

## EdiPower® III

# Tunable Datasheet



Down Light



High Bay



Spot Light



PAR Lamp



Bulb



Street Light

### 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 :

- 10W\_4000K\_100lm/W
- 10W\_6500K\_110lm/W
- 25W\_4000K\_100lm/W
- 25W\_6500K\_110lm/W
- CCT : 1800K~4000K, 2700K~6500K, 2700K~4000K

### Feature and Benefits :

- Internal Structure: Aluminum mirror Chip on Board
- 3 / 5 – step Macadam
- Either Brightness adjustments without changing color temperature or changes in colors without brightness drops is possible

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## General Information

### Ordering Code Format

$\frac{2}{X1}$      $\frac{P}{X2}$      $\frac{TU}{X3}$      $\frac{XX}{X4}$      $\frac{XX}{X5}$      $\frac{XX}{X6}$      $\frac{PXX}{X7}$      $\frac{XXX}{X8}$

X1		X2		X3		X4		X5	
Type		Component		Series		Wattage		Color	
2	Emitter	P	EdiPower®	TU	TU Series	10	10W	WN	Dim to Neutral
						25	25W	WC	Dim to White

X6		X7		X8	
Internal code		PCB Board		Serial Number	
-	-	P53	TU 1313	-	-
		P54	TU 1919		

## Absolute Maximum Ratings

### Absolute maximum ratings( $T_c=25^{\circ}\text{C}$ )

Parameter	Symbol	2PTU10xxxxPxx00x	2PTU25xxxxPxx00x	Units
		Rating	Rating	
Input Power	$P_i$	10	25	W
DC Forward Current <sup>1</sup>	$I_F$	280	700	mA
Min. Forward Current	Min. $I_F$	10	10	mA
Reverse Current <sup>2</sup>	$I_R$	1	1	mA
Operating Temperature	$T_{op}$	-40 ~ +100	-40 ~ +100	$^{\circ}\text{C}$
Storage Temperature	$T_{st}$	-40 ~ +100	-40 ~ +100	$^{\circ}\text{C}$
LED junction Temperature <sup>3</sup>	$T_J$	125	125	$^{\circ}\text{C}$
Case Temperature	$T_C$	105	105	$^{\circ}\text{C}$
Thermal Resistance	$R_{j-c}$	-	-	$^{\circ}\text{C}/\text{W}$

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  $T_c$  measurement point.
5. D.C. Current :  $T_j = T_c + R_{j-c} * P_i$

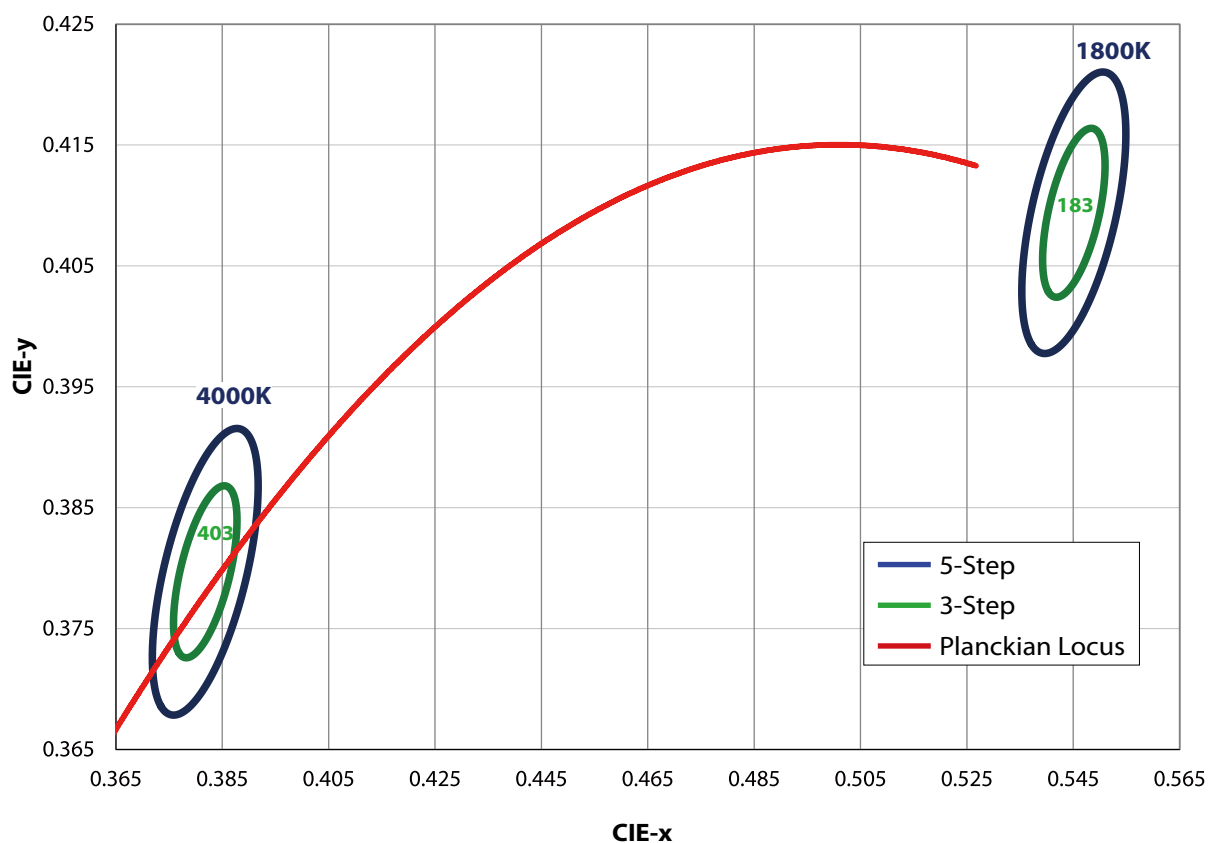
## Luminous Flux Characteristic

Order Code	CCT (K)	Luminous Flux(lm) T <sub>J</sub> =85°C		Luminous Flux(lm) T <sub>c</sub> =25°C		Efficacy (lm/W)	CRI Ra	CRI R9	Forward Voltage V <sub>f</sub> (V)				Forward Current ( mA )
		Min.	Typ.	Min.	Typ.	Typ.	Typ.	Min.	Min.	Typ.	Max.		
2PTU10WN49P53003	1800	627	689	696	760	75	95	50	34.8	36.0	37.2	280	
	4000	881	970	979	1070	100	95	50	36.0	37.9	40.1	280	
2PTU10WC49P53003	2700	867	954	964	1060	105	95	50	34.8	36.0	37.2	280	
	6500	973	1071	1081	1190	112	95	50	36.0	37.9	40.1	280	
2PTU25WN49P54003	1800	1704	1874	1893	2080	82	95	50	34.8	36.0	37.2	700	
	4000	2229	2452	2477	2720	102	95	50	36.0	37.9	40.1	700	
2PTU25WC49P54003	2700	2273	2500	2525	2775	110	95	50	34.8	36.0	37.2	700	
	6500	2452	2697	2724	2995	112	95	50	36.0	37.9	40.1	700	
2PTU10WN49P53004	2700	744	826	817	908	90	95	50	34.8	36.0	37.2	280	
	4000	809	899	889	988	93	95	50	36.0	37.9	40.1	280	
2PTU25WN49P54004	2700	2121	2357	2331	2590	103	95	50	34.8	36.0	37.2	700	
	4000	2248	2498	2471	2745	103	95	50	36.0	37.9	40.1	700	
2PTU10WN27P53001	2700	1110	1233	1220	1355	134	80	0	34.8	36.0	37.2	280	
	4000	1057	1174	1161	1290	122	80	0	36.0	37.9	40.1	280	
2PTU25WN27P54001	2700	2907	3231	3195	3550	141	80	0	34.8	36.0	37.2	700	
	4000	2776	3085	3051	3390	128	80	0	36.0	37.9	40.1	700	

**Notes :**

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

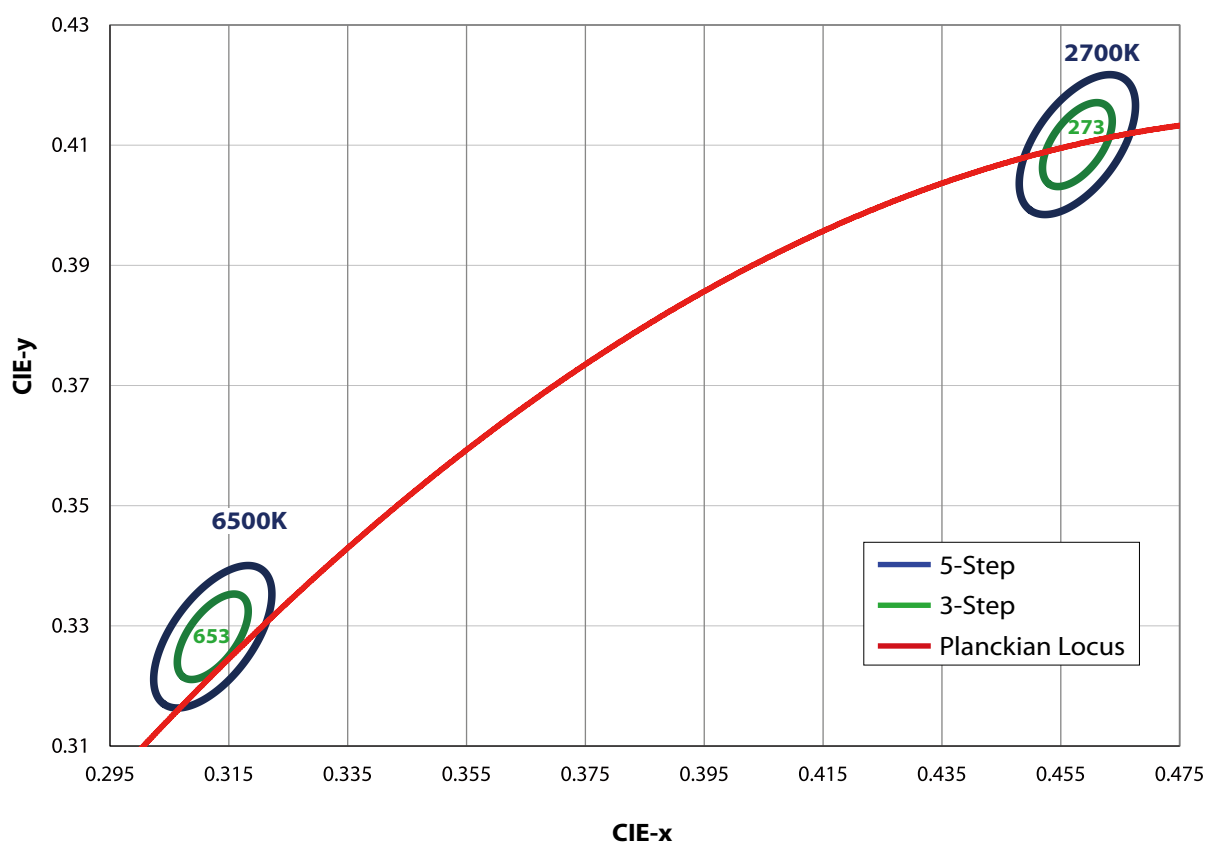
## Chromaticity coordinates( $T_c=25^{\circ}\text{C}$ ) 1800K-4000K



CCT	Steps	Cx	Cy	a	b	theta
1800K	5	0.5451	0.4094	0.01350	0.00700	53.70
4000K	5	0.3818	0.3797	0.01390	0.00680	53.22
1800K	3	0.5451	0.4094	0.00810	0.00420	53.70
4000K	3	0.3818	0.3797	0.00834	0.00408	53.22

Note:  
CIE<sub>x,y</sub> tolerance:  $\pm 0.005$ .

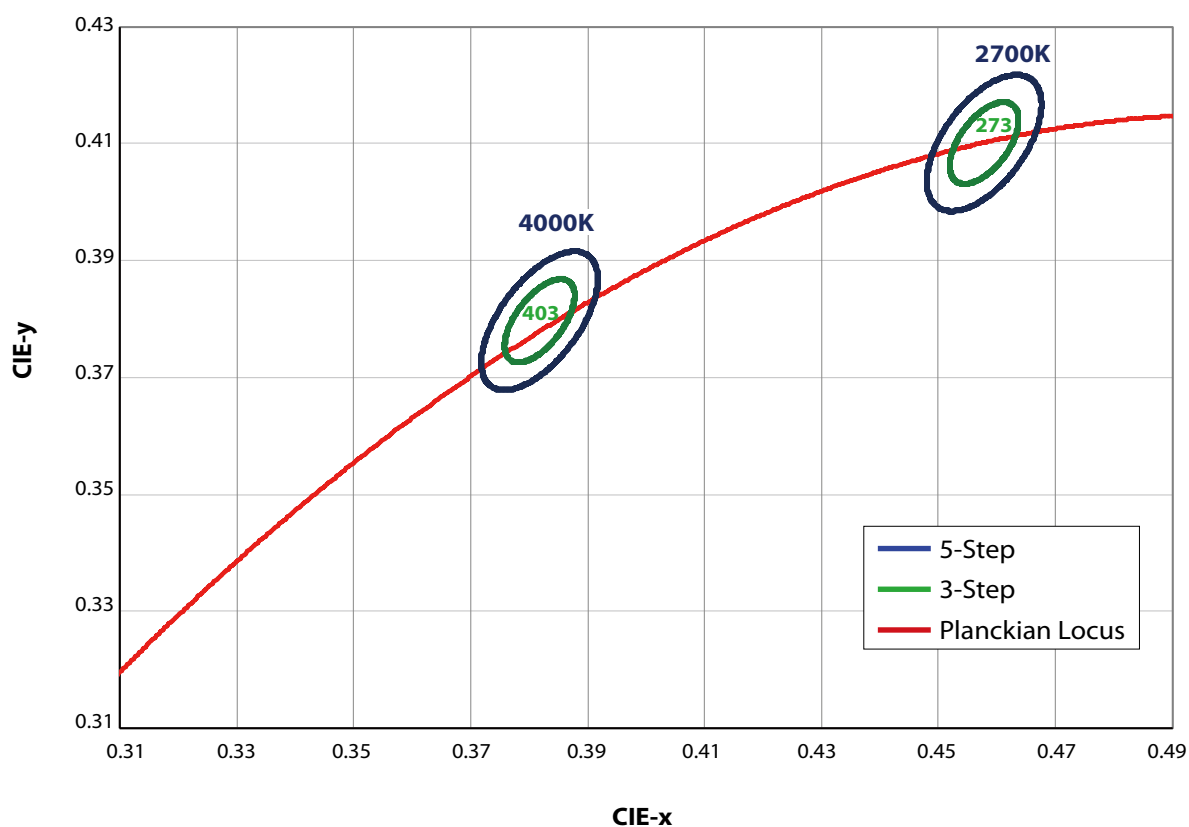
## Chromaticity coordinates( $T_c=25^\circ\text{C}$ ) 2700K-6500K



CCT	Steps	Cx	Cy	a	b	theta
2700K	5	0.4578	0.4101	0.01350	0.00700	53.70
6500K	5	0.3123	0.3282	0.01390	0.00680	53.22
2700K	3	0.4578	0.4101	0.00810	0.00420	53.70
6500K	3	0.3123	0.3282	0.00834	0.00408	53.22

Note:  
CIE<sub>x,y</sub> tolerance:  $\pm 0.005$ .

## Chromaticity coordinates( $T_c=25^{\circ}\text{C}$ ) 2700K-4000K

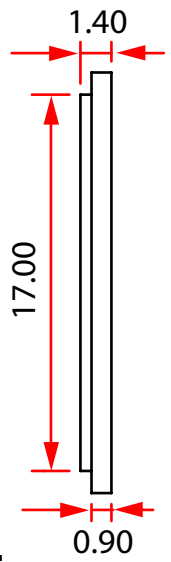
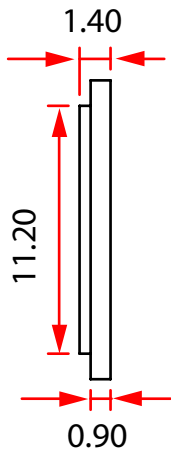


CCT	Steps	Cx	Cy	a	b	theta
2700K	5	0.4578	0.4101	0.0135	0.007	53.7
4000K	5	0.3818	0.3797	0.0139	0.0068	53.22
2700K	3	0.4578	0.4101	0.0081	0.0042	53.7
4000K	5	0.3818	0.3797	0.00834	0.00408	53.22

Note:  
CIE<sub>x,y</sub> tolerance:  $\pm 0.005$ .



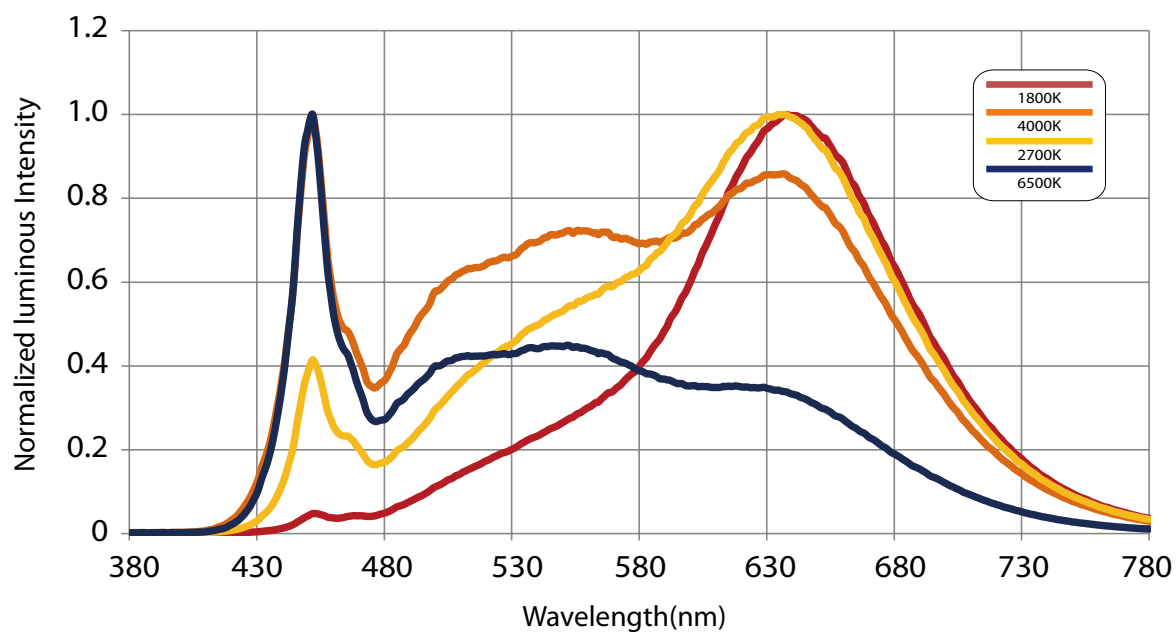
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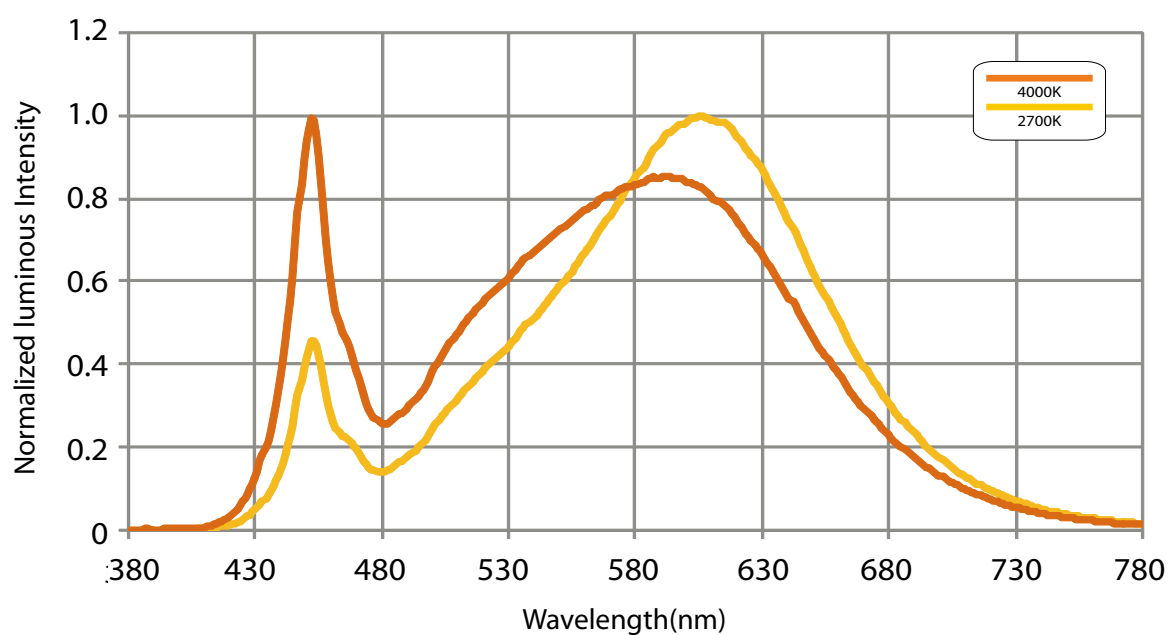
1. Unit : mm
2. Tolerance :  $\pm 0.3$  mm
3. Drawings are not to scale
4. PAD "1" and "2" control the low color temperature, "1" is "positive" and "2" is "negative".
5. PAD "+" and "-" control high color temperature, "+" is "positive" and "-" is "negative".

## Characteristic curve

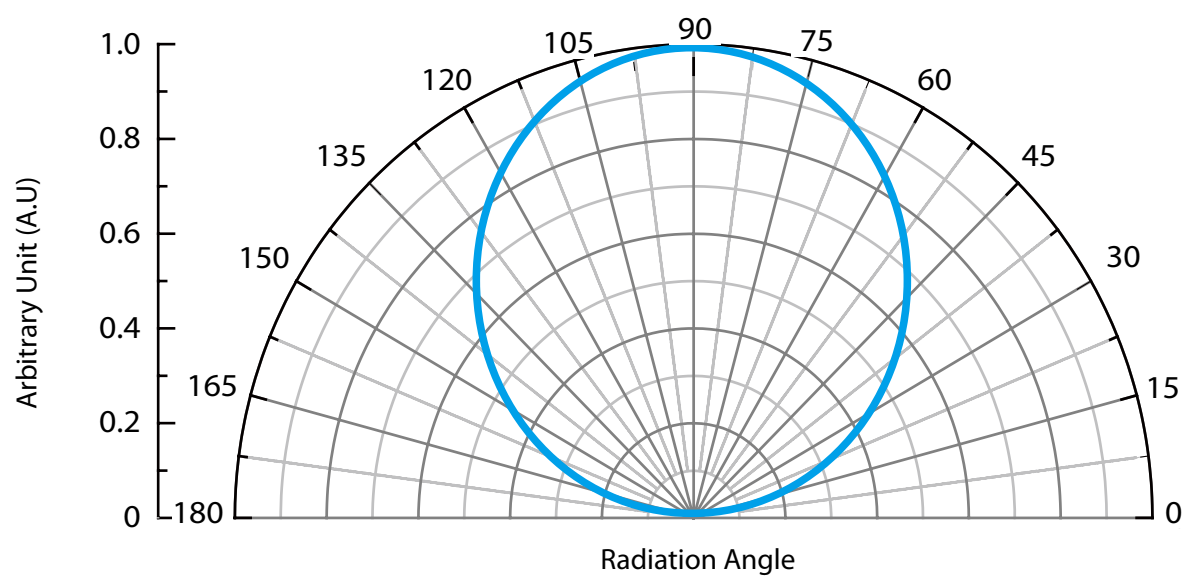
### Color Spectrum(1800K-4000K, 2700K-6500K)\_Ra 95



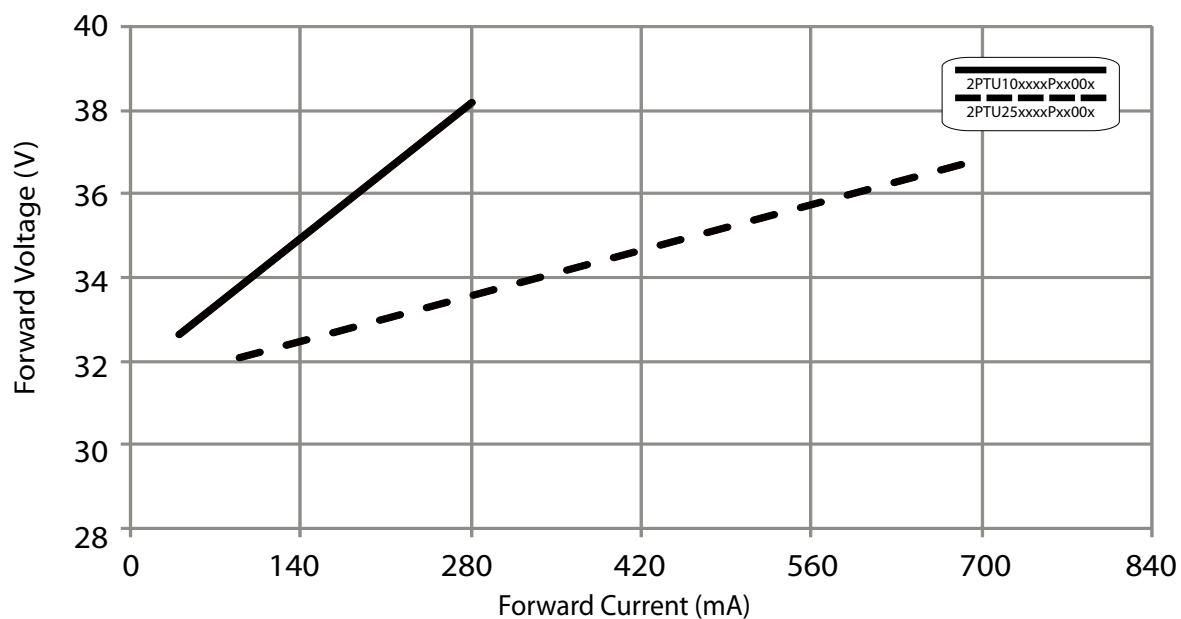
### Color Spectrum(2700K-4000K)\_Ra 80



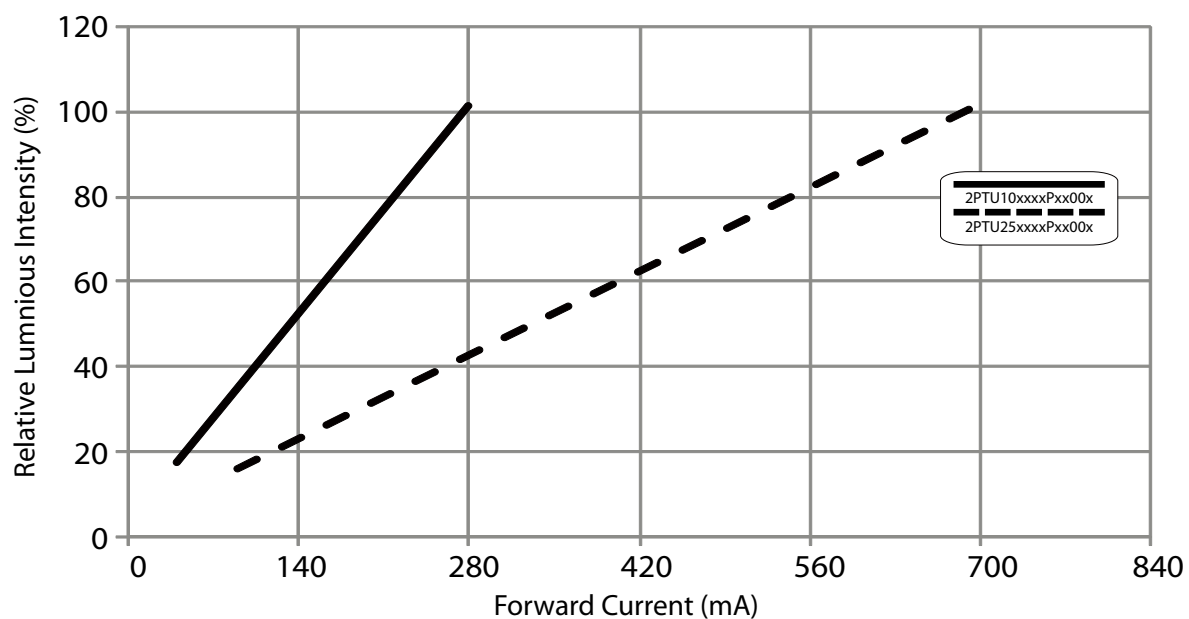
## Beam Pattern



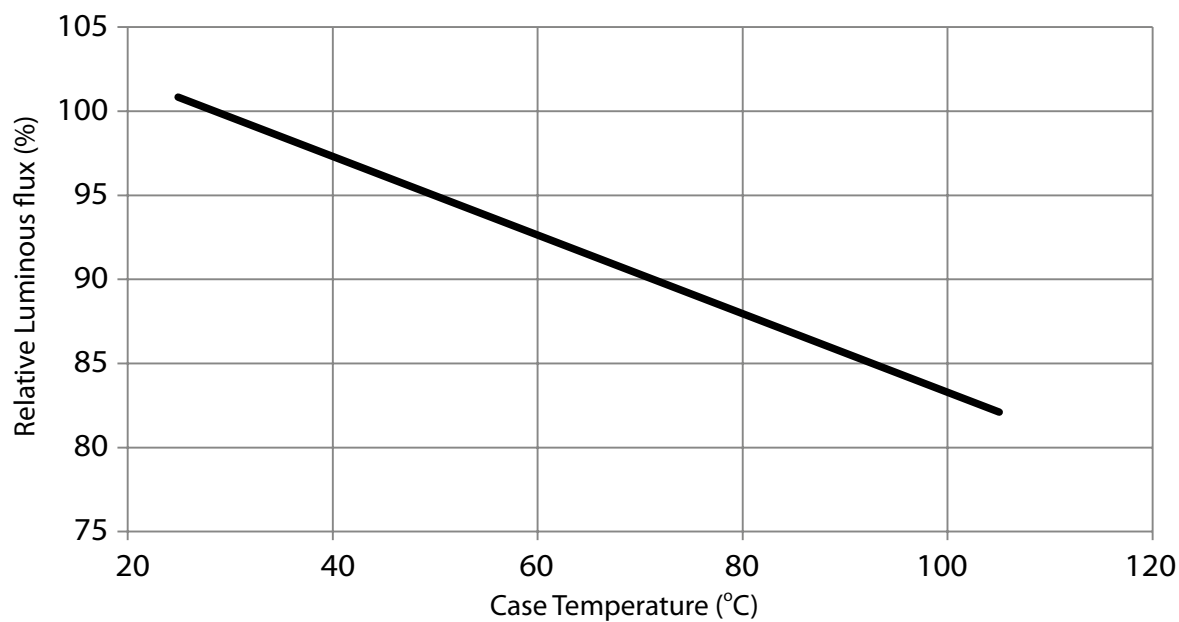
### Forward Voltage vs. Forward Current



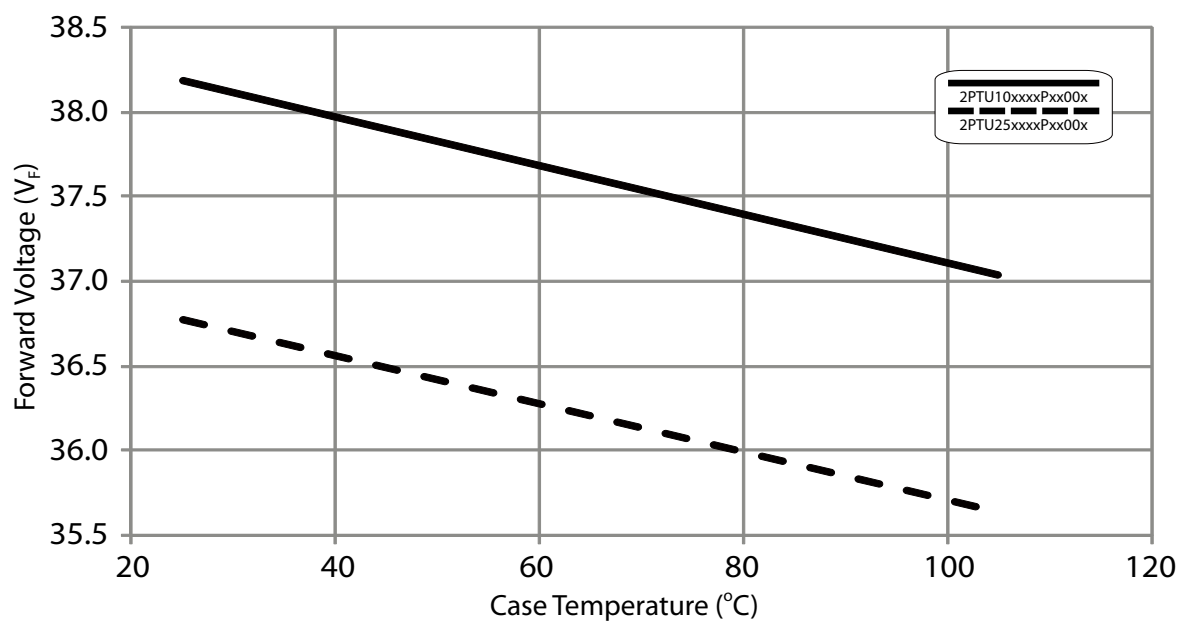
### Relative Luminous Intensity vs. Forward Current



### Relative Luminous Flux vs. Case Temperature

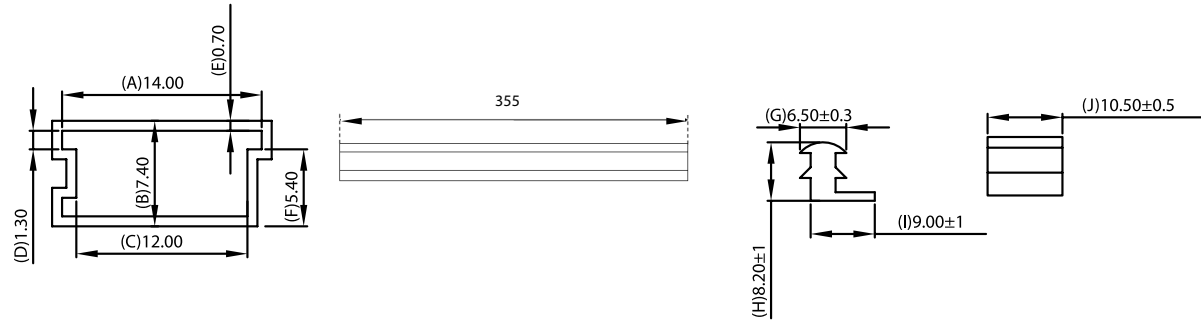


### Forward Voltage vs. Case Temperature

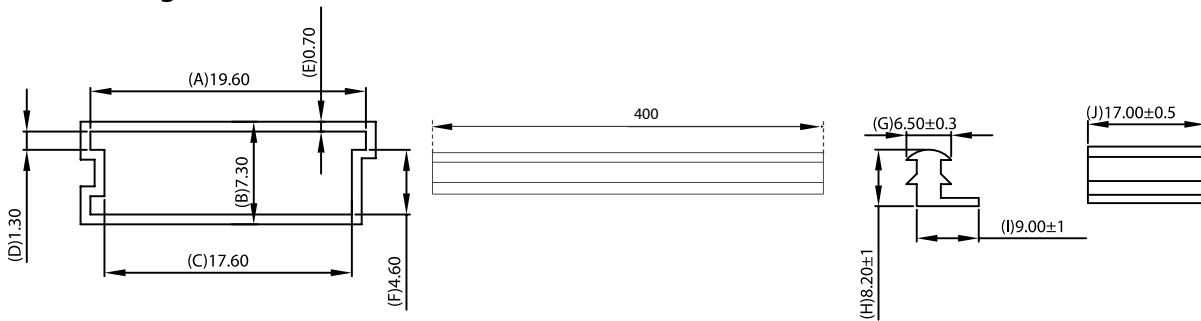


## Product Packaging Information

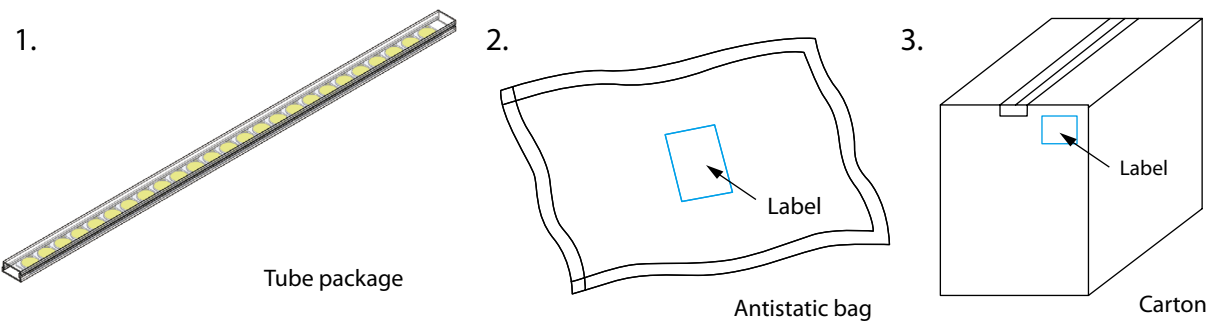
### Tube Packing for 10W



### Tube Packing for 25W



Tube package dimension.



#### Packaging items

##### Notes:

1. All dimensions are in mm.
2. 10W: 25pcs emitters in a full tube  
25W: 20pcs emitters in a full tube.
3. There are 20 tubes in a bag.
4. 10W: 6 bags in a carton  
25W: 4 bags in a carton.
5. A bag contains one humidity indicator card and drying agent.
6. Carton dimensions: 460x196x135mm

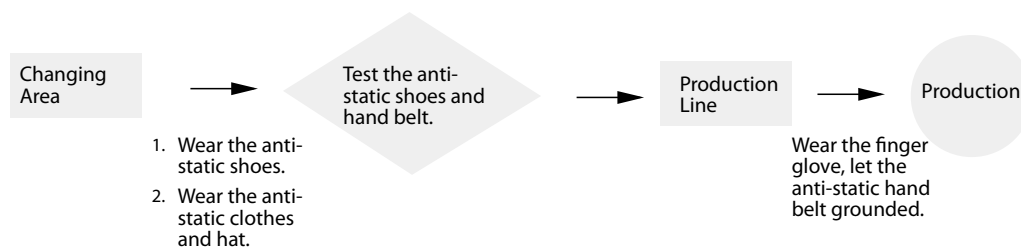
## Handling with a EdiPower® III Series

### 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

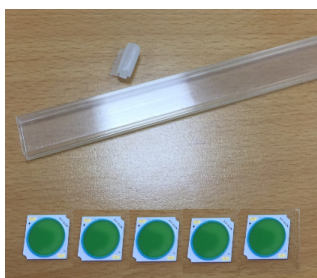
- Use an anti-static floor and make earth. Materials such as plastic or rubber contain carbon or conductive polyester is recommended.
- LEDs should be operated on the desk which is laid by the static discharge material.
- Protection area with a temperature at  $22\pm5^{\circ}\text{C}$  and a relative humidity at  $70\pm10\%\text{RH}$  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.

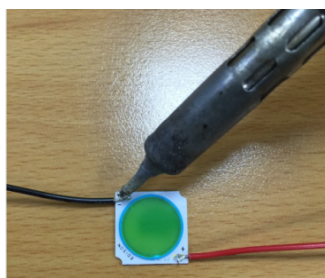
- Package: All the bags must have the ability of anti-static. Do not use any nylon bag, normal plastic bag or polyester bag for package. Do not open the bag if a LED is not ready to be handling. Open the bag at the protection area and put in a conductive case.
- Transportation: The cart should install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

## Protector Operation Manual

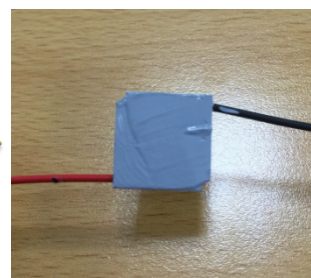
Take out the COB components  
from the material tube



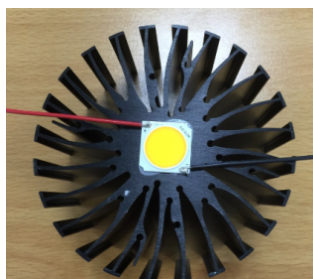
Solder electric wires



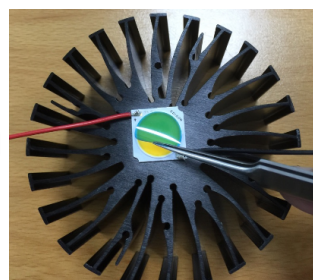
Backside coated with  
thermal grease



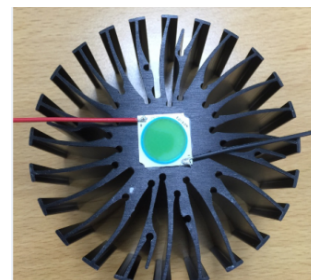
Complete operation process



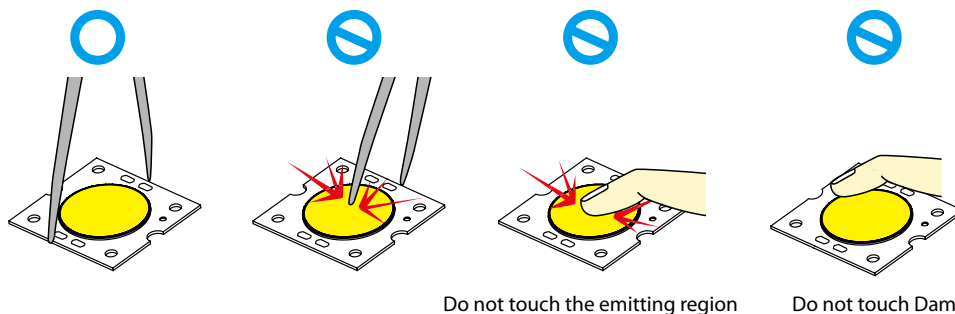
Remove the Blue protective  
film with tweezers



Mount the COB components  
to the heatsink modules



## Handling with a EdiPower® III Component

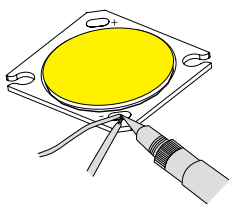


- Proper handling of the EdiPower® III using tweezers or gloved fingers.
- Do not touch the emitting region and Dam.
- Use only the IPA and swab to clean the flux/dust of the EdiPower® III surface. Other organic solvent may cause the failure

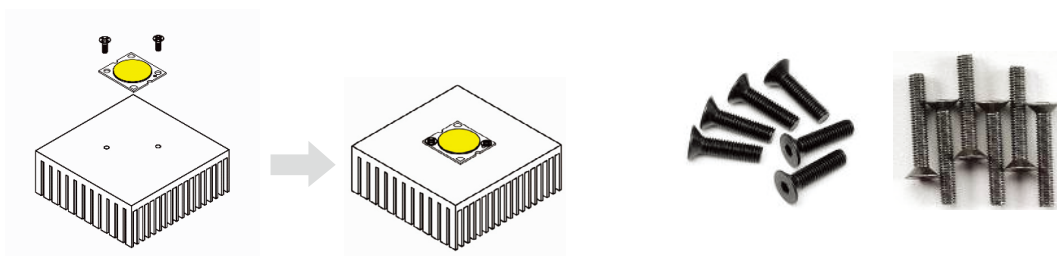


### Notification of Installation.

1. Soldering pads are present for direct electrical wiring. Manual soldering at  $360\pm 5^{\circ}\text{C}$ , <5 secs are recommended. (No need with IR reflow process)



**EdiPower® III 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  $T_j$ .

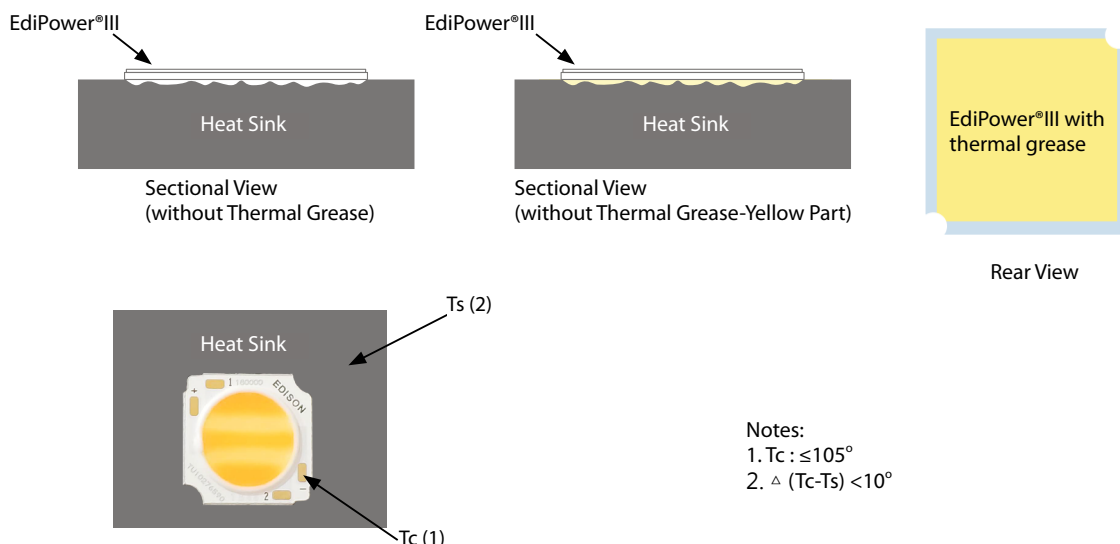
The power dissipation ability, the ambient temperature between the LED junction, environment, thermal path and its thermal resistance are the mean parameters which affect the performance of a LED device. Therefore, the limitation of the junction temperature has become an important issue when designing 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.  $T_c : \leq 105^\circ$   
2.  $\Delta (T_c - T_s) < 10^\circ$

## Recommended thermal Grease Parameters

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

## Revision History

Versions	Description	Release Date
1	Establish a Datasheet	2019/07/24
2	Add the 2700K-4000K Information	2019/12/09

## 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](http://www.edison-opto.com)

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