Unity Opto Technology Co., Ltd.

MVL-303G
MVL-303Y
MVL-303HR
MVL-303DR
MVL-303UR

04/30/2002

## Description

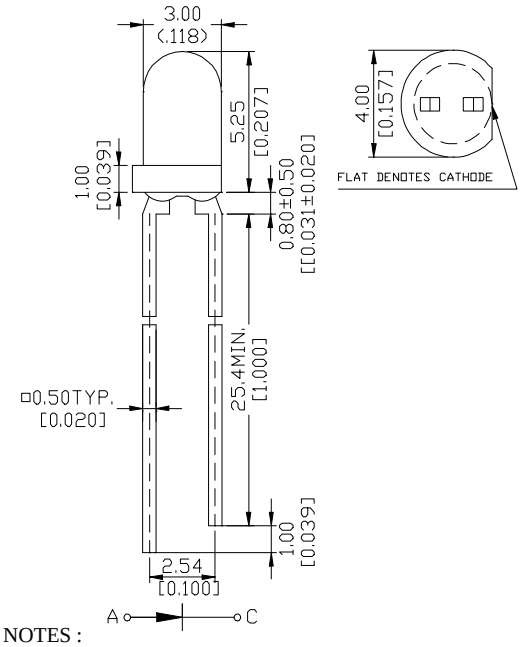
The MVL-303xx series package are T-1 (ϕ3mm) standard color transparent plastic lens package. The Hi-EFF red (HR) and yellow LED chips are made with Gallium Arsenide Phosphide on Gallium Phosphide diode. The green LED chip is made with Gallium Phosphide on Gallium Phosphide diode. The red (DR) chip is made with Aluminum Gallium Arsenide on Gallium Arsenide diode. The red (UR) chip is made with Aluminum Gallium Arsenide on Aluminum Gallium Arsenide diode.

## Applications

- Popular T-1 (ϕ3mm) diameter package
- Selected minimum intensities
- General purpose leads
- Reliable and rugged

## Package Dimensions

Unite: mm ( inches )




NOTES :
1. Tolerance is ± 0.25 mm (.010") unless otherwise noted.
2. Protruded resin under flange is 1.5 mm (.059") max.
3. Lead spacing is measured where the leads emerge from the package.

## Absolute Maximum Tatings

| Parameter | Symbol | Maximum Rating | | | | Unit |
|---|---|---|---|---|---|---|
| | | GREEN | YELLOW | HR | DR/UR | |
| Power Dissipation | Pad | 100 | 60 | 100 | 100 | mW |
| Peak Forward Current (1/10 Duty Cycle 0.1ms pulse width) | Ipf | 120 | 80 | 120 | 120 | A |
| Continuous Forward Current | Iaf | 30 | 20 | 30 | 40 | mA/$^{o}$C |
| Derating Linear From 25$^{o}$C | | 0.4 | 0.25 | 0.4 | 0.5 | mA |
| Reverse Voltage | $V_R$ | 5 | 5 | 5 | 5 | V |
| Operating Temperature Range | Topr | -55$^{o}$C to + 100$^{o}$C | | | | |
| Storage Temperature Range | Tstg | -55$^{o}$C to + 100$^{o}$C | | | | |
| Lead Soldering Temperature (1.6mm from body) for 3 seconds at 260$^{o}$C | | | | | | |

## Optical -Electrical Characteristics

**Part No. : MVL-303G** $@T_A=25^oC$

| Parameter | Test Conditions | Symbol | Min . | Typ . | Max . | Unit . |
|---|---|---|---|---|---|---|
| Luminous Intensity | $I_F$=10mA | $I_V$ | 9.0 | 30 | - | mcd |
| Forward Voltage | $I_F$=20mA | $V_F$ | - | 2.1 | 2.8 | V |
| Reverse Current | $V_R$=5V | $I_R$ | - | - | 100 | μA |
| Wavelength | $I_F$=20mA | λp | - | 565 | - | nm |
| Spectral Line Half Width | $I_F$=20mA | Δλ | - | 30 | - | nm |
| Viewing Angle | $I_F$=20mA | $2\theta_{1/2}$ | - | 20 | - | deg |

**Part No. : MVL-303Y** $@T_A=25^oC$

| Parameter | Test Conditions | Symbol | Min . | Typ . | Max . | Unit . |
|---|---|---|---|---|---|---|
| Luminous Intensity | $I_F$=10mA | $I_V$ | 6.0 | 21 | - | mcd |
| Forward Voltage | $I_F$=20mA | $V_F$ | - | 2.1 | 2.8 | V |
| Reverse Current | $V_R$=5V | $I_R$ | - | - | 100 | μA |
| Wavelength | $I_F$=20mA | λp | - | 585 | - | nm |
| Spectral Line Half Width | $I_F$=20mA | Δλ | - | 35 | - | nm |
| Viewing Angle | $I_F$=20mA | $2\theta_{1/2}$ | - | 20 | - | deg |

**Part No. : MVL-303HR** $@T_A=25^oC$

| Parameter | Test Conditions | Symbol | Min . | Typ . | Max . | Unit . |
|---|---|---|---|---|---|---|
| Luminous Intensity | $I_F$=10mA | $I_V$ | 8.0 | 28 | - | mcd |
| Forward Voltage | $I_F$=20mA | $V_F$ | - | 2.0 | 2.8 | V |
| Reverse Current | $V_R$=5V | $I_R$ | - | - | 100 | μA |
| Wavelength | $I_F$=20mA | λp | - | 640 | - | nm |
| Spectral Line Half Width | $I_F$=20mA | Δλ | - | 40 | - | nm |
| Viewing Angle | $I_F$=20mA | $2\theta_{1/2}$ | - | 20 | - | deg |

**Part No. : MVL-303DR** $@T_A=25^oC$

| Parameter | Test Conditions | Symbol | Min . | Typ . | Max . | Unit . |
|---|---|---|---|---|---|---|
| Luminous Intensity | $I_F$=20mA | $I_V$ | 60 | 250 | - | mcd |
| Forward Voltage | $I_F$=20mA | $V_F$ | - | 1.8 | 2.4 | V |
| Reverse Current | $V_R$=5V | $I_R$ | - | - | 100 | μA |
| Wavelength | $I_F$=20mA | λp | - | 660 | - | nm |
| Spectral Line Half Width | $I_F$=20mA | Δλ | - | 20 | - | nm |
| Viewing Angle | $I_F$=20mA | $2\theta_{1/2}$ | - | 20 | - | deg |

**Part No. : MVL-303UR** $@T_A=25^oC$

| Parameter | Test Conditions | Symbol | Min . | Typ . | Max . | Unit . |
|---|---|---|---|---|---|---|
| Luminous Intensity | $I_F$=20mA | $I_V$ | 120 | 500 | - | mcd |
| Forward Voltage | $I_F$=20mA | $V_F$ | - | 1.8 | 2.4 | V |
| Reverse Current | $V_R$=5V | $I_R$ | - | - | 100 | μA |
| Wavelength | $I_F$=20mA | λp | - | 660 | - | nm |
| Spectral Line Half Width | $I_F$=20mA | Δλ | - | 20 | - | nm |
| Viewing Angle | $I_F$=20mA | $2\theta_{1/2}$ | - | 20 | - | deg |

## Typical Optical-Electrical Characteristic Curves

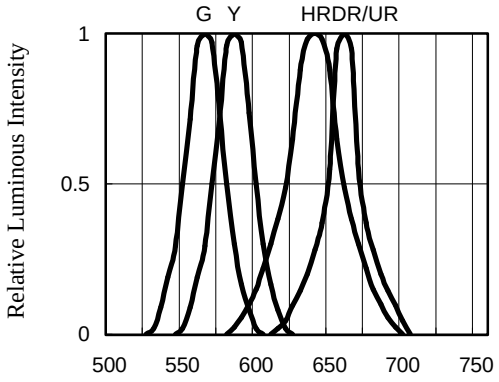



Fig 1. RELATIVE LUMINOUS INTENSITY VS. WAVELENGTH

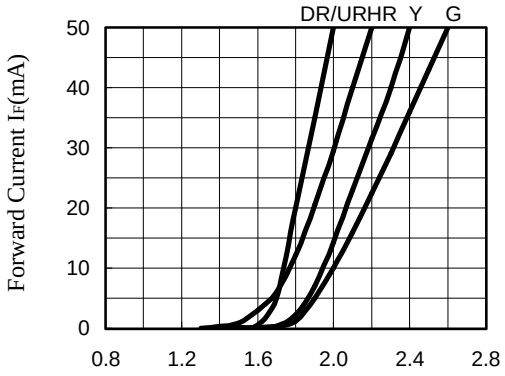



Fig 2. FORWARD CURRENT VS. FORWARD VOLTAGE

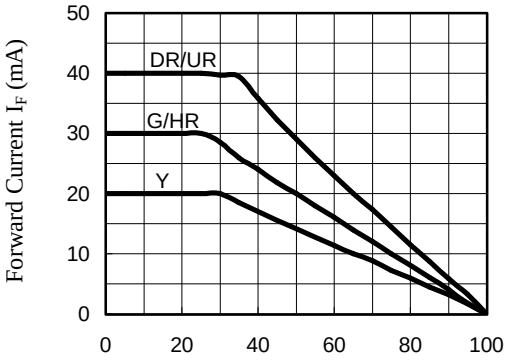



Fig 3. FORWARD CURRENT VS. AMBIENT TEMPERATURE

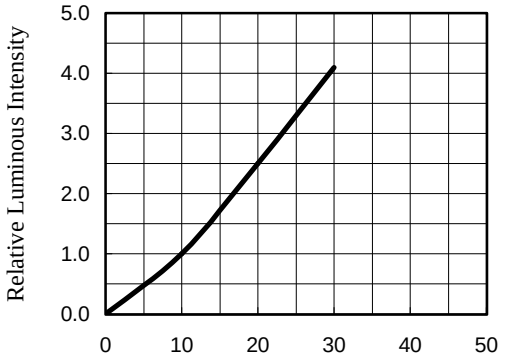



Fig 4. RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT

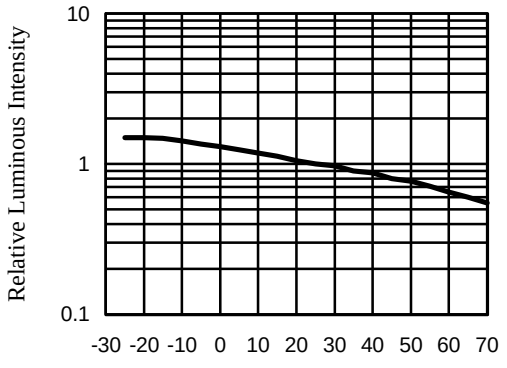



Fig 5. RELATIVE LUMINOUS INTENSITY VS. AMBIENT TEMPERATURE

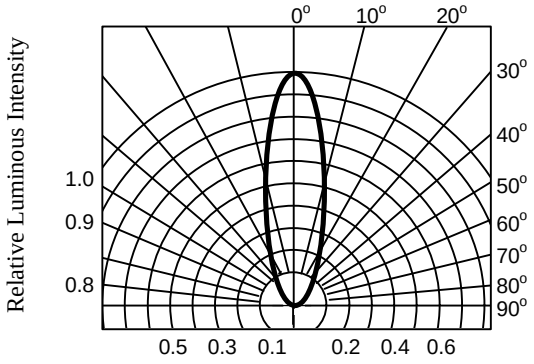



Fig 6. RADIATION DIAGRAM