2x4 Rectangular Bar LED Lamps

LTL-403P Bright Red
LTL-403HR High Efficiency Red
LTL-403G Green
LTL-403Y Yellow

Features

- Low power consumption.
- Most suitable for use like level indicator.
- Excellent uniformity of light emittance.
- Long life-solid state reliability.ments.
- 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 soure color devices are made with Gallium Arsenide Phosphide on Gallium Phosphide Orange Light Emitting Diode.

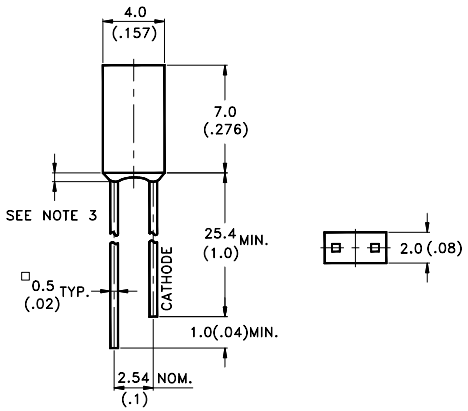
The Green source color devices are made with Gallium Phosphide on Gallium Phosphide Green Light Emitting Diode.

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

Devices

Part No. LTL-	Lens	Source Color
403P	Red Diffused	Bright Red
403HR	Red Diffused	Hi. Eff. Red
403G	Green Diffused	Green
403Y	Yellow Diffused	Yellow

Package Dimensions



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	Bright Red	Green	Yellow	Hi. Eff. Red	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℃	0.2	0.4	0.25	0.4	mA/℃
Reverse Voltage	5	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				

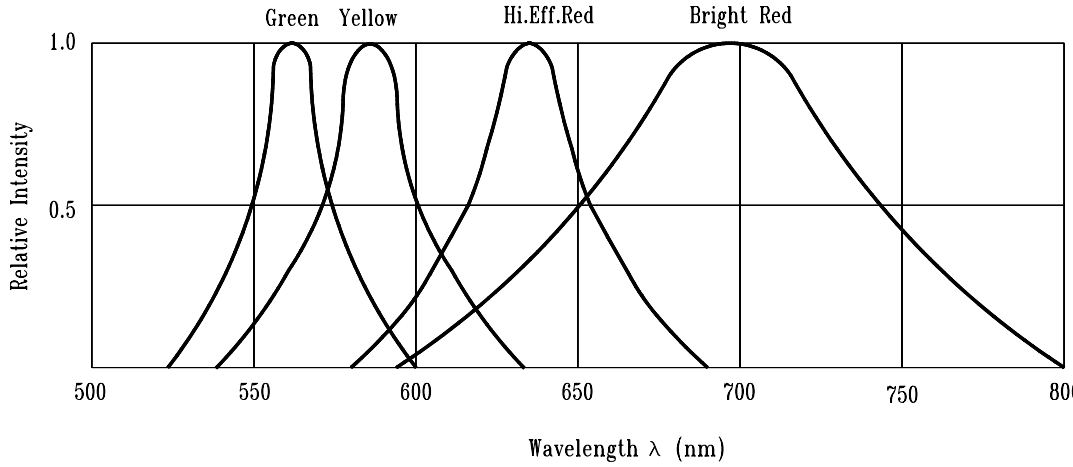


Fig.1 Relative Intensity vs. Wavelength

Electrical/Optical Characteristics at Ta=25℃

Parameter	Symbol	Part No. LTL-	Min.	Typ.	Max.	Unit.	Test Condition.
Luminous Intensity	I_V	403P 403HR 403G 403Y	0.4 1.1 1.1 0.7	1.1 3.7 3.7 2.5		mcd	I_F=10 mA Note 1,4
Viewing Angle	$2\theta_{1/2}$	403x		104		deg	Note 2 (Fig.7)
Peak Emission Wavelength	λP	403P 403HR 403G 403Y		697 635 565 585		nm	Measurement @Peak (Fig.1)
Dominant Wavelength	λd	403P 403HR 403G 403Y		657 623 569 588		nm	Note 3
Spectral Line Half Width	$\triangle\lambda$	403P 403HR 403G 403Y		90 40 30 35		nm	
Forward Voltage	V_F	403P 403HR 403G 403Y		2.1 2.0 2.1 2.1	2.6 2.6 2.6 2.6	V	I_F=20mA
Reverse Current	I_R	403x			100	μA	V_R=5V
Capacitance	C	403P 403HR 403G 403Y		55 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)

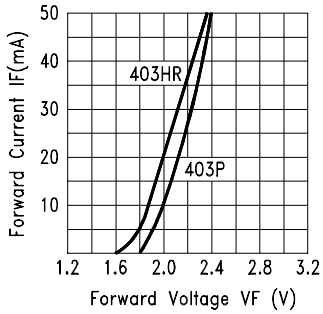


Fig.2 FORWARD CURRENT VS. FORWARD VOLTAGE

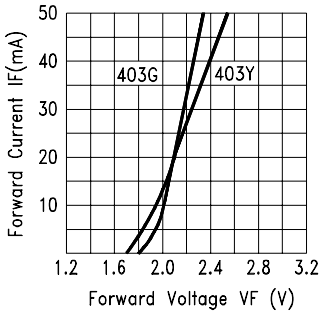


Fig.3 FORWARD CURRENT VS. FORWARD VOLTAGE

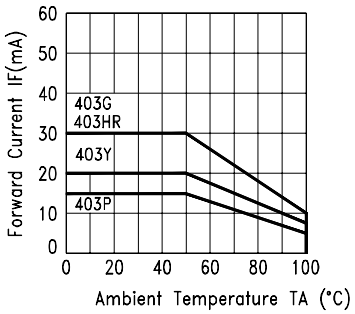


Fig.4 FORWARD CURRENT DERATING CURVE

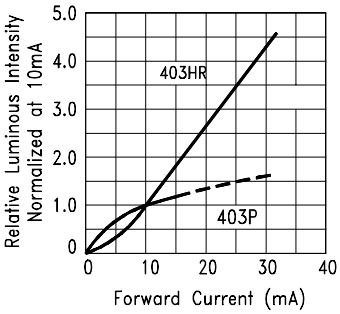


Fig.5 RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT

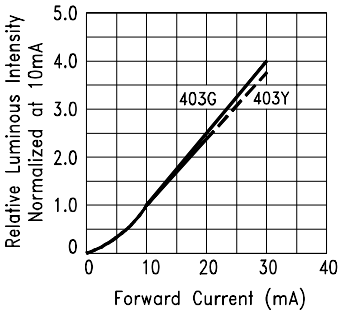


Fig.6 RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT

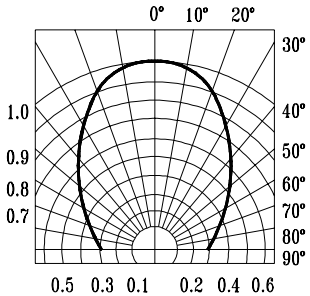


Fig.7 SPATIAL DISTRIBUTION

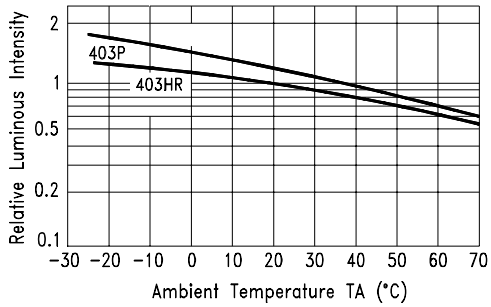


Fig.8 LUMINOUS INTENSITY VS. AMBIENT TEMPERATURE

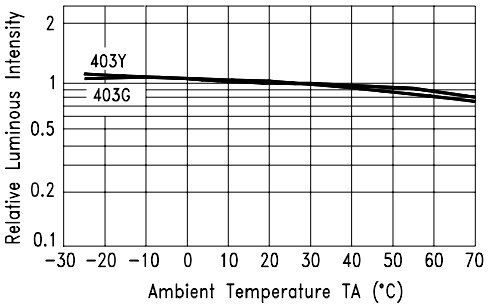


Fig.9 LUMINOUS INTENSITY VS. AMBIENT TEMPERATURE