

EdiPower® V

2PHE30xWxxP34020

Datasheet



Down Light



Track Light



Ceiling Light



Spot Light



PAR Lamp



Cylinder 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 :

- High efficacy chip on board solution
- Best luminous and color uniformity
- Enables halogen and CDM replacement
- The article itself presents the actual color.

Feature and Benefits :

- Based on the mirror aluminum MCPCB which excellent 98% reflectivity and High thermal conductivity. ($k=200 \text{ w/mK}$)
- Low R_{th}
- Meet the ErP specification ($CRI>80$ and $R9>0$)
- Meet the CEC specification ($CRI>90$ and $R9>50$)
- Excellent reliability
- 3 / 5 – step Macadam

Table of Contents

General Information	3
Absolute Maximum Ratings	4
Luminous Flux Characteristic ($T_j=85^{\circ}\text{C}$)	5
Chromaticity coordinates($T_j=85^{\circ}\text{C}$)	6
Mechanical Dimensions.....	7
Characteristic curve.....	9
Reliability.....	14
Product Packaging Information	15
Handling with a EdiPower® V Series	16
Revision History	20
About Edison Opto	20

General Information

Ordering Code Format

<u>2</u>	<u>P</u>	<u>HE</u>	<u>30</u>	<u>xW</u>	<u>xx</u>	<u>P34</u>	<u>xxx</u>
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	30	30W	CW	Cool White
								NW	Neutral White
								WW	Warm White

X6		X7		X8	
Internal code		PCB Board		Serial Number	
-	-	P34	19x19	-	-

Absolute Maximum Ratings

Parameter	Symbol	Value	Units
Input Power	P _i	67.5	W
DC Forward Current ¹	I _F	1800	mA
Min. Forward Current	Min. I _F	50	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}	0.4	°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 T_C measurement point.
5. D.C. Current : $T_J = T_C + R_{J-C} \cdot P_i$

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.				Min.	Typ.	Max.	
2PHE30WW27P34020	2700	3991	4435	4391	4879	145	80	0	31.2	34	36.8	900
	3000	4122	4580	4534	5038	150	80	0	31.2	34	36.8	900
	3500	4176	4640	4594	5104	152	80	0	31.2	34	36.8	900
2PHE30NW27P34020	4000	4203	4670	4623	5137	153	80	0	31.2	34	36.8	900
	5000	4261	4735	4688	5209	155	80	0	31.2	34	36.8	900
2PHE30CW27P34020	5700	4149	4610	4564	5071	151	80	0	31.2	34	36.8	900
	6500	4131	4590	4544	5049	150	80	0	31.2	34	36.8	900
2PHE30WW38P34020	2700	3392	3769	3732	4147	123	90	50	31.2	34	36.8	900
	3000	3503	3893	3854	4282	127	90	50	31.2	34	36.8	900
	3500	3549	3944	3905	4338	129	90	50	31.2	34	36.8	900
2PHE30NW38P34020	4000	3572	3969	3930	4367	130	90	50	31.2	34	36.8	900
2PHE30CW38P34020	5000	3622	4024	3985	4427	132	90	50	31.2	34	36.8	900
	5700	3526	3918	3879	4310	128	90	50	31.2	34	36.8	900
	6500	3511	3901	3862	4292	127	90	50	31.2	34	36.8	900

Notes :

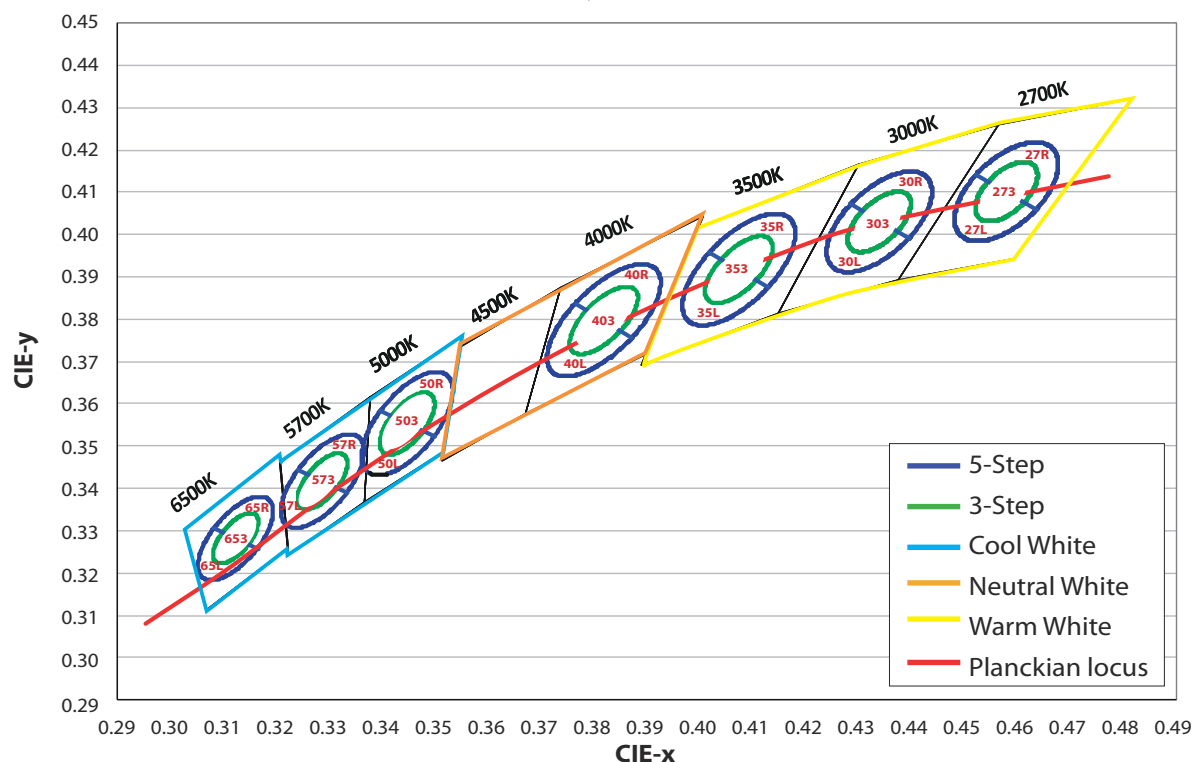
- Edison Opto Corp. maintains forward voltage $\pm 3\%$, luminous flux $\pm 10\%$, Ra and R9 ± 2 tolerance.
- Flux values @ 25 °C are calculated and for reference only.

Chromaticity coordinates($T_c=85^\circ\text{C}$)

Color region stay within Macadam "3-Step/5-step" ellipse from the chromaticity center.

The chromaticity center refers to ANSI C78.377:2011.

Please refer to ANSI C78.377 for the chromaticity center.



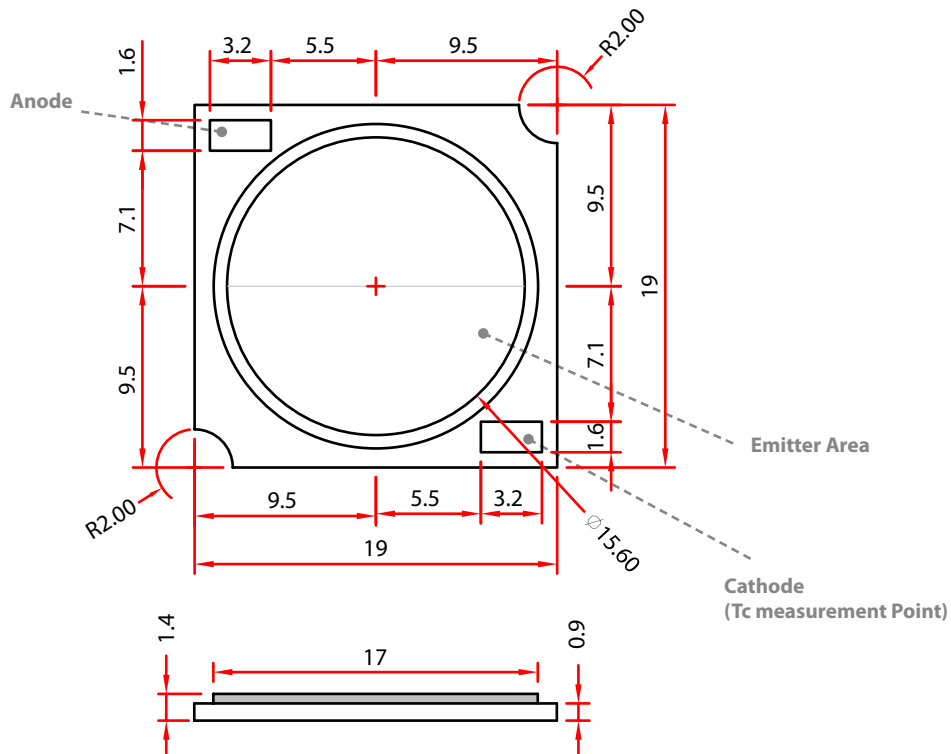
CCT	Steps	Cx	Cy	a	b	theta
2700K	5	0.4578	0.4101	0.01350	0.00700	53.70
3000K	5	0.4338	0.4030	0.01390	0.00680	53.22
3500K	5	0.4073	0.3917	0.01545	0.00690	54.00
4000K	5	0.3818	0.3797	0.01565	0.00670	53.72
5000K	5	0.3447	0.3553	0.01370	0.00590	59.62
5700K	5	0.3287	0.3417	0.01243	0.00533	59.09
6500K	5	0.3123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

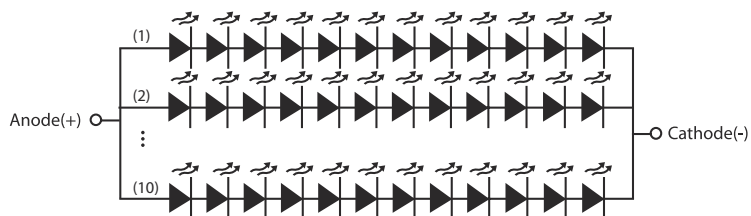
Mechanical Dimensions

Emitter Dimensions



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

Emitter Circuit Layout



Product marking



V
X1

HE30
X2

x0
X3

27
X4

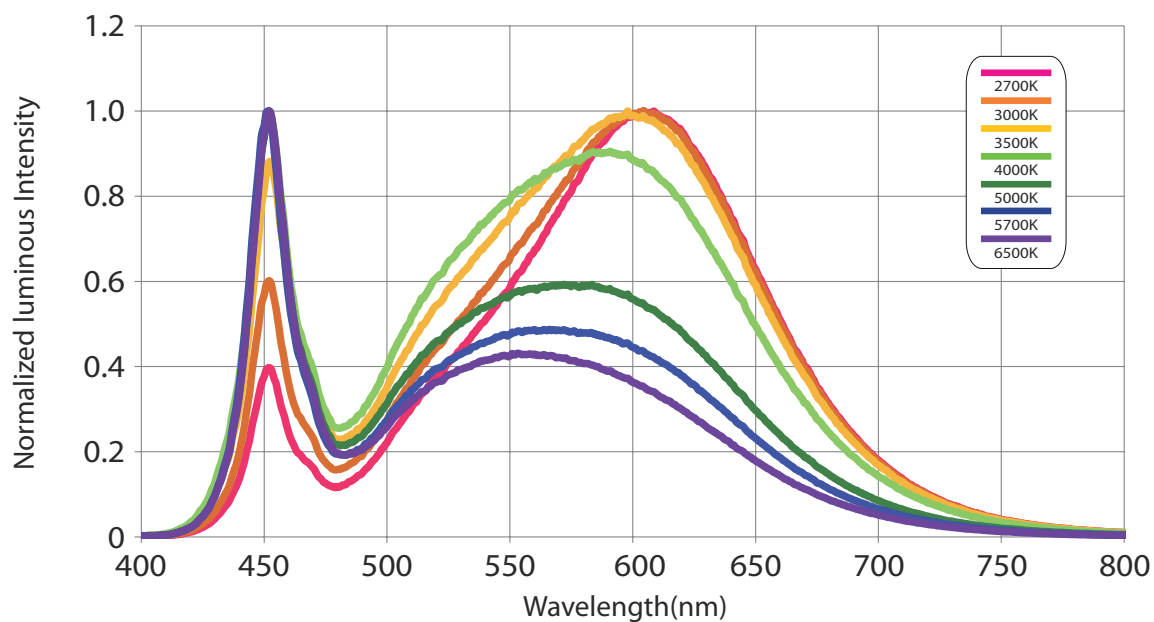
17
X5

xxxx
X6

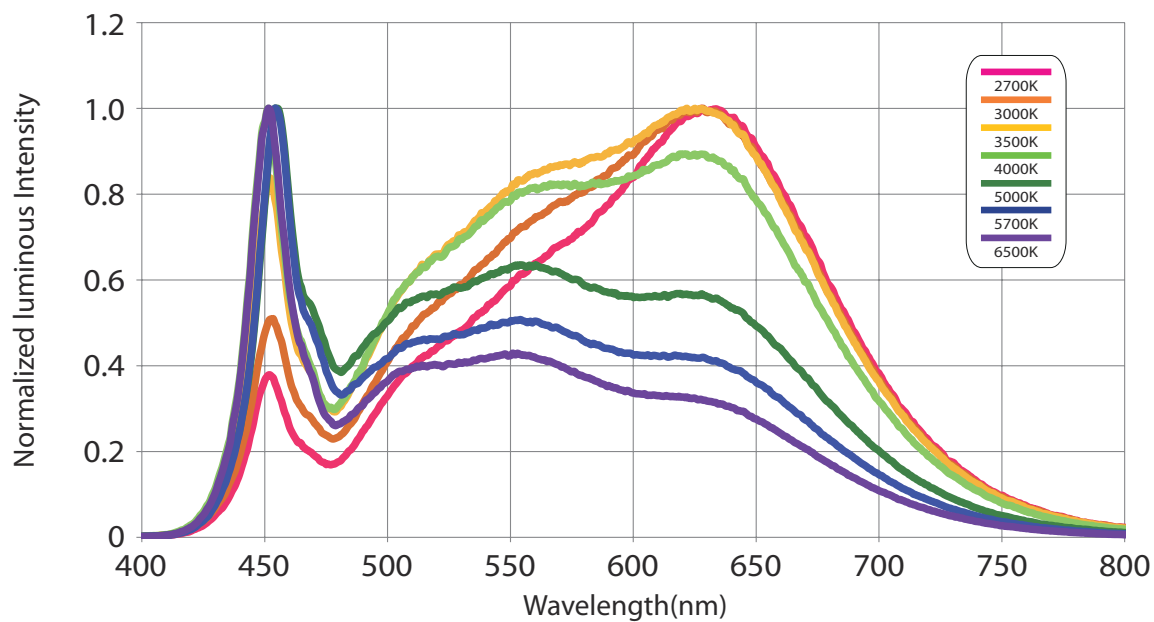
X1		X2		X3		X4		X5		X6	
Type		Series		CRI		CCT		Year		Serial Number	
V	EdiPower® V	HE30	HE30	80	CRI80	27	2700K	17	2017	xxxx	-
				90	CRI90						

Characteristic curve

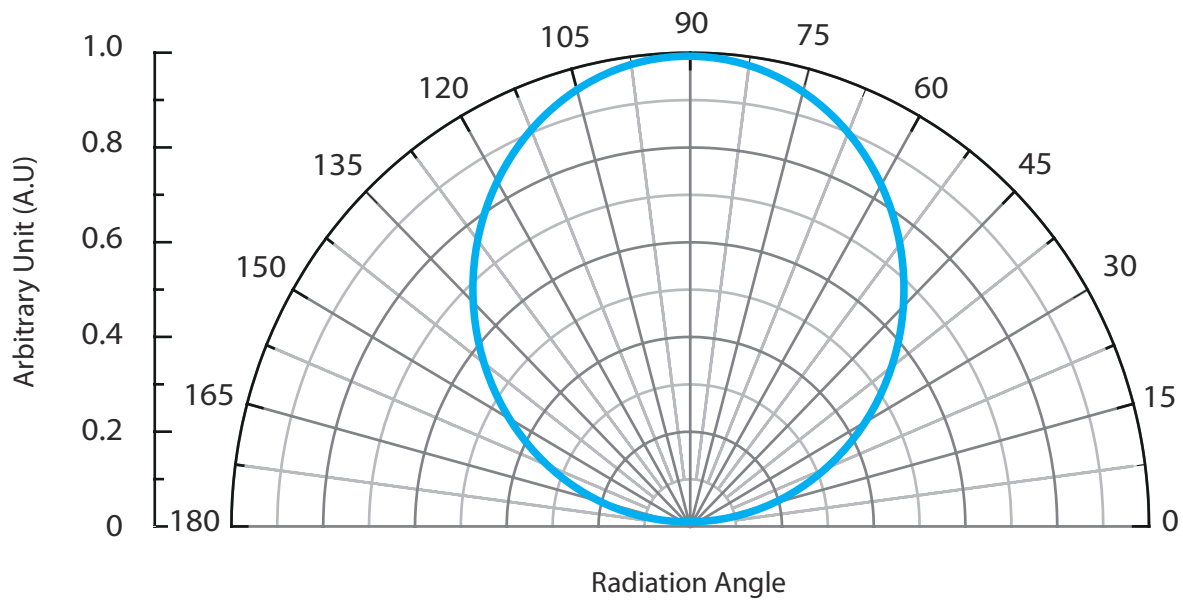
Color Spectrum ($T_c=25^\circ\text{C}, I_F=900\text{mA}$)_CRI80



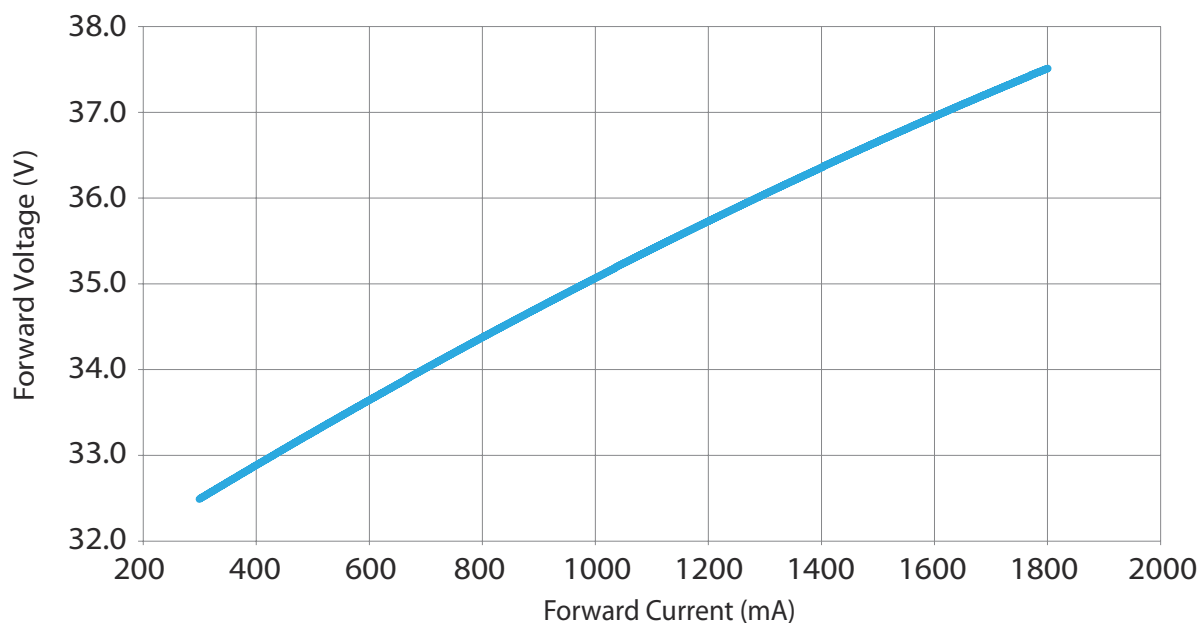
Color Spectrum ($T_c=25^\circ\text{C}, I_F=900\text{mA}$)_CRI90



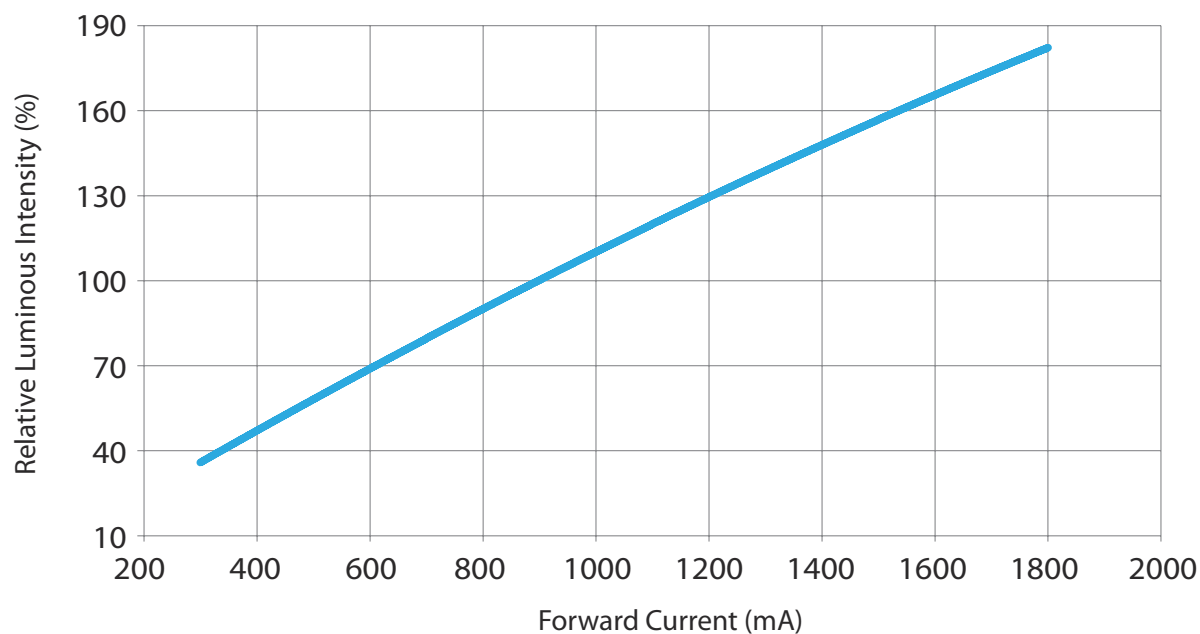
Beam Pattern



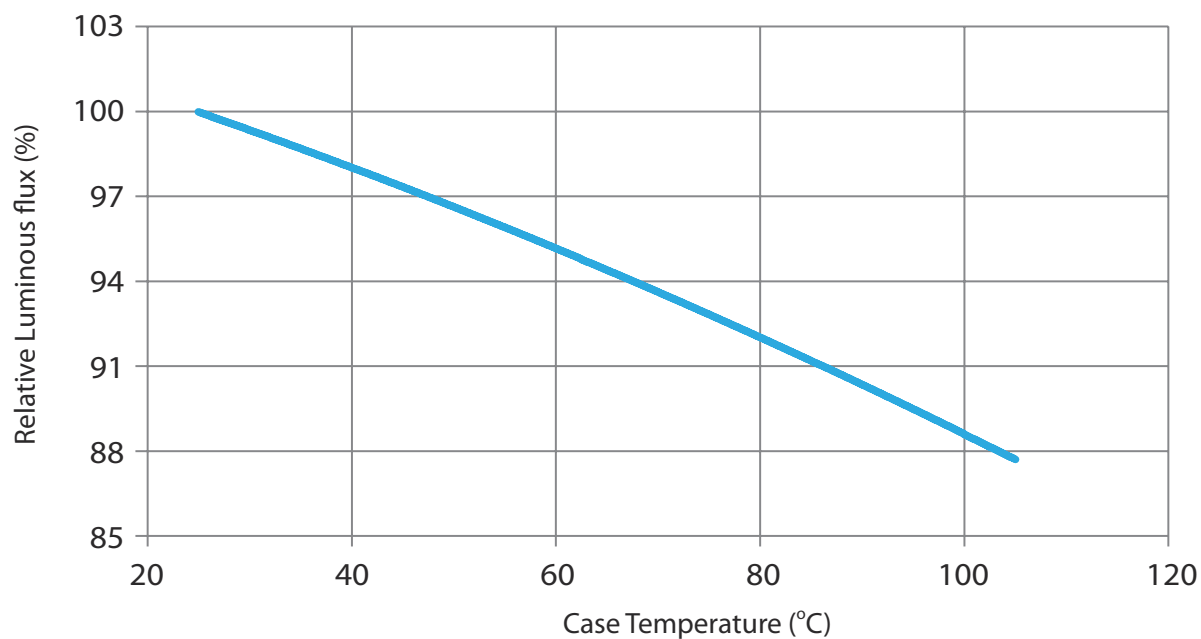
Forward Voltage vs. Forward Current ($T_c=25^\circ\text{C}$)



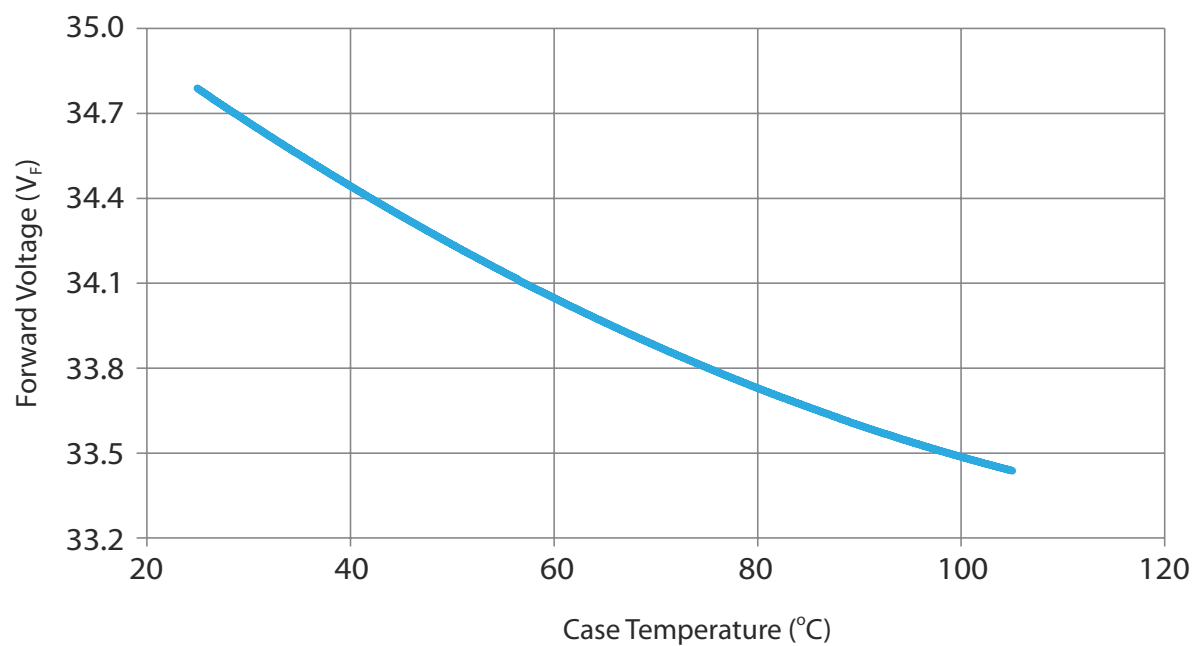
Relative luminous Intensity vs. Forward Current ($T_c=25^\circ\text{C}$)



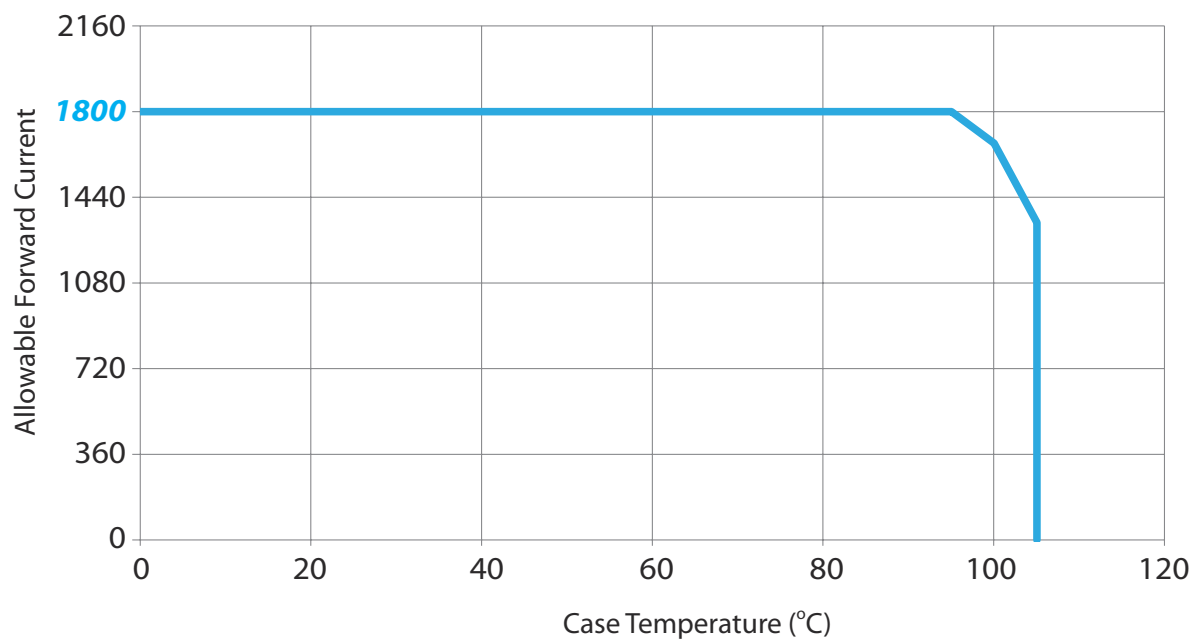
Relative Luminous Flux vs. Case Temperature ($I_F=900\text{mA}$)



Forward Voltage vs. Case Temperature ($I_F=900\text{mA}$)



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

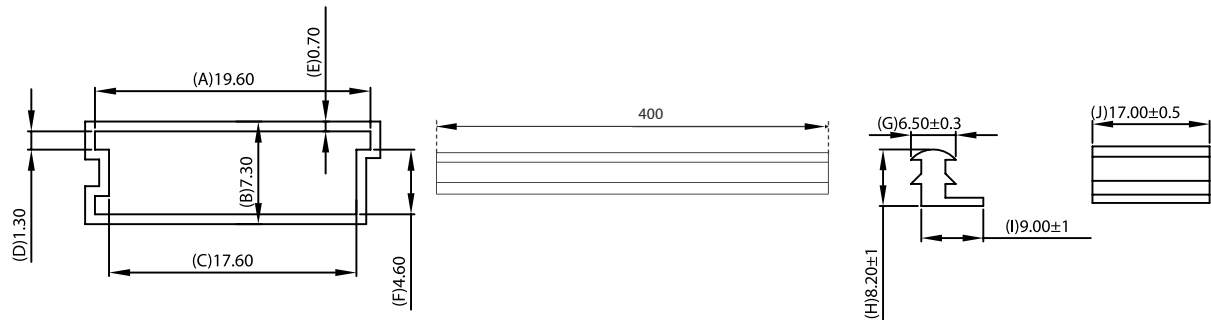
Item	Criteria for Judgment	
	Min.	Max.
Lumen Maintenance	85%	-
$\Delta u'v'$	-	0.006
Forward Voltage	-	Initial Data x 1.1
Reverse Current	-	10 μ A
Resistance to Soldering Heat	No dead lamps or visual damage	

Cautions

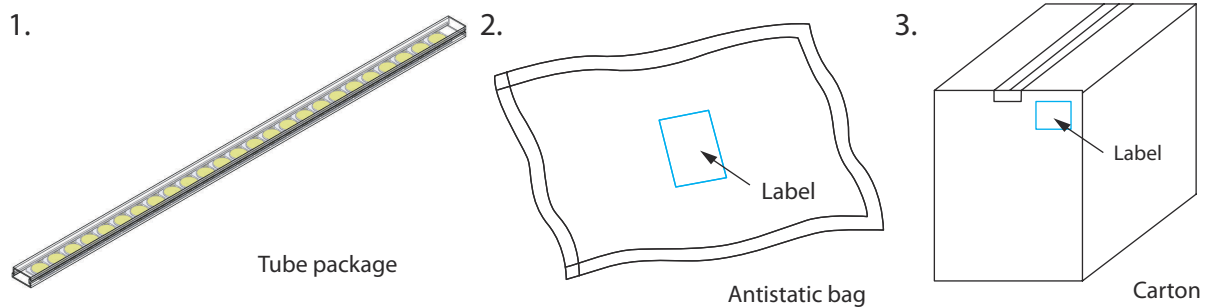
LED avoids being stored and lighted in the environment containing sulfur. Some materials, such as seals, printing ink, enclosure and adhesives, may contain sulfur, avoiding the exposure in acid or halogen environment.

Product Packaging Information

Tube Packing



Tube package dimension.



Packaging items for HE Series

Notes:

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

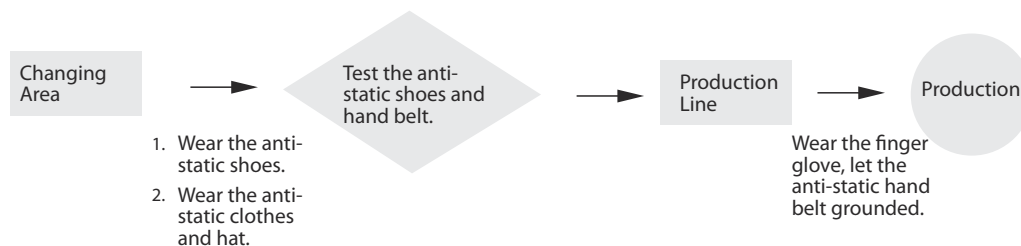
Handling with a EdiPower® V Series

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

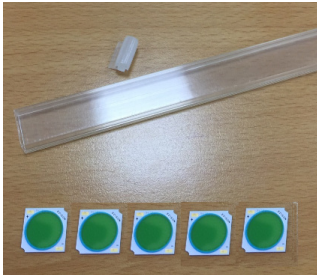
- Use an anti-static floor and make earth. Materials such as plastic or rubber contain carbon or conductive polyester is recommended.
- LEDs should be operated on the desk which is laid by the static discharge material.
- Protection area with a temperature at $22\pm5^{\circ}\text{C}$ and a relative humidity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

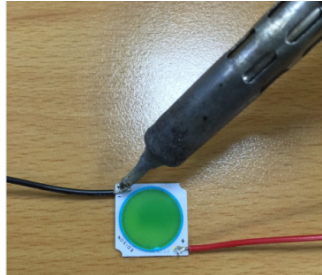
- Package: All the bags must have the ability of anti-static. Do not use any nylon bag, normal plastic bag or polyester bag for package. Do not open the bag if a LED is not ready to be handling. Open the bag at the protection area and put in a conductive case.
- Transportation: The cart should install 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

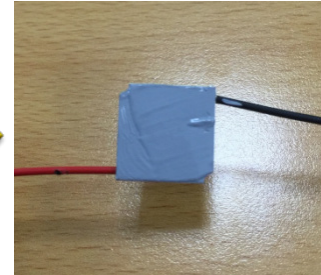
Take out the COB components from the material tube



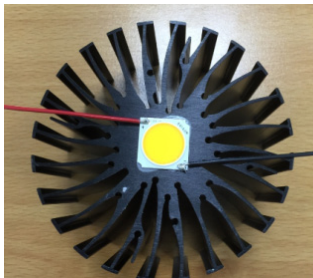
Solder electric wires



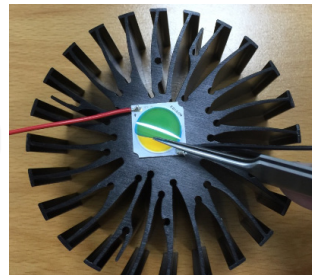
Backside coated with thermal grease



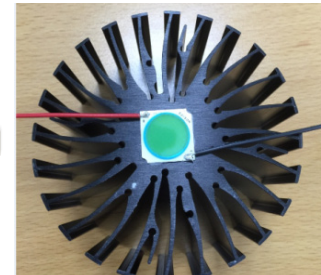
Complete operation process



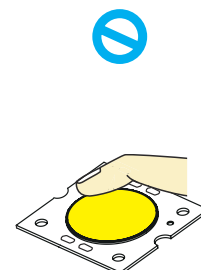
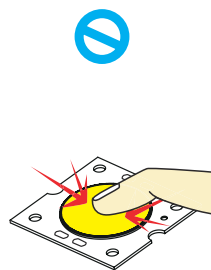
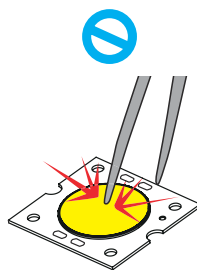
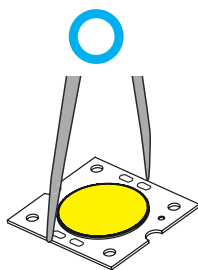
Remove the Blue protective film with tweezers



Mount the COB components to the heatsink modules



Handling with a EdiPower® V Component



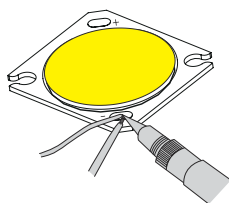
Do not touch the emitting region

Do not touch Dam

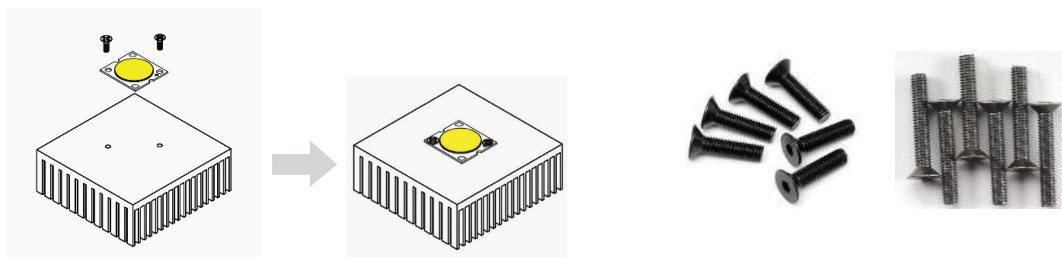
- Proper handling of the EdiPower® V using tweezers or gloved fingers.
- Do not touch the emitting region and Dam.
- Use only the IPA and swab to clean the flux/dust of the EdiPower® V surface. Other organic solvent may cause the failure

Notification of Installation.

1. Soldering pads are present for direct electrical wiring. Manual soldering at $360\pm 5^{\circ}\text{C}$, <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 .

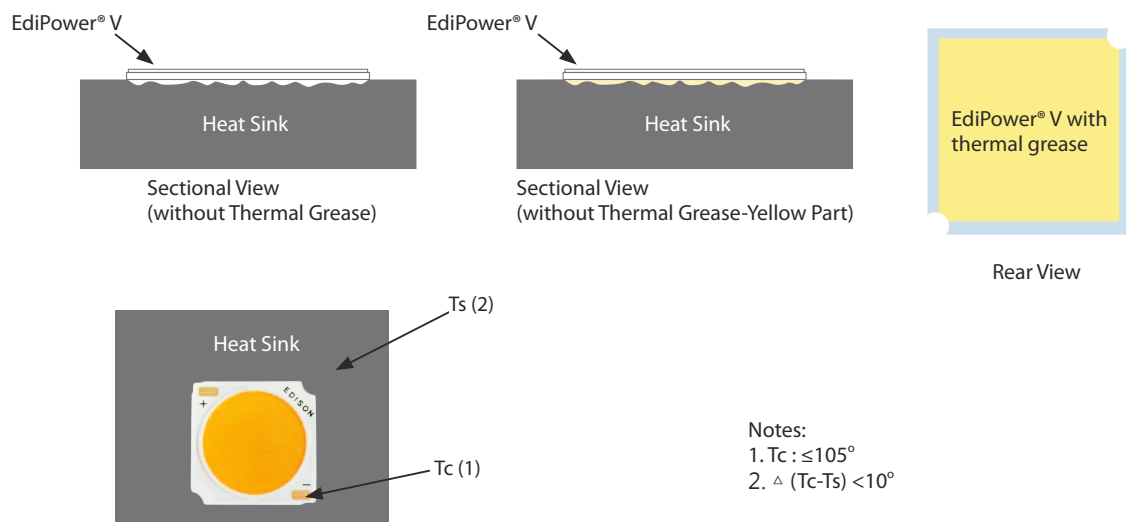
The power dissipation ability, the ambient temperature between the LED junction, environment, thermal path and its thermal resistance are the mean parameters which affect the performance of a LED device. Therefore, the limitation of the junction temperature has become an important issue when designing 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. $T_c : \leq 105^\circ$
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	2017/10/13

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

Copyright©2017 Edison Opto. All rights reserved. No part of publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photo copy, recording or any other information storage and retrieval system, without prior permission in writing from the publisher. The information in this publication are subject to change without notice.

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