

VISIBLE LIGHT PRODUCTS SPECIFICATION

HPR40E-19K50xWx



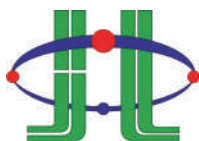
High Power 50W LED

| Drawn by | Checked by | Approved by |
|----------|------------|-------------|
| | | |
| | | |



DATE:2010/10/15

REV:F



HUEY JANN ELECTRONICS INDUSTRY CO., LTD.

No.27 Line 466 Sec.2,Cannng-nan Rd. Wu-chi Town Taichung Shien, Taiwan, R.O.C.

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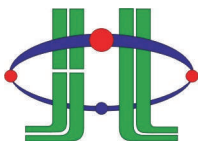
HUEY JANN High Power 50W LED is made of hi-eff AS/TS GaInN chips with precise package technique which makes excellent heat dissipation to reach the advantages of high luminous efficiency, low decay, and long endurance. Now we have these colors available: red, green, blue, white, yellow .

☰ **FEATERUS**

- Instant light
- Long operating life
- Superior ESD defense
- Low voltage DC operated
- More energy efficient than incandescent and most halogen lamps

☰ **TYPICAL APPLICATIONS**

- Architectural detail lighting
- Portable flashlight
- Reading lights
- Medical applications
- LCD backlights
- Beacon lights
- Decoration lights



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Explanation of Part Number:

H P R 40 E - 1 9K 50 xWx
① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

1.H: Huey Jann

2.P: High power LED Type

3.Shape distinguish:

4.Identification no:

R: Reflector type

5.Lead frame type

6.Lens appearance:

1:White Diffusion

7.Color number:

8.Power type:

3: Green

4: Yellow

50: 50W

5: Red

8: Blue

9: White

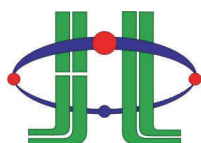
9.Color kind:

BWx: Cool White

Wx: Pure White

NWx: Nature White

YWx: Warm White



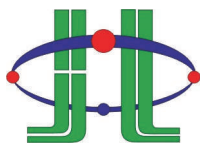
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DEVICES

| Item | Lens Color | Dice Source | Color Temperature (°K) | |
|-------------------|------------------|-------------|------------------------|--------------|
| HPR40E-19K50BW | Yellow Diffusion | GaInN/GaN | 8000 | Cool White |
| HPR40E-19K50BWG | | | | |
| HPR40E-19K50BWGAA | | | | |
| HPR40E-19K50BWGBA | | | | |
| HPR40E-19K50W | | | 6000 | Pure White |
| HPR40E-19K50WG | | | | |
| HPR40E-19K50WGAA | | | | |
| HPR40E-19K50WGBA | | | | |
| HPR40E-19K50NW | | | 4000 | Nature White |
| HPR40E-19K50NWG | | | | |
| HPR40E-19K50NWGAA | | | | |
| HPR40E-19K50NWGBA | | | | |
| HPR40E-19K50YW | | | 3300 | Warm white |
| HPR40E-19K50YWG | | | | |
| HPR40E-19K50YWGAA | | | | |
| HPR40E-19K50YWGBA | | | | |



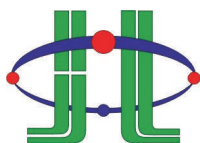
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☰ DEVICES FOR CRI

| Item | Lens Color | Dice Source | Color Temperature (°K) | |
|--------------------------|------------------|-------------|------------------------|------|
| HPR40E-19K50NW/CRI 90 | Yellow Diffusion | GaInN/GaN | Nature White | 4000 |
| HPR40E-19K50NWG/CRI 90 | | | | |
| HPR40E-19K50NWGAA/CRI 90 | | | | |
| HPR40E-19K50NWGBA/CRI 90 | | | | |
| HPR40E-19K50YW/CRI 90 | | | Warm white | 3300 |
| HPR40E-19K50YWG/CRI 90 | | | | |
| HPR40E-19K50YWGAA/CRI 90 | | | | |
| HPR40E-19K50YWGBA/CRI 90 | | | | |

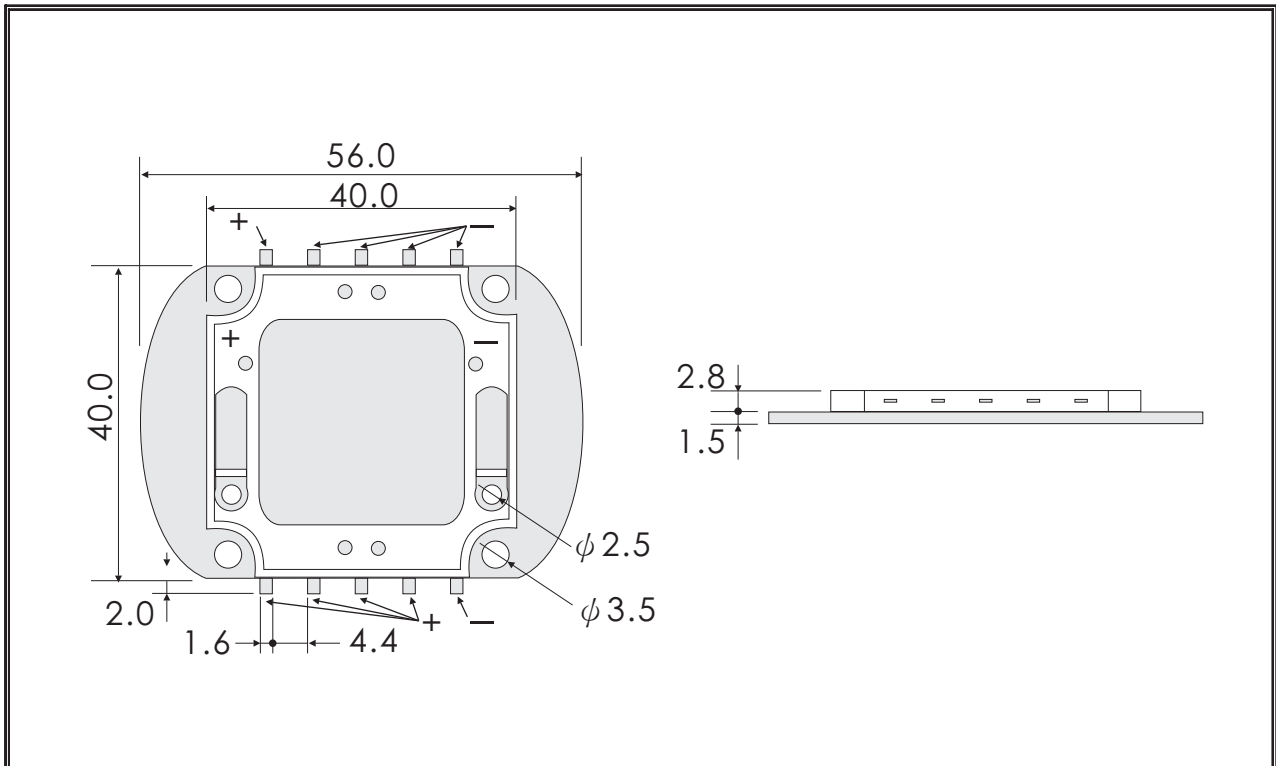


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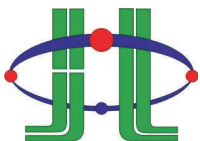
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PACKAGE DIMENSIONS:



NOTE:

- 1.All dimensions are in millimeter.
- 2.Lead spacing is measured where the lead emerge from the package.
- 3.protruded resin under flange is 1.5mm max.
- 4.specifications are subject to change without notice.
- 5.Tolerance is 0.3mm unless otherwise noted.
- 6.Driving LED without heat sinking device is forbidden.
- 7.It is strongly recommended that the temperature of lead be not higher than 55°C.
- 8.Proper current derating must be observed to maintain junction temperature below the maximum.
- 9.LEDs are not designed to be driven in reserve bias.
10. Warps the degree 0.5mm.



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ABSOLUTE MAXIMUM RATINGS

TA=25°C

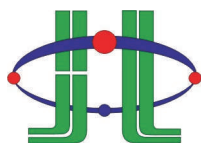
| PARAMETER | SYMBOL | MAX. RATING | UNIT |
|---|--------|-------------|------|
| Continuous Forward Current | IF | 1.75 | A |
| Peak Forward Current *1 | IFM | 2 | A |
| Electrostatic Discharge (HBM) | ESD | 4000 | V |
| LED Junction Temperature | Tj | 135 | °C |
| Operating Temperature | Topr | -40 ~ +110 | °C |
| Storage Temperature | Tstg | -40 ~ +120 | °C |
| Manual Soldering Temperature 260 °C for 5 seconds max. *2 | | | |

*1.Duty Ratio=0.1%,Pulse Width=10us.

*2.Iron soldering high temperature will not cause damage to the dice. But be aware of the high temperature will not only make the epoxy soften but also cause the lead moving and the gold wire broken and even open. So before returning to the normal temperatures PLEASE AVOID any serious pressure on the top of epoxy and lead.

*3. We suggest using PWM (Pulse Width Modulation) for driving.

*4. It is recommended to use series as there are several 3pcs. If there are more than 5pcs, please use product with higher power.



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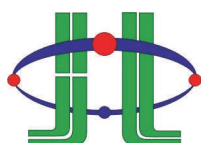
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ELECTRIC-OPTICAL CHARACTERISTICS

TA=25°C

| PARAMETER | | SYMBOL | TEST CONDITION | MIN | TYP | MAX | UNIT |
|--|--------------------|-------------------------|----------------|-----|-----|-----|-------|
| View Angle of Half Power | | 2θ1/2 | IF=1750mA | | 120 | | deg |
| Forward Voltage | HPR40E-19K50xWx | VF | | | 28 | 32 | V |
| | HPR40E-19K50xWGx | | | | 27 | 32 | |
| | HPR40E-19K50xWGAAx | | | | 28 | 32 | |
| | HPR40E-19K50xWGBAx | | | | 28 | 32 | |
| Color Rendering Index For 4000°K | | CRI | | | 75 | | |
| Color Rendering Index For 3300°K | | CRI | | | 70 | | |
| Color Rendering Index For CRI 90 | | CRI | | | 90 | | |
| Thermal Resistance Junction To Case | | $R_{\theta_{J-C}}$ | | | 0.8 | | °C/W |
| Temperature Coefficient Of Forward Voltage | | $\Delta V_F / \Delta T$ | | | -2 | | mV/°C |



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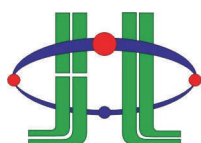
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ELECTRIC-OPTICAL CHARACTERISTICS FOR LUMINOUS INTENSITY

TA=25°C

| ITEM | SYMBOL | TEST CONDITION | MIN | TYP | MAX | UNIT |
|-------------------|--------|----------------|-----|------|-----|------|
| HPR40E-19K50BW | IV | IF=1750mA | | 3250 | | lm |
| HPR40E-19K50BWG | | | | 3735 | | |
| HPR40E-19K50BWGAA | | | | 4100 | | |
| HPR40E-19K50BWGBA | | | | 4340 | | |
| HPR40E-19K50W | | | | 3250 | | |
| HPR40E-19K50WG | | | | 3735 | | |
| HPR40E-19K50WGAA | | | | 4100 | | |
| HPR40E-19K50WGBA | | | | 4340 | | |
| HPR40E-19K50NW | | | | 3175 | | |
| HPR40E-19K50NWG | | | | 3650 | | |
| HPR40E-19K50NWGAA | | | | 3900 | | |
| HPR40E-19K50NWGBA | | | | 4120 | | |
| HPR40E-19K50YW | | | | 2925 | | |
| HPR40E-19K50YWG | | | | 3360 | | |
| HPR40E-19K50YWGAA | | | | 3650 | | |
| HPR40E-19K50YWGBA | | | | 3860 | | |

*Tolerance: 15% HUEY-JANN measuring equipment : EXELTRON 2001. 2.S370 made by U.D.T.



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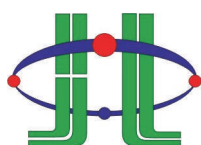
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ELECTRIC-OPTICAL CHARACTERISTICS FOR LUMINOUS INTENSITY FOR CRI

TA=25°C

| ITEM | SYMBOL | TEST CONDITION | MIN | TYP | MAX | UNIT |
|--------------------------|--------|----------------|-----|------|-----|------|
| HPR40E-19K50NW/CRI 90 | IV | IF=1750mA | | 2620 | | lm |
| HPR40E-19K50NWG/CRI 90 | | | | 3010 | | |
| HPR40E-19K50NWGAA/CRI 90 | | | | 3150 | | |
| HPR40E-19K50NWGBA/CRI 90 | | | | 3330 | | |
| HPR40E-19K50YW/CRI 90 | | | | 2410 | | |
| HPR40E-19K50YWG/CRI 90 | | | | 2770 | | |
| HPR40E-19K50YWGAA/CRI 90 | | | | 2950 | | |
| HPR40E-19K50YWGBA/CRI 90 | | | | 3120 | | |

*Tolerance: 15% HUEY-JANN measuring equipment : EXELTRON 2001. 2.S370 made by U.D.T.



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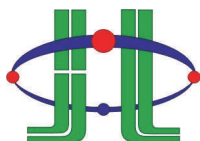
RELIABILITY TEST

➤ Endurance Test

| Test Item | Reference Standard | Test Conditions | Result |
|--|---|---|--------|
| Operation Life | MIL-STD-750:1026 MIL-STD-883:1005 JIS-C-7021 :B-1 | Connect with a power if=1750mA Ta=Under room temperature Test Time=1,000hrs | 0/22 |
| High Temperature High Humidity Storage | MIL-STD-202:103B JIS-C-7021 :B-11 | Ta=+85°C 5°C RH=80% ~ 85% Test Time=1,000hrs | 0/22 |
| High Temperature Storage | MIL-STD-883:1008 JIS-C-7021 :B-10 | High Ta=+120°C 5°C Test Time=1,000hrs | 0/22 |
| Low Temperature Storage | JIS-C-7021 :B-12 | Low Ta=-40°C 5°C Test Time=1,000hrs | 0/22 |

*Failure Criteria:

1. VF arise \geq 10%
2. IV decline \geq 30%
3. A failure is an LED that is open or shorted



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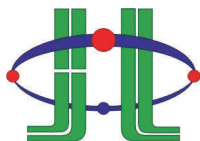
RELIABILITY TEST

➤ Environmental Test

| Test Item | Reference Standard | Test Conditions | Result |
|---------------------|---|--|--------|
| Temperature Cycling | MIL-STD-202:107D MIL-STD-750:1051 MIL-STD-883:1010 JIS-C-7021 :A-4 | -40°C ~ +25°C ~ +85°C ~ +25°C 60min 20min 60min 20min Test Time=200cycle | 0/22 |
| Thermal Shock | MIL-STD-202:107D MIL-STD-750:1051 MIL-STD-883:1010 | -40°C 5°C ~ +110°C 5°C 20min 20min Test Time=200cycle | 0/22 |

*Failure Criteria:

1. VF arise \geq 10%
2. IV decline \geq 30%
3. A failure is an LED that is open or shorted

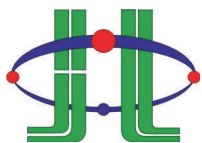
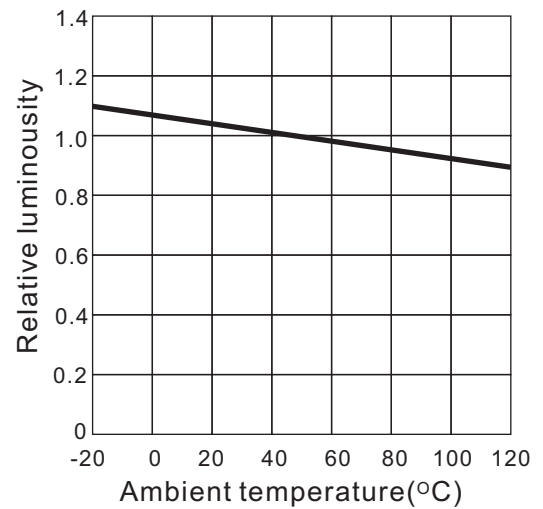
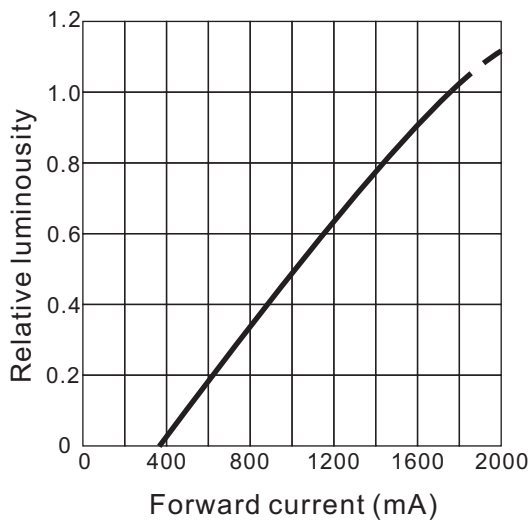
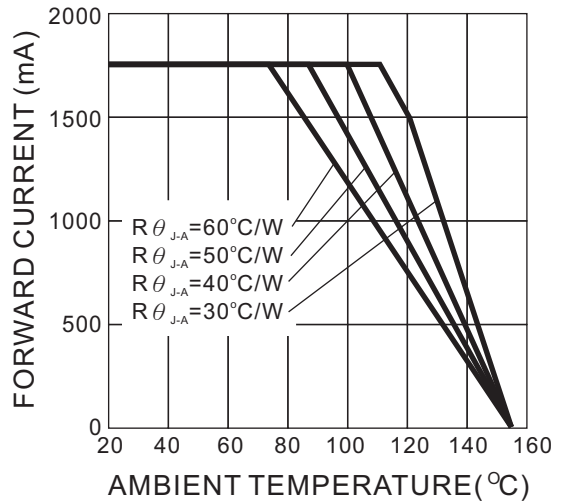
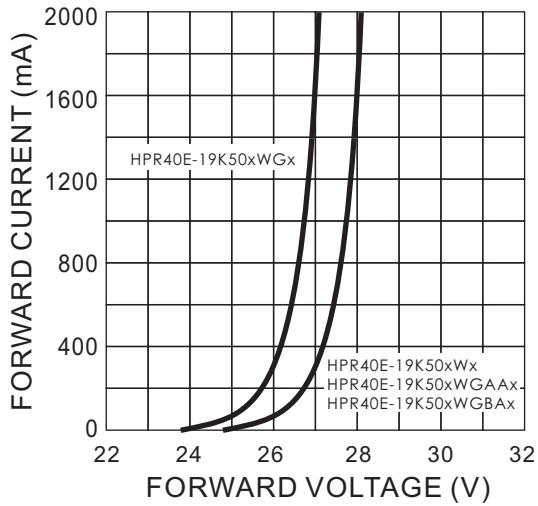


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TYPICAL ELECTRICAL OPTICAL CHARACTERISTICS CURVES

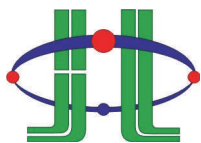
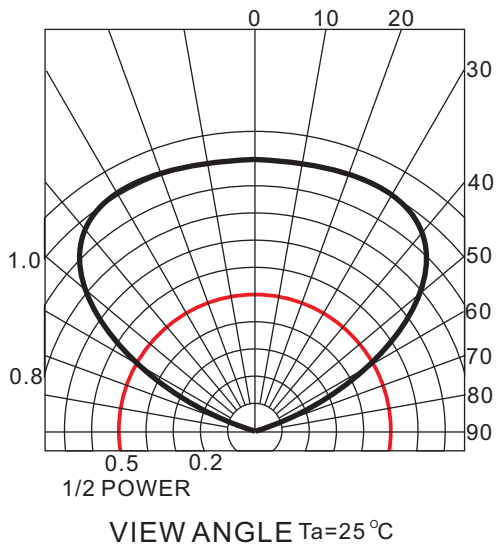
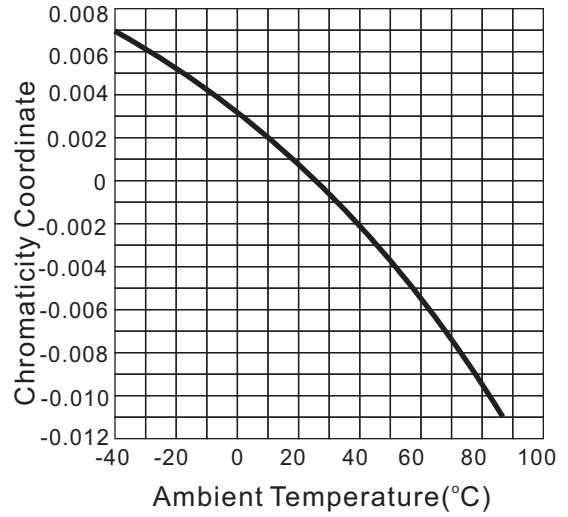
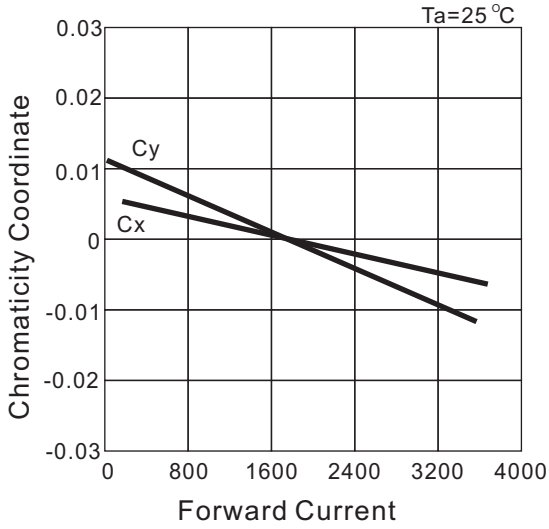


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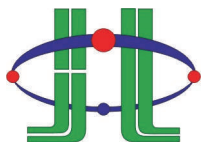
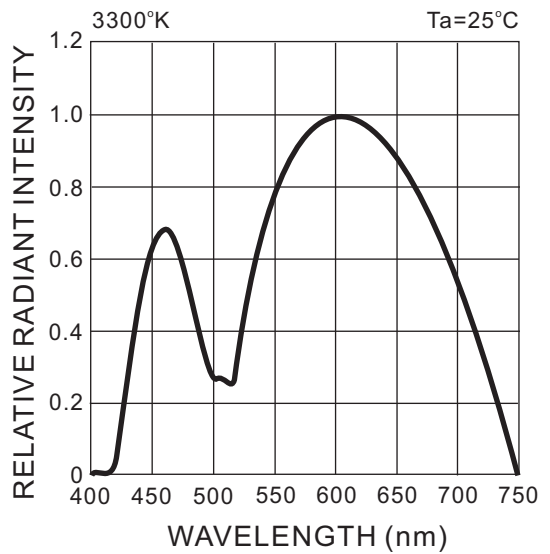
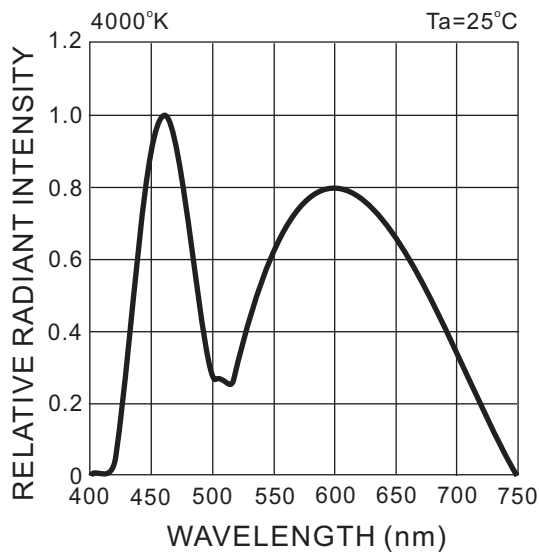
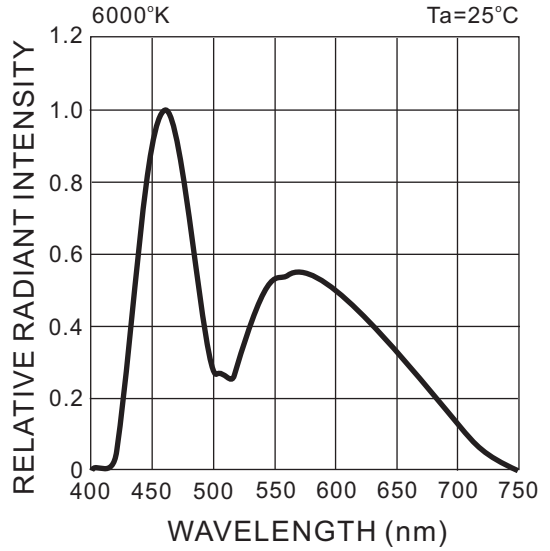
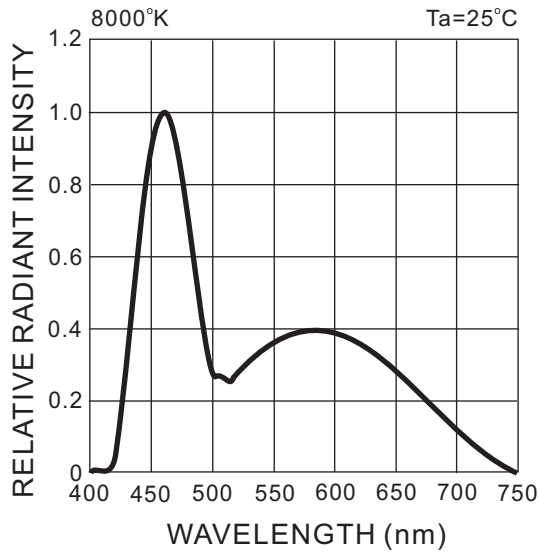


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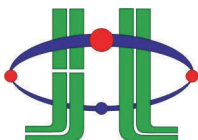
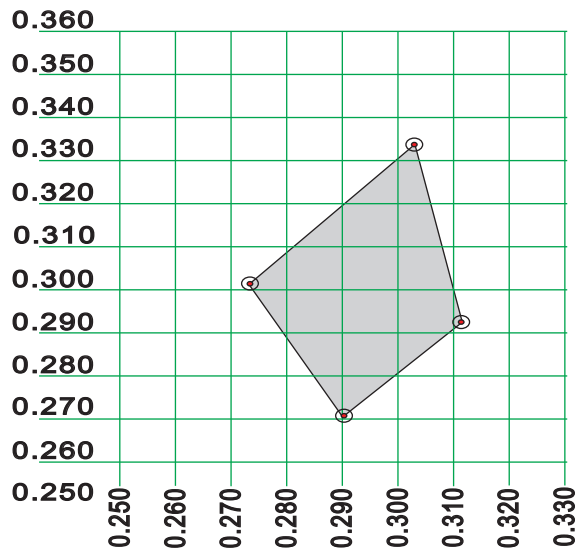
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☰ Cool White Color Bin Selection

| CCT(°K) | Chromaticity Coordinates | | | | |
|-----------|--------------------------|--------------|-------|--------------|-------|
| TYP | | | | | |
| 8000 | x | 0.274 | 0.303 | 0.311 | 0.290 |
| | y | 0.301 | 0.333 | 0.293 | 0.270 |
| Tolerance | | $x \pm 0.02$ | | $y \pm 0.02$ | |

☰ Cool White CIE Light Color Chart



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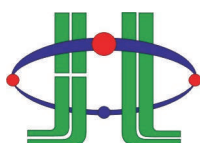
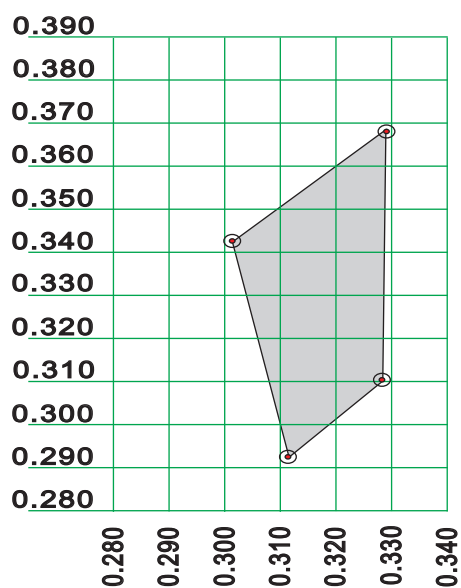
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Pure White Color Bin Selection

| CCT(°K) | | Chromaticity Coordinates | | | |
|-----------|---|--------------------------|-------|--------------|-------|
| TYP | | | | | |
| 6000 | x | 0.301 | 0.329 | 0.329 | 0.311 |
| | y | 0.342 | 0.369 | 0.310 | 0.293 |
| Tolerance | | $x \pm 0.02$ | | $y \pm 0.02$ | |

Pure White CIE Light Color Chart



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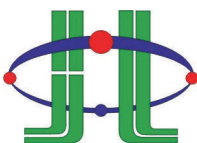
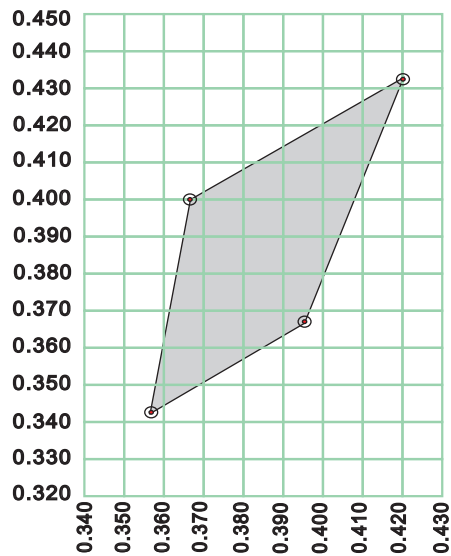
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☰ Nature White Color Bin Selection

| CCT(°K) | Chromaticity Coordinates | | | | | |
|------------------|--------------------------|-----------------|-------|-------|-----------------|--|
| TYP | | | | | | |
| 4000 | x | 0.367 | 0.420 | 0.396 | 0.357 | |
| | y | 0.400 | 0.432 | 0.367 | 0.342 | |
| Tolerance | | x ± 0.02 | | | y ± 0.02 | |

☰ Nature White CIE Light Color Chart



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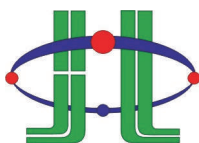
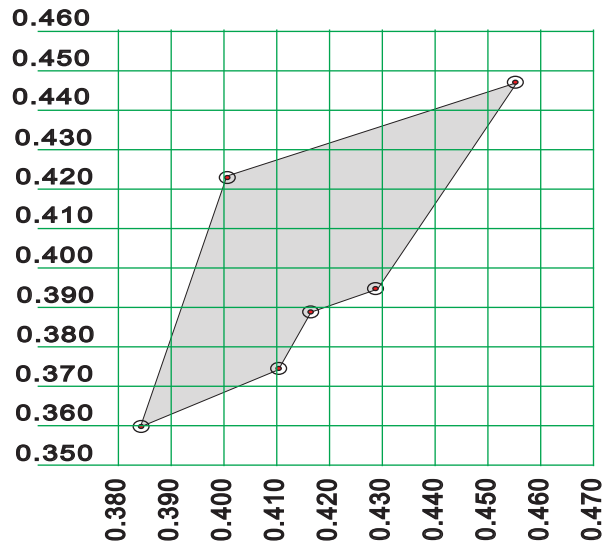
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Warm White Color Bin Selection

| CCT(K) | Chromaticity Coordinates | | | | | | |
|------------------|--------------------------|-----------------|-------|-------|-----------------|-------|-------|
| TYP | | | | | | | |
| 3300 | x | 0.402 | 0.454 | 0.429 | 0.416 | 0.410 | 0.383 |
| | y | 0.423 | 0.446 | 0.394 | 0.389 | 0.374 | 0.360 |
| Tolerance | | x ± 0.02 | | | y ± 0.02 | | |

Warm White CIE Light Color Chart

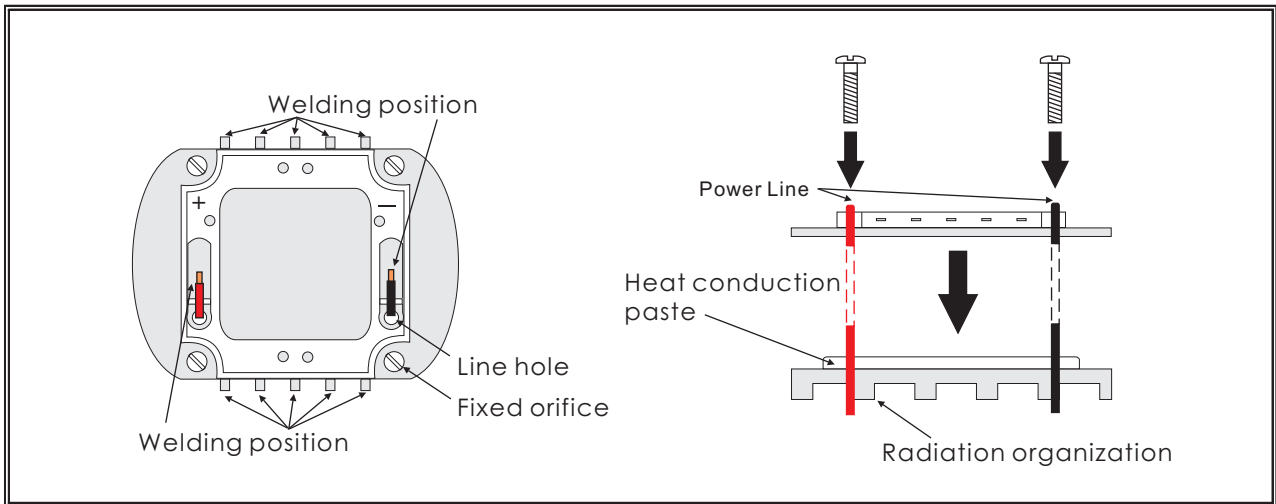


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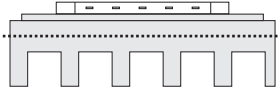
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POSITION EXPLANATION:



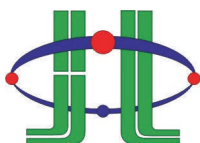
Conclusion

Huey Jann provide simple comparison table for High Power LED, you could find your request heat dissipation area from the following table.

| |  Free Convection Horizontal Flat Heat Dissipation-Set-up (Area Require mm ²) |  Free Convection Vertical Flat Heat Dissipation-Set-up (Area Require mm ²) |  Free Convection Finned Heat Dissipation-Set-up (Area Require mm ²) |
|-----|---|---|--|
| 50W | 55,000 | 41,000 | 191,000 |

*TAB in this table is according to highest operating temperature 65°C.

*Different materials of second heat dissipation device, the surface area of heat sink will be different. Thus, this document is for reference only.

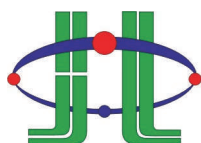
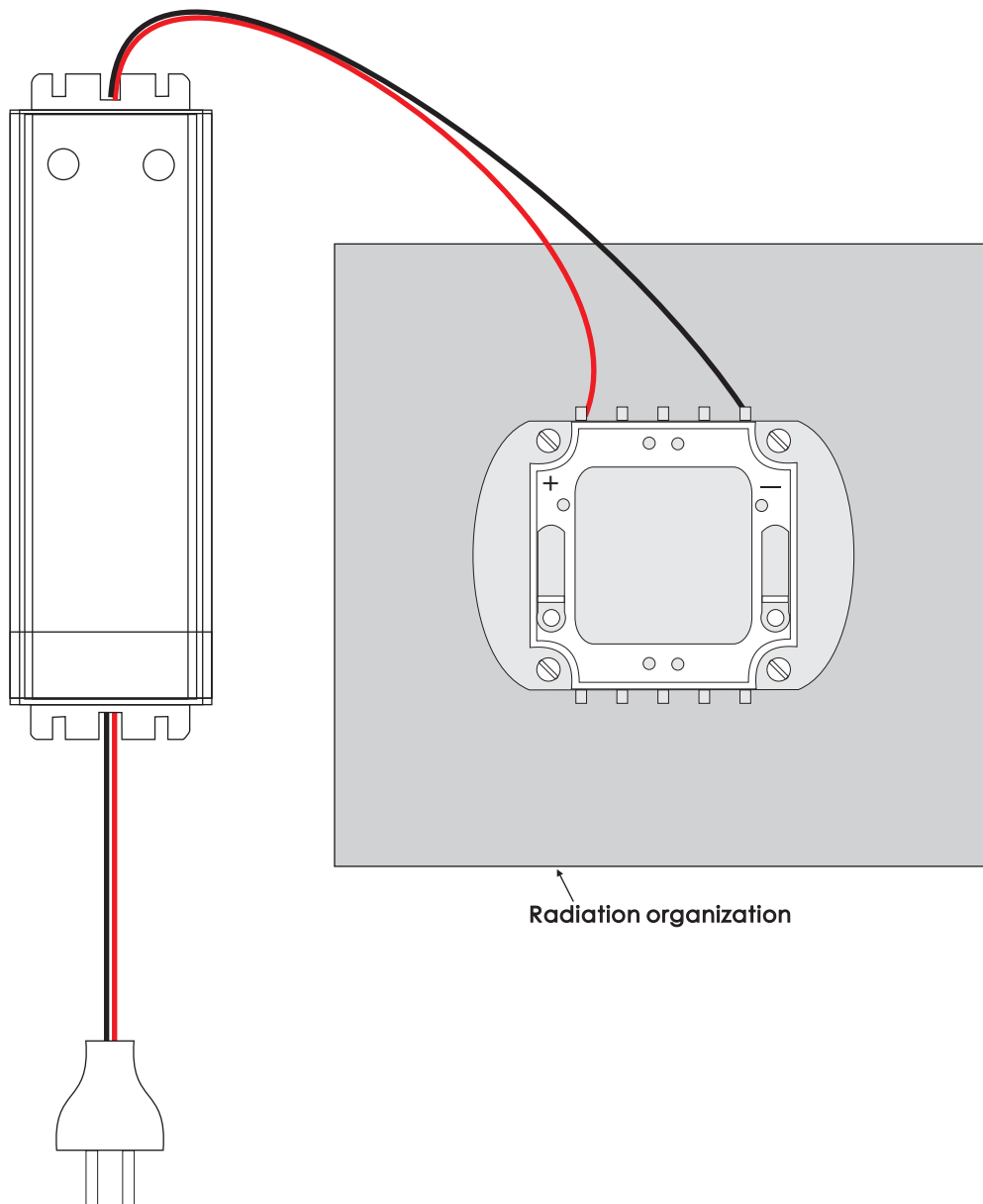


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PRODUCT APPLICATION

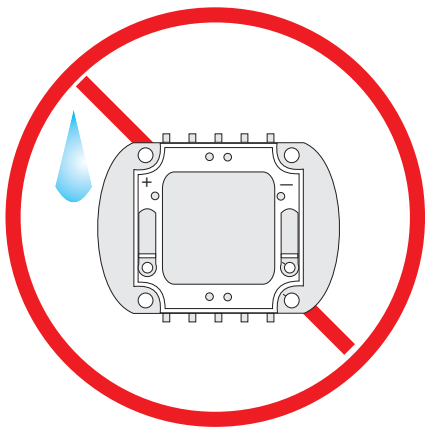


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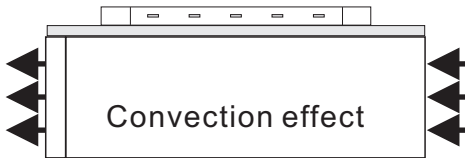
50W Operating Instructions



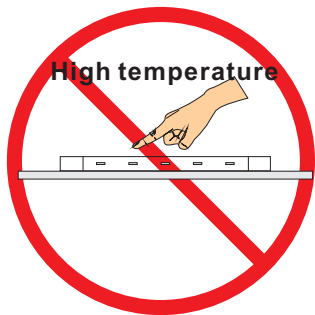
1. It is important to keep away the product from water, in order to avoid the product's electronic characteristics becoming harmful.



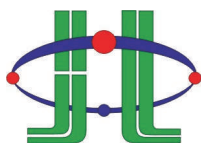
2. When making use of products, it is necessary to use anti-ESD devices to prevent destructive electronic characteristics.



3. It should be noticed whether there is convection in the design of the device. Convection must exist.



4. There is 150°C directly from the front of the 50W emitting diode. It is untouchable to prevent burning.

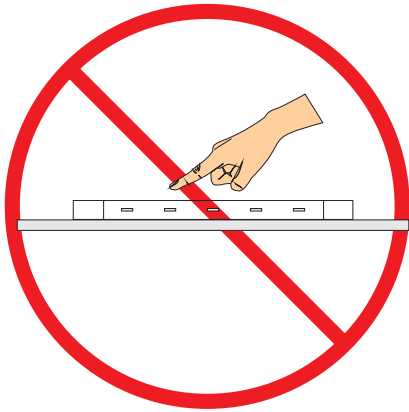


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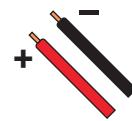
50W Operating Instructions



5. The material in the central top of 50W LED is soft. Therefore, it is un-squeezable and untouchable.

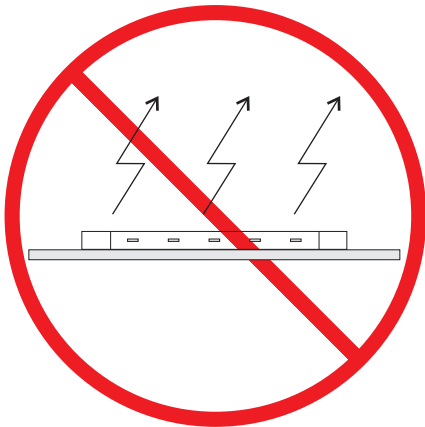


Keep Insulation

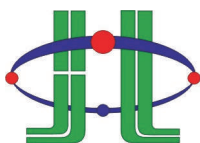


Power Supply

6. In the bottom of heat sink cannot be touched with neither positive nor negative pole. (Heat sink has to be insulation.)



7. The product should not be light up directly without heat dissipation device.

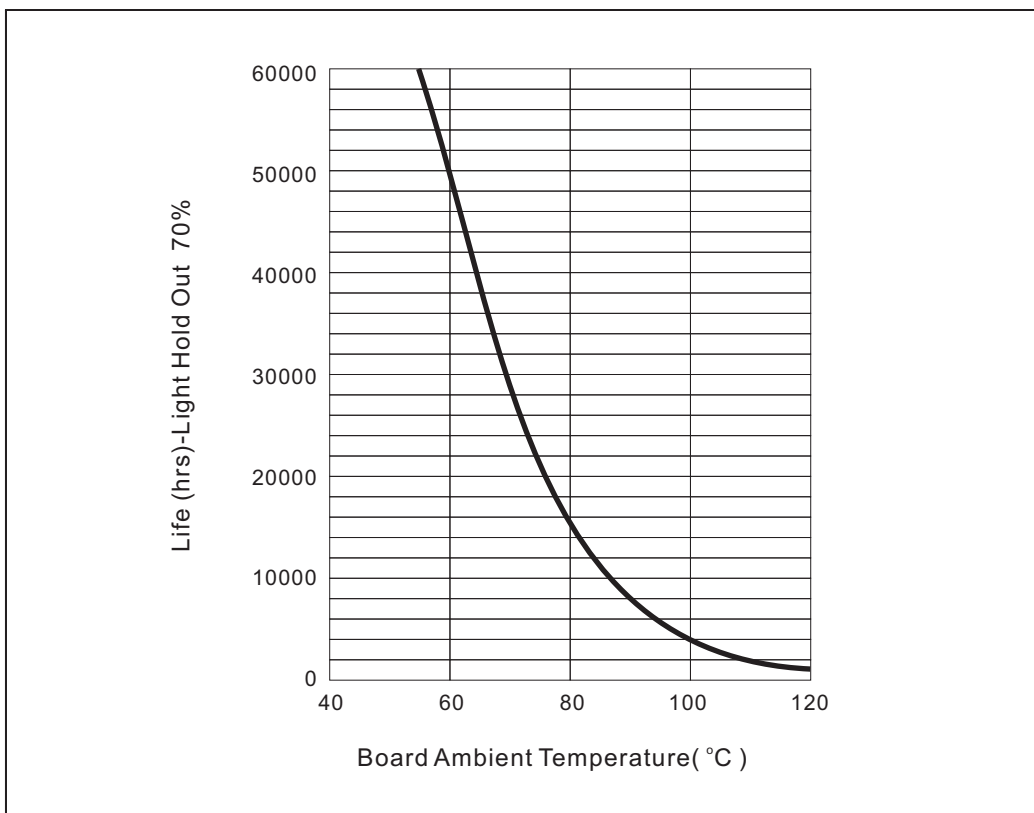
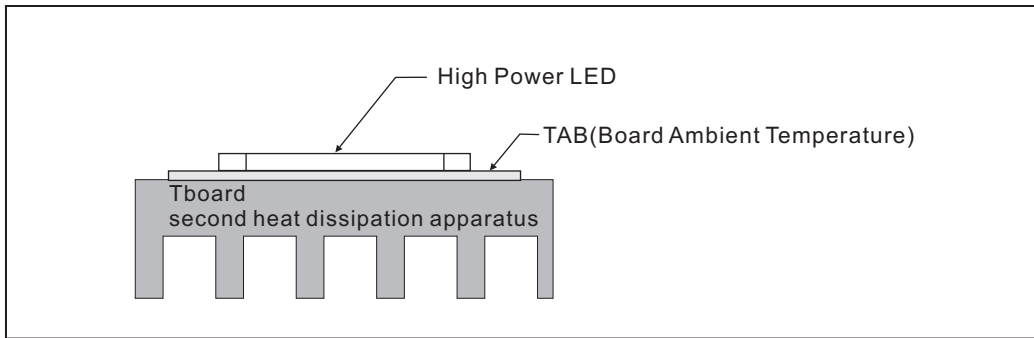


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TAB Temperature - Life Characteristics Curves

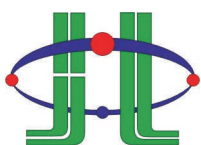


*Board Ambient Temperature Tolerance 5°C.

*TAB in this table is according to highest operating temperature 65°C.

*The TAB is the stable testing value for the product lighted 100% after one hour.

*Different materials of second heat dissipation device, the surface area of heat sink will be different. Thus, this document is for reference only.



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