PARA LIGHT ELECTRONICS CO., LTD.
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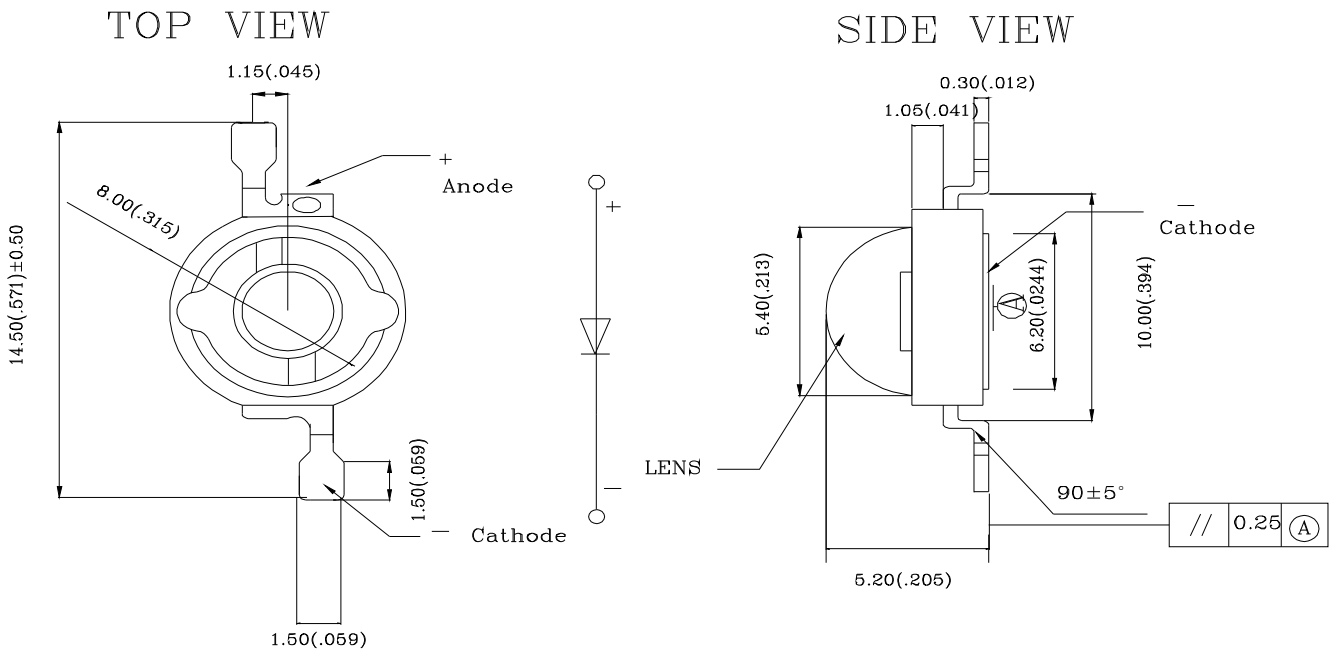
DATA SHEET

PART NO. : EP502IRAL039W

REV : A/3

CUSTOMER'S APPROVAL : _____ DCC : _____

●Package Dimension



Note:

1. All dimensions are in millimeters.
2. Tolerance is ± 0.25mm (.010") unless otherwise noted.

●Features

1. Long operating life.
2. Low voltage DC operated.
3. Instant light (Less than 100NS).
4. RoHS Compliant.
5. Cool beam safe to touch.
6. Compatible to assemble, lead free reflow soldering process.
7. Night surveillance CCD camera illumination.

●Chip Material

1. Dice Material : GaAlAs
2. Light Color : Infrared
3. Lens Color : Water Clear

●Absolute Maximum Rating(Ta=25℃)

Symbol	Parameter	Rating	Unit
IF	DC Forward Current	700	mA
Ipulse	Peak Pulse Current; (tp≦100us, duty cycle=0.25)	1000	mA
VR	Reverse Voltage	5	V
Ir	Reverse Current(VR=5V)	50	uA
Tj	LED Junction Temperature(at IF=700mA)	115	℃
*Topr	Operating Temperature	-30 ~ +100	℃
*Tstg	Storage Temperature	-40 ~ +100	℃
Tsol	Manual Soldering Time at 260℃(Max.)	5	seconds
$R\theta_{J-C}$	Thermal Resistance Junction to Board	6.5	℃/W

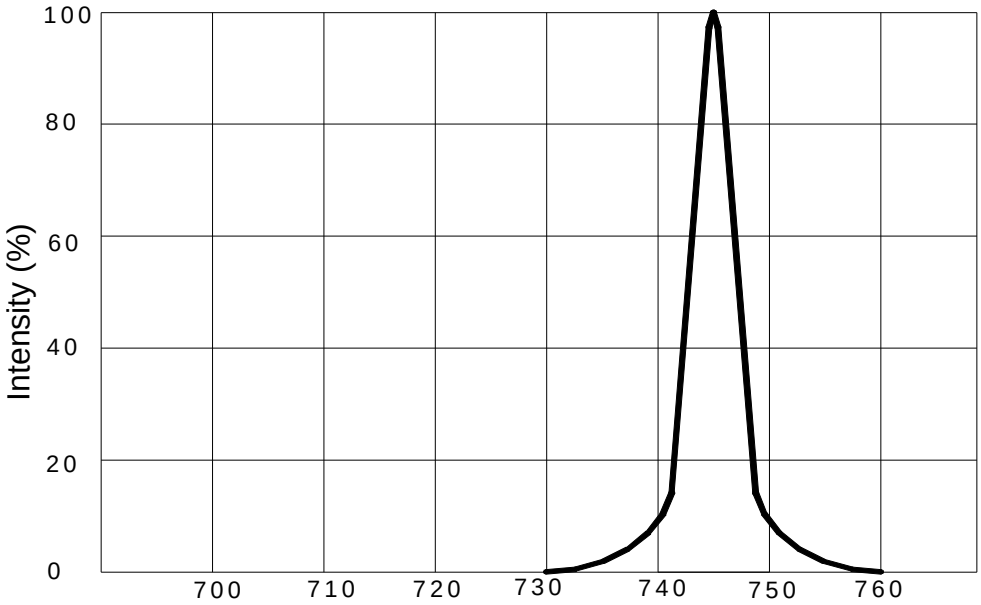
Note :

* : Temperature for using with aluminum board.

●Electro-Optical Characteristic(Ta=25℃)

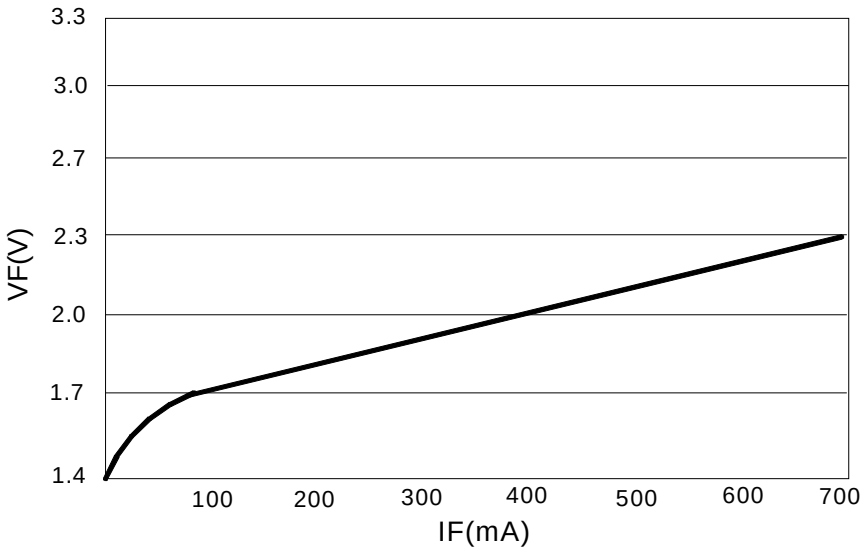
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Radiant Intensity	IE		70		mw/sr	IF=700mA
Viewing Angle	2θ1/2		130		deg	
Peak Emission Wavelength	λp		745		nm	IF=700mA
Spectral Line Half-Width	Δλ		50		nm	
Forward Voltage	VF		2.15		V	IF =700mA
Reverse Current	IR			50	μA	VR = 5V

●Typical Optical and Electrical



Relative Intensity VS Wavelength

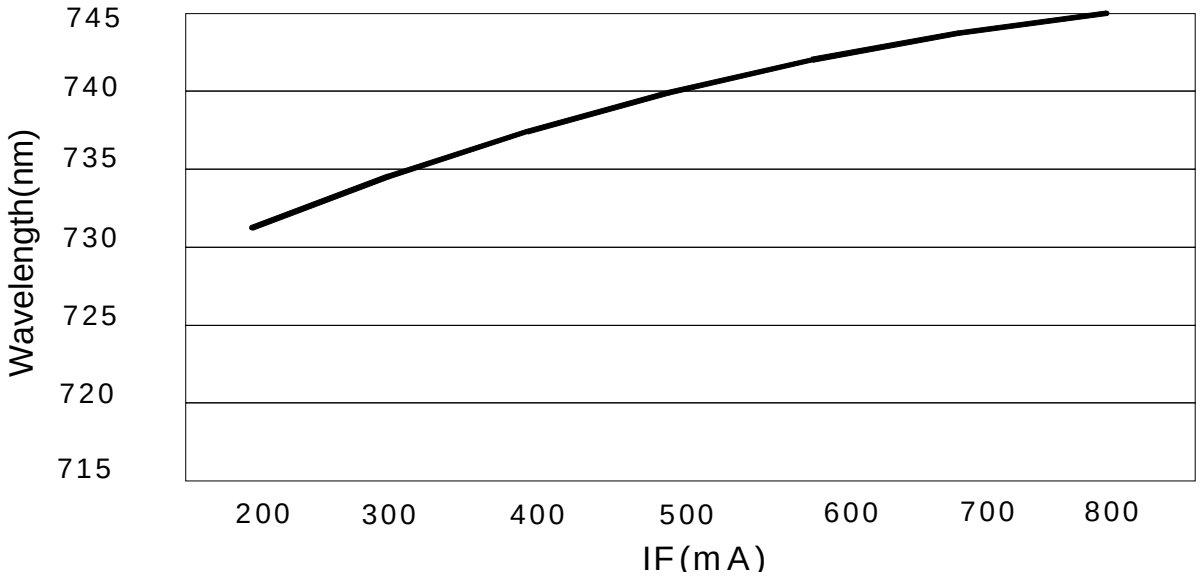
Wavelength(nm)



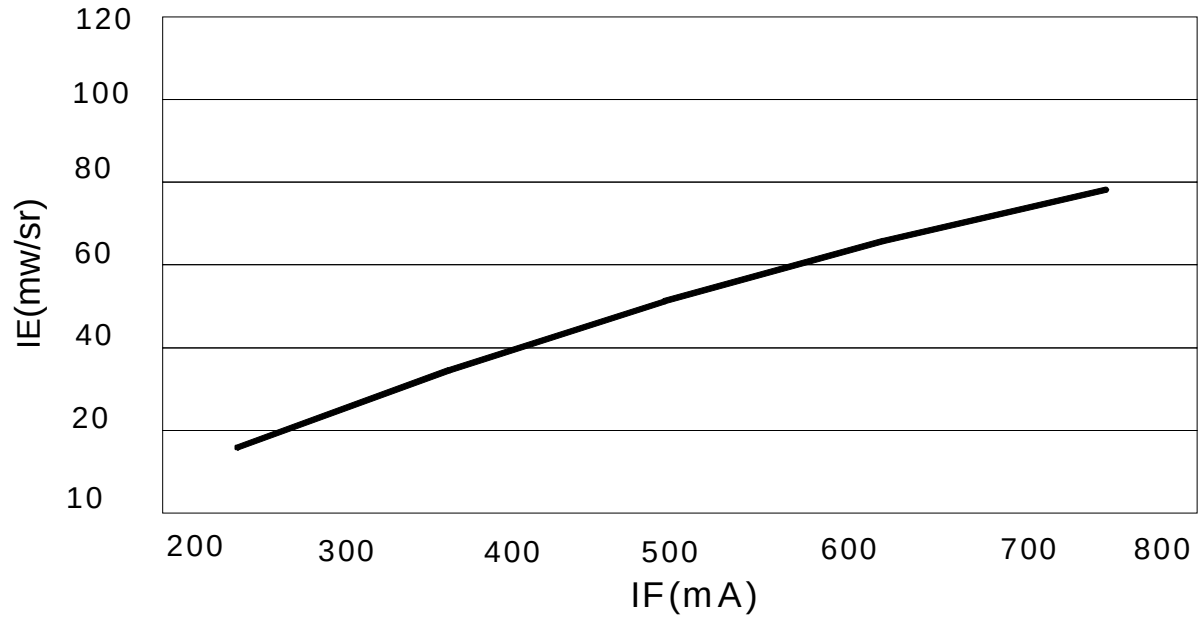
Operating Current VS Forward Voltage

	Enhance Power LED	
PARA light	EP502IRAL039W	REV:A/3

●Typical Optical and Electrical

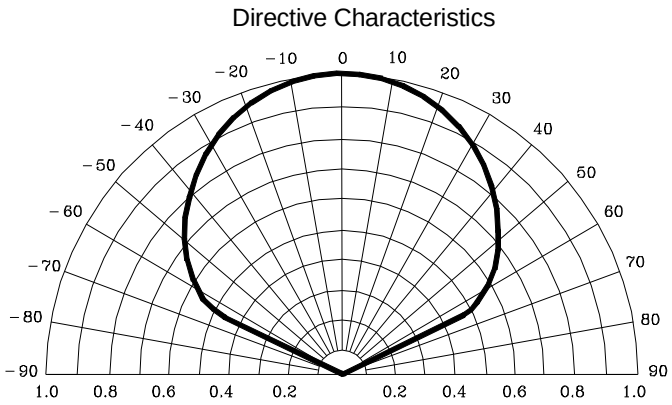


Forward Current VS Wavelength



Forward Current VS IE

●Typical Optical and Electrical



●Bin Code List

Radiant Intensity(IE)(Unit: mw/sr ,IF=700mA)		
Bin Code	Min	Max
X	54	62
Y	62	68
Z	68	74
Z1	74	82
Z2	82	97

Including test tolerance ± 10%

Forward Voltage(VF)(Unit: V ,IF=700mA）		
Bin Code	Min	Max
V1	1.85	1.95
V2	1.95	2.05
V3	2.05	2.15
V4	2.15	2.25
V5	2.25	2.35
V6	2.35	2.45

Including test tolerance±0.1V

Dominant Wavelength (Hue)(Unit: nm , IF=700mA)		
Bin Code	Min	Max
IRA	720	760

Including±2nm test tolerance

●Label Explanation

P/N:	EP502IRAL039W	
QTY:	XXXX	PCS
LOT NO.:	LEM1001001	
BIN NO.:	Y/V3	

PART NO: EP502IRAL039W

LOT NO: L E M 10 1 001
A B C D E F

A---L: Local F: Foreign

B---E: E-power

C---M: For series number

D---Year

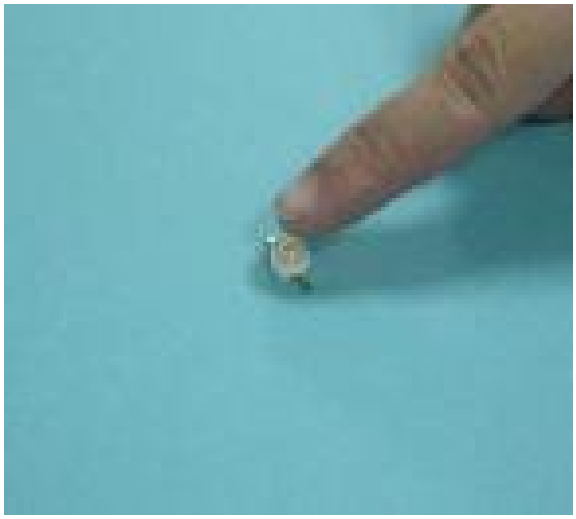
E---Month

F---Spec.

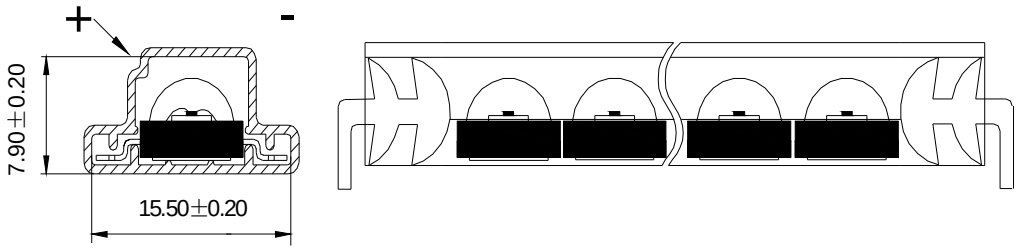
BIN NO: Bin Code

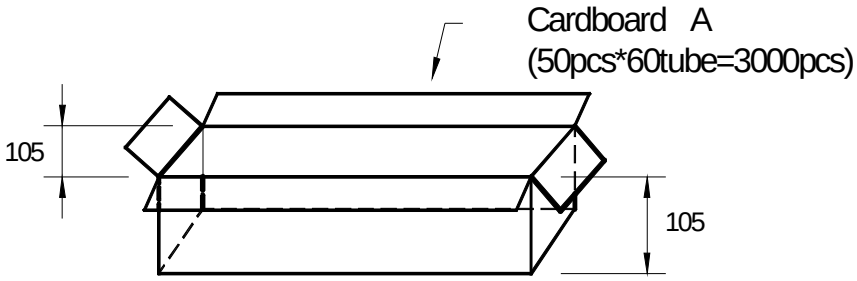
●Caution

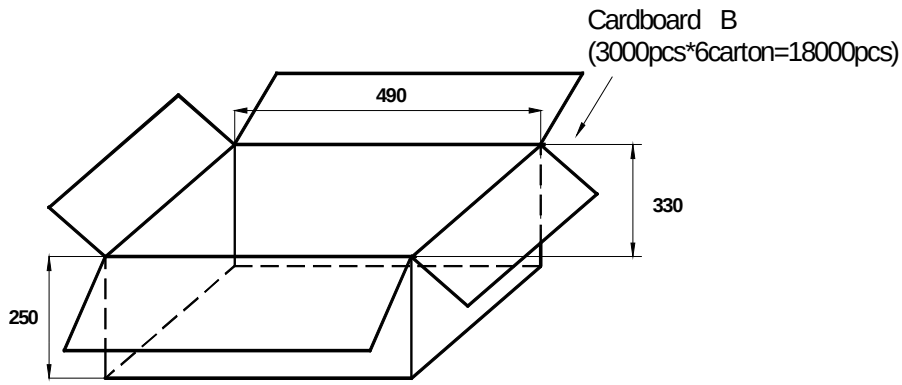
Handling note: Do not touch LED's lens.



●Packing Specification



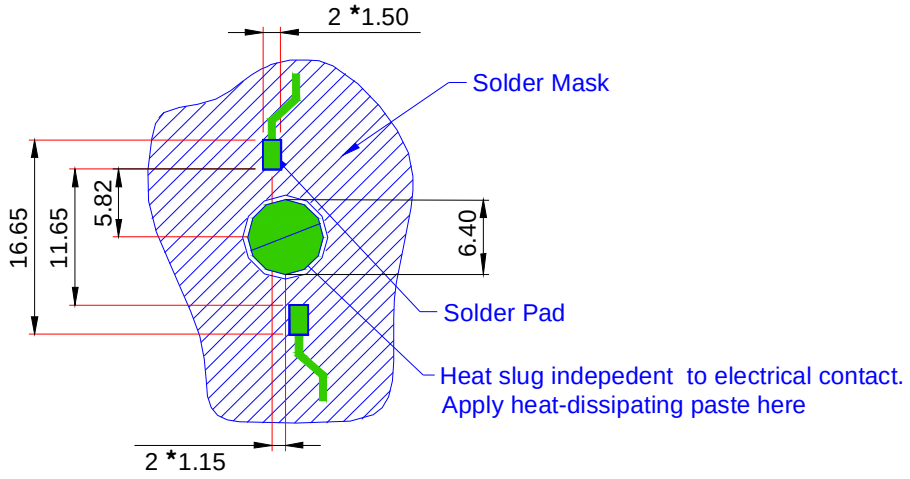




Note:

1. All dimensions are in millimeters.
2. Normal packing Quantity:3000pcs.
3. The carton B contains 6 cartons A at maximum.

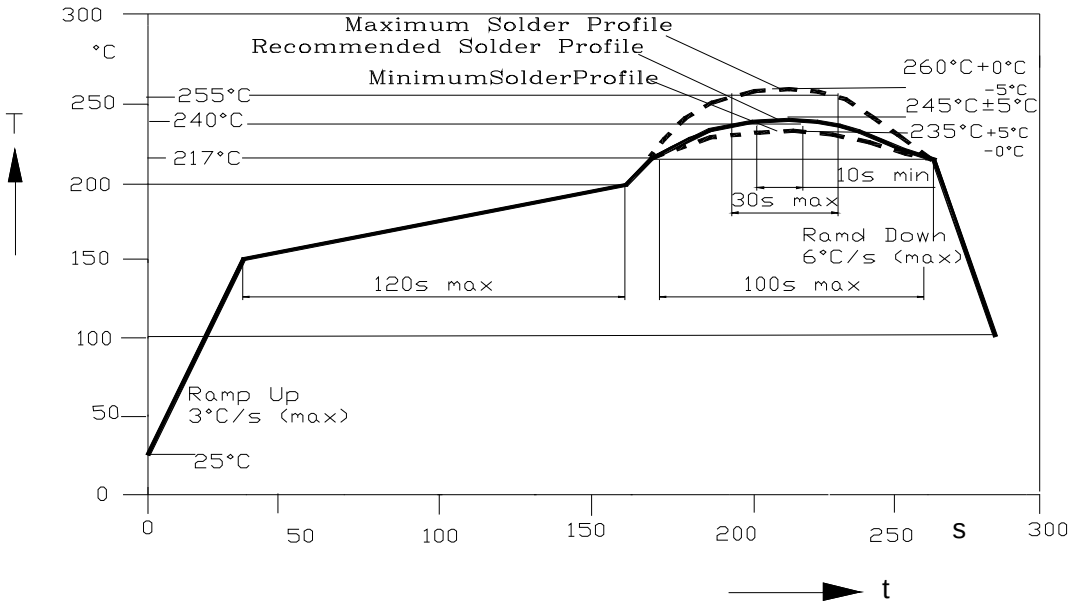
●Suggest Soldering Pad Dimension



Note:

1. All dimensions are in millimeters.
2. The drawings are not to scale.
3. Solder pad can't be connected to slug.

●IR Reflow soldering profile for lead free soldering(J-STD-020C)



●Storage

1. Do not open the moisture proof bag before the devices are ready to use.
2. Before the package is opened, LED should be stored at temperatures less than 30℃ and humidity less than 50%.
3. LED may be stored for 6 months. When the storage time has reached more than 6 months, LED should be stored in a sealed container filled with Nitrogen gas.
4. After the package is opened, LED should be stored at temperatures less than 30℃ and humidity less than 30%.
5. LED should be used within 168 hours (7 days) after the package is opened.
6. Before using LED, baking treatment should be implemented based on the following condition: pre-curing at 60±5℃ for 24 hours.

●E-Power Operating Procedure

1. E-power700 series products should be operated at 700 mA for ideal performance, but not more than 700mA.
2. E-power 700 series products must be used in conjunction with heat-sinking devices. Soldering on Al PCB with mid-connection point while keeping the layout pattern (¢ 19.9mm,thickness2.5mm) is another way to help heat dissipation. Thermal Resistance for aluminum board must be less than 0.65 ℃/W.
3. A non-conductive heat-dissipating paste should be applied between E-power and heat-sinking device.
4. Sufficient thermal management must be applied. Large LED forward current will cause high junction temperature and reduce LED life.

●Reliability Test

Test Item	number	Test Condition	Stress duration	result
Reflow	100pcs	Tsol=260℃,10sec	3 times	No Failure
Temperature Cycle	20pcs	H:+100±5℃ 15mins L：-40±5℃	300 Cycles	No Failure
High Temperature High Humidity Operation	20pcs	Ta=85℃±5℃ RH= 90～95% IF=700mA	500 hours	No Failure
High Temperature High Humidity Storage	20pcs	Ta:65℃±5℃ RH:90～95%RH	1000hours	No Failure
Room Temperature Operation	20pcs	Ta= 25±5℃ IF =700mA	1000hours	No Failure
Low Temperature Operation	20pcs	Ta= -40±5℃ IF=700mA	1000hours	No Failure
High Temperature Operation	20pcs	Ta= 110±5℃ IF=700mA	1000hours	No Failure
Salt Spray	20pcs	Ta=35℃	48 hours	No Failure

Temperature for using with aluminum board, in a good thermal-exchange surroundings.

Failure Criteria:

1. LED are open or shorted,
2. Radiant intensity attenuate difference(1000hours)＞30%,
3. Forward voltage difference(1000hours) ＞20%.

● Part NO. System of E-Power LED

EP 5 02 IR A 039 W

EP	EP：Enhance Power
5	Slug material: 1—Al,2—silicon,3—Fe,4—ceramic, 5—Cu
02	Power： 01—0.5-1W，02—1-2W，03—2-3W,..... 0A-100W
IR	R1: λd =625nm Y1: λd=590nm G1: λd=525nm B1: λd= 460nm IR: λP=850nm A1: λd=615nm W1: white WY: warm white W2: Netural White IR/IR4:850nm IR1:940nm IRA:730nm
A	View Angle: 2: 2*5=10° L: L*5=130° 3: 3*5=15° M: M*5=160° 6 : 6*5=30° C: C*5=60°
039	Series Number
W	Special mark：W:white, B:black