

4-8W COB LED

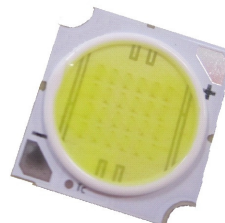
Updated on 2013/02/06

Approval Sheet

4~8W COB LED
 Product Specification

RoHS

| | |
|--------------------|---------|
| Product | COB |
| Part Number | PB04H06 |
| Customer | |
| Issue Date | 2013/02 |



Feature

- ✓ High Power DC white LED
- ✓ External dimension : 13.0mmx13.5mmx1.0mm
- ✓ ANSI white binning COB package
- ✓ Multi-GaN-based LED solution
- ✓ View angle 120°, uniform chromaticity profile
- ✓ Pb free
- ✓ Green product, remain within RoHS
- ✓ Thermocouple attaching point

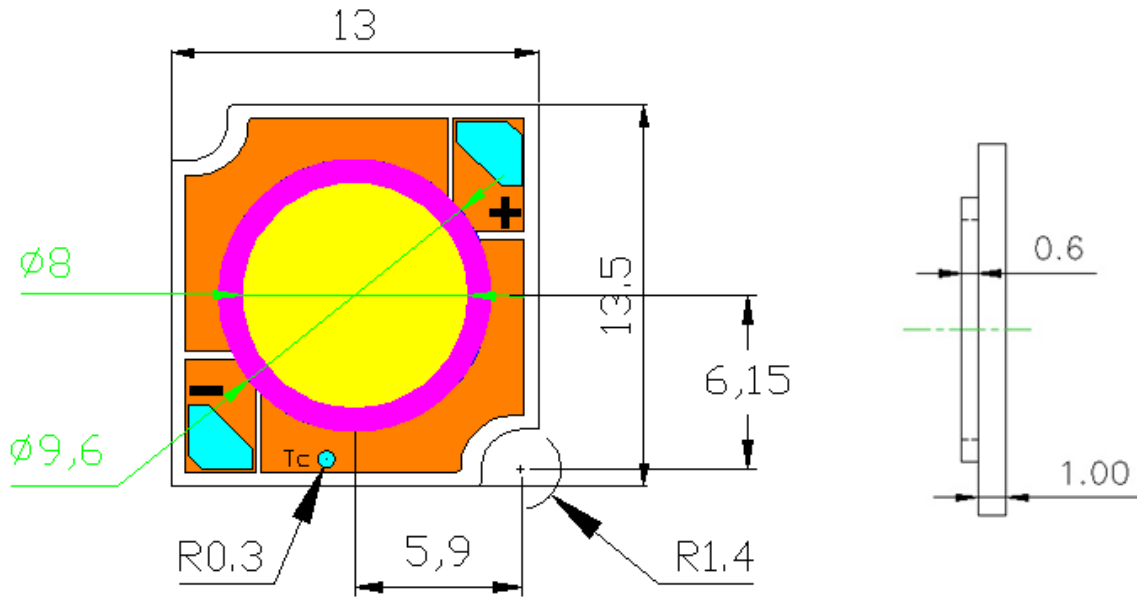
Applications

- ✓ Indoor general lighting
- ✓ Decoration lighting

| MAKER | | | CUSTOMER | | | |
|----------|---------|----------|----------|--|--|--|
| Prepared | Checked | Approved | | | | |
| | | | | | | |

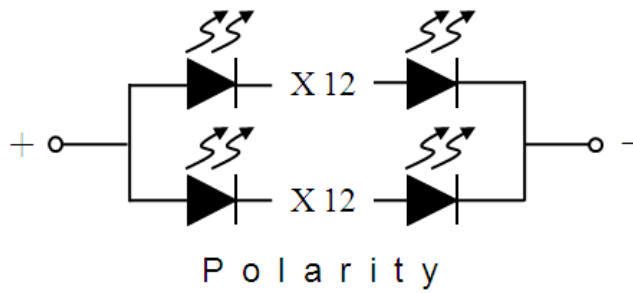
Outline Dimension

4~8W COB LED
Product Specification



Unit:mm

Tolerance : ± 0.15 mm



Note: Circuit layout is 12 series and 2 parallels

Performance

4~8W COB LED

Product Specification

■ Electro-Optical Characteristics

| Parameter | Symbol | Condition | Min. | Typical | Max. | Unit |
|----------------------------------|----------|------------------------|------|--------------|------|-----------------------------|
| Forward Voltage ⁽¹⁾ | V_F | | 31 | 35 | 40 | V |
| Color Temperature ⁽²⁾ | CCT | $I_F = 120 \text{ mA}$ | | 2700 3000 | | K |
| Color Rendering Index | R_a | | 80 | | | |
| Thermal Resistance | R_{th} | | | 2.5 | | $^{\circ}\text{C}/\text{W}$ |
| View Angle | θ | | | 120 | | deg |

| Parameter | Symbol | Condition | Min. | Typical | Max. | Unit |
|----------------------------------|----------|------------------------|------|--------------|------|-----------------------------|
| Forward Voltage ⁽¹⁾ | V_F | | 31 | 35 | 40 | V |
| Color Temperature ⁽²⁾ | CCT | $I_F = 120 \text{ mA}$ | | 5000 5700 | | K |
| Color Rendering Index | R_a | | 70 | | | |
| Thermal Resistance | R_{th} | | | 2.5 | | $^{\circ}\text{C}/\text{W}$ |
| View Angle | θ | | | 120 | | deg |

(1) The Forward Voltage tolerance is $\pm 3\%$.

(2) Correlated Color Temperature is derived from the CIE 1931 Chromaticity diagram.

■ Luminous Flux⁽¹⁾ ($T_a=25^{\circ}\text{C}$)

| CCT | Condition | Lumen | | | Unit |
|-------|------------------------|-------|---------|------|------|
| | | Min. | Typical | Max. | |
| 2700K | $I_F = 120 \text{ mA}$ | 400 | 420 | | Lm |
| 3000K | | 420 | 440 | | |
| 5000K | | 500 | 520 | | |
| 5700K | | 480 | 500 | | |

(1) The luminous flux tolerance is $\pm 10\%$

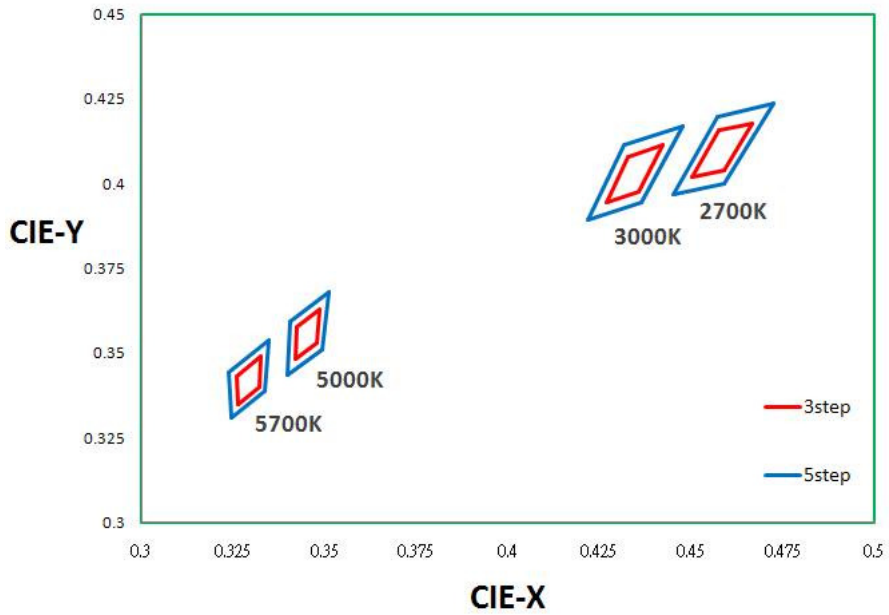
(2) The power consumption is typical value.

■ Absolute Maximum Ratings

| Parameter | Symbol | | Unit |
|-------------------------------------|-----------|-----------|------|
| DC Forward Current ⁽¹⁾ | I_F | 240 | mA |
| Power Dissipation | P_d | 8 | W |
| Storage Temperature | T_s | -40 ~ 100 | °C |
| Junction Temperature | T_J | 125 | °C |
| Substrate Temperature | T_{sub} | 100 | °C |
| Manual Soldering Time at 300°C(Max) | T_{sol} | 60 | sec |

- (1) Proper current rating must be observed to maintain junction temperature below maximum at all time.
- (2) Thermal resistance is calculated from junction to substrate.

■ **Chromaticity Coordinates**



| | CIE-x | CIE-y | | CIE-x | CIE-y |
|------------|--------|--------|------------|--------|--------|
| 273 | 0.4501 | 0.4020 | 275 | 0.4449 | 0.3968 |
| | 0.4576 | 0.4158 | | 0.4570 | 0.4198 |
| | 0.4666 | 0.4179 | | 0.4724 | 0.4235 |
| | 0.4588 | 0.4040 | | 0.4590 | 0.4002 |
| 303 | 0.4422 | 0.4113 | 305 | 0.4317 | 0.4113 |
| | 0.4328 | 0.4079 | | 0.4218 | 0.3892 |
| | 0.4267 | 0.3946 | | 0.4363 | 0.3943 |
| | 0.4355 | 0.3977 | | 0.4476 | 0.4170 |
| 503 | 0.3425 | 0.3579 | 505 | 0.3406 | 0.3594 |
| | 0.3487 | 0.3629 | | 0.3396 | 0.3435 |
| | 0.3477 | 0.3530 | | 0.3492 | 0.3512 |
| | 0.3418 | 0.3483 | | 0.3511 | 0.3679 |
| 573 | 0.3325 | 0.3492 | 575 | 0.3345 | 0.354 |
| | 0.3258 | 0.3432 | | 0.3238 | 0.3444 |
| | 0.3263 | 0.335 | | 0.3246 | 0.3308 |
| | 0.332 | 0.3401 | | 0.3336 | 0.3387 |

(1) Tolerance of measurement is Chromaticity (x,y) ± 0.005

Binning

4~8W COB LED
 Product Specification

■ Binning ($I_F=120\text{mA}$, $T_a=25^\circ\text{C}$)

| CCT | Step | CRI | Lumen | V_F |
|-----|------|-----|-------|-------|
| 50 | 3 | 7 | L1 | DB |

| CCT Bin Code | CCT |
|--------------|---------------|
| 273/ 275 | 2700K-3/5step |
| 303/ 305 | 3000K-3/5step |
| 503/ 505 | 5000K-3/5step |
| 573/ 575 | 5700K-3/5step |

| CRI Bin Code | CRI |
|--------------|-----|
| 8 | >80 |
| 7 | >70 |

| Lumen Bin Code | Lumen Range | |
|----------------|-------------|-----|
| | From | To |
| L1 | 380 | 417 |
| L2 | 417 | 454 |
| L3 | 454 | 490 |
| L4 | 490 | 543 |
| L5 | 543 | 595 |

| V_F Bin Code | V_F Range | |
|----------------|-------------|----|
| | From | To |
| DB | 31 | 40 |

| | | |
|----|-----|-----|
| M1 | 595 | 648 |
| M2 | 648 | 706 |
| M3 | 706 | 770 |
| M4 | 770 | 839 |

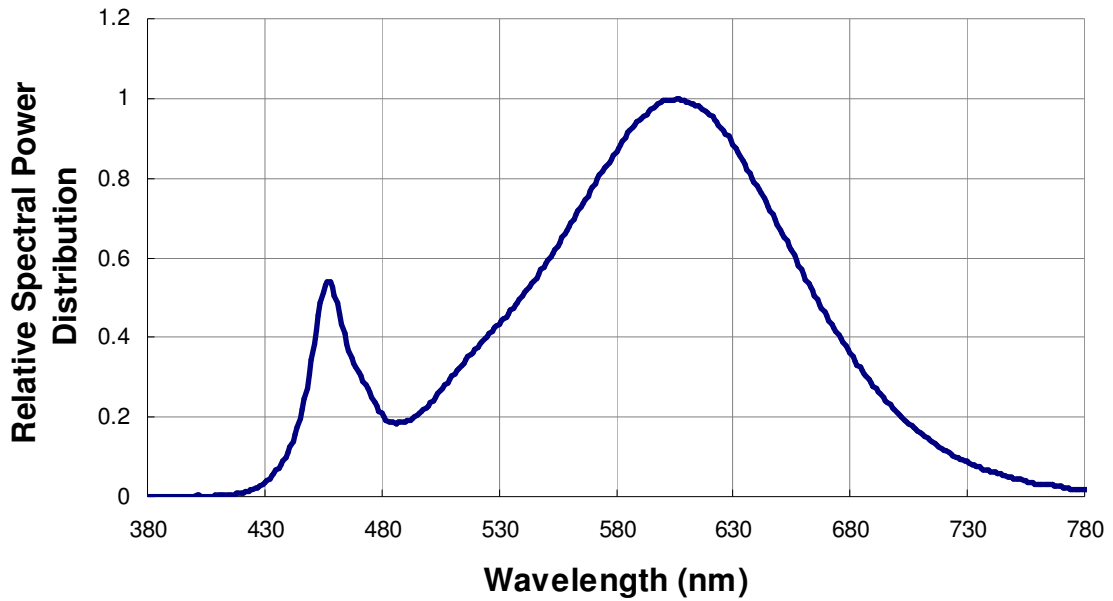
Note:

- (1) Correlated color Temperature is derived from the CIE 1931 Chromaticity diagram.
- (2) The CRI tolerance is ± 2
- (3) The Forward Voltage tolerance is $\pm 3\%$.

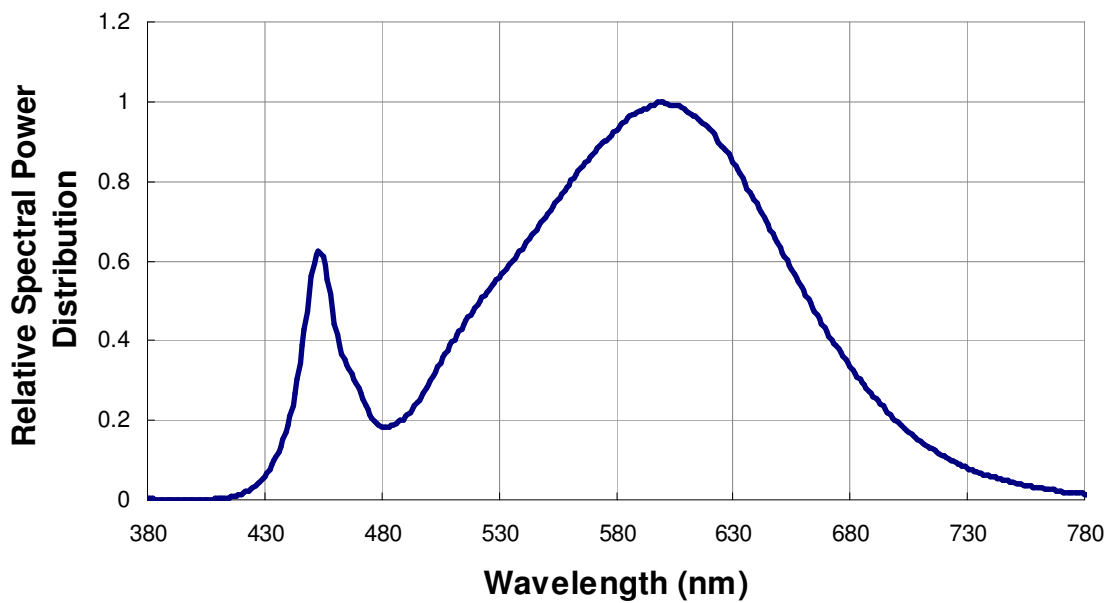
Characteristics

4~8W COB LED
Product Specification

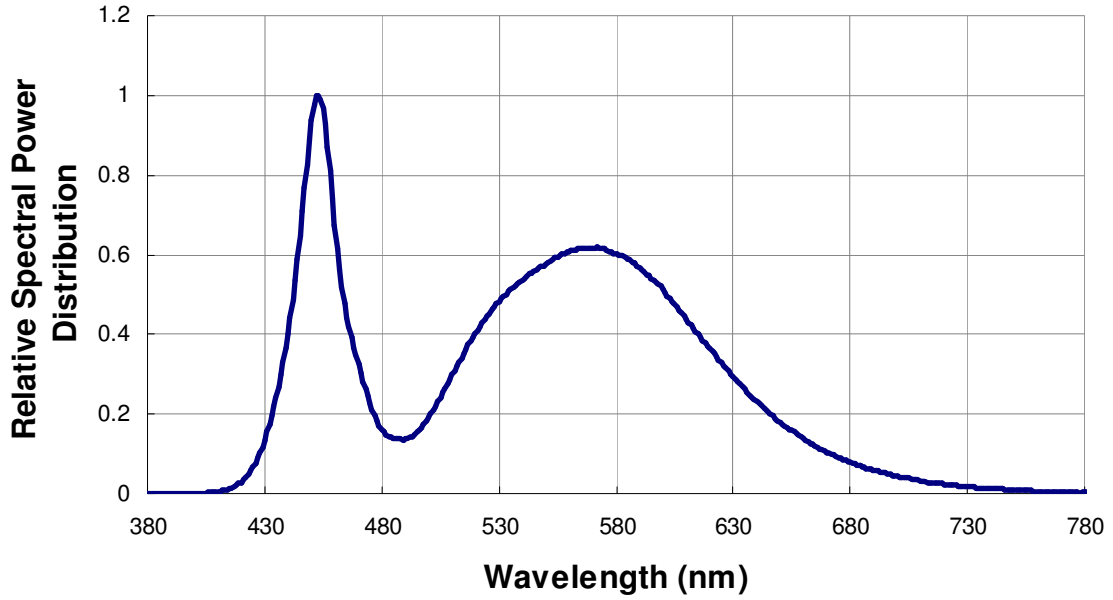
Spectrum ($I_F=120\text{mA}$, $T_a=25^\circ\text{C}$)
2700K



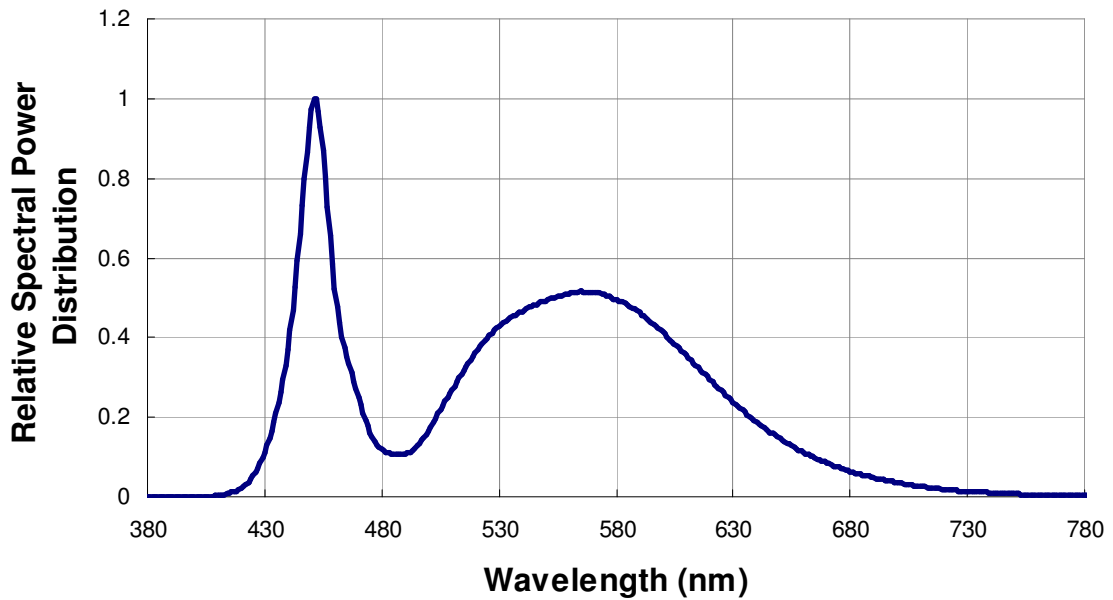
3000K



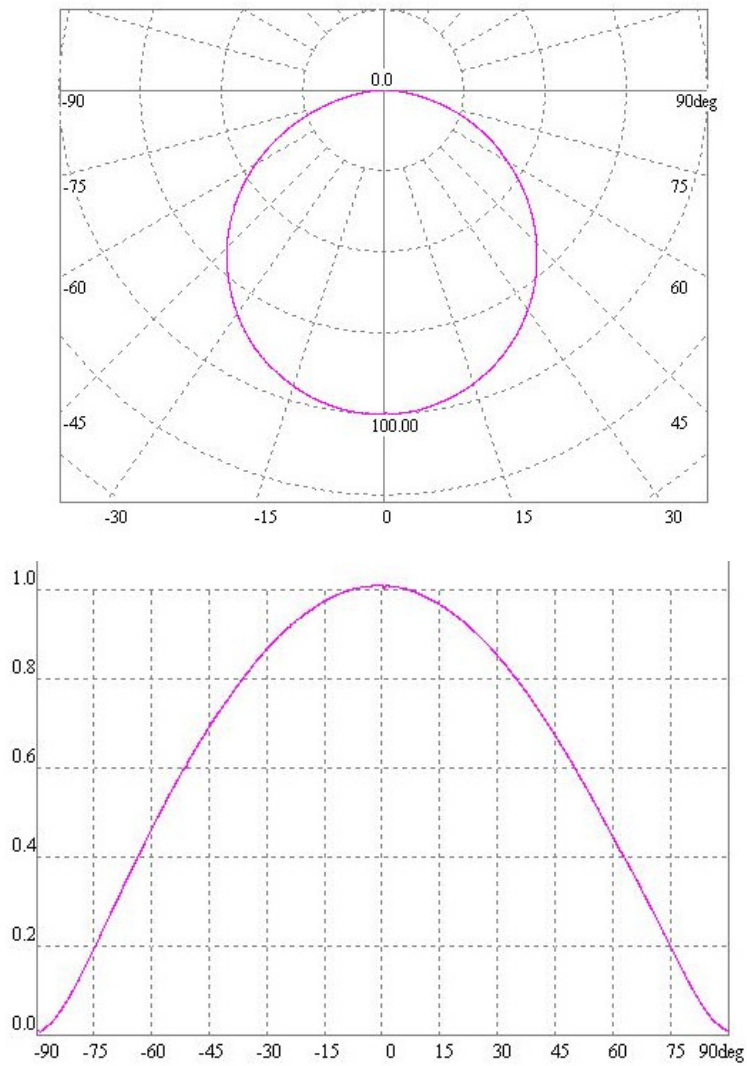
5000K



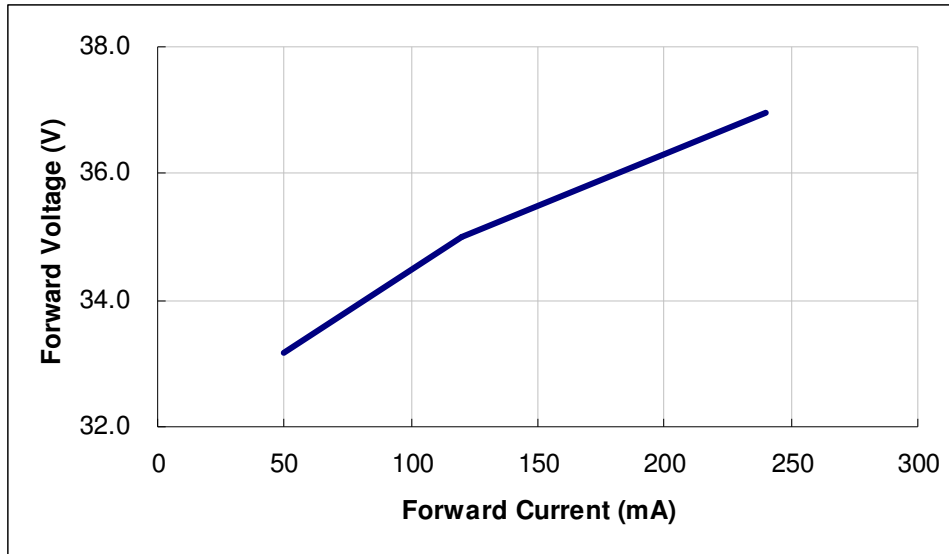
5700K



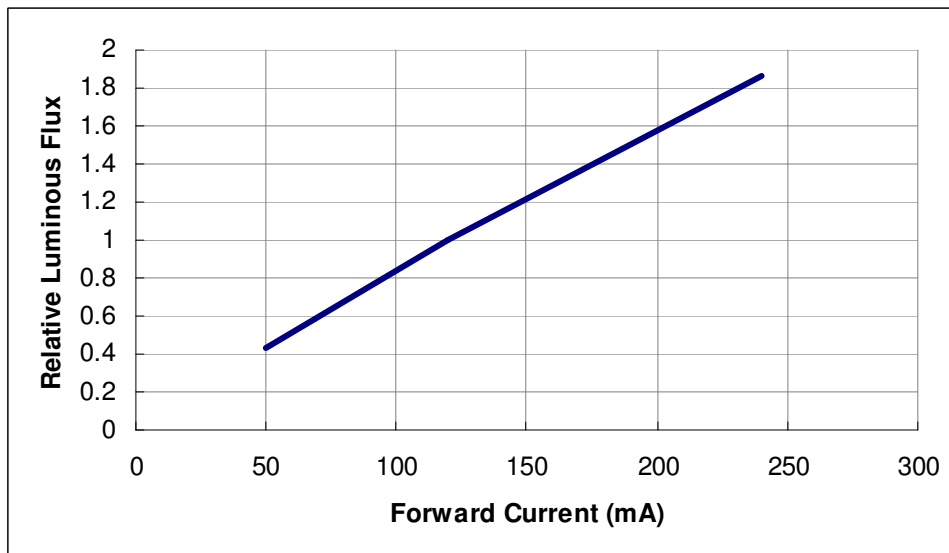
■ Radiation Pattern ($I_F=120\text{mA}$, $T_a=25^\circ\text{C}$)



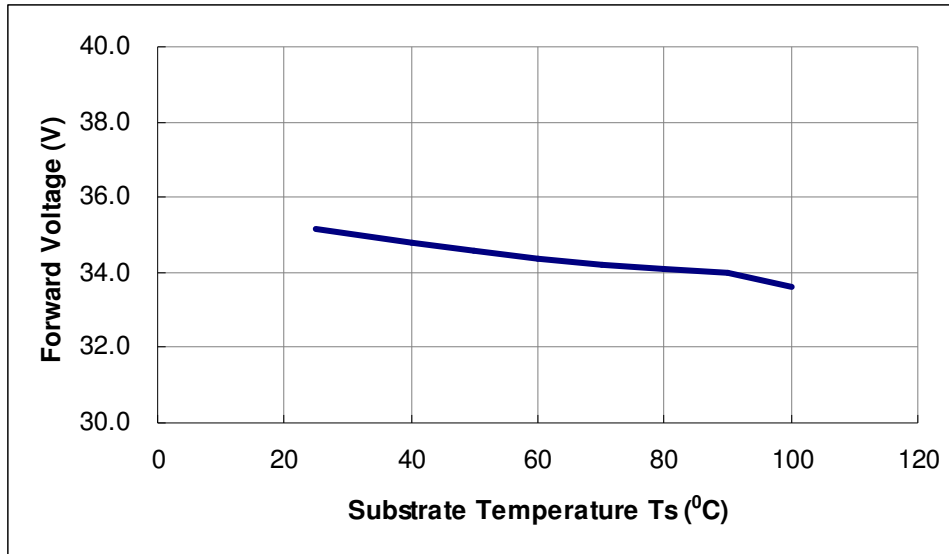
■ Forward Voltage vs. Forward Current ($T_a=25^\circ\text{C}$)



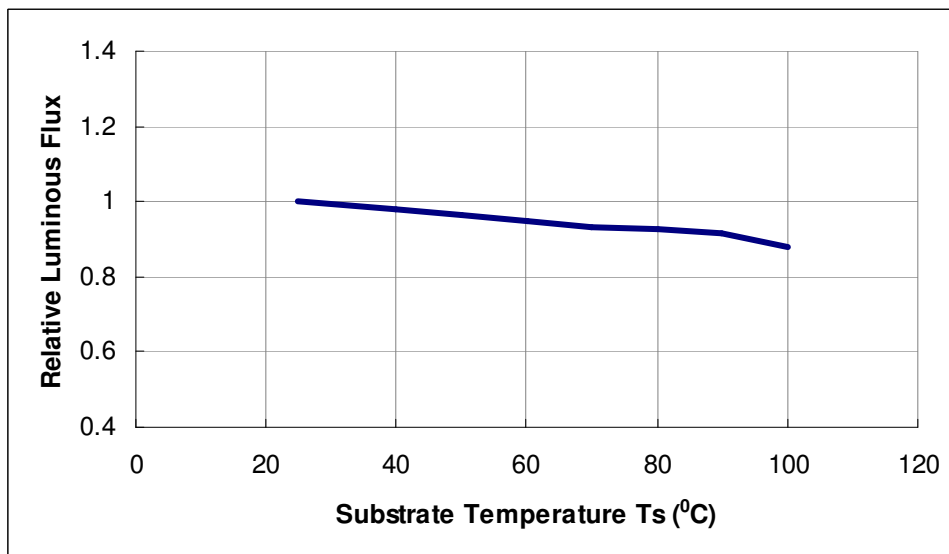
■ Forward Current vs. Related Luminous Flux (Ta=25⁰C)



■ Substrate Temperature vs. Forward Voltage (I_F=120mA)

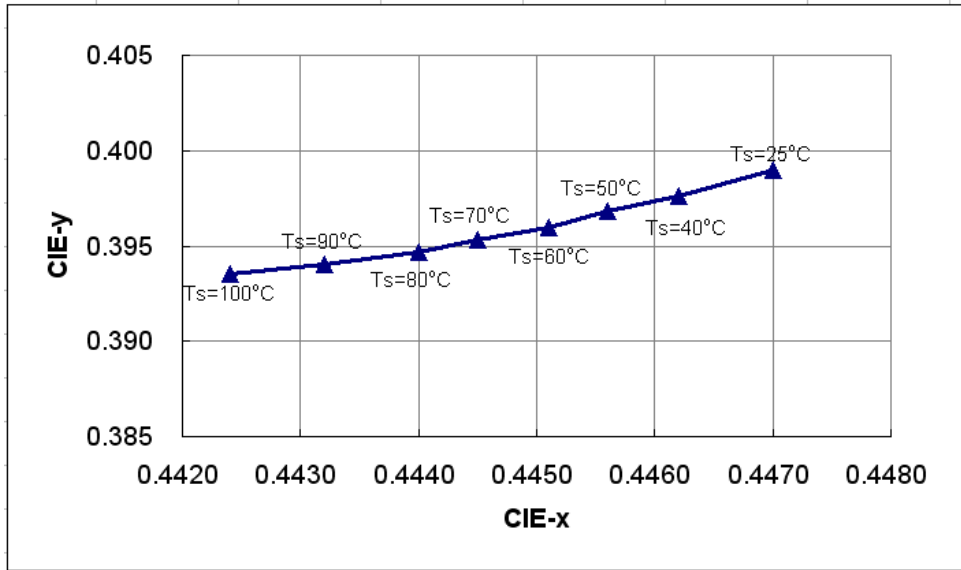


■ Substrate Temperature vs. Relative Luminous Flux ($I_F=120\text{mA}$)

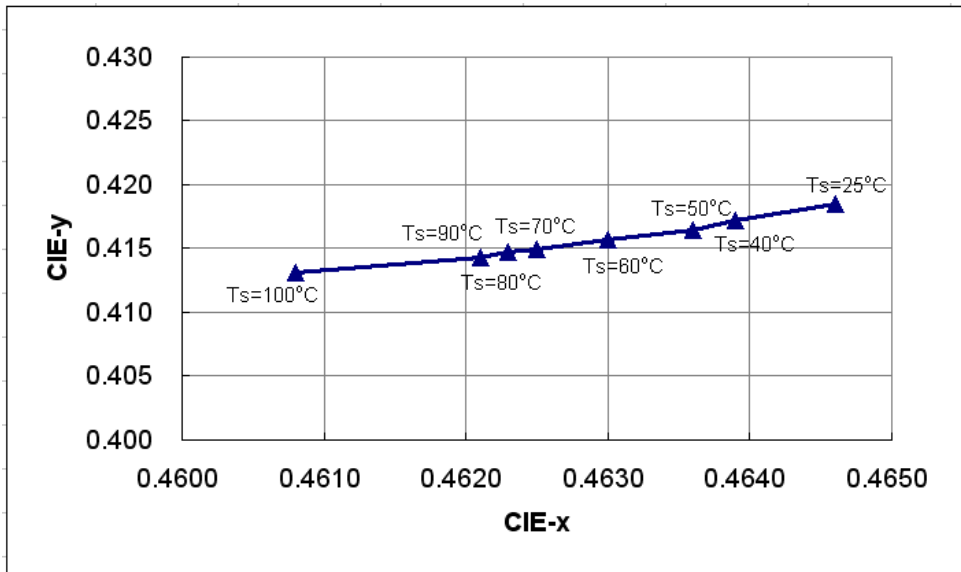


■ Substrate Temperature vs. Chromaticity Coordinate ($I_F=120\text{mA}$)

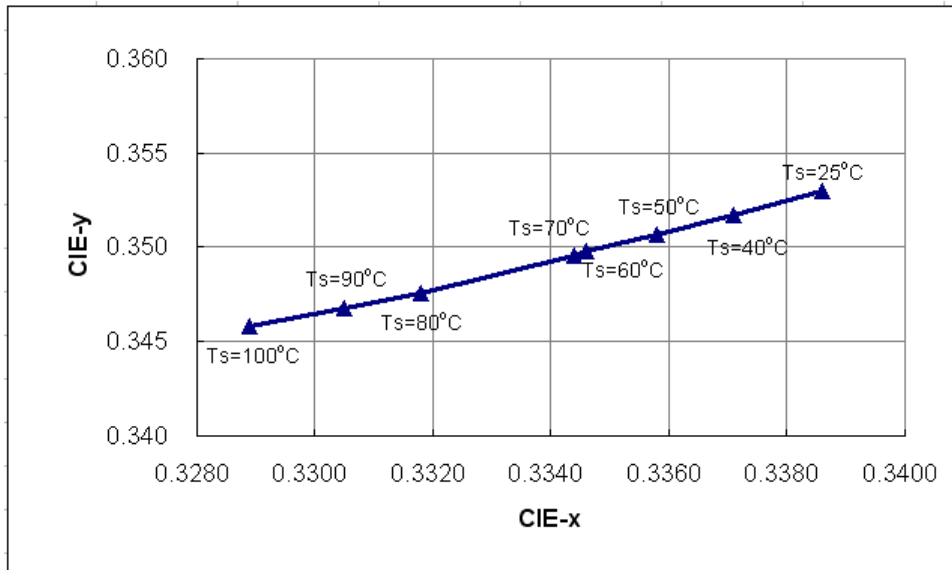
2700K



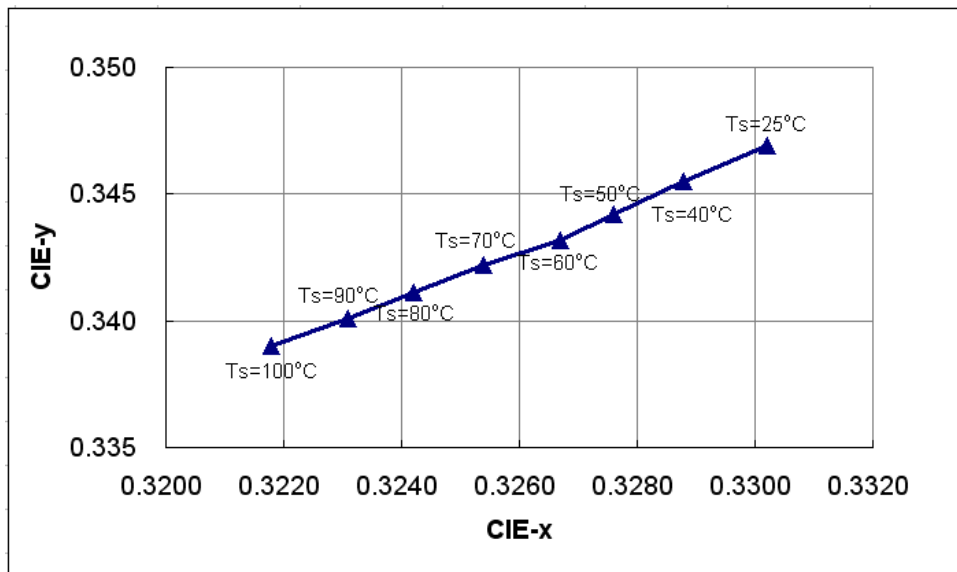
3000K



5000K

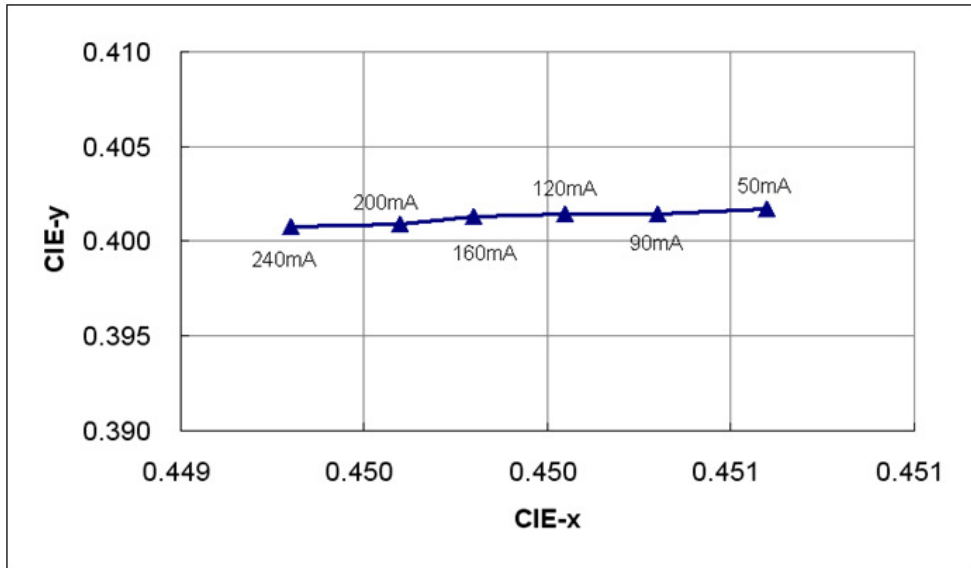


5700K

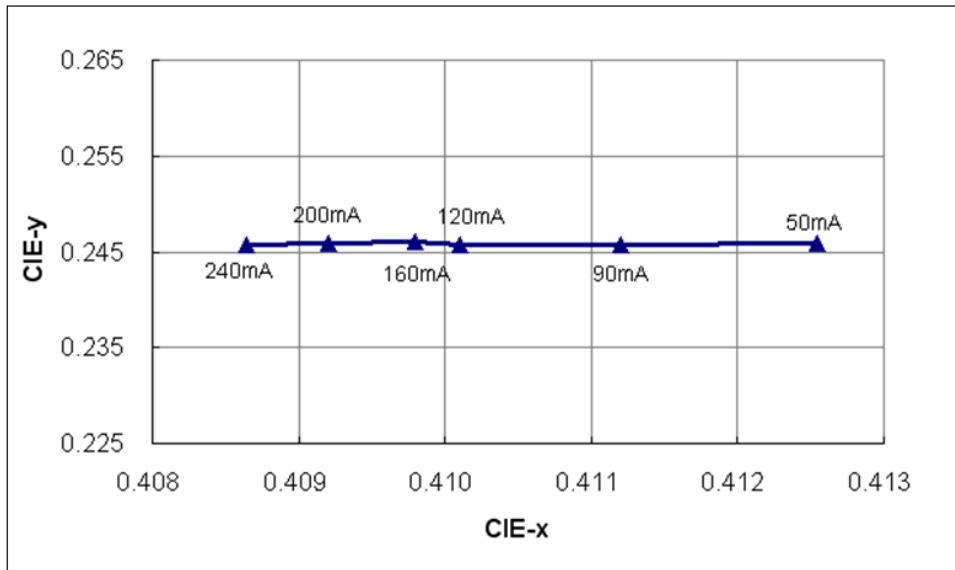


Forward Current vs. Chromaticity Coordinate (Ta=25°C)

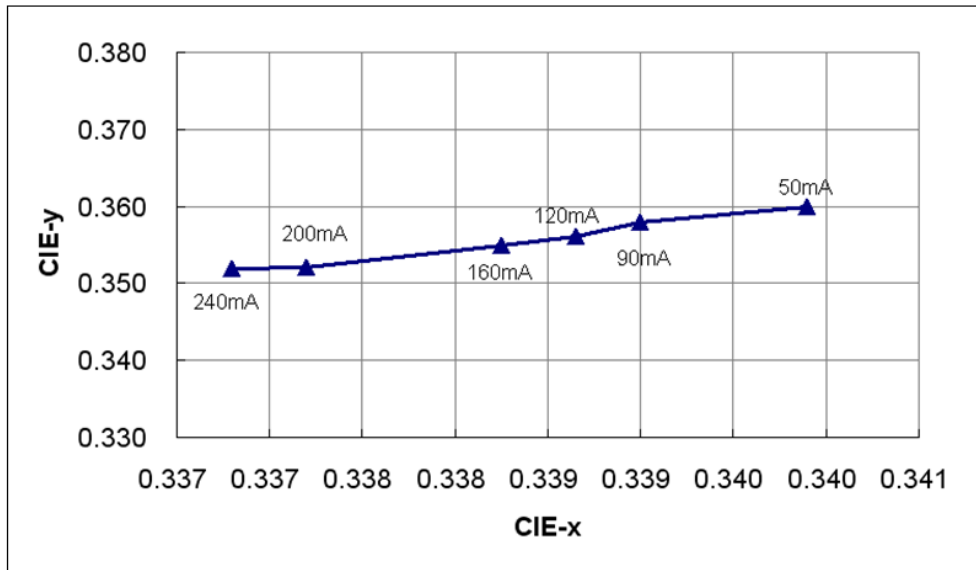
2700K



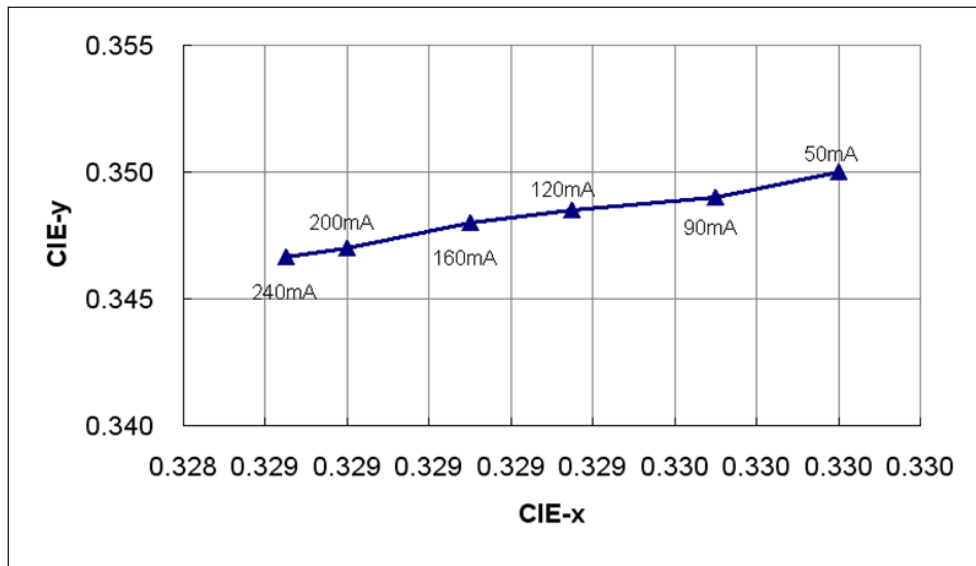
3000K



5000K



5700K



Reliability

4~8W COB LED
 Product Specification

| No | Item | Condition | Time/Cycle |
|----|--|---|------------|
| 1 | 2 nd Temp. Operation Life Test | Tc=85°C, I _F =180mA | 1000 Hrs |
| 2 | High Temp. and High Humidity Operation Life Test | 85°C, 85%RH I _F =180mA | 1000 Hrs |
| 3 | High Temp. Storage | 85°C | 1000 Hrs |
| 4 | Low Temp. Storage | -40°C | 1000 Hrs |
| 5 | Temperature Cycle Storage | -40°C ~100°C (30min dwell) /<5min transfer | 300cles |

Judgment Criteria

| Item | Symbol | Test Condition | Judgment Criteria |
|-----------------|----------------|----------------|-------------------|
| Forward Voltage | V _f | Note1 | Δ% < 10 % |
| Luminous Flux | I _v | Note1 | Decay < 30 % |

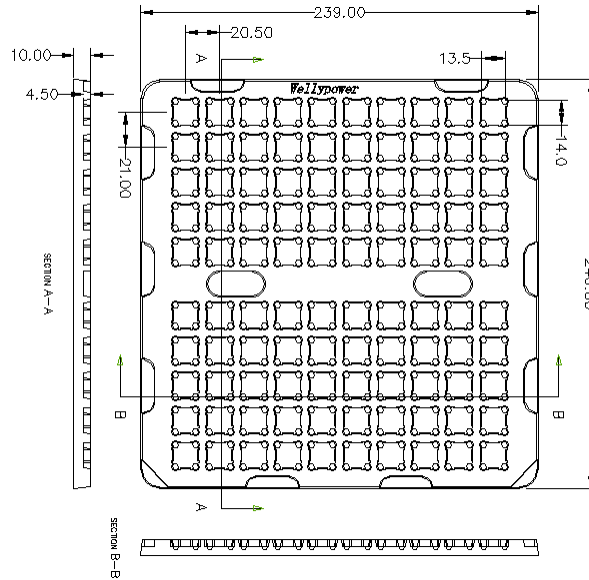
Notes:

1. Refer to operating Current and Luminous Flux Characteristics for different value operating current regarding each type of Light Engine Series.

Packing

4~8W COB LED
Product Specification

Tray



Tray contains 100 units

Precautions

4~8W COB LED

Product Specification

1. Avoid the application of any stress to the resin portion (lighting area).
2. Avoid any contact by a sharp metal nail or other materials with the resin portion (lighting area).



3. This product should be secured firmly by fastening screws on both sides of the product.
Please be careful not to apply any stress to the product during the clamping operation.



4. For fixing this product to the outer heat sink, thermal pad or thermal glue should be applied between backside of substrate and heat sink so that the product can dissipate heat completely.
Please avoid product deformation when fixing the clamping operation.
5. Handling of static electricity
 - These products are sensitive to static electricity charge. Please prevent any static electricity within the assembling process.
 - All devices, equipment and machinery must be properly grounded. It is recommended that precautions be taken against surge voltage to the equipment that mounts the LEDs.
 - ESD sensitivity of this product is 1000V (HBM, based on JEITA ED-4701/304).
 - It is easy to find static-damaged LEDs by a light-on test.
6. Before open the package, should kept at room temperature, 90% RH environment or less. The LED should be used within 6 months.
7. After open the package, the LED should be kept at room temperature, 60% RH environment or less. The LED should be soldered within 168 hours (7 days) after opening the package. If unused LEDs remain, they should be stored in moisture proof packages, such as sealed containers with packages of moisture absorbent material (silica gel).
8. Applying proper resistor for the circuit design is recommended. Otherwise slight voltage shift may cause big current change and the LED may be burn out.
9. Please ensure that heat and electronic generation is not in excess of the absolute maximum rating.

Smart Lighting

Amazing Life

Lextar Electronics Corp. is the leading LED (Light Emitting Diode) maker integrating upper stream epitaxial, middle stream chip, and downstream package, SMT and LED lighting applications. Founded in May, 2008, Lextar is a subsidiary of AU Optronics, the leading TFT-LCD and solar PV manufacturer. Lextar's product applications include lighting and LCD backlight. Lextar's manufacturing sites include Hsinchu and Chunan in Taiwan, and Suzhou in China. The company turnover in 2010 is 266 million USD.