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**DATA SHEET**

**PART NO. : EP501W1L001WS**

**REV : A/4**

CUSTOMER'S APPROVAL : \_\_\_\_\_

DCC : \_\_\_\_\_

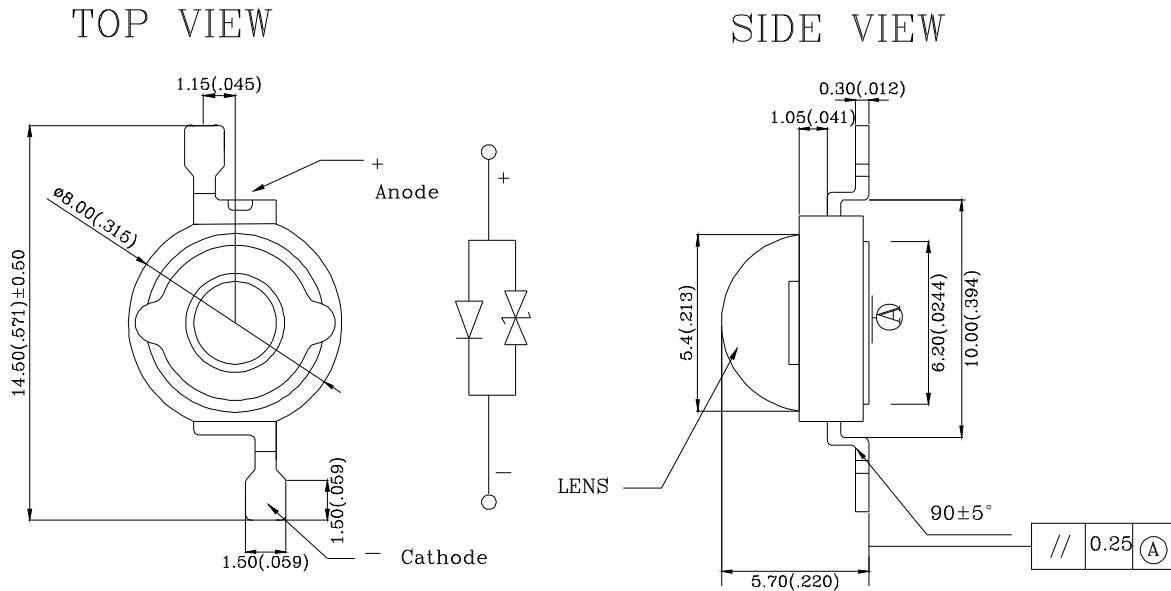


# Enhance Power LED

EP501W1L001WS

REV:A/4

## ●Package Dimension



### Note:

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

## ●Features

1. Long operating life.
2. Low voltage DC operated.
3. Instant light (Less than 100NS).
4. RoHS Compliant.
5. Compatible to assemble, lead free reflow soldering process.
6. No UV emission.
7. The led can withstand the max static level when assembling or operation (HBM) .



## Enhance Power LED

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### ●Chip Material

1. Dice Material : InGaN
2. Light Color : White
3. Lens Color : Water Clear

### ●Absolute Maximum Rating(Ta=25°C)

Symbol	Parameter	Rating	Unit
IF	DC Forward Current	700	mA
I <sub>pulse</sub>	Peak Pulse Current ( $t_p \leq 100\mu s$ , duty cycle=0.25)	1000	mA
VR	Reverse Voltage	5	V
IR	Reverse Current(VR=5V)	50	uA
T <sub>j</sub>	LED Junction Temperature(at IF=350mA)	115	°C
*Topr	Operating Temperature	-30 ~ +100	°C
*Tstg	Storage Temperature	-40 ~ +100	°C
Tsol	Manual Soldering Time at 260°C(Max.)	5	seconds
ESD	ESD Sensitivity (Human Body Model)	2000	V

Note :

\* : Temperature for using with aluminum board.

### ●Electro-Optical Characteristic(Ta=25°C , T<sub>opr</sub>=100ms)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Luminous Flux	$\Phi_V$		115/195		lm	IF=350mA/700mA
Viewing Angle	2 $\theta$ 1/2		130		deg	
Color Temperature	CCT		6000		K	IF=350mA
Forward Voltage	VF		3.2/3.6	3.4/4.0	V	IF =350mA/700mA
Reverse Current	IR			50	$\mu A$	VR = 5V

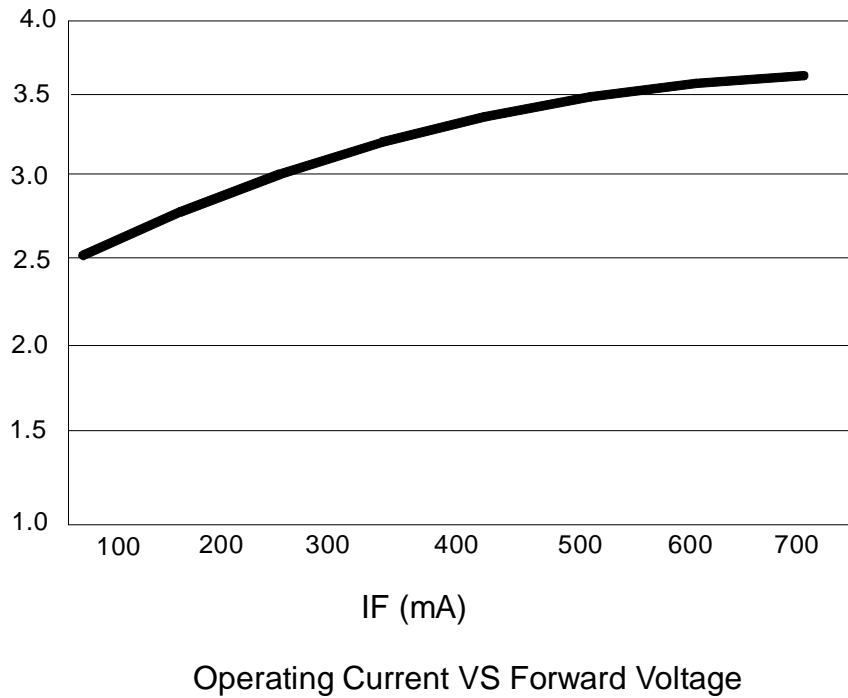
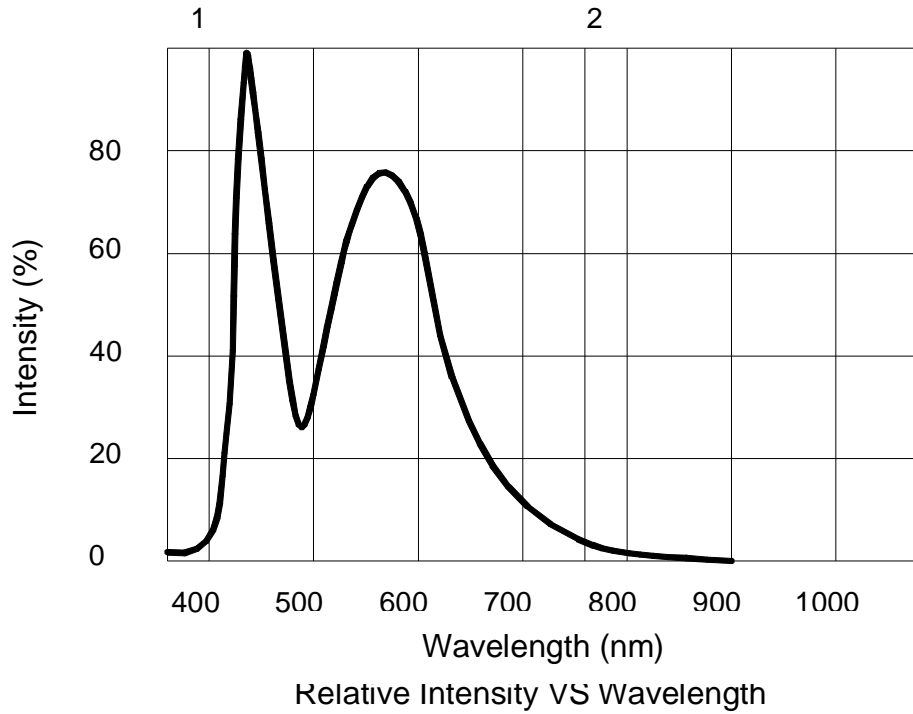


# Enhance Power LED

## EP501W1L001WS

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### • Typical Optical and Electrical



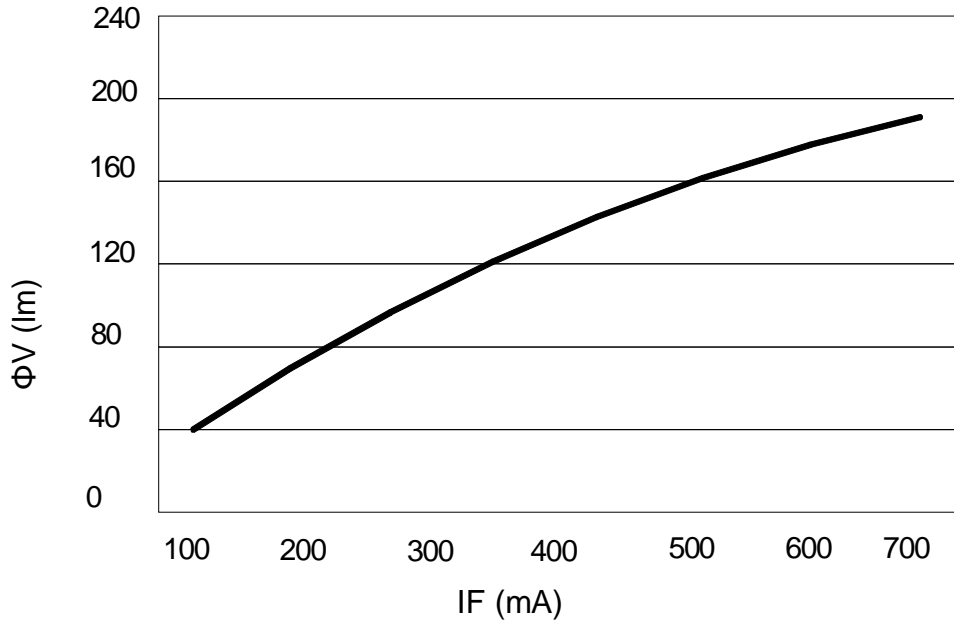


Enhance Power LED

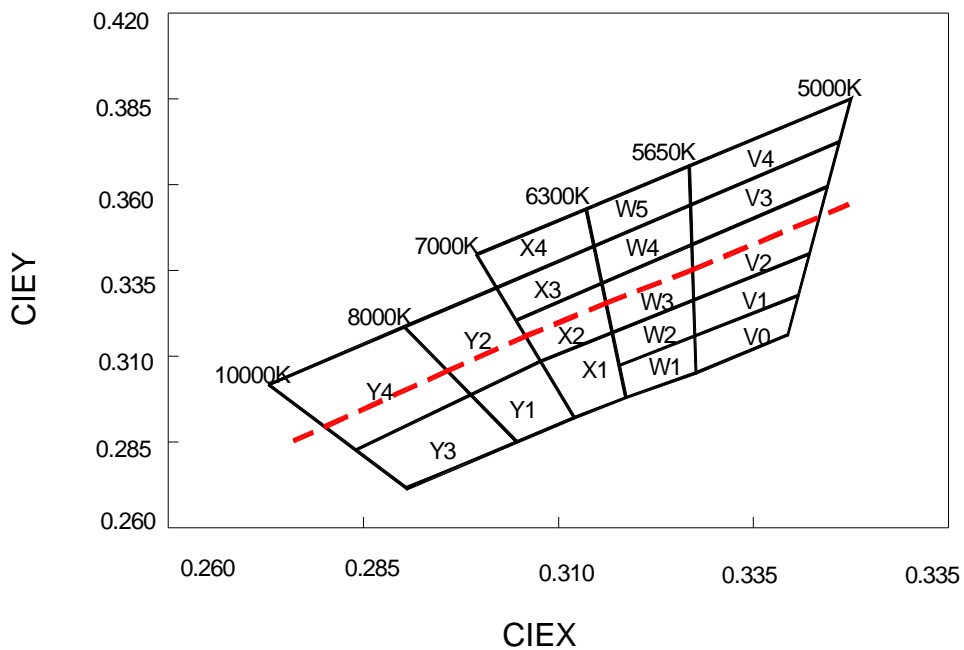
EP501W1L001WS

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• Typical Optical and Electrical



Forward Current VS Luminous Flux



Cool – white Bin Structure



# Enhance Power LED

## EP501W1L001WS

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Group/ CCT(Typ)	X	Y	Group/ CCT(Typ)	X	Y
V0 5300K	0.34335	0.33203	W1 6000K	0.32939	0.32021
	0.34250	0.32080		0.32954	0.31050
	0.32954	0.31050		0.31960	0.30130
	0.32939	0.32002		0.31861	0.31020
V1 5300K	0.32922	0.33133	W2 6000K	0.32922	0.33133
	0.34444	0.34423		0.32939	0.32021
	0.34335	0.33203		0.31861	0.31020
	0.32939	0.32002		0.31747	0.32044
V2 5300K	0.32922	0.33133	W3 6000K	0.32901	0.34509
	0.32901	0.34509		0.32922	0.33133
	0.34578	0.35919		0.31747	0.32044
	0.34444	0.34423		0.31604	0.33322
V3 5300K	0.32901	0.34509	W4 6000K	0.32901	0.34509
	0.32882	0.35692		0.31604	0.33322
	0.34690	0.37174		0.31479	0.34444
	0.34578	0.35919		0.32882	0.35692
V4 5300K	0.32882	0.35692	W5 6000K	0.31479	0.34444
	0.32864	0.36895		0.31362	0.35499
	0.34815	0.38563		0.32864	0.36895
	0.34690	0.37174		0.32882	0.35692

Group/ CCT(Typ)	X	Y	Group/ CCT(Typ)	X	Y
X1 6650K	0.30755	0.31078	Y1 7500K	0.30400	0.28500
	0.31745	0.32044		0.29900	0.30100
	0.31960	0.30130		0.30755	0.31078
	0.31116	0.29319		0.31116	0.29319
X2 6650K	0.30755	0.31078	Y2 7500K	0.29900	0.30100
	0.30517	0.32239		0.29200	0.32100
	0.34335	0.33322		0.30305	0.33271
	0.31747	0.32044		0.30755	0.31078
X3 6650K	0.30517	0.32239	Y3 9000K	0.30400	0.28500
	0.30305	0.33271		0.28992	0.27032
	0.31479	0.34444		0.28297	0.27032
	0.31604	0.33322		0.29900	0.30100
X4 6650K	0.30305	0.33271	Y4 9000K	0.29200	0.32100
	0.30109	0.34224		0.27424	0.30067
	0.30109	0.34224		0.28297	0.28377
	0.31479	0.34444		0.29900	0.30100



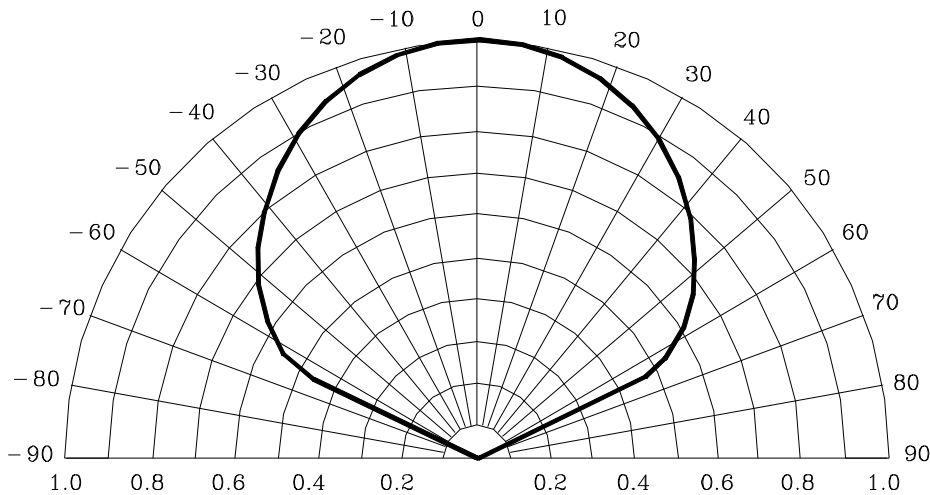
# Enhance Power LED

## EP501W1L001WS

REV:A/4

### Typical Optical and Electrical

typical polar radiation pattern for lambertian



### ●Bin Code List

Luminous Flux ( $\Phi_V$ ), (Unit: lm, $I_F=350\text{mA}$ )		
Bin Code	Min	Max
T	103.5	115
U	115	126.5

Luminous Flux ( $\Phi_V$ ), (Unit: lm, $I_F=700\text{mA}$ )		
Bin Code	Min	Max
Y	175.5	195
Z	195	214.5

Forward Voltage( $V_F$ ), (Unit: V, $I_F=350\text{mA}/700\text{mA}$ )		
Bin Code	Min	Max
V8	3.00	3.20
V9	3.20	3.40
V10	3.40	3.60
V11	3.60	3.80
V12	3.80	4.00

Including test tolerance  $\pm 0.1\text{V}$



Enhance Power LED

EP501W1L001WS

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●Label Explanation

P/N: \_\_\_\_\_ EP501W1L001WS  
 QTY: \_\_\_\_\_ XXXX \_\_\_\_\_ PCS  
 LOT NO.: \_\_\_\_\_ LEM1001001  
 BIN NO.: \_\_\_\_\_ S/W3/6000/V9

PART NO: EP501W1L001WS

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

(1).Handling note: Do not touch LED's lens.





Enhance Power LED

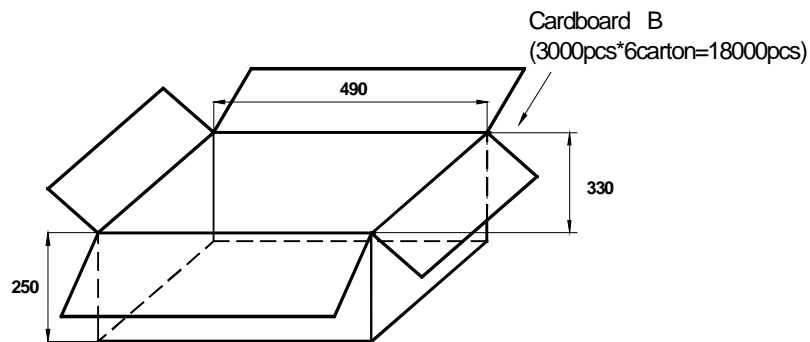
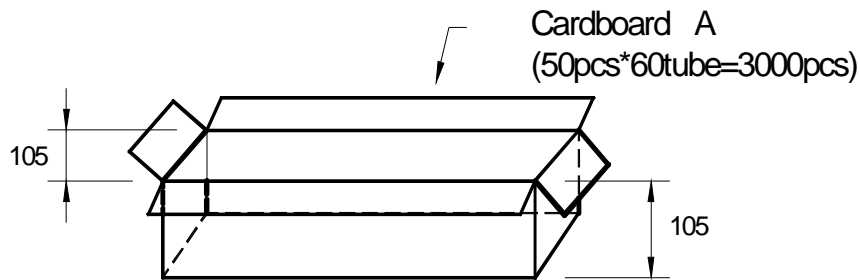
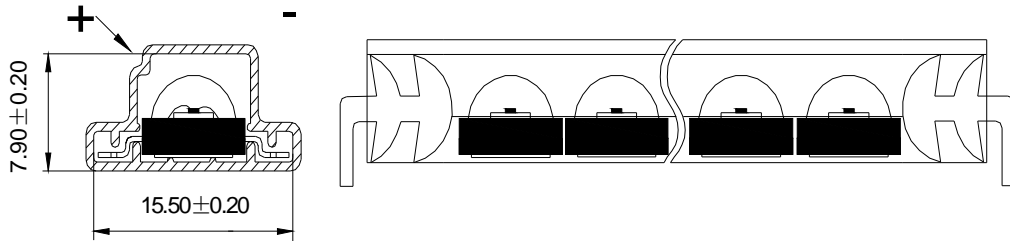
EP501W1L001WS

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(2) Please wear anti-static wrist strap and gloves to prevent ESD damage when handling.



●Packing Specification



Note:

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

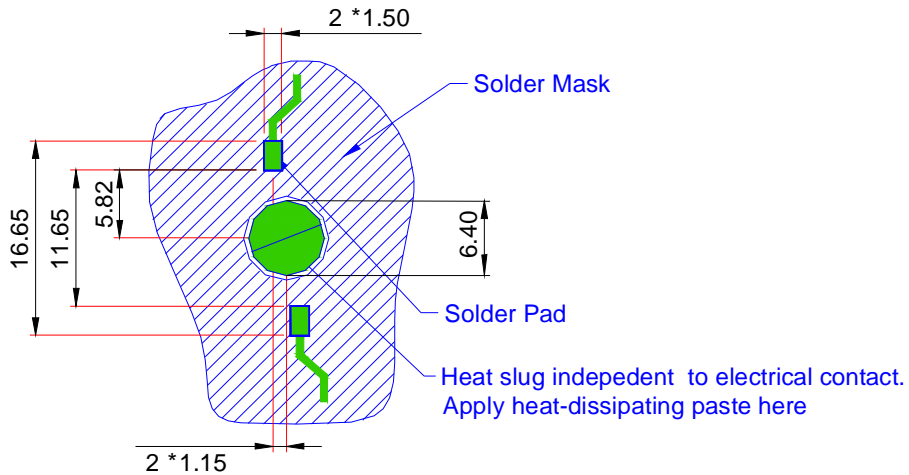


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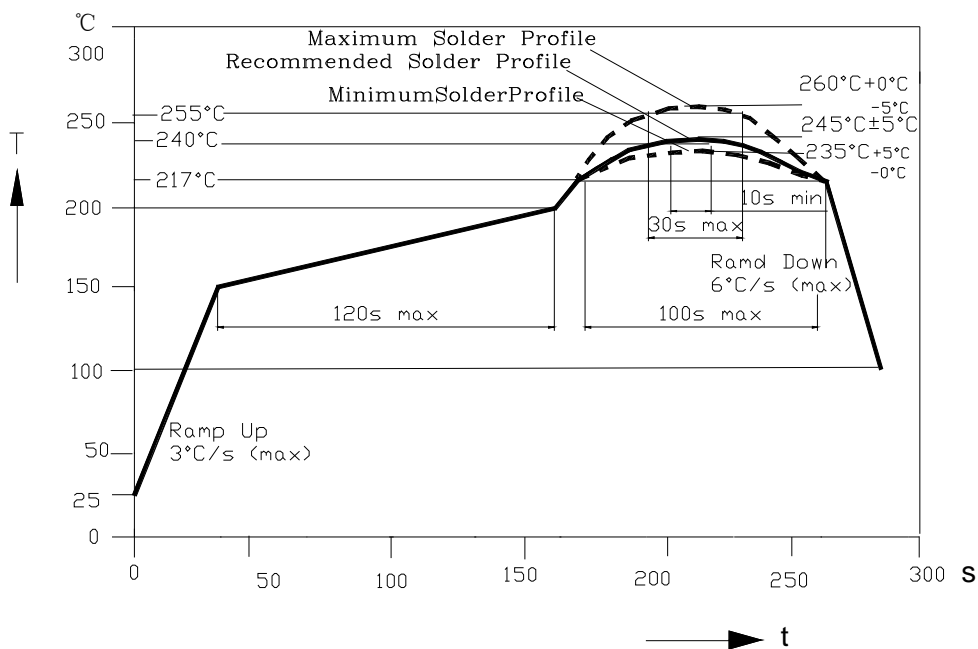
●Suggest Soldering Pad Dimension



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)





## Enhance Power LED

EP501W1L001WS

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### ●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°C 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°C 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°C for 24 hours.

### ●E-Power Operating Procedure

1. E-power 350 series products should be operated at 350 mA for ideal performance, but you can overload at 700mA.
2. E-power 350 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, thickness 5mm) is another way to help heat dissipation. Thermal Resistance for aluminum board must be less than 0.65 °C/W.
3. E-power 350 series products are sensitive to static. Operators must wear static wristband (wireless static wristband is prohibited) and be well grounded while working in the environment with an ionizing air blower. Anti-static requirement should be under ESD 2000V.
4. A non-conductive heat-dissipating paste should be applied between E-power and heat-sinking device.
5. Sufficient thermal management must be applied. Large LED forward current will cause high junction temperature and reduce LED life.



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## ●Reliability Test

Test Item	number	Test Condition	Stress duration	result
Reflow	100pcs	Tsol=260°C,10sec	3 times	No Failure
Temperature Cycle	20pcs	H:+100±5°C 15mins L: -40±5°C	300 Cycles	No Failure
High Temperature High Humidity Operation	20pcs	Ta=85°C±5°C RH= 90~95% IF=350mA	500 hours	No Failure
High Temperature High Humidity Storage	20pcs	Ta:65°C±5°C RH:90~95%RH	1000hours	No Failure
Room Temperature Operation	20pcs	Ta= 25±5°C IF =350mA	1000hours	No Failure
Low Temperature Operation	20pcs	Ta= -40±5°C IF=350mA	1000hours	No Failure
High Temperature Operation	20pcs	Ta= 110±5°C IF=350mA	1000hours	No Failure
Salt Spray	20pcs	Ta=35°C	48 hours	No Failure

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

Failure Criteria:

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



Enhance Power LED

EP501W1L001WS

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● Part NO. System of E-Power LED

EP 5 01 W1 L 001 W S

	S: Street lamp
	Special mark: W:white, B:black
	Series Number
	View Angle: 2: 2*5=10°                      L: L*5=130° 3: 3*5=15°                      M: M*5=160° 6 : 6*5=30°
	R1: λ d=625nm    Y1: λ d=590nm G1: λ d=525nm    B1: λ d= 460nm IR: λ P=850nm    A1: λ d=615nm W1: white            WY: warm white
	Power: 01—1W , 03—3W , 05—5W,..... 0A-100W
	Slug material: 1—Al,2—silicon,3—Fe,4—ceramic, 5—Cu
	EP: Enhance Power