

2.5 × 7.1 (mm) Rectangular Bar LED Lamps

LTL-3213A Bright Red

LTL-3223A Hi. Eff. Red

LTL-3233A Green

LTL-3253A Yellow

LTL-3293A Red Orange

Features

- Low power consumption.
- Most suitable for use like level indicator.
- Excellent uniformity of light Emittance.
- Long Life solid state reliability.
- I.C. compatible.

Description

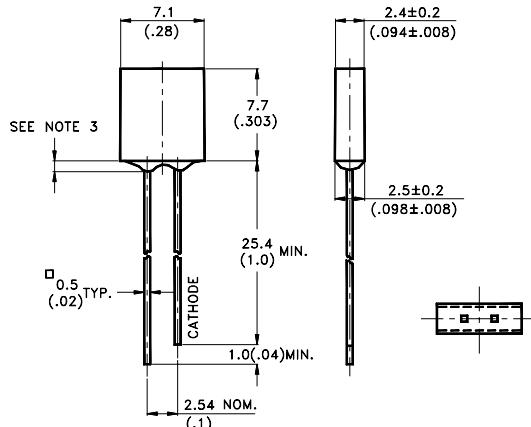
The Bright Red source color devices are made with Gallium Phosphide on Gallium Phosphide Red Light Emitting Diode.

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 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 1.0mm (.04") 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
3213A	Red Diffused	Bright Red
3223A	Red Diffused	Hi. Eff. Red
3233A	Green Diffused	Green
3253A	Yellow Diffused	Yellow
3293A	Orange Diffused	Red Orange

Absolute Maximum Ratings at Ta=25°C

Parameter	Bright Red	Green	Yellow	Hi. Eff. Red Red Orange	Unit
Power Dissipation	40	100	60	100	mW
Peak Forward Current (1/10 Duty Cycle, 0.1ms Pulse Width)	60	120	80	120	mA
Continuous Forward Current	15	30	20	30	mA
Derating Linear From 50°C	0.2	0.4	0.25	0.4	mA/°C
Reverse Voltage	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	

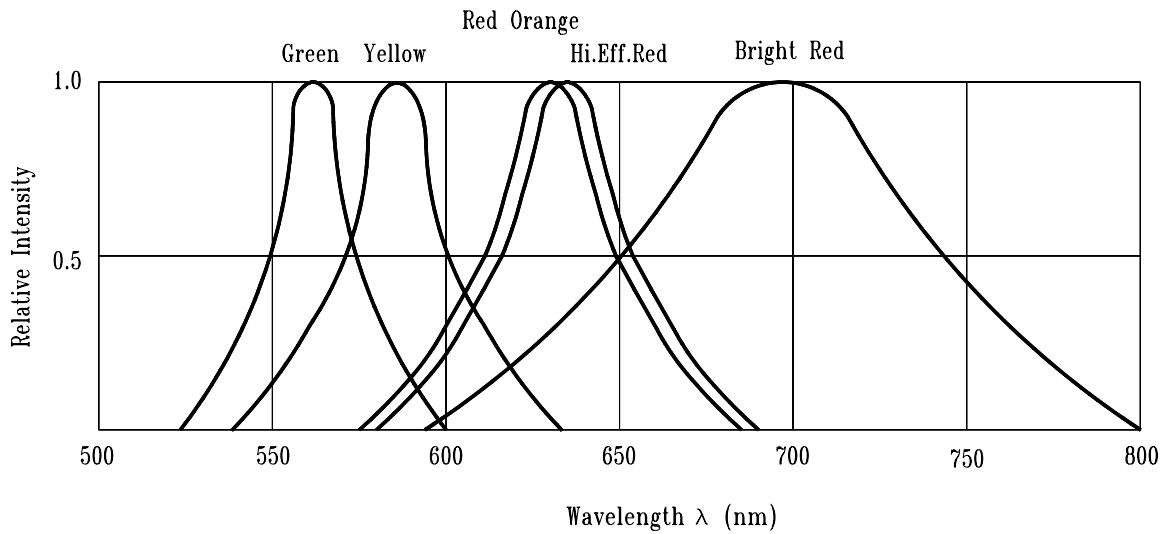


Fig. 1 Relative Intensity vs. Wavelength

Electrical/Optical Characteristics at Ta=25°C

Parameter	Symbol	Part No. LTL-	Min.	Typ.	Max.	Unit.	Test Condition.
Luminous Intensity	IV	3213A 3223A 3233A 3253A 3293A	0.3 2.8 2.8 0.5 3.7	0.7 6.3 6.3 1.7 8.2		mcd	IF=10 mA Note 1,4
Viewing Angle	2θ 1/2	32x3A		130		deg	Note 2 (Fig.7)
Peak Emission Wavelength	λ P	3213A 3223A 3233A 3253A 3293A		697 635 565 585 630		nm	Measurement @Peak (Fig.1)
Dominant Wavelength	λ d	3213A 3223A 3233A 3253A 3293A		657 623 569 588 621		nm	Note 3
Spectral Line Half Width	Δλ	3213A 3223A 3233A 3253A 3293A		24 90 40 30 35		nm	
Forward Voltage	VF	3213A 3223A 3233A 3253A 3293A		2.1 2.0 2.1 2.1 2.0	2.0 2.6 2.6 2.6 2.6	V	IF=20mA
Reverse Current	IR	32x3A			100	μA	VR=5V
Capacitance	C	3213A 3223A 3233A 3253A 3293A		55 20 35 15 20		pF	VF=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. IV needs $\pm 15\%$ additional for guaranteed limits.

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

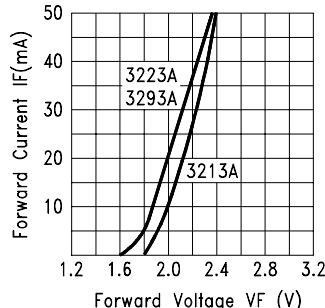


Fig.2 FORWARD CURRENT VS.
FORWARD VOLTAGE

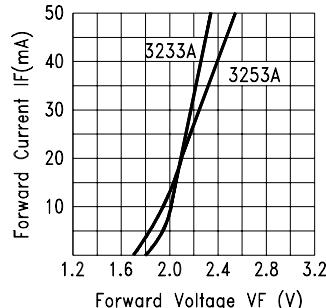


Fig.3 FORWARD CURRENT VS.
FORWARD VOLTAGE

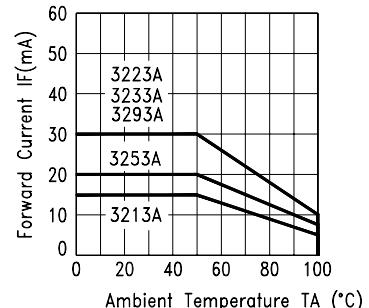


Fig.4 FORWARD CURRENT
DERATING CURVE

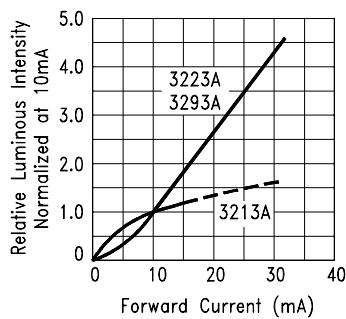


Fig.5 RELATIVE LUMINOUS
INTENSITY VS. FORWARD
CURRENT

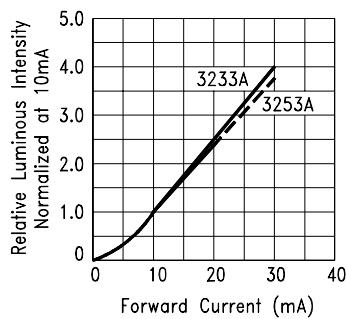


Fig.6 RELATIVE LUMINOUS
INTENSITY VS. FORWARD
CURRENT

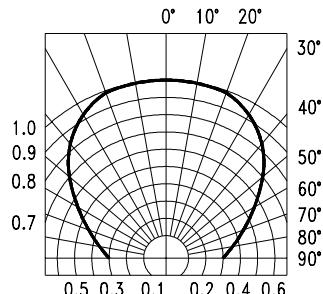


Fig.7 SPATIAL DISTRIBUTION

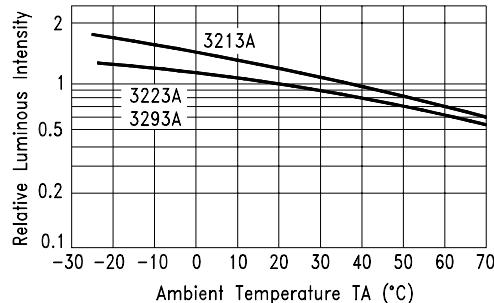


Fig.8 LUMINOUS INTENSITY VS.
AMBIENT TEMPERATURE

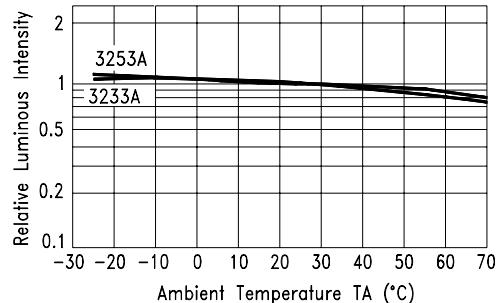


Fig.9 LUMINOUS INTENSITY VS.
AMBIENT TEMPERATURE