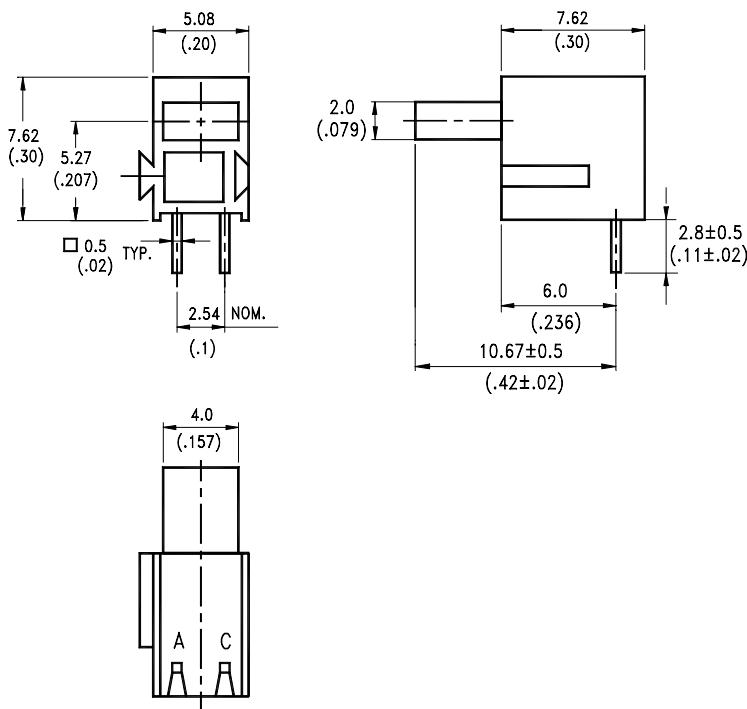


**Features**

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

**Package Dimensions**

Part No.	Lens	Source
LTL-		Color
403HR	Red Diffused	Hi.Eff.Red

**NOTES:**

1. All dimensions are in millimeters (inches).
2. Tolerance is  $\pm 0.25\text{mm} (.010")$  unless otherwise noted.
3. The holder color is black.
4. The holder raw material is PC.
5. The LED lamp is LTL-403HR.



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**Absolute Maximum Ratings at Ta=25°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/°C
Reverse Voltage	5	V
Operating Temperature Range	-55°C to + 100°C	
Storage Temperature Range	-55°C to + 100°C	
Lead Soldering Temperature [1.6mm(.063") From Body]	260°C for 5 Seconds	

Electrical Optical Characteristics at  $T_a=25^\circ C$ 

Parameter	Symbol	Part No. LTL-	Min.	Typ.	Max.	Unit	Test Condition
Luminous Intensity	$I_v$	403HRHA	1.1	3.7		mcd	$I_F = 10mA$ Note 1,4
Viewing Angle	$2\theta_{1/2}$	403HRHA		104		deg	Note 2 (Fig.6)
Peak Emission Wavelength	$\lambda_p$	403HRHA		635		nm	Measurement @Peak (Fig.1)
Dominant Wavelength	$\lambda_d$	403HRHA		623		nm	Note 3
Spectral Line Half-Width	$\Delta\lambda$	403HRHA		40		nm	
Forward Voltage	$V_F$	403HRHA		2.0	2.6	V	$I_F = 20mA$
Reverse Current	$I_R$	403HRHA			100	$\mu A$	$V_R = 5V$
Capacitance	C	403HRHA		20		PF	$V_F = 0, f = 1MHz$

- NOTE:
1. Luminous intensity is measured with a light sensor and filter combination that approximates the CIE 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,  $\lambda_d$  is derived from the CIE chromaticity diagram and represents the single wavelength which defines the color of the device.
  4.  $I_v$  needs  $\pm 15\%$  additionary for guaranteed limits.

## Typical Electrical / Optical Characteristics Curves

(25°C Ambient Temperature Unless Otherwise Noted)

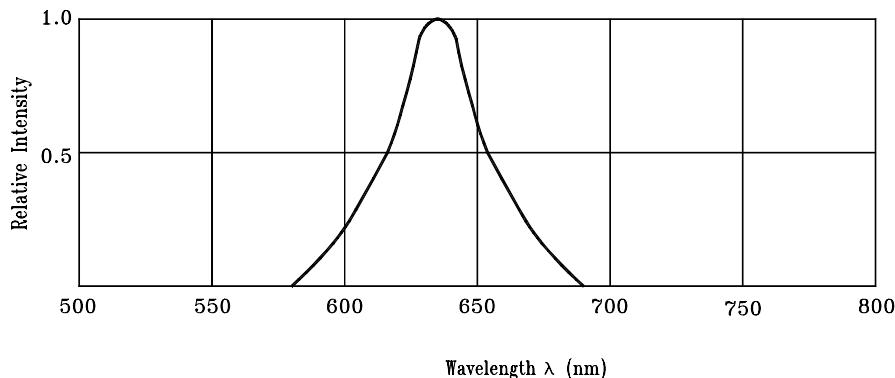


Fig.1 Relative Intensity vs. Wavelength

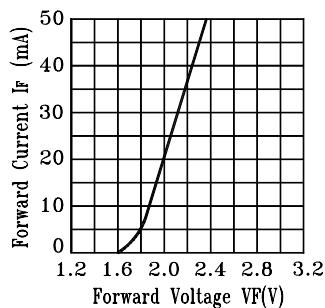


Fig.2 Forward Current vs. Forward Voltage

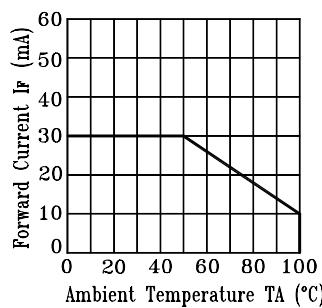


Fig.3 Forward Current Derating Curve

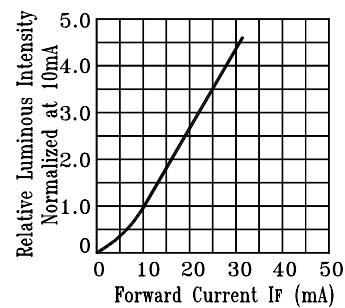


Fig.4 Relative Luminous Intensity vs. Forward Current

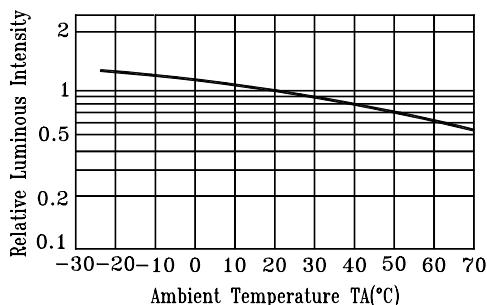


Fig.5 Luminous Intensity vs. Ambient Temperature

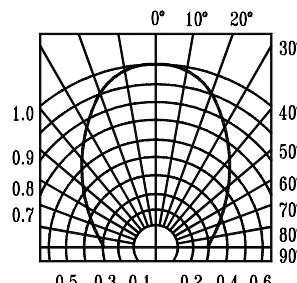


Fig.6 Spatial Distribution