

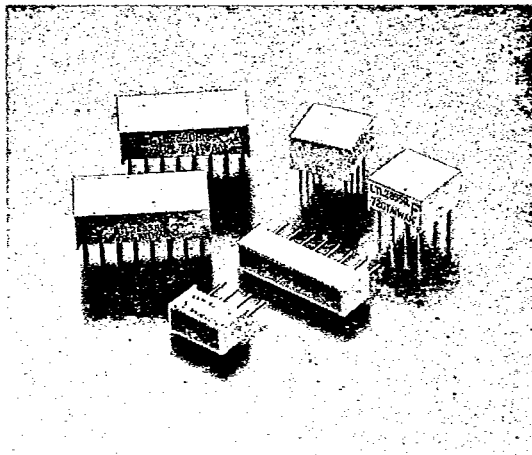


LTL- 2300/2600 2400/2700 SERIES 2500/2800

LIGHT BARS

FEATURES

- RECTANGULAR LIGHT BAR.
- CHOICE OF THREE BRIGHT COLORS-GREEN/
YELLOW/HIGH EFFICIENCY RED.
- LARGE, BRIGHT, UNIFORM LIGHT EMITTING
AREAS.
- LOW POWER REQUIREMENT.
- EXCELLENT ON-OFF CONTRAST.
- CAN BE USED WITH PANEL AND LEGEND
MOUNT.
- SUITABLE FOR MULTIPLEX OPERATION.
- I.C. COMPATIBLE.
- EASY MOUNTING ON P.C. BOARDS.



LED LIGHT BARS &
BAR GRAPH ARRAYS

DESCRIPTION

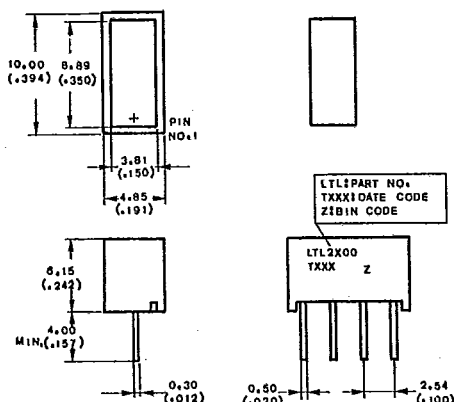
The LTL-2300/2400/2500/2600/2700/2800 series light bars are rectangular light sources designed for a variety of applications where a large bright source of light is required. These light bars are configured in single-in-line and dual-in-line packages. The green series devices utilize LED chips which are made from GaP on a transparent GaP substrate. The yellow and high efficiency red series devices utilize LED chips which are made from GaAsP on transparent GaP substrate. All devices have white bar color.

DEVICES

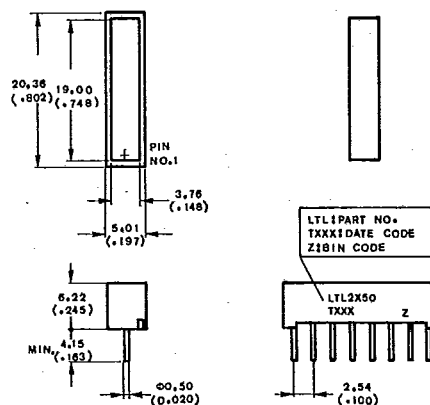
PART NO. LTL--			Size of Light Emitting Areas	PACKAGE DIMENSION		INTERNAL CIRCUIT DIAGRAM
GREEN	YELLOW	HI.-EFF. RED				
2500G	2400Y	2300HR	8.89 mm x 3.81 mm (.350 in x .150 in.)	A		A
2550G	2450Y	2350HR	19.05 mm x 3.81 mm (.750 in x .150 in.)	B		B
2800G	2700Y	2600HR	8.89 mm x 3.81 mm (.350 in x .150 in.)	C		C
2855G	2755Y	2655HR	8.89 mm x 8.89 mm (.350 in x .350 in.)	D		D
2820G	2720Y	2620HR	8.89 mm x 3.81 mm (.350 in x .150 in.)	E		E
2885G	2785Y	2685HR	8.89 mm x 19.05 mm (.350 in x .750 in.)	F		F

PACKAGE DIMENSIONS

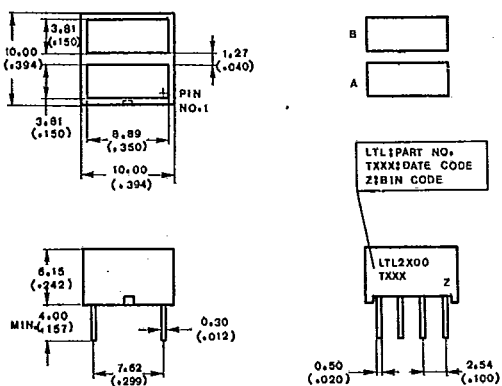
A. LTL-2300/2400/2500



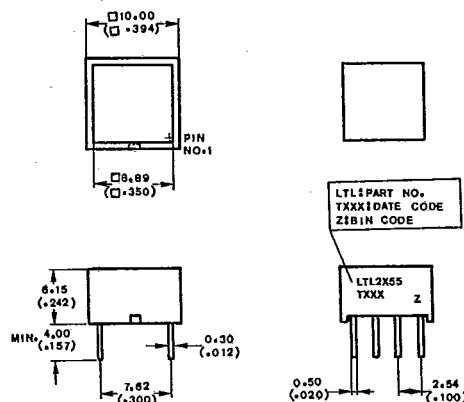
B. LTL-2350/2450/2550



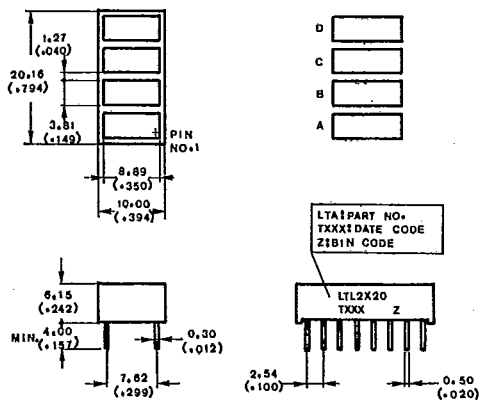
C. LTL-2600H/2700/2800



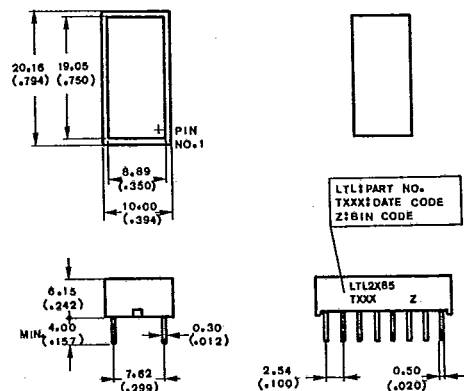
D. LTL-2655/2755/2855



E. LTL-2620/2720/2820



F. LTL-2685/2785/2885



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NOTE: All dimensions are in $\frac{\text{millimeters}}{\text{(inches)}}$, and tolerance is $\frac{0.25\text{mm}}{(0.010'')}$ unless otherwise noted.

PIN CONNECTION

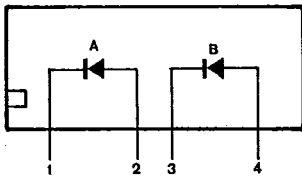
PIN NO.	CONNECTION			
	A LTL-2300/2400/2500	B LTL-2350/2450/2550	C LTL-2600/2700-2800	D LTL-2655/2755/2855
1	Cathode A	Cathode A	Cathode A	Cathode A
2	Anode A	Anode A	Anode A	Anode A
3	Cathode B	Cathode B	Anode B	Anode B
4	Anode B	Anode B	Cathode B	Cathode B
5		Cathode C	Cathode C	Cathode C
6		Anode C	Anode C	Anode C
7		Cathode D	Anode D	Anode D
8		Anode D	Cathode D	Cathode D

LED LIGHT BARS & BAR GRAPH ARRAYS

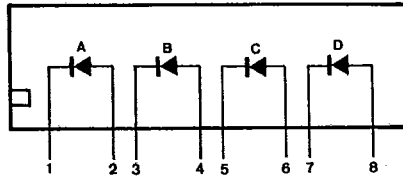
PIN NO.	CONNECTION	
	E. LTL-2620/2720/2820	F. LTL-2685/2785/2885
1	Cathode A	Cathode A
2	Anode A	Anode A
3	Anode B	Anode B
4	Cathode B	Cathode B
5	Cathode C	Cathode C
6	Anode C	Anode C
7	Anode D	Anode D
8	Cathode D	Cathode D
9	Cathode E	Cathode E
10	Anode E	Anode E
11	Anode F	Anode F
12	Cathode F	Cathode F
13	Cathode G	Cathode G
14	Anode G	Anode G
15	Anode H	Anode H
16	Cathode H	Cathode H

INTERNAL CIRCUIT DIAGRAM

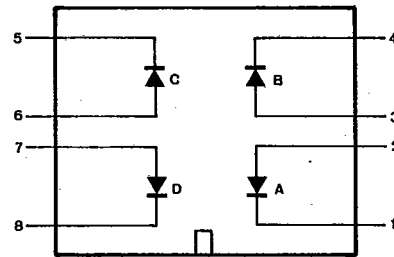
A. LTL-2300/2400/2500



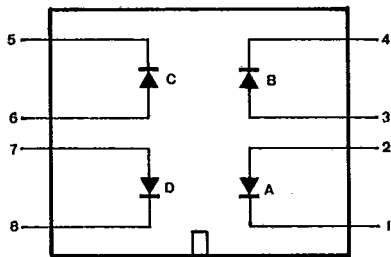
B. LTL-2350/2450/2550



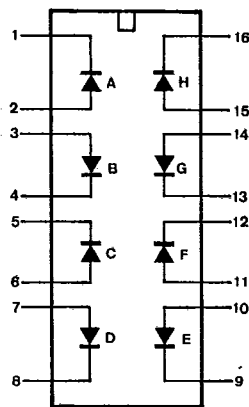
C. LTL-2600/2700/2800



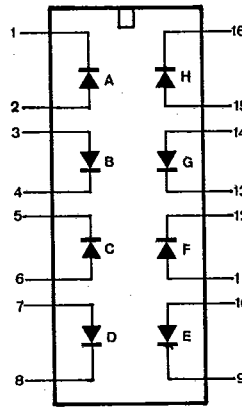
D. LTL-2655/2755/2855



E. LTL-2620/2720/2820



F. LTL-2685/2785/2885



ABSOLUTE MAXIMUM RATINGS AT TA = 25°C

PARAMETER	GREEN	YELLOW	HI-EFF. RED	UNIT
Power Dissipation Per Chip	75	60	75	mW
Peak Forward Current Per Chip (1/10 Duty Cycle, 0.1ms Pulse Width)	100	80	100	mA
Continuous Forward Current Per Chip	25	20	25	mA
Derating Linear From 25°C Per Chip	0.3	0.24	0.3	mA/°C
Reverse Voltage Per Chip	5	5	5	V
Operating Temperature Range	-25°C to +85°C			
Storage Temperature Range	-25°C to +85°C			
Solder Temperature 1/16 inch Below Seating Plane for 3 Seconds at 260°C				

**ELECTRICAL/OPTICAL CHARACTERISTICS AT $T_A = 25^\circ\text{C}$
HI-EFF RED LTL-2300HR/2600HR SERIES**

PARAMETER	LTL-	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity Per Bar	2300	Iv		9.0		mcd	I _F = 10 mA
	2350		7	17			
	2600		3.2	9.0			
	2620		3.2	9.0			
	2655		7	17			
	2685		14	34			
Peak Emission Wavelength		λ_p		565		nm	I _F = 20 mA
Spectral Line Half-Width		$\Delta\lambda$		30		nm	I _F = 20 mA
Forward Voltage any Chip		V _F		2.1	2.8	V	I _F = 20 mA
Reverse Current any Chip		I _R			100	μA	V _R = 5V

LED LIGHT BARS &
BAR GRAPH ARRAYS

Note: The BIN brightness classification see page 3-24, category E

TYPICAL ELECTRICAL/OPTICAL CHARACTERISTIC CURVES
(25°C Ambient Temperature Unless Otherwise Noted)

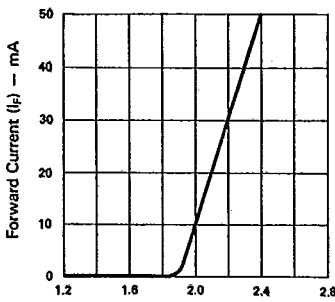


Fig. 1 FORWARD CURRENT Vs. FORWARD VOLTAGE.

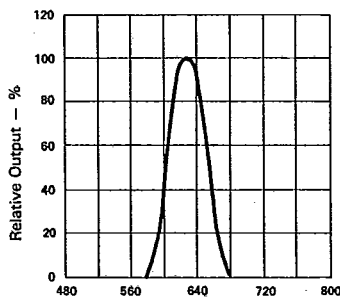


Fig. 2 SPECTRAL RESPONSE.

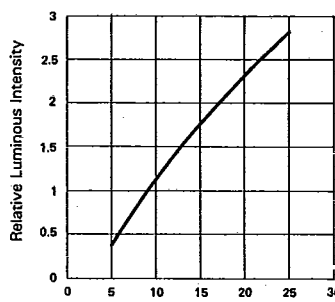


Fig. 3 RELATIVE LUMINOUS INTENSITY Vs. FORWARD CURRENT (PER SEGMENT).

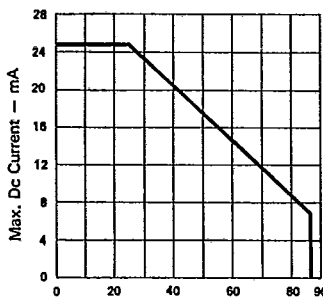


Fig. 4 MAX. ALLOWABLE DC CURRENT PER SEG. Vs AMBIENT TEMPERATURE.

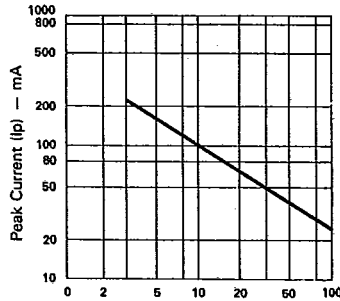


Fig. 5 MAX. PEAK CURRENT Vs. DUTY CYCLE.% (REFRESH RATE - F = 1 KHz)

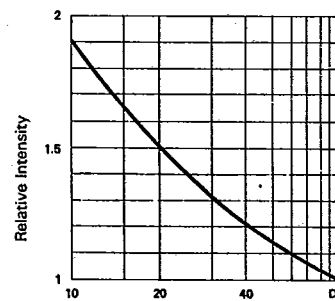


Fig. 6 LUMINOUS INTENSITY Vs. DUTY CYCLE% (AVERAGE I_F = 10mA PER SEG.)

**ELECTRICAL/OPTICAL CHARACTERISTICS AT TA = 25°C
YELLOW LTL-2400Y/2700Y SERIES**

PARAMETER	LTL--	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity Per Bar	2400	Iv	3.2	9.0		mcd	IF = 10 mA
	2450		7	17			
	2700		3.2	9.0			
	2720		3.2	9.0			
	2755		7	17			
	2785		14	34			
Peak Emission Wavelength		λ_p		585		nm	IF = 20 mA
Spectral Line Half-Width		$\Delta\lambda$		35		nm	IF = 20 mA
Forward Voltage any Chip		VF		2.1	2.8	V	IF = 20 mA
Reverse Current any Chip		IR			100	μ A	VR = 5V

Note: The BIN brightness classification see page 3-24, category E

TYPICAL ELECTRICAL/OPTICAL CHARACTERISTIC CURVES

(25°C Ambient Temperature Unless Otherwise Noted)

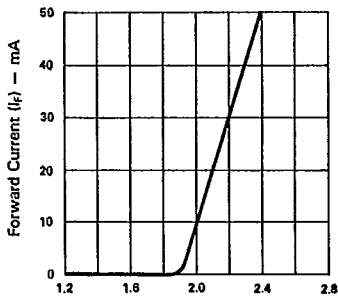


Fig. 1 FORWARD CURRENT Vs. FORWARD VOLTAGE.

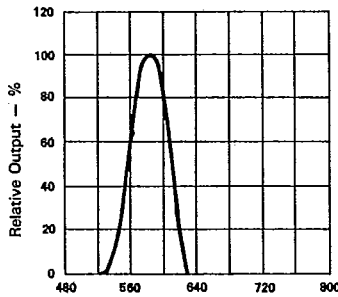


Fig. 2 SPECTRAL RESPONSE.

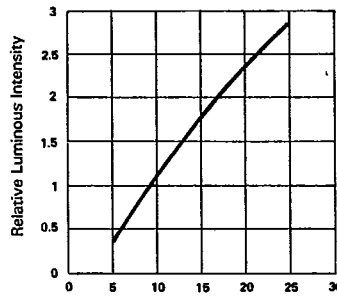


Fig. 3 RELATIVE LUMINOUS INTENSITY Vs. FORWARD CURRENT (PER SEGMENT).

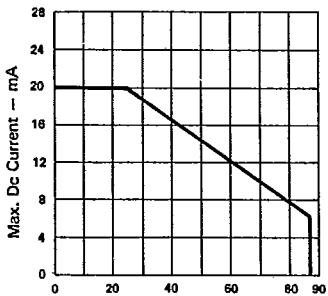


Fig. 4 MAX. ALLOWABLE DC CURRENT PER SEG. Vs AMBIENT TEMPERATURE.

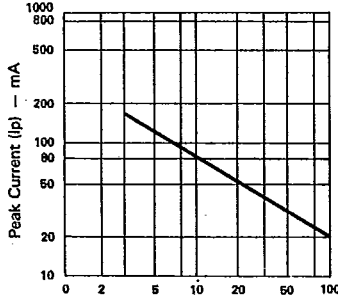


Fig. 5 MAX. PEAK CURRENT Vs. DUTY CYCLE.% (REFRESH RATE - F = 1 KHz)

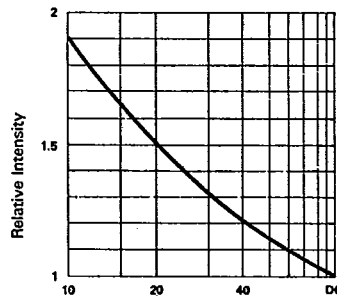


Fig. 6 LUMINOUS INTENSITY Vs. DUTY CYCLE% (AVERAGE If = 10mA PER SEG.)

**ELECTRICAL/OPTICAL CHARACTERISTICS AT TA = 25°C
GREEN LTL-2500G/2800G SERIES**

PARAMETER	LTL#	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity Per Bar	2500	Iv	3.2	9.0		mcd	IF = 10 mA
	2550		7	17			
	2800		3.2	9.0			
	2820		3.2	9.0			
	2855		7	17			
	2885		14	34			
Peak Emission Wavelength		λ_p		565		nm	IF = 20 mA
Spectral Line Half-Width		$\Delta\lambda$		30		nm	IF = 20 mA
Forward Voltage any Chip		VF		2.1	2.8	V	IF = 20 mA
Reverse Current any Chip		IR			100	μ A	VR = 5V

LED LIGHT BARS & BAR GRAPH ARRAYS

Note: The BIN brightness classification see page 3-24, category E

TYPICAL ELECTRICAL/OPTICAL CHARACTERISTIC CURVES

(25°C Ambient Temperature Unless Otherwise Noted)

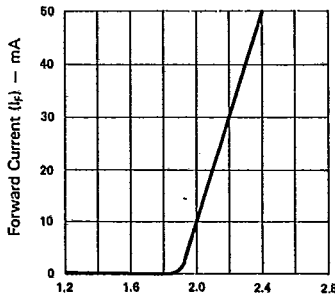


Fig. 1 FORWARD CURRENT VS. FORWARD VOLTAGE.

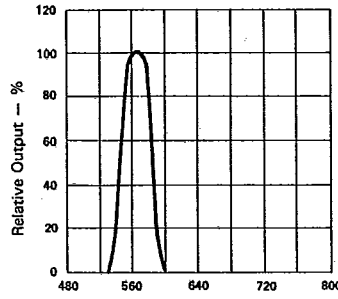


Fig. 2 SPECTRAL RESPONSE.

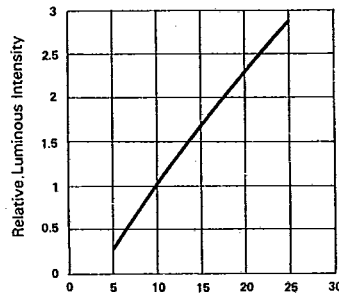


Fig. 3 RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT (PER SEGMENT).

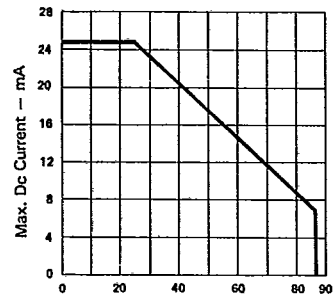


Fig. 4 MAX. ALLOWABLE DC CURRENT PER SEG. VS AMBIENT TEMPERATURE.

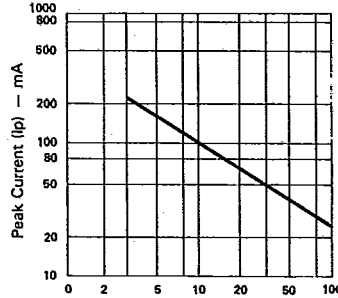


Fig. 5 MAX. PEAK CURRENT VS. DUTY CYCLE.% (REFRESH RATE - F = 1 KHz)

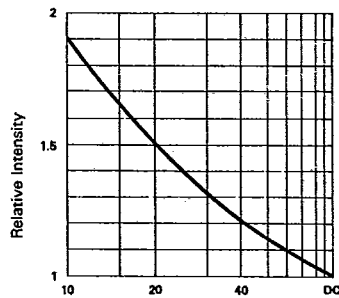


Fig. 6 LUMINOUS INTENSITY VS. DUTY CYCLE% (AVERAGE If = 10mA PER SEG.)