



ROUND RECTANGULAR LED LAMPS

LTL-6203LN RED

LTL-6213LN BRIGHT RED

LTL-6223LN HIGH EFFICIENCY RED

LTL-6233LN GREEN

LTL-6253LN YELLOW

LTL-6293LN ORANGE

LITE-ON INC

31E D 5536367 0002118 T LTN

FEATURES

- LOW POWER CONSUMPTION.
- MINIMUM LEAD LENGTH 1".
- ROUNDED END RECTANGULAR SHAPE.
- I.C. COMPATIBLE.
- LONG LIFE-SOLID STATE RELIABILITY.

DESCRIPTION

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

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

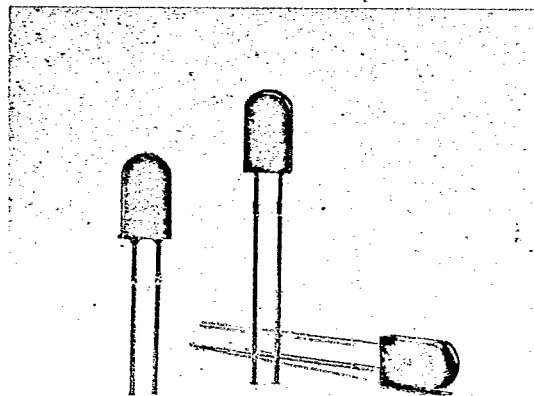
The High Efficiency Red Orange source color devices are made with Gallium Arsenide Phosphide on Gallium Phosphide Orange Light Emitting Diode.

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

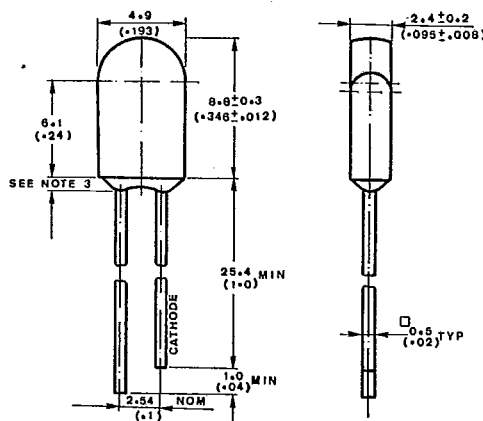
The Yellow source color devices are made with Gallium Arsenide Phosphide on Gallium Phosphide Yellow Light Emitting Diode.

DEVICES

PART NO. LTL-	LENS		SOURCE COLOR
	COLOR	DIFFUSION	
6203LN	Red	Diffused	Red
6213LN	Red	Diffused	Bright Red
6223LN	Red	Diffused	Hi. Eff. Red
6233LN	Green	Diffused	Green
6253LN	Yellow	Diffused	Yellow
6293LN	Orange	Diffused	Orange



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 1.5mm (.059") max.
4. Lead spacing is measured where the leads emerge from the package.
5. Specifications are subject to change without notice.

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ABSOLUTE MAXIMUM RATINGS AT $T_A = 25^\circ\text{C}$

PARAMETER	RED	BRIGHT RED	GREEN	YELLOW	HI. EFF. 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 25°C	0.5	0.2	0.4	0.25	0.4	mA/ $^\circ\text{C}$
Reverse Voltage	5	5	5	5	5	V
Operating Temperature Range	-55°C to $+100^\circ\text{C}$					
Storage Temperature Range	-55°C to $+100^\circ\text{C}$					
Lead Soldering Temperature [1.6mm (0.063in) From Body]	260°C for 5 Seconds					

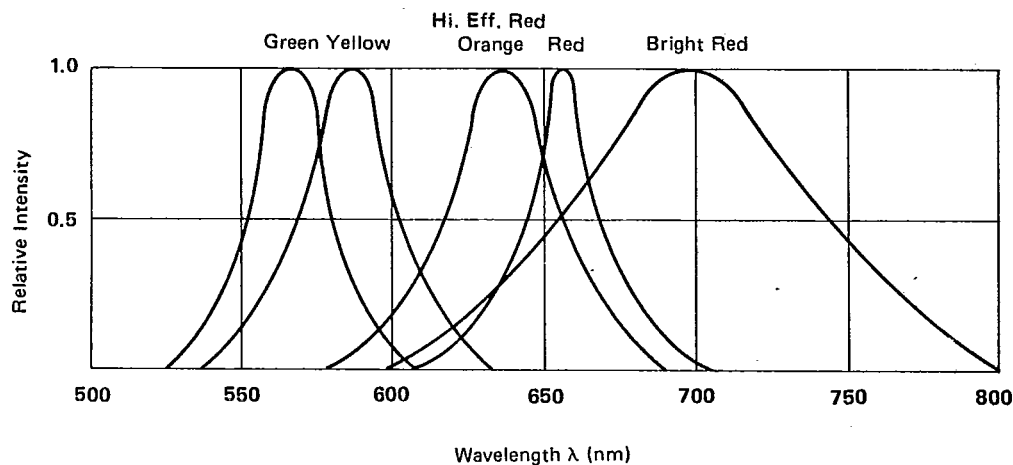


FIG. 1 RELATIVE INTENSITY VS. WAVELENGTH

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	6203LN 6213LN 6223LN	0.09 0.4 1.7	0.2 1.5 5.6		mcd	$I_F = 10\text{ mA}$ Note 1
Viewing Angle	$2\theta_{1/2}$	6203LN 6213LN 6223LN		70		deg.	Note 2 (Fig. 6)
Peak Emission Wavelength	λ_{PEAK}	6203LN 6213LN 6223LN		655 697 635		nm	Measurement @ Peak (Fig. 1)
Spectral Line Half Width	$\Delta\lambda$	6203LN 6213LN 6223LN		24 90 40		nm	
Forward Voltage	V_F	6203LN 6213LN 6223LN		1.7 2.1 2.0	2.8	V	$I_F = 20\text{ mA}$
Reverse Current	I_R	6203LN 6213LN 6223LN			100	μA	$V_R = 5\text{V}$
Capacitance	C	6203LN 6213LN 6223LN		30 55 20		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.

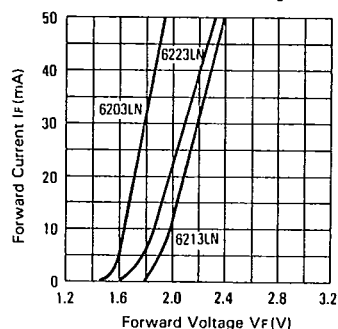


FIG. 2 FORWARD CURRENT VS. FORWARD VOLTAGE

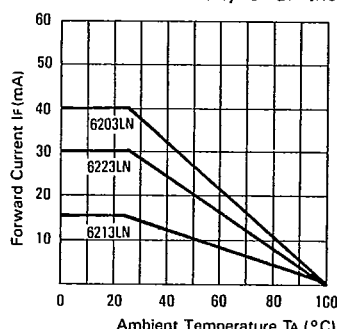


FIG. 3 FORWARD CURRENT DERATING CURVE

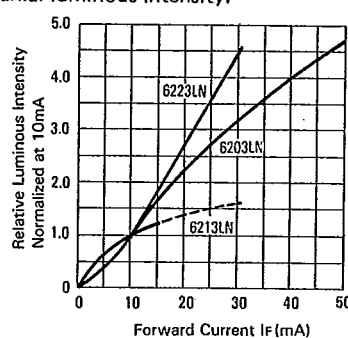


FIG. 4 RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT.

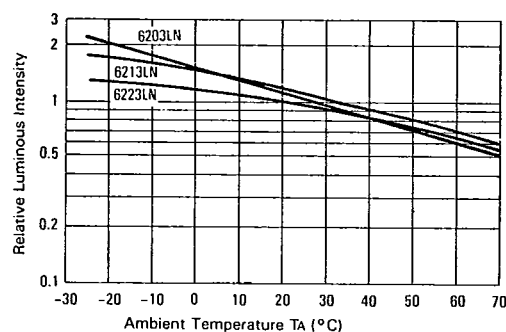


FIG. 5 LUMINOUS INTENSITY VS. AMBIENT TEMPERATURE

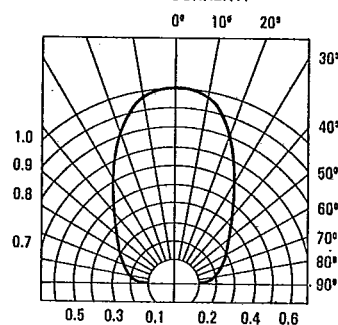


FIG. 6 SPATIAL DISTRIBUTION

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

PARAMETER	SYMBOL	PART NO. LTL-	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Luminous Intensity	I_v	6233LN 6253LN	1.7 1.7	5.6 5.6		mcd	$I_F = 10\text{ mA}$ Note 1
Viewing Angle	$2\theta_{1/2}$	6233LN 6253LN		70		deg.	Note 2 (Fig. 11)
Peak Emission Wavelength	λ_{PEAK}	6233LN 6253LN		565 585		nm	Measurement @ Peak (Fig. 1)
Spectral Line Half Width	$\Delta\lambda$	6233LN 6253LN		30 35		nm	
Forward Voltage	V_F	6233LN 6253LN		2.1	2.8	V	$I_F = 20\text{ mA}$
Reverse Current	I_R	6233LN 6253LN			100	μA	$V_R = 5\text{ V}$
Capacitance	C	6233LN 6253LN		35 15		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.

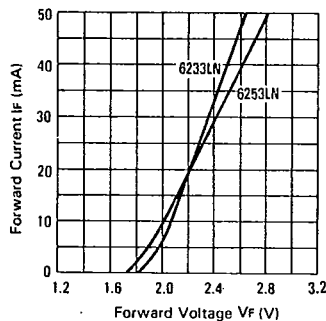


FIG. 7 FORWARD CURRENT VS. FORWARD VOLTAGE

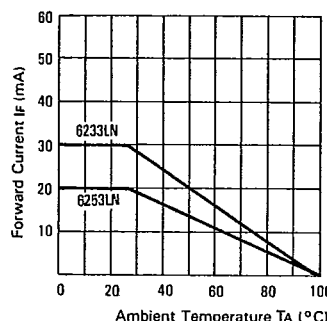


FIG. 8 FORWARD CURRENT DERATING CURVE

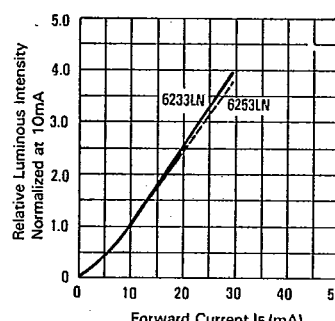


FIG. 9 RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT

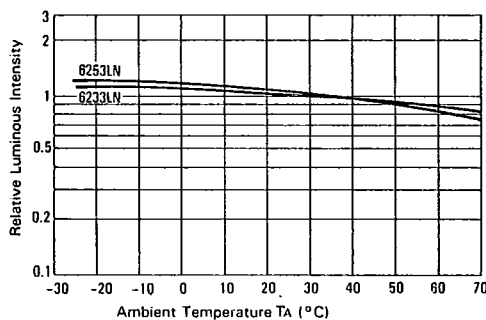


FIG. 10 LUMINOUS INTENSITY VS. AMBIENT TEMPERATURE

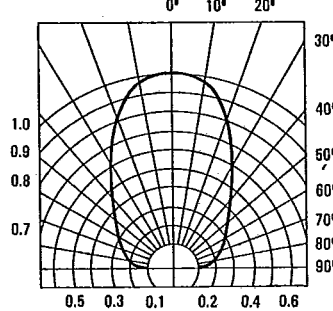


FIG. 11 SPATIAL DISTRIBUTION



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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	6293LN	1.7	5.6		mcd	$I_F = 10\text{ mA}$ Note 1
Viewing Angle	$2\theta_{1/2}$	6293LN		70		deg.	Note 2 (Fig. 16)
Peak Emission Wavelength	λ_{PEAK}	6293LN		630		nm	Measurement @ Peak (Fig. 1)
Spectral Line Half Width	$\Delta\lambda$	6293LN		40		nm	
Forward Voltage	V_F	6293LN		2.0	2.8	V	$I_F = 20\text{ mA}$
Reverse Current	I_R	6293LN			100	μA	$V_R = 5\text{ V}$
Capacitance	C	6293LN		20		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.

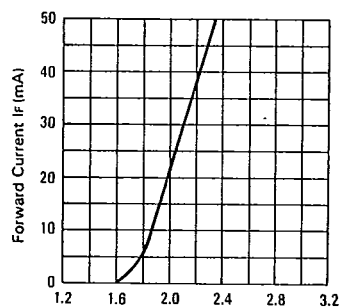


FIG. 12 FORWARD CURRENT VS. FORWARD VOLTAGE

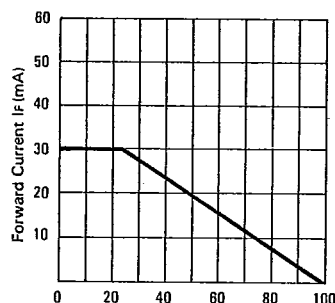


FIG. 13 FORWARD CURRENT DERATING CURVE

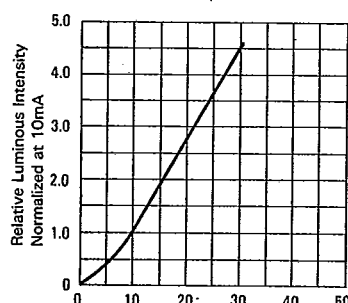


FIG. 14 RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT

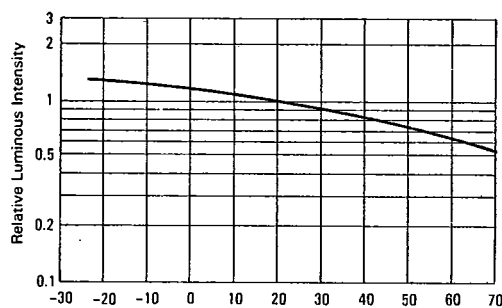


FIG. 15 LUMINOUS INTENSITY VS. AMBIENT TEMPERATURE

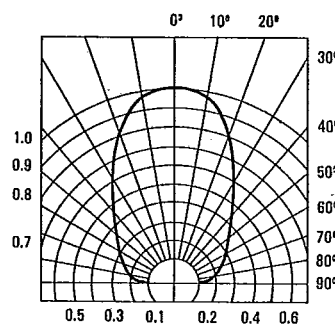


FIG. 16 SPATIAL DISTRIBUTION