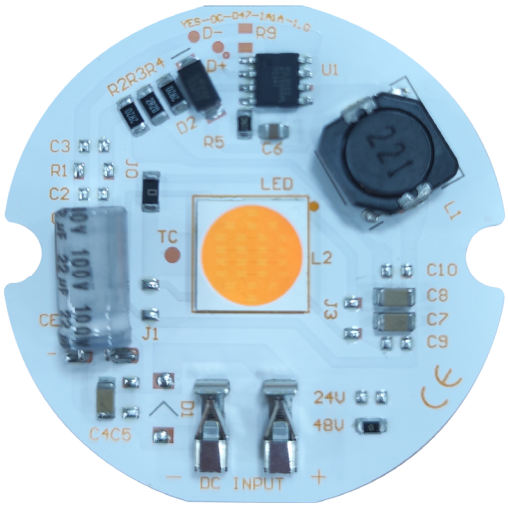
DOB III DC Module
D47 10W Series



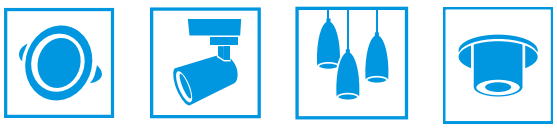
Product Description

10W Power Consumption
DC 24~48V Voltage input
Module Diameter 47mm
LES Diameter 9.6mm

Features

High efficacy chip on board solution
High color rendering index CRI(Ra)>80/90
Small color tolerance MacAdam < 3
PWM&Analog dimming compatible
Uniform Full dimming
Low EMI
RoHS compliant
No photo-biological hazard: RG0

Application



Down Light | Track Light | Ceiling Light | Cylinder Light

Benefits

Module with integrated electronic
Enables thin designs of luminaries

EDISON
Lighting Design Manufacturing Service

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Lighting Design Manufacturing Service

General Information

Ordering Code Format

5	E L A	C	N	3 T	x x	x x	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		Intemal code		Type	
5	Module	ELA	Edilex AC	C	Circle	-	-	3T	EMC

X9-X10		X11-X12		X13-X14		X15-X16	
Voltage		Emitter Power		Emitting color		Serial Number	
W1	24~48	10	10W	27	2700K	-	-
				30	3000K		
				40	4000K		

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Absolute Maximum Ratings

Parameter	Symbol	Value	Units
Input Power	Pi	11.0	W
Input Voltage	V_DC	24~48	-
Operating Temperature	T_{op}	-40 ~ +100	℃
Storage Temperature	T_{st}	-40 ~ +100	℃
LED junction Temperature[3]	T_J	125	℃
Case Temperature	T_C	85	℃
Recommended Dimming Range for PWM	-	0~5.0	V_DC
PWM_in High Level	PWM(on)	2.5~5.0	V_DC
PWM_in Low Level	PWM(off)	0~0.24	V_DC
PWM_in Frequency		300~10000	Hz
PWM_in Duty Cycle		0~100%	
Recommended Dimming Range for 0~3V	-	0~3.0	V_DC
0~3V Dimming in High Level	Dim(on)	0.4~3.0	V_DC
0~3V Dimming in Low Level	Dim(off)	0~0.3	V_DC
0~3V Dimming Output Range	-	10%~100%	Imax

Optical and Electrical Characteristic (Tc=25°C)

Order Code	CCT (K)	Luminous Flux(lm) T_C=25°C		Efficacy (lm/W)	CRI Ra	LES (mm)	Vdc	Watt
		Min.	Typ.	Typ.	Min.	Typ.	Typ.	
5ELACN3TW1102701	2700	1230	1365	137	80	9.6	24~48	10
5ELACN3TW1103001	3000	1255	1395	140				
5ELACN3TW1104001	4000	1295	1435	144				
5ELACN3TW1102702	2700	1115	1240	124	90			
5ELACN3TW1103002	3000	1140	1265	127				
5ELACN3TW1104002	4000	1175	1305	131				

Notes :
1. Edison Opto Corp. maintains forward voltage ±3%, luminous flux ±10%, Ra and R9±2 tolerance.
2. Flux values @ 25 °C are calculated and for reference only.

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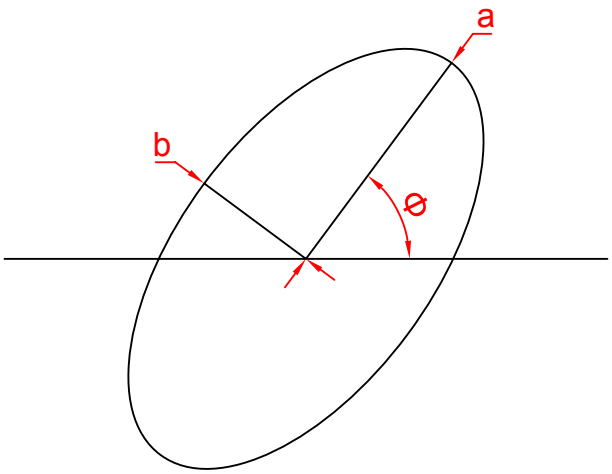
Chromaticity coordinates(T_C=25°C)

CIE Chromaticity Diagram



The color ranks have chromaticity ranges within 3-step MacAdam ellipse

CCT	Steps	Cx	Cy	a	b	theta
2700K	3	0.4620	0.4145	0.00810	0.00420	53.42
3000K	3	0.4383	0.4081	0.00834	0.00408	53.13
4000K	3	0.3875	0.3868	0.00939	0.00402	53.43

*Tolerance of measurements of the chromaticity Coordinate is ±0.005

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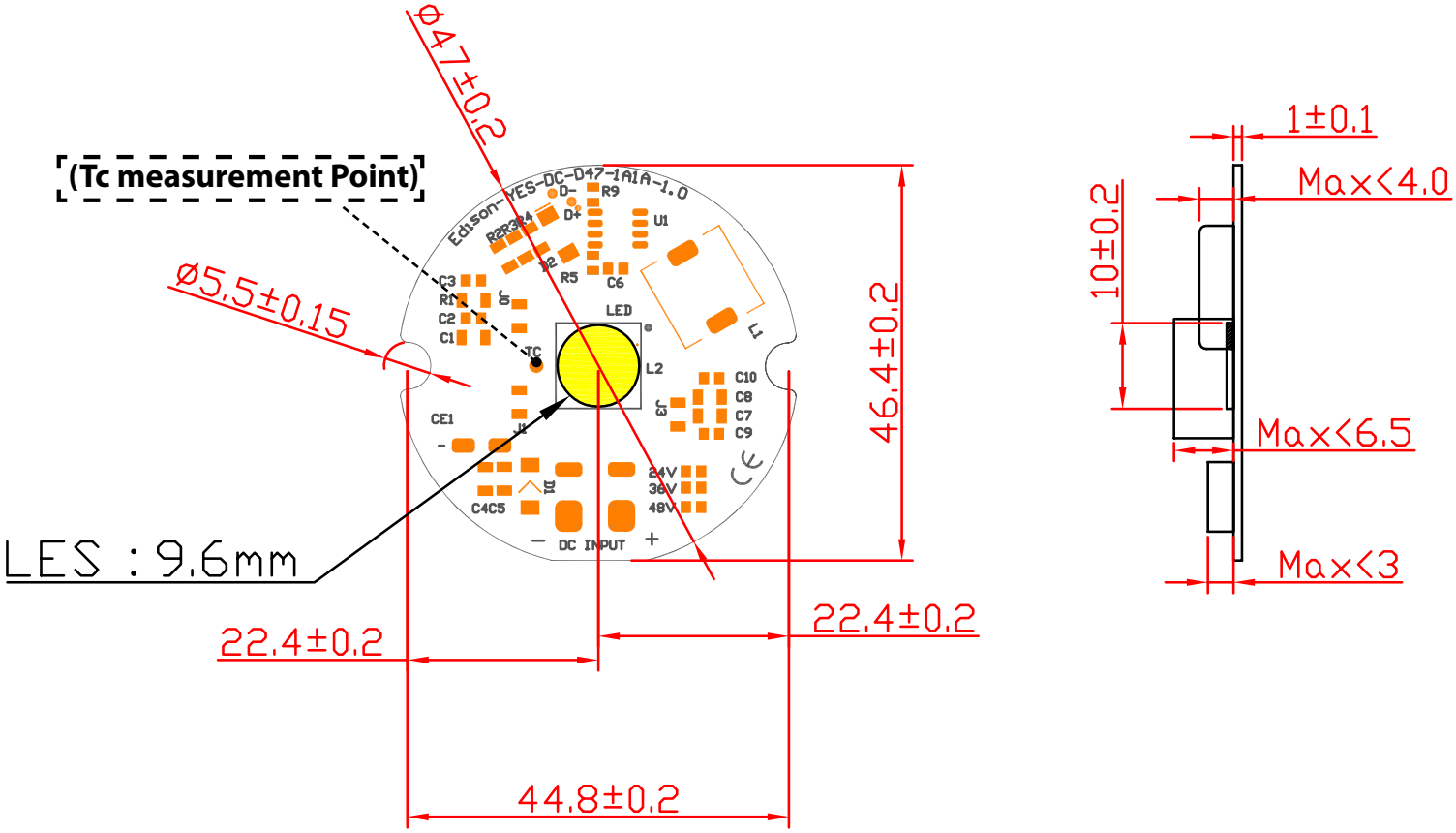
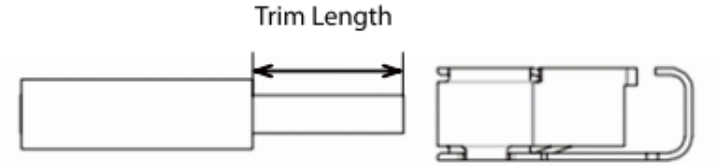
Mechanical Dimensions

5ELACN3Txx10xx25/26



Note : Suggestion Wire Insulation Diameter : 0.75~0.5mm2(18~20AWG), Trim Length Diameter Suggestion spec 4~6mm



Note :
Unit : mm

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Holder Dimensions (Version A)

Product description

1. Material : PC
2. Color : White/Black
3.Flame retardant rating : V0

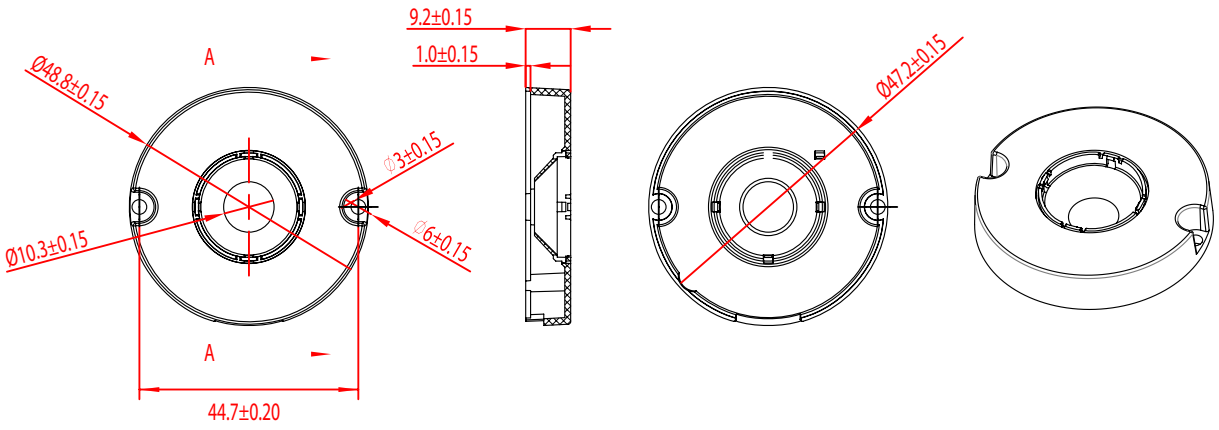
D47-White

D47-Black

Application Note

1. Operating temperature : -40˚C~120˚C
2. Apply on DOB D47 Series
3. M3 screws with flat head , max. head diameter should be no more than 6mm

Product Dimensions



Ordering Data

Part No	Color	Packaging Bag	Weight per pc.
13CRDAA00115	white	1,500 pcs	0.004kg
13CRDAA00118	black	1,500 pcs	0.004kg

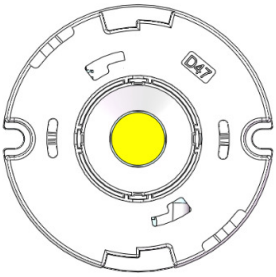
Lighting Design Manufacturing Service

Holder Dimensions (Version B)

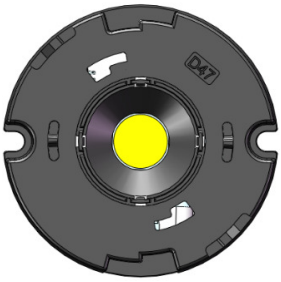
Product description

1. Material : PC
2. Color : White/Black
3.Flame retardant rating : V2

D47-White



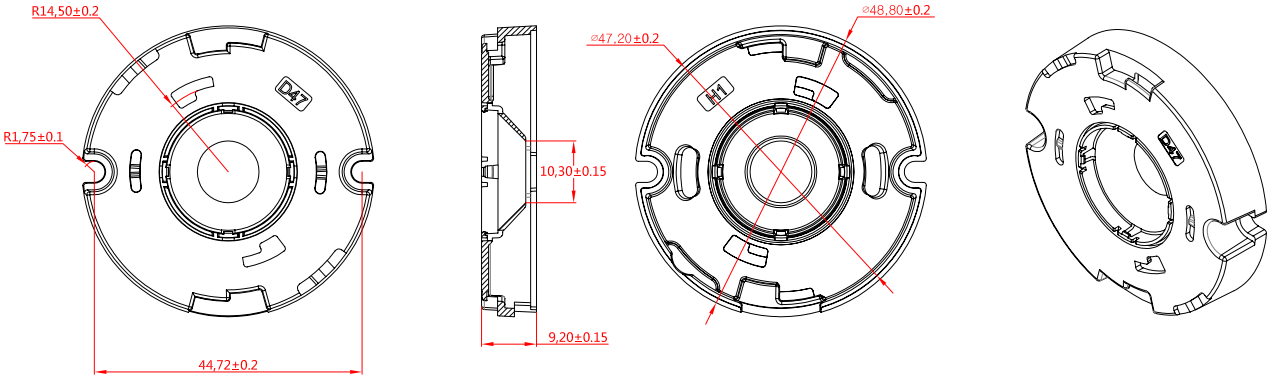
D47-Black



Application Note

1. Operating temperature : -40˚C~120˚C
2. Apply on DOB D47 Series
3. M3 screws with flat head , max. head diameter should be no more than 6mm

Product Dimensions

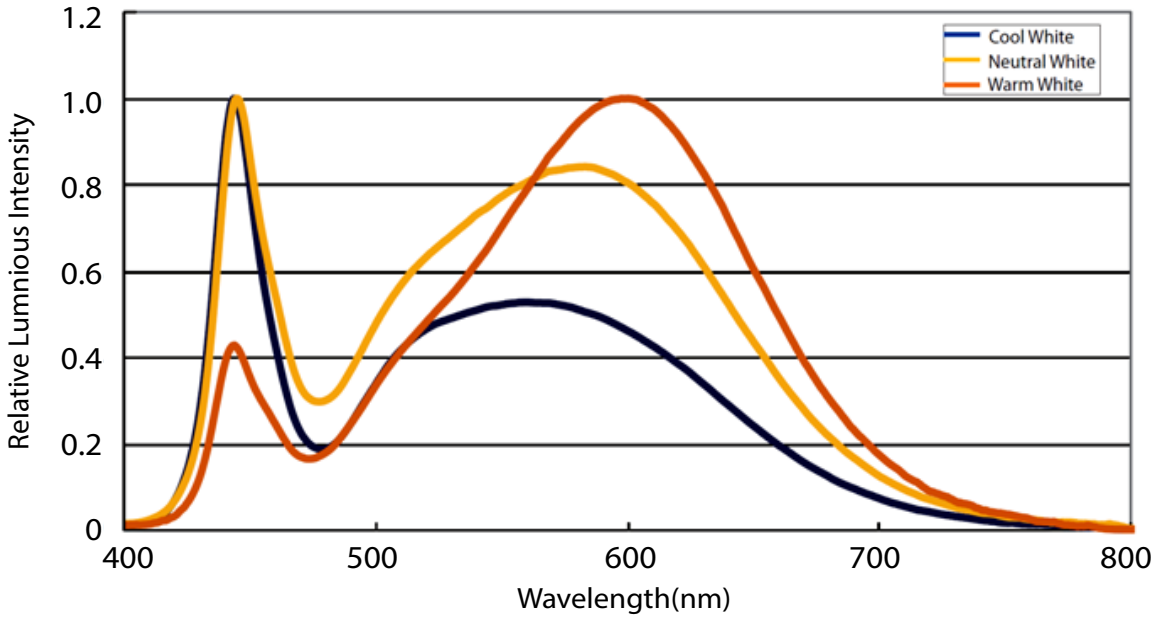


Ordering Data

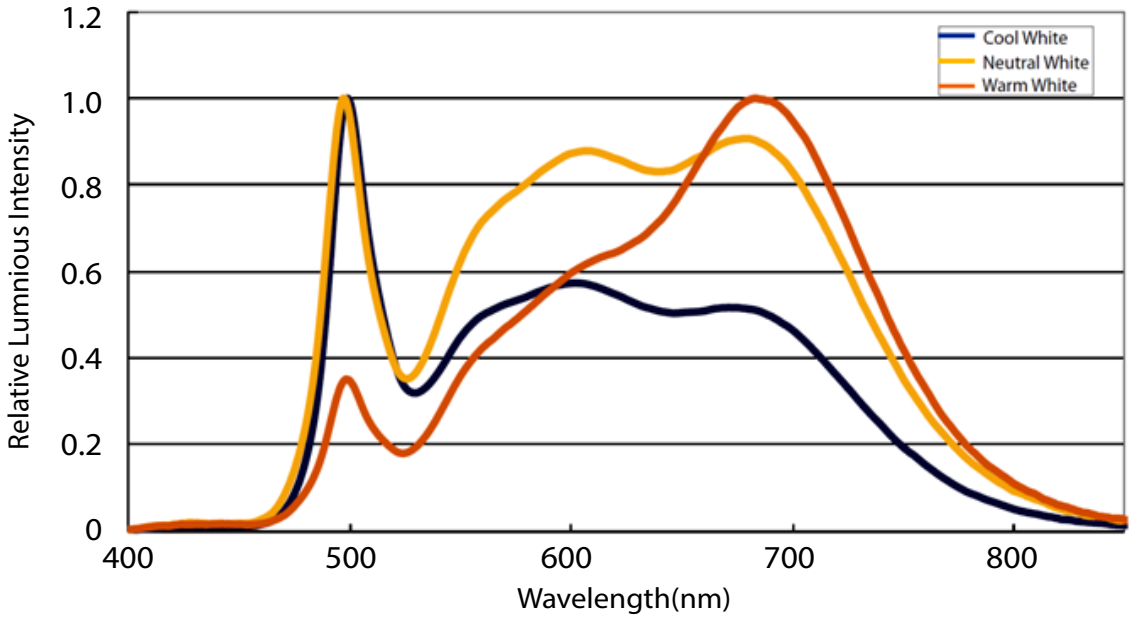
Part No	Color	Packaging Bag	Weight per pc.
13CRDAA00122	white	1,000 pcs	0.004kg
13CRDAA00123	black	1,000 pcs	0.004kg

Characteristic curve

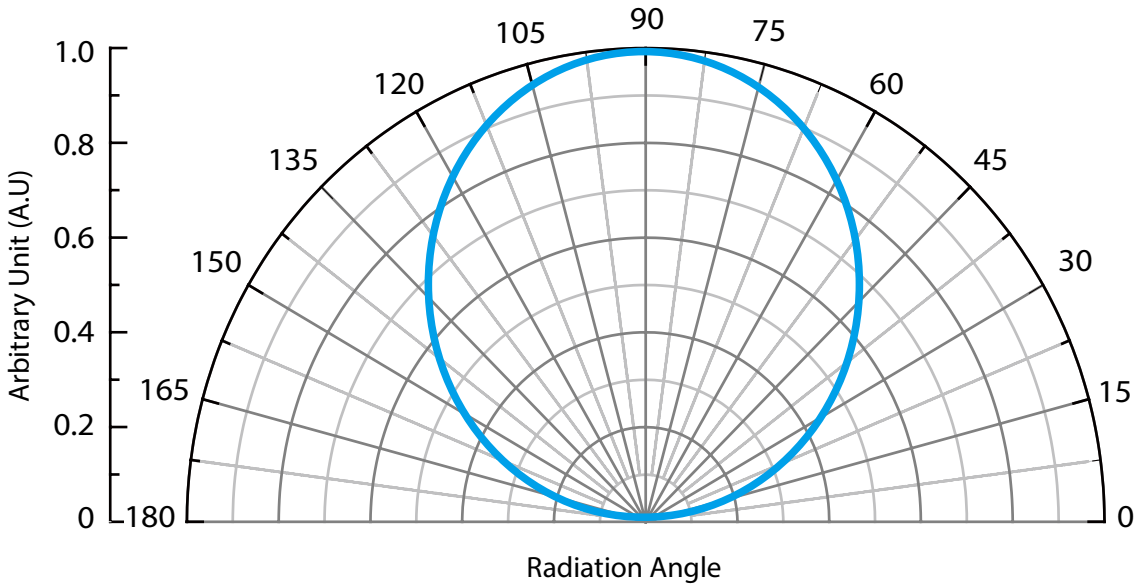
Color Spectrum (Tc=25°C,VAC=230V)_Ra 80



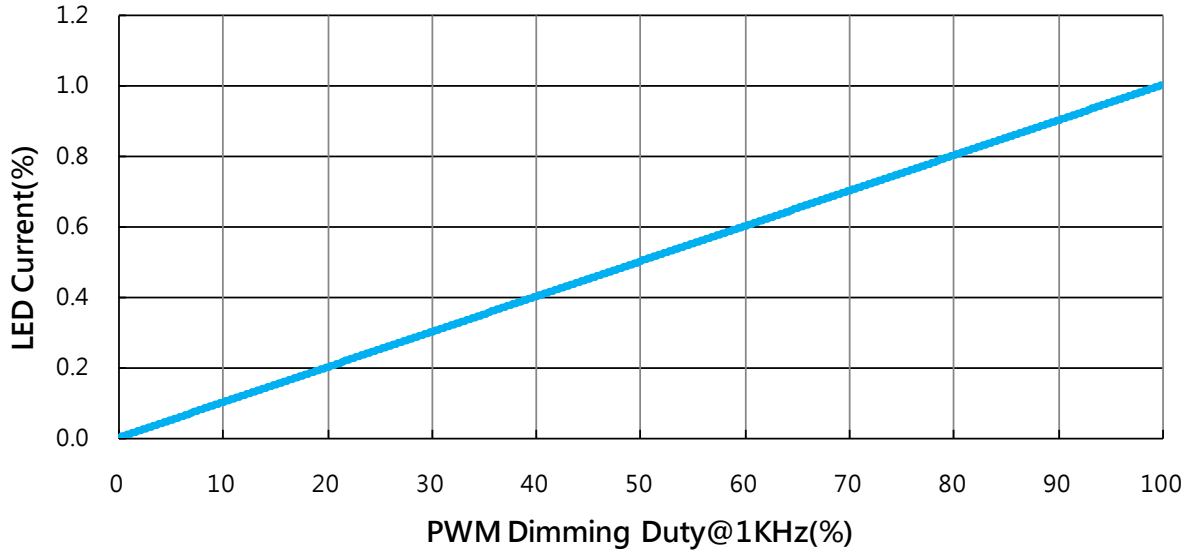
Color Spectrum (Tc=25°C,VAC=230V)_Ra 90



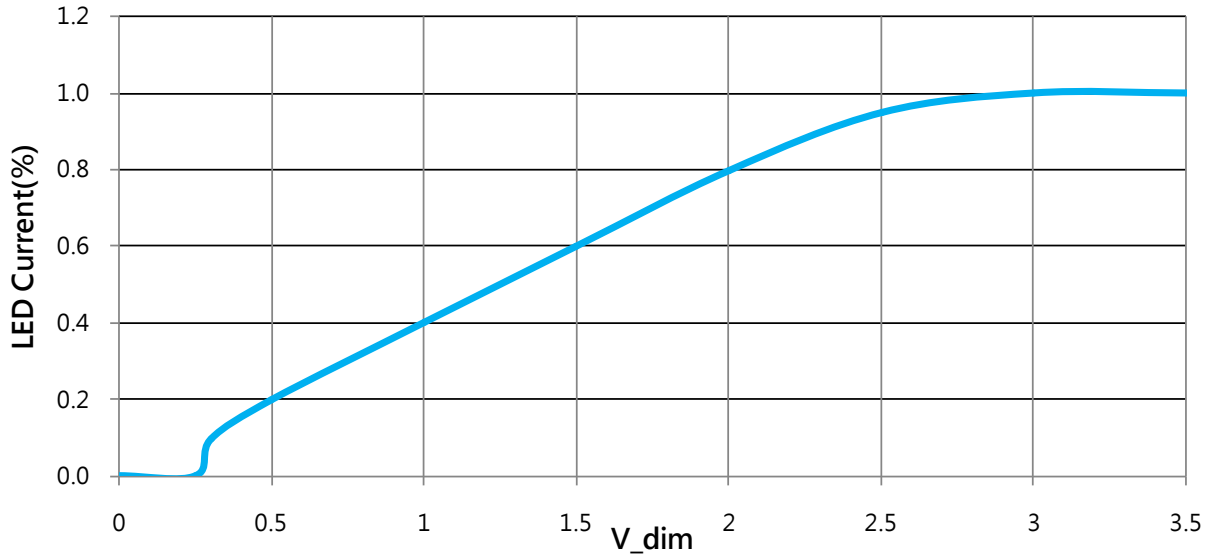
Beam Pattern



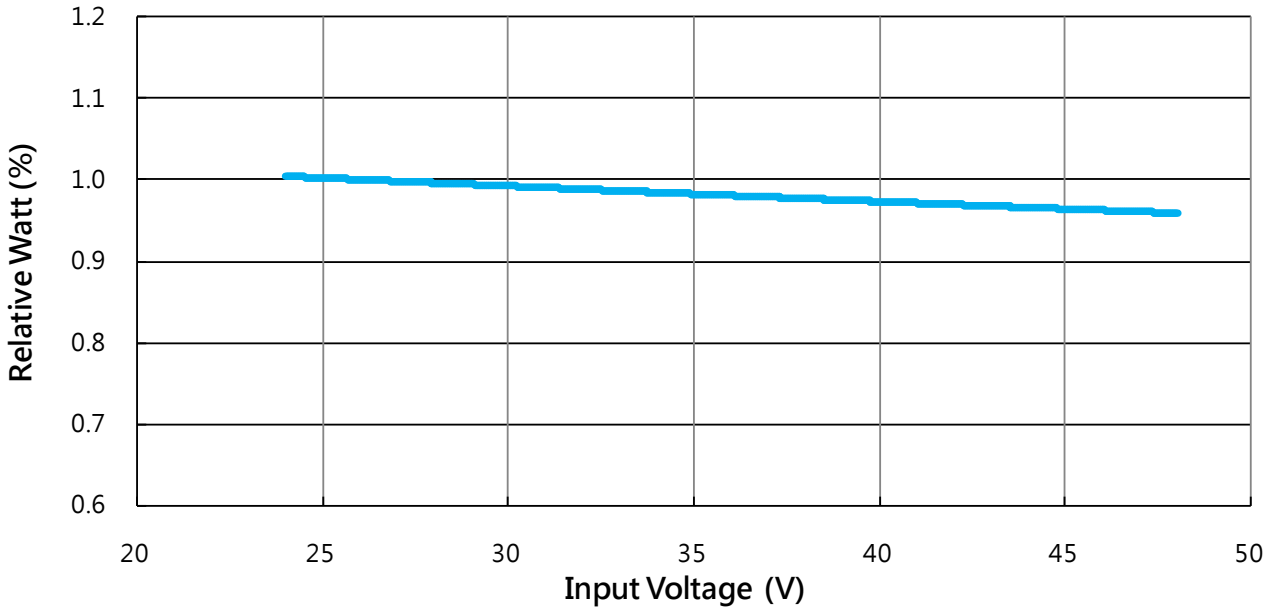
PWM Dimming Duty@1KHz(%) vs LED Current(%)



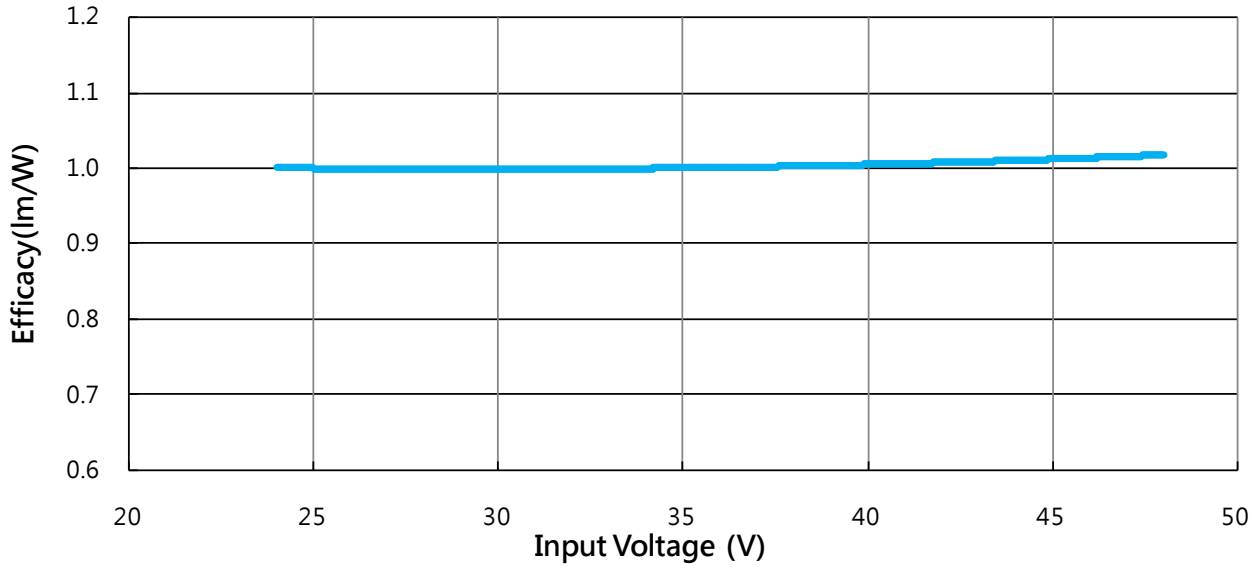
V_dim vs LED Current(%)



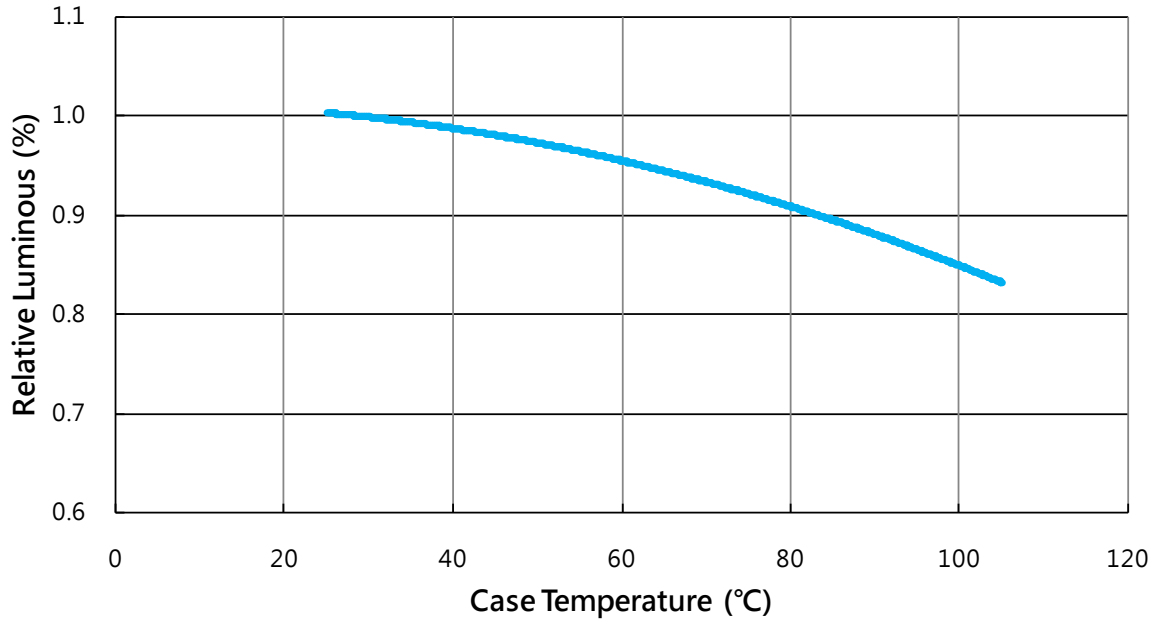
Input Voltage vs Watt(%)



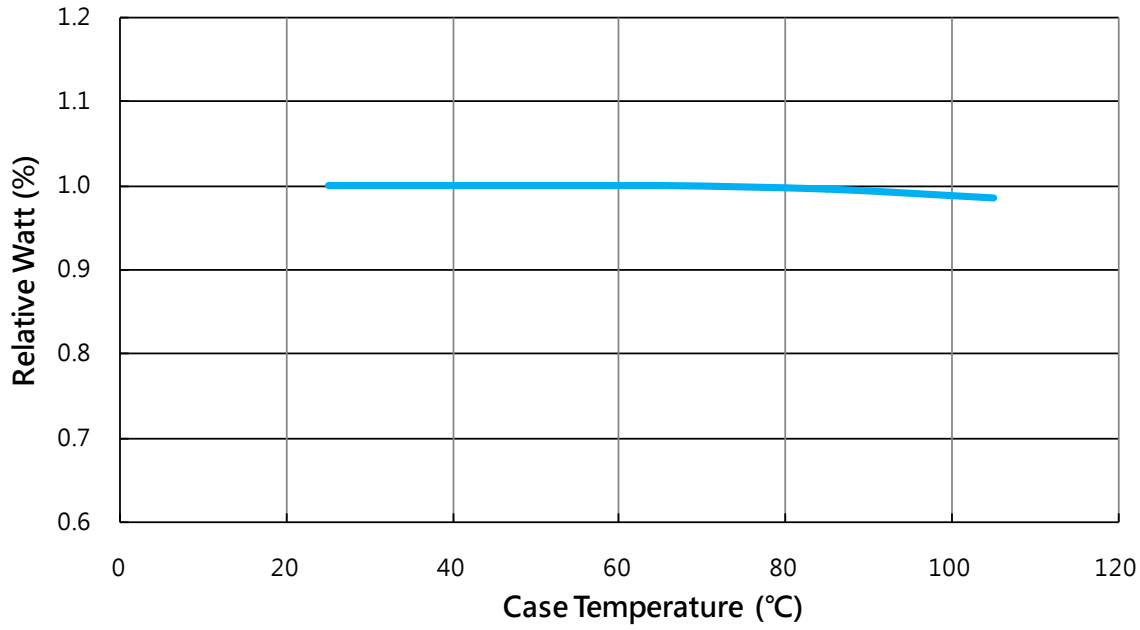
Input Voltage vs Efficacy(lm/W)



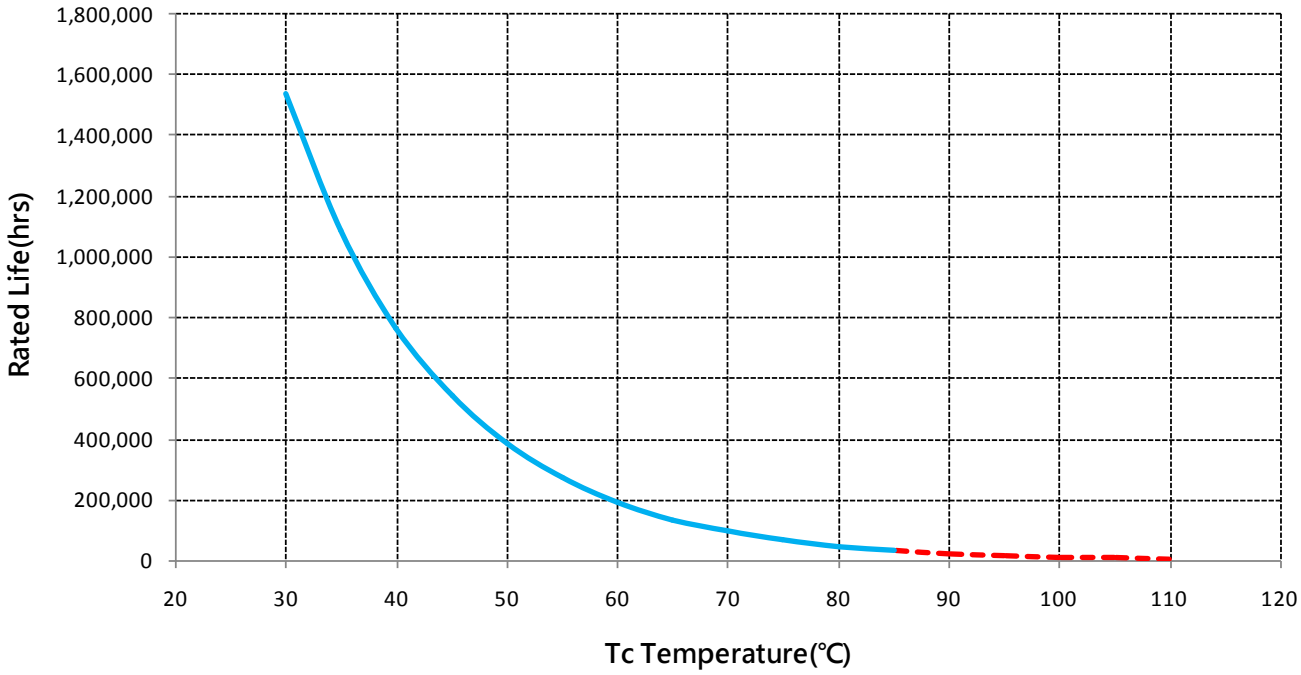
Case Temperature vs Relative Luminous(%)



Case Temperature vs Relative Watt(%)



Tc Temperature vs Lifetime



Reliability

NO .	Test Item	Test Condition	Remark
1	Temperature Cycle	-40°C~100°C (30 mins / 30 mins)	100 Cycle
2	Operation Life test	Ta = 25°C	1000 hrs
3	ON/OFF Test	50 sec ON, 10 sec OFF	15K times

Failure Criteria

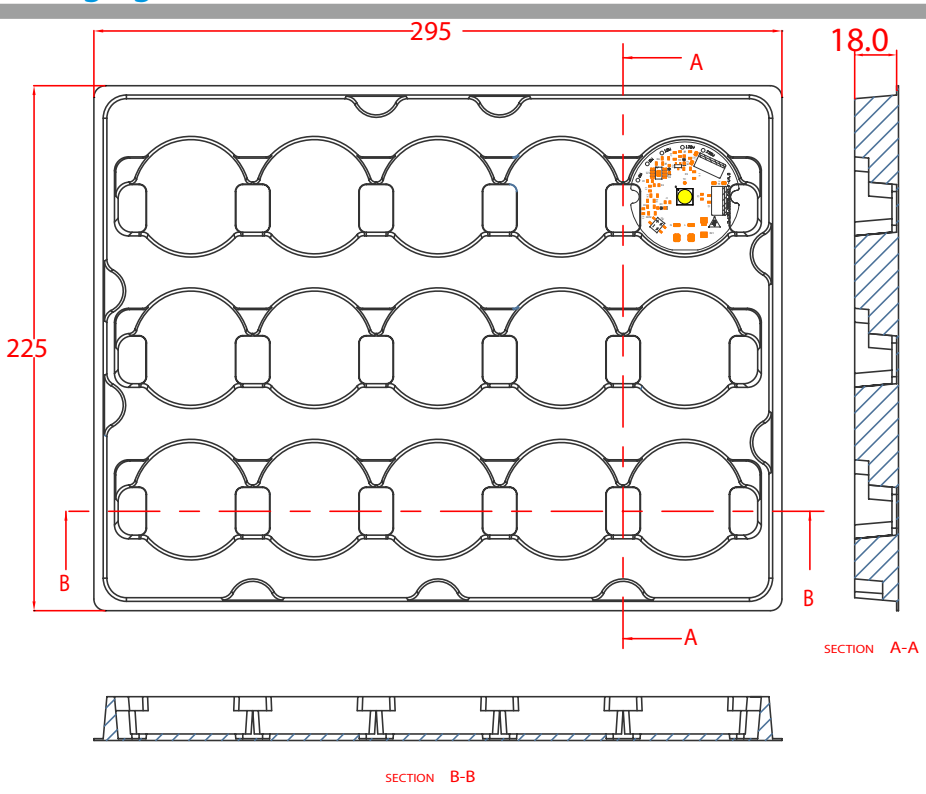
Item	Criteria for Judgment	
	Min.	Max.
Luminous Flux	0.85	
Δu'v'	-	0.006
Resistance to Soldering Heat	No dead lamps or visual damage	

Cautions

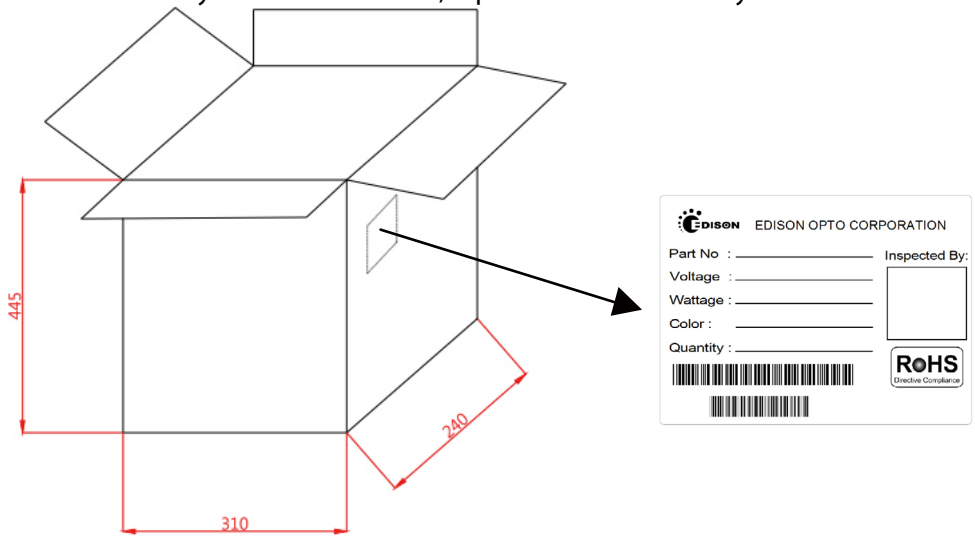
LED avoids being stored and lighted in the environment containing sulfur. Some matrrials, such as seals, printing ink, enclosure and adhesives, may contain sulfur, avoiding the exposure in acid or halogen environment.

Lighting Design Manufacturing Service

Product Packaging Information



Tray : 295x225x18 mm ,15pcs Module In the Tray



33 Tray in the outer box, 495 pcs Module in the outer box

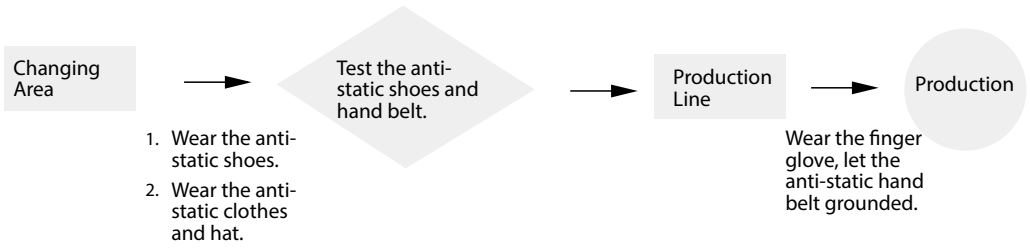
Part No.	Number of module / Tray	Number of module / Box	Weight
5ELACN3Txx10xx25 5ELACN3Txx10xx26	15pcs	495pcs	5.2KG

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

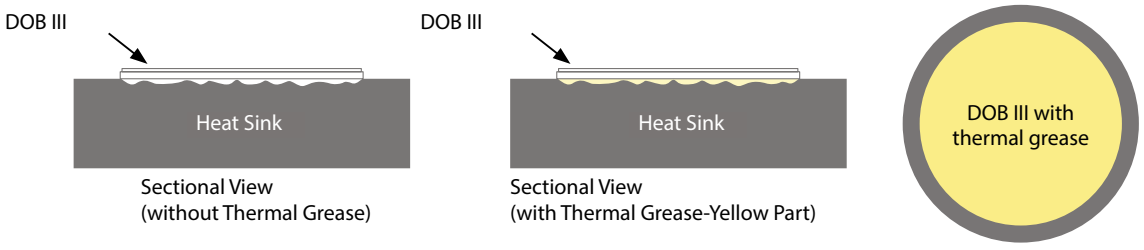
About 80% of input power of a LED transform into heat. A high temperature operation condition always easily causes the LEDs to decrease of flux and the life decay of LED dies. The highest operation temperature of a component is able to be found in its datasheet which is indicated as T_J.

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 :

(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.



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 the Tc Point when the modules are used in an enclosed environment.
√ DO NOT use adhesives to attach the LED that outgas organic vapor.
√ DO NOT directly make the HI-POT test over 750V on the module.
√ DO NOT separately connection L and N terminal when the power source turn on
√ DO NOT wear any conductive accessories (such as jewelry) which could accidentally get an electric shock.
√ DO NOT press the product; even a slight pressure may damage the product. The environments such as high temperatures, high humidity or direct expose to sunlight should be avoided since the product is sensitive to these conditions
√ DOB AC Module uses integrated circuit (IC) which can be damaged when exposed to static electricity. Please operate with antistatic device. Do not touch the product unless ESD protection is used. DOB AC Module can't be installed in end product unless the ESD protection is used
√ 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. Longtime exposure to sunlight or UV can cause the lens to discolor.
√ Please note that BOB AC Module products are driven by high voltage, therefore when operating DOB AC Modules should be very cautious
√ Faults, lightning, or fast switch may cause voltage surge which surpasses the normal value
√ The failure of internal component may cause excessive voltages
√ Storage Precautions:
(1) The devices should be stored in the anti-static bag.
(2) If the anti-static bag has been opened, please make sure to reseal the bag to avoid air and moisture infiltrate in the bag.

Lighting Design Manufacturing Service

Revision History

Versions	Description	Release Date
1	Establish a Datasheet	2024/4/17

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

www.edison-opto.com

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