

# **T-1 3/4(5mm) Medium Profile LED Lamps**

**LTL-10203 Red**

**LTL-10213 Bright Red**

**LTL-10223 High Efficiency Red**

**LTL-10233 Green**

**LTL-10253 Yellow**

## **Features**

- Low Power Consumption.
- Wide Viewing Angle.
- Medium Profile: 7.24mm (0.285") Nominal.
- General Purpose Leads.
- I.C. Compatible/Low Current Requirement.
- 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.

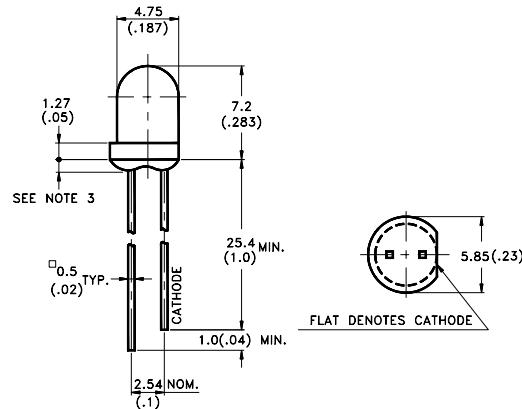
The Yellow source color devices are made with Gallium Arsenide Phosphide on Gallium Phosphide Yellow Light Emitting Diode.

## **Devices**

<b>Part No. LTL-</b>	<b>Lens</b>	<b>Source Color</b>
10203	Red Diffused	Red
10213	Red Diffused	Bright Red
10223	Red Diffused	Hi. Eff. Red
10233	Green Diffused	Green
10253	Yellow Diffused	Yellow

## **Package Dimensions**

**LTL-102x3 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.

## 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	

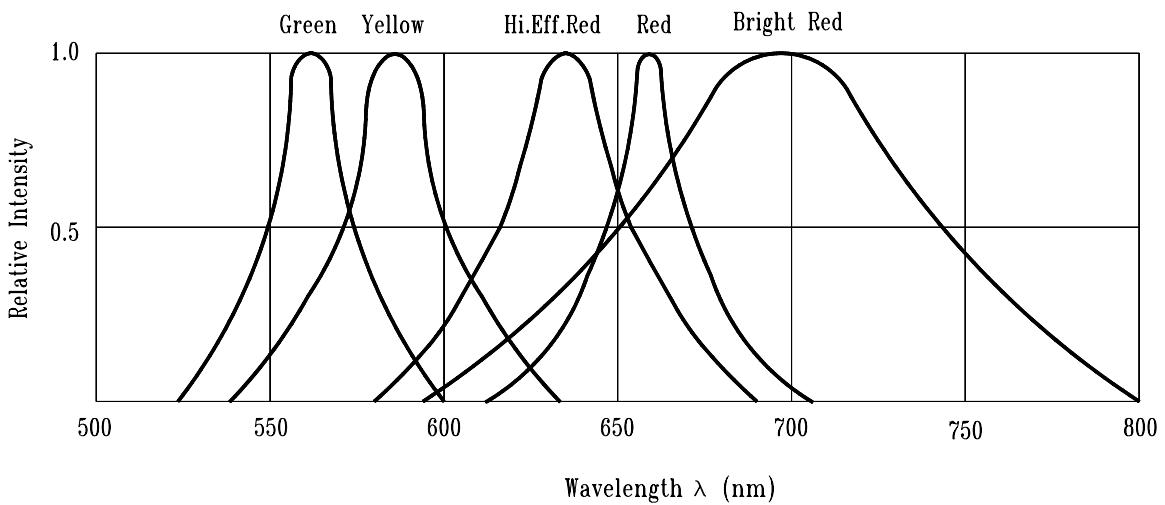


Fig. 1 Relative Intensity vs. Wavelength

## Electrical/Optical Characteristics at Ta=25°C

Parameter	Symbol	Part No. LTL-	Min.	Typ.	Max.	Unit.	Test Condition.
Luminous Intensity	IV	10203 10213 10223 10233 10253	0.4 1.7 3.7 3.7 3.7	1.1 5.6 12.6 12.6 12.6		mcd	IF=10 mA Note 1,4
Viewing Angle	2θ 1/2	102x3		60		deg	Note 2 (Fig.7)
Peak Emission Wavelength	λ P	10203 10213 10223 10233 10253		655 697 635 565 585		nm	Measurement @Peak (Fig.1)
Dominant Wavelength	λ d	10203 10213 10223 10233 10253		651 657 623 569 588		nm	Note 3
Spectral Line Half Width	Δλ	10203 10213 10223 10233 10253		24 90 40 30 35		nm	
Forward Voltage	VF	10203 10213 10223 10233 10253		1.7 2.1 2.0 2.1 2.1	2.0 2.6 2.6 2.6 2.6	V	IF=20mA
Reverse Current	IR	102x3			100	μA	VR=5V
Capacitance	C	10203 10213 10223 10233 10253		30 55 20 35 15		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,  $\lambda d$  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)

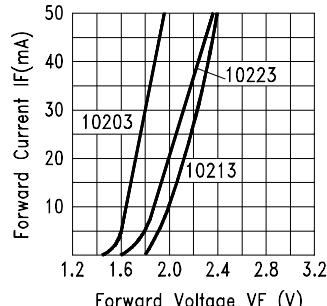


Fig.2 FORWARD CURRENT VS.  
FORWARD VOLTAGE

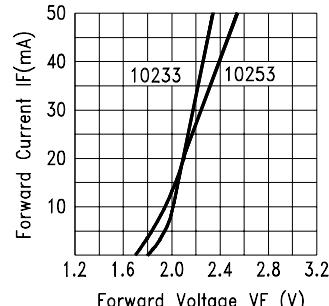


Fig.3 FORWARD CURRENT VS.  
FORWARD VOLTAGE

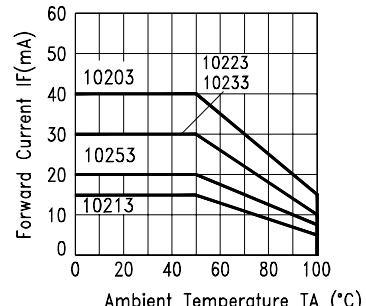


Fig.4 FORWARD CURRENT  
DERATING CURVE

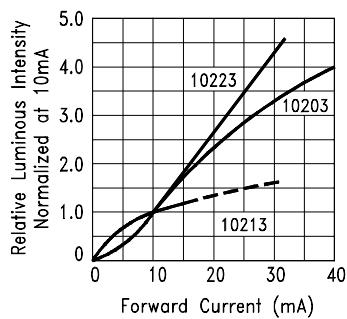


Fig.5 RELATIVE LUMINOUS  
INTENSITY VS. FORWARD  
CURRENT

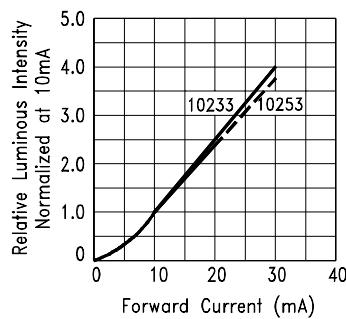


Fig.6 RELATIVE LUMINOUS  
INTENSITY VS. FORWARD  
CURRENT

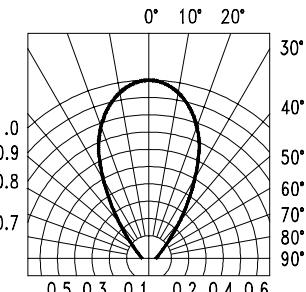


Fig.7 SPATIAL DISTRIBUTION

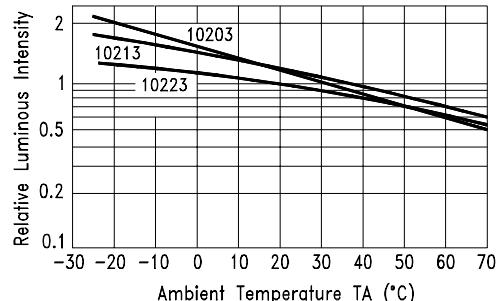


Fig.8 LUMINOUS INTENSITY VS.  
AMBIENT TEMPERATURE

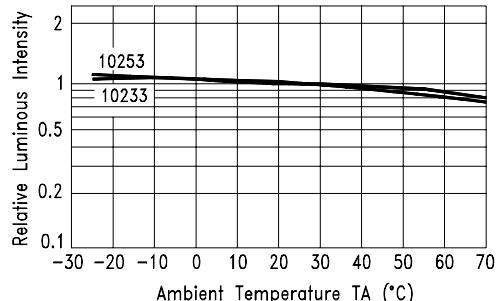


Fig.9 LUMINOUS INTENSITY VS.  
AMBIENT TEMPERATURE