



RECTANGULAR BARS LED LAMPS

LTL-3217A/3218A BRIGHT RED LTL-3277A/3278A AMBER
 LTL-3237A/3238A GREEN LTL-3297A ORANGE
 LTL-3257A/3258A YELLOW

FEATURES

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

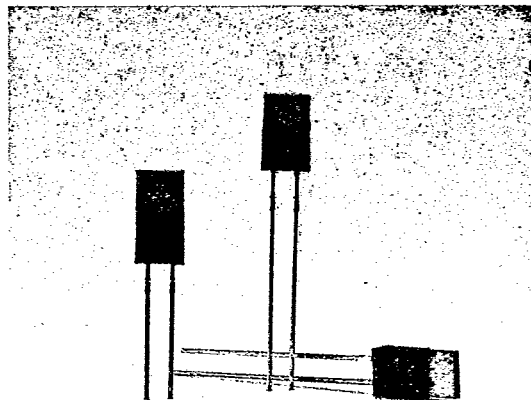
DESCRIPTION

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

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

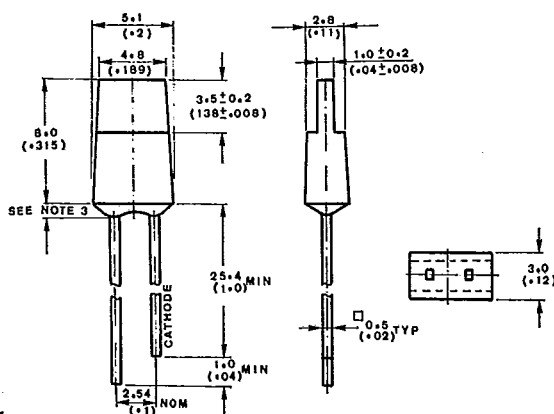
The Green source color devices are made with Gallium Phosphide on Gallium Phosphide Green Light Emitting Diode.

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

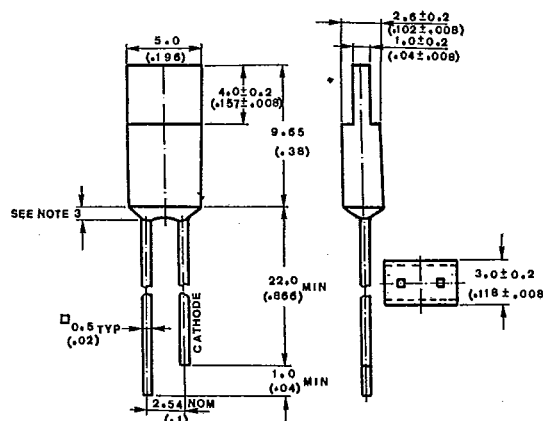


PACKAGE DIMENSION

LTL-32 x 7A Series



LTL-32 x 8A Series



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.

DEVICES

PART NO. LTL-	LENS		SOURCE COLOR
	COLOR	DIFFUSION	
3217A	Red	Diffused	Bright Red
3237A	Green	Diffused	Green
3257A	Yellow	Diffused	Yellow
3277A	Amber	Diffused	Amber
3297A	Orange	Diffused	Orange

PART NO. LTL-	LENS		SOURCE COLOR
	COLOR	DIFFUSION	
3218A	Red	Diffused	Bright Red
3238A	Green	Diffused	Green
3258A	Yellow	Diffused	Yellow
3278A	Amber	Diffused	Amber

LED LAMPS

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

PARAMETER	BRIGHT RED	GREEN	YELLOW AMBER	ORANGE	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 25°C	0.2	0.4	0.25	0.4	$\text{mA}/^\circ\text{C}$
Reverse Voltage	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				

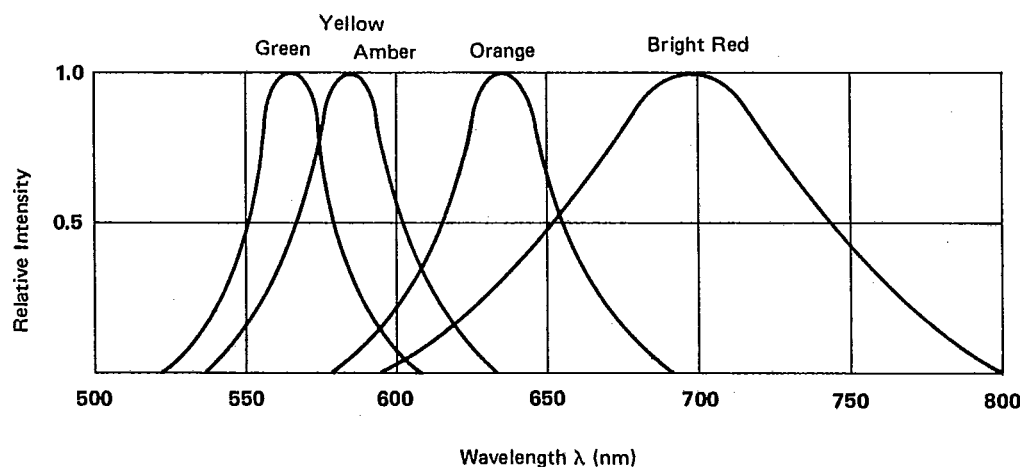


FIG. 1 RELATIVE INTENSITY VS. WAVELENGTH

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	3217A 3218A	0.3 0.2	0.8 0.6		mcd	$I_F = 10\text{ mA}$ Note 1
Viewing Angle	$2\theta_{1/2}$	3217A 3218A		120 106		deg.	Note 2 (Fig. 6)
Peak Emission Wavelength	λ_{PEAK}	3217A 3218A		697		nm	Measurement @ Peak (Fig. 1)
Spectral Line Half Width	$\Delta\lambda$	3217A 3218A		90		nm	
Forward Voltage	V_F	3217A 3218A		2.1	2.8	V	$I_F = 20\text{ mA}$
Reverse Current	I_R	3217A 3218A			100	μA	$V_R = 5\text{ V}$
Capacitance	C	3217A 3218A		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.

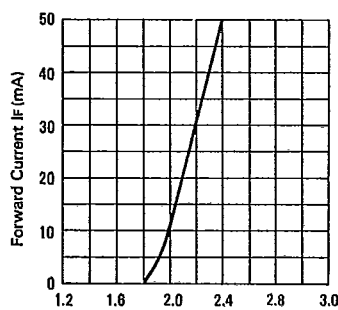


FIG. 2 FORWARD CURRENT VS. FORWARD VOLTAGE.

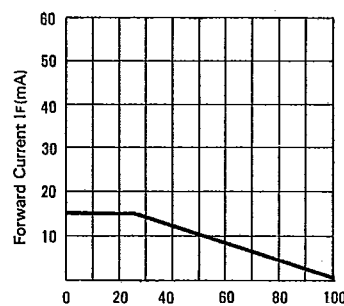


FIG. 3 FORWARD CURRENT DERATING CURVE.

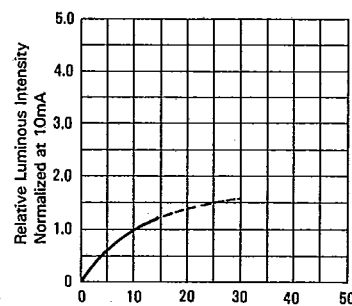


FIG. 4 RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT.

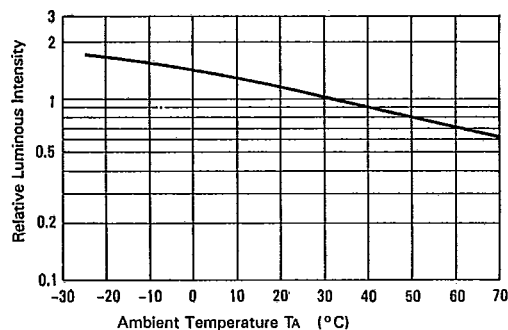


FIG. 5 LUMINOUS INTENSITY VS. AMBIENT TEMPERATURE

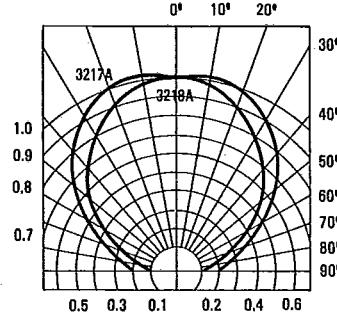


FIG. 6 SPATIAL DISTRIBUTION

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

PARAMETER	SYMBOL	PART NO. LTL—	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Luminous Intensity	I_v	3237A 3257A 3238A 3258A	0.8 0.5 0.5 0.5	1.7 1.7 1.7 1.7		md	$I_F = 10\text{ mA}$ Note 1
Viewing Angle	$2\theta_{1/2}$	3237A 3257A 3238A 3258A		120 120 108 108		deg.	Note 2 (Fig. 11)
Peak Emission Wavelength	λ_{PEAK}	3237A 3257A 3238A 3258A		585 585 585 585		nm	Measurement @ Peak (Fig. 1)
Spectral Line Half Width	$\Delta\lambda$	3237A 3257A 3238A 3258A		30 35 30 35		nm	
Forward Voltage	V_F	3237A 3257A 3238A 3258A		2.1	2.8	V	$I_F = 20\text{ mA}$
Reverse Current	I_R	3237A 3257A 3238A 3258A			100	μA	$V_R = 5\text{ V}$
Capacitance	C	3237A 3257A 3238A 3258A		35 15 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.

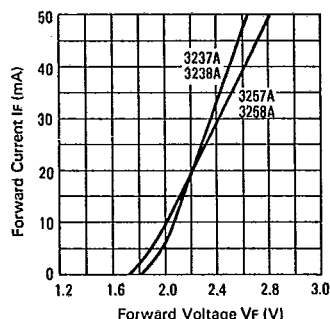


FIG. 7 FORWARD CURRENT VS. FORWARD VOLTAGE

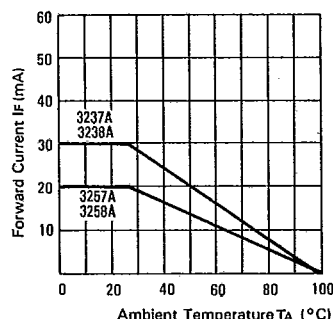


FIG. 8 FORWARD CURRENT DERATING CURVE

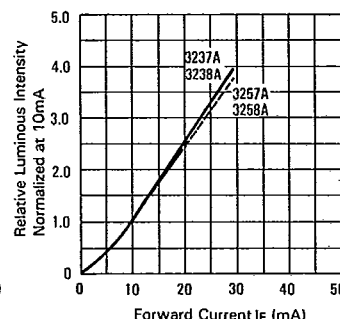


FIG. 9 RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT

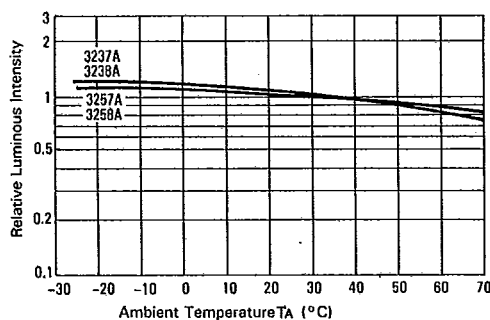


FIG. 10 LUMINOUS INTENSITY VS. AMBIENT TEMPERATURE

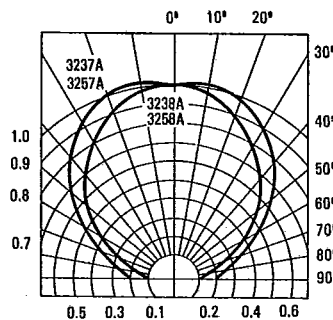


FIG. 11 SPATIAL DISTRIBUTION

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	3277A 3297A 3278A	0.5 0.5 0.5	1.7 1.7 1.7		mcd	$I_F = 10\text{ mA}$ Note 1
Viewing Angle	$2\theta\%$	3277A 3297A 3278A		120 120 106		deg.	Note 2 (Fig. 16)
Peak Emission Wavelength	λ_{PEAK}	3277A 3297A 3278A		600 630 600		nm	Measurement @ Peak (Fig. 1)
Spectral Line Half Width	$\Delta\lambda$	3277A 3297A 3278A		35 40 35		nm	
Forward Voltage	V_F	3277A 3297A 3278A		2.1 2.0 2.1	2.8	V	$I_F = 20\text{ mA}$
Reverse Current	I_R	3277A 3297A 3278A			100	μA	$V_R = 5\text{ V}$
Capacitance	C	3277A 3297A 3278A		15 20 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. $\theta\%$ is the off-axis angle at which the luminous intensity is half the axial luminous intensity.

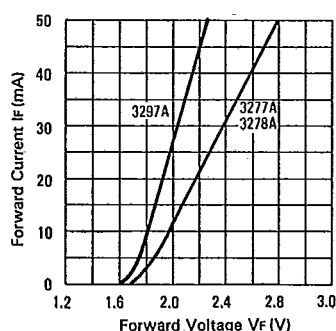


FIG. 12 FORWARD CURRENT VS. FORWARD VOLTAGE

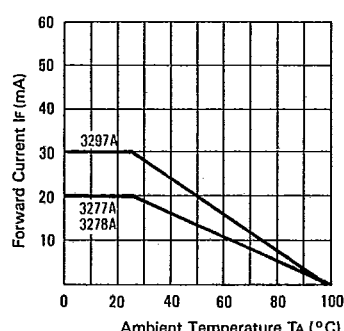


FIG. 13 FORWARD CURRENT DERATING CURVE

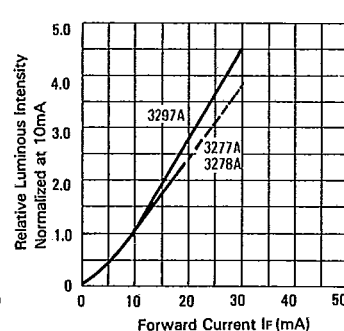


FIG. 14 RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT

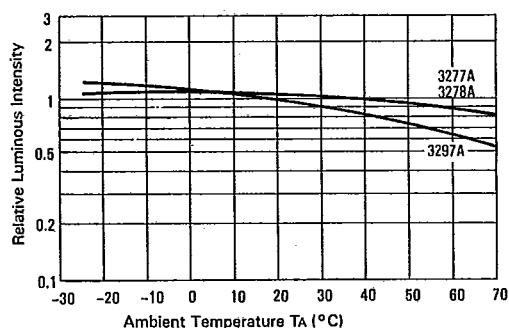


FIG. 15 LUMINOUS INTENSITY VS. AMBIENT TEMPERATURE

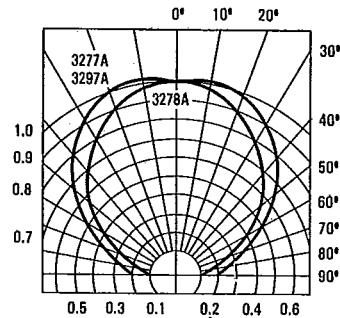


FIG. 16 SPATIAL DISTRIBUTION