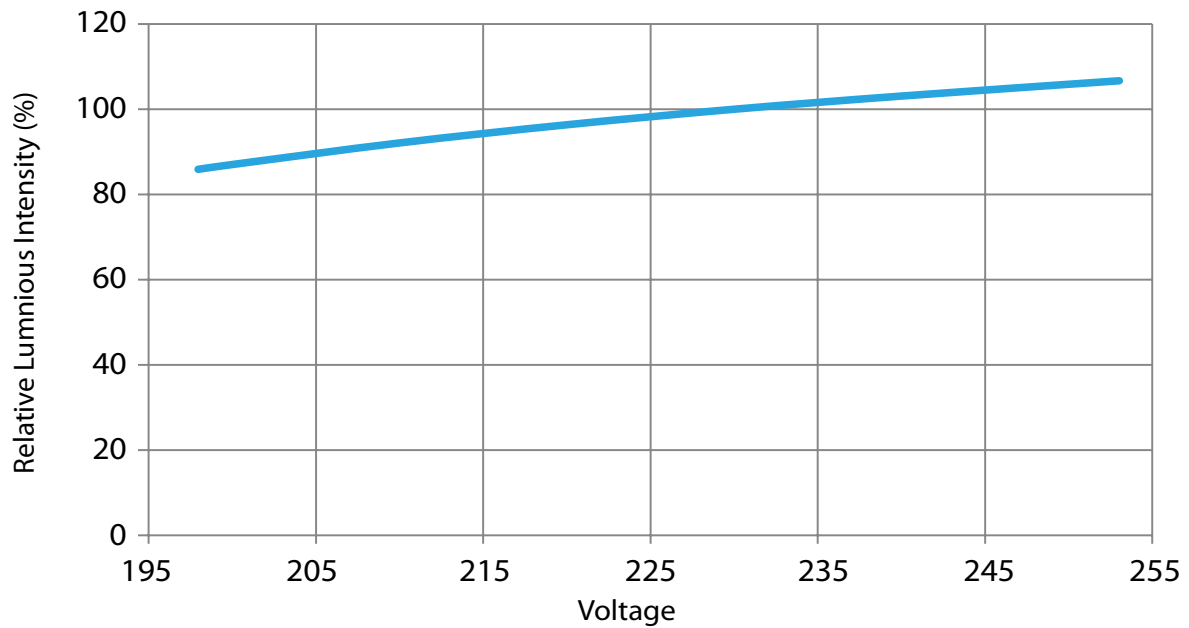
Color Spectrum (CRI90)



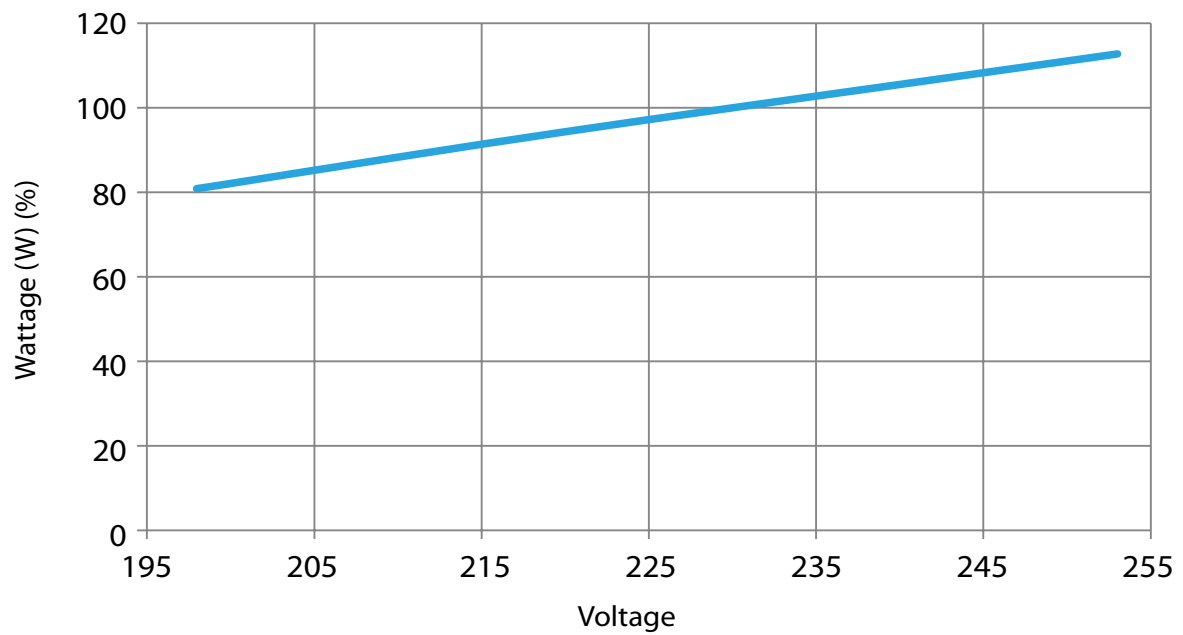
Beam Pattern



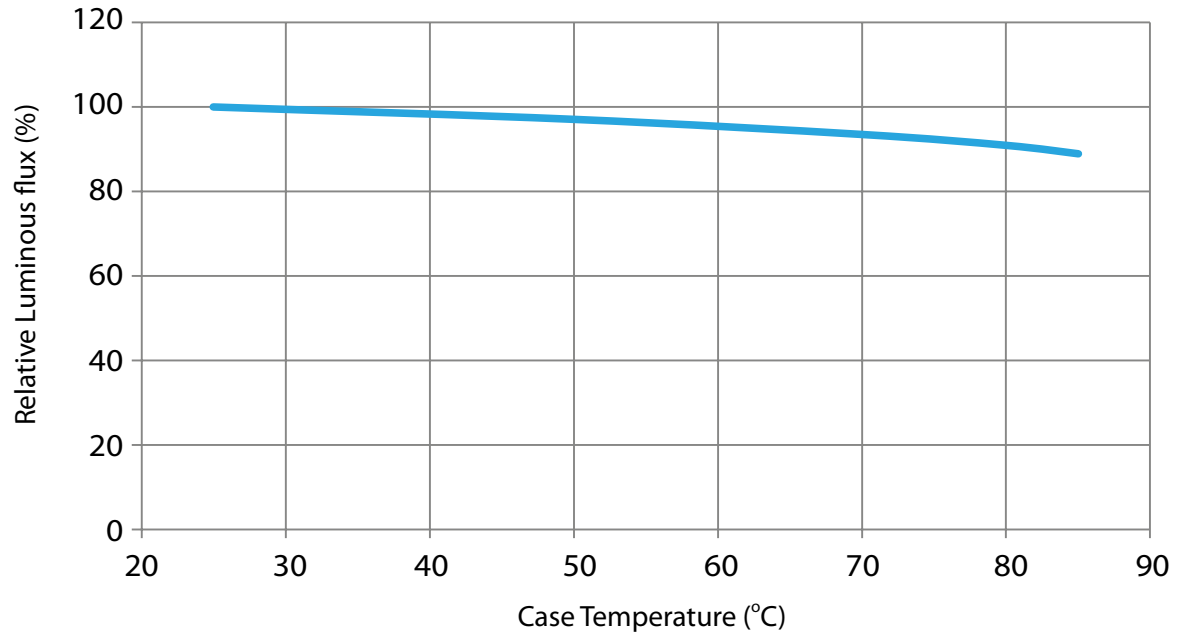
Relative luminous Intensity vs. Voltage



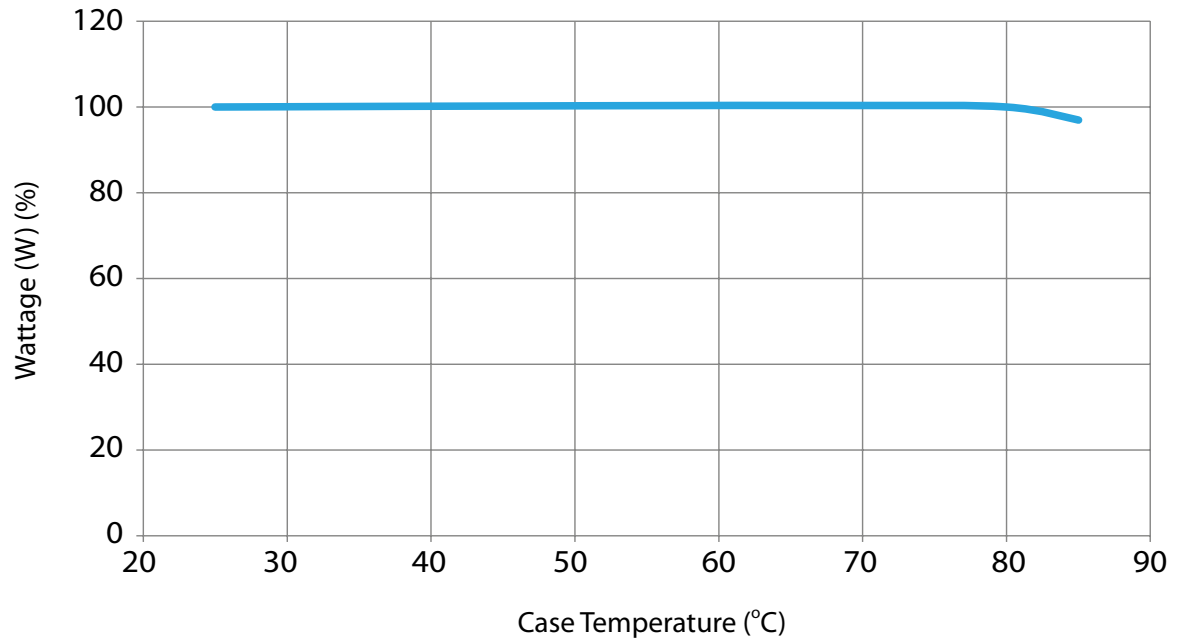
Wattage vs. Voltage



Relative Luminous Flux vs. Case Temperature



Wattage vs. Case Temperature



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 = 70°C	1000 hrs
7	ON/OFF Test	3 sec ON, 3 sec OFF	1.5W times

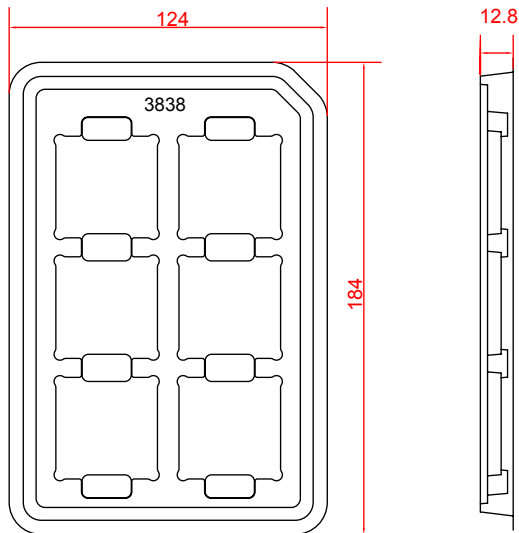
Failure Criteria

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

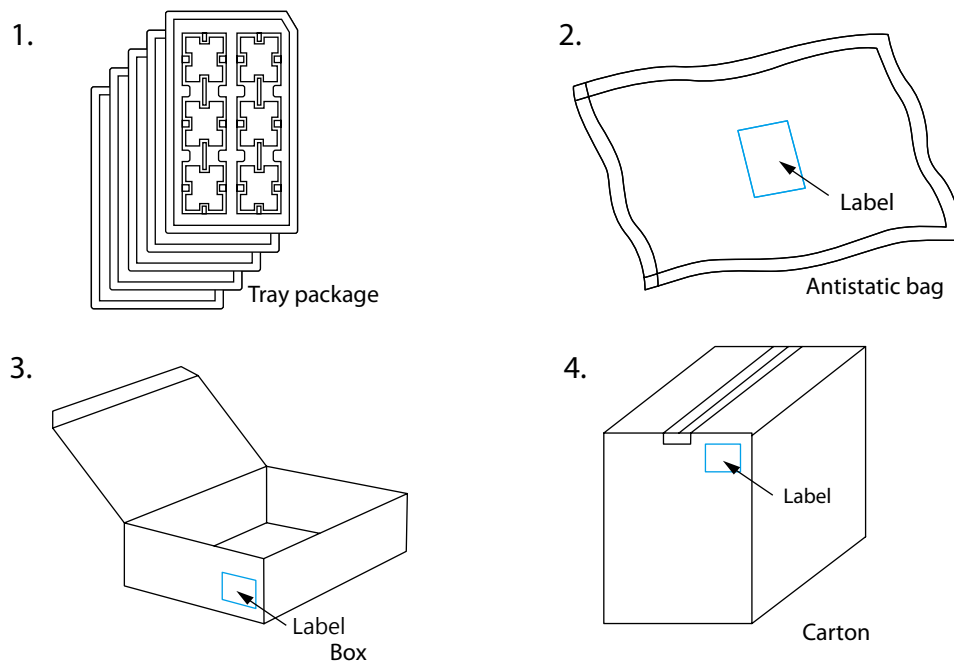
Cautions

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

Product Packaging Information



Tray package dimension.



Notes:

1. All dimensions are in mm.
2. There are 6pcs emitters in a full tray.
3. There are 5 trays in a bag.
4. There are 10 bags in a box.
5. There are 10 boxes in a carton.
6. A bag contains one humidity indicator card and drying agent.

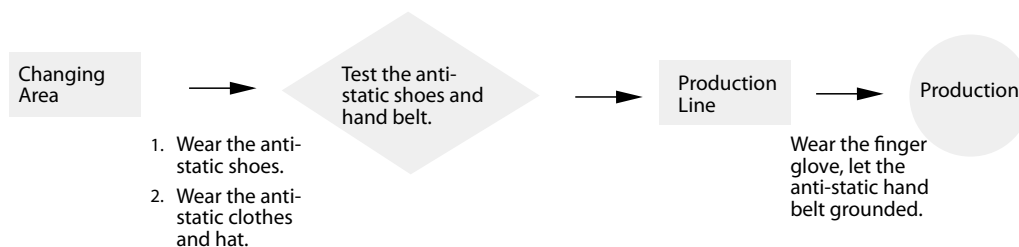
Handling with a DOB Series

√ 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 $22\pm 5^{\circ}\text{C}$ and a relative humidity at $70\pm 10\%\text{RH}$ are recommended.
- Layout an appropriate earth system. All the equipments should earth isolated into the ground or pillar.
- All soldering and testing equipments 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.

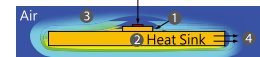
√ Thermal Management

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 .

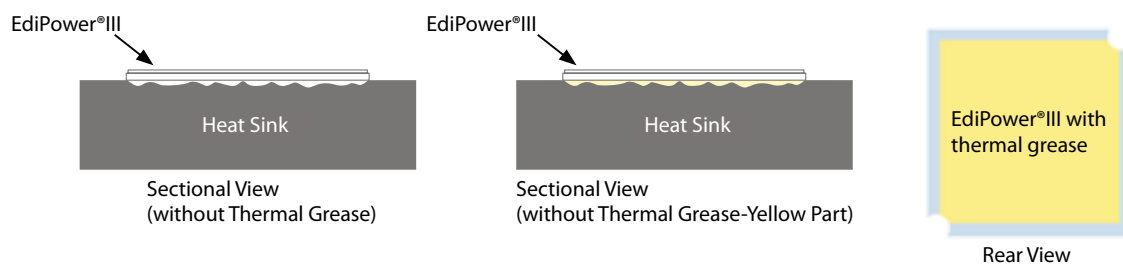
The power dissipation ability, the ambient temperature between the LED junction, environment, thermal path and its thermal resistance are the mean parameters which affect the performance of a LED device. Therefore, the limitation of the junction temperature has become an important issue when designing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

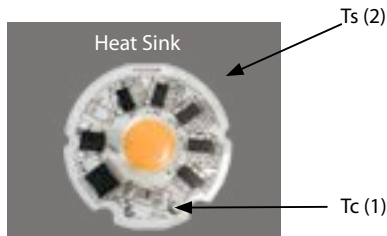
For LEDs, choose an appropriate operation environment and conduct the heat to the air after light on LEDs may maintain the better performance and lifetime. Four major thermal path are

- (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. $T_c \leq 70^\circ\text{C}$
2. $\Delta(T_c - T_s) < 10^\circ\text{C}$

Recommended thermal Grease Parameters

Characteristics	Value	Unit
Thermal Conductivity (K)	>3.0	W/m ² 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 Cl, H₂S, NH₃, SO₂, NO_x, 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.

Revision History

Versions	Description	Release Date
1	Establish a Datasheet	2016/09/01
2	Correct Reliability	2016/09/27
3	Add the cautions of reliability	2017/05/19
4	1. Add CRI90 Information 2. Revise luminous flux characteristic	2017/11/27
5	Add the tolerance of mechanical dimensions	2018/04/13
6	1. Revise the photo of front page 2. Update the Absolute Maximum Ratings and Information 3. Update the Mechanical Dimensions Information	2019/03/08

About Edison Opto

Edison Opto is a leading manufacturer of high power LED and a solution provider experienced in LDMS. LDMS is an integrated program derived from the four essential technologies in LED lighting applications- Thermal Management, Electrical Scheme, Mechanical Refinement, Optical Optimization, to provide customer with various LED components and modules. More Information about the company and our products can be found at www.edison-opto.com

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