LITEON

3.2 × 5.6 (mm) Reflector Cap Rectangular Bars

LTL-33221AA High Efficiency Red
LTL-33231AA Green
LTL-33251AA Yellow

Features

- Legend back lighting.
- Illuminated push button.
- Panel indicator.
- Bar graph meter.

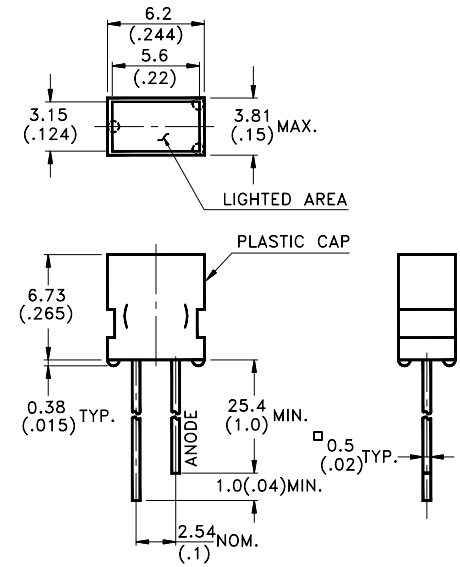
Description

The High Efficiency Red 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



Devices

Part No. LTL-	Lens	Source Color
33221AA	Red Diffused	Hi. Eff. Red
33231AA	Green Diffused	Green
33251AA	Yellow Diffused	Yellow

Notes:

1. All dimensions are in millimeters (inches).
2. Tolerance is ± 0.25mm (.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.

Absolute Maximum Ratings at Ta=25℃

Parameter	Hi. Eff. Red	Green	Yellow	Unit
Power Dissipation	100	100	60	mW
Peak Forward Current (1/10 Duty Cycle, 0.1ms Pulse Width)	120	120	80	mA
Continuous Forward Current	30	30	20	mA
Derating Linear From 50℃	0.4	0.4	0.25	mA/℃
Reverse Voltage	5	5	5	V
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			

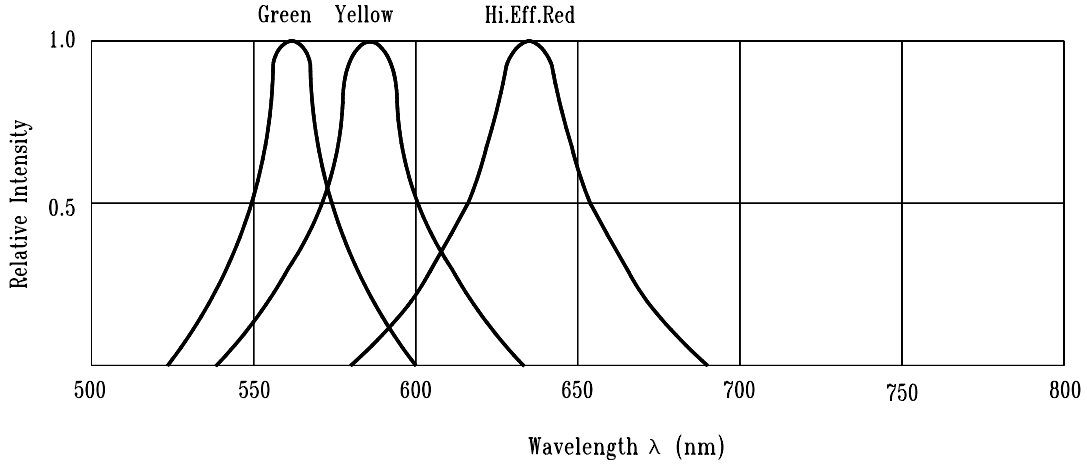


Fig.1 Relative Intensity vs. Wavelength

Electrical/Optical Characteristics at Ta=25℃

Parameter	Symbol	Part No. LTL-	Min.	Typ.	Max.	Unit.	Test Condition.
Luminous Intensity	I_V	33221AA 33231AA 33251AA	1.7 1.7 2.5	5.6 5.6 8.7		mcd	I_F=20 mA Note 1,4
Viewing Angle	$2\theta_{1/2}$	332x1AA		100		deg	Note 2 (Fig.6)
Peak Emission Wavelength	λP	33221AA 33231AA 33251AA		635 565 585		nm	Measurement @Peak (Fig.1)
Dominant Wavelength	λd	33221AA 33231AA 33251AA		623 569 588		nm	Note 3
Spectral Line Half Width	$\triangle\lambda$	33221AA 33231AA 33251AA		40 30 35		nm	
Forward Voltage	V_F	33221AA 33231AA 33251AA		2.0 2.1 2.1	2.6 2.6 2.6	V	I_F=20mA
Reverse Current	I_R	332x1AA			100	μA	V_R=5V
Capacitance	C	33221AA 33231AA 33251AA		20 35 15		pF	V_F=0 , f=1MHz

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% additionary for guaranteed limits.

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

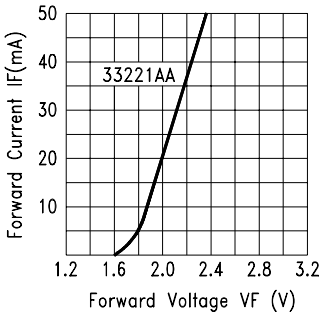


Fig.2 FORWARD CURRENT VS. FORWARD VOLTAGE

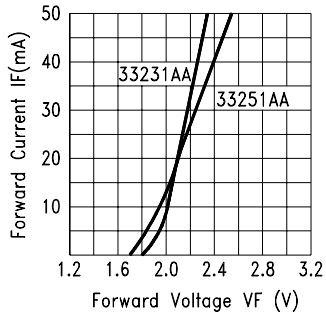


Fig.3 FORWARD CURRENT VS. FORWARD VOLTAGE

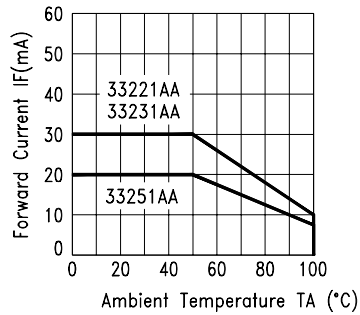


Fig.4 FORWARD CURRENT DERATING CURVE

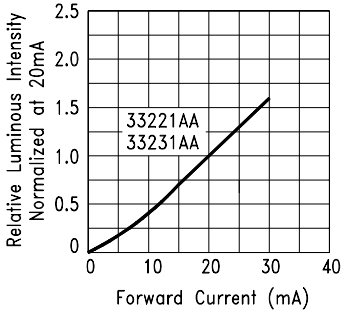


Fig.5 RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT

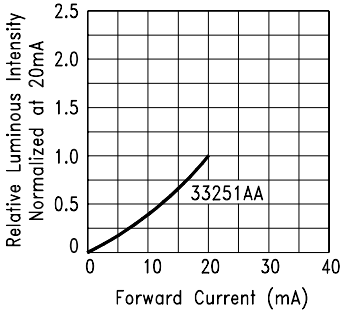


Fig.6 RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT

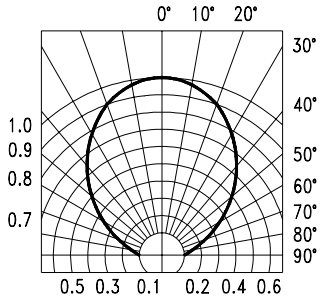


Fig.7 SPATIAL DISTRIBUTION

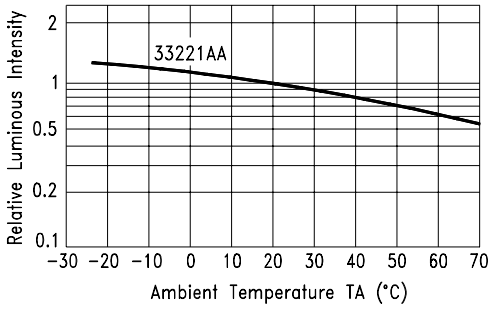


Fig.8 LUMINOUS INTENSITY VS. AMBIENT TEMPERATURE

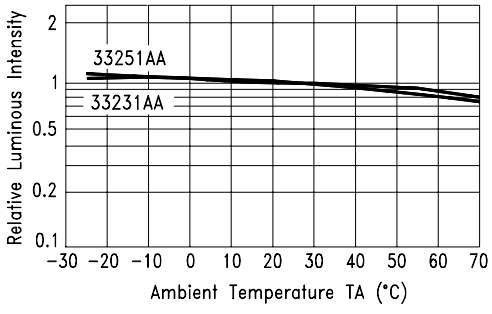


Fig.9 LUMINOUS INTENSITY VS. AMBIENT TEMPERATURE