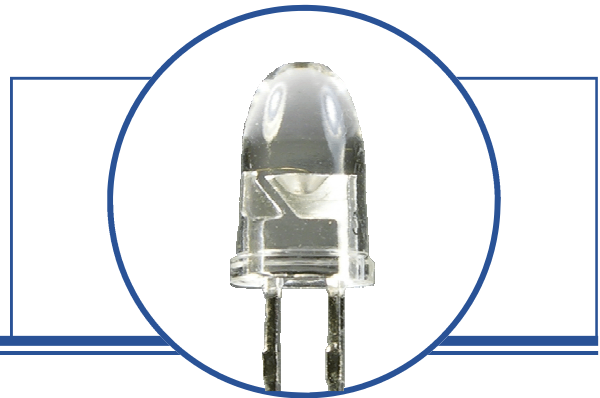


High-Intensity LED in Plastic T-1³/₄ Package

OVLG Series

- Narrow beam angle
- High brightness LED
- Water clear plastic package
- UV resistant epoxy

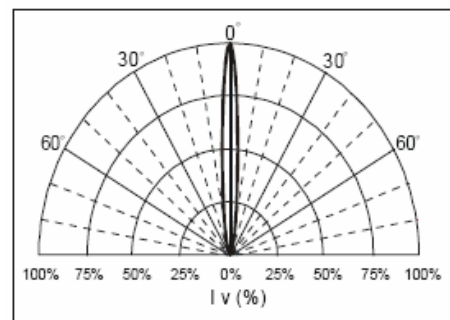
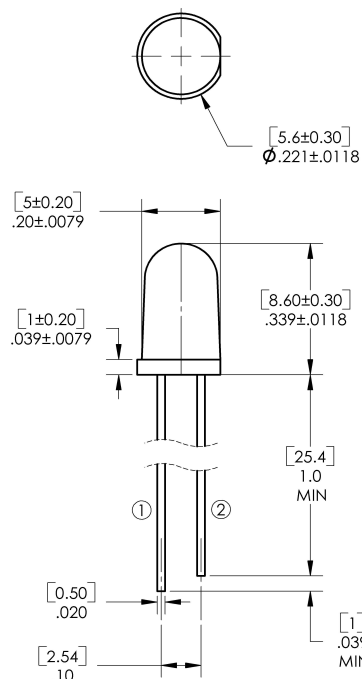


Each device in the **OVLG Series** is a high intensity LED mounted in a clear plastic T-1³/₄ package. Each device incorporates an integral molded lens that enables a narrow beam angle and provides an even emission pattern. Designed to produce light over a wide range of drive currents, these LEDs are useful in applications that require a higher on-axis brightness than that achievable with standard lamps.

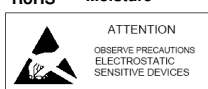
Applications

- Indoor/outdoor applications
- Variable message boards
- Store front signage
- Indicators

| Part Number | Material | Emitted Color | Intensity Typ. mcd | Lens Color |
|-------------|----------|---------------|--------------------|-------------|
| OVLGB0C6B9 | InGaN | Blue | 3800 | Water Clear |
| OVLGC0C6B9 | | Blue-Green | 9800 | |
| OVLGS0C8B9 | AlInGaP | Red | 8550 | |
| OVLGY0C9B9 | | Yellow | 10300 | |



Beam Pattern



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

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

OPTEK reserves the right to make changes at any time in order to improve design and to supply the best product possible.

T-1 $\frac{3}{4}$ High-Intensity LED

OVLG Series



Absolute Maximum Ratings

T_A = 25°C

| Parameter | Red, Yellow | Blue, Blue-Green |
|--|----------------|------------------|
| DC Forward Current | 30mA | 20mA |
| Peak Pulsed Forward Current ¹ | 100mA | 50mA |
| Power Dissipation | 72mW | 80mW |
| Current Linearity vs Ambient Temperature | -0.5mA/°C | -0.2mA/°C |
| Junction Temperature | 125°C | |
| Reverse Voltage | 5V | |
| Storage Temperature Range | -40° ~ +100 °C | |
| Operating Temperature Range | -40° ~ +85 °C | |
| Soldering Temperature ² | 260°/5 seconds | |

Note:

1. Duty Ratio = 1/10, Pulse Width = 0.1ms
2. 4mm (.157") away from epoxy

Electrical and Optical Characteristics —Blue

T_A = 25°C

| SYMBOL | PARAMETER | MIN | TYP | MAX | UNITS | CONDITIONS |
|----------------------|---------------------|------|------|------|-------|------------------------|
| I _v | Luminous Intensity | 2225 | 3800 | 6105 | mcd | I _F = 20 mA |
| V _F | Forward Voltage | 2.6 | 3.4 | 4.0 | V | I _F = 20 mA |
| I _R | Reverse Current | ---- | ---- | 50 | μA | V _R = 5 V |
| λ _D | Dominant Wavelength | 460 | 465 | 475 | nm | I _F = 20 mA |
| Δλ | Spectral Half Width | ---- | 25 | ---- | nm | I _F = 20 mA |
| 2Θ $\frac{1}{2}$ H-H | 50% Power Angle | ---- | 6 | ---- | deg | I _F = 20 mA |

Electrical and Optical Characteristics —Blue-Green

T_A = 25°C

| SYMBOL | PARAMETER | MIN | TYP | MAX | UNITS | CONDITIONS |
|----------------------|---------------------|------|------|-------|-------|------------------------|
| I _v | Luminous Intensity | 6105 | 9800 | 16758 | mcd | I _F = 20 mA |
| V _F | Forward Voltage | 2.6 | 3.4 | 4.0 | V | I _F = 20 mA |
| I _R | Reverse Current | ---- | ---- | 50 | μA | V _R = 5 V |
| λ _D | Dominant Wavelength | 499 | 505 | 511 | nm | I _F = 20 mA |
| Δλ | Spectral Half Width | ---- | 25 | ---- | nm | I _F = 20 mA |
| 2Θ $\frac{1}{2}$ H-H | 50% Power Angle | ---- | 6 | ---- | deg | I _F = 20 mA |

T-1³/₄ High-Intensity LED

OVLG Series

Electrical and Optical Characteristics —Red

T_A = 25°C

| SYMBOL | PARAMETER | MIN | TYP | MAX | UNITS | CONDITIONS |
|------------------------------------|---------------------|------|------|-------|-------|------------------------|
| I _v | Luminous Intensity | 6105 | 8550 | 11970 | mcd | I _F = 20 mA |
| V _F | Forward Voltage | 1.8 | 2.0 | 2.4 | V | I _F = 20 mA |
| I _R | Reverse Current | ---- | ---- | 10 | μA | V _R = 5 V |
| λ _D | Dominant Wavelength | 620 | 623 | 630 | nm | I _F = 20 mA |
| Δλ | Spectral Half Width | ---- | 25 | ---- | nm | I _F = 20 mA |
| 2Θ ¹ / ₂ H-H | 50% Power Angle | ---- | 6 | ---- | deg | I _F = 20 mA |

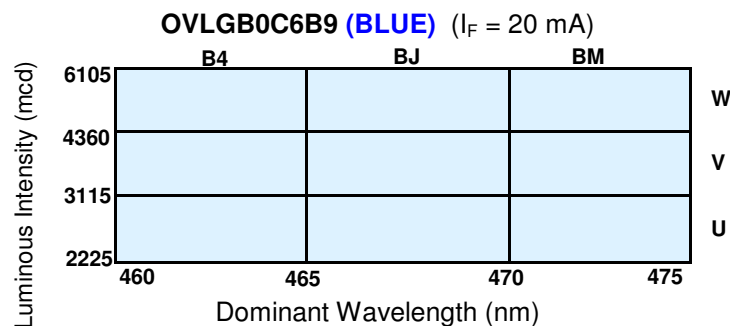
Electrical and Optical Characteristics —Yellow

T_A = 25°C

| SYMBOL | PARAMETER | MIN | TYP | MAX | UNITS | CONDITIONS |
|------------------------------------|---------------------|------|-------|-------|-------|------------------------|
| I _v | Luminous Intensity | 6105 | 10300 | 16758 | mcd | I _F = 20 mA |
| V _F | Forward Voltage | 1.8 | 2.0 | 2.4 | V | I _F = 20 mA |
| I _R | Reverse Current | ---- | ---- | 10 | μA | V _R = 5 V |
| λ _D | Dominant Wavelength | 585 | 589 | 595 | nm | I _F = 20 mA |
| Δλ | Spectral Half Width | ---- | 25 | ---- | nm | I _F = 20 mA |
| 2Θ ¹ / ₂ H-H | 50% Power Angle | ---- | 6 | ---- | deg | I _F = 20 mA |

Standard Bins

Lamps are sorted to luminous intensity (I_v) and dominant wavelength (λ_D) bins shown. Orders may be filled with any or all bins contained as below.



Forward Voltage (V_F)

| Rank | H | J | K | L |
|-------------|---------|---------|---------|---------|
| Voltage (V) | 2.6—3.0 | 3.0—3.3 | 3.3—3.6 | 3.6—4.0 |

Important Notes:

- All ranks will be included per delivery, rank ratio will be based on the chip distribution.
- To designate luminous intensity ranks, please contact OPTEK.

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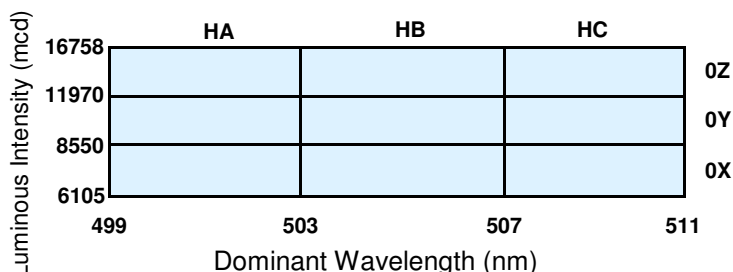
T-1^{3/4} High-Intensity LED

OVLG Series

Standard Bins

Lamps are sorted to luminous intensity (I_v) and dominant wavelength (λ_D) bins shown. Orders may be filled with any or all bins contained as below.

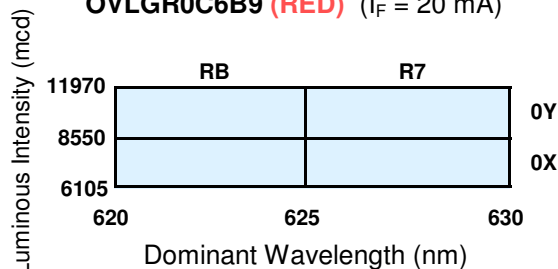
OVLGC0C6B9 (BLUE-GREEN) ($I_F = 20$ mA)



Forward Voltage (V_F)

| Rank | H | J | K | L |
|-------------|---------|---------|---------|---------|
| Voltage (V) | 2.6—3.0 | 3.0—3.3 | 3.3—3.6 | 3.6—4.0 |

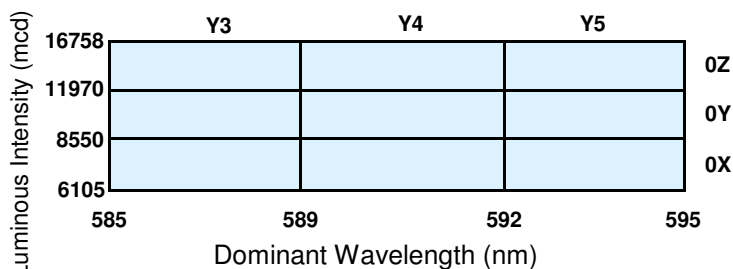
OVLGR0C6B9 (RED) ($I_F = 20$ mA)



Forward Voltage (V_F)

| Rank | G | H | J |
|-------------|---------|---------|---------|
| Voltage (V) | 1.8—2.0 | 2.0—2.2 | 2.2—2.4 |

OVLGY0C6B9 (YELLOW) ($I_F = 20$ mA)



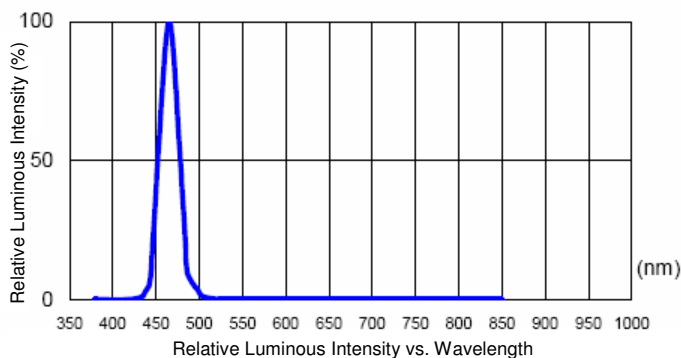
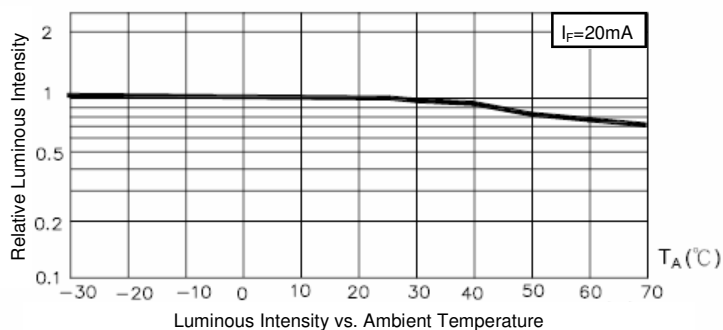
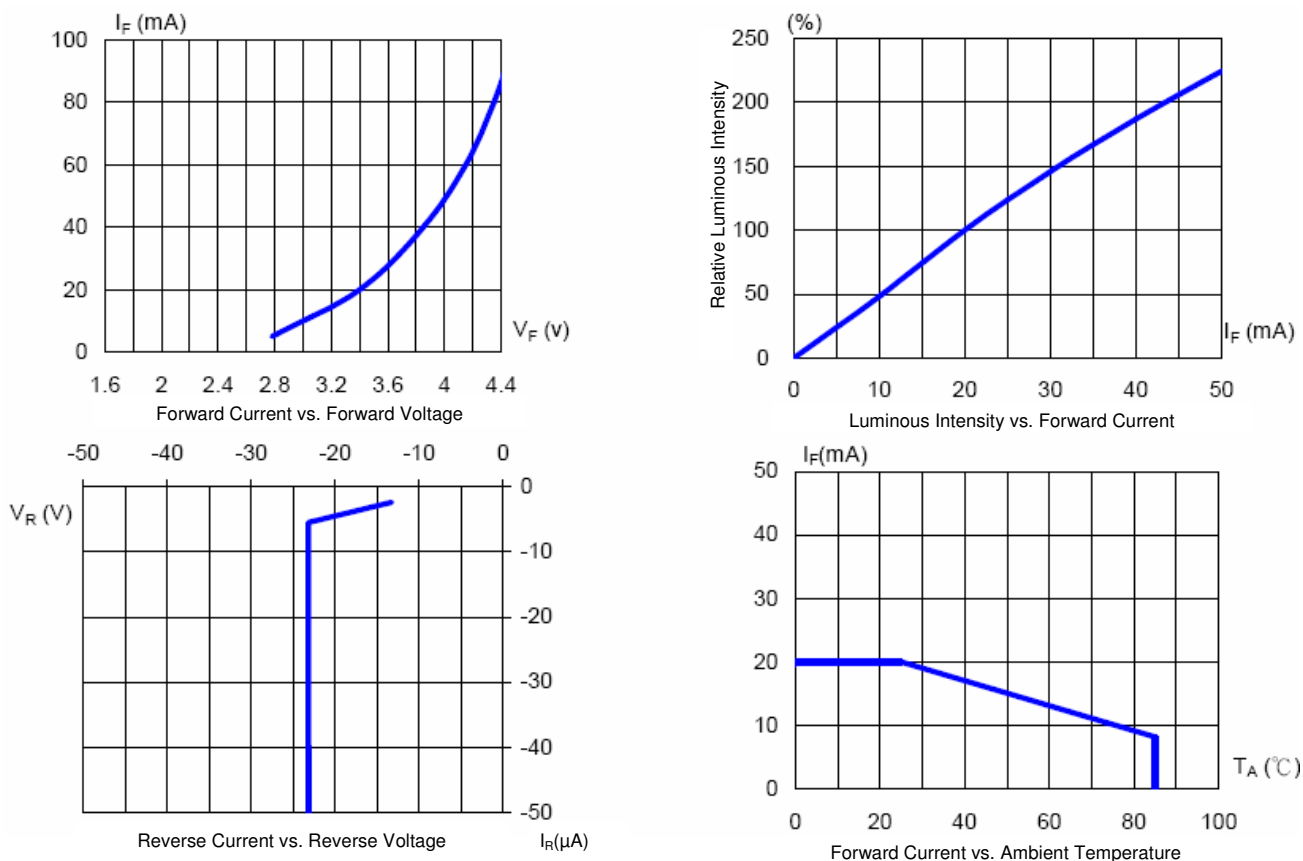
Forward Voltage (V_F)

| Rank | G | H | J |
|-------------|---------|---------|---------|
| Voltage (V) | 1.8—2.0 | 2.0—2.2 | 2.2—2.4 |

Important Notes:

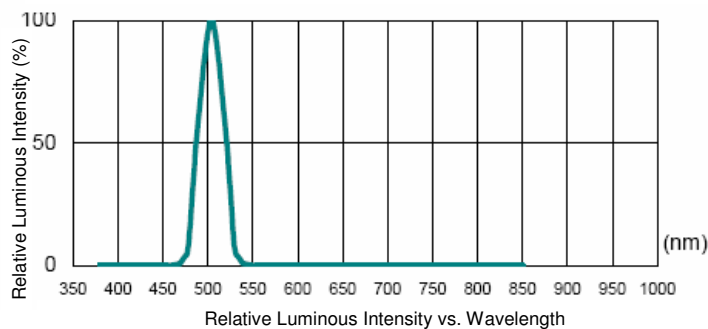
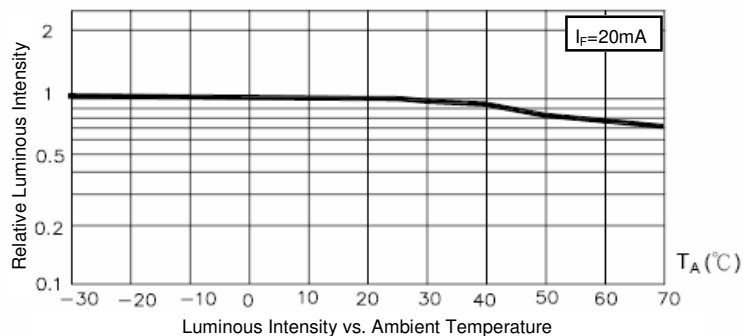
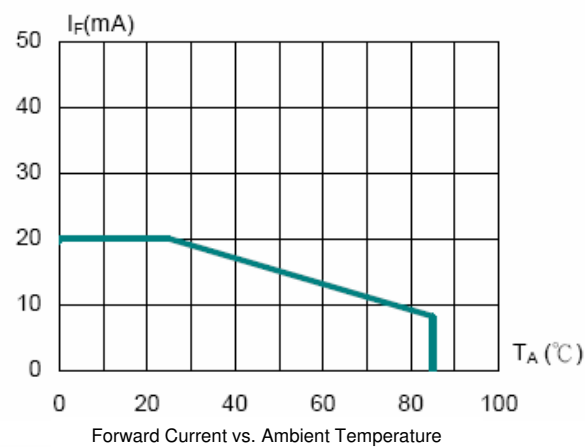
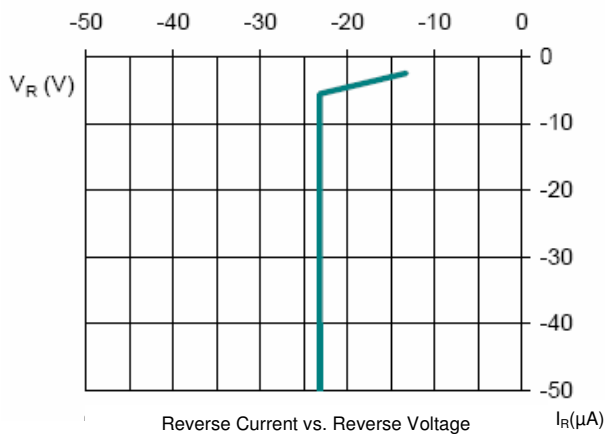
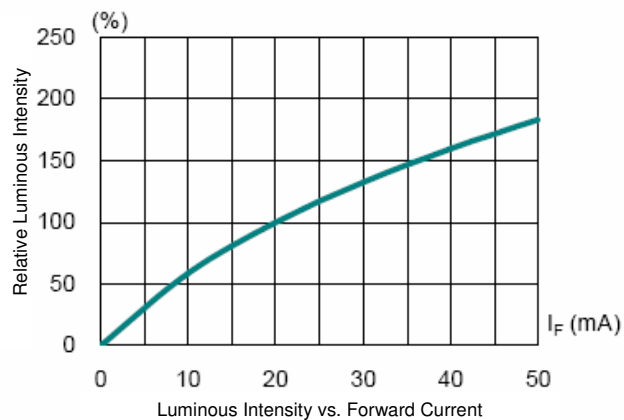
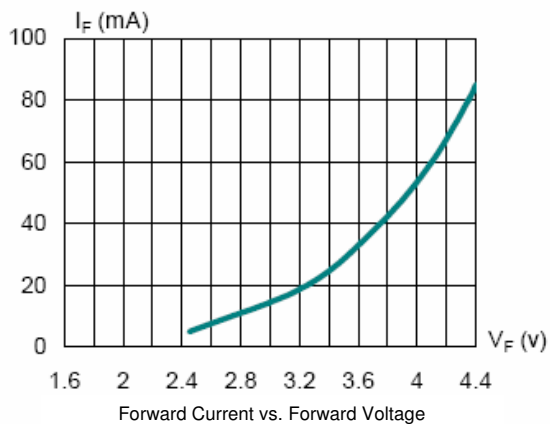
1. All ranks will be included per delivery, rank ratio will be based on the chip distribution.
2. To designate luminous intensity ranks, please contact OPTeK.

Typical Electro-Optical Characteristics Curves—Blue



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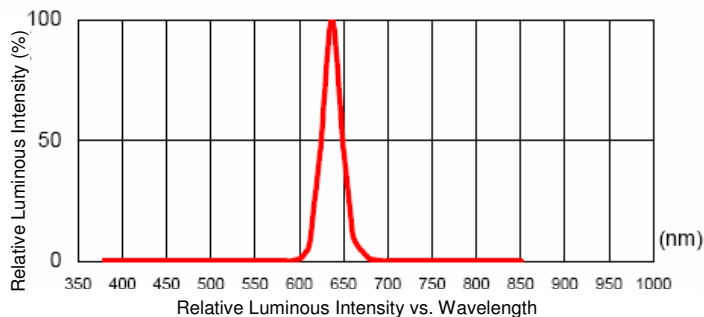
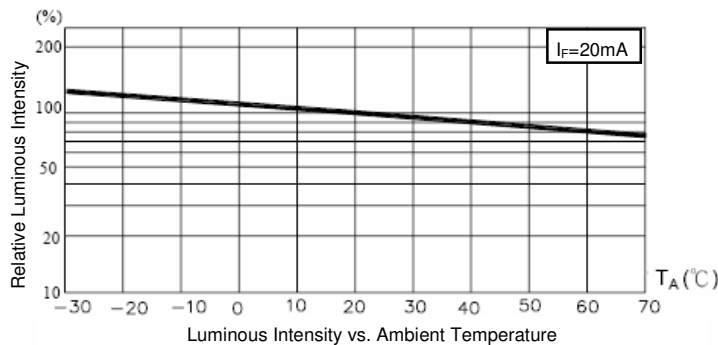
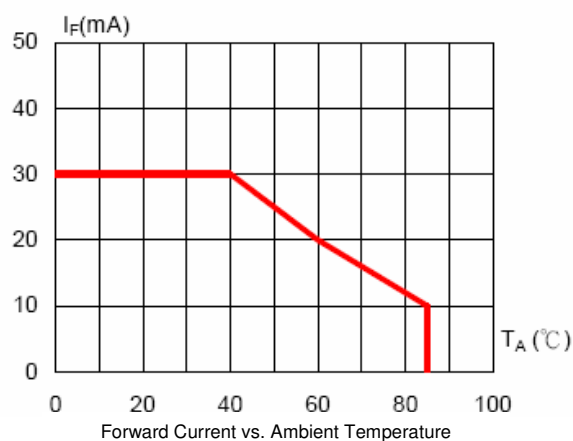
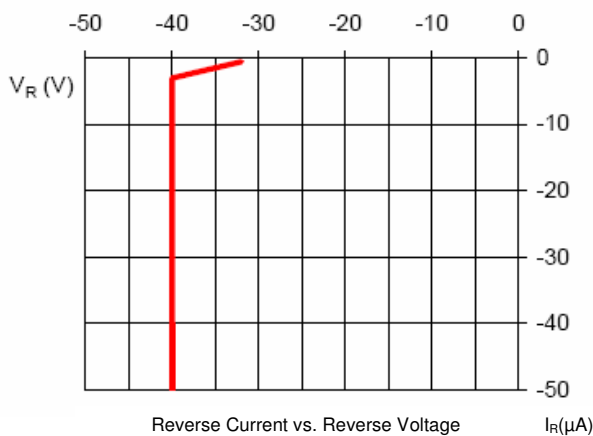
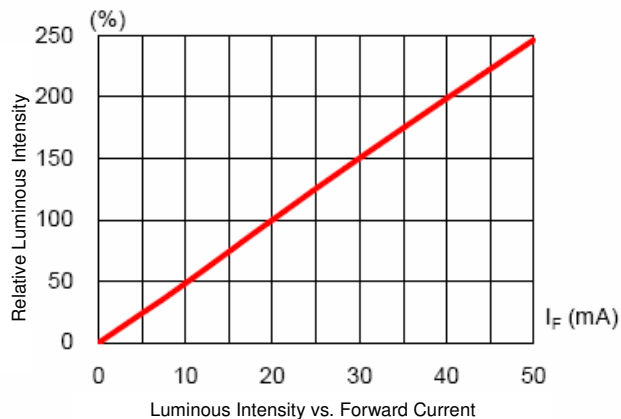
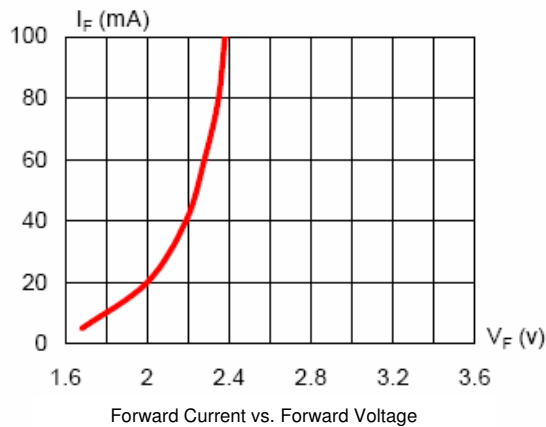
Typical Electro-Optical Characteristics Curves—Blue-Green



T-1 $\frac{3}{4}$ High-Intensity LED

OVLG Series

Typical Electro-Optical Characteristics Curves—Red

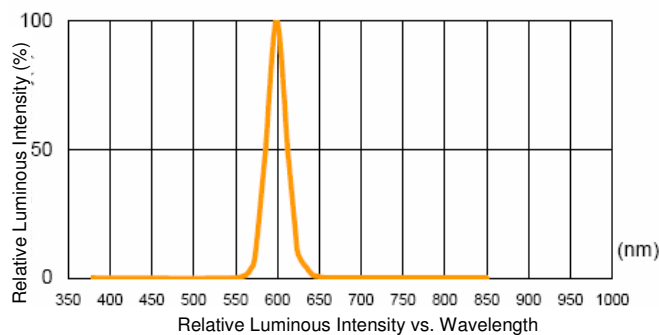
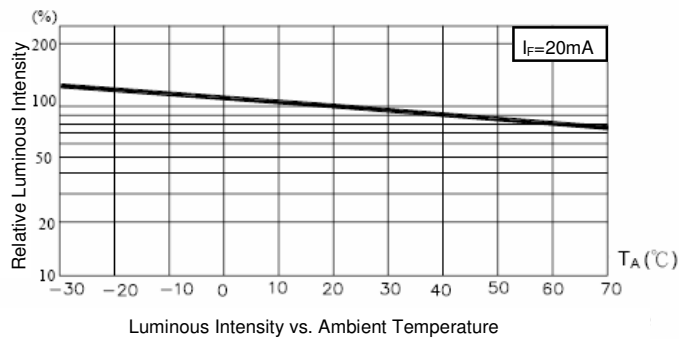
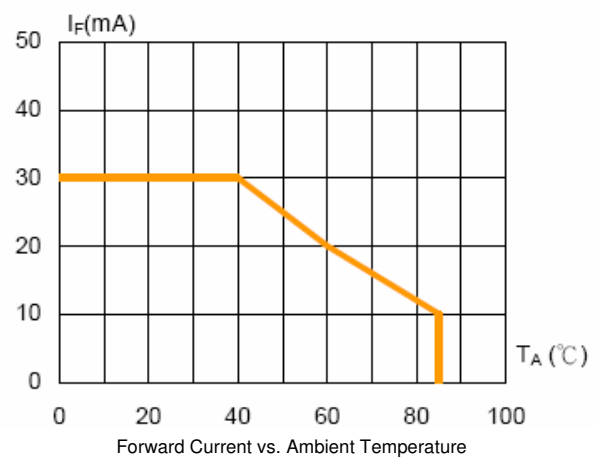
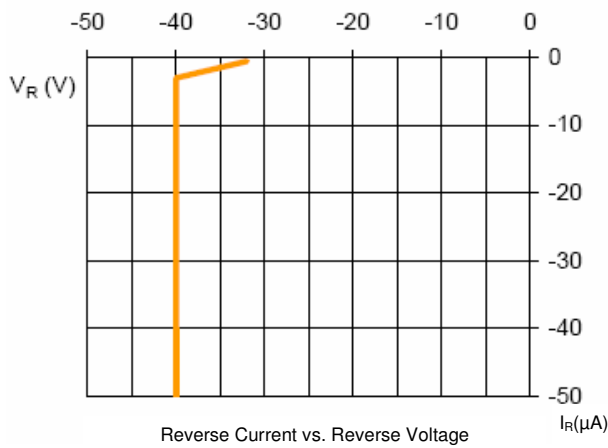
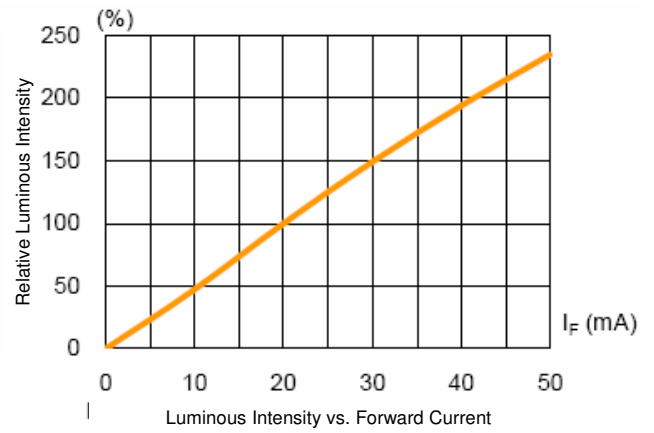
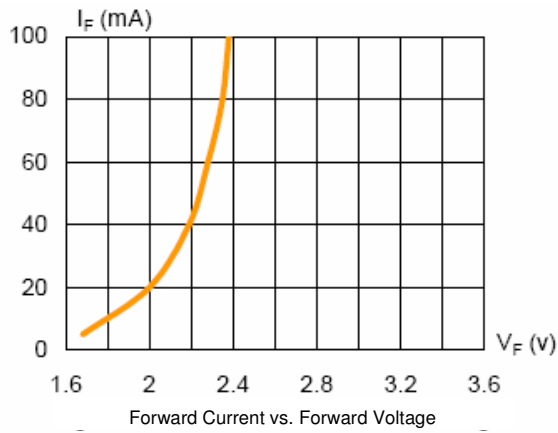


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T-1³/₄ High-Intensity LED

OVLG Series

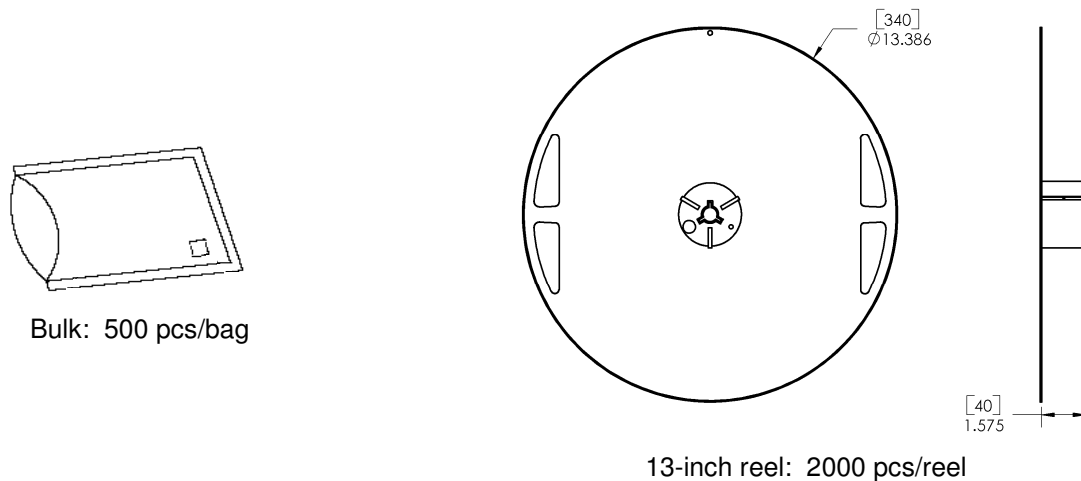
Typical Electro-Optical Characteristics Curves—Yellow



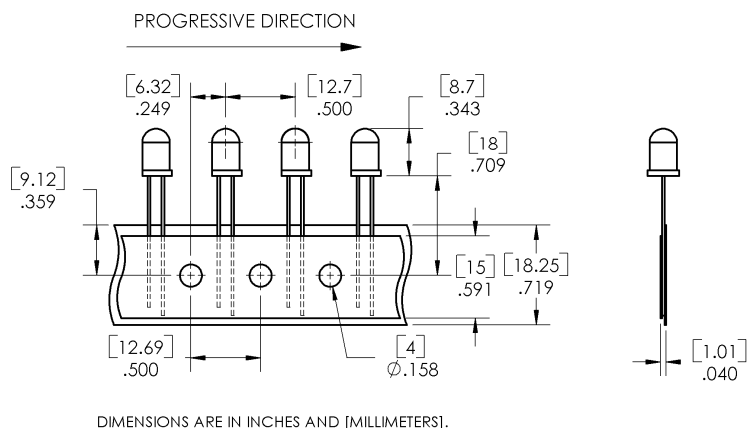
T-1^{3/4} High-Intensity LED

OVLG Series

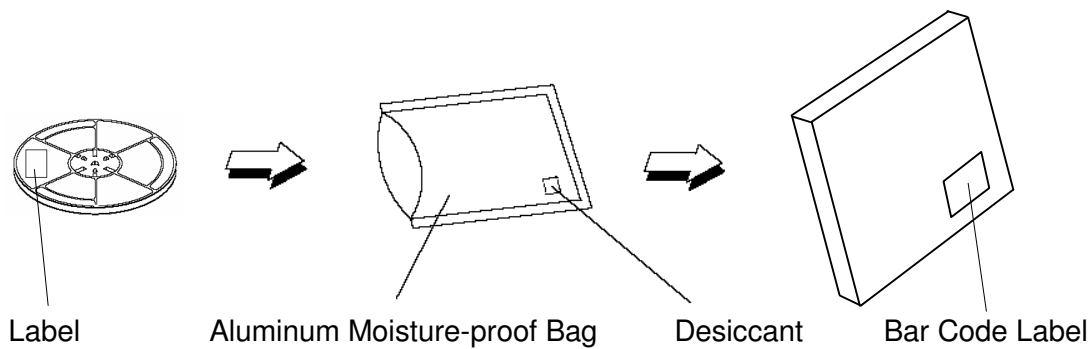
Packing Information: Available in bulk or reel



Carrier Tape Dimensions: Loaded quantity 2000 pieces per reel



Moisture Resistant Packaging



OPTEK reserves the right to make changes at any time in order to improve design and to supply the best product possible.

T-1^{3/4} High-Intensity LED

OVLG Series

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 | $T_A=85^{\circ}\text{C}$, $\text{Rh}=85\%$ $I_F=20\text{mA}$ ** | 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 | $260\pm 5^{\circ}\text{C}$, 10 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 | $I_F=20\text{mA}$ | $\text{LSL}\times 0.7$ ** | |
| Voltage (Forward) | V_F | $I_F=20\text{mA}$ | | $\text{USL}\times 1.1$ * |

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