LITEON

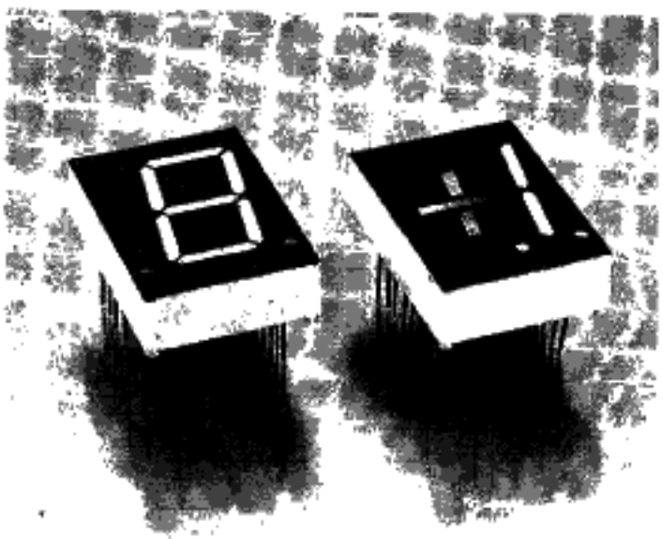
LTS-3400L SERIES

T-41-33

0.8" SINGLE DIGIT NUMERIC DISPLAYS

FEATURES

- 0.8 INCH (20.32mm) DIGIT HEIGHT.
- CONTINUOUS UNIFORM SEGMENTS.
- CHOICE OF FIVE BRIGHT COLORS-RED/BRIGHT RED/GREEN/YELLOW/ORANGE.
- LOW POWER REQUIREMENT.
- EXCELLENT CHARACTERS APPEARANCE.
- HIGH CONTRAST.
- HIGH BRIGHTNESS.
- WIDE VIEWING ANGLE.
- SOLID STATE RELIABILITY.
- CATEGORIZED FOR LUMINOUS INTENSITY.
- I. C. COMPATIBLE.
- EASY MOUNTING ON P.C. BOARD OR SOCKETS.



SEVEN SEGMENT LED DISPLAYS & ALPHANUMERIC DISPLAYS

DESCRIPTION

The LTS-3400L series are 0.8 inch (20.32mm) height single digit displays.

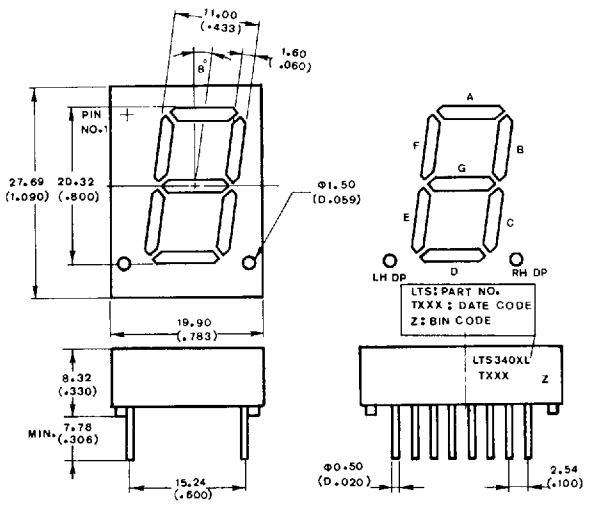
The red series devices utilized LED chips which are made from GaAsP on a GaAs substrate. The bright red and green series devices utilize LED chips which are made from GaP on a transparent GaP substrate. The orange series devices utilize LED chips which are made from GaAsP on a transparent GaP substrate. All devices have gray face and white segment color.

DEVICES

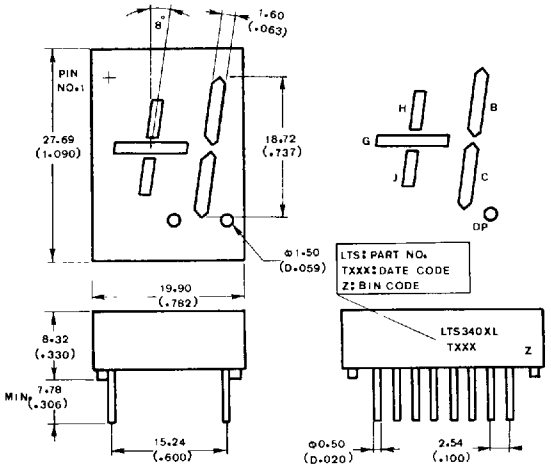
PART NO. LTS-					DESCRIPTION	PACKAGE DIMENSION	INTERNAL CIRCUIT DIAGRAM
RED	BRIGHT RED	GREEN	YELLOW	ORANGE			
3401LR	3401LP	3401LG	3401LY	3401LE	Common Anode, Rt. & Lt. Hand Decimal	A	A
3403LR	3403LP	3403LG	3403LY	3403LE	Common Cathode, Rt. & Lt. Hand Decimal	A	B
3406LR	3406LP	3406LG	3406LY	3406LE	Universal, ± 1 Overflow, Rt. Hand Decimal	B	C

PACKAGE DIMENSIONS

A. LTS-3401L/3403L



B. LTS-3406L



NOTE: All dimensions are in $\frac{\text{millimeters}}{(\text{inches})}$ tolerance are:

1. Lead length (from seating plane). minimum valum $\frac{+1.00}{-0.00}$ mm ($\frac{+0.040''}{-0.000''}$)
2. $\frac{\pm 0.25\text{mm}}{(0.010'')}$ unless otherwise noted.

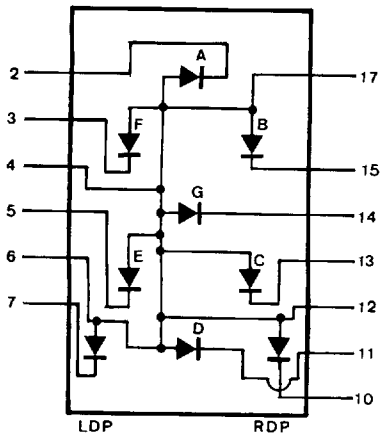
PIN CONNECTION

PIN NO.	CONNECTION		
	A. LTS-3401L	B. LTS-3403L	C. LTS-3406L
1	No Pin	No Pin	No Pin
2	Cathode A	Anode A	Cathode B *2
3	Cathode F	Anode F	Anode H
4	Common Anode *1	Common Cathode *1	Cathode H
5	Cathode E	Anode E	Cathode G
6	Common Anode *1	Common Cathode *1	Cathode J
7	Cathode L.D.P.	Anode L.D.P.	Anode J
8	No Pin	No Pin	Cathode D.P. *3
9	No Pin	No Pin	No Pin
10	Cathode R.D.P.	Anode R.D.P.	Anode D.P.
11	Cathode D	Anode D	Cathode D.P. *3
12	Common Anode *1	Common Cathode *1	Cathode C
13	Cathode C	Anode C	Anode C
14	Cathode G	Anode G	Anode G
15	Cathode B	Anode B	Anode B
16	No Pin	No Pin	No Pin
17	Common Anode *1	Common Cathode *1	Cathode B *2
18	No Pin	No Pin	No Pin

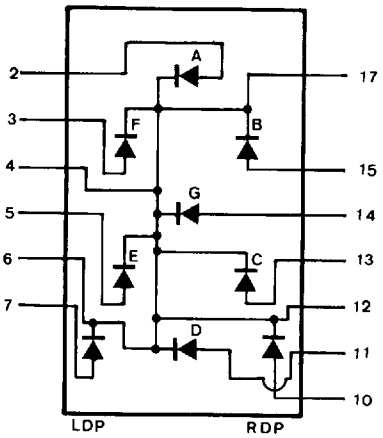
NOTES 1. Pin & 4, 6, 12 & 17 are internally connected
2 Pin 2 & 17 are internally connected.
3 Pin 8 & 11 are internally connected.

INTERNAL CIRCUIT DIAGRAM

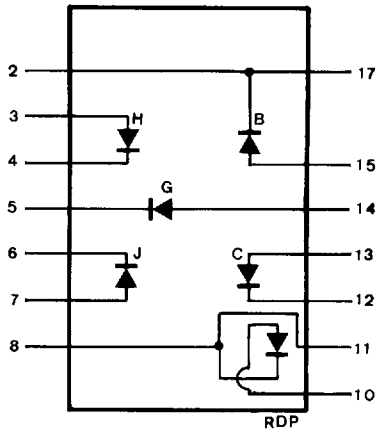
A. LTS-3401L x



B. LTS-3403L x



C. LTS-3406L x



ABSOLUTE MAXIMUM RATINGS AT $T_A = 25°C$

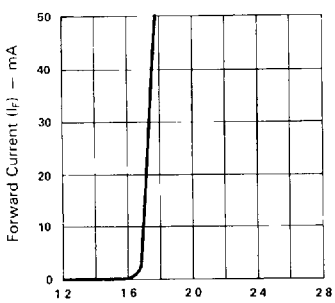
PARAMETER	RED	BRIGHT RED	GREEN	YELLOW	HI.-EFF. RED	UNIT
Power Dissipation Per Segment	55	40	75	60	75	mW
Peak Forward Current Per Segment (1/10 Duty Cycle, 0.1ms Pulse Width)	160	60	100	80	100	mA
Continuous Forward Current Per Segment	25	15	25	20	25	mA
Derating Linear From 25° C Per Segment	0.3	0.18	0.3	0.24	0.3	mA/°C
Reverse Voltage Per Segment	5	5	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°C
LTS-3400LR SERIES

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity	Iv	200	600		µcd	I_F = 10 mA
Peak Emission Wavelength	λp		655		nm	I_F = 20 mA
Spectral Line Half-Width	Δλ		24		nm	I_F = 20 mA
Forward Voltage, any Segment or D.P.	V_F		1.7	2.0	V	I_F = 20 mA
Reverse Current, any Segment or D.P.	I_R			100	µA	V_R = 5V
Luminous Intensity Matching Ratio	Iv-m			2:1		I_F = 20 mA

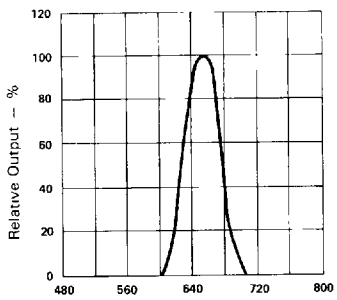
TYPICAL ELECTRICAL/OPTICAL CHARACTERISTIC CURVES

(25°C Ambient Temperature Unless Otherwise Noted)



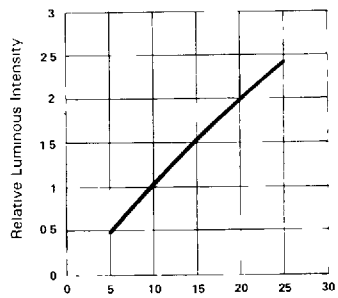
Forward Voltage (V_F) – Volts

Fig 1 FORWARD CURRENT Vs FORWARD VOLTAGE



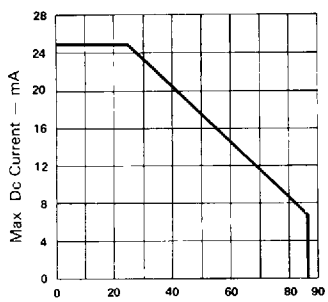
Wavelength (λ) – nm

Fig 2 SPECTRAL RESPONSE



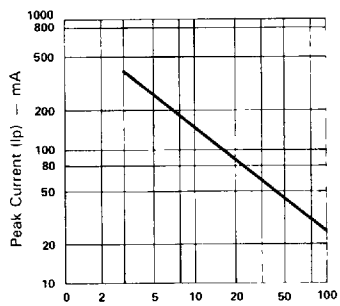
Forward Current (I_F) – mA

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



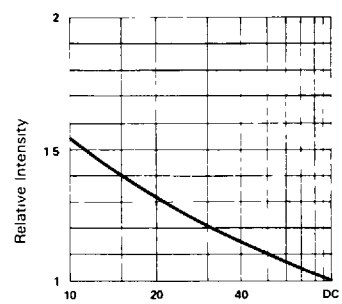
Ambient Temperature (Ta) – °C

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



Duty Cycle %

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



Duty Cycle %

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

ELECTRICAL/OPTICAL CHARACTERISTICS AT $T_A = 25°C$
LTS-3400LP SERIES

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity	Iv	300	950		µcd	I_F = 10 mA
Peak Emission Wavelength	λp		697		nm	I_F = 20 mA
Spectral Line Half-Width	Δλ		90		nm	I_F = 20 mA
Forward Voltage, any Segment or D.P.	V_F		2.1	2.8	V	I_F = 20 mA
Reverse Current, any Segment or D.P.	I_R			100	µA	V_R = 5V
Luminous Intensity Matching Ratio	Iv-m			2:1		I_F = 20 mA

TYPICAL ELECTRICAL/OPTICAL CHARACTERISTIC CURVES

(25°C Ambient Temperature Unless Otherwise Noted)

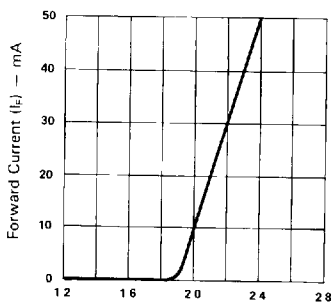


Fig. 1 FORWARD CURRENT Vs FORWARD VOLTAGE

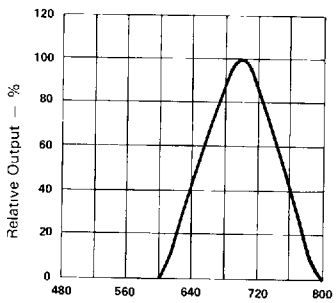


Fig 2 SPECTRAL RESPONSE

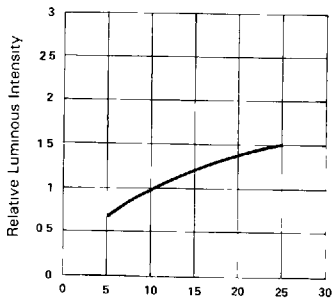


Fig 3 RELATIVE LUMINOUS INTENSITY Vs FORWARD CURRENT (PER SEGMENT)

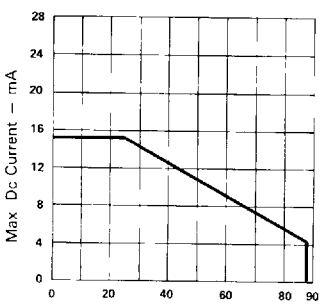


Fig 4 MAX. ALLOWABLE DC CURRENT PER SEG Vs AMBIENT TEMPERATURE

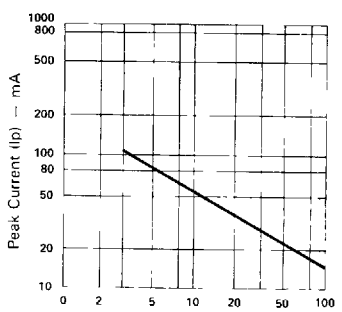


Fig 5 MAX. PEAK CURRENT Vs DUTY CYCLE % (REFRESH RATE F = 1 KHz)

ELECTRICAL/OPTICAL CHARACTERISTICS AT T_A = 25°C
LTS-3400LG SERIES

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity	Iv	800	2400		µcd	I_F = 10 mA
Peak Emission Wavelength	λp		565		nm	I_F = 20 mA
Spectral Line Half-Width	Δλ		30		nm	I_F = 20 mA
Forward Voltage, any Segment or D.P.	V_F		2.1	2.8	V	I_F = 20 mA
Reverse Current, any Segment or D.P.	I_R			100	µA	V_R = 5V
Luminous Intensity Matching Ratio	Iv-m			2:1		I_F = 20 mA

TYPICAL ELECTRICAL/OPTICAL CHARACTERISTIC CURVES

(25° C Ambient Temperature Unless Otherwise Noted)

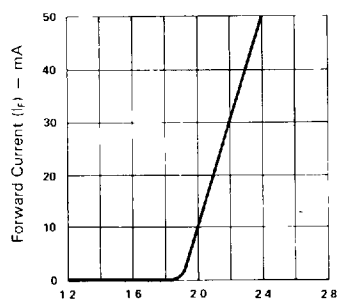


Fig 1 FORWARD CURRENT Vs FORWARD VOLTAGE

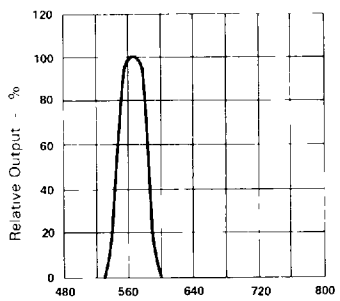


Fig 2 SPECTRAL RESPONSE

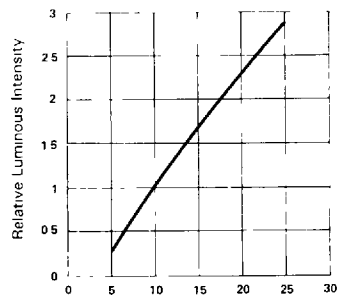


Fig 3 RELATIVE LUMINOUS INTENSITY Vs FORWARD CURRENT (PER SEGMENT)

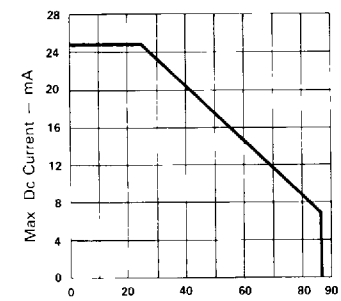


Fig 4 MAX. ALLOWABLE DC CURRENT PER SEG Vs AMBIENT TEMPERATURE

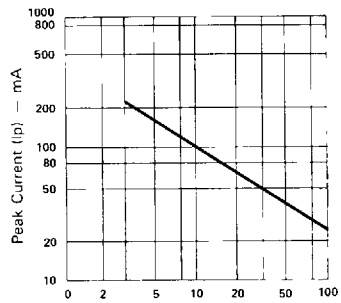


Fig 5 MAX. PEAK CURRENT Vs DUTY CYCLE % (REFRESH RATE – F – 1 KHz)

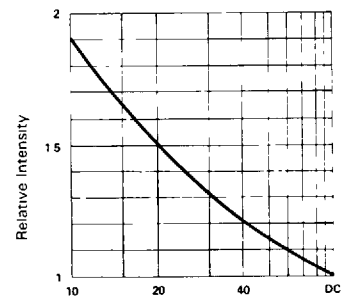


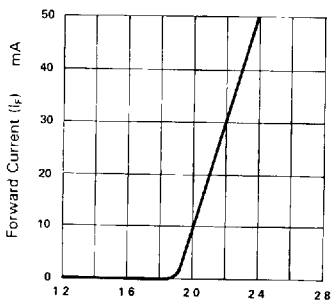
Fig 6 LUMINOUS INTENSITY Vs DUTY CYCLE % (AVERAGE I_F = 10mA PER SEG.)

ELECTRICAL/OPTICAL CHARACTERISTICS AT $T_A = 25°C$
LTS-3400LY SERIES

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity	Iv	750	2400		μcd	I_F = 10 mA
Peak Emission Wavelength	λp		585		nm	I_F = 20 mA
Spectral Line Half-Width	Δλ		35		nm	I_F = 20 mA
Forward Voltage, any Segment or D.P.	V_F		2.1	2.8	V	I_F = 20 mA
Reverse Current, any Segment or D.P.	I_R			100	μA	V_R = 5V
Luminous Intensity Matching Ratio	Iv-m			2:1		I_F = 20 mA

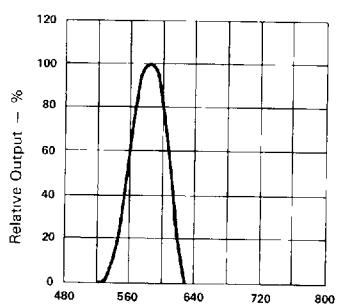
TYPICAL ELECTRICAL/OPTICAL CHARACTERISTIC CURVES

(25° C Ambient Temperature Unless Otherwise Noted)



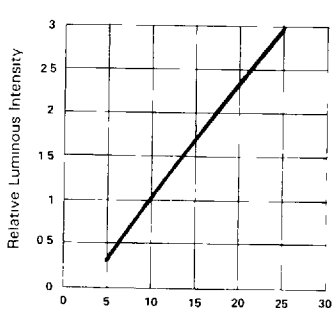
Forward Voltage (V_F) — Volts

Fig 1 FORWARD CURRENT Vs FORWARD VOLTAGE



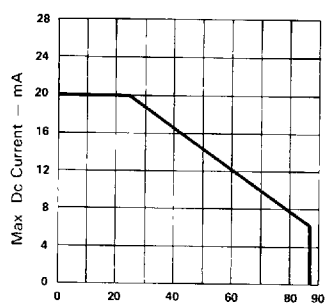
Wavelength (λ) — nm

Fig 2 SPECTRAL RESPONSE



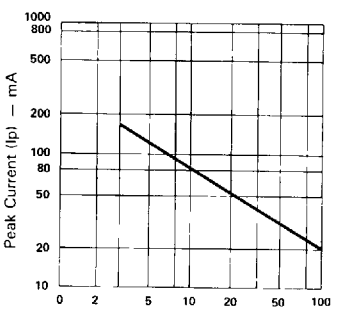
Forward Current (I_F) — mA

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



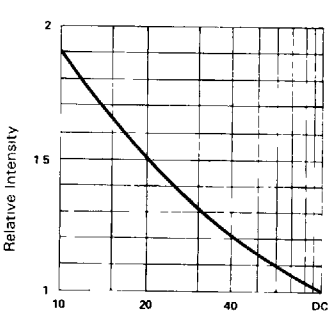
Ambient Temperature (Ta) — °C

Fig 4 MAX ALLOWABLE DC CURRENT PER SEG Vs AMBIENT TEMPERATURE



Duty Cycle %

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



Duty Cycle %

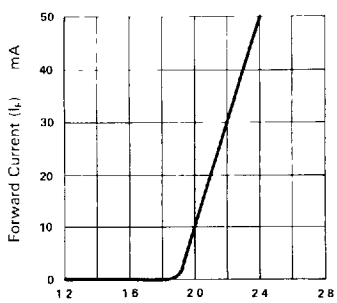
Fig 6 LUMINOUS INTENSITY Vs DUTY CYCLE % (AVERAGE I_F = 10mA PER SEG)

ELECTRICAL/OPTICAL CHARACTERISTICS AT $T_A = 25°C$
LTS-3400LE SERIES

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity	Iv	800	2400		µcd	I_F = 10 mA
Peak Emission Wavelength	λp		630		nm	I_F = 20 mA
Spectral Line Half-Width	Δλ		40		nm	I_F = 20 mA
Forward Voltage, any Segment or D.P.	V_F		2.1	2.8	V	I_F = 20 mA
Reverse Current, any Segment or D.P.	I_R			100	µA	V_R = 5V
Luminous Intensity Matching Ratio	Iv-m			2:1		I_F = 20 mA

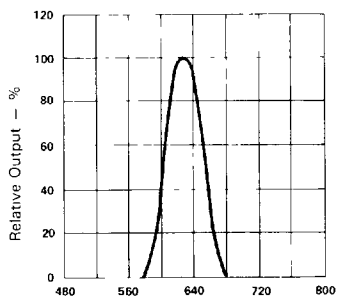
TYPICAL ELECTRICAL/OPTICAL CHARACTERISTIC CURVES

(25° C Ambient Temperature Unless Otherwise Noted)



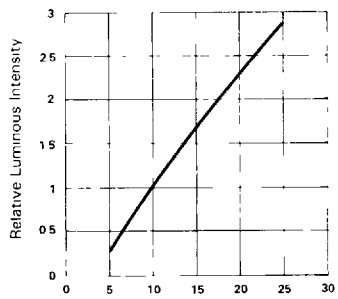
Forward Voltage (V_F) — Volts

Fig 1 FORWARD CURRENT Vs FORWARD VOLTAGE



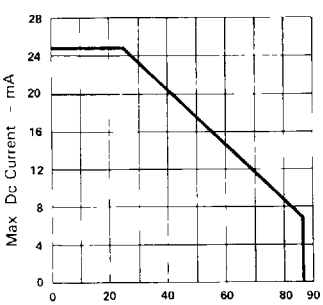
Wavelength (λ) — nm.

Fig 2 SPECTRAL RESPONSE



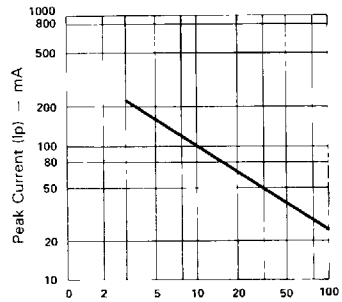
Forward Current (I_F) — mA

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



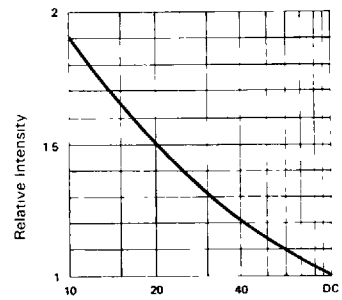
Ambient Temperature (Ta) — °C

Fig 4 MAX ALLOWABLE DC CURRENT PER SEG Vs AMBIENT TEMPERATURE



Duty Cycle %

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



Duty Cycle %

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