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

LTL-4203/4204 Red
LTL-4213/4214 Bright Red
LTL-4223/4224 High Efficiency Red
LTL-4233/4234 Green
LTL-4253/4254 Yellow
LTL-4293/4294 Red Orange

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 Aresnide 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 Red Orange source color devices are made with Gallium

Arsenide Phosphide on Gallium Phosphide Orange Light Emitting Diode. The Green

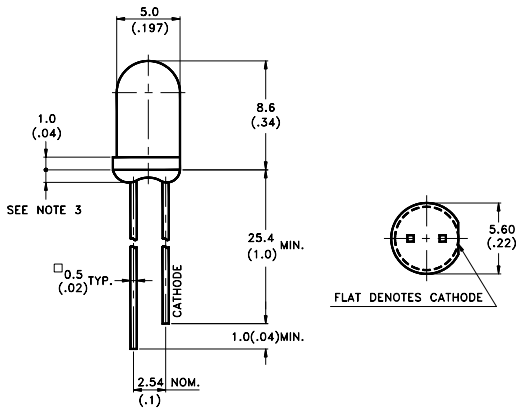
source color devices are made with Gallium Phosphide on Gallium Phosphide GreenLight Emitting Diode.

The Yellow source color devices are made with Gallium

Arsenide Phosphide on Gallium Phosphide Yellow Light Emitting Diode.

Package Dimensions

LTL-42x3/42x4 Series



Notes:

1. All dimensions are in millimeters (inches).
2. Tolerance is ± 0.25mm (.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
4203	Red Diffused	Red
4204	Red Transparent	
4213	Red Diffused	Bright Red
4214	Red Transparent	
4223	Red Diffused	Hi. Eff. Red
4224	Red Transparent	
4233	Green Diffused	Green
4234	Green Transparent	
4253	Yellow Diffused	Yellow
4254	Yellow Transpaent	
4293	Orange Diffused	Red Orange
4294	Orange Transparent	

Absolute Maximum Ratings at Ta=25℃

Parameter	Red	Bright Red	Green	Yellow	Hi. Eff. Red Red Orange	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℃	0.5	0.2	0.4	0.25	0.4	mA/℃
Reverse Voltage	5	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					

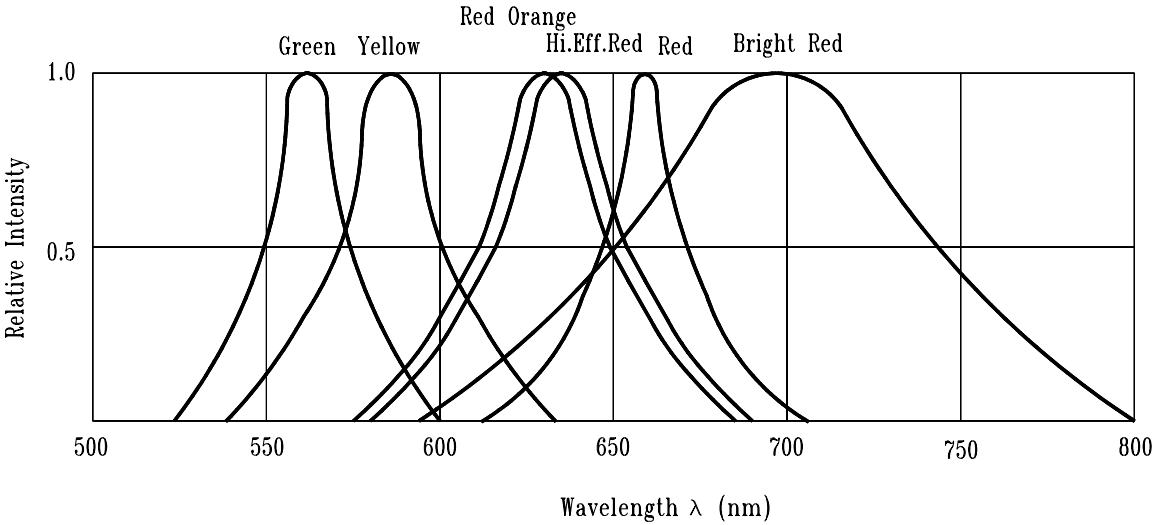


Fig.1 Relative Intensity vs. Wavelength

Electrical/Optical Characteristics at Ta=25℃

Parameter	Symbol	Part No. LTL-	Min.	Typ.	Max.	Unit.	Test Condition.
Luminous Intensity	I_V	4203 4213 4223 4233 4253 4293	0.3 1.1 5.6 5.6 5.6 8.7	0.8 3.7 19.0 19.0 19.0 29		mcd	I_F=10 mA Note 1,4
Viewing Angle	$2\theta_{1/2}$	42x3		36		deg	Note 2 (Fig.7)
Peak Emission Wavelength	λ P	4203 4213 4223 4233 4253 4293		655 697 635 565 585 630		nm	Measurement @Peak (Fig.1)
Dominant Wavelength	λ d	4203 4213 4223 4233 4253 4293		651 657 623 569 588 621		nm	Note 3
Spectral Line Half Width	$\Delta\lambda$	4203 4213 4223 4233 4253 4293		24 90 40 30 35 40		nm	
Forward Voltage	V_F	4203 4213 4223 4233 4253 4293		1.7 2.1 2.0 2.1 2.1 2.0	2.0 2.6 2.6 2.6 2.6 2.6	V	I_F=20mA
Reverse Current	I_R	42x3			100	μ A	V_R=5V
Capacitance	C	4203 4213 4223 4233 4253 4293		30 55 20 35 15 20		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.

Electrical/Optical Characteristics at Ta=25℃

Parameter	Symbol	Part No. LTL-	Min.	Typ.	Max.	Unit.	Test Condition.
Luminous Intensity	I_V	4204 4214 4224 4234 4254 4294	5.6 5.6 29 19 29 29	19 19 90 60 90 90		mcd	IF=10 mA Note 1,4
Viewing Angle	$2\theta_{1/2}$	42x4		16		deg	Note 2 (Fig.15)
Peak Emission Wavelength	λP	4204 4214 4224 4234 4254 4294		655 697 635 565 585 630		nm	Measurement @Peak (Fig.1)
Dominant Wavelength	λd	4204 4214 4224 4234 4254 4294		651 657 623 569 588 621		nm	Note 3
Spectral Line Half Width	$\triangle\lambda$	4204 4214 4224 4234 4254 4294		24 90 40 30 35 40		nm	
Forward Voltage	V_F	4204 4214 4224 4234 4254 4294		1.7 2.1 2.0 2.1 2.1 2.0	2.0 2.6 2.6 2.6 2.6 2.6	V	I_F=20mA
Reverse Current	I_R	42x4			100	μ A	V_R=5V
Capacitance	C	4204 4214 4224 4234 4254 4294		30 55 20 35 15 20		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)

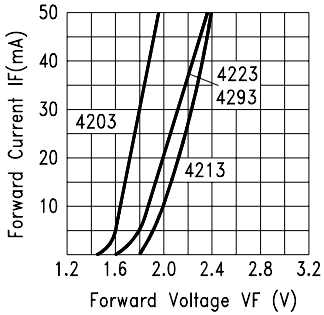


Fig.2 FORWARD CURRENT VS. FORWARD VOLTAGE

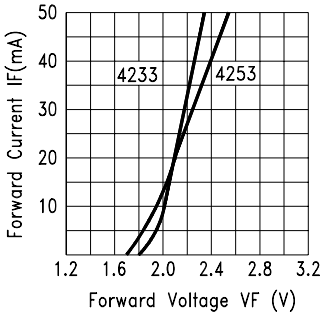


Fig.3 FORWARD CURRENT VS. FORWARD VOLTAGE

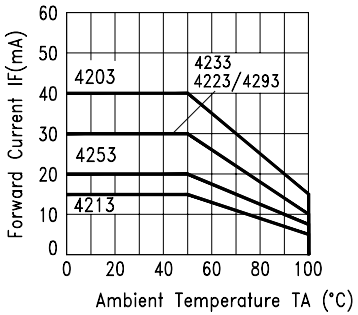


Fig.4 FORWARD CURRENT DERATING CURVE

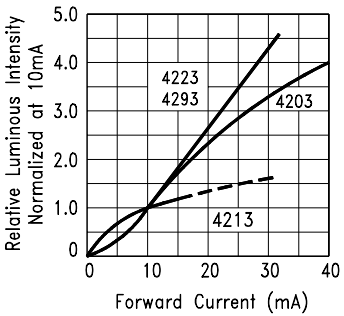


Fig.5 RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT

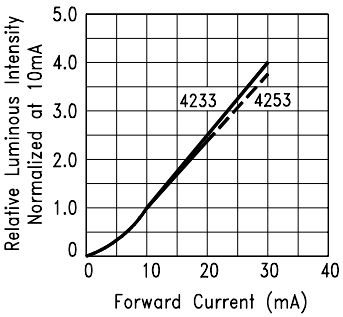


Fig.6 RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT

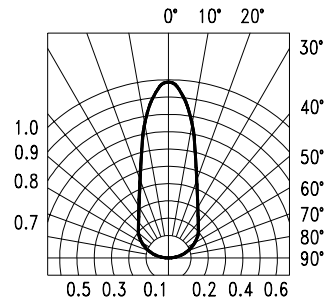


Fig.7 SPATIAL DISTRIBUTION

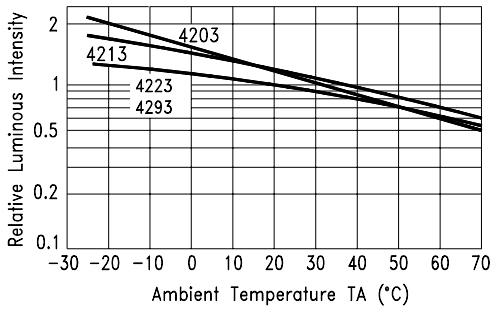


Fig.8 LUMINOUS INTENSITY VS. AMBIENT TEMPERATURE

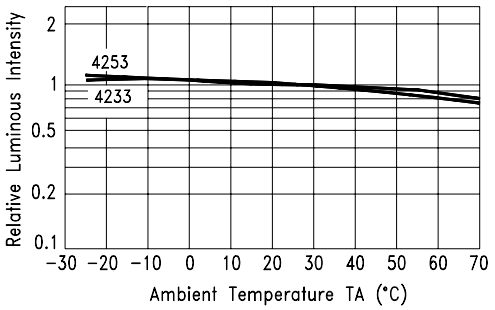


Fig.9 LUMINOUS INTENSITY VS. AMBIENT TEMPERATURE

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

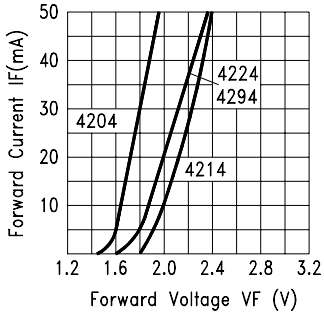


Fig.10 FORWARD CURRENT VS. FORWARD VOLTAGE

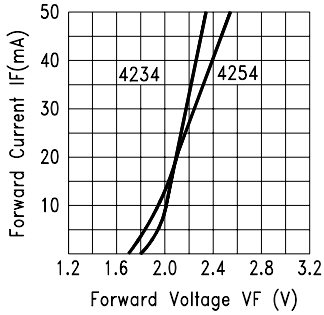


Fig.11 FORWARD CURRENT VS. FORWARD VOLTAGE

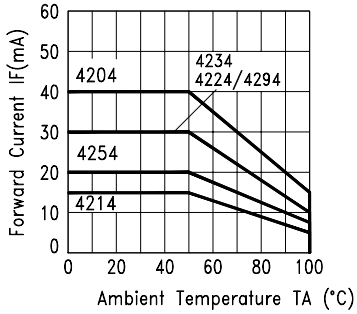


Fig.12 FORWARD CURRENT DERATING CURVE

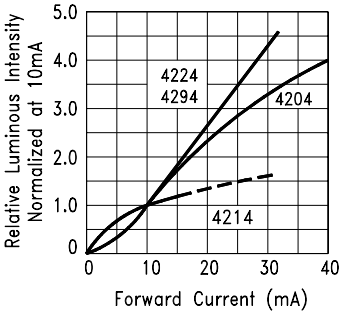


Fig.13 RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT

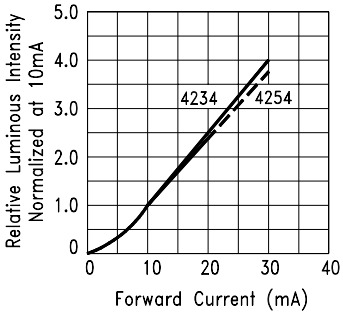


Fig.14 RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT

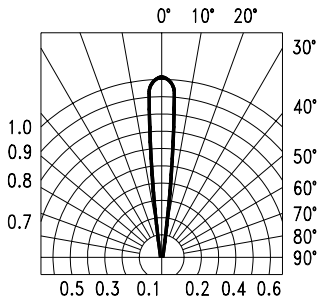


Fig.15 SPATIAL DISTRIBUTION

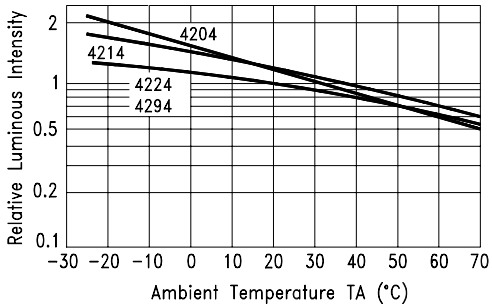


Fig.16 LUMINOUS INTENSITY VS. AMBIENT TEMPERATURE

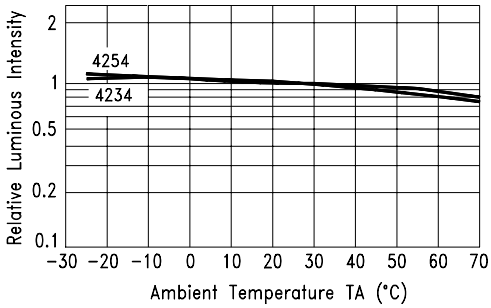


Fig.17 LUMINOUS INTENSITY VS. AMBIENT TEMPERATURE

THROUGH HOLE LAMPS