

SPECIFICATIONS

FOR TOPLIGHT COB MODULE

MODEL: ATL-X4-12



TOPLIGHT INTERNATIONAL LLC.

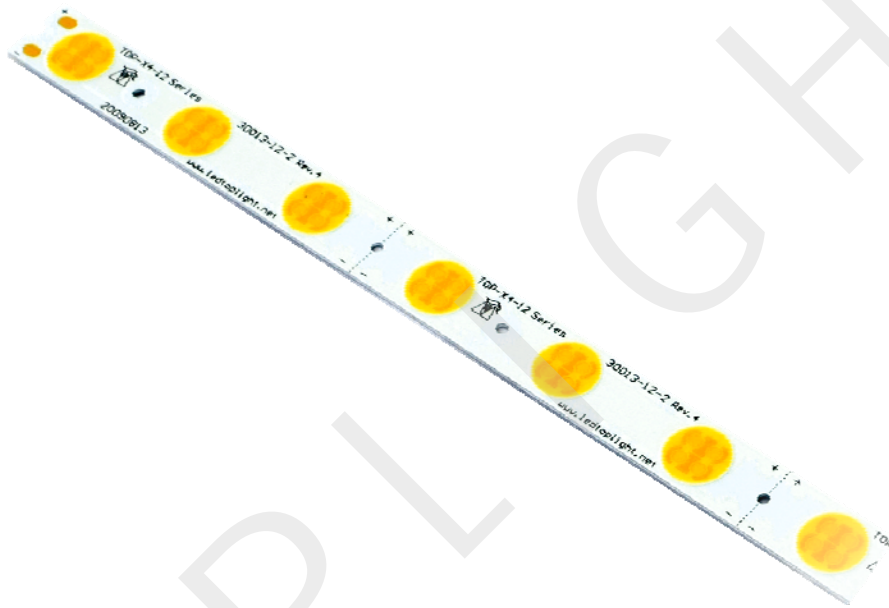
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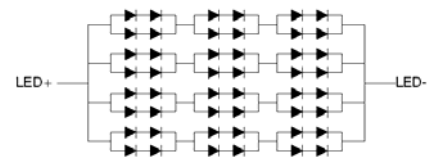
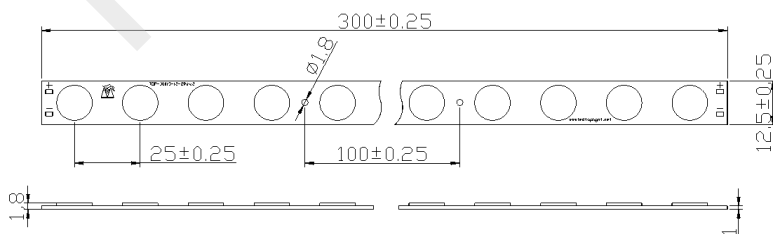
TECHNICAL DATA SHEET

ATL-X4-12 SERIES <FOR TOPLIGHT COB MODULE>

1. PRODUCT APPEARANCE



2. OUTLINE DRAWING



Unit: mm

Tolerance: ±0.25

**TECHNICAL DATA SHEET****ATL-X4-12 SERIES** <FOR TOPLIGHT COB MODULE>**3. PERFORMANCE PARAMETERS****3-1. ABSOLUTE MAXIMUM RATINGS**

| ITEM | SYMBOL | RATING | UNIT |
|-----------------------|-------------------|--------------|------|
| Power Dissipation | P | 4.3 | W |
| Forward Current | I _F | 240 | mA |
| Reverse Voltage | V _R | 30 | V |
| Operating Temperature | T _{opr} | - 30 ~ + 85 | °C |
| Storage Temperature | T _{stg} | - 40 ~ + 100 | °C |
| Junction Temperature | T _{jmax} | + 125 | °C |
| Thermal Resistance | RJ-C | 3.5 | °C/W |

Note:

*1. Forward Current allows maximum surge current ≤ 10 ms.

*2. Power dissipation and forward current are the values when the LED is used within the range of the derating curve in this data sheet.



TECHNICAL DATA SHEET

ATL-X4-12 SERIES <FOR TOPLIGHT COB MODULE>

3-2. ELECTRICAL-OPTICAL CHARACTERISTICS

(T_a=25°C)

| ** | PARAMETER | SYMBOL | CONDITION | MIN. | TYP. | MAX. | UNIT | |
|--------|-----------------------------|---------------------|-----------------------|------|------|------|------|------|
| common | Forward Voltage *1 | V _F | I _F =160mA | 17.4 | 18.6 | 19.8 | V | |
| | Beam Angle | — | | — | 120 | — | Deg | |
| W | ** Color Temp. | — | I _F =160mA | 2870 | 3045 | 3220 | K | |
| | ** Color Rendering Index *3 | Ra | | 80 | — | — | — | |
| | W ₁ | Luminous Flux *2 | | Φ | 210 | 240 | — | lm |
| | | Luminous Efficiency | | η | 70 | 80 | — | lm/W |
| | W ₂ | Luminous Flux *2 | | Φ | 241 | 270 | — | lm |
| | | Luminous Efficiency | | η | 81 | 90 | — | lm/W |
| | W ₃ | Luminous Flux *2 | | Φ | 271 | 300 | — | lm |
| | | Luminous Efficiency | | η | 91 | 100 | — | lm/W |
| D | ** Color Temp. | — | I _F =160mA | 4745 | 5028 | 5311 | K | |
| | ** Color Rendering Index *3 | Ra | | 80 | — | — | — | |
| | D ₁ | Luminous Flux *2 | | Φ | 240 | 270 | — | lm |
| | | Luminous Efficiency | | η | 80 | 90 | — | lm/W |
| | D ₂ | Luminous Flux *2 | | Φ | 271 | 300 | — | lm |
| | | Luminous Efficiency | | η | 91 | 100 | — | lm/W |
| | D ₃ | Luminous Flux *2 | | Φ | 301 | 330 | — | lm |
| | | Luminous Efficiency | | η | 101 | 110 | — | lm/W |
| C | ** Color Temp. | — | I _F =160mA | 6020 | 6530 | 7040 | K | |
| | ** Color Rendering Index *3 | Ra | | 80 | — | — | — | |
| | C ₁ | Luminous Flux *2 | | Φ | 250 | 280 | — | lm |
| | | Luminous Efficiency | | η | 84 | 93 | — | lm/W |
| | C ₂ | Luminous Flux *2 | | Φ | 281 | 310 | — | lm |
| | | Luminous Efficiency | | η | 94 | 103 | — | lm/W |
| | C ₃ | Luminous Flux *2 | | Φ | 311 | 340 | — | lm |
| | | Luminous Efficiency | | η | 104 | 114 | — | lm/W |

(Note) Parameters is formulated based on shipping samples

*1. After 20 ms drive, Measurement tolerance: ± 3 %

*2. Monitored by Toplight's 1 m integrating sphere, after 20 ms drive, Measurement tolerance: ± 10 %

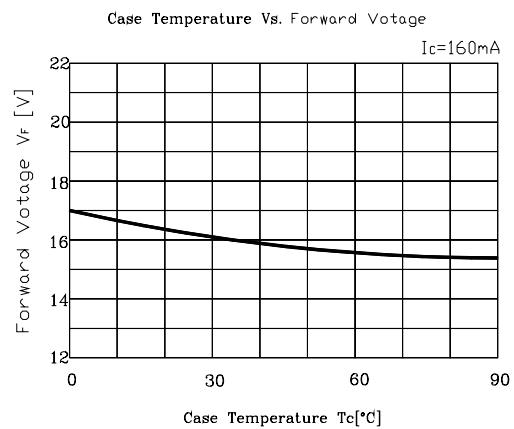
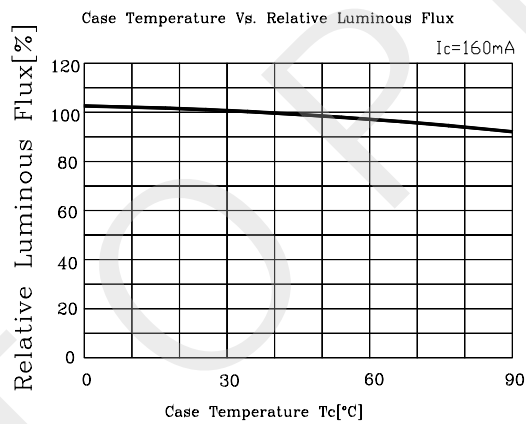
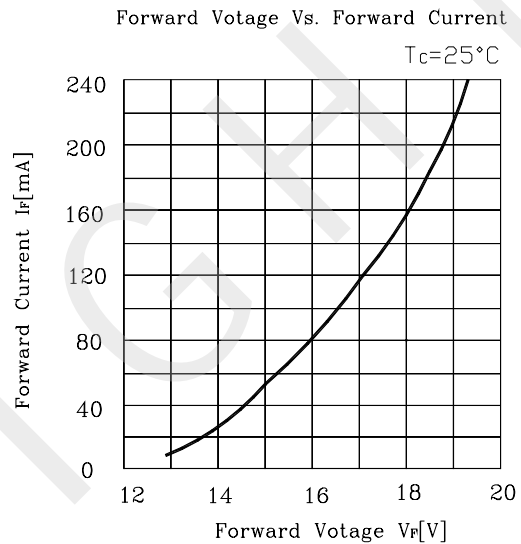
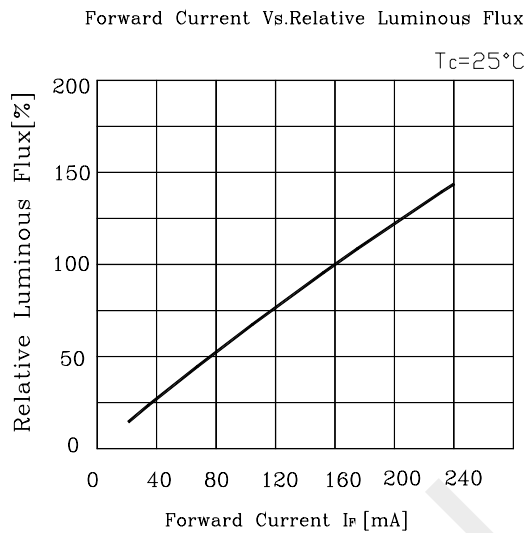
*3. Monitored by Toplight's 1 m integrating sphere, after 20 ms drive, Measurement tolerance:± 2



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3-3. Characteristics diagram (TYP.)



**TECHNICAL DATA SHEET****ATL-X4-12 SERIES** <FOR TOPLIGHT COB MODULE>**4. RELIABILITY**

The reliability of products shall be satisfied with items listed below.

4-1. TEST ITEMS AND TEST CONDITIONS

| NO. | TEST ITEM | TEST CONDITIONS | RESULT |
|-----|---------------------------|---|--------|
| 1 | Continuous operation test | $T_a = 25^{\circ}\text{C}$, $I_F = 160\text{ mA} \times 1000\text{ hours}$ (with Al fin) | PASS |
| | | $T_a = 80^{\circ}\text{C}$, $T_j = 120^{\circ}\text{C}$, $I_F = 160\text{ mA} \times 1000\text{ hours}$ (with Al fin) | |
| 2 | Low temperature storage | $T_a = -40^{\circ}\text{C} \times 1000\text{ hours}$ | PASS |
| 3 | High temperature storage | $T_a = 100^{\circ}\text{C} \times 1000\text{ hours}$ | PASS |
| 4 | Moisture resistance | $T_a = 60^{\circ}\text{C}$, 90%RH for 1000 hours | PASS |
| 5 | Thermal shock | $T_a = -40^{\circ}\text{C} \times 30\text{ minutes} \sim 100^{\circ}\text{C} \times 30\text{ minutes}$, 100 cycle | PASS |

4-2. FAILURE CRITERIA

| NO. | PARAMETER | SYMBOL | FAILURE CRITERIA |
|-----|-----------------|--------|--|
| 1 | Forward Voltage | V_F | $V_F > \text{Initial value} \times 1.1$ |
| 2 | Luminous Flux | Φ | $\Phi < \text{Initial value} \times 0.7$ |



TECHNICAL DATA SHEET

ATL-X4-12 SERIES <FOR TOPLIGHT COB MODULE>

5. CHROMATICITY COORDINATES REGIONAL

5-1. 3000K CHROMATICITY COORDINATES

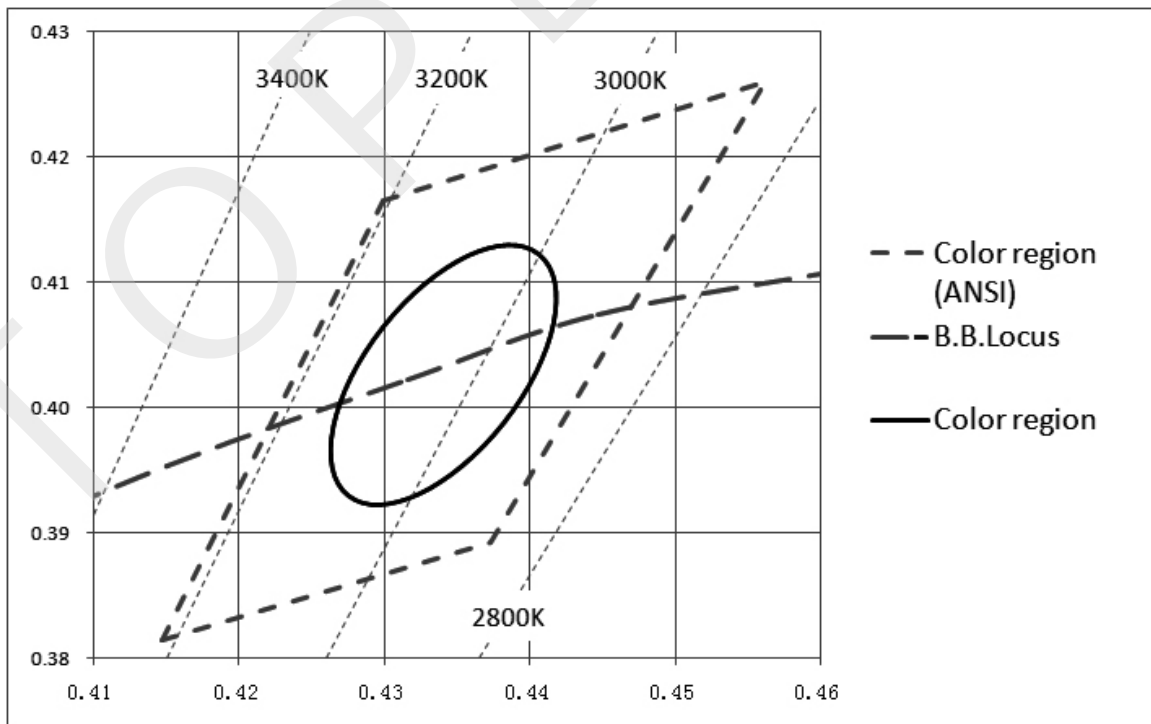
(Tolerance: $x,y \pm 0.005$)

($I_F = 160\text{mA}$, $T_c = 25^\circ\text{C}$)

| Range | | Chromaticity coordinates | | | | |
|-------|---|--------------------------|--------|--------|--------|--------|
| | | NO.1 | NO.2 | NO.3 | NO.4 | NO.5 |
| | x | 0.4363 | 0.4305 | 0.4320 | 0.4340 | 0.4377 |
| | y | 0.4201 | 0.4206 | 0.4201 | 0.4188 | 0.4180 |

* The percentage of each rank in the shipment shall be determined by TOPLIGHT.

Chromaticity Diagram



Note: The tolerance of measurement at our tester is $V_F \pm 3\%$, $D_v \pm 10\%$, Chromaticity(x,y) ± 0.005 .



TECHNICAL DATA SHEET

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5-2. 5000K CHROMATICITY COORDINATES

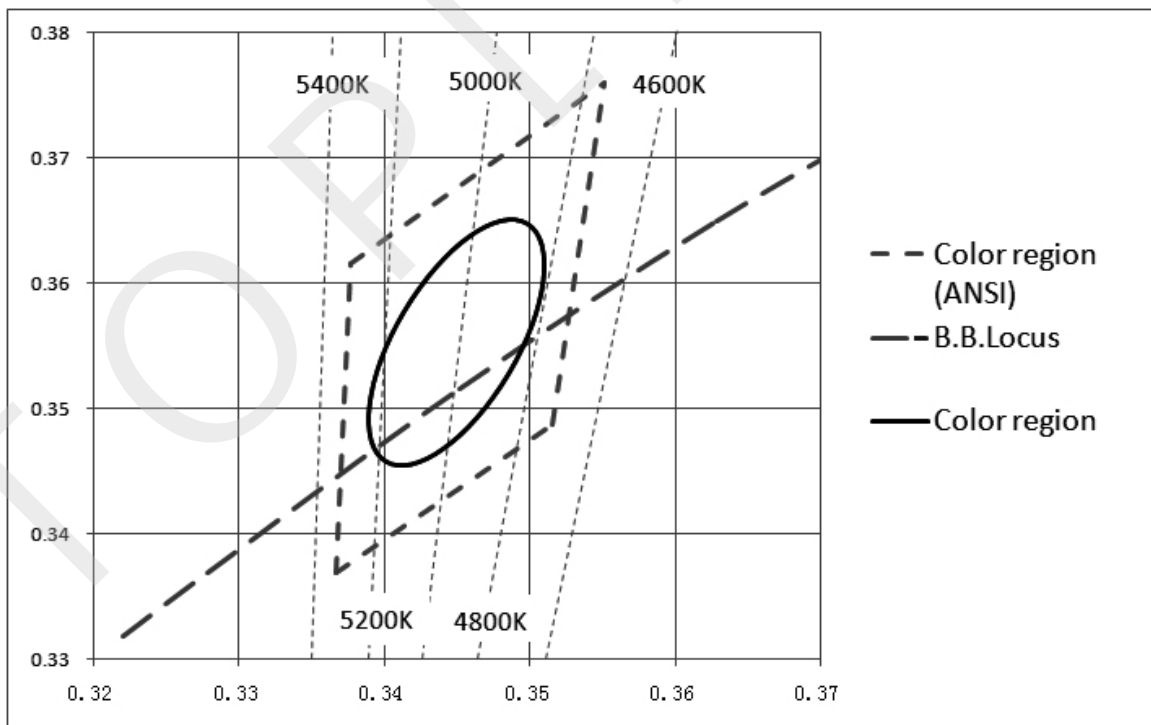
(Tolerance: $x,y \pm 0.005$)

($I_F = 160\text{mA}, T_c = 25^\circ\text{C}$)

| Range | | Chromaticity coordinates | | | | |
|-------|----------|--------------------------|--------|--------|--------|--------|
| | | NO.1 | NO.2 | NO.3 | NO.4 | NO.5 |
| | x | 0.3551 | 0.3376 | 0.3366 | 0.3515 | 0.3551 |
| | y | 0.376 | 0.3616 | 0.3369 | 0.3487 | 0.376 |

* The percentage of each rank in the shipment shall be determined by TOPLIGHT.

Chromaticity Diagram



Note: The tolerance of measurement at our tester is $V_F \pm 3\%$, $D_v \pm 10\%$, Chromaticity(x,y) ± 0.005 .



TECHNICAL DATA SHEET

ATL-X4-12 SERIES <FOR TOPLIGHT COB MODULE>

5-3. 6500K CHROMATICITY COORDINATES

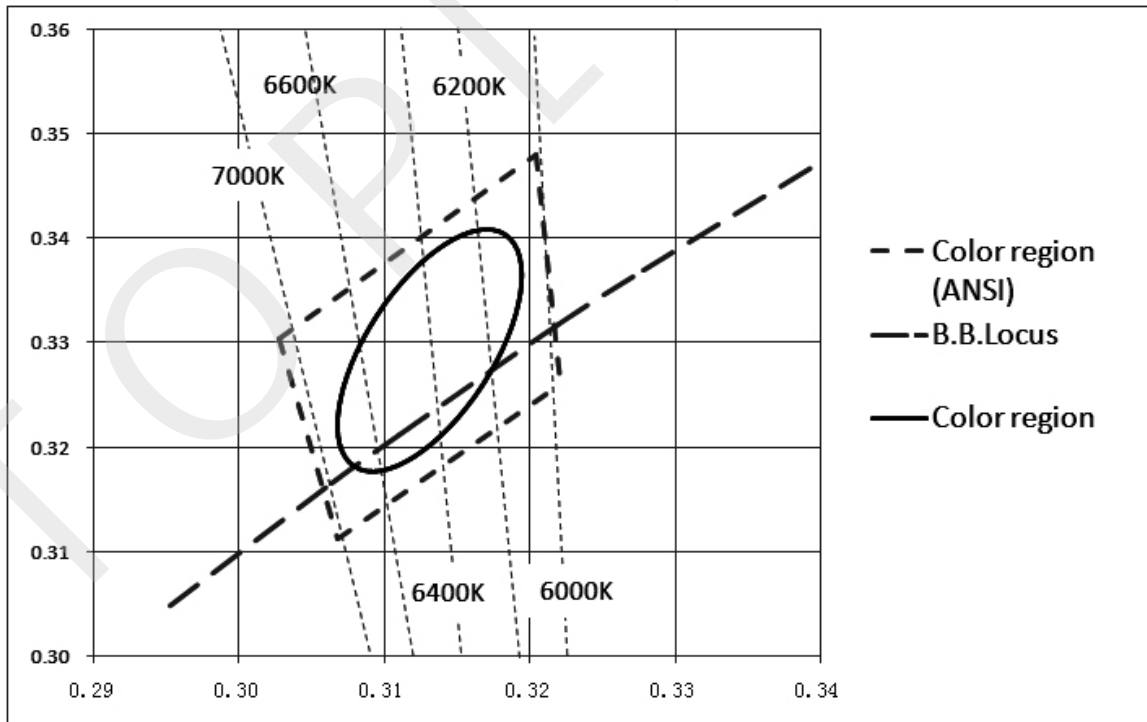
(Tolerance: x,y ± 0.005)

(I_F =160mA, T_c= 25°C)

| Range | | Chromaticity coordinates | | | | |
|-------|---|--------------------------|--------|--------|--------|--------|
| | | NO.1 | NO.2 | NO.3 | NO.4 | NO.5 |
| | x | 0.3205 | 0.3028 | 0.3068 | 0.3221 | 0.3205 |
| | y | 0.3481 | 0.3304 | 0.3113 | 0.3261 | 0.3481 |

* The percentage of each rank in the shipment shall be determined by TOPLIGHT.

Chromaticity Diagram



Note: The tolerance of measurement at our tester is VF±3% , Dv±10% , Chromaticity(x,y)±0.005.



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6. PACKING

- ◆ One packaging tube installed a light bar
- ◆ One cardboard box interior 60, total of 60pieces
- ◆ Packaging Tube Size: 330mm × 14mm × 5.5mm
- ◆ Dimensions of outer carton: 400 × 190 × 95mm (Reference value)

60 pieces × 1 box = 60 pieces

1 piece × 60 = 60 pieces

1 piece × 1 tube = 1 piece

