**LITEON**

T-1 (3mm) Bi-Polar Indicator LED Lamp

LTL-10CEJ Dual High Efficiency Red
LTL-10CGJ Dual Green
LTL-10CYJ Dual Yellow
LTL-10CDJ Yellow and Green
LTL-10CHJ Red Orange and Green

Features

- T-1 type package.
- Long life solid state reliability.
- Low power consumption.
- I.C. compatible.

Description

The LTL-10CXJ bipolar indicator lamp is a white diffused, with dual chips .

The viewing angle is wide.

The dual chips are operating Dependently of each other.

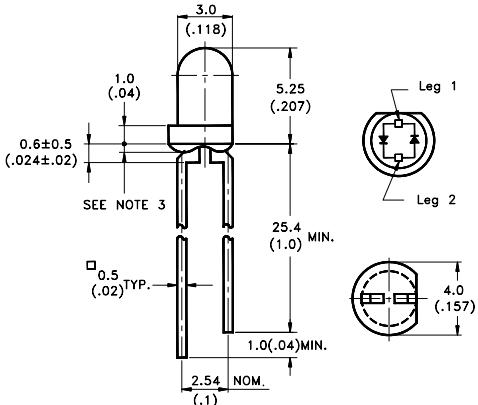
The Green LED is utilizing GaP on GaP.

The Hi-Efficiency Red LED is utilizing GaAsP on GaP.

The Yellow LED is utilizing GaAsP on GaP.

The Red Orange LED is utilizing GaAsP on GaP.

Package Dimensions



| Part No. LTL- | Leg1 | Leg2 |
|------------------|--------------------|---------------|
| 10CEJ | N/A | N/A |
| 10CGJ | N/A | N/A |
| 10CYJ | N/A | N/A |
| 10CDJ | Yellow Cathode | Green Cathode |
| 10CHJ | Red Orange Cathode | Green Cathode |

Devices

| Part No. LTL- | Lens | Source Color |
|------------------|----------------|-----------------|
| 10CEJ | White Diffused | Hi. Eff. Red |
| 10CGJ | White Diffused | Green |
| 10CYJ | White Diffused | Yellow |
| 10CDJ | White Diffused | Green |
| | | Yellow |
| 10CHJ | White Diffused | Green |
| | | Red Orange |

Notes:

1. All dimensions are in millimeters (inches).
2. Tolerance is $\pm 0.25\text{mm}$ (.010")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.

THROUGH HOLE
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Absolute Maximum Ratings at Ta=25

| Parameter | Hi. Eff. Red | Green | Yellow | Red Orange | Unit |
|--|--------------|-------|-------------------|------------|------|
| Power Dissipation | 100 | 100 | 60 | 100 | mW |
| Peak Forward Current (1/10 Duty Cycle, 0.1ms Pulse Width) | 120 | 120 | 80 | 120 | mA |
| Continuous Forward Current | 30 | 30 | 20 | 30 | mA |
| Derating Linear From 50 | 0.4 | 0.4 | 0.25 | 0.4 | mA/ |
| Operating Temperature Range | | | -55 to +100 | | |
| Storage Temperature Range | | | -55 to +100 | | |
| Lead Soldering Temperature [1.6mm (.063 in.) from body] | | | 260 for 5 Seconds | | |

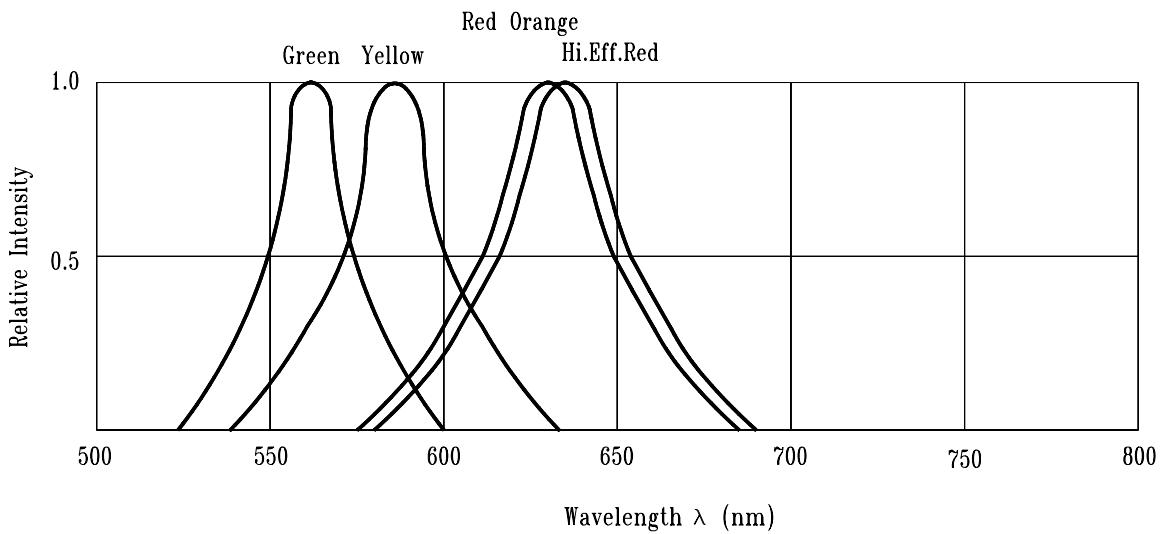


Fig. 1 Relative Intensity vs. Wavelength

Electrical / Optical Characteristics and Curves at Ta=25

| Parameter | Symbol | Part No. LTL- | Color | Min. | Typ. | Max. | Unit. | Test Condition. |
|--------------------------|----------------|------------------|------------|------|------|------|-------|-----------------------------------|
| Luminous Intensity | I _v | 10CEJ | Hi.Eff.Red | 3.7 | 12.6 | | mcd | I _f =20 mA Note 1,4 |
| | | 10CGJ | Green | 3.7 | 12.6 | | | |
| | | 10CYJ | Yellow | 2.5 | 8.7 | | | |
| | | 10CDJ | Green | 3.7 | 12.6 | | | |
| | | | Yellow | 2.5 | 8.7 | | | |
| | | 10CHJ | Red Orange | 2.5 | 8.7 | | | |
| | | | Green | 3.7 | 12.6 | | | |
| Viewing Angle | 2 | 10CXJ | | | 72 | | deg | Note 2 (Fig.7) |
| Peak Emission Wavelength | P | 10CEJ | Hi.Eff.Red | | 635 | | nm | Measurement @Peak (Fig.1) |
| | | 10CGJ | Green | | 565 | | | |
| | | 10CYJ | Yellow | | 585 | | | |
| | | 10CDJ | Green | | 565 | | | |
| | | | Yellow | | 585 | | | |
| | | 10CHJ | Red Orange | | 630 | | | |
| | | | Green | | 565 | | | |
| Dominant Wavelength | d | 10CEJ | Hi.Eff.Red | | 623 | | nm | Note 3 |
| | | 10CGJ | Green | | 569 | | | |
| | | 10CYJ | Yellow | | 588 | | | |
| | | 10CDJ | Green | | 569 | | | |
| | | | Yellow | | 588 | | | |
| | | 10CHJ | Red Orange | | 621 | | | |
| | | | Green | | 569 | | | |
| Spectral Line Half Width | | 10CEJ | Hi.Eff.Red | | 40 | | nm | |
| | | 10CGJ | Green | | 30 | | | |
| | | 10CYJ | Yellow | | 35 | | | |
| | | 10CDJ | Green | | 30 | | | |
| | | | Yellow | | 35 | | | |
| | | 10CHJ | Red Orange | | 40 | | | |
| | | | Green | | 30 | | | |
| Forward Voltage | V _f | 10CEJ | Hi.Eff.Red | | 2.0 | 2.6 | V | I _f =20mA |
| | | 10CGJ | Green | | 2.1 | 2.6 | | |
| | | 10CYJ | Yellow | | 2.1 | 2.6 | | |
| | | 10CDJ | Green | | 2.1 | 2.6 | | |
| | | | Yellow | | 2.1 | 2.6 | | |
| | | 10CHJ | Red Orange | | 2.0 | 2.6 | | |
| | | | Green | | 2.1 | 2.6 | | |
| Reverse Current | I _R | 10CXJ | | | | 100 | A | V _R =5V, Note 5 |
| Capacitance | C | 10CEJ | Hi.Eff.Red | | 20 | | pF | V _f =0, f=1MHz |
| | | 10CGJ | Green | | 35 | | | |
| | | 10CYJ | Yellow | | 15 | | | |
| | | 10CDJ | Green | | 35 | | | |
| | | | Yellow | | 15 | | | |
| | | 10CHJ | Red Orange | | 20 | | | |
| | | | Green | | 35 | | | |

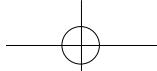
Notes: 1. Luminous intensity is measured with a light sensor and filter combination that approximates the CIE eye-response curve.

2. θ is the off-axis angle at which the luminous intensity is half the axial luminous intensity.

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

4. I_v needs 15% additional for guaranteed limits.

5. Reverse current is controlled by dice source.



Typical Electrical/Optical Characteristic Curves (25°C Ambient Temperature Unless Otherwise Noted)

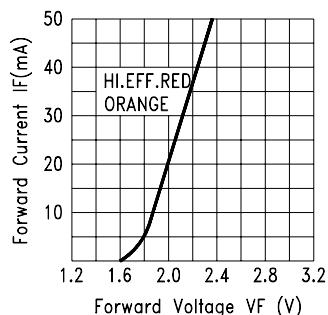


Fig.2 FORWARD CURRENT VS.
FORWARD VOLTAGE

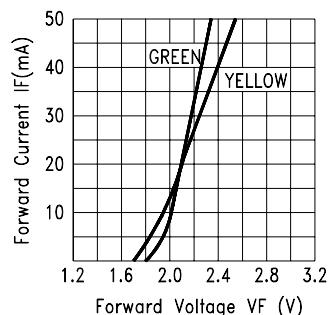


Fig.3 FORWARD CURRENT VS.
FORWARD VOLTAGE

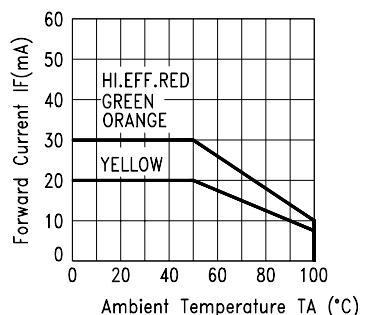


Fig.4 FORWARD CURRENT
DERATING CURVE

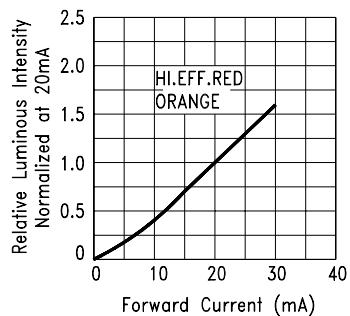


Fig.5 RELATIVE LUMINOUS
INTENSITY VS. FORWARD
CURRENT

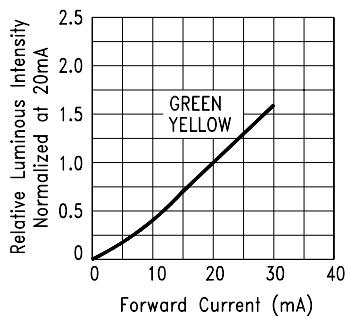


Fig.6 RELATIVE LUMINOUS
INTENSITY VS. FORWARD
CURRENT

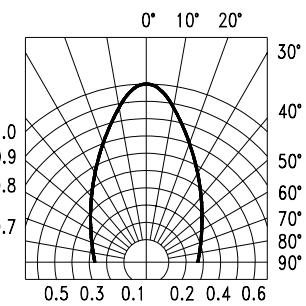


Fig.7 SPATIAL DISTRIBUTION

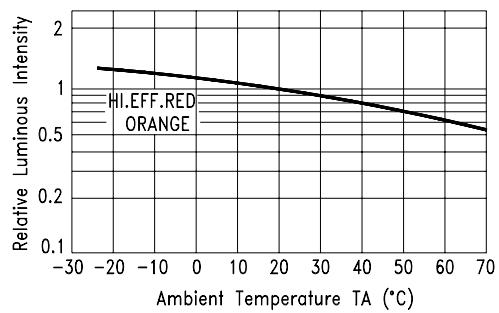


Fig.8 LUMINOUS INTENSITY VS.
AMBIENT TEMPERATURE

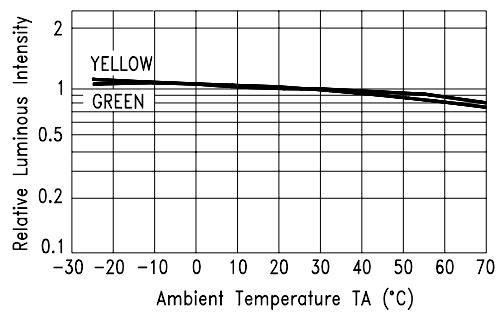


Fig.9 LUMINOUS INTENSITY VS.
AMBIENT TEMPERATURE