



2x4 RECTANGULAR BAR LED LAMPS

T-41-23

LTL-403P BRIGHT RED
LTL-403G GREEN

LTL-403Y YELLOW
LTL-403A AMBER

TAIWAN LITON ELECTRONIC 49E D ■ 8835695 0003541 986 ■ TLIT

FEATURES

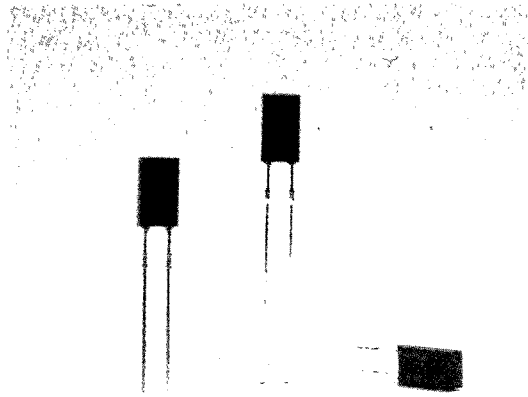
- LOW POWER CONSUMPTION
- MOST SUITABLE FOR USE LIKE LEVEL INDICATOR
- EXCELLENT UNIFORMITY OF LIGHT EMISSION.
- LONG LIFE-SOLID STATE RELIABILITY.
- I.C. COMPATIBLE.

DESCRIPTION

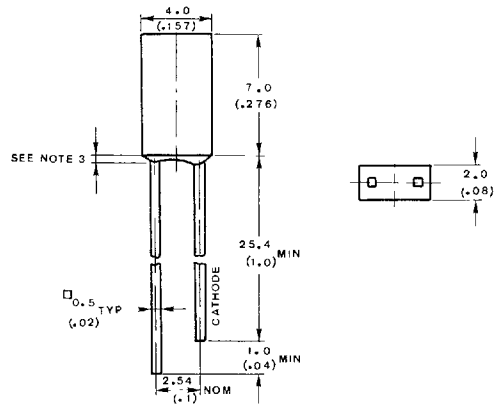
The Bright Red source color devices are made with Gallium Phosphide on Gallium Phosphide Red Light Emitting Diode.

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

The Yellow and Amber 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
	COLOR	DIFFUSION	
403P	Red	Diffused	Bright Red
403G	Green	Diffused	Green
403Y	Yellow	Diffused	Yellow
403A	Amber	Diffused	Amber

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 $T_A = 25^\circ\text{C}$

PARAMETER	BRIGHT RED	GREEN	YELLOW AMBER	UNIT
Power Dissipation	40	100	60	mW
Peak Forward Current (1/10 Duty Cycle, 0.1ms Pulse Width)	60	120	80	mA
Continuous Forward Current	15	30	20	mA
Derating Linear From 25°C	0.2	0.4	0.25	mA/ $^\circ\text{C}$
Reverse Voltage	5	5	5	V
Operating Temperature Range	-55 $^\circ\text{C}$ to +100 $^\circ\text{C}$			
Storage Temperature Range	-55 $^\circ\text{C}$ to +100 $^\circ\text{C}$			
Lead Soldering Temperature [1.6mm (0.063 in) From Body]	260 $^\circ\text{C}$ for 5 Seconds			

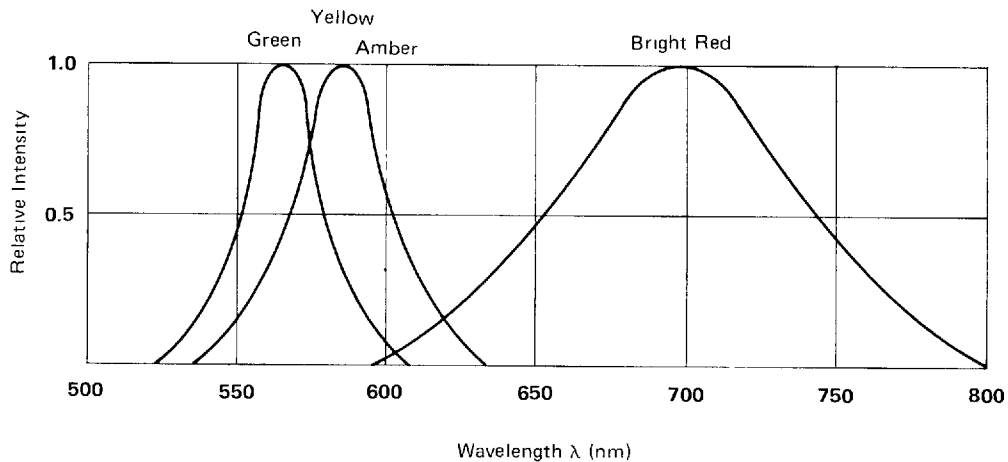


FIG. 1 RELATIVE INTENSITY VS. WAVELENGTH



ELECTRICAL/OPTICAL CHARACTERISTICS AND CURVES AT $T_A = 25^\circ\text{C}$

PARAMETER	SYMBOL	PART NO. LTL-	MIN	TYP.	MAX	UNIT	TEST CONDITION
Luminous Intensity	I_v	403P	0.1	0.4		mcd	$I_F = 10\text{ mA}$ Note 1
Viewing Angle	$2\theta_{1/2}$	403P		104		deg.	Note 2 (Fig. 6)
Peak Emission Wavelength	λ_{PEAK}	403P		697		nm	Measurement @ Peak (Fig. 1)
Spectral Line Half Width	$\Delta\lambda$	403P		90		nm	
Forward Voltage	V_F	403P		2.1	2.8	V	$I_F = 20\text{ mA}$
Reverse Current	I_R	403P			100	μA	$V_R = 5\text{ V}$
Capacitance	C	403P		55		PF	$V_F = 0$ $f = 1\text{ MHz}$

NOTES: 1. Luminous intensity is measured with a light sensor and filter combination that approximates the CIE (Commission Internationale De L'Eclairage) eye-response curve.
 2. $\theta_{1/2}$ is the off-axis angle at which the luminous intensity is half the axial luminous intensity.

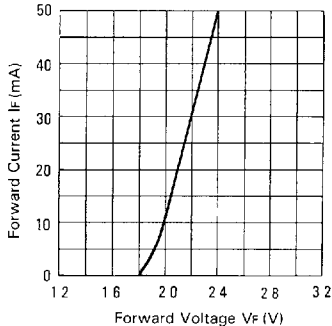


FIG 2 FORWARD CURRENT VS FORWARD VOLTAGE.

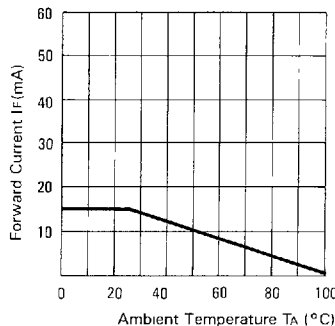


FIG 3 FORWARD CURRENT DERATING CURVE

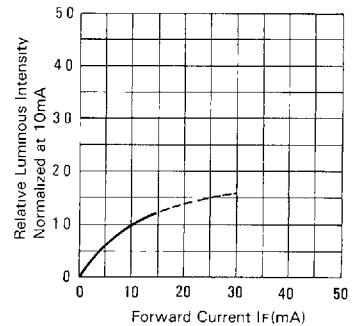


FIG 4 RELATIVE LUMINOUS INTENSITY VS FORWARD CURRENT

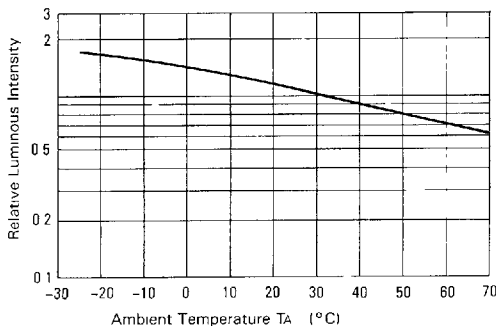


FIG 5 LUMINOUS INTENSITY VS AMBIENT TEMPERATURE

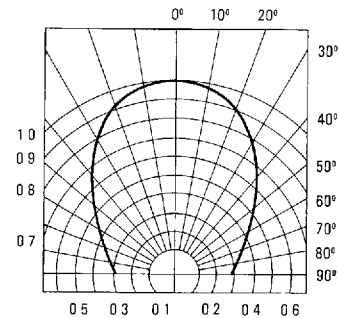


FIG 6 SPATIAL DISTRIBUTION

ELECTRICAL/OPTICAL CHARACTERISTICS AND CURVES AT TA = 25°C

PARAMETER	SYMBOL	PART NO. LTL-	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Luminous Intensity	Iv	403G 403Y	0.7 0.7	2.5 2.5		mcd	IF = 10 mA Note 1
Viewing Angle	2θ½	403G 403Y		104		deg.	Note 2 (Fig. 11)
Peak Emission Wavelength	λ PEAK	403G 403Y		565 585		nm	Measurement @ Peak (Fig. 1)
Spectral Line Half Width	Δλ	403G 403Y		30 35		nm	
Forward Voltage	VF	403G 403Y		2.1	2.8	V	IF = 20 mA
Reverse Current	IR	403G 403Y			100	μA	VR = 5V
Capacitance	C	403G 403Y		35 15		PF	VF = 0 f = 1MHZ

NOTES: 1. Luminous intensity is measured with a light sensor and filter combination that approximates the CIE (Commission Internationale De L'Eclairage) eye-response curve.
 2. θ½ is the off-axis angle at which the luminous intensity is half the axial luminous intensity.

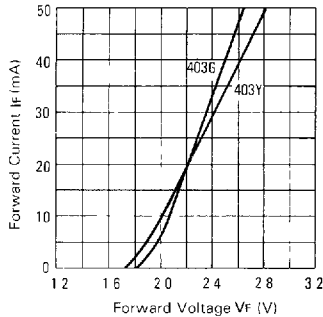


FIG 7 FORWARD CURRENT VS FORWARD VOLTAGE

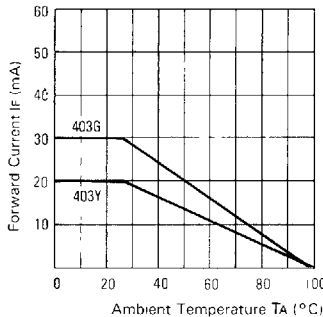


FIG 8 FORWARD CURRENT DERATING CURVE

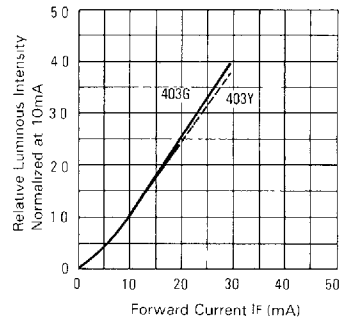


FIG 9 RELATIVE LUMINOUS INTENSITY VS FORWARD CURRENT

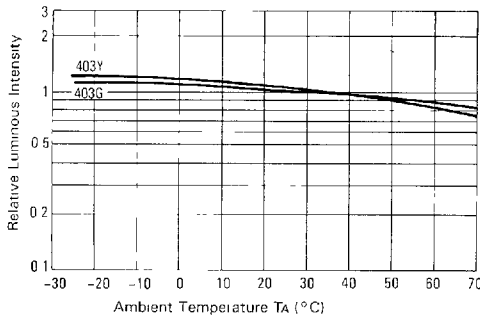


FIG 10 LUMINOUS INTENSITY VS AMBIENT TEMPERATURE

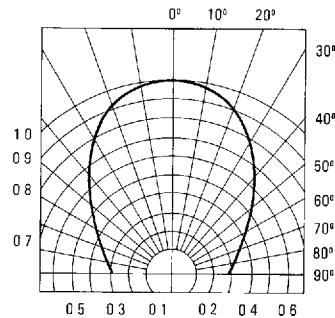


FIG 11 SPATIAL DISTRIBUTION



ELECTRICAL/OPTICAL CHARACTERISTICS AND CURVES AT TA = 25°C

PARAMETER	SYMBOL	PART NO. LTL-	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Luminous Intensity	Iv	403A	0.7	2.5		mcd	IF = 10 mA Note 1
Viewing Angle	2θ½	403A		104		deg.	Note 2 (Fig. 16)
Peak Emission Wavelength	λ PEAK			600		nm	Measurement @ Peak (Fig. 1)
Spectral Line Half Width	Δλ			35		nm	
Forward Voltage	VF			2.1	2.8	V	IF = 20 mA
Reverse Current	IR				100	μA	VR = 5V
Capacitance	C			15		PF	VF = 0 f = 1MHZ

NOTES: 1. Luminous intensity is measured with a light sensor and filter combination that approximates the CIE (Commission Internationale De L'Eclairage) eye-response curve.
 2. θ½ is the off-axis angle at which the luminous intensity is half the axial luminous intensity.

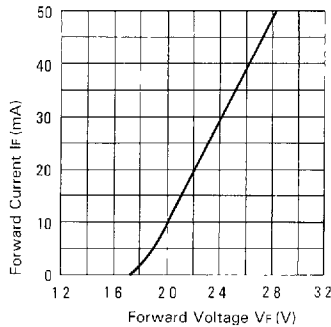


FIG 12 FORWARD CURRENT VS FORWARD VOLTAGE

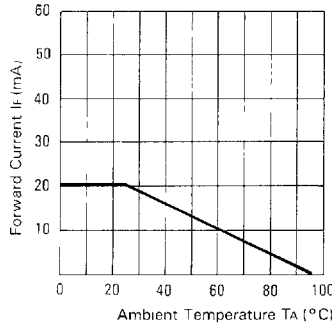


FIG 13 FORWARD CURRENT DERATING CURVE

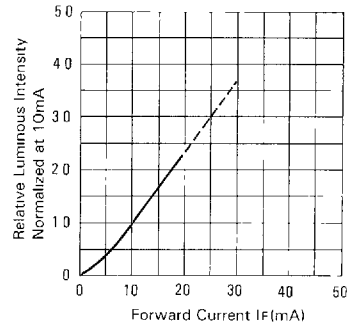


FIG 14 RELATIVE LUMINOUS INTENSITY VS FORWARD CURRENT

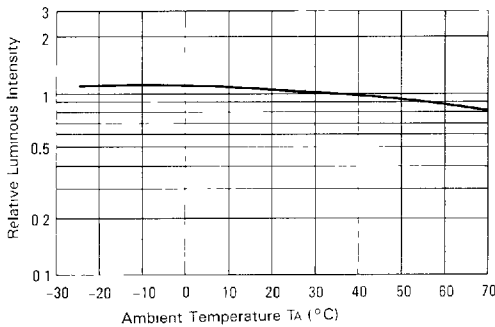


FIG 15 LUMINOUS INTENSITY VS AMBIENT TEMPERATURE

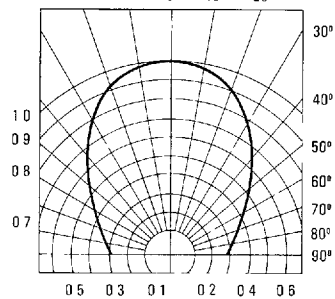


FIG 16 SPATIAL DISTRIBUTION