

Cylindrical High-Intensity LED (5 mm)

OVLLx8C7



Features:

- Wide viewing angle
- High-brightness indicator
- Industry standard lead spacing
- Unique lens shape for flexible applications



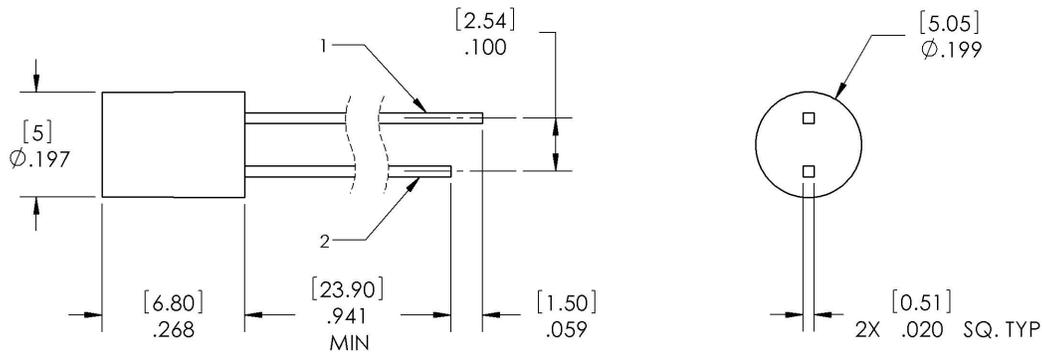
Description:

The OVLLx8C7 series is designed for superior performance in signage and lighting applications that require wide-angle uniform light output. These devices combine a high-intensity LED with a unique flat-topped T-1 $\frac{3}{4}$ package to provide both high brightness and a wide spatial radiation pattern.

Applications:

- Channel letter and other signage backlighting
- Decorative architectural indoor and outdoor lighting accents
- Industrial and consumer indicators

| Part Number | Material | Emitted Color | Intensity Typ. mcd | Lens Color |
|-------------|----------|---------------|--------------------|------------|
| OVLLB8C7 | InGaN | Blue | 440 | Clear |
| OVLLG8C7 | InGaN | Green | 2400 | Clear |
| OVLLR8C7 | AllnGaP | Red | 900 | Clear |
| OVLLY8C7 | AllnGaP | Yellow | 980 | Clear |



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

TOLERANCES ARE .005 [.12] UNLESS OTHERWISE SPECIFIED.



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

General Note

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Electrical Specifications

Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$ 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) | | 100 mA |
| Power Dissipation | Blue, Green | 100 mW |
| Power Dissipation | Red, Yellow | 120 mW |
| Lead Soldering Temperature (4 mm from the base of the epoxy bulb) ¹ | | 260° C / 5 seconds |
| LED Junction Temperature | | 125° C |
| Electrostatic Discharge Classification (JEDEC-JESD22-A114F) | | Class 1C |
| Current Linearity vs. Ambient Temperature | Blue, Green | -0.29 mA/° C |
| Current Linearity vs. Ambient Temperature | Red, Yellow | -0.72 mA/° C |

Electrical Characteristics $T_A = 25^\circ\text{C}$ unless otherwise noted

| SYMBOL | PARAMETER | COLOR | MIN | TYP | MAX | UNITS | CONDITIONS |
|-----------------------------|---------------------|-------------|------|------|------|---------------|----------------------|
| I_v | Luminous Intensity | Blue | 295 | 440 | ---- | mcd | $I_F = 20\text{ mA}$ |
| | | Green | 1135 | 2400 | ---- | | |
| | | Red | 580 | 900 | ---- | | |
| | | Yellow | 580 | 980 | ---- | | |
| V_F | Forward Voltage | Blue, Green | ---- | 3.2 | 4.0 | V | $I_F = 20\text{ mA}$ |
| | | Red, Yellow | ---- | 2.0 | 2.4 | | |
| I_R | Reverse Current | Blue, Green | ---- | ---- | 10 | μA | $V_R = 5\text{ V}$ |
| | | Red, Yellow | | | | | |
| λ_D | Dominant Wavelength | Blue | 460 | 470 | 475 | nm | $I_F = 20\text{ mA}$ |
| | | Green | 519 | 525 | 531 | | |
| | | Red | 620 | 623 | 630 | | |
| | | Yellow | 585 | 589 | 595 | | |
| 2 $\theta_{\frac{1}{2}H-H}$ | 50% Power Angle | Blue, Green | ---- | 85 | ---- | deg | $I_F = 20\text{ mA}$ |
| | | Red, Yellow | ---- | 100 | ---- | | |

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Typical Electro-Optical Characteristics Curves (BLUE)

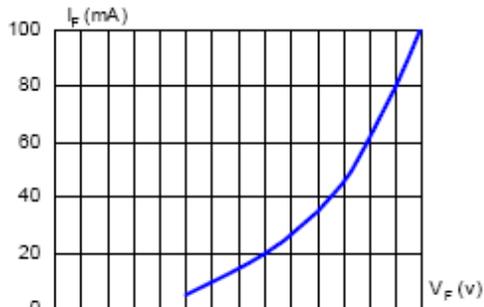


Fig.1 Forward Current vs. Forward Voltage

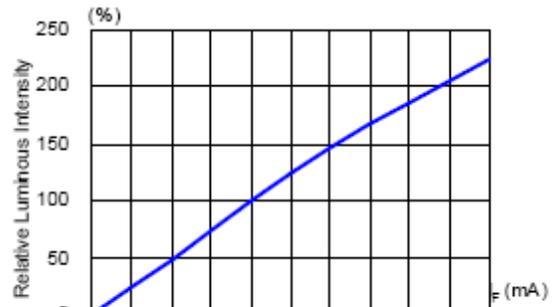


Fig.2 Luminous Intensity vs. Forward Current

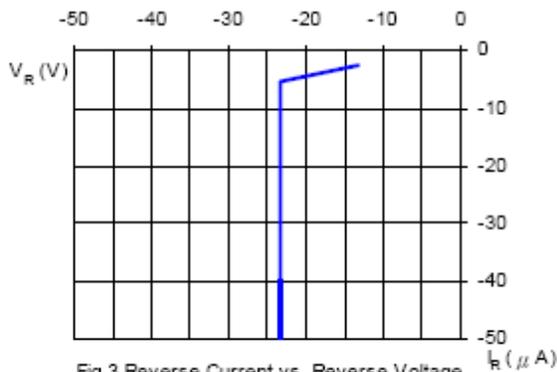


Fig.3 Reverse Current vs. Reverse Voltage

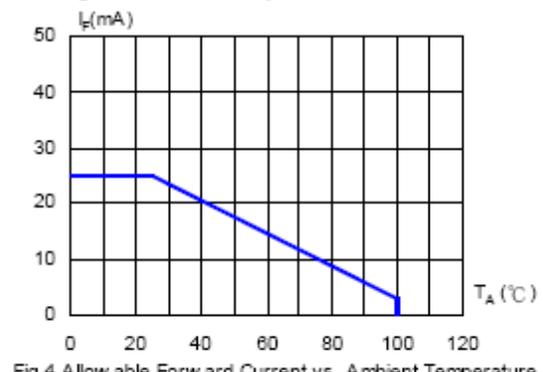


Fig.4 Allowable Forward Current vs. Ambient Temperature

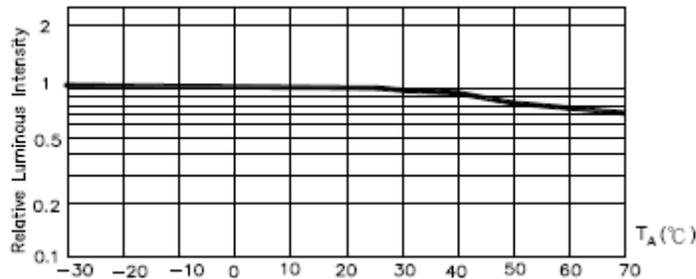


Fig.5 Luminous Intensity at $I_F=20mA$ vs. Ambient Temperature

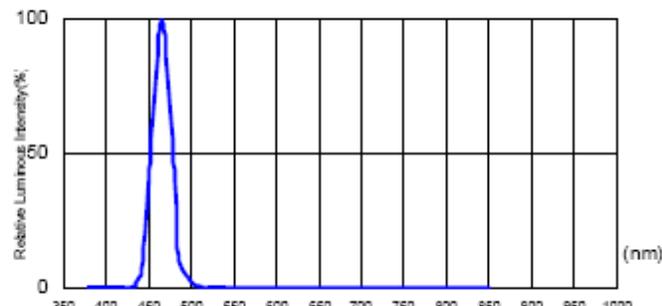


Fig.6 Relative Luminous Intensity vs. Wavelength

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Typical Electro-Optical Characteristics Curves (GREEN)

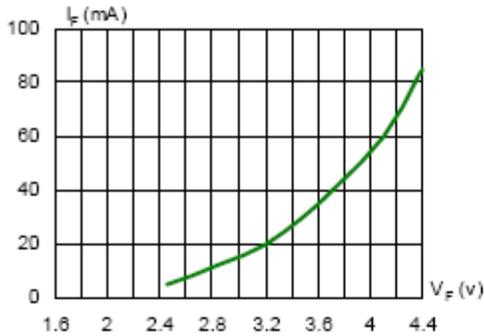


Fig.1 Forward Current vs. Forward Voltage

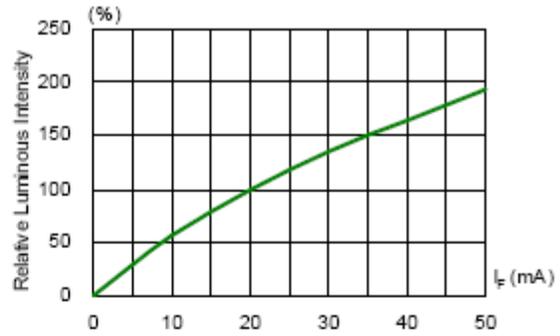


Fig.2 Luminous Intensity vs. Forward Current

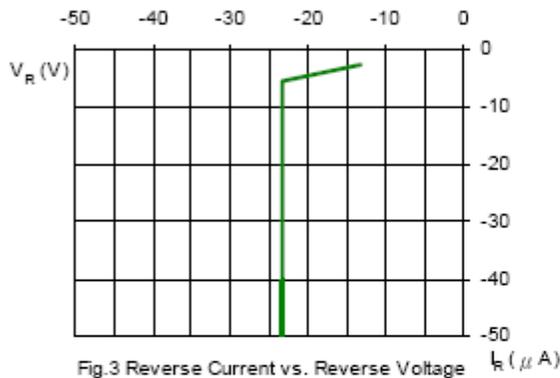


Fig.3 Reverse Current vs. Reverse Voltage

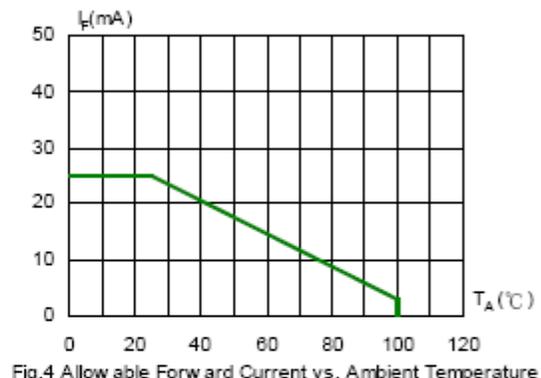


Fig.4 Allowable Forward Current vs. Ambient Temperature

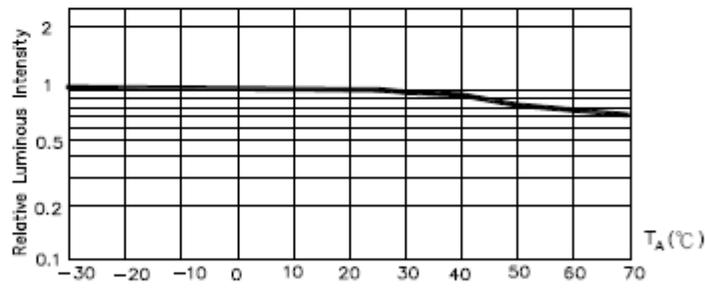


Fig.5 Luminous Intensity at $I_F=20mA$ vs. Ambient Temperature

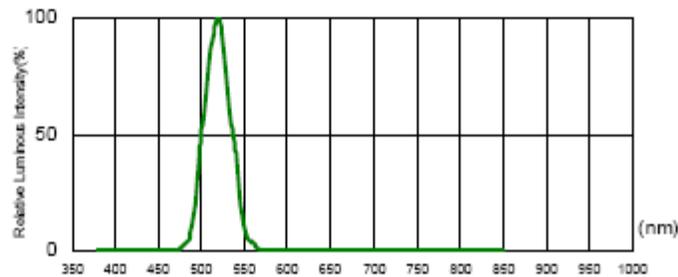


Fig.6. Relative Luminous Intensity vs. Wavelength

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Typical Electro-Optical Characteristics Curves (RED)

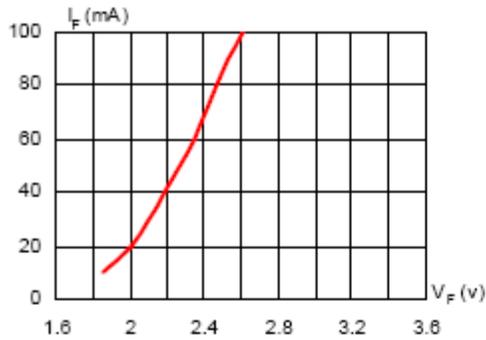


Fig. 1 Forward Current vs Forward Voltage

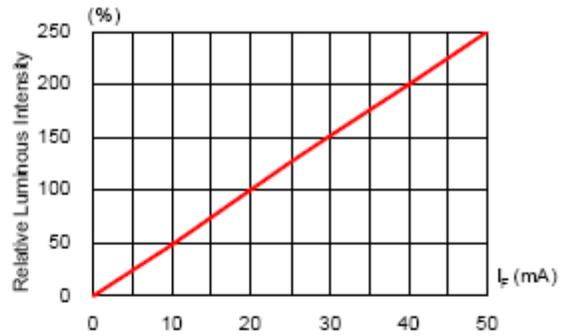


Fig. 2 Luminous Intensity vs. Forward Current

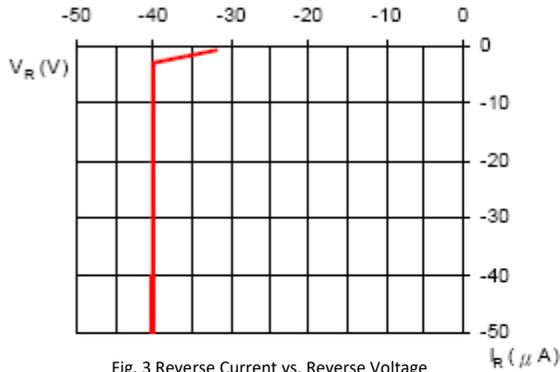


Fig. 3 Reverse Current vs. Reverse Voltage

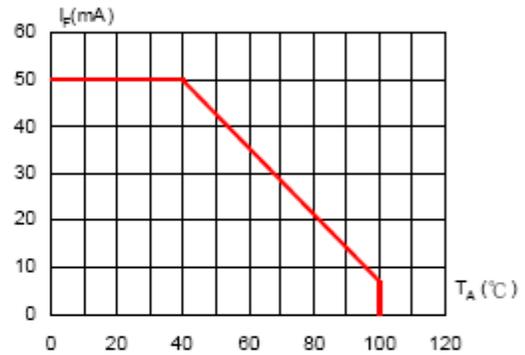


Fig. 4 Allowable Forward Current vs. Ambient Temperature

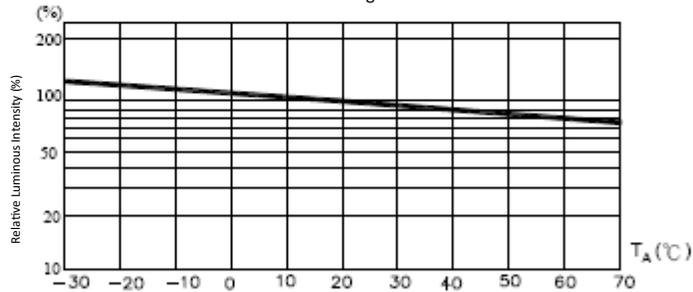


Fig. 5 Luminous Intensity at $I_F=20mA$ vs. Ambient Temperature

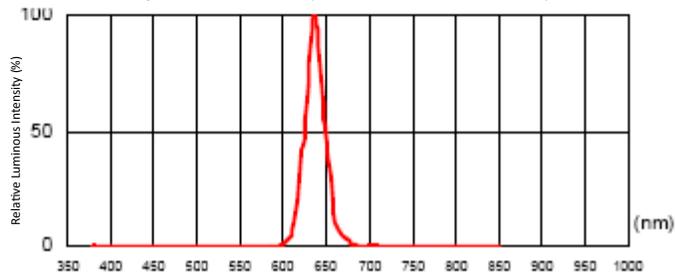


Fig. 6 Relative Luminous Intensity vs. Wavelength

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Typical Electro-Optical Characteristics Curves (YELLOW)

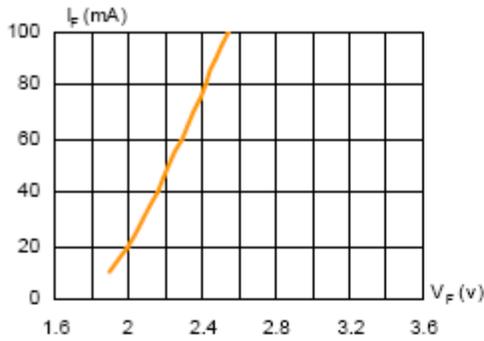


Fig. 1 Forward Current vs. Forward Voltage

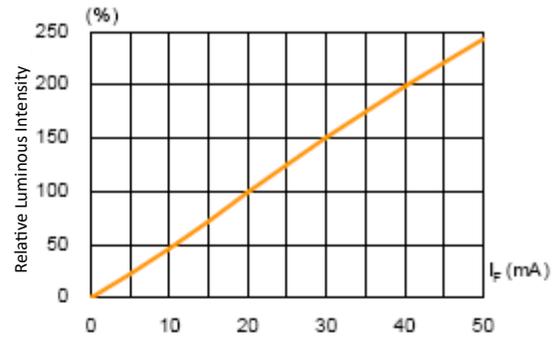


Fig. 2 Luminous Intensity vs. Forward Current

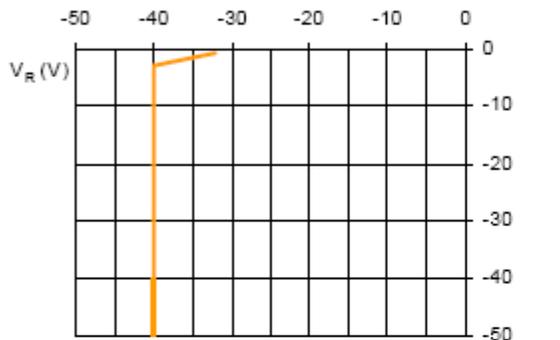


Fig. 3 Reverse Current vs. Reverse Voltage

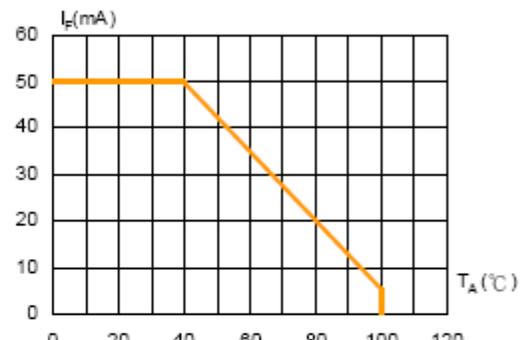


Fig. 4 Allowable Forward Current vs. Ambient Temperature

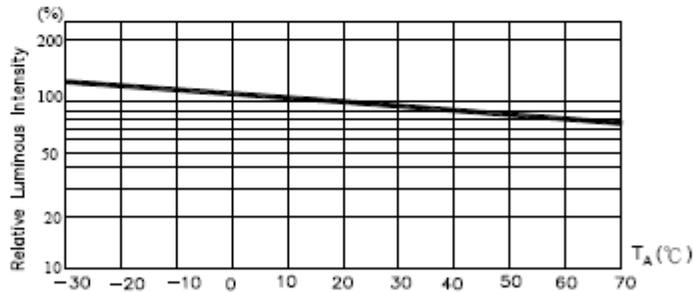


Fig. 5 Luminous Intensity at $I_F = 20mA$ vs. Ambient Temperature

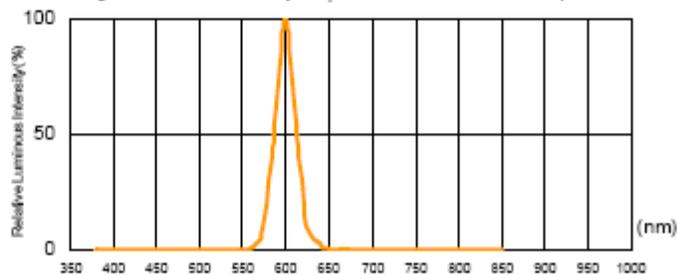


Fig. 6. Relative Luminous Intensity vs. Wavelength

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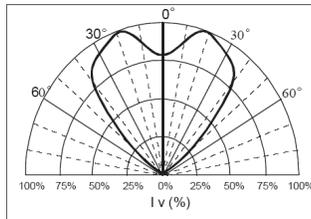
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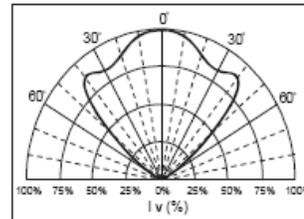


Beam Pattern

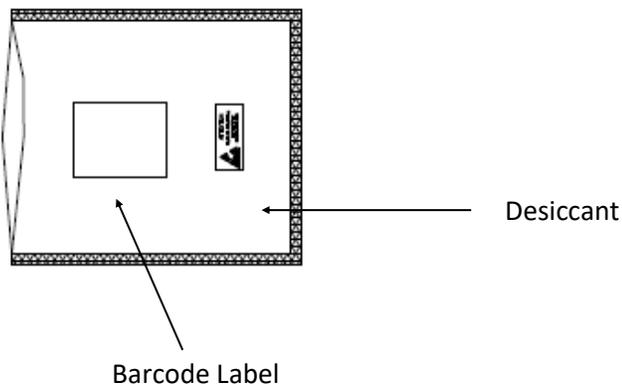
BLUE and GREEN



RED and YELLOW



Packaging: 500 pcs per bulk bag with desiccant



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Reliability Test

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

1. Test Conditions, Acceptable Criteria & Results:

| Classification | 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 | $T_A=25^{\circ}\text{C}$, $I_F=30\text{mA}$ * | 1000 Hrs | 100 | 0 / 1 | Pass |
| Environment Test | High Temperature Storage (HTS) | MIL-STD-750D Method 1032.1 | $T_A=100^{\circ}\text{C}$ | 1000 Hrs | 100 | 0 / 1 | Pass |
| | Low Temperature Storage (LTS) | MIL-STD-750D Method 1032.1 | $T_A=-40^{\circ}\text{C}$ | 1000 Hrs | 100 | 0 / 1 | Pass |
| | Temp. & Humidity with Bias (THB) | MIL-STD-750D Method 103B | $T_A=85^{\circ}\text{C}$, $R_h=85\%$ $I_F=20\text{mA}$ ** | 500 Hrs | 100 | 0 / 1 | Pass |
| | Thermal Shock Test (TST) | MIL-STD-750D Method 1056.1 | 0°C ~ 100°C 2min 2min | 100 cycles | 100 | 0 / 1 | Pass |
| | Temperature Cycling Test (TCT) | MIL-STD-750D Method 1051.5 | -40°C ~ 25°C ~ 100°C ~ 25°C 30min 5min 30min 5min | 100 cycles | 100 | 0 / 1 | Pass |
| Mechanical Test | Solderability | MIL-STD-750D Method 2026.4 | $235\pm 5^{\circ}\text{C}$, 5 sec. | 1 time | 20 | 0 / 1 | Pass |
| | Resistance to Soldering Heat | MIL-STD-750D Method 2031.1 | $260\pm 5^{\circ}\text{C}$, 5 sec. | 1 time | 20 | 0 / 1 | Pass |
| | Lead Integrity | MIL-STD-750D Method 2036.3 | Load 2.5N (0.25kgf) 0° ~ 90° ~ 0° , bend | 3 times | 20 | 0 / 1 | Pass |

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

(**) $I_F=20\text{mA}$ for AlInGaP chip ; $I_F=10\text{mA}$ for InGaN chip

2. Failure Criteria ($T_A=25^{\circ}\text{C}$):

| Test Item | Symbol | Test Conditions | Criteria for Judgment | |
|--------------------|--------|--------------------|-----------------------|--------------------|
| | | | Min. | Max. |
| Luminous Intensity | I_V | $I_F=20\text{ mA}$ | $LSL \times 0.7$ ** | |
| Forward Voltage | V_F | $I_F=20\text{ mA}$ | | $USL \times 1.1$ * |

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

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