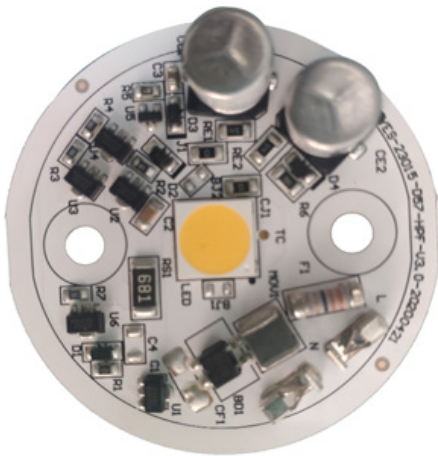


DOB III AC Module

D57 230V Series



Application



Down Light



Spot Light



PAR Lamp

Product Description

12W/15W Power Consumption
AC 230V Voltage input
Module Diameter 57mm
LES Diameter 9.6mm

Features

High color rendering index CRI(Ra)>80/90
Small color tolerance MacAdam < 3
TRIAC dimming compatible
Uniform Full dimming
High Power Factor > 0.9
Low THDi 30%(Typ)
Low EMI
RoHS compliant
No photo-biological hazard: RG1
Percent Flicker <10%
SVM <0.4

Benefits

Module with integrated electronic
Enables thin designs of luminaries

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General Information

Ordering Code Format

5 ELA C N 3T 23 XX XX XX
 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 | | 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 | |
| 23 | 230V | 12 | 12W | 27 | 2700K | - | - |
| | | 15 | 15W | 30 | 3000K | | |
| | | | | 40 | 4000K | | |

Absolute Maximum Ratings

| Parameter | Symbol | Value | Units | Condition |
|-------------------------------|-----------|-----------|-------|---------------|
| Maximum operation voltage | V_{op} | 253 | V | - |
| Power Dissipation | P_d | 13.2/16.5 | W | $V_{op}=230V$ |
| Operation ambient temperature | T_{op} | -40~+85 | °C | $V_{op}=230V$ |
| Storage temperature | T_{st} | -40~+100 | °C | - |
| Case Temperature | T_C | 85 | °C | $V_{op}=230V$ |
| Insulation voltage | Viso[RMS] | 1.5 | KV | - |
| Tolerance of Surge | V_s | 1.5 | KV | $V_{op}=230V$ |

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) | Vac | Watt |
|------------------|---------|-------------------------------------------|------|-----------------|--------|----------|------|------|
| | | Min. | Typ. | Typ. | Min. | Typ. | Typ. | |
| 5ELACN3T23122715 | 2700 | 1195 | 1330 | 111 | 80 | 9.6 | 230 | 12 |
| 5ELACN3T23123015 | 3000 | 1230 | 1370 | 114 | | | | |
| 5ELACN3T23124015 | 4000 | 1355 | 1505 | 125 | | | | |
| 5ELACN3T23122716 | 2700 | 1015 | 1130 | 94 | 90 | | | |
| 5ELACN3T23123016 | 3000 | 1050 | 1160 | 97 | | | | |
| 5ELACN3T23124016 | 4000 | 1150 | 1280 | 107 | | | | |

| Order Code | CCT (K) | Luminous Flux(lm) T _c =25°C | | Efficacy (lm/W) | CRI Ra | LES (mm) | Vac | Watt |
|------------------|---------|-------------------------------------------|------|-----------------|--------|----------|------|------|
| | | Min. | Typ. | Typ. | Min. | Typ. | Typ. | |
| 5ELACN3T23152715 | 2700 | 1470 | 1635 | 109 | 80 | 9.6 | 230 | 15 |
| 5ELACN3T23153015 | 3000 | 1510 | 1680 | 112 | | | | |
| 5ELACN3T23154015 | 4000 | 1675 | 1860 | 124 | | | | |
| 5ELACN3T23152716 | 2700 | 1280 | 1425 | 95 | 90 | | | |
| 5ELACN3T23153016 | 3000 | 1300 | 1450 | 97 | | | | |
| 5ELACN3T23154016 | 4000 | 1430 | 1590 | 106 | | | | |

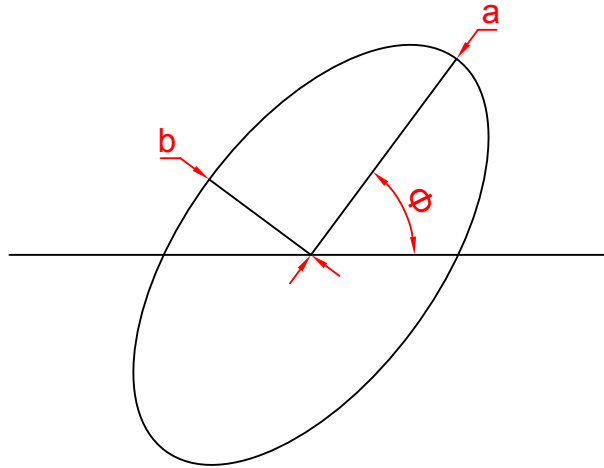
| Parameter | Symbol | Min. | Typ. | Max. | Units | Condition |
|---------------------|--------|------|-------|------|-------|-----------|
| Viewing Angle FWHM | 2θ1/2 | | 120 | | deg | Vop=230V |
| Operation Voltage | Vop | 207 | 230 | 253 | V | Vop=230V |
| Power Dissipation | Pd | 10.8 | 12.0 | 13.2 | W | Vop=230V |
| | | 13.5 | 15.0 | 16.5 | | |
| Operation Frequency | Fop | | 50/60 | | Hz | Vop=230V |
| Power Factor | PF | 0.9 | - | - | - | Vop=230V |
| Current THD | ATHD | - | 30 | - | % | Vop=230V |
| Flicker | - | - | 5 | 10 | % | Vop=230V |
| DF | - | 0.9 | - | - | - | Vop=230V |

Notes:

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

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

CIE Chromaticity Diagram



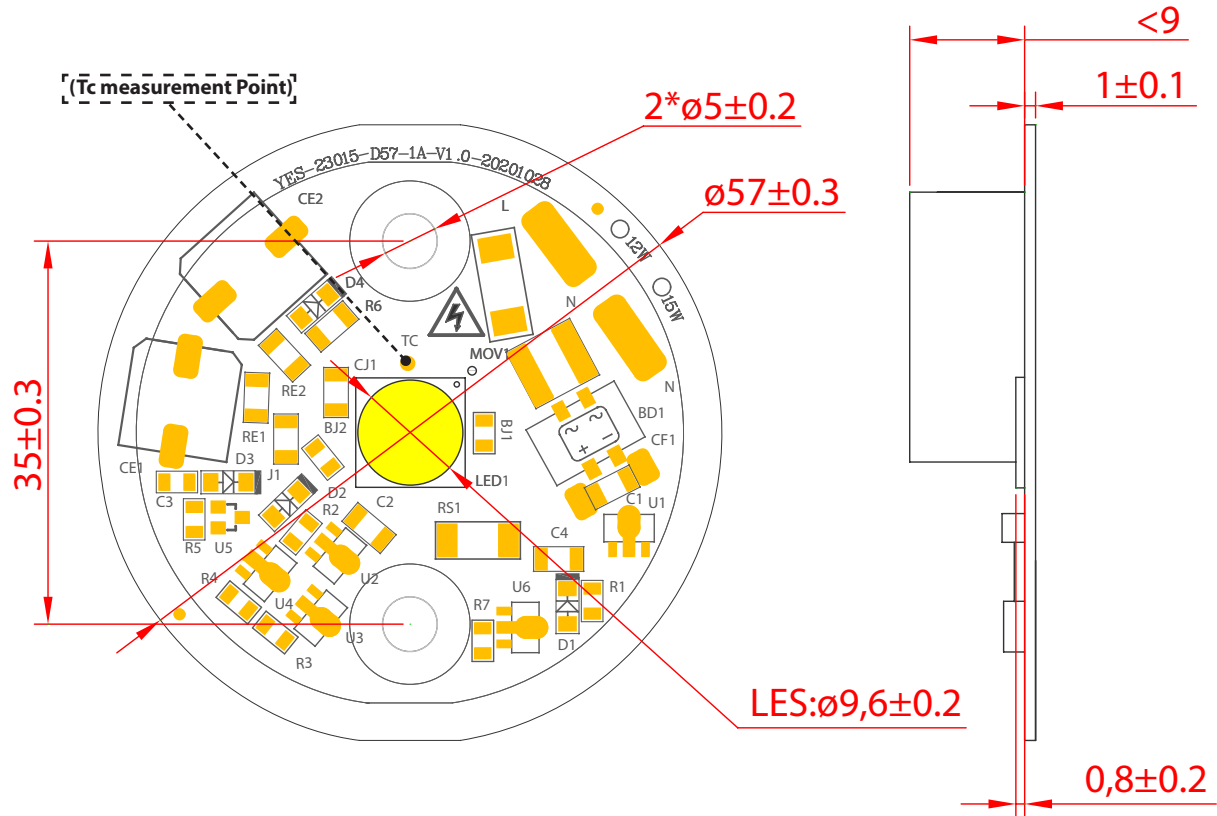
The color ranks have chromaticity ranges within 3-step MacAdam ellipse

| CCT | Steps | C _x | C _y | 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

Mechanical Dimensions

Emitter Dimensions



Note :
Unit : mm

Holder Dimensions

Product description

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

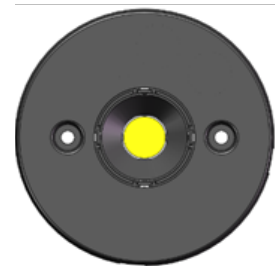
Application Note

1. Operating temperature : $-40^{\circ}\text{C} \sim 120^{\circ}\text{C}$
2. Apply on DOB D57 Series
3. M3 screws with flat head , max. head diameter should be no more than 6mm

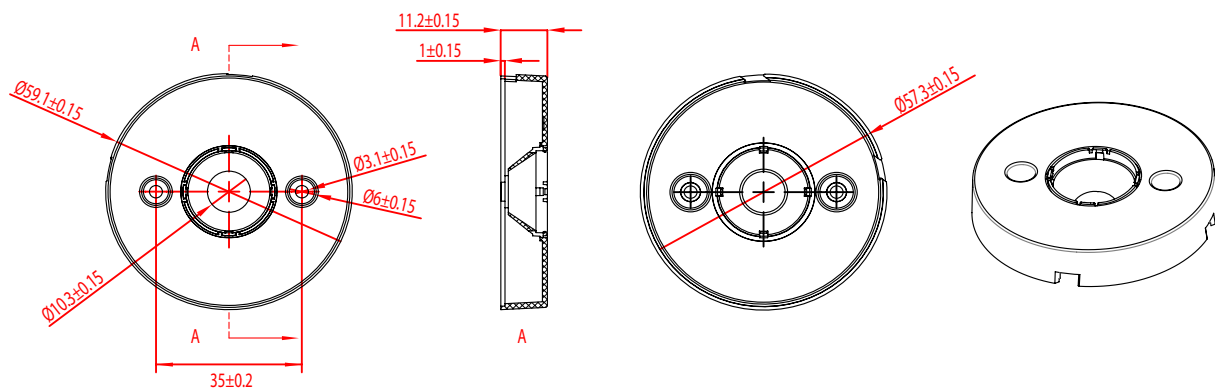
D57-White



D57-Black



Product Dimension

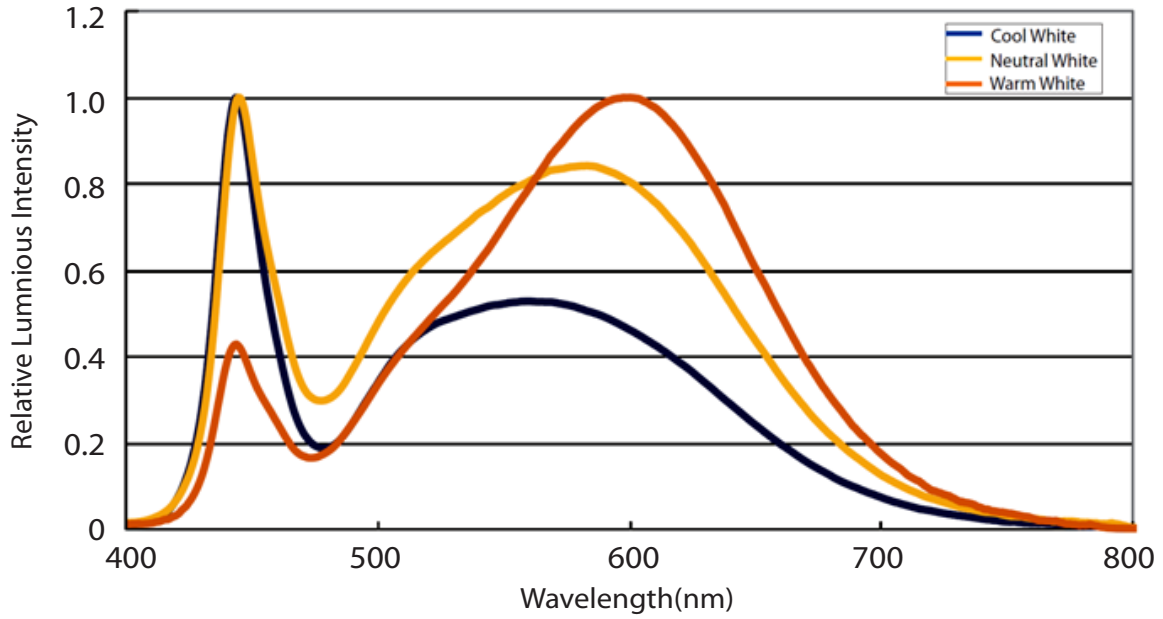


Ordering Data

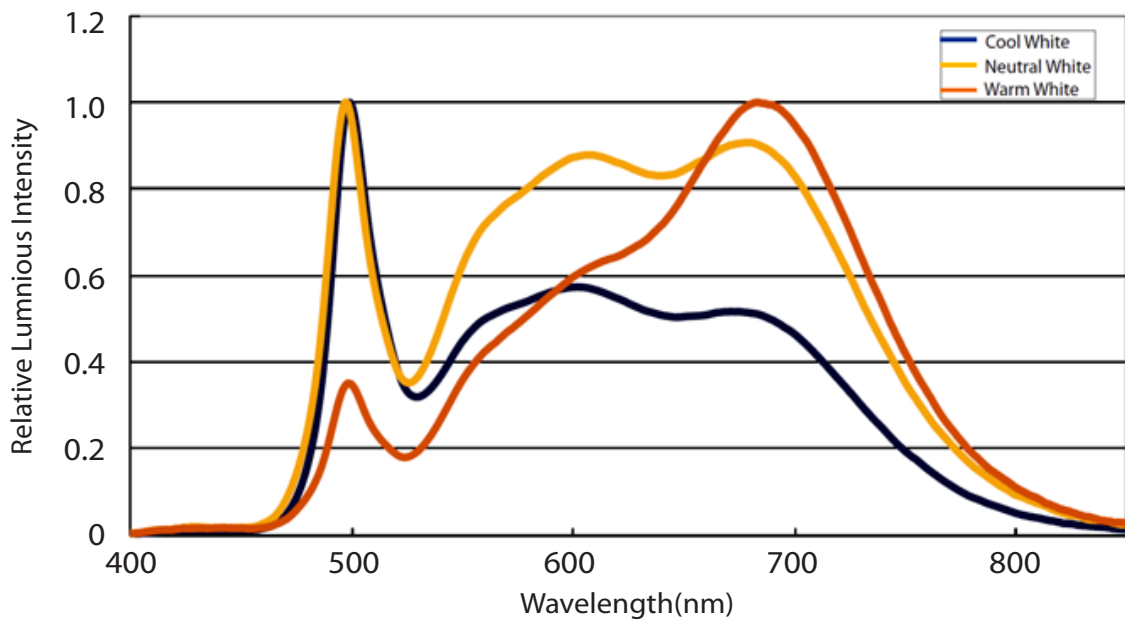
| Part No | Color | Packaging Bag | Weight per pc. |
|--------------|-------|---------------|----------------|
| 13CRDAA00116 | white | 1,200 pcs | 0.007kg |
| 13CRDAA00119 | black | 1,200 pcs | 0.007kg |

Characteristic curve

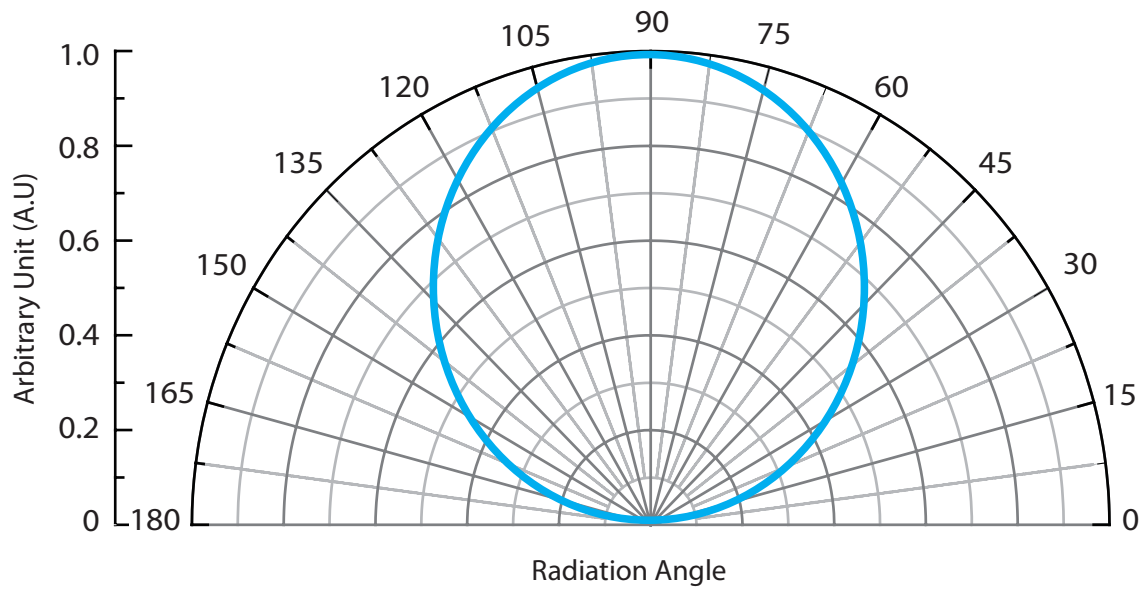
Color Spectrum (Tc=25°C,VAC=230V)_Ra 80



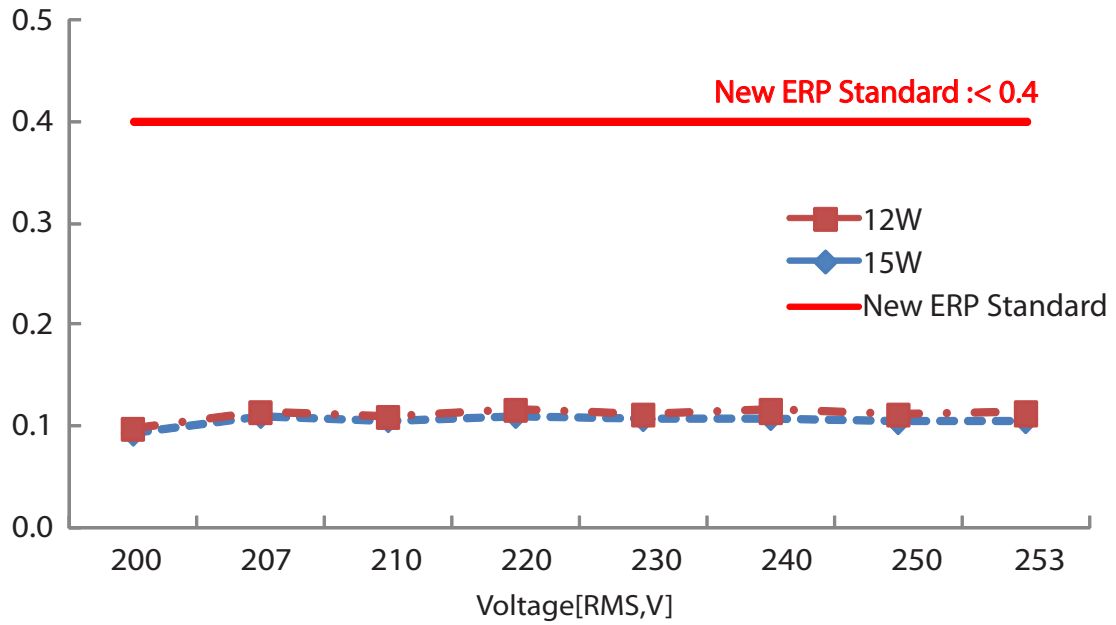
Color Spectrum (Tc=25°C,VAC=230V)_Ra 90



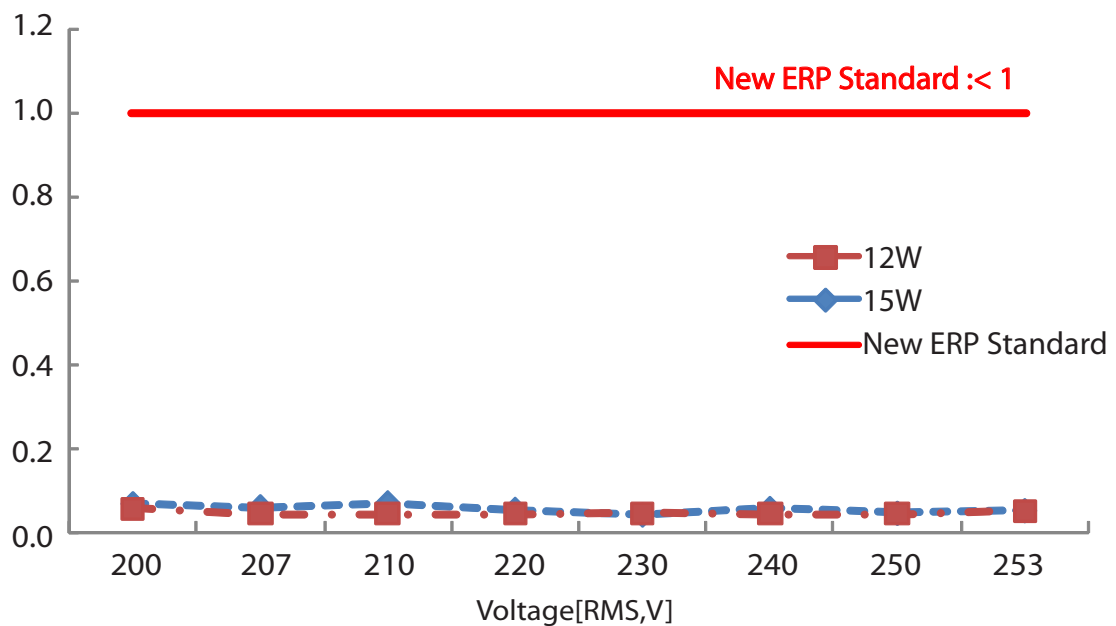
Beam Pattern



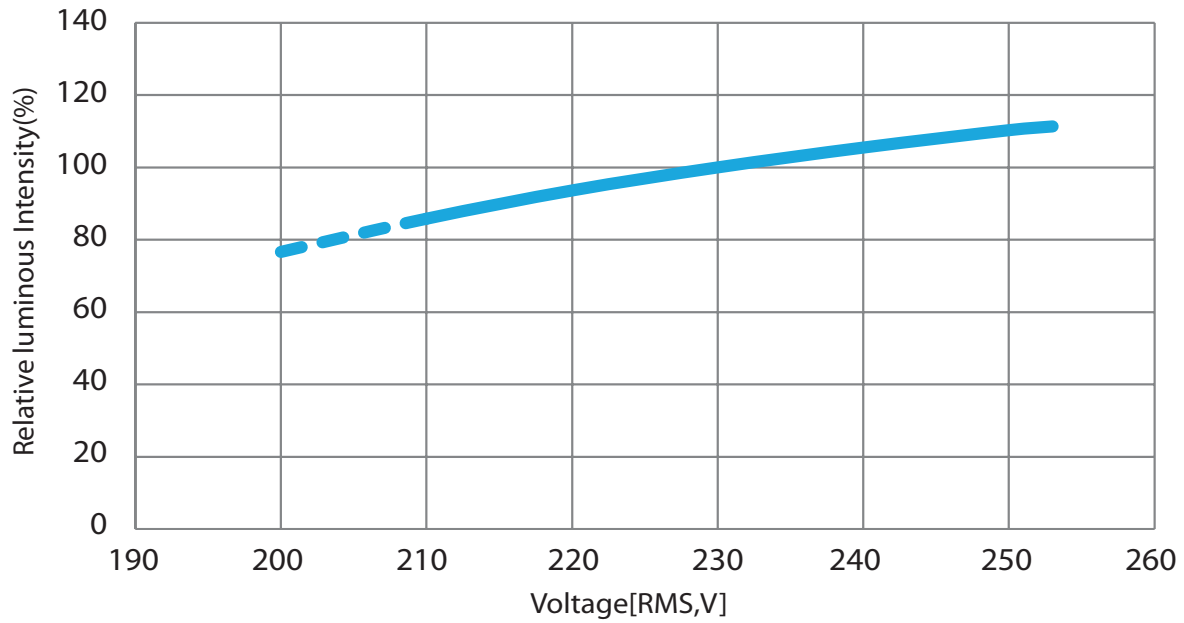
SVM Test (Tc=25°C)



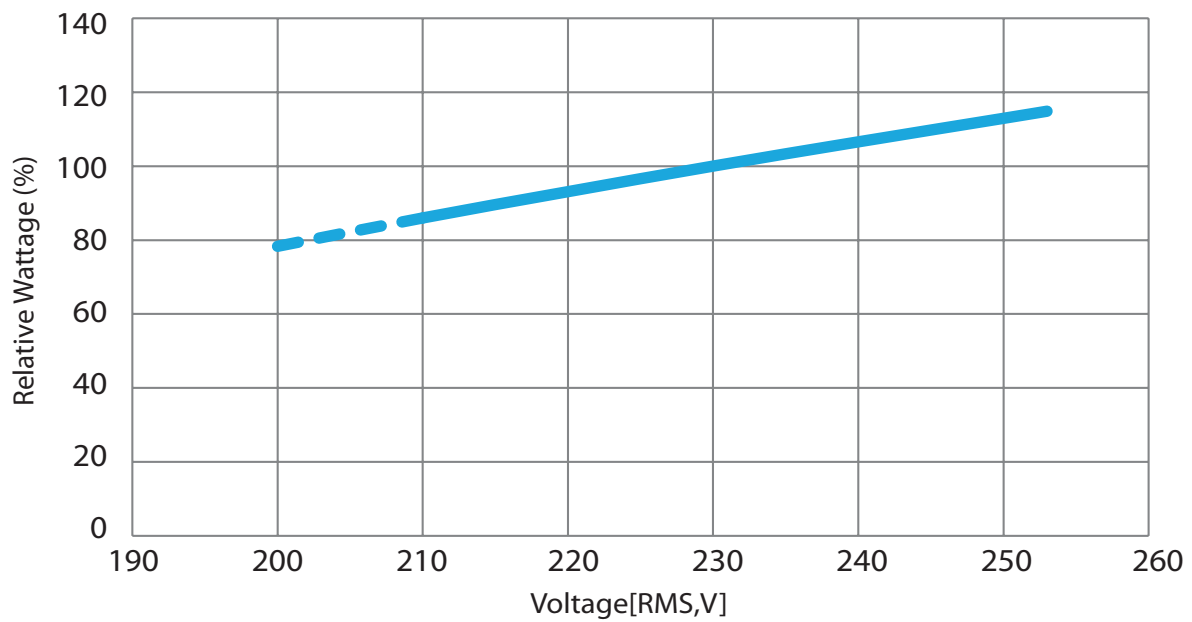
PST Test (Tc=25°C)



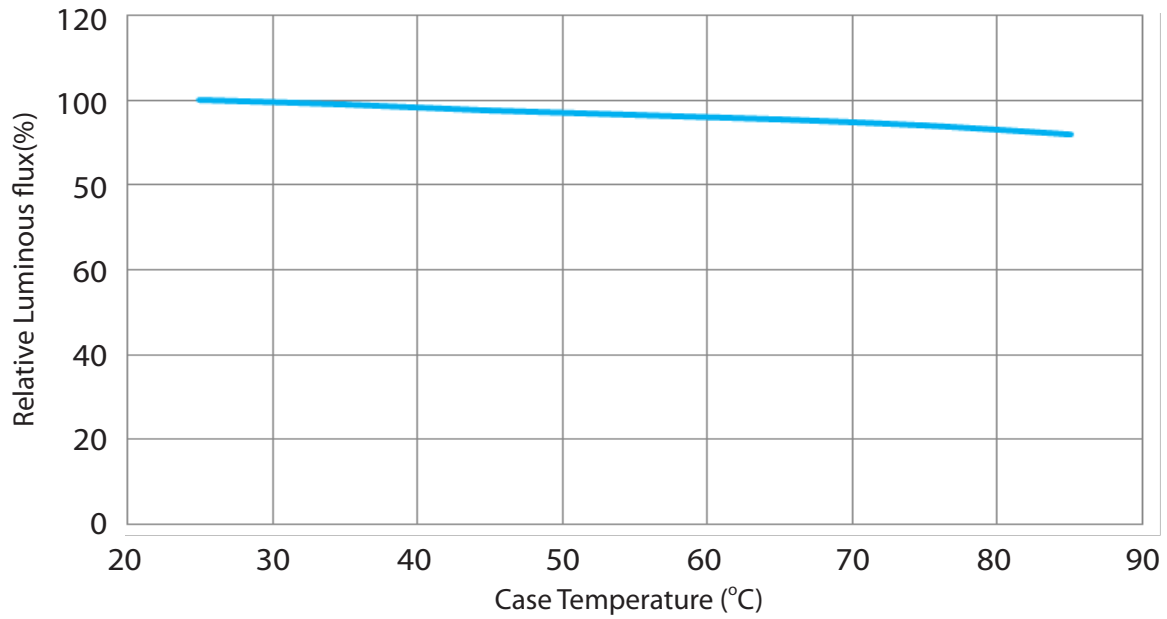
Relative luminous Intensity vs. Voltage (Tc=25°C)



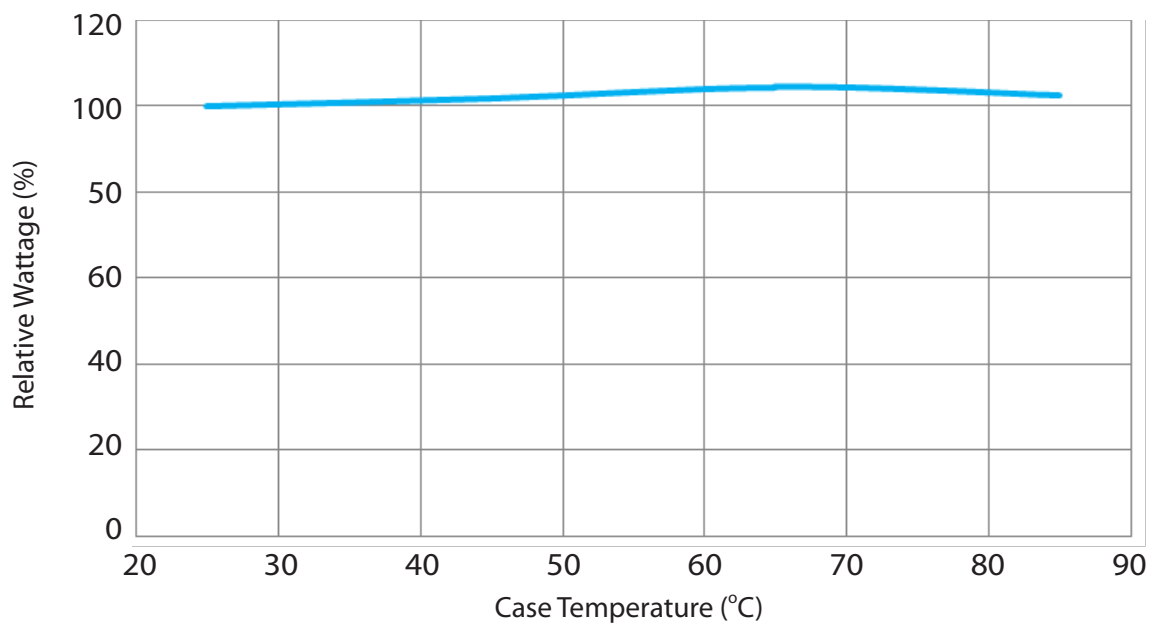
Relative Wattage vs. Voltage (Tc=25°C)



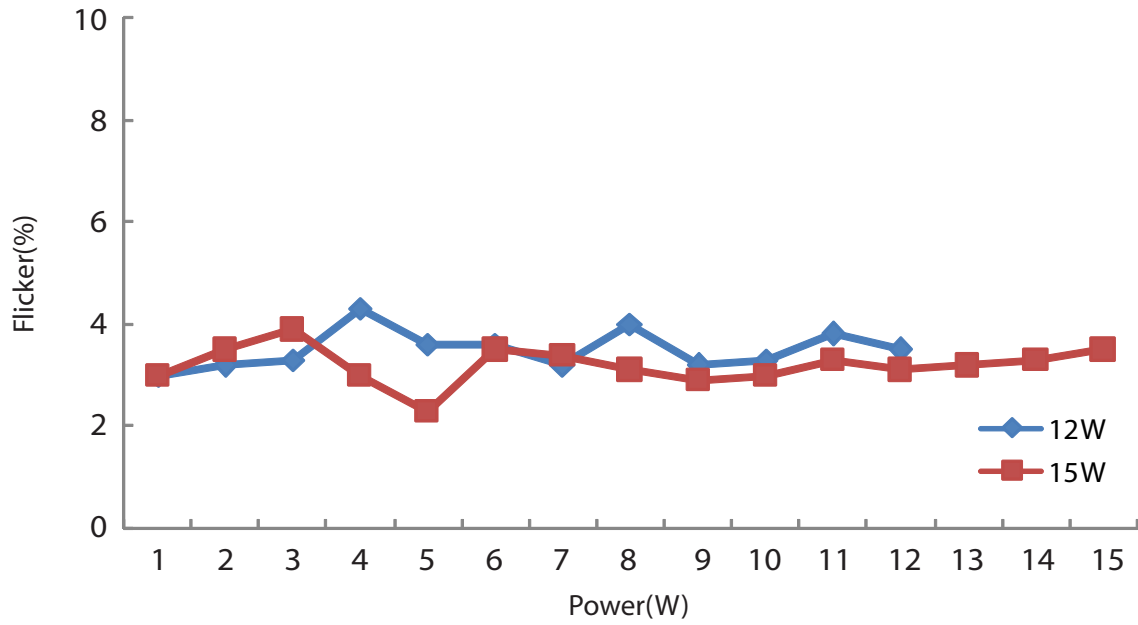
Relative Luminous Intensity vs. Case Temperature



Relative Wattage vs. Case Temperature (VAC=230V)



Flicker Performance (During dimming)



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 | 3 sec ON, 3 sec OFF | 15K times |

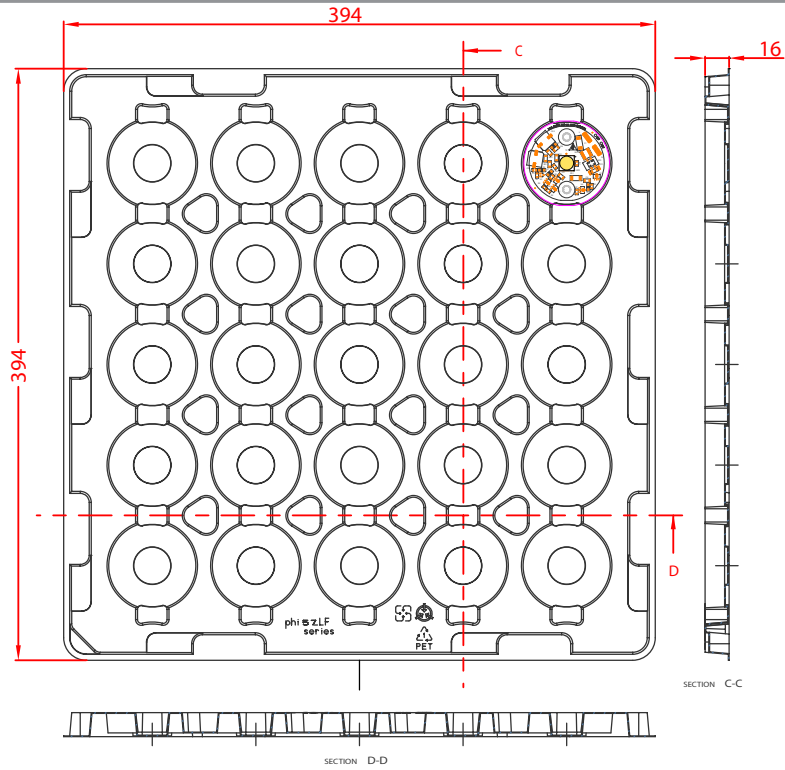
Failure Criteria

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

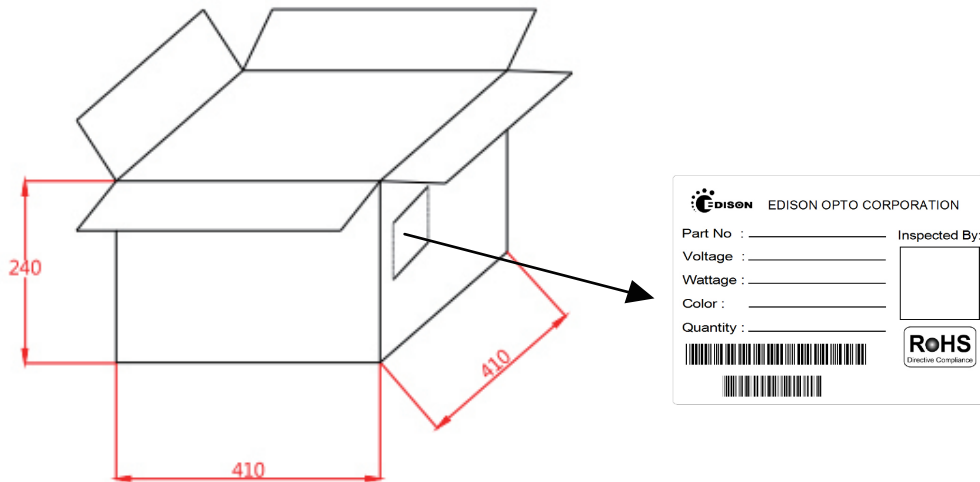
Cautions

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

Product Packaging Information



Tray : 394x394x16 mm ,25pcs Module In the Tray



15 Tray in the outer box, 375 pcs Module in the outer box

| Part No. | Number of module /Tray | Number of module /Box | Weight |
|--------------------------------------|------------------------|-----------------------|--------|
| 5ELACN3T2312xxxx 5ELACN3T2315xxxx | 25pcs | 375pcs | 5.6KG |

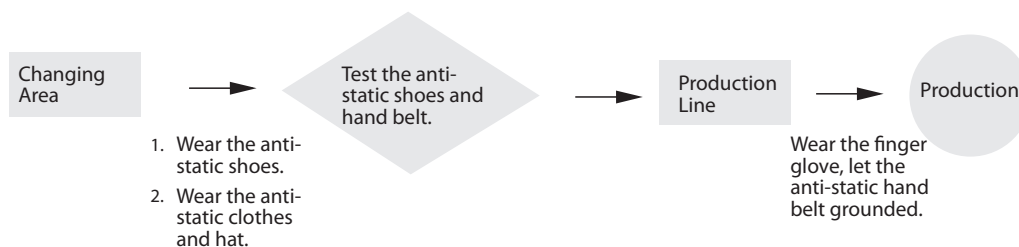
Handling with a DOB Series

√ 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 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

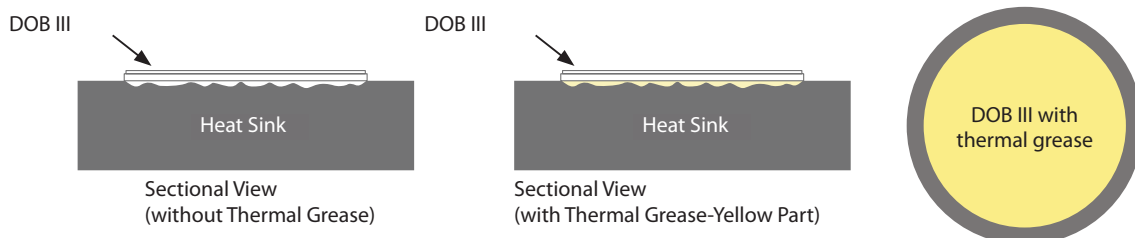
About 80% of input power of a LED transform into heat. A high temperature operation condition always easily causes the LEDs to decrease of flux and the life decay of LED dies. The highest operation temperature of a component is able to be found in its datasheet which is indicated as T_j .

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 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. 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.

Revision History

| Versions | Description | Release Date |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| 1 | Establish a Datasheet | 2020/11/16 |
| 2 | Revise Features Information Add Holder Dimensions Information Add Product Packaging Information Revise Recommended thermal Grease Parameters | 2021/06/23 |

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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www.edison-opto.com

For general assistance please contact:
service@edison-opto.com.tw

For technical assistance please contact:
LED.Detective@edison-opto.com.tw