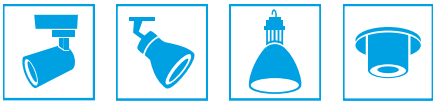
EdiPower® V

2PHE60xx56P35091

Datasheet



Introduction :

Edison COB is a high uniformity array component which delivers high lumen output with excellent efficacy. Edison COB is optimized to simplify luminaire designs and lower the system cost. Edison COB combines the advantages of performance, reliability and ease-of-use in one LED. As for the applications, Edison COB can be widely used in general lighting such as spot light, down light, high bay, floodlight and PAR lamp.

Description :

- High Color saturation Series (TM30)
- Show more vibrant and bright colors of commodities
- High lumen output with excellent efficacy
- Suitable for retail shops, clothing stores, museums, or supermarkets.

Feature and Benefits :

- Reference to IES-TM-30-15(Rf>90& Rg>100)
- Reference to CQS Excellent color consistency which is compliant 3-step MacAdam ellipse
- Meet the CEC specification(CRI>90 & R12>80)
- High efficient & Low Rth
- Based on the mirror aluminum MCPCB which features excellent reflectivity (up to 98%) and High thermal conductivity (K=200w/mk)
- Current input from 1620mA to 4140mA (60W-170W)

EDISON
Lighting Design Manufacturing Service

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Lighting Design Manufacturing Service

General Information

Ordering Code Format

2	P	HE	60	xx	56	P35	xxx
X1	X2	X3	X4	X5	X6	X7	X8

X1		X2		X3		X4		X5	
Type		Component		Series		Wattage		Color	
2	Emitter	P	EdiPower®	HE	HE Series	60	60W	27	2700K
								30	3000K
								35	3500K
								40	4000K
								50	5000K
								57	5700K
								65	6500K

X6		X7		X8	
CRI		PCB Board		Serial Number	
56	TM30	P35	28x28	-	-

Lighting Design Manufacturing Service

Absolute Maximum Ratings

Parameter	Symbol	Value	Units
Input Power	Pi	170.6	W
DC Forward Current[1]	I_F	4140	mA
Min. Forward Current	Min. I_F	90	mA
Reverse Current[2]	I_R	1	mA
Operating Temperature	T_{op}	-40 ~ +100	°C
Storage Temperature	T_{st}	-40 ~ +100	°C
LED junction Temperature[3]	T_J	125	°C
Case Temperature	T_C	105	°C
Thermal Resistance	R_{j-c}	0.22	°C/W

Notes:
1. DC forward current should not exceed LED's operating current; the current tolerance should be kept within a range of 5%.
2. LEDs are not designed to be driven in reverse bias.
3. Proper current derating must be observed to maintain junction temperature below the maximum at all time.
4. Refer to Outline drawing for Tc measurement point.
5. D.C. Current : Tj = Tc + R_{j-c}*Pi

Luminous Flux Characteristic (T_J=85°C)

Order Code	CCT (K)	Luminous Flux(lm) T_J=85°C		Luminous Flux(lm) T_C=25°C		Efficacy (lm/W)	CRI Ra	CRI R9	Forward Voltage V_F (V)			Forward Current (mA)
		Min.	Typ.	Min.	Typ.	Typ.	Min.	Min.	Min.	Typ.	Max.	
2PHE602756P35091	2700	5980	6640	6580	7310	123	95	90	34.0	36.8	39.6	1620
2PHE603056P35091	3000	6280	6980	6910	7680	129	95	90	34.0	36.8	39.6	1620
2PHE603556P35091	3500	6480	7200	7130	7920	133	95	90	34.0	36.8	39.6	1620
2PHE604056P35091	4000	6530	7250	7180	7980	134	95	90	34.0	36.8	39.6	1620
2PHE605056P35091	5000	6530	7250	7180	7980	134	95	90	34.0	36.8	39.6	1620
2PHE605756P35091	5700	6480	7200	7120	7920	133	95	90	34.0	36.8	39.6	1620
2PHE606556P35091	6500	6430	7140	7070	7860	132	95	90	34.0	36.8	39.6	1620

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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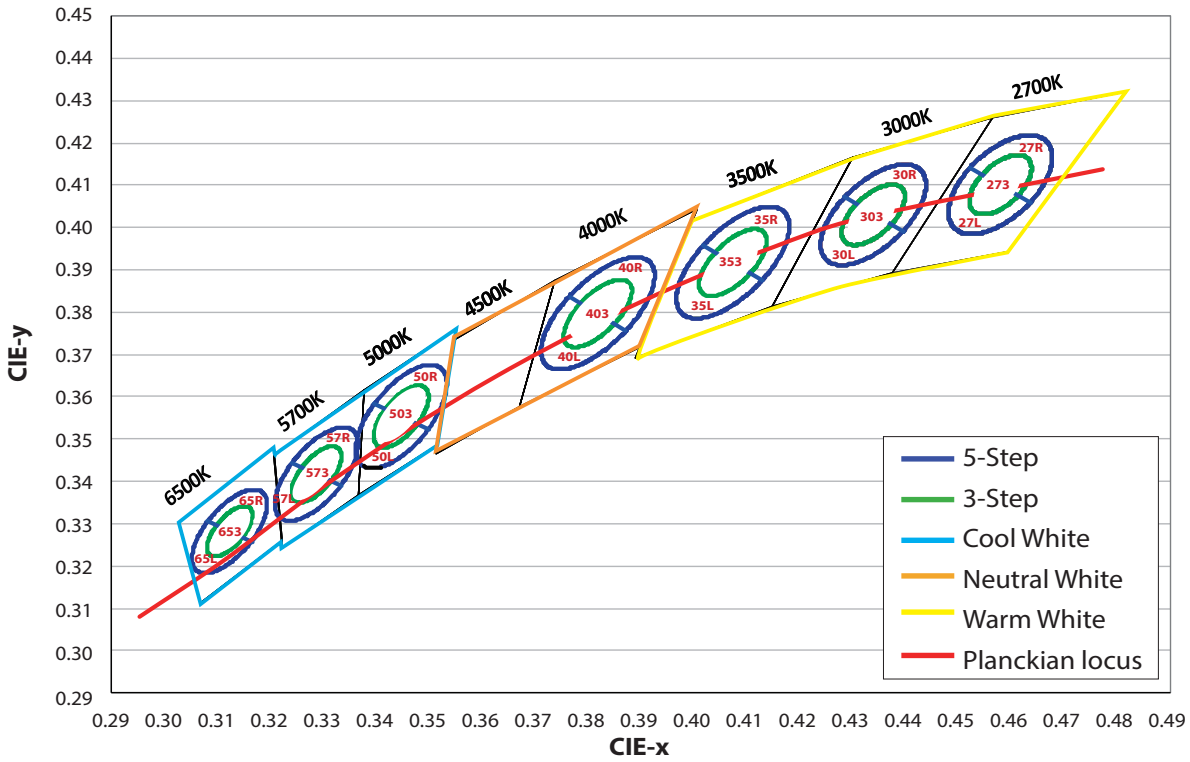
Chromaticity coordinates(T_J=85°C)

Color region stay within Macadam "3-Step/5-step" ellipse from the chromaticity center.
The chromaticity center refers to ANSI C78.377:2011.
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

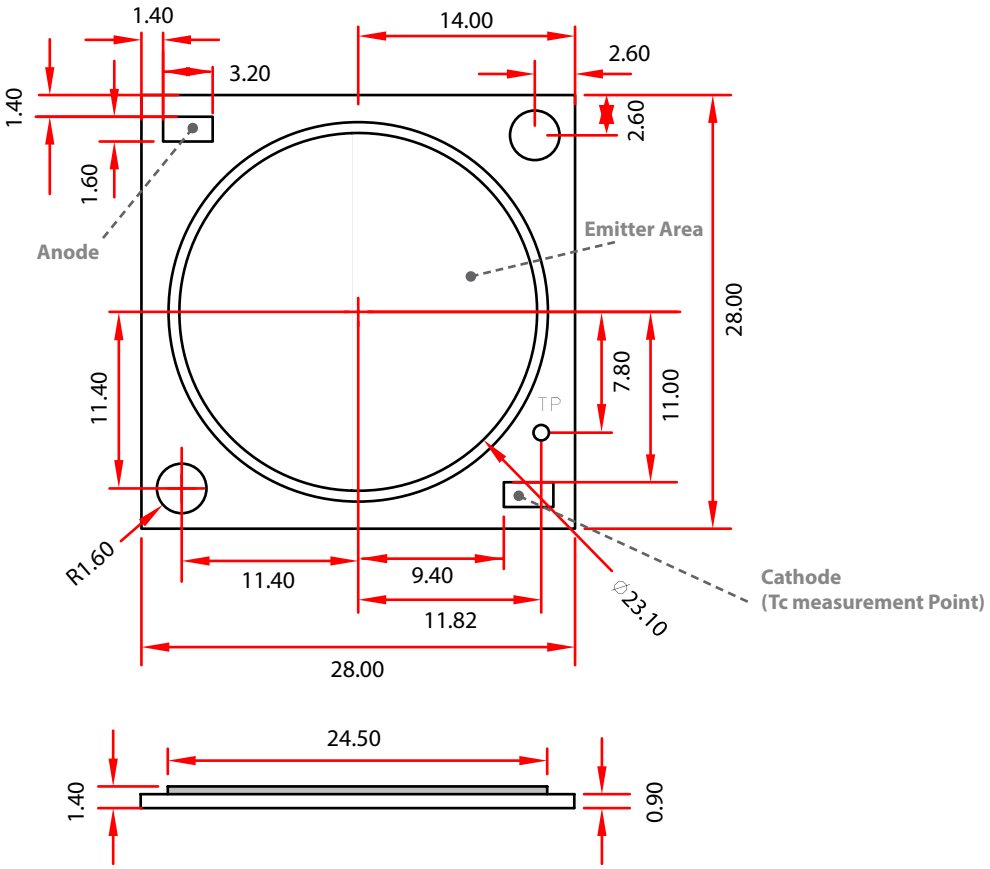
CCT	Steps	Cx	Cy	a	b	theta
2700K	3	0.4578	0.4101	0.00810	0.00420	53.70
3000K	3	0.4338	0.4030	0.00834	0.00408	53.22
3500K	3	0.4073	0.3917	0.00927	0.00414	54.00
4000K	3	0.3818	0.3797	0.00939	0.00402	53.72
5000K	3	0.3447	0.3553	0.00822	0.00354	59.62
5700K	3	0.3287	0.3417	0.00746	0.00320	59.09
6500K	3	0.3123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

Note: CIE_x,y tolerance: ±0.005.

Lighting Design Manufacturing Service

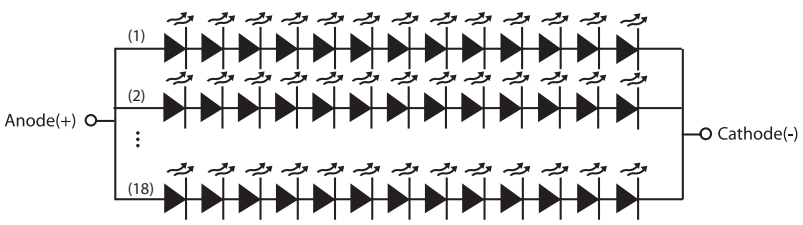
Mechanical Dimensions

Emitter Dimensions

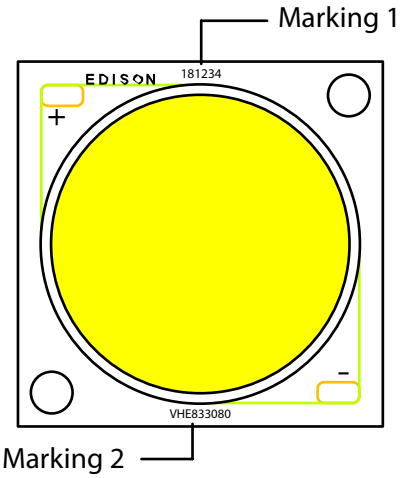


Notes :
1. Unit : mm
2. Tolerance : ± 0.2 mm

Emitter Circuit Layout



Product marking



Marking 1

1 8	x x x x
X5	X6

X5		X6	
Production Year		Serial Number	
18	2018	xxxx	-

Marking 2

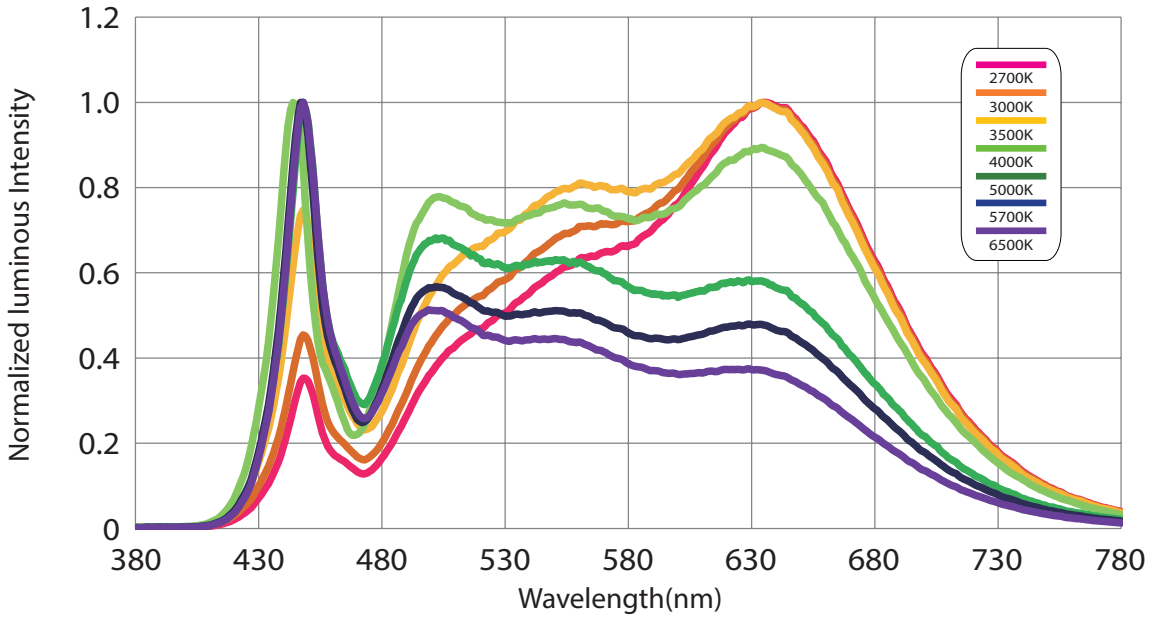
V	H E 6 0	2 7	x x
X1	X2	X3	X4

X1		X2		X3		X4	
Type		Series		CCT		CRI (Ra)	
V	EdiPower® V	HE60	HE60	27	2700K	95	CRI95

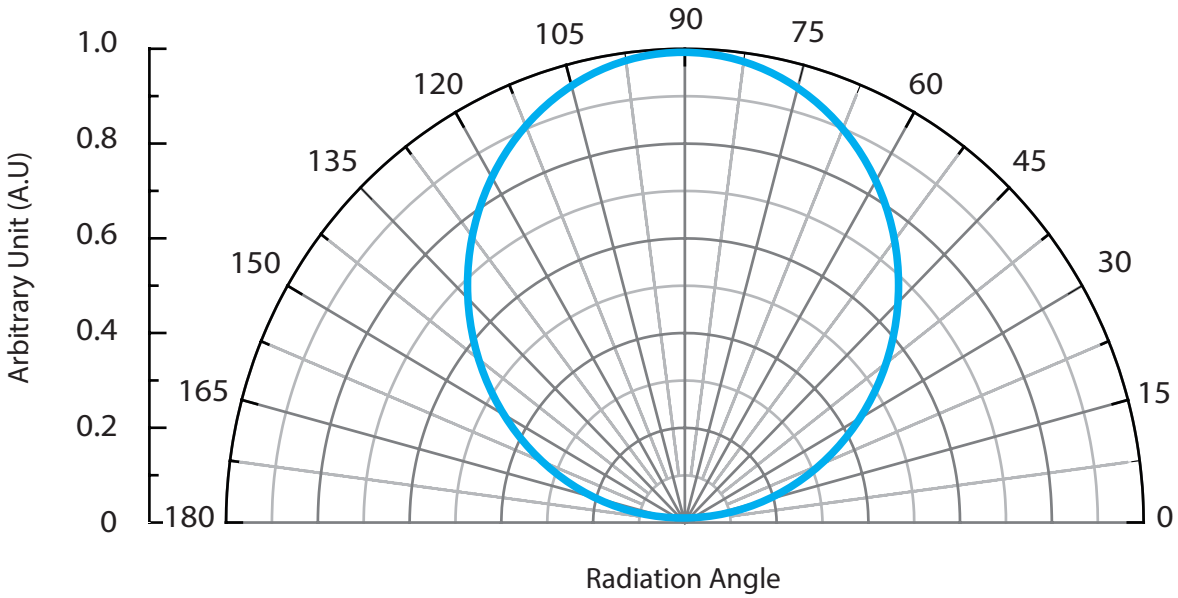
Lighting Design Manufacturing Service

Characteristic curve

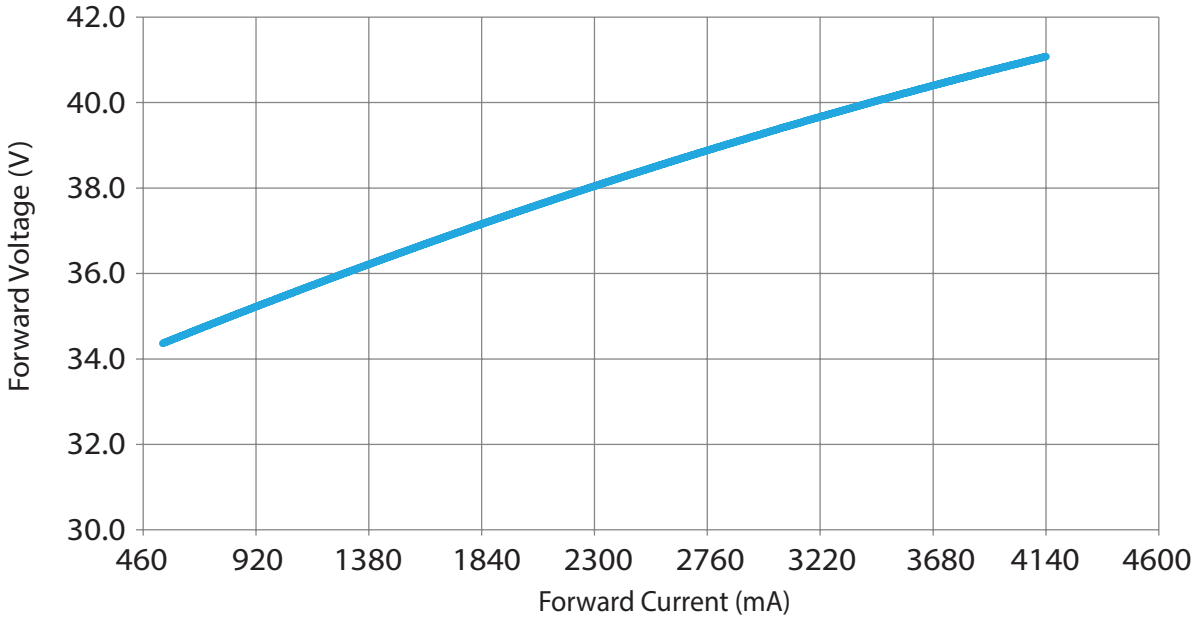
Color Spectrum (T_C=25°C,I_F=1620mA)



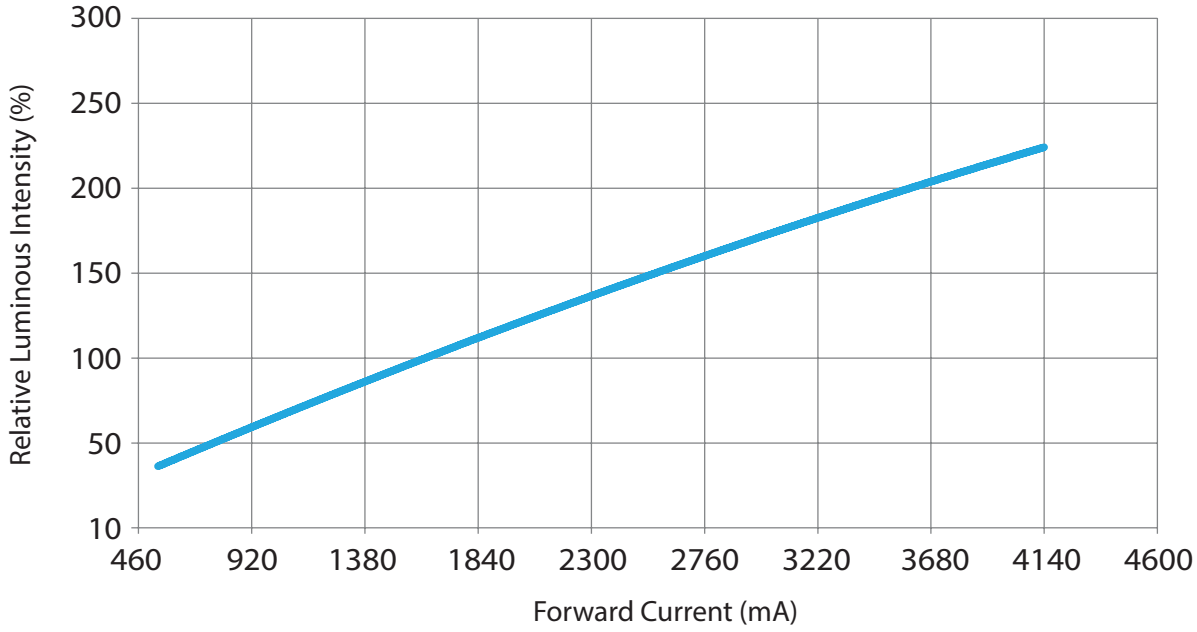
Beam Pattern



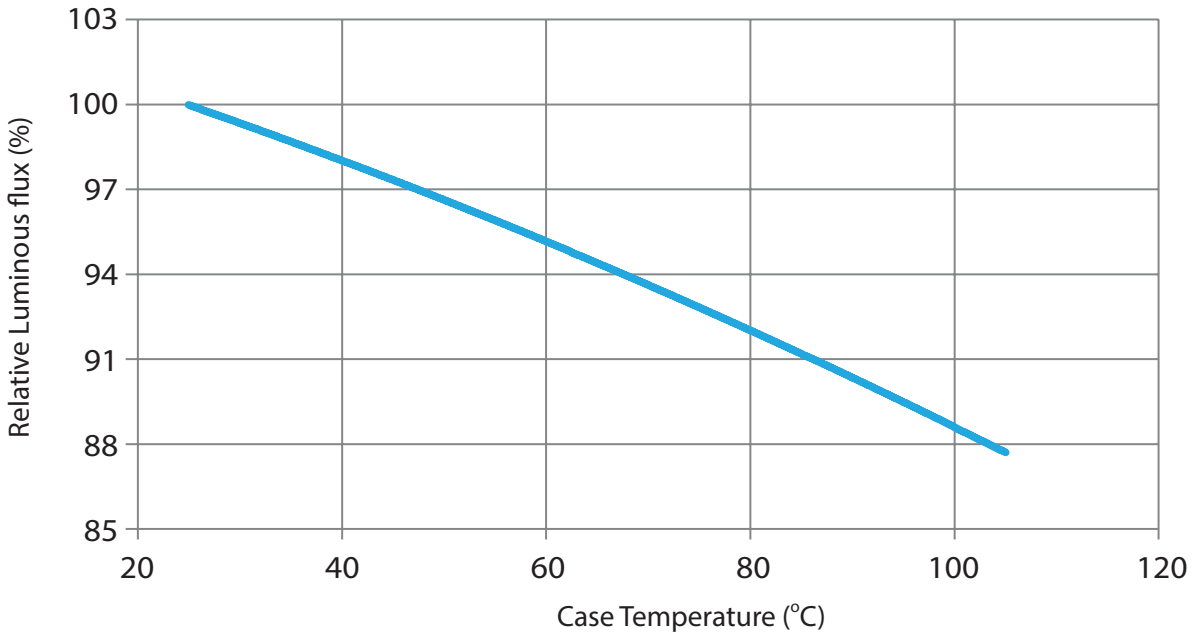
Forward Voltage vs. Forward Current (T_C=25°C)



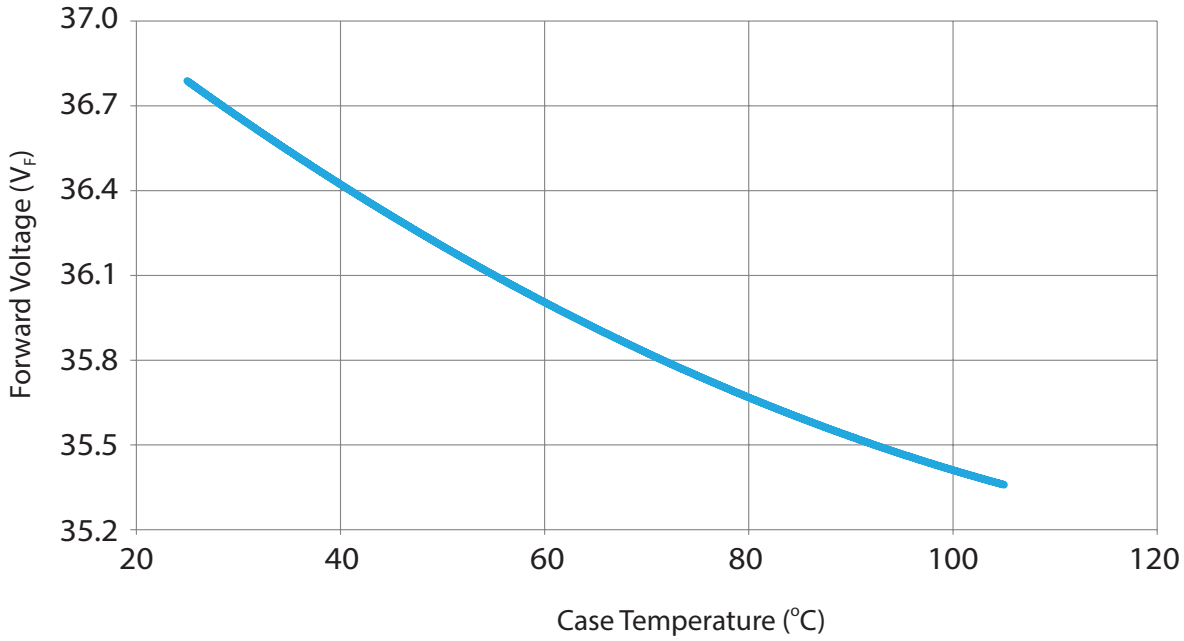
Relative luminous Intensity vs. Forward Current (T_C=25°C)



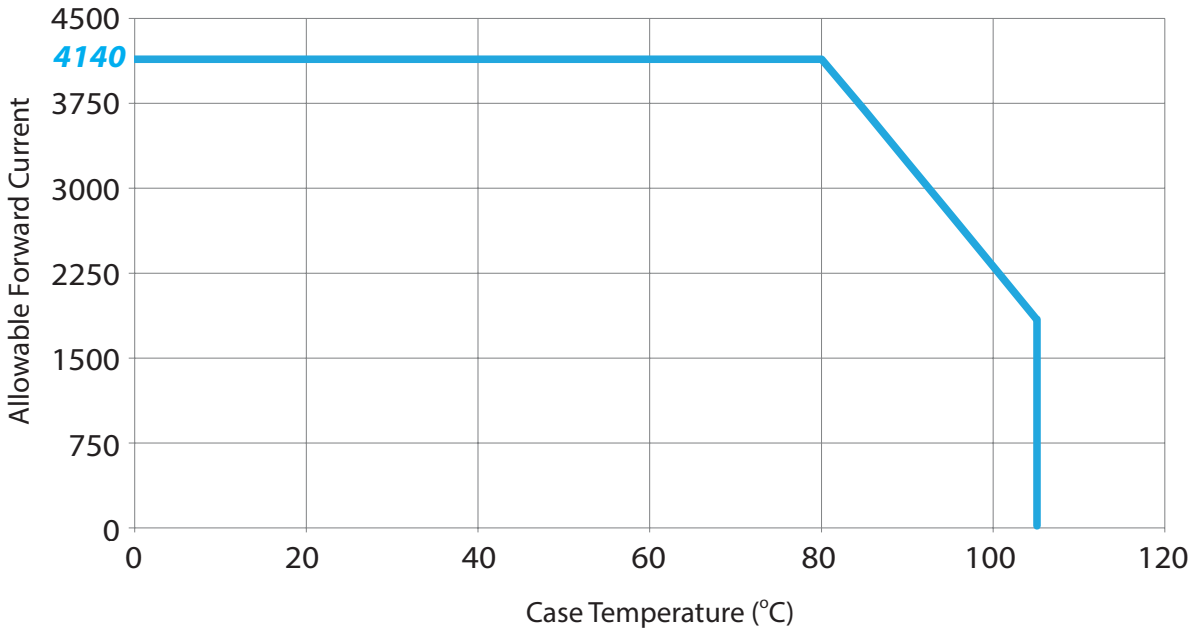
Relative Luminous Flux vs. Case Temperature (I_F=1620mA)



Forward Voltage vs. Case Temperature (I_F=1620mA)



Allowable Forward Current vs. Case Temperature



Reliability

NO .	Test Item	Test Condition	Remark
1	Temperature Cycle	-40°C~100°C (30 mins / 30 mins)	100 Cycle
2	Thermal Shock	-40°C~100°C (15,min/15 mins 10 sec)	100 Cycle
3	High-Temperature Storage	Ta=100°C	1000 hrs
4	Humidity Heat Storage	Ta=85°C, RH=85%	500 hrs
5	Low-Temperature Storage	Ta= -40°C	1000 hrs
6	Operation Life test	25°C	6000 hrs
7	High Temperature Operation Life test	85°C	1000 hrs
8	ON/OFF Test	30 sec ON, 30 sec OFF	1.5W times

Failure Criteria

Item	Criteria for Judgment	
	Min.	Max.
Lumen Maintenance	85%	-
Δu'v'	-	0.006
Forward Voltage	-	Initial Data x 1.1
Reverse Current	-	10 μA
Resistance to Soldering Heat	No dead lamps or visual damage	

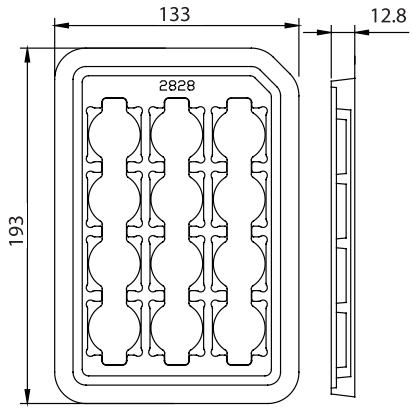
Cautions

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.

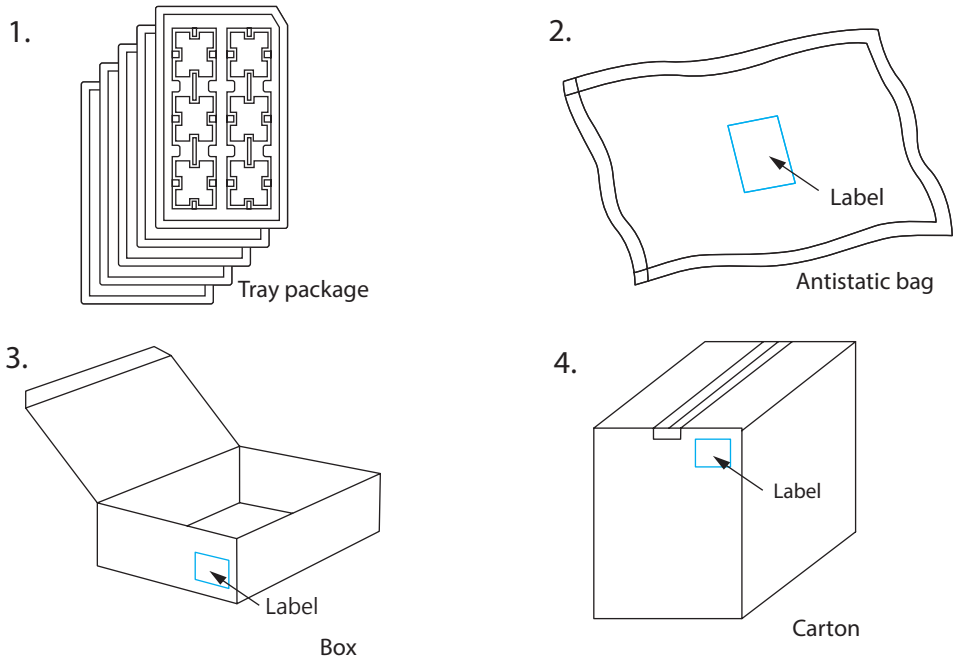
Lighting Design Manufacturing Service

Product Packaging Information

Tray Packing



Tray package dimension.



Packaging items for HE Series

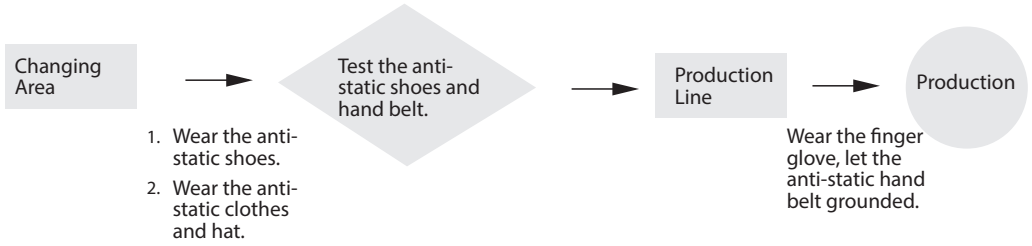
Notes:
1. All dimensions are in mm.
2. There are 12pcs emitters in a full tray.
3. There are 5 trays in a bag.
4. There are 10 bags in a box.
5. There are 10 boxes in a carton.
6. A bag contains one humidity indicator card and drying agent.
7. Carton dimensions: 488x260x364mm

Handling with a EdiPower® V Series

Notification on Anti-static

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.

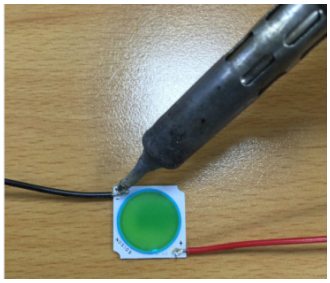


2. Environmental anti-static protection
   - Use an anti-static floor and make earth. Materials such as plastic or rubber contain carbon or conductive polyester is recommended.
   - LEDs should be operated on the desk which is laid by the static discharge material.
   - Protection area with a temperature at 22±5°C and a relative humidity at 70±10%RH are recommended.
   - Layout an appropriate earth system. All the 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.

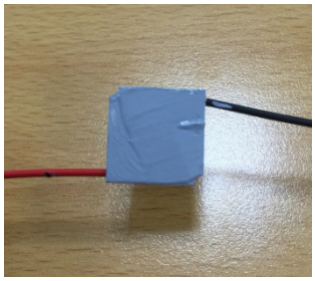
3. Anti-Static steps for package, transportation and storage.
   - Package: All the bags must have the ability of anti-static. Do not use any nylon bag, normal plastic bag or polyester bag for package. Do not open the bag if a LED is not ready to be handling. Open the bag at the protection area and put 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.

Protector Operation Manual

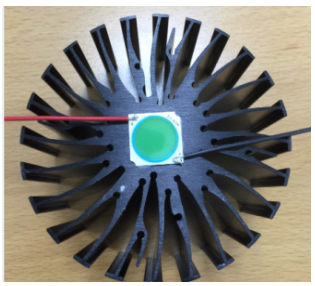
Solder electric wires



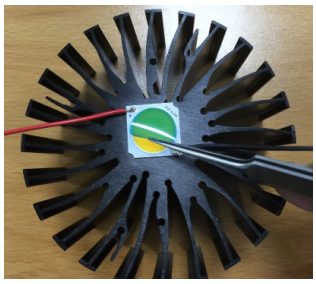
Backside coated with thermal grease



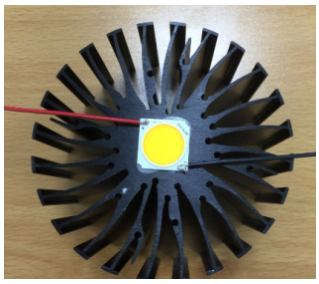
Mount the COB components to the heatsink modules



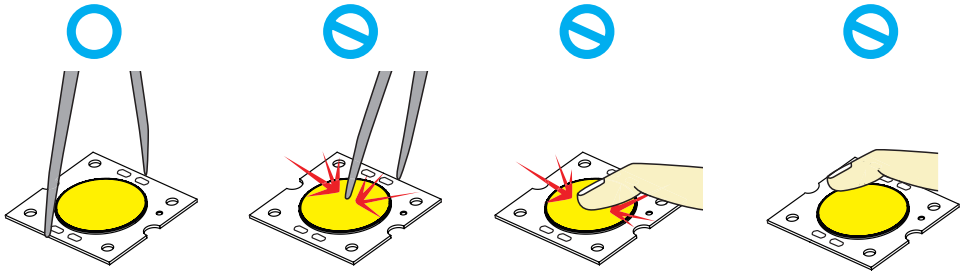
Remove the Blue protective film with tweezer



Complete operation process



Handling with a EdiPower® V Component



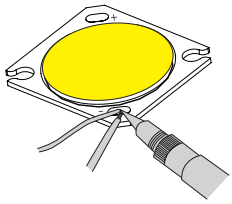
Do not touch the emitting region

Do not touch Dam

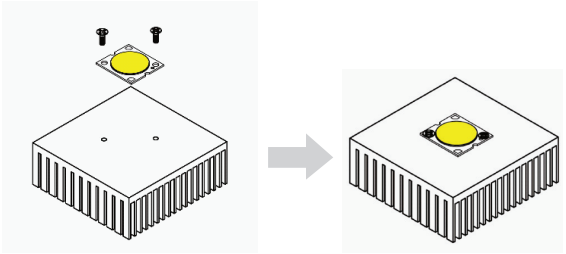
- Proper handling of the EdiPower® V using tweezers or gloved fingers.
- Do not touch the emitting region and Dam.
- Use only the IPA and swab to clean the flux/dust of the EdiPower® V surface. Other organic solvent may cause the failure

Notification of Installation.

1. Soldering pads are present for direct electrical wiring. Manual soldering at 360±5°C, <5 secs are recommended.(No need with IR reflow process)



EdiPower® V can be secured with M2/M3 screws. To ensure optimal usage.



Recommendations:
Flat screws or countersunk screws are recommended.
Avoid the screw head touching the pad to prevent from the electric leakage.

Screw Torque Specification

Size	Tightening Torque (N·m)
M2	0.25~1
M3	1~1.25

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.

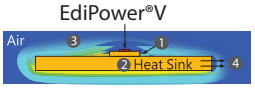
For LEDs, choose an appropriate operation environment and conduct the heat to the air after light on LEDs may maintain the better performance and lifetime. Four major thermal path are as follow:

(1) From heat source (component) to heat sink. (By conduction)

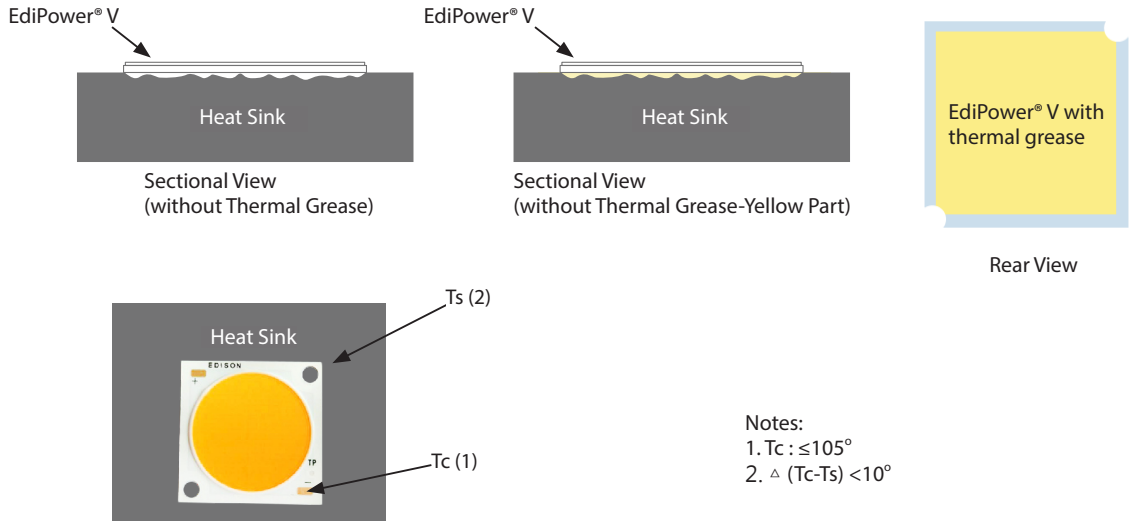
(2) Conduction from within the heat sink to its surface. (By conduction)

(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 : ≤105°
2. ▵ (Tc-Ts) <10°

Recommended thermal Grease Parameters

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

Lighting Design Manufacturing Service

Revision History

Versions	Description	Release Date
1	Establish a Datasheet	2024/01/08

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

www.edison-opto.com

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LED.Detective@edison-opto.com.tw