

T-1 3/4 (5mm) Solid State LED Lamps

LTL-307R/307RE Red

LTL-307P/307PE Bright Red

LTL-307E/307EE High Efficiency Red

LTL-307G/307GE Green

LTL-307Y/307YE Yellow

Features

- High intensity.
- Popular T-1 3/4 Diameter package.
- Selected minimum intensities.
- Wide viewing angle.
- General purpose leads.
- Reliable and rugged.

Description

The Red source color devices are made with Gallium Arsenide Phosphide on Gallium Arsenide Red Light Emitting Diode.

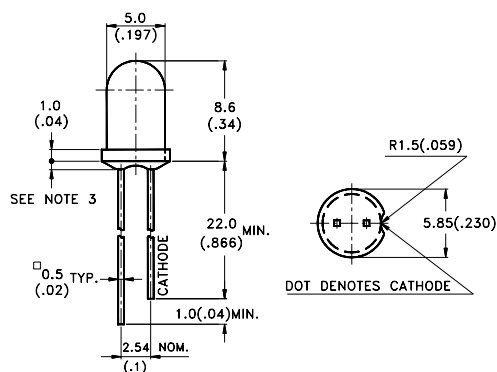
The Bright Red source color devices are made with Gallium Phosphide on Gallium Phosphide Red Light Emitting Diode.

The High Efficiency Red and Orange source color devices are made with Gallium Arsenide Phosphide on Gallium Phosphide Orange Light Emitting Diode.

The Green source color devices are made with Gallium Phosphide on Gallium Phosphide Green Light Emitting Diode.

The Yellow source color devices are made with Gallium Arsenide Phosphide on Gallium Phosphide Yellow Light Emitting Diode.

Package Dimensions



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
307R	Red Diffused	Red
307RE	Red Transparent	
307P	Red Diffused	Bright Red
307PE	Red Transparent	
307E	Red Diffused	Hi. Eff. Red
307EE	Red Transparent	
307G	Green Diffused	Green
307GE	Green Transparent	
307Y	Yellow Diffused	Yellow
307YE	Yellow Transparent	

Absolute Maximum Ratings at Ta=25°C

Parameter	Red	Bright Red	Green	Yellow	Hi. Eff. Red	Unit
Power Dissipation	80	40	100	60	100	mW
Peak Forward Current (1/10 Duty Cycle, 0.1ms Pulse Width)	200	60	120	80	120	mA
Continuous Forward Current	40	15	30	20	30	mA
Derating Linear From 50°C	0.5	0.2	0.4	0.25	0.4	mA/°C
Reverse Voltage	5	5	5	5	5	V
Operating Temperature Range	-55°C to +100°C					
Storage Temperature Range	-55°C to +100°C					
Lead Soldering Temperature [1.6mm (.063 in.) from body]	260°C for 5 Seconds					

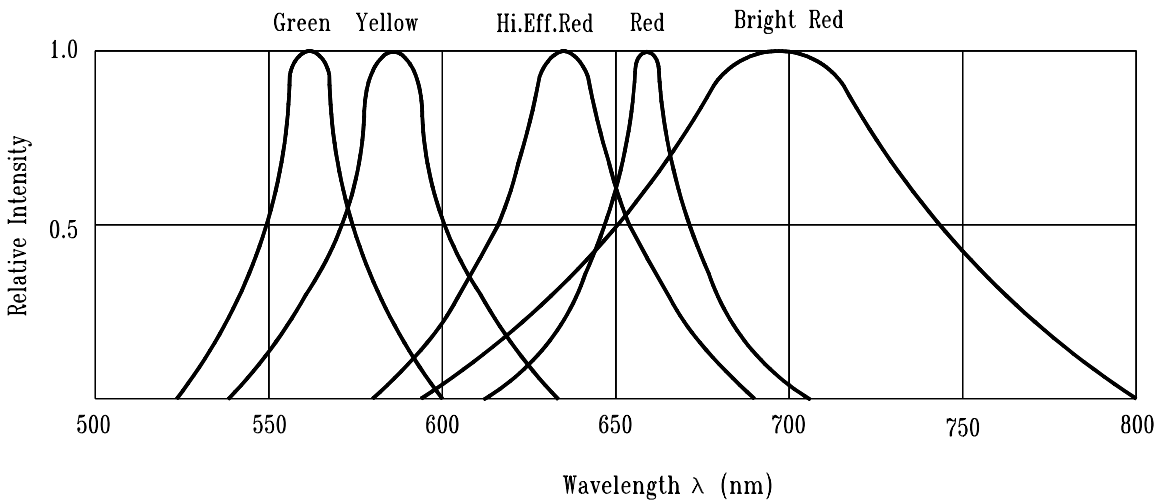
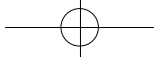


Fig.1 Relative Intensity vs. Wavelength



Electrical/Optical Characteristics at Ta=25°C

Parameter	Symbol	Part No. LTL-	Min.	Typ.	Max.	Unit.	Test Condition.
Luminous Intensity	I _v	307R	0.5	1.7		mcd	I _F =10 mA Note 1,4
		307P	1.7	5.6			
		307E	5.6	19			
		307G	5.6	19			
		307Y	8.7	29			
Viewing Angle	2 θ _{1/2}	307x		50		deg	Note 2 (Fig.7)
Peak Emission Wavelength	λ _P	307R		655		nm	Measurement @ Peak (Fig.1)
		307P		697			
		307E		635			
		307G		565			
		307Y		585			
Dominant Wavelength	λ _d	307R		651		nm	Note 3
		307P		657			
		307E		623			
		307G		569			
		307Y		588			
Spectral Line Half Width	Δλ	307R		24		nm	
		307P		90			
		307E		40			
		307G		30			
		307Y		35			
Forward Voltage	V _F	307R		1.7	2.0	V	I _F =20mA
		307P		2.1	2.6		
		307E		2.0	2.6		
		307G		2.1	2.6		
		307Y		2.1	2.6		
Reverse Current	I _R	307x			100	μA	V _R =5V
Capacitance	C	307R		30		pF	V _F =0, f=1MHz
		307P		55			
		307E		20			
		307G		35			
		307Y		15			

- 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.

Electrical/Optical Characteristics at Ta=25°C

Parameter	Symbol	Part No. LTL-	Min.	Typ.	Max.	Unit.	Test Condition.
Luminous Intensity	I_v	307RE 307PE 307EE 307GE 307YE	1.1 2.5 29 19 12.6	3.7 8.7 90 60 40		mcd	$I_F=10\text{ mA}$ Note 1,4
Viewing Angle	$2\theta_{1/2}$	307xE		40		deg	Note 2 (Fig.15)
Peak Emission Wavelength	λ_P	307RE 307PE 307EE 307GE 307YE		655 697 635 565 585		nm	Measurement @Peak (Fig.1)
Dominant Wavelength	λ_d	307RE 307PE 307EE 307GE 307YE		651 657 623 569 588		nm	Note 3
Spectral Line Half Width	$\Delta\lambda$	307RE 307PE 307EE 307GE 307YE		24 90 40 30 35		nm	
Forward Voltage	V_F	307RE 307PE 307EE 307GE 307YE		1.7 2.1 2.0 2.1 2.1	2.0 2.6 2.6 2.6 2.6	V	$I_F=20\text{ mA}$
Reverse Current	I_R	307xE			100	$\mu\text{ A}$	$V_R=5\text{ V}$
Capacitance	C	307RE 307PE 307EE 307GE 307YE		30 55 20 35 15		pF	$V_F=0$, $f=1\text{ MHz}$

- 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, 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 $\pm 15\%$ additional for guaranteed limits.

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

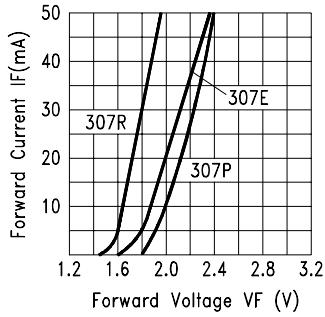


Fig.2 FORWARD CURRENT VS. FORWARD VOLTAGE

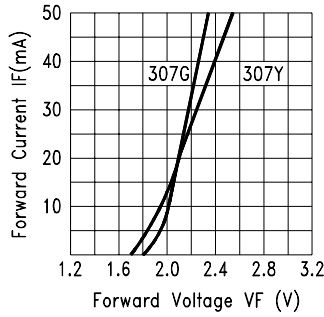


Fig.3 FORWARD CURRENT VS. FORWARD VOLTAGE

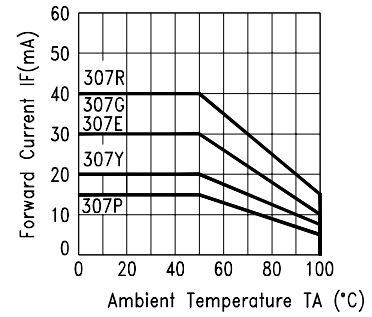


Fig.4 FORWARD CURRENT DERATING CURVE

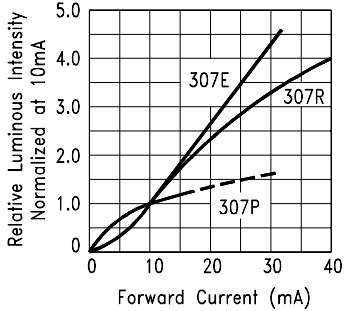


Fig.5 RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT

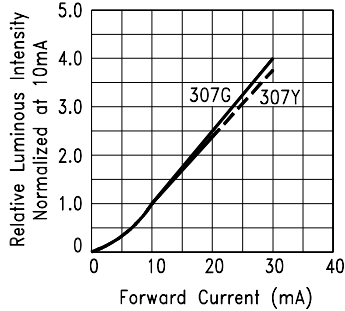


Fig.6 RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT

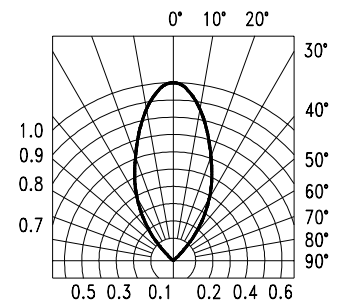


Fig.7 SPATIAL DISTRIBUTION

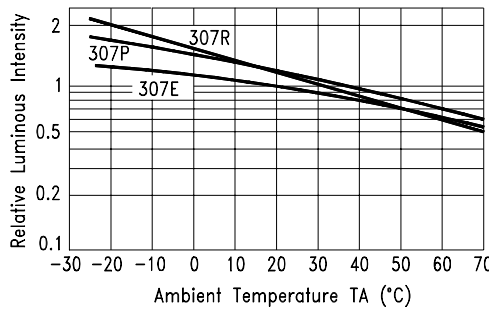


Fig.8 LUMINOUS INTENSITY VS. AMBIENT TEMPERATURE

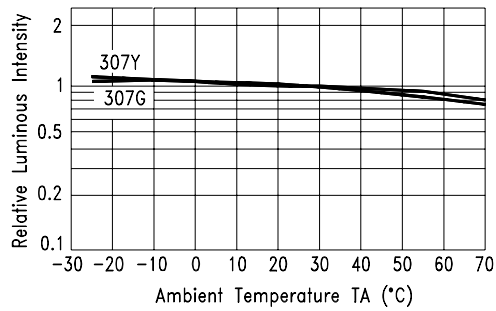


Fig.9 LUMINOUS INTENSITY VS. AMBIENT TEMPERATURE

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

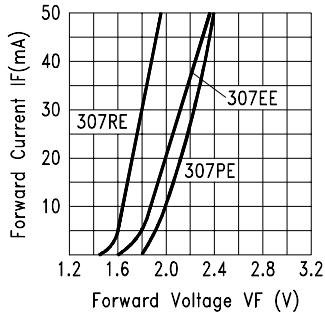


Fig.10 FORWARD CURRENT VS. FORWARD VOLTAGE

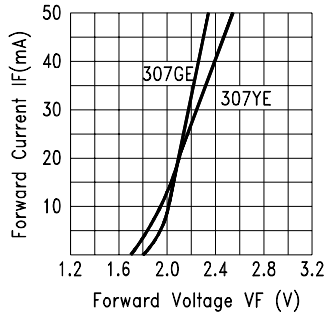


Fig.11 FORWARD CURRENT VS. FORWARD VOLTAGE

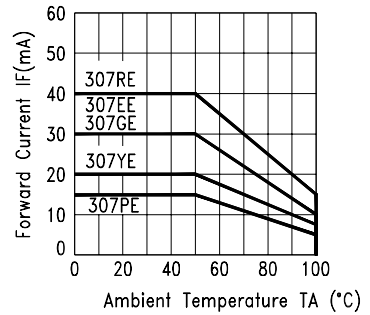


Fig.12 FORWARD CURRENT DERATING CURVE

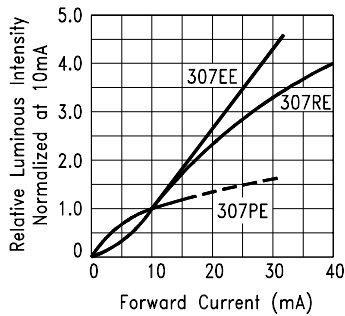


Fig.13 RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT

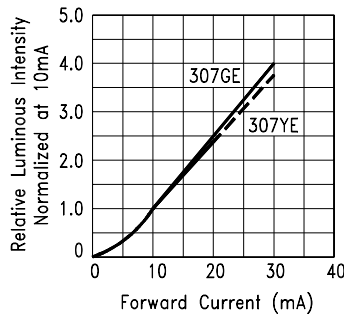


Fig.14 RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT

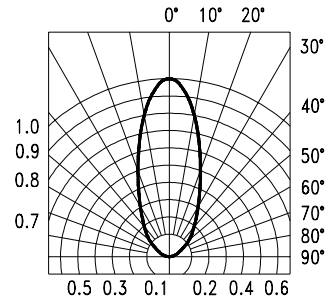


Fig.15 SPATIAL DISTRIBUTION

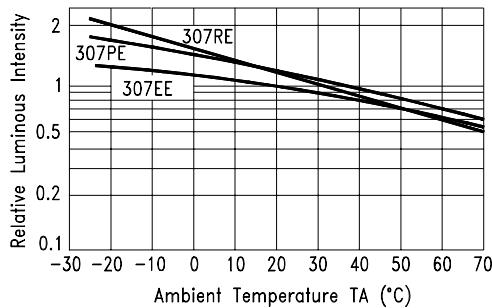


Fig.16 LUMINOUS INTENSITY VS. AMBIENT TEMPERATURE

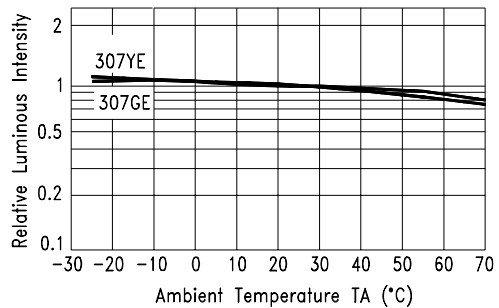


Fig.17 LUMINOUS INTENSITY VS. AMBIENT TEMPERATURE