# Round Through-Hole LED Lamp (5 mm)

## OVLFx3C7

### Features:

- High brightness with well-defined spatial radiation patterns
- UV-resistant epoxy lens
- 30° Beam Angle

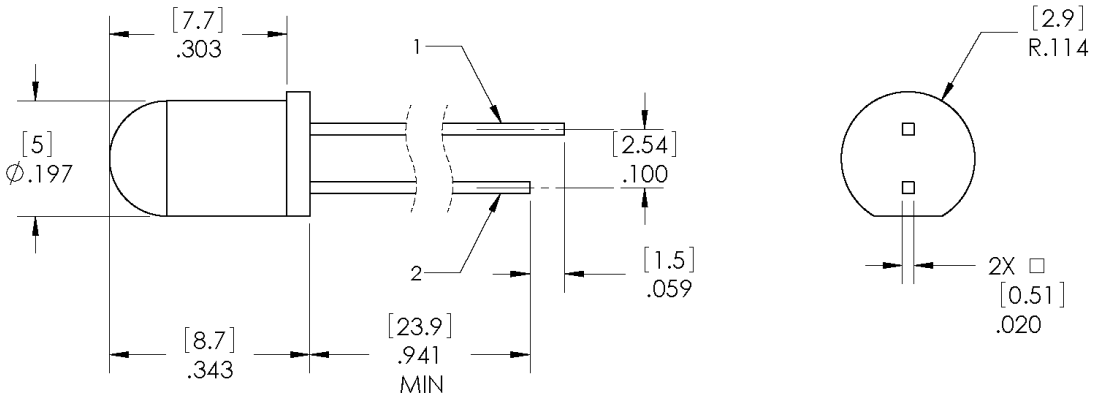
### Description:

Each device in the OVLFx3C7 series is a high-intensity LED mounted in a clear plastic T-1¾ package. The LED provides a well-defined and even emission pattern. The UV-resistant epoxy lens makes this device an optimal solution for outdoor applications.

### Applications:

- Traffic and pedestrian signals
- Signage and architectural lighting
- Backlighting
- Automotive

| Part Number | Material | Emitted Color | Intensity Typ. mcd | Lens Color |
|---|---|---|---|---|
| OVLFB3C7 | InGaN | Blue | 5,200 | Clear |
| OVLFG3C7 | InGaN | Green | 16,000 | Clear |
| OVLFR3C7 | AlInGaP | Red | 7,400 | Clear |
| OVLFY3C7 | AlInGaP | Yellow | 7,400 | Clear |




RoHS

ATTENTION
OBSERVE PRECAUTIONS
ELECTROSTATIC
SENSITIVE DEVICES

1 ANODE 2 CATHODE DIMENSIONS ARE IN INCHES AND [MILLIMETERS].

Leadframe material is iron alloy with tin-plated leads

**DO NOT LOOK DIRECTLY AT LED WITH UNSHIELDED EYES OR DAMAGE TO RETINA MAY OCCUR.**



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## Electrical Specifications

**Absolute Maximum Ratings** ($T_A$ = 25° C unless otherwise noted)

| | | |
|---|---|---|
| Storage Temperature Range | | -40 ~ +100 °C |
| Operating Temperature Range | | -40 ~ +100 °C |
| Reverse Voltage | | 5 V |
| Continuous Forward Current | Blue, Green | 25 mA |
| Continuous Forward Current | Red, Yellow | 50 mA |
| Peak Forward Current (10% Duty Cycle, 1 kHz) | Blue, Green | 100 mA |
| Peak Forward Current (10% Duty Cycle, 1 kHz) | Red, Yellow | 100 mA |
| Power Dissipation | Blue, Green | 100 mW |
| Power Dissipation | Red, Yellow | 120 mW |
| Current Linearity vs Ambient Temperature | Blue, Green | -0.29 mA/° C |
| Current Linearity vs Ambient Temperature | Red, Yellow | -0.72 mA/° C |
| Electrostatic Discharge Classification (JEDEC-JESD22-A114F) | | Class 1C |
| LED Junction Temperature | | 125° C |
| Lead Soldering Temperature (4 mm from the base of the epoxy bulb) | | 260° C / 5 seconds |

**Electrical Characteristics** $T_A$ = 25° C unless otherwise noted

| SYMBOL | PARAMETER | COLOR | MIN | TYP | MAX | UNITS | CONDITIONS |
|---|---|---|---|---|---|---|---|
| $I_V$ | Luminous Intensity | Blue | 3,115 | 5,200 | ---- | mcd | $I_F$ = 20 mA |
| | | Green | 8,550 | 16,000 | ---- | | |
| | | Red | 4,360 | 7,400 | ---- | | |
| | | Yellow | 4,360 | 7,400 | ---- | | |
| $V_F$ | Forward Voltage | Blue | 2.6 | 3.4 | 4.0 | V | $I_F$ = 20 mA |
| | | Green | | | | | |
| | | Red | 1.8 | 2.0 | 2.4 | | |
| | | Yellow | | | | | |
| $I_R$ | Reverse Current | Blue | ---- | ---- | 10 | µA | $V_R$ = 5 V |
| | | Green | | | | | |
| | | Red | | | | | |
| | | Yellow | | | | | |
| $\lambda_D$ | Dominant Wavelength | Blue | 460 | 470 | 475 | nm | $I_F$ = 20 mA |
| | | Green | 519 | 525 | 531 | | |
| | | Red | 620 | 623 | 630 | | |
| | | Yellow | 585 | 589 | 595 | | |
| Δλ | Spectra Half Width | Blue | ---- | 25 | ---- | nm | $I_F$ = 20 mA |
| | | Green | | | | | |
| | | Red | | | | | |
| | | Yellow | | | | | |
| 2Θ½H-H | 50% Power Angle | | ---- | 30 | ---- | deg | $I_F$ = 20 mA |




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## Typical Electro-Optical Characteristics Curves (BLUE)

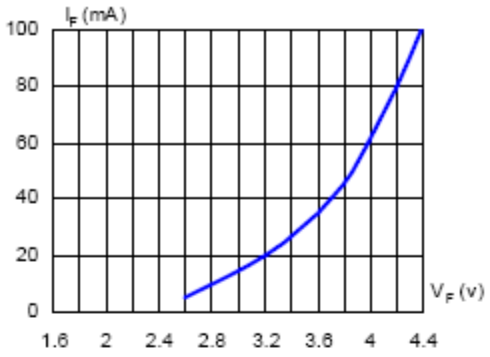


Fig. 1 Forward Current vs. Forward Voltage

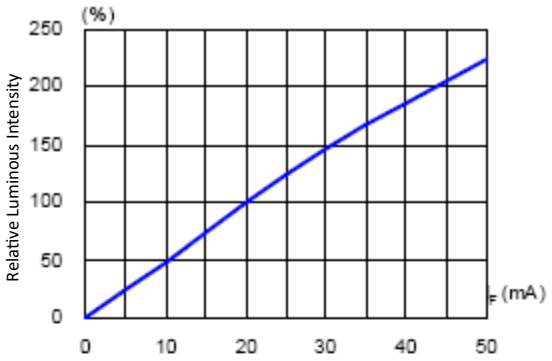


Fig. 2 Luminous Intensity vs. Forward Current

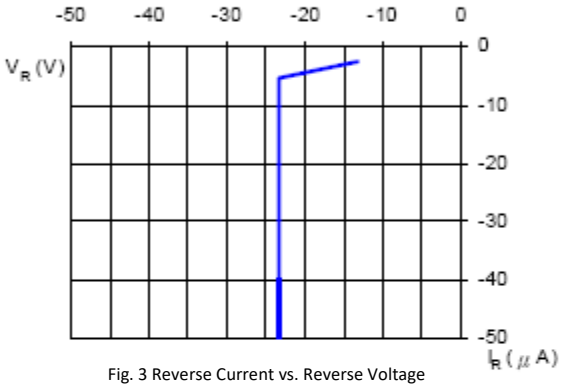


Fig. 3 Reverse Current vs. Reverse Voltage

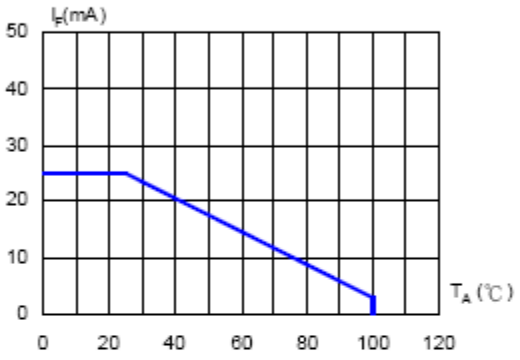


Fig. 4 Allow able Forward Current vs. Ambient Temperature

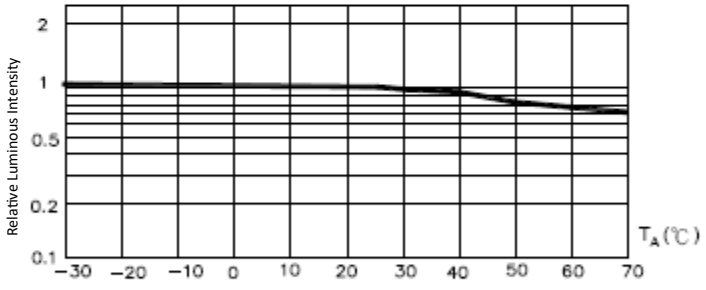


Fig. 5 Luminous Intensity at $I_F$ = 20mA vs. Ambient Temperature

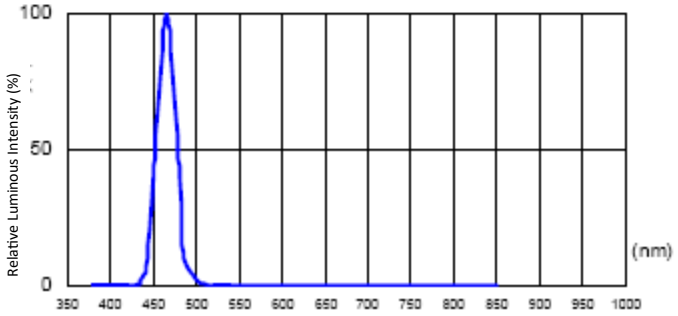


Fig. 6 Relative Luminous Intensity vs. Wavelength




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## Typical Electro-Optical Characteristics Curves (GREEN)

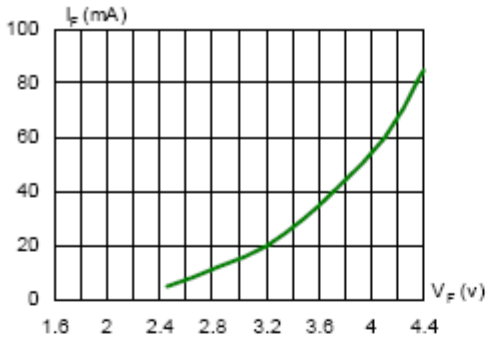


Fig.1 Forward Current vs Forward Voltage

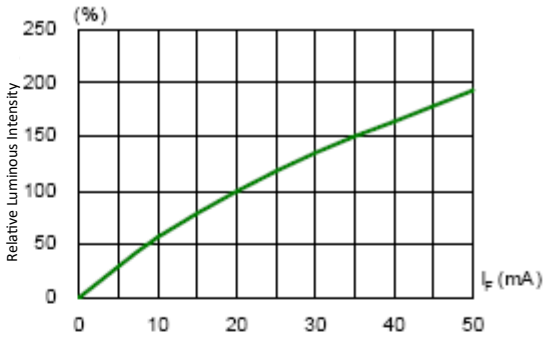


Fig. 2 Luminous Intensity vs. Forward Current

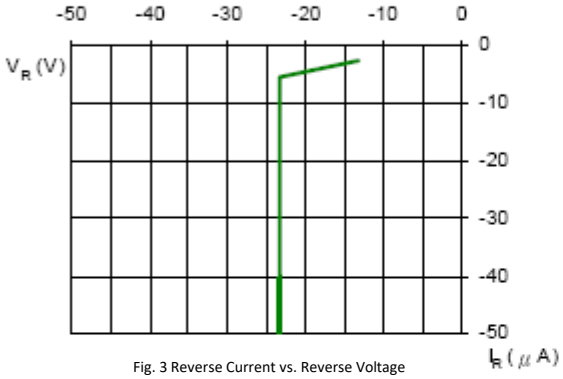


Fig. 3 Reverse Current vs. Reverse Voltage

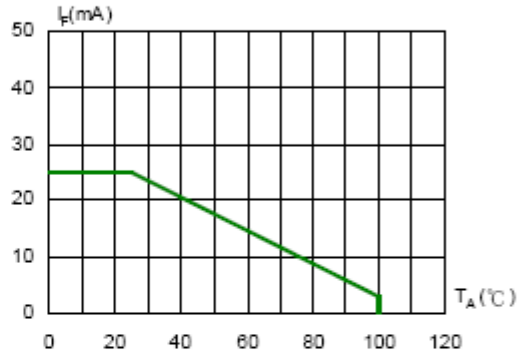


Fig. 4 Allow able Forward Current vs. Ambient Temperature

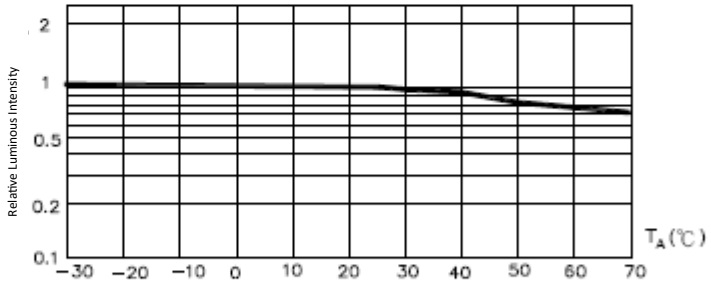


Fig. 5 Luminous Intensity at $I_F$ = 20mA vs. Ambient Temperature

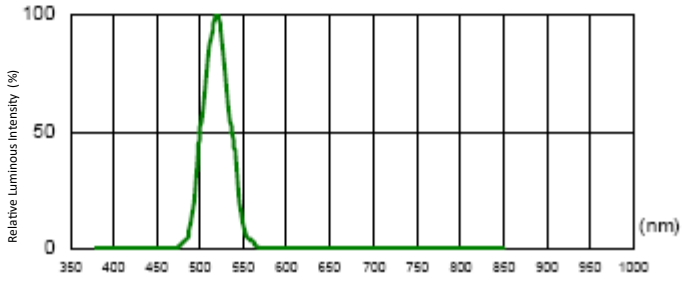


Fig. 6 Relative Luminous Intensity vs. Wavelength




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## Typical Electro-Optical Characteristics Curves (RED)

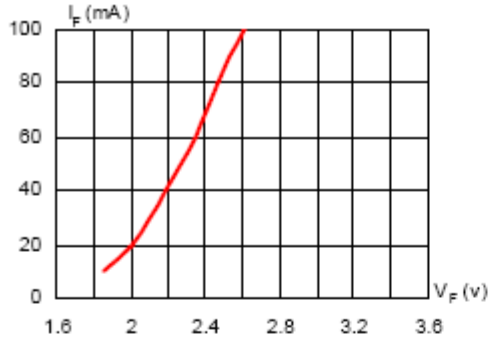


Fig. 1 Forward Current vs. Forward Voltage

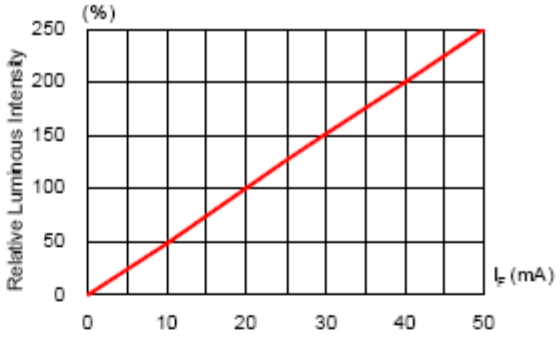


Fig. 2 Luminous Intensity vs Forward Current

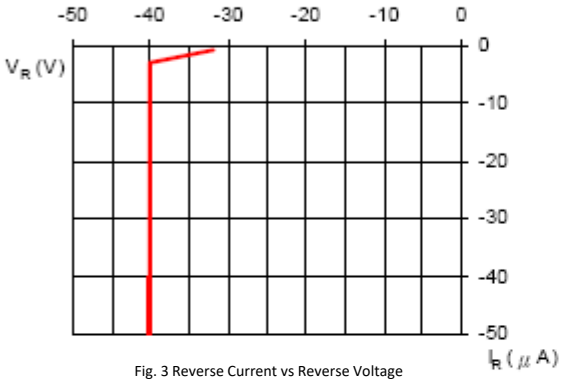


Fig. 3 Reverse Current vs Reverse Voltage

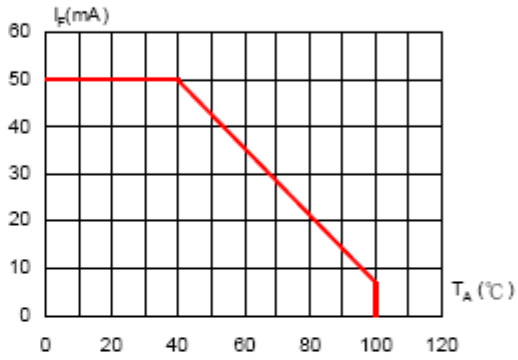


Fig. 4 Allow able Forward Current vs. Ambient Temperature

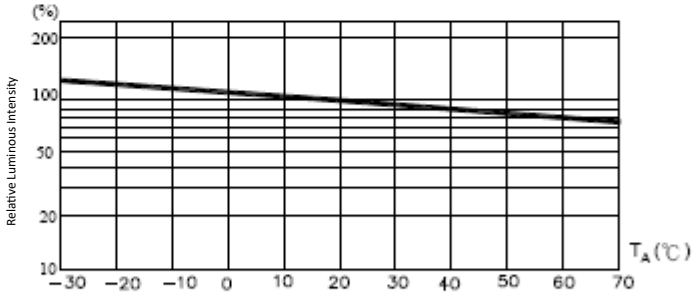


Fig. 5 Luminous Intensity at $I_F$ + 20mA vs. Ambient Temperature

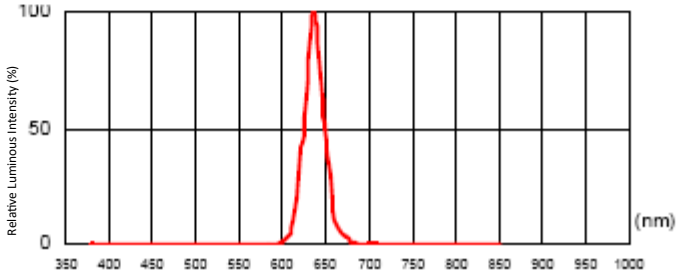


Fig. 6 Relative Luminous Intensity vs. Wavelength




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## Typical Electro-Optical Characteristics Curves (YELLOW)

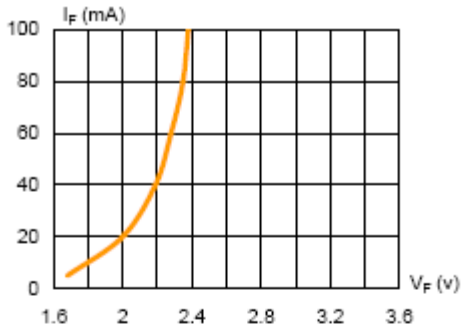


Fig.1 Forward Current vs. Forward Voltage

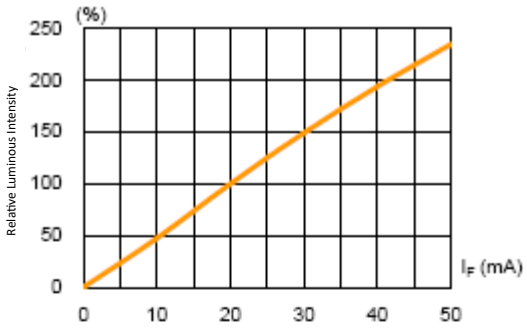


Fig. 2 Luminous Intensity vs. Forward Current

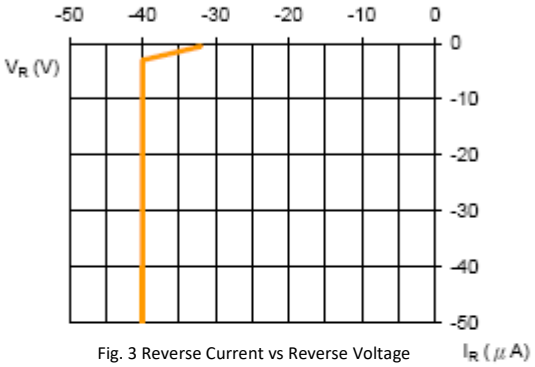


Fig. 3 Reverse Current vs Reverse Voltage

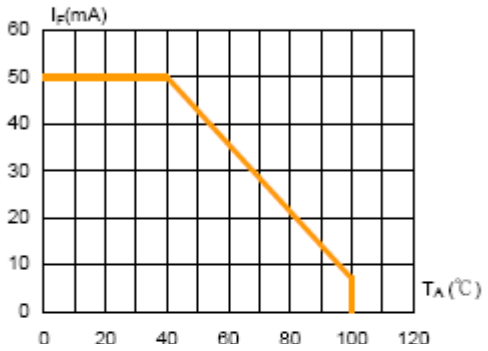


Fig. 4 Allowable Forward Current vs. Ambient Temperature

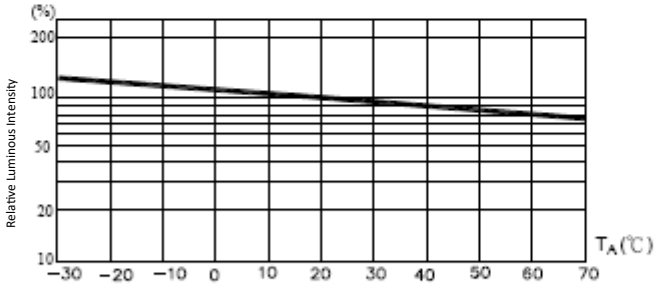


Fig. 5 Luminous Intensity at IF = 20mA vs. Ambient Temperature

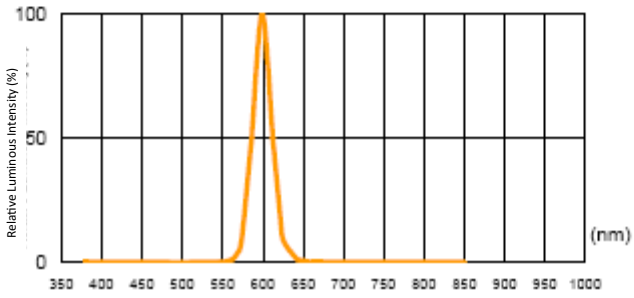


Fig. 6 Relative Luminous Intensity vs. Wavelength




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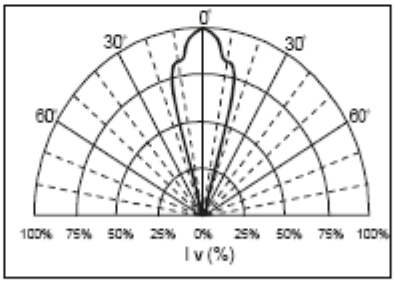
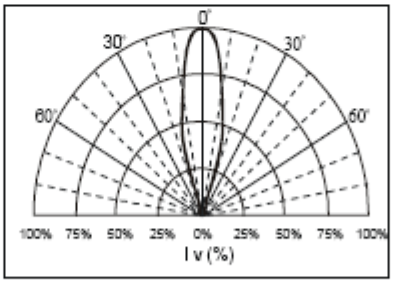
## Beam Pattern

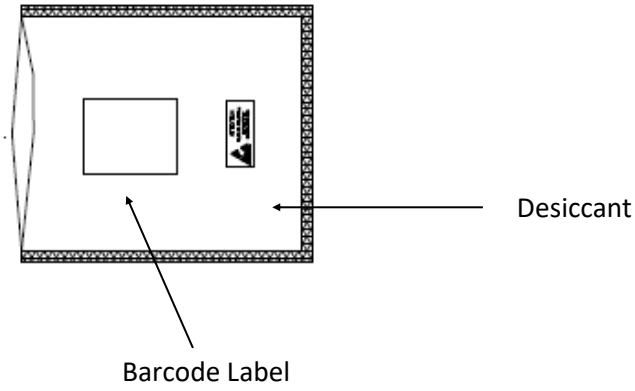
(RED) and (YELLOW)




(BLUE) and (GREEN)




**Packaging:** 500 pcs per bulk bag with desiccant



## Reliability Test

LED lamps are checked by reliability tests based on MIL standards.

| Classi-fication | Test Item | Standard Test Method | Test Conditions | Duration | Unit | Acc / Rej Criteria | Result |
|---|---|---|---|---|---|---|---|
| Life Test | Operation Life Test (OLT) | MIL-STD-750D Method 1026.3 | $T_A$=25℃ , $I_F$ =30mA * | 1000 Hrs | 100 | 0 / 1 | Pass |
| Environment Test | High Temperature Storage (HTS) | MIL-STD-750D Method 1032.1 | $T_A$=100℃ | 1000 Hrs | 100 | 0 / 1 | Pass |
| | Low Temperature Storage (LTS) | MIL-STD-750D Method 1032.1 | $T_A$=−40℃ | 1000 Hrs | 100 | 0 / 1 | Pass |
| | Temp. & Humidity with Bias (THB) | MIL-STD-750D Method 103B | $T_A$=85℃ , Rh=85% $I_F$ =20mA ** | 500 Hrs | 100 | 0 / 1 | Pass |
| | Thermal Shock Test (TST) | MIL-STD-750D Method 1056.1 | 0℃ ~ 100℃<br>2min 2min | 100 cycles | 100 | 0 / 1 | Pass |
| | Temperature | MIL-STD-750D | -40℃ ~25℃~ 100℃ ~25℃ | 100 | 100 | 0 / 1 | Pass |

Remark : (*) $I_F$ =30mA for AlInGaP chip ; $I_F$ =20mA for InGaN chip

(**) $I_F$ =20mA for AlInGaP chip ; $I_F$ =10mA for InGaN chip

Mechanical Test

**2. Failure Criteria ($T_A$ =25℃):**

| Test Item | Symbol | Test Conditions | Criteria for Judgment | |
|---|---|---|---|---|
| | | | Min. | Max. |
| Luminous Intensity | $I_V$ | $I_F$ =20 mA | LSL×0.7 ** | |
| Voltage (Forward) | $V_F$ | $I_F$ =20 mA | | USL×1.1 * |

(*) USL : Upper Standard Level , (**) LSL : Lower Standard Level

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