



T-1(3mm), T-1³/₄(5mm) Low Current LED Lamps

LTL-4221NLC/307ELC Hi. Eff. Red

LTL-4231NLC/307GLC Green

LTL-4251NLC/307YLC Yellow

Features

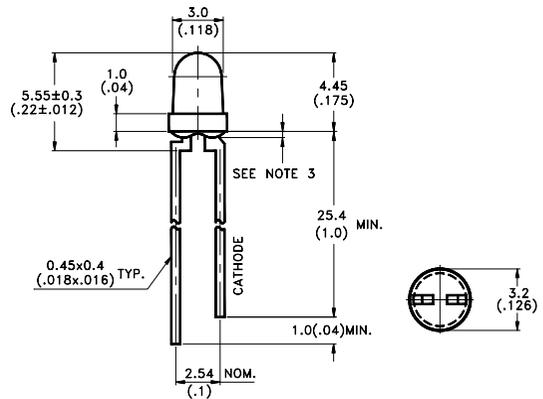
- Low power consumption
- High efficiency
- CMOS/MOS compatible
- TTL compatible
- Wide viewing angle

Description

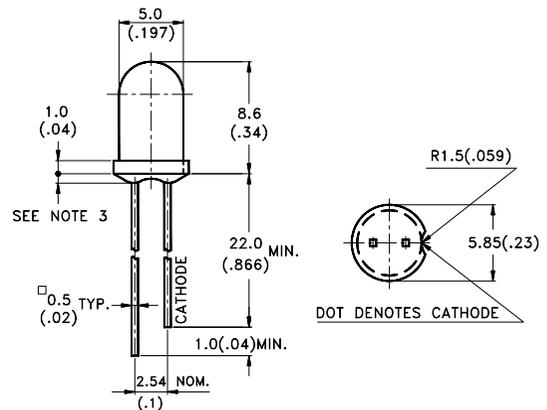
These tinted diffused LED lamps were designed and optimized specifically for low DC current operation. Luminous intensity and forward voltage are tested at 2 mA to assure consistent brightness at TTL output current levels.

Package Dimensions

LTL-42x1NLC Series



LTL-307xLC Series



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 1.5mm (.059") max.
4. Lead spacing is measured where the leads emerge from the package.
5. Specifications are subject to change without notice.

Devices

Part No. LTL-	Lens	Source Color
4221NLC	Red Diffused	Hi. Eff. Red
4231NLC	Green Diffused	Green
4251NLC	Yellow Diffused	Yellow

Part No. LTL-	Lens	Source Color
307ELC	Red Diffused	Hi. Eff. Red
307GLC	Green Diffused	Green
307YLC	Yellow Diffused	Yellow

Absolute Maximum Ratings at Ta=25°C

Parameter	Maximum Rating	Unit
Power Dissipation Tamb ≤ 90°C	Hi. Eff. Red	20
	Green	20
	Yellow	20
Forward Current	7	mA
Forward Surge Current (10 μ sec Pulse)	500	mA
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 (0.063in) From Body]	260°C for 5 Seconds	

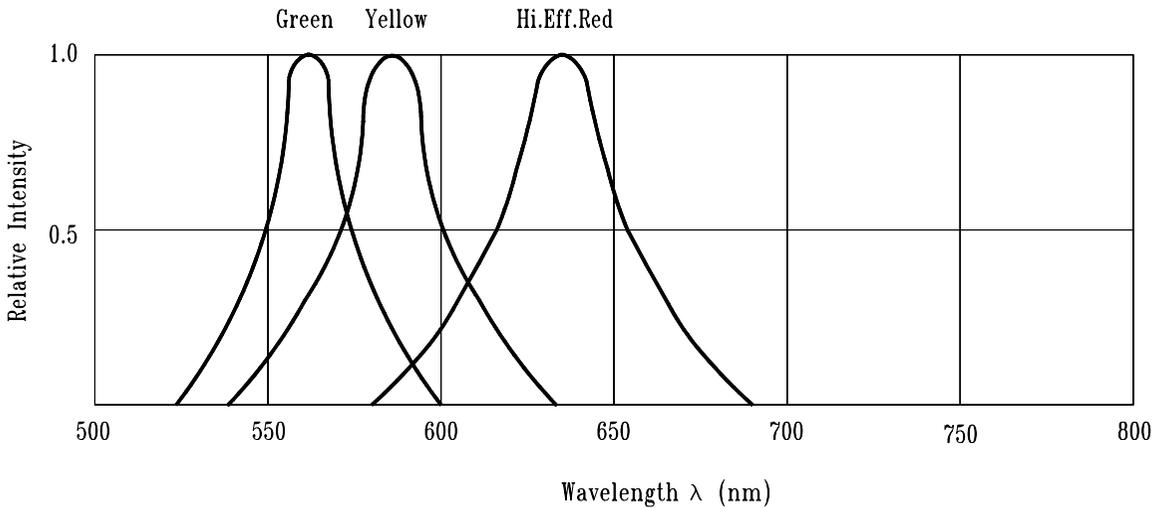


Fig.1 Relative Intensity vs. Wavelength

Electrical /Optical Characteristics and Curves at Ta=25°C

Parameter	Symbol	Part No. LTL-	Min.	Typ.	Max.	Unit.	Test Condition.
Luminous Intensity	Iv	4221NLC 4231NLC 4251NLC	0.7 0.4 0.4	2.5 1.1 1.1		mcd	I _F =2 mA Note 1,4
Viewing Angle	2θ 1/2	42x1NLC		60		deg	Note 2 (Fig.6)
Peak Emission Wavelength	λ P	4221NLC 4231NLC 4251NLC		635 565 585		nm	Measurement @Peak (Fig.1)
Dominant Wavelength	λ d	4221NLC 4231NLC 4251NLC		623 569 588		nm	Note 3
Spectral Line Half Width	Δλ	4221NLC 4231NLC 4251NLC		40 30 35		nm	
Forward Voltage	V _F	4221NLC 4231NLC 4251NLC		1.7 1.9 1.8	2.2 2.2 2.7	V	I _F =2mA
Reverse Current	I _R	42x1NLC			10	μ A	V _R =5V

- Notes: 1. Luminous intensity is measured with a light sensor and filter combination that approximates the CIE 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. I_v needs ± 15% additional for guaranteed limits.

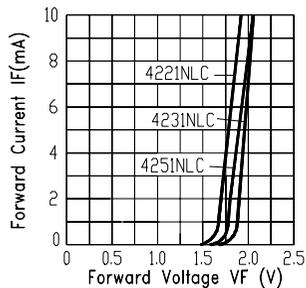


Fig.2 FORWARD CURRENT VS. FORWARD VOLTAGE

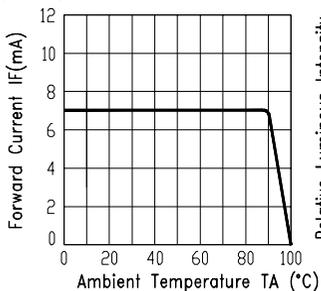


Fig.3 FORWARD CURRENT DERATING CURVE

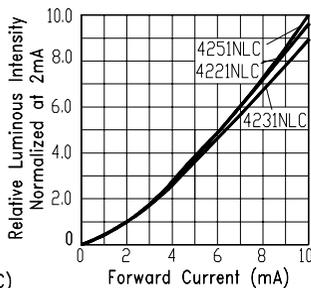


Fig.4 RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT

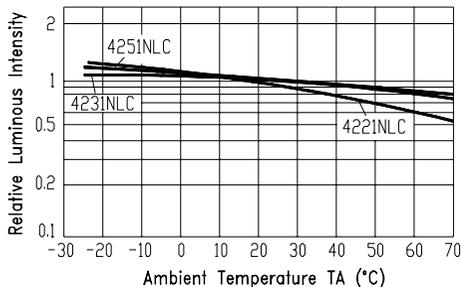


Fig.5 LUMINOUS INTENSITY VS. AMBIENT TEMPERATURE

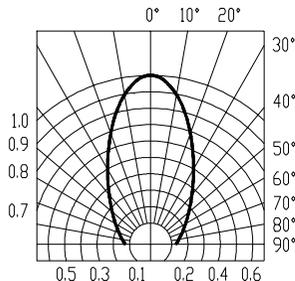


Fig.6 SPATIAL DISTRIBUTION

Electrical /Optical Characteristics and Curves at Ta=25°C

Parameter	Symbol	Part No. LTL-	Min.	Typ.	Max.	Unit.	Test Condition.
Luminous Intensity	Iv	307ELC 307GLC 307YLC	1.1 1.1 1.1	3.7 3.7 3.7		mcd	If=2 mA Note 1,4
Viewing Angle	$2\theta_{1/2}$	307xLC		50		deg	Note 2 (Fig.11)
Peak Emission Wavelength	λP	307ELC 307GLC 307YLC		635 565 585		nm	Measurement @Peak (Fig.1)
Dominant Wavelength	λd	307ELC 307GLC 307YLC		623 569 588		nm	Note 3
Spectral Line Half Width	$\Delta\lambda$	307ELC 307GLC 307YLC		40 30 35		nm	
Forward Voltage	V _F	307ELC 307GLC 307YLC		1.7 1.9 1.8	2.2 2.2 2.7	V	If=2mA
Reverse Current	I _R	307xLC			10	μA	V _R =5V

- Notes: 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, λd is derived from the CIE chromaticity diagram and represents the single wavelength which defines the color of the device.
 4. I_v needs $\pm 15\%$ additional for guaranteed limits.

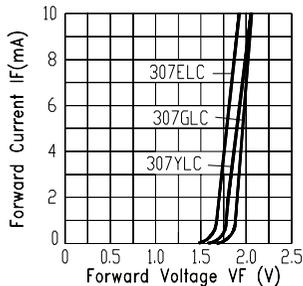


Fig.7 FORWARD CURRENT VS. FORWARD VOLTAGE

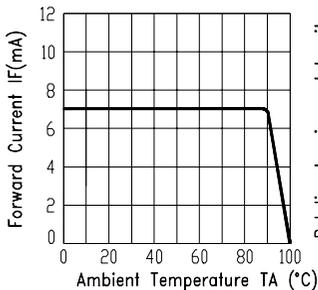


Fig.8 FORWARD CURRENT DERATING CURVE

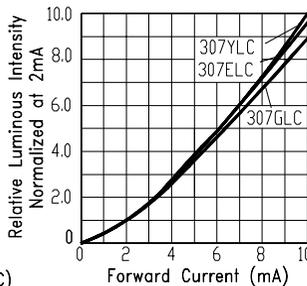


Fig.9 RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT

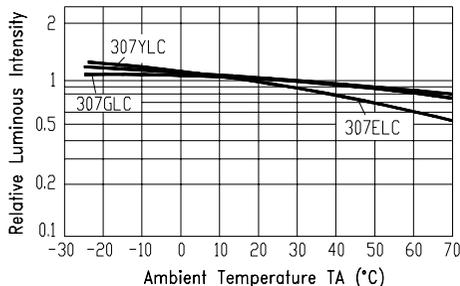


Fig.10 LUMINOUS INTENSITY VS. AMBIENT TEMPERATURE

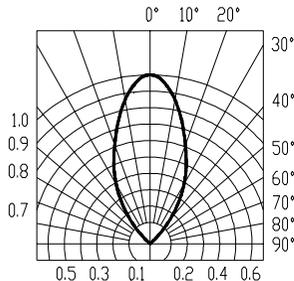


Fig.11 SPATIAL DISTRIBUTION