

MVL-301G  
MVL-301Y  
MVL-301HR  
MVL-301DR  
MVL-301UR

04/30/2002

## Description

The MVL-301xx series package are T-1 ( $\phi 3\text{mm}$ ) standard color diffused 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

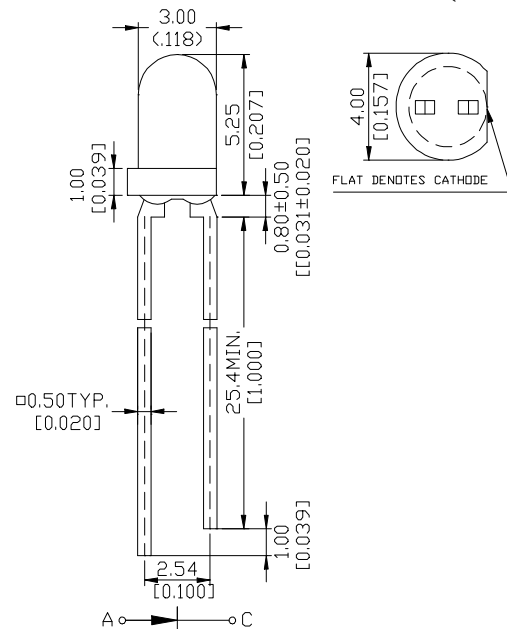
- Popular T-1 ( $\phi 3\text{mm}$ ) diameter package
- Selected minimum intensities
- General purpose leads
- Reliable and rugged

## Absolute Maximum Ratings

| 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/°C |
| Derating Linear From 25°C                                           |                | 0.4              | 0.25   | 0.4 | 0.5   | mA    |
| Reverse Voltage                                                     | V <sub>R</sub> | 5                | 5      | 5   | 5     | V     |
| Operating Temperature Range                                         | Topr           | -55°C to + 100°C |        |     |       |       |
| Storage Temperature Range                                           | Tstg           | -55°C to + 100°C |        |     |       |       |
| Lead Soldering Temperature (1.6mm from body) for 3 seconds at 260°C |                |                  |        |     |       |       |

## Package Dimensions

Unit: mm ( inches )



NOTES :

1. Tolerance is  $\pm 0.25\text{ mm}$  ( $.010''$ ) unless otherwise noted.
2. Protruded resin under flange is  $1.5\text{ mm}$  ( $.059''$ ) max.
3. Lead spacing is measured where the leads emerge from the package.

## Optical -Electrical Characteristics

### Part No. : MVL-301G

@T<sub>A</sub>=25°C

| Parameter                | Test Conditions      | Symbol            | Min . | Typ . | Max . | Unit . |
|--------------------------|----------------------|-------------------|-------|-------|-------|--------|
| Luminous Intensity       | I <sub>F</sub> =10mA | I <sub>V</sub>    | 3.0   | 10    | -     | mcd    |
| Forward Voltage          | I <sub>F</sub> =20mA | V <sub>F</sub>    | -     | 2.1   | 2.8   | V      |
| Reverse Current          | V <sub>R</sub> =5V   | I <sub>R</sub>    | -     | -     | 100   | μA     |
| Wavelength               | I <sub>F</sub> =20mA | λ <sub>p</sub>    | -     | 565   | -     | nm     |
| Spectral Line Half Width | I <sub>F</sub> =20mA | Δλ                | -     | 30    | -     | nm     |
| Viewing Angle            | I <sub>F</sub> =20mA | 2θ <sub>1/2</sub> | -     | 40    | -     | deg    |

### Part No. : MVL-301Y

@T<sub>A</sub>=25°C

| Parameter                | Test Conditions      | Symbol            | Min . | Typ . | Max . | Unit . |
|--------------------------|----------------------|-------------------|-------|-------|-------|--------|
| Luminous Intensity       | I <sub>F</sub> =10mA | I <sub>V</sub>    | 2.5   | 9.0   | -     | mcd    |
| Forward Voltage          | I <sub>F</sub> =20mA | V <sub>F</sub>    | -     | 2.1   | 2.8   | V      |
| Reverse Current          | V <sub>R</sub> =5V   | I <sub>R</sub>    | -     | -     | 100   | μA     |
| Wavelength               | I <sub>F</sub> =20mA | λ <sub>p</sub>    | -     | 585   | -     | nm     |
| Spectral Line Half Width | I <sub>F</sub> =20mA | Δλ                | -     | 35    | -     | nm     |
| Viewing Angle            | I <sub>F</sub> =20mA | 2θ <sub>1/2</sub> | -     | 40    | -     | deg    |

### Part No. : MVL-301HR

@T<sub>A</sub>=25°C

| Parameter                | Test Conditions      | Symbol            | Min . | Typ . | Max . | Unit . |
|--------------------------|----------------------|-------------------|-------|-------|-------|--------|
| Luminous Intensity       | I <sub>F</sub> =10mA | I <sub>V</sub>    | 2.5   | 9.0   | -     | mcd    |
| Forward Voltage          | I <sub>F</sub> =20mA | V <sub>F</sub>    | -     | 2.0   | 2.8   | V      |
| Reverse Current          | V <sub>R</sub> =5V   | I <sub>R</sub>    | -     | -     | 100   | μA     |
| Wavelength               | I <sub>F</sub> =20mA | λ <sub>p</sub>    | -     | 640   | -     | nm     |
| Spectral Line Half Width | I <sub>F</sub> =20mA | Δλ                | -     | 40    | -     | nm     |
| Viewing Angle            | I <sub>F</sub> =20mA | 2θ <sub>1/2</sub> | -     | 40    | -     | deg    |

### Part No. : MVL-301DR

@T<sub>A</sub>=25°C

| Parameter                | Test Conditions      | Symbol            | Min . | Typ . | Max . | Unit . |
|--------------------------|----------------------|-------------------|-------|-------|-------|--------|
| Luminous Intensity       | I <sub>F</sub> =20mA | I <sub>V</sub>    | 10    | 40    | -     | mcd    |
| Forward Voltage          | I <sub>F</sub> =20mA | V <sub>F</sub>    | -     | 1.8   | 2.4   | V      |
| Reverse Current          | V <sub>R</sub> =5V   | I <sub>R</sub>    | -     | -     | 100   | μA     |
| Wavelength               | I <sub>F</sub> =20mA | λ <sub>p</sub>    | -     | 660   | -     | nm     |
| Spectral Line Half Width | I <sub>F</sub> =20mA | Δλ                | -     | 20    | -     | nm     |
| Viewing Angle            | I <sub>F</sub> =20mA | 2θ <sub>1/2</sub> | -     | 40    | -     | deg    |

### Part No. : MVL-301UR

@T<sub>A</sub>=25°C

| Parameter                | Test Conditions      | Symbol            | Min . | Typ . | Max . | Unit . |
|--------------------------|----------------------|-------------------|-------|-------|-------|--------|
| Luminous Intensity       | I <sub>F</sub> =20mA | I <sub>V</sub>    | 20    | 80    | -     | mcd    |
| Forward Voltage          | I <sub>F</sub> =20mA | V <sub>F</sub>    | -     | 1.8   | 2.4   | V      |
| Reverse Current          | V <sub>R</sub> =5V   | I <sub>R</sub>    | -     | -     | 100   | μA     |
| Wavelength               | I <sub>F</sub> =20mA | λ <sub>p</sub>    | -     | 660   | -     | nm     |
| Spectral Line Half Width | I <sub>F</sub> =20mA | Δλ                | -     | 20    | -     | nm     |
| Viewing Angle            | I <sub>F</sub> =20mA | 2θ <sub>1/2</sub> | -     | 40    | -     | deg    |

## Typical Optical-Electrical Characteristic Curves

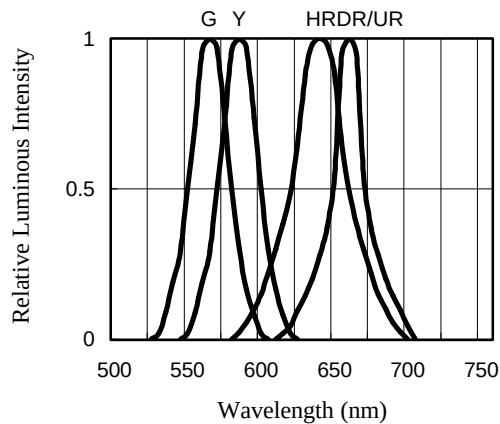


Fig 1. RELATIVE LUMINOUS INTENSITY  
VS. WAVELENGTH

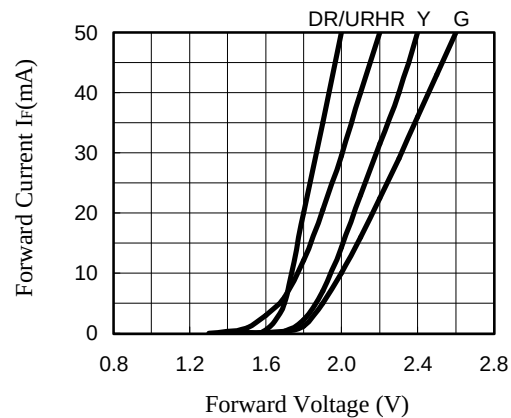


Fig 2. FORWARD CURRENT  
VS. FORWARD VOLTAGE

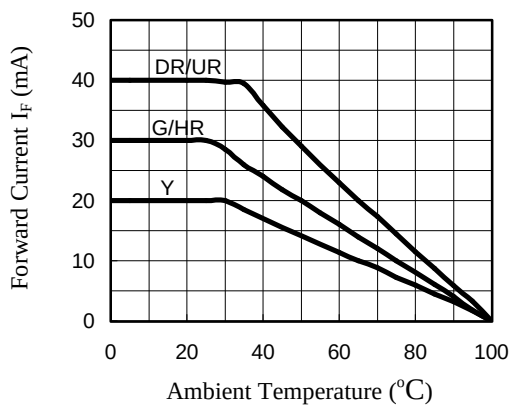


Fig 3. FORWARD CURRENT  
VS. AMBIENT TEMPERATURE

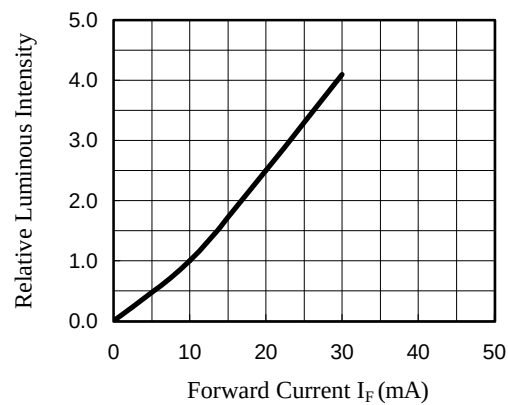


Fig 4. RELATIVE LUMINOUS INTENSITY  
VS. FORWARD CURRENT

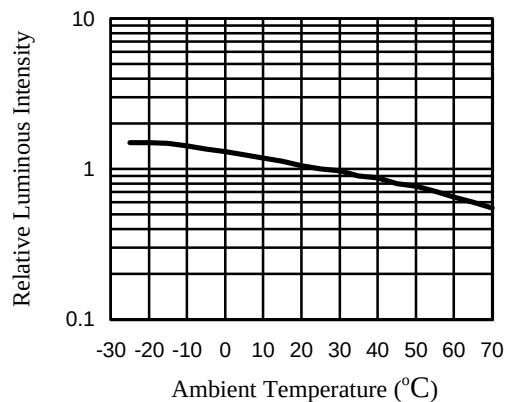


Fig 5. RELATIVE LUMINOUS INTENSITY  
VS. AMBIENT TEMPERATURE

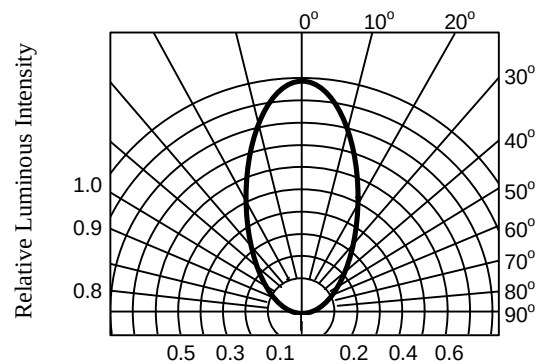


Fig 6. RADIATION DIAGRAM