LITEON

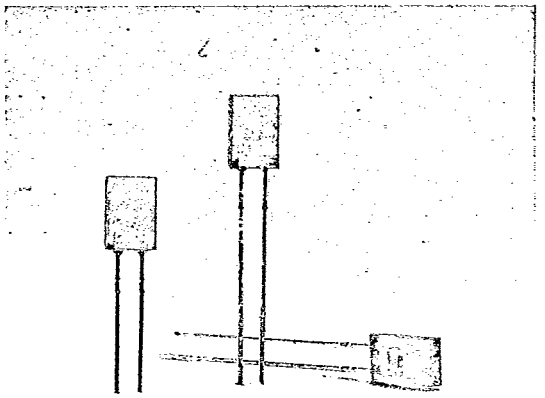
2x5 RECTANGULAR BAR FLANGELESS LED LAMPS

LTL-433R RED
LTL-433P BRIGHT RED
LTL-433HR HIGH EFFICIENCY RED
LTL-433G GREEN
LTL-433Y YELLOW
LTL-433A AMBER
LTL-433EA ORANGE

T-41-23

FEATURES

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



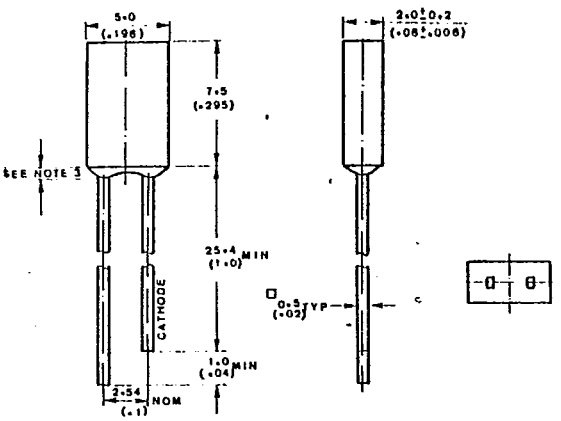
DESCRIPTION

The Red source color devices are made with Gallium Arsenide Phosphide on Gallium 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 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 and Amber 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	
433R	Red	Diffused	Red
433P	Red	Diffused	Bright Red
433HR	Red	Diffused	Hi. Eff. Red
433G	Green	Diffused	Green
433Y	Yellow	Diffused	Yellow
433A	Amber	Diffused	Amber
433EA	Orange	Diffused	Orange

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 1.5mm (.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 $T_A = 25°C$

PARAMETER	RED	BRIGHT RED	GREEN	AMBER 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/°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 Solering Temperature [1.6mm (0.063in) From Body]	260°C for 5 Seconds					

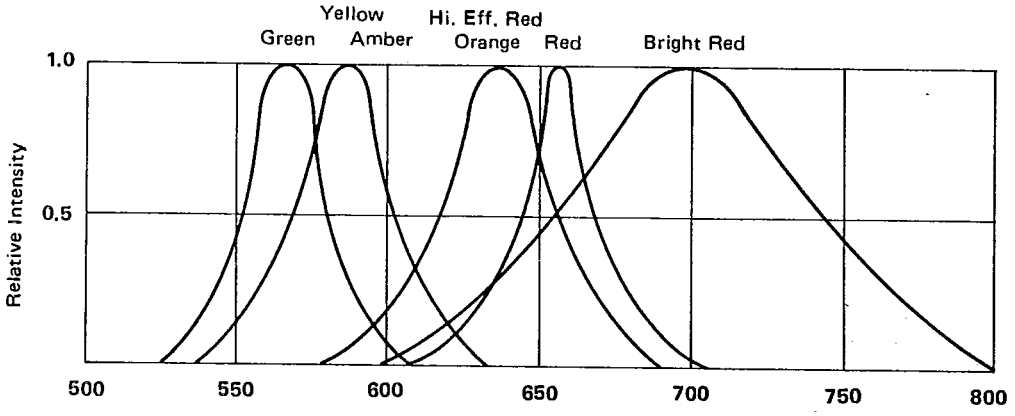

FIG. 1 RELATIVE INTENSITY VS. WAVELENGTH

ELECTRICAL/OPTICAL CHARACTERISTICS AND CURVES AT $T_A = 25°C$

PARAMETER	SYMBOL	PART NO. LTL–	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Luminous Intensity	Iv	433R 433P 433HR	0.08 0.2 0.5	0.2 0.6 1.7		mcd	I_F = 10 mA Note 1
Viewing Angle	$2\theta 1/2$	433R 433P 433HR		140		deg.	Note 2 (Fig. 6)
Peak Emission Wavelength	λ_{PEAK}	433R 433P 433HR		655 697 635		nm	Measurement @ Peak (Fig. 1)
Spectral Line Half Width	$\Delta\lambda$	433R 433P 433HR		24 90 40		nm	
Forward Voltage	V_F	433R 433P 433HR		1.7 2.1 2.0	2.0 2.8 2.8	V	I_F = 20 mA
Reverse Current	I_R	433R 433P 433HR			100	μA	V_R = 5V
Capacitance	C	433R 433P 433HR		30 55 20		PF	V_F = 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. $\theta 1/2$ is the off-axis angle at which the luminous intensity is half the axial luminous intensity.

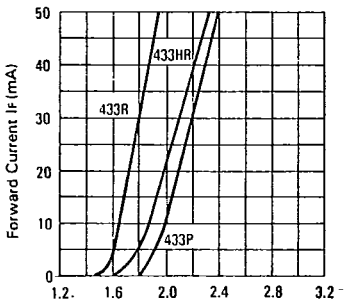

FIG. 2 FORWARD CURRENT VS. FORWARD VOLTAGE

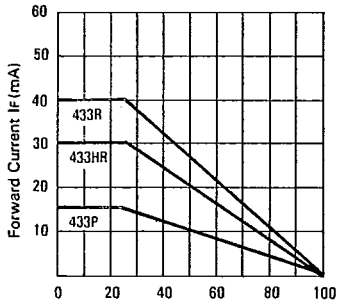

FIG. 3 FORWARD CURRENT DERATING CURVE

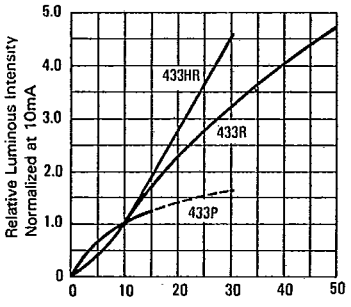

FIG. 4 RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT.

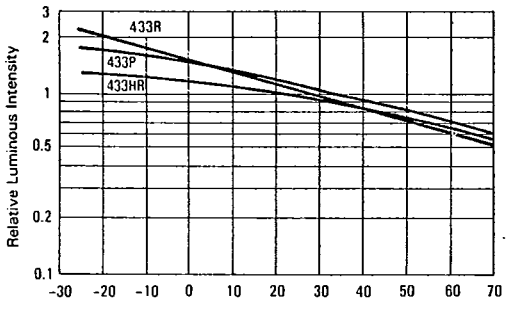

FIG. 5 LUMINOUS INTENSITY VS. AMBIENT TEMPERATURE

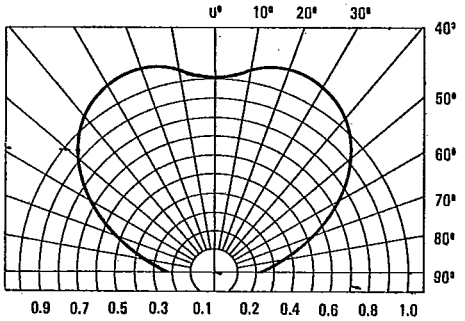

FIG. 6 SPATIAL DISTRIBUTION

ELECTRICAL/OPTICAL CHARACTERISTICS AND CURVES AT $T_A = 25°C$

PARAMETER	SYMBOL	PART NO. LTL–	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Luminous Intensity	Iv	433G 433Y	0.6 0.6	1.7 1.7		mcd	I_F = 10 mA Note 1
Viewing Angle	$2\theta\frac{1}{2}$	433G 433Y		140		deg.	Note 2 (Fig. 11)
Peak Emission Wavelength	λ_{PEAK}	433G 433Y		565 585		nm	Measurement @ Peak (Fig. 1)
Spectral Line Half Width	$\Delta\lambda$	433G 433Y		30 35		nm	
Forward Voltage	V_F	433G 433Y		2.1	2.8	V	I_F = 20 mA
Reverse Current	I_R	433G 433Y			100	μA	V_R = 5V
Capacitance	C	433G 433Y		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 (Commission Internationale De L'Eclairage) eye-response curve.
2. $\theta\frac{1}{2}$ is the off-axis angle at which the luminous intensity is half the axial luminous intensity.

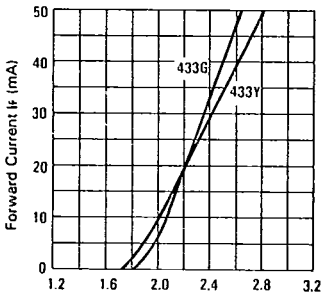

FIG. 7 FORWARD CURRENT VS. FORWARD VOLTAGE

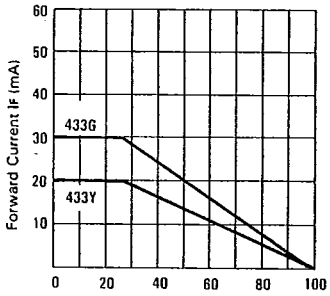

FIG. 8 FORWARD CURRENT DERATING CURVE

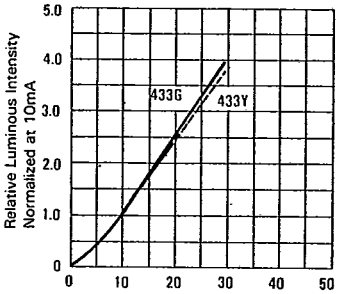

FIG. 9 RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT

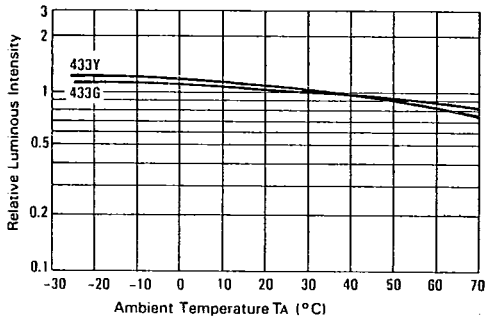

FIG. 10 LUMINOUS INTENSITY VS. AMBIENT TEMPERATURE

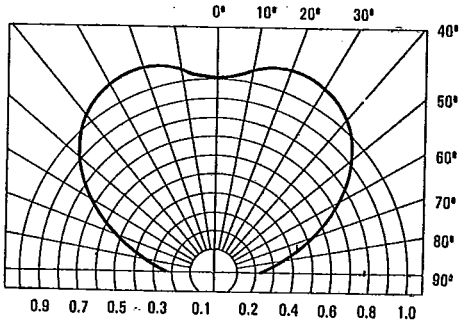

FIG. 11 SPATIAL DISTRIBUTION

ELECTRICAL/OPTICAL CHARACTERISTICS AND CURVES AT $T_A = 25°C$

PARAMETER	SYMBOL	PART NO. LTL–	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Luminous Intensity	Iv	433A 433EA	0.6 0.5	2.5 1.7		mcd	I_F = 10 mA Note 1
Viewing Angle	2θ½	433A 433EA		140		deg.	Note 2 (Fig. 16)
Peak Emission Wavelength	λ PEAK	433A 433EA		600 630		nm	Measurement @ Peak (Fig. 1)
Spectral Line Half Width	Δλ	433A 433EA		35 40		nm	
Forward Voltage	V_F	433A 433EA		2.1 2.0	2.8	V	I_F = 20 mA
Reverse Current	I_R	433A 433EA			100	μA	V_R = 5V
Capacitance	C	433A 433EA		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 (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.

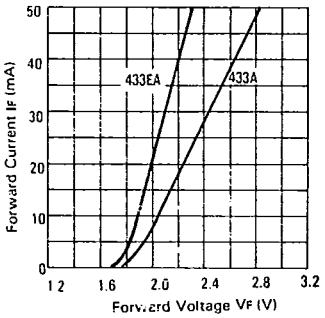

FIG 12 FORWARD CURRENT VS. FORWARD VOLTAGE

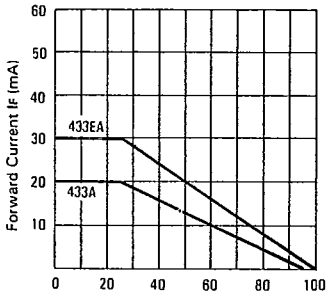

FIG.13 FORWARD CURRENT DERATING CURVE

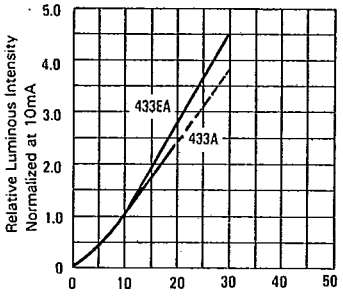

FIG. 14 RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT

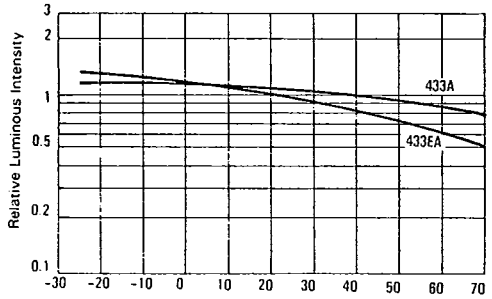

FIG 15 LUMINOUS INTENSITY VS. AMBIENT TEMPERATURE

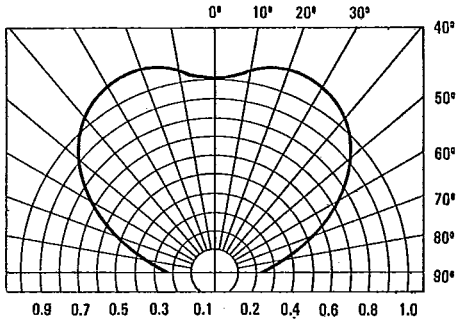

FIG. 16 SPATIAL DISTRIBUTION