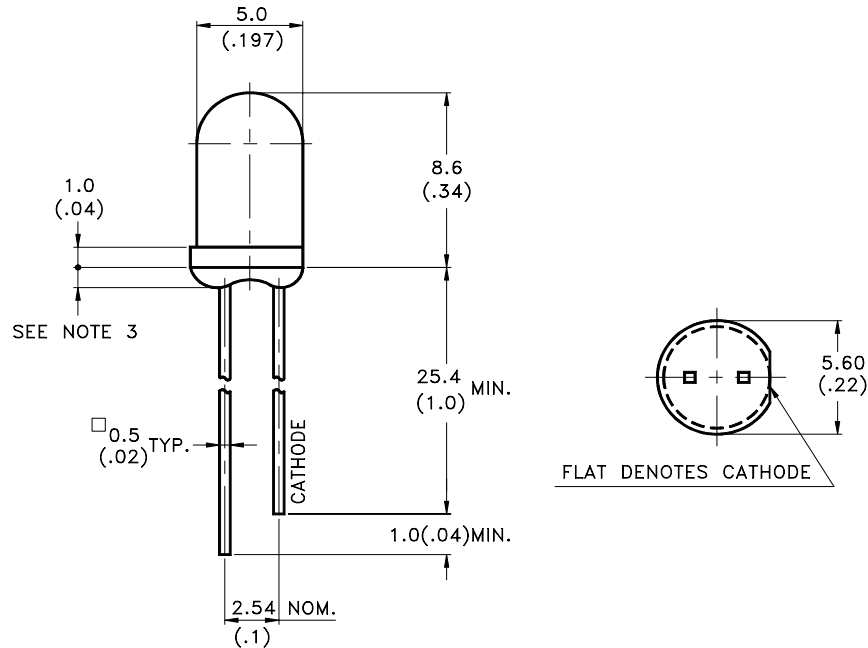


Features

- * High Intensity.
- * Popular T-1 3/4 diameter Package.
- * Selected minimum intensities.
- * General purpose leads.
- * Reliable and rugged.

Package Dimensions



| Part No. | Lens | Source Color |
|---------------|--------------|--------------|
| LTL-4223-051A | Red Diffused | Hi-Eff.Red |

Notes:

1. All dimensions are in millimeters (inches).
2. Tolerance is $\pm 0.25\text{mm}(.010\text{'})$ unless otherwise noted.
3. Protruded resin under flange is 1.0mm(.04") max.
4. Lead spacing is measured where the leads emerge from the package.
5. Specifications are subject to change without notice.



LITE-ON TECHNOLOGY CORPORATION

Property of Lite-On Only

Absolute Maximum Ratings at $T_A=25^{\circ}\text{C}$

| Parameter | Maximum Rating | Unit |
|--|---|------------------------|
| Power Dissipation | 100 | mW |
| Peak Forward Current (1/10 Duty Cycle, 0.1ms Pulse Width) | 120 | mA |
| Continuous Forward Current | 30 | mA |
| Derating Linear From 50°C | 0.4 | mA/ $^{\circ}\text{C}$ |
| Reverse Voltage | 5 | V |
| Operating Temperature Range | -55°C to $+100^{\circ}\text{C}$ | |
| Storage Temperature Range | -55°C to $+100^{\circ}\text{C}$ | |
| Lead Soldering Temperature [1.6mm(.063") From Body] | 260 $^{\circ}\text{C}$ for 5 Seconds | |



LITE-ON TECHNOLOGY CORPORATION

Property of Lite-On Only

Electrical / Optical Characteristics at TA=25°C

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Test Condition |
|--------------------------|-------------------|------|------|------|------|-----------------------------------|
| Luminous Intensity | I _v | 5.6 | 19 | | mcd | I _F = 10mA Note 1,4 |
| Viewing Angle | 2θ _{1/2} | | 36 | | deg | Note 2 (Fig.6) |
| Peak Emission Wavelength | λ _P | | 635 | | nm | Measurement @Peak (Fig.1) |
| Dominant Wavelength | λ _d | | 623 | | nm | Note 3 |
| Spectral Line Half-Width | Δλ | | 40 | | nm | |
| Forward Voltage | V _F | | 2.0 | 2.6 | V | I _F = 20mA |
| Reverse Current | I _R | | | 100 | μA | V _R = 5V |
| Capacitance | C | | 20 | | pF | V _F = 0 , f = 1MHz |

Note: 1. Luminous intensity is measured with a light sensor and filter combination that approximates the CIE (Commission International De L'Eclairage) eye-response curve.

2. θ_{1/2} is the off-axis angle at which the luminous intensity is half the axial luminous intensity.

3. The dominant wavelength, λ_d is derived from the CIE chromaticity diagram and represents the single wavelength which defines the color of the device.

4. The I_v guarantee should be added ±15% .

Typical Electrical / Optical Characteristics Curves

(25°C Ambient Temperature Unless Otherwise Noted)

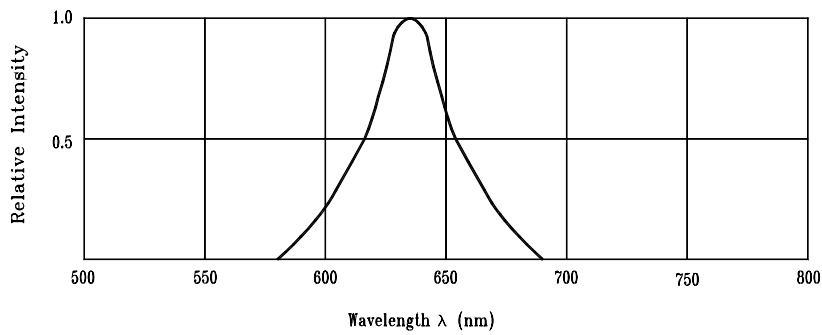


Fig.1 Relative Intensity vs. Wavelength

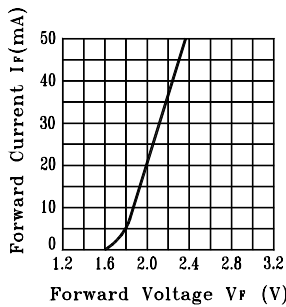


Fig.2 Forward Current vs. Forward Voltage

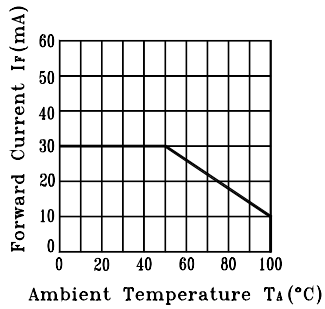


Fig.3 Forward Current Derating Curve

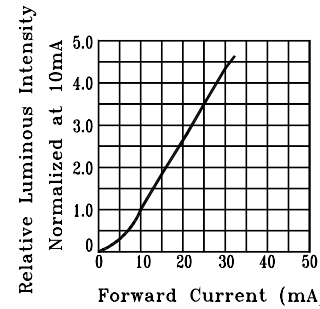


Fig.4 Relative Luminous Intensity vs. Forward Current

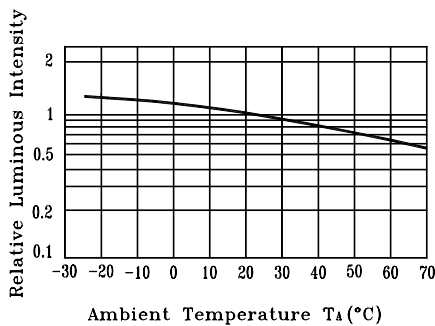


Fig.5 Luminous Intensity vs. Ambient Temperature

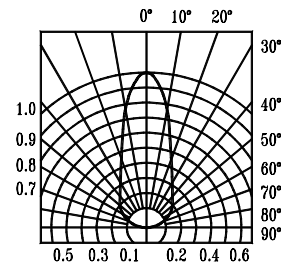
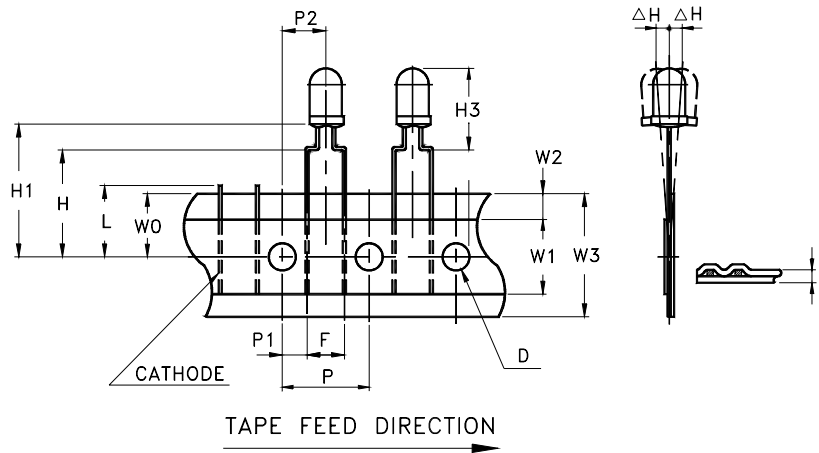


Fig.6 Spatial Distribution

Features

- * Compatible with radial lead automatic insertion equipment.
- * Most radial lead plastic lead lamps available packaged in tape and folding.
- * 5mm (0.197") formed lead and 2.54mm (0.1") straight lead spacing available.
- * Folding packaging simplifies handling and testing.

Package Dimensions



| Item | Symbol | Specification | | | |
|------------------------------------|------------|---------------|-------|---------|-------|
| | | Minimum | | Maximum | |
| | | mm | inch | mm | inch |
| Tape Feed Hole Diameter | D | 3.8 | 0.149 | 4.2 | 0.165 |
| Component Lead Pitch | F | 4.8 | 0.188 | 5.8 | 0.228 |
| Front to Rear Deflection | ΔH | -- | -- | 2.0 | 0.078 |
| Height of Seating Plane | H | 15.5 | 0.610 | 16.5 | 0.649 |
| Feed Hole to Bottom of Component | H1 | 20.8 | 0.818 | 22.8 | 0.898 |
| Seating Plane to Top of Component | H3 | 13.7 | 0.540 | 15.2 | 0.60 |
| Lead Length After Component Height | L | W0 | | 11.0 | 0.433 |
| Feed Hole Pitch | P | 12.4 | 0.488 | 13.0 | 0.511 |
| Lead Location | P1 | 3.15 | 0.124 | 4.55 | 0.179 |
| Center of Component Location | P2 | 5.05 | 0.198 | 7.65 | 0.301 |
| Total Tape Thickness | T | -- | -- | 0.90 | 0.035 |
| Feed Hole Location | W0 | 8.5 | 0.334 | 9.75 | 0.384 |
| Adhesive Tape Width | W1 | 14.5 | 0.571 | 15.5 | 0.610 |
| Adhesive Tape Position | W2 | 0 | 0 | 3.0 | 0.118 |
| Tape Width | W3 | 17.5 | 0.689 | 19.0 | 0.748 |

CAUTIONS

1. Application limitation

The LEDs described here are intended to be used for ordinary electronic equipment (such as office equipment, communication equipment and household application.) Consult Liteon's sales in advance for information on application in which exceptional quality and reliability are required, particularly when the failure or malfunction of the LEDs may directly jeopardize life or health (such as airplanes, automobiles, traffic control equipment, life support system and safety devices).

5. Storage

After being shipped from Liteon the LEDs should be kept at 30°C or less and 70%RH or less.

The LEDs should be used within 3 months. They can be stored for a year in a sealed container with a nitrogen atmosphere and moisture absorbent material. Please avoid rapid transitions in ambient temperature in high humidity environments where condensation may occur.

5. Cleaning

Use alcohol-based cleaning solvents such as isopropyl alcohol to clean the LED.

4. Forming & Mounting

When forming a lead, the leads should be bent at a point at least 3mm from the base of epoxy bulb. Do not use the base of the leadframe as a fulcrum during forming. Lead forming must be done before soldering at normal temperature. When mounted through hole type LED lamp, avoid the occurrence of residual mechanical stress due to clinching.

5. Soldering

When soldering, leave a minimum of 2mm clearance from the resin to the soldering point.

Dipping the resin into the solder must be avoided.

Do not apply any stress to the lead frame during soldering while the LED is at high temperature.

Recommended soldering condition

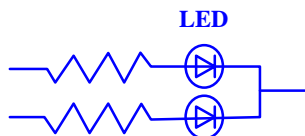
| Soldering iron | | Wave soldering | |
|----------------|--------------------------------|----------------|--------------|
| Temperature | 300°C Max. | Pre-heat | 100°C Max. |
| Soldering time | 3 sec. Max. (one time only) | Pre-heat time | 60 sec. Max. |
| | | Solder wave | 260°C Max. |
| | | Soldering time | 10 sec. Max. |

6. Drive Method

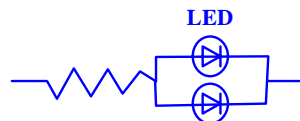
LED is a current operated device, and therefore, requires some kind of current limiting incorporated into the drive circuit. This current limiting typically takes the form of a current limiter resistor placed in series with the LED. Consider worst case voltage variations that could occur across the current limiting resistor.

The forward current should not be allowed to change by more than 40% of its desired value.

Circuit model A



Circuit model B



(A) Recommended circuit.

(B) The difference of brightness between LEDs could be found due to the Vf-I_f characteristics of LED



LITE-ON TECHNOLOGY CORPORATION

Property of Lite-On Only

7. ESD (Electrostatic Discharge)

Static Electricity or power surge will damage the LED. Use of a conductive wrist band or anti-electrostatic glove is recommended when handling these LED. All devices, equipment and machinery must be properly grounded.

8. Reliability Test

| Classification | Test Item | Test Condition | Duration / Cycle | Reference Standard |
|--------------------|---------------------------|--|------------------|--|
| Endurance Test | Room Temp. Operation Life | Ta= Room Temp, Ip= 160 mA / 1/8 duty, Pulse Width =1.25 ms | 1000 hrs | MIL-STD-750D:1026 (1995) MIL-STD-883D:1005 (1991) JIS C 7021:B-1 (1982) |
| Environmental Test | Temperature Cycling | 105°C ~ 25°C ~ -55°C ~ 25°C 30mins 5mins 30mins 5mins | 10 cycles | MIL-STD-202F:107D (1980) MIL-STD-750D:1051(1995) MIL-STD-883D:1010 (1991) JIS C 7021: A-4(1982) |
| | Solder Resistance | Solder temperature is 260± 5 °C | 10 sec | MIL-STD-202F:210A(1980) MIL-STD-750D:2031(1995) JIS C 7021: A-1(1982) |
| | Solderability | Solder temperature is 230± 5 °C | 5 sec | MIL-STD-202F:208D(1980) MIL-STD-750D:2026(1995) MIL-STD-883D:2003(1991) JIS C 7021: A-2(1982) |

9. Others

The appearance and specifications of the product may be modified for improvement without notice.