



PARA LIGHT ELECTRONICS CO., LTD.

4F, No.1, Lane 93, Chien Yi Road, Chung Ho City, Taipei, Taiwan
Tel: 886-2-2225-3733 Fax: 886-2-2225-4800
E-mail: para@para.com.tw <http://www.para.com.tw>

DATA SHEET

PART NO. : EP503WYL095WHR

REV : A/1

CUSTOMER'S APPROVAL : _____

DCC : _____

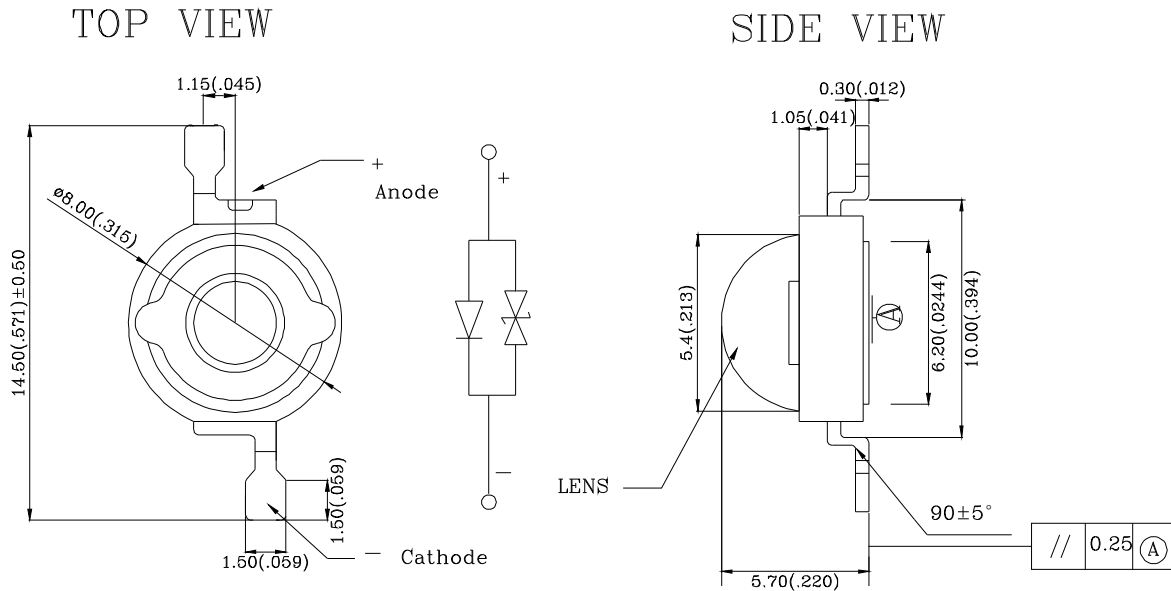


Enhance Power LED

EP503WYL095WHR

REV:A/1

●Package Dimension



Note:

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

●Features

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



Enhance Power LED

EP503WYL095WHR

REV:A/1

●Chip Material

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

●Absolute Maximum Rating(Ta=25°C)

| Symbol | Parameter | Rating | Unit |
|--------------------|--|------------|---------|
| IF | DC Forward Current | 350 | mA |
| I _{pulse} | Peak Pulse Current ($t_p \leq 100\mu s$, duty cycle=0.25) | 700 | mA |
| VR | Reverse Voltage | 5 | V |
| IR | Reverse Current(VR=5V) | 50 | uA |
| T _j | 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_{opr}=100ms)

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Test Condition |
|-----------------------|----------------|------|------|------|------|----------------|
| Luminous Flux | Φ_V | 100 | 110 | | lm | IF=350mA |
| Viewing Angle | 2 θ 1/2 | | 130 | | deg | |
| Color Temperature | CCT | | 3000 | 3150 | K | IF=350mA |
| Forward Voltage | VF | | 3.2 | 3.6 | V | IF =350mA |
| Reverse Current | IR | | | 50 | μA | VR = 5V |
| Color Rendering Index | CRI | 80 | 81 | | Ra | IF=350mA |

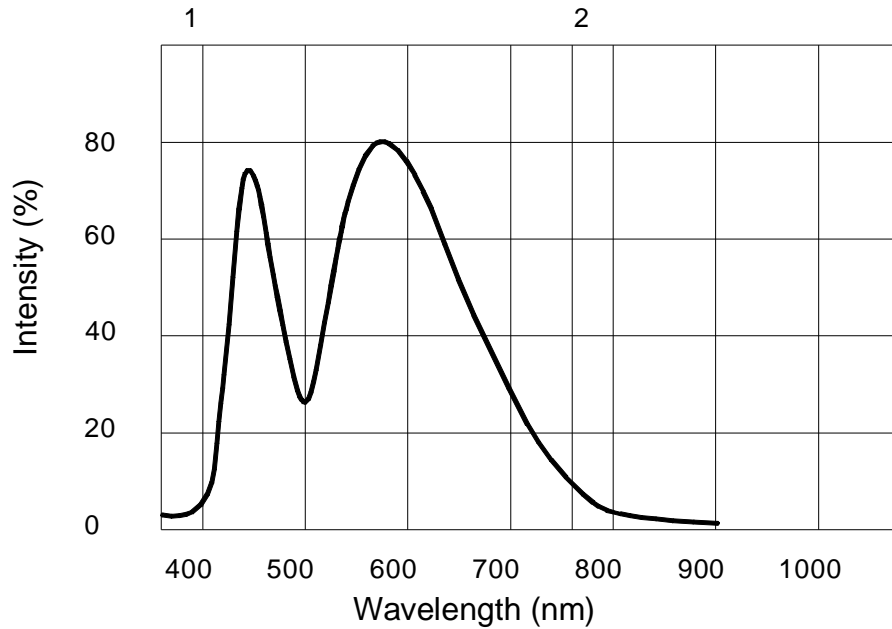


Enhance Power LED

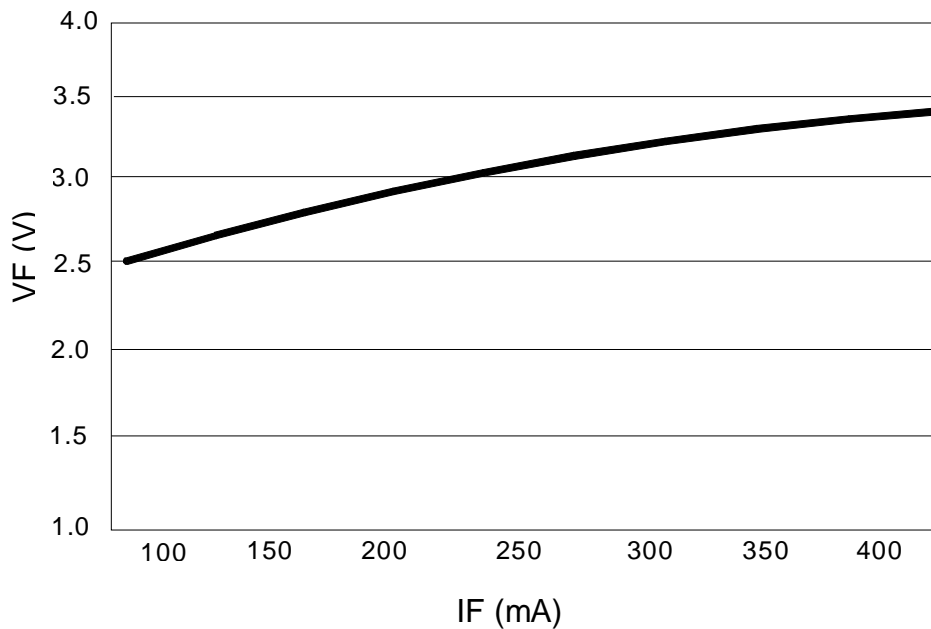
EP503WYL095WHR

REV:A/1

•Typical Optical and Electrical



Relative Intensity VS Wavelength



Forward Current VS Forward Voltage

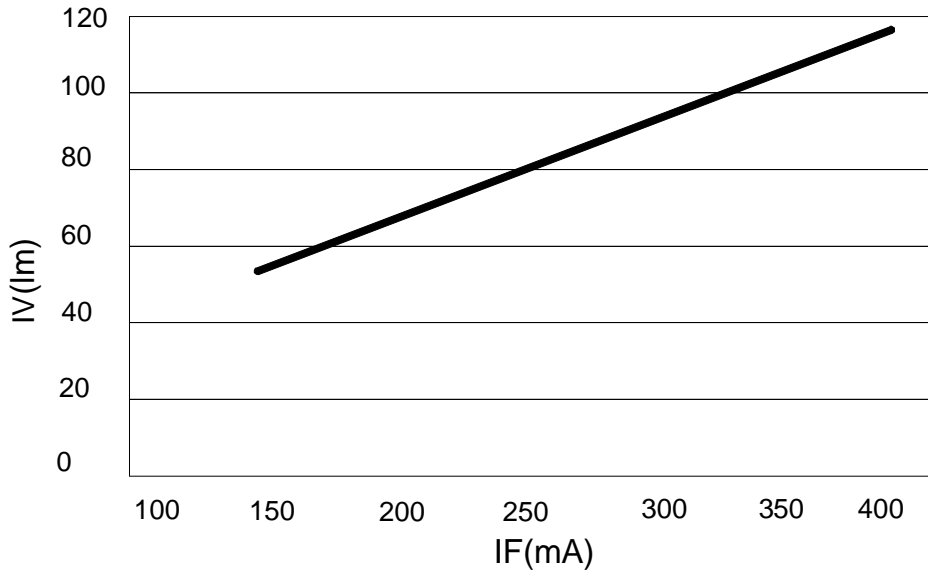


Enhance Power LED

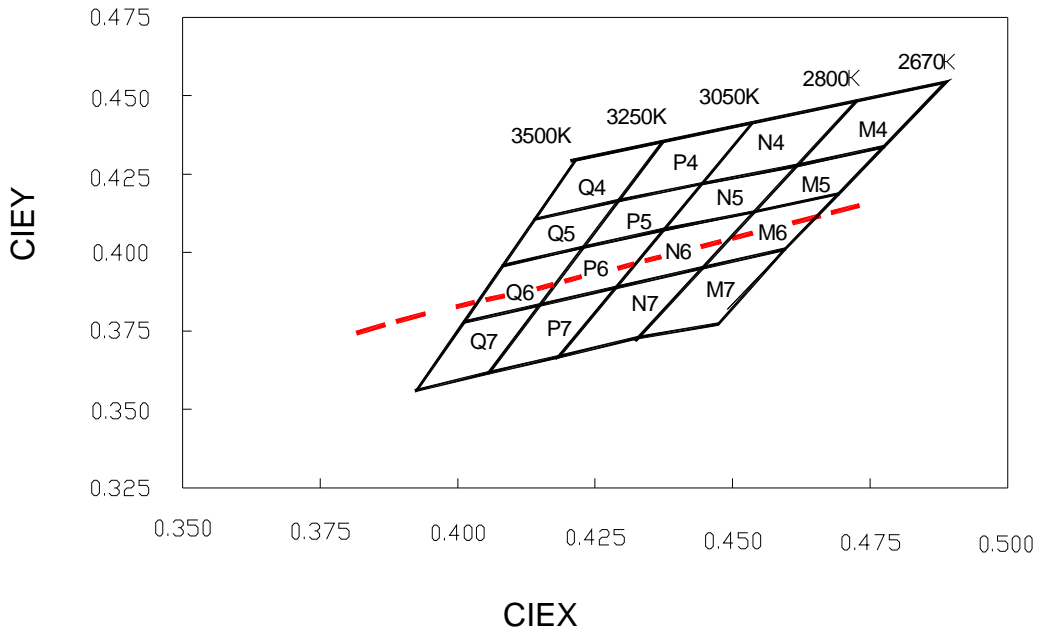
EP503WYL095WHR

REV:A/1

•Typical Optical and Electrical



Forward Current VS IV



Warm—white Bin Structure



Enhance Power LED

EP503WYL095WHR

REV:A/1

| Group/ CCT(Typ) | X | Y | Group/ CCT(Typ) | X | Y |
|--------------------|---------|---------|--------------------|---------|---------|
| M4 2700K | 0.47051 | 0.45083 | P4 3150K | 0.43846 | 0.4404 |
| | 0.48665 | 0.45419 | | 0.45382 | 0.44598 |
| | 0.47673 | 0.43663 | | 0.44564 | 0.42868 |
| | 0.4614 | 0.43333 | | 0.43119 | 0.42339 |
| M5 2700K | 0.4614 | 0.43333 | P5 3150K | 0.43119 | 0.42339 |
| | 0.47673 | 0.43663 | | 0.44564 | 0.42868 |
| | 0.46713 | 0.41963 | | 0.43758 | 0.41163 |
| | 0.45251 | 0.41624 | | 0.42396 | 0.40647 |
| M6 2700K | 0.45251 | 0.41624 | P6 3150K | 0.42396 | 0.40647 |
| | 0.46713 | 0.41963 | | 0.43758 | 0.41163 |
| | 0.45766 | 0.40287 | | 0.42937 | 0.39428 |
| | 0.4436 | 0.39911 | | 0.41649 | 0.389 |
| M7 2700K | 0.4436 | 0.39911 | P7 3150K | 0.42937 | 0.39428 |
| | 0.45766 | 0.40287 | | 0.42212 | 0.37895 |
| | 0.44899 | 0.38752 | | 0.41 | 0.37381 |
| | 0.43559 | 0.38371 | | 0.41649 | 0.389 |
| N4 2900K | 0.45382 | 0.44598 | Q4 3300K | 0.43846 | 0.4404 |
| | 0.47051 | 0.45083 | | 0.43119 | 0.42339 |
| | 0.4614 | 0.43333 | | 0.41478 | 0.4161 |
| | 0.44564 | 0.42868 | | 0.42094 | 0.43262 |
| N5 2900K | 0.4614 | 0.43333 | Q5 3300K | 0.40859 | 0.39953 |
| | 0.45251 | 0.41624 | | 0.41478 | 0.4161 |
| | 0.43758 | 0.41163 | | 0.43119 | 0.42339 |
| | 0.44564 | 0.42868 | | 0.42396 | 0.40647 |
| N6 2900K | 0.43758 | 0.41163 | Q6 3300K | 0.40859 | 0.39953 |
| | 0.42937 | 0.39428 | | 0.42396 | 0.40647 |
| | 0.4436 | 0.39911 | | 0.41649 | 0.389 |
| | 0.45251 | 0.41624 | | 0.40211 | 0.38216 |
| N7 2900K | 0.42937 | 0.39428 | Q7 3300K | 0.41649 | 0.389 |
| | 0.4436 | 0.39911 | | 0.41 | 0.37381 |
| | 0.43559 | 0.38371 | | 0.41 | 0.37381 |
| | 0.42212 | 0.37895 | | 0.39656 | 0.36728 |



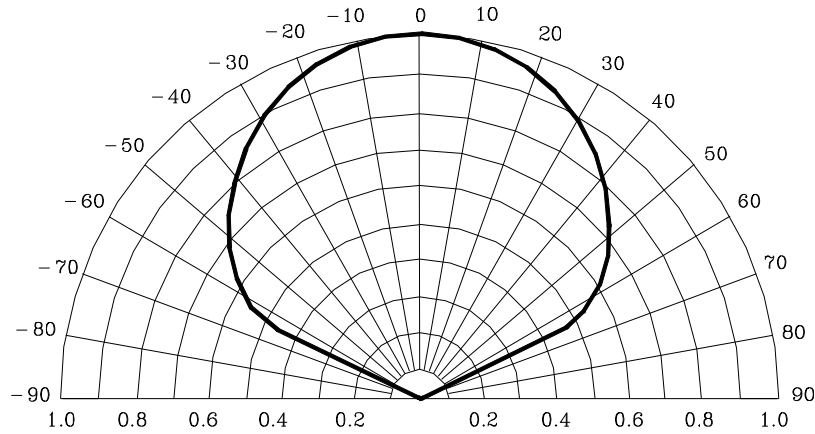
Enhance Power LED

EP503WYL095WHR

REV:A/1

Typical Optical and Electrical

typical polar radiation pattern for lambertian



●Bin Code List

| Luminous Flux (Φ_V), (Unit: lm, $I_F=350\text{mA}$) | | |
|---|-----|-----|
| Bin Code | Min | Max |
| S | 100 | 110 |
| T | 110 | 120 |
| U | 120 | 130 |
| V | 130 | 140 |

Including test tolerance $\pm 10\%$

| Forward Voltage (VF), (Unit: V, $I_F=350\text{mA}$) | | |
|--|------|------|
| Bin Code | Min | Max |
| V8 | 3.00 | 3.20 |
| V9 | 3.20 | 3.40 |
| V10 | 3.40 | 3.60 |

Including test tolerance ± 0.1

| 色温 CCT, (Unit: K, $I_F=350\text{mA}$) | | |
|--|------|------|
| Bin Code | Min | Max |
| CCT1 | 2800 | 2900 |
| CCT2 | 2900 | 3000 |
| CCT3 | 3000 | 3100 |
| CCT4 | 3100 | 3150 |

Including test tolerance $\pm 10\%$



Enhance Power LED

EP503WYL095WHR

REV:A/1

●Label Explanation

P/N: EP503WYL095WHR
QTY: XXXX PCS
LOT NO.: LEM1001001
BIN NO.: T/2900-3000/V10

PART NO: EP503WYL095WHR

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.





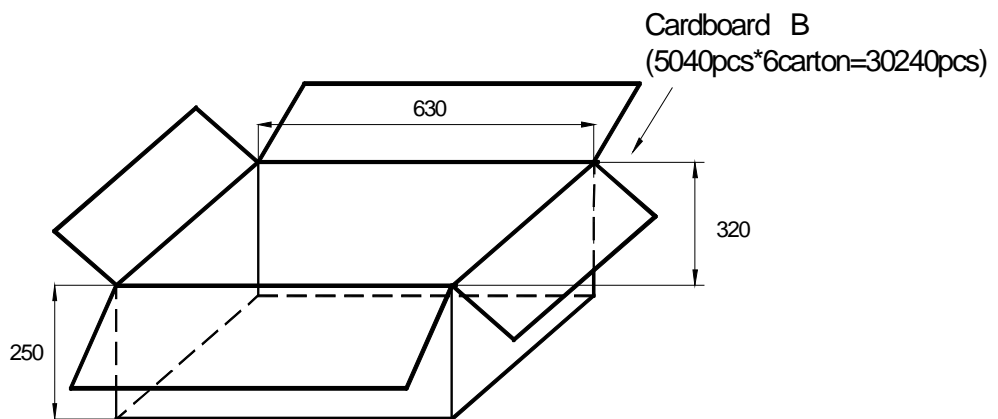
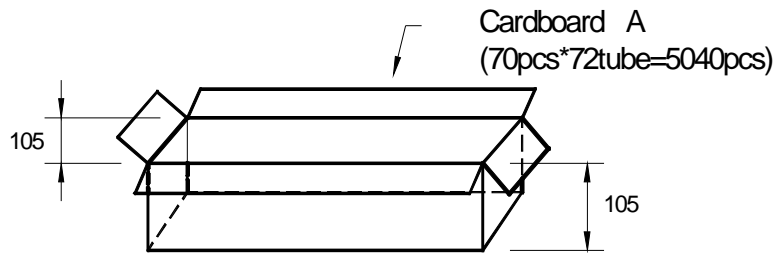
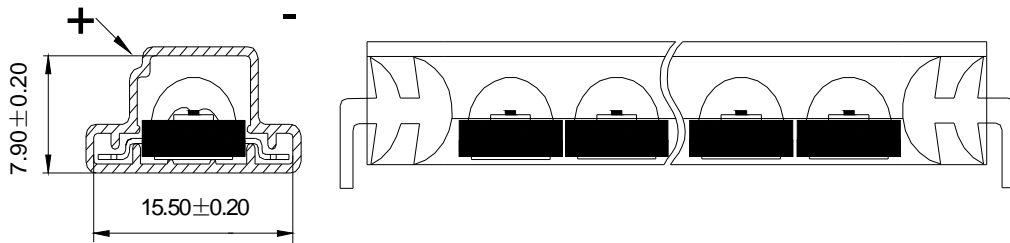
Enhance Power LED
EP503WYL095WHR

REV:A/1

(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: 5040 pcs.
3. The carton B contains 6 cartons A at maximum.

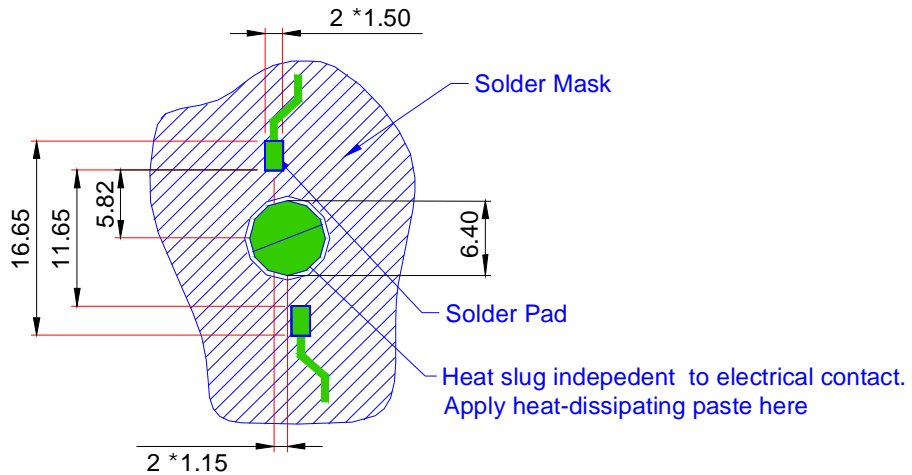


Enhance Power LED

EP503WYL095WHR

REV: A/1

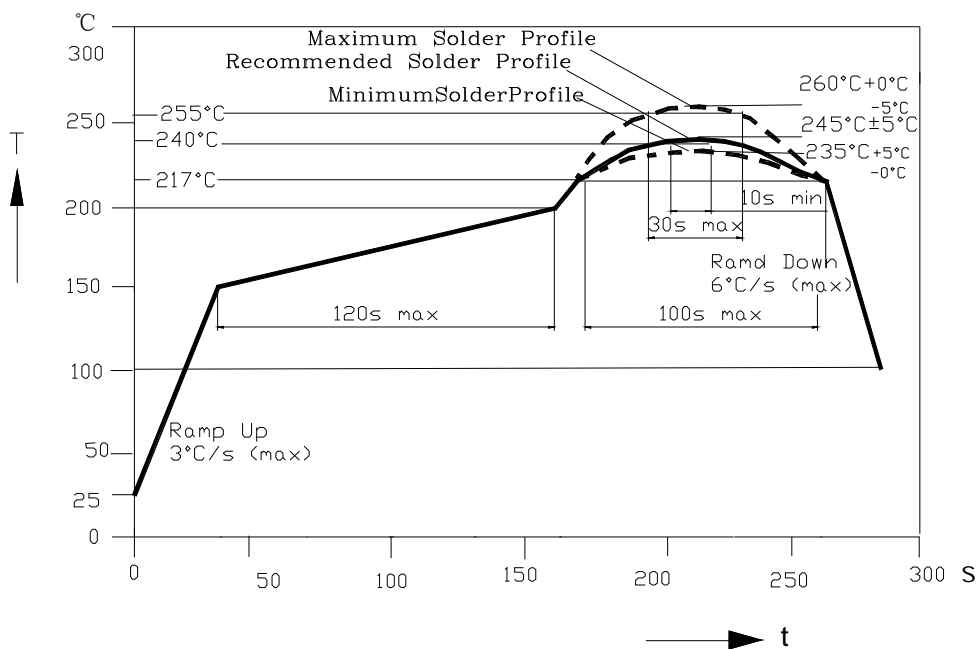
●Suggest Soldering Pad Dimension



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

EP503WYL095WHR

REV:A/1

●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 not more than 350mA.
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 2.5mm) 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.



Enhance Power LED

EP503WYL095WHR

REV:A/1

●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%.

Note:

1. These testings are going on.
2. The thermal resistance testing is going on.



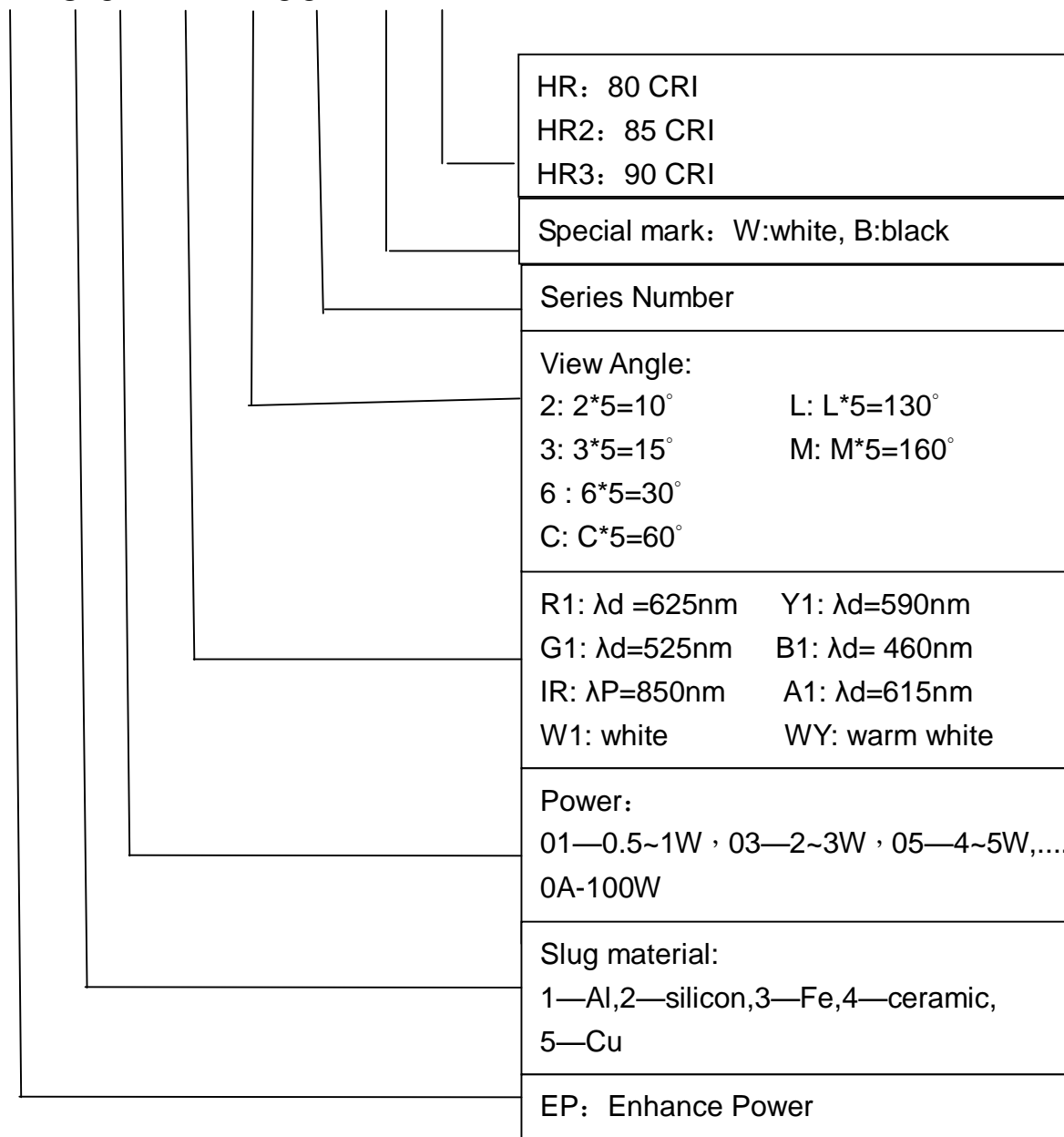
Enhance Power LED

EP503WYL095WHR

REV:A/1

● Part NO. System of E-Power LED

EP 5 01 WY L 002 W HR



HR: 80 CRI
HR2: 85 CRI
HR3: 90 CRI

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°
C: C*5=60°

R1: λd =625nm Y1: λd=590nm
G1: λd=525nm B1: λd= 460nm
IR: λP=850nm A1: λd=615nm
W1: white WY: warm white

Power:
01—0.5~1W , 03—2~3W , 05—4~5W,.....
0A-100W

Slug material:
1—Al, 2—silicon, 3—Fe, 4—ceramic,
5—Cu

EP: Enhance Power