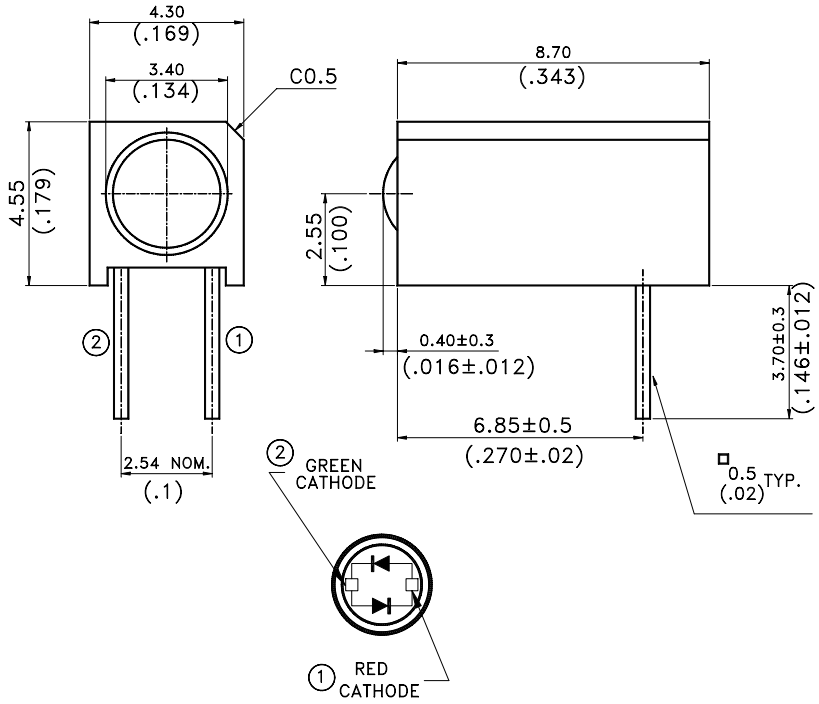
Features

* Designed for ease in circuit board assembly.
* Black case enhance contrast ratio.
* Solid state light source.
* Reliable and rugged.

Package Dimensions



Lamp Part No.	Lens	Source Color
LTL-14CHJ	White Diffused	Red Orange / Green

Notes:

1. All dimensions are in millimeters (inches).
2. Tolerance is ±0.25mm(.010") unless otherwise noted.
3. The holder color is black.
4. The LED lamp is LTL-14CHJ.

Absolute Maximum Ratings at T_A=25℃

Parameter	Red Orange	Green	Unit
Power Dissipation	100	100	mW
Peak Forward Current (1/10 Duty Cycle, 0.1ms Pulse Width)	120	120	mA
DC Forward Current	30	30	mA
Derating Linear From 50℃	0.4	0.4	mA/℃
Operating Temperature Range	-55℃ to + 100℃		
Storage Temperature Range	-55℃ to + 100℃		
Lead Soldering Temperature [1.6mm(.063") From Body]	260℃ for 5 Seconds		

Electrical / Optical Characteristics at T_A=25℃

Parameter	Symbol	Color	Min.	Typ.	Max.	Unit	Test Condition
Luminous Intensity	I_V	Red Orange Green	2.2 2.2	4.8 4.8		mcd	I_F = 20mA Note 1,4
Viewing Angle	$2\theta_{1/2}$	Red Orange Green		200		deg	Note 2 (Fig.6)
Peak Emission Wavelength	λ p	Red Orange Green		630 565		nm	Measurement @Peak (Fig.1)
Dominant Wavelength	λ d	Red Orange Green		621 569		nm	Note 3
Spectral Line Half-Width	$\Delta\lambda$	Red Orange Green		40 30		nm	
Forward Voltage	V_F	Red Orange Green		2.0 2.1	2.6 2.6	V	I_F = 20mA
Reverse Current	I_R	Red Orange Green			100	μA	V_R = 5V
Capacitance	C	Red Orange Green		20 35		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. $\theta_{1/2}$ 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 Iv guarantee should be added ±15% .

5. Reverse current is controlled by dice source.

Typical Electrical / Optical Characteristics Curves

(25℃ Ambient Temperature Unless Otherwise Noted)

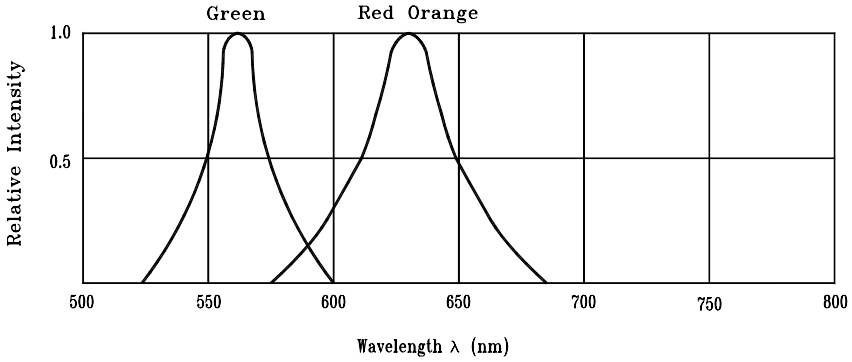


Fig.1 Relative Intensity vs. Wavelength

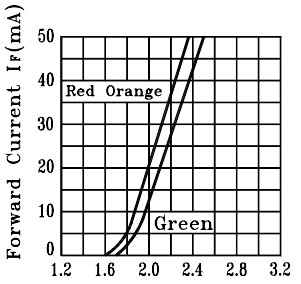


Fig.2 Forward Current vs. Forward Voltage

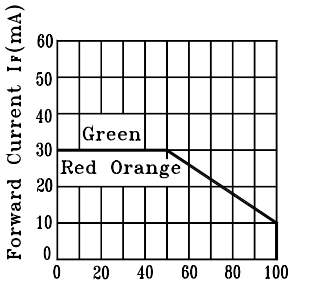


Fig.3 Forward Current Derating Curve

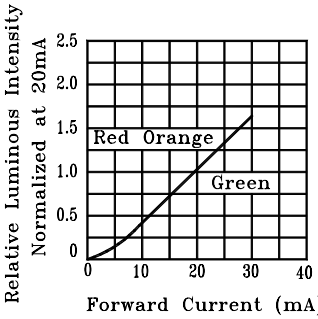


Fig.4 Relative Luminous Intensity vs. Forward Current

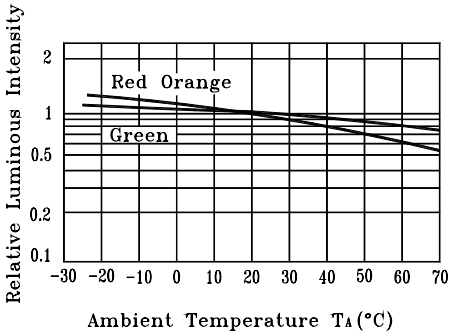


Fig.5 Luminous Intensity vs. Ambient Temperature

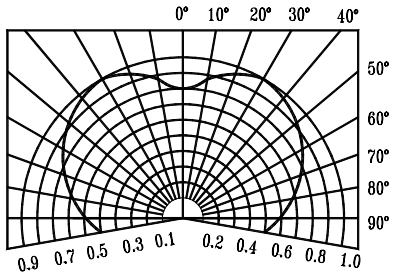


Fig.6 Spatial Distribution

CAUTIONS

1. Application

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

2. Storage

The storage ambient for the LEDs should not exceed 30°C temperature or 70% relative humidity. It is recommended that LEDs out of their original packaging are used within three months.
For extended storage out of their original packaging, it is recommended that the LEDs be stored in a sealed container with appropriate desiccant or in a dessicator with nitrogen ambient.

3. Cleaning

Use alcohol-based cleaning solvents such as isopropyl alcohol to clean the LEDs if necessary.

4. Lead Forming & Assembly

During lead forming, the leads should be bent at a point at least 3mm from the base of LED lens. Do not use the base of the leadframe as a fulcrum during forming. Lead forming must be done before soldering at normal temperature. During assembly on PCB, use minimum clinch force possible to avoid excessive mechanical stress

5. Soldering

When soldering, leave a minimum of 2mm clearance from the base of the lens to the soldering point.
Dipping the lens into the solder must be avoided.
Do not apply any external stress to the lead frame during soldering while the LED is at high temperature.
Recommended soldering condition (for Lamp):

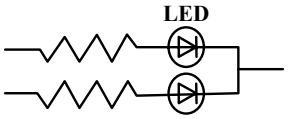
Soldering iron		Wave soldering	
Temperature Soldering time	300°C Max. 3 sec. Max. (one time only)	Pre-heat Pre-heat time Solder wave Soldering time	100°C Max. 60 sec. Max. 260°C Max. 10 sec. Max.

Note: Excessive soldering temperature and/or time might result in deformation of the LED lens or catastrophic failure of the LED.

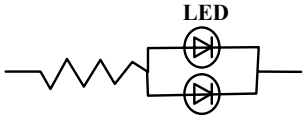
6. Drive Method

An LED is a current operated device, In order to ensure intensity uniformity on multiple LEDs connected in parallel in an application; it is recommended that a current limiting resistor be incorporated in the drive circuit. In series with each LED as shown in Circuit A below.

Circuit model A



Circuit model B



(A) Recommended circuit.
(B) The brightness of each LED might appear different due to the differences in the I-V characteristics of those LEDs

7. Reliability Test

Classification	Test Item	Test Condition	Reference Standard
Endurance Test	Operation Life	Ta = Under room temperature as per data sheet maximum rating *Test time = 1000hrs (-24hrs, +72hrs)	MIL-STD-750D : 1026 (1995) MIL-STD-883D : 1005 (1991) JIS C 7021 : B-1 (1982)
	High Temperature High Humidity Storage	Ta = 65±5℃ RH = 90 ～ 95% Test time = 240hrs±2hrs	MIL-STD-202F: 103B(1980) JIS C 7021 : B-11(1982)
	High Temperature High Humidity Reverse Bias	Ta = 65±5℃ RH = 90 ～ 95% VR = 5V Test time = 500hrs (-24hrs, +48hrs)	JIS C 7021 : B-11(1982)
	High Temperature Storage	Ta = 105±5℃ Test time = 1000hrs (-24hrs, +72hrs)	MIL-STD-883D : 1008 (1991) JIS C 7021 : B-10 (1982)
	Low Temperature Storage	Ta = -55±5℃ Test time = 1000hrs (-24hrs, +72hrs)	JIS C 7021 : B-12 (1982)
Environmental Test	Temperature Cycling	105℃ ～ 25℃ ～ -55℃ ～ 25℃ 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)
	Thermal Shock	105 ± 5℃ ～ -55℃ ± 5℃ 10mins 10mins 10 cycles	MIL-STD-202F : 107D(1980) MIL-STD-750D : 1051(1995) MIL-STD-883D : 1011 (1991)
	Solder Resistance	T.sol = 260 ± 5℃ Dwell time = 10 ± 1secs	MIL-STD-202F : 210A(1980) MIL-STD-750D : 2031(1995) JIS C 7021 : A-1(1982)
	Solderability	T.sol = 230 ± 5℃ Dwell time = 5 ± 1secs	MIL-STD-202F : 208D(1980) MIL-STD-750D : 2026(1995) MIL-STD-883D : 2003(1991) JIS C 7021 : A-2(1982)

8. Others

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