

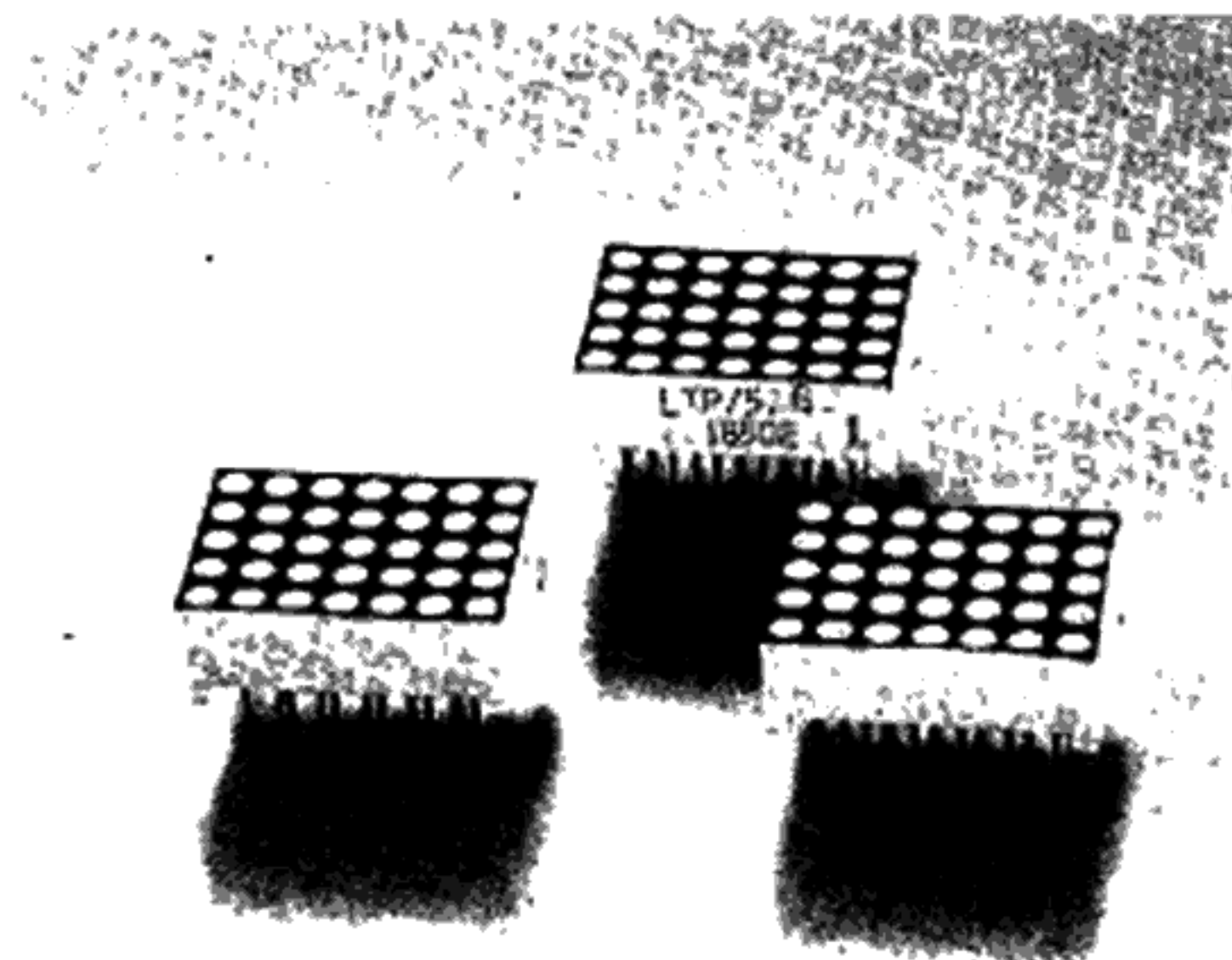
# LITEON

## LTP-747/757 SERIES

### 0.7" 5 x 7 SINGLE COLOR DOT MATRIX DISPLAY

#### FEATURES

- 0.7 INCH (17.2 mm) MATRIX HEIGHT.
- CHOICE OF SIX BRIGHT COLORS – RED / BRIGHT RED / GREEN / YELLOW / ORANGE / HIGH EFFICIENCY RED.
- LOW POWER REQUIREMENT.
- 5 x 7 ARRAY WITH X-Y SELECT.
- COMPATIBLE WITH USASCII AND EBCDIC CODES.
- STACKABLE VERTICALLY AND HORIZONTALLY.
- CHOICE OF TWO MATRIX ORIENTATION CATHODE ROW, OR CATHODE COLUMN.
- EASY MOUNTING ON P.C. BOARD OR SOCKETS.
- CATEGORIZED FOR LUMINOUS INTENSITY.



#### DESCRIPTION

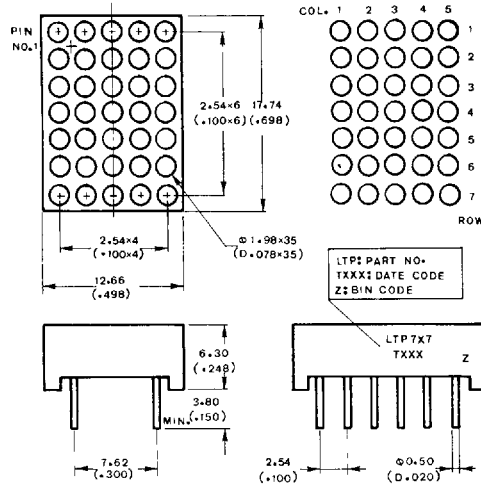
The LTP-747/757 series are 0.7 inch (17.2 mm) matrix height 5 x 7 dot matrix displays.

The red series devices utilize 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 yellow, orange and high-efficiency red series utilize LED chips which are made from GaAsP on a transparent GaP substrate. The red, green, yellow and orange displays have gray face and white dot color. The bright red and high efficiency red displays have red face and red dot color.

#### DEVICES

PART NO. LTP-					DESCRIPTION	INTERNAL CIRCUIT DIAGRAM
RED	GREEN	YELLOW	ORANGE	HI.-EFF. RED		
747R	747G	747Y	747E	747HR	Anode Column, Cathode Row	A
757R	757G	757Y	757E	757HR	Cathode Column, Anode Row	B

# PACKAGE DIMENSIONS



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

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

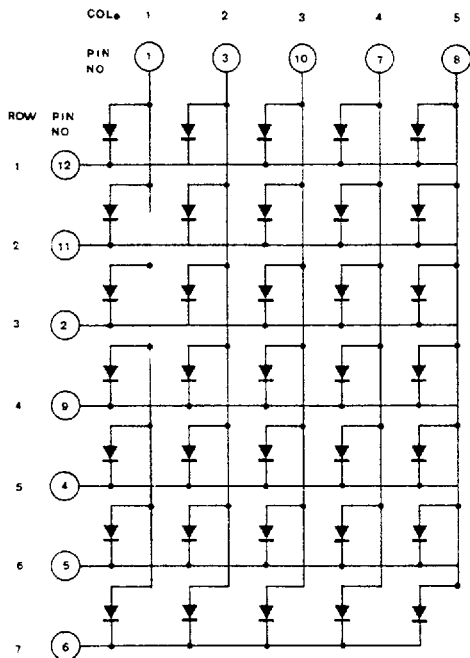
# PIN CONNECTION

PIN NO.	CONNECTION	
	LTP-747	LTP-757
1	Anode Column 1	Cathode Column 1
2	Cathode Row 3	Anode Row 3
3	Anode Column 2	Cathode Column 2
4	Cathode Row 5	Anode Row 5
5	Cathode Row 6	Anode Row 6
6	Cathode Row 7	Anode Row 7
7	Anode Column 4	Cathode Column 4
8	Anode Column 5	Cathode Column 5
9	Cathode Row 4	Anode Row 4
10	Anode Column 3	Cathode Column 3
11	Cathode Row 2	Anode Row 2
12	Cathode Row 1	Anode Row 1

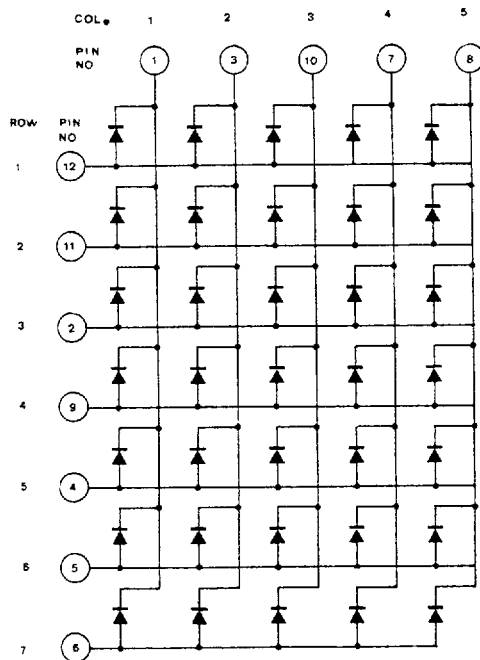
DOT MATRIX  
DISPLAYS

# INTERNAL CIRCUIT DIAGRAM

A. LTP-747



B. LTP-757



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

PARAMETER	RED	GREEN	YELLOW	ORANGE	HI.-EFF. RED	UNIT
Power Dissipation Per Dot	45	60	50	60	60	mW
Peak Forward Current Per Dot (1/10 Duty Cycle, 0.1ms Pulse Width)	120	80	60	80	80	mA
Continuous Forward Current Per Dot	20	20	16	20	20	mA
Derating Linear From $25^\circ\text{C}$ Per Dot	0.24	0.24	0.2	0.24	0.24	$\text{mA}/^\circ\text{C}$
Reverse Voltage Per Dot	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 $T_A = 25^\circ\text{C}$

## LTP-747R/757R

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity	$I_V$	200	500		$\mu\text{cd}$	$I_P = 48\text{ mA}$ 1/8 DUTY
Peak Emission Wavelength	$\lambda_p$		655		$\text{nm}$	$I_F = 20\text{ mA}$
Spectral Line Half-Width	$\Delta\lambda$		24		$\text{nm}$	$I_F = 20\text{ mA}$
Forward Voltage, any Dot	$V_F$		1.7	2.0	$\text{V}$	$I_F = 20\text{ mA}$
Reverse Current, any Dot	$I_R$			100	$\mu\text{A}$	$V_R = 5\text{V}$
Luminous Intensity Matching Ratio	$I_V\text{-m}$			2:1		$I_F = 20\text{ mA}$

### TYPICAL ELECTRICAL/OPTICAL CHARACTERISTIC CURVES

( $25^\circ\text{C}$  Ambient Temperature Unless Otherwise Noted)

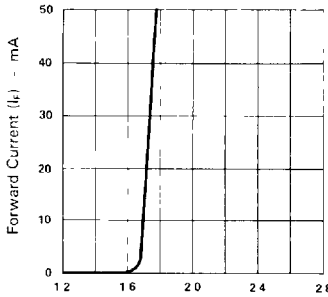


Fig. 1 FORWARD CURRENT Vs FORWARD VOLTAGE

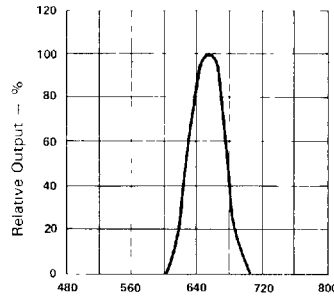


Fig. 2 SPECTRAL RESPONSE

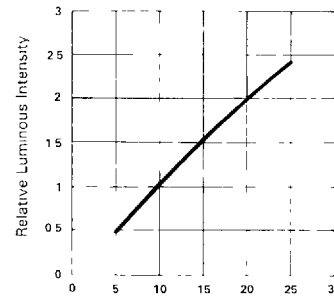


Fig. 3 RELATIVE LUMINOUS INTENSITY Vs FORWARD CURRENT (PER SEGMENT)

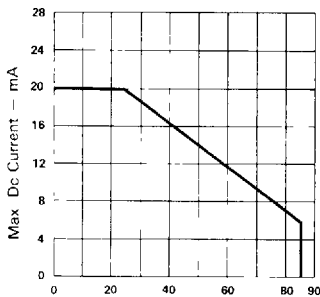


Fig. 4 MAX. ALLOWABLE DC CURRENT PER SEG Vs AMBIENT TEMPERATURE

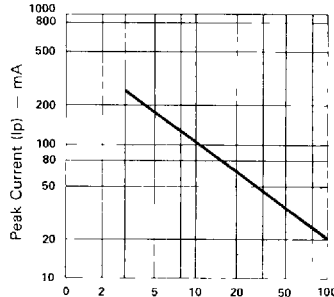


Fig. 5 MAX. PEAK CURRENT Vs DUTY CYCLE % (REFRESH RATE -  $F = 1\text{ KHz}$ )

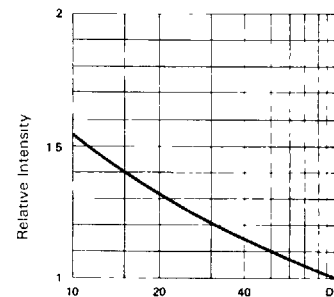


Fig. 6 LUMINOUS INTENSITY Vs DUTY CYCLE % (AVERAGE  $I_V = 10\text{ mA PER SEG}$ )

DOT MATRIX  
DISPLAYS

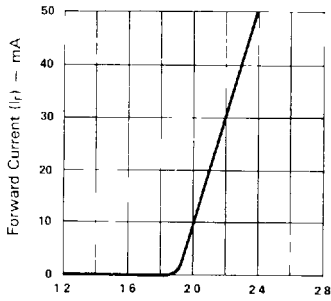
# ELECTRICAL/OPTICAL CHARACTERISTICS AT $T_A = 25^\circ\text{C}$

## LTP-747Y/757Y

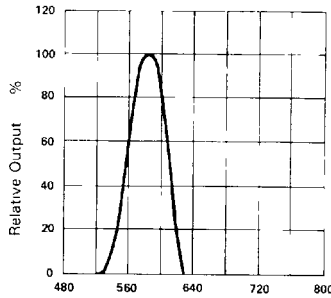
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity	$I_v$	700	2000		$\mu\text{cd}$	$I_F = 48\text{ mA}$ 1/8 DUTY
Peak Emission Wavelength	$\lambda_p$		585		nm	$I_F = 20\text{ mA}$
Spectral Line Half-Width	$\Delta\lambda$		35		nm	$I_F = 20\text{ mA}$
Forward Voltage, any Dot	$V_F$		2.1	2.8	V	$I_F = 20\text{ mA}$
Reverse Current, any Dot	$I_R$			100	$\mu\text{A}$	$V_R = 5\text{V}$
Luminous Intensity Matching Ratio	$I_v\text{-m}$			2:1		$I_F = 20\text{ mA}$

### TYPICAL ELECTRICAL/OPTICAL CHARACTERISTIC CURVES

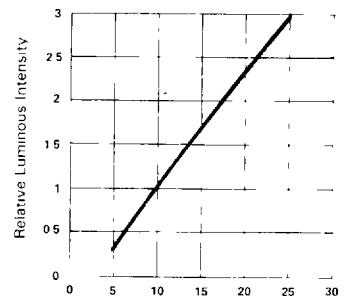
( $25^\circ\text{C}$  Ambient Temperature Unless Otherwise Noted)



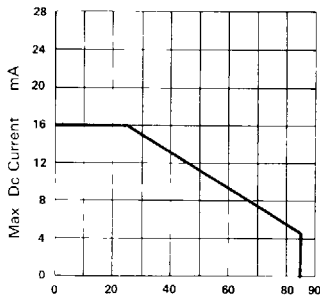
Forward Voltage ( $V_F$ ) — Volts  
Fig 1 FORWARD CURRENT VS FORWARD VOLTAGE



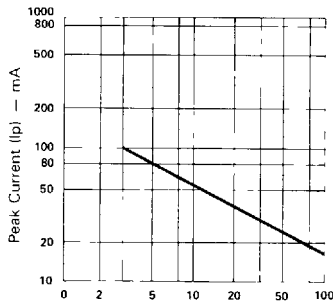
Wavelength ( $\lambda$ ) — nm  
Fig 2 SPECTRAL RESPONSE



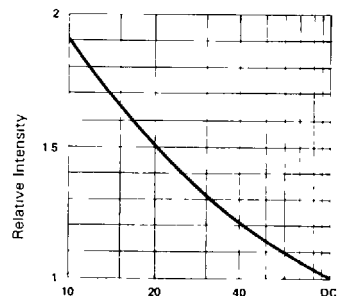
Forward Current ( $I_F$ ) — mA  
Fig 3 RELATIVE LUMINOUS INTENSITY VS FORWARD CURRENT (PER SEGMENT)



Ambient Temperature ( $T_A$ ) —  $^\circ\text{C}$   
Fig 4 MAX ALLOWABLE DC CURRENT PER SEG VS AMBIENT TEMPERATURE



Duty Cycle %  
Fig 5 MAX PEAK CURRENT VS DUTY CYCLE % (REFRESH RATE  $F = 1\text{ KHz}$ )



Duty Cycle %  
Fig 6 LUMINOUS INTENSITY VS DUTY CYCLE % (AVERAGE  $I = 10\text{ mA PER SEG}$ )



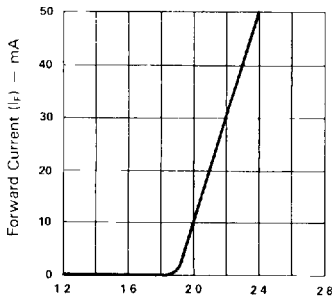
# ELECTRICAL/OPTICAL CHARACTERISTICS AT $T_A = 25^\circ\text{C}$

## LTP-747G/757G

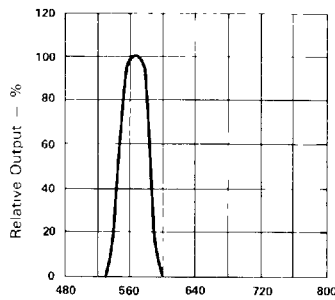
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity	$I_v$	700	2000		$\mu\text{cd}$	$I_F = 48 \text{ mA}$ 1/8 DUTY
Peak Emission Wavelength	$\lambda_p$		565		nm	$I_F = 20 \text{ mA}$
Spectral Line Half-Width	$\Delta\lambda$		30		nm	$I_F = 20 \text{ mA}$
Forward Voltage, any Dot	$V_F$		2.1	2.8	V	$I_F = 20 \text{ mA}$
Reverse Current, any Dot	$I_R$			100	$\mu\text{A}$	$V_R = 5\text{V}$
Luminous Intensity Matching Ratio	$I_{v,m}$			2:1		$I_F = 20 \text{ mA}$

### TYPICAL ELECTRICAL/OPTICAL CHARACTERISTIC CURVES

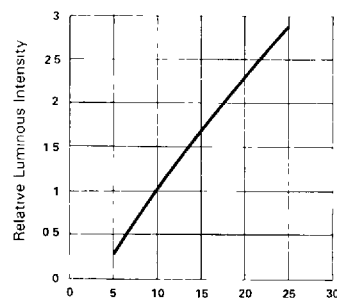
( $25^\circ\text{C}$  Ambient Temperature Unless Otherwise Noted)



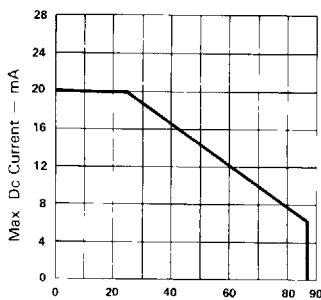
Forward Voltage ( $V_F$ ) — Volts  
Fig 1 FORWARD CURRENT VS FORWARD VOLTAGE



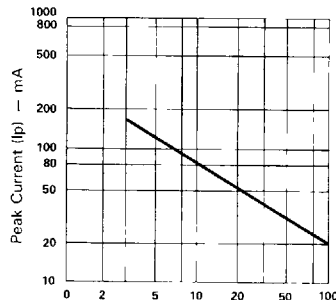
Wavelength ( $\lambda$ ) — nm  
Fig 2 SPECTRAL RESPONSE



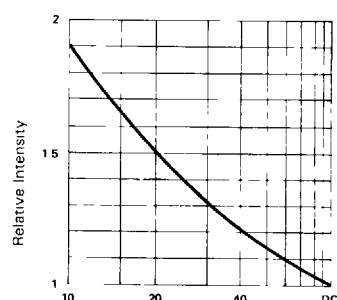
Forward Current ( $I_F$ ) — mA  
Fig 3 RELATIVE LUMINOUS INTENSITY VS FORWARD CURRENT (PER SEGMENT)



Ambient Temperature ( $T_A$ ) —  $^\circ\text{C}$   
Fig 4 MAX. ALLOWABLE DC CURRENT PER SEG VS AMBIENT TEMPERATURE



Duty Cycle %  
Fig 5 MAX. PEAK CURRENT VS DUTY CYCLE % (REFRESH RATE  $F = 1 \text{ KHz}$ )



Duty Cycle %  
Fig 6 LUMINOUS INTENSITY VS DUTY CYCLE % (AVERAGE  $I_F = 10 \text{ mA}$  PER SFG)

DOT MATRIX  
DISPLAYS

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

## LTP-747E/757E

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity	$I_v$	700	2000		$\mu\text{cd}$	$I_F = 48\text{ mA}$ 1/8 DUTY
Peak Emission Wavelength	$\lambda_p$		630		nm	$I_F = 20\text{ mA}$
Spectral Line Half-Width	$\Delta\lambda$		40		nm	$I_F = 20\text{ mA}$
Forward Voltage, any Dot	$V_F$		2.1	2.8	V	$I_F = 20\text{ mA}$
Reverse Current, any Dot	$I_R$			100	$\mu\text{A}$	$V_R = 5\text{ V}$
Luminous Intensity Matching Ratio	$I_v\text{-m}$			2:1		$I_F = 20\text{ mA}$

### TYPICAL ELECTRICAL/OPTICAL CHARACTERISTIC CURVES

( $25^\circ\text{C}$  Ambient Temperature Unless Otherwise Noted)

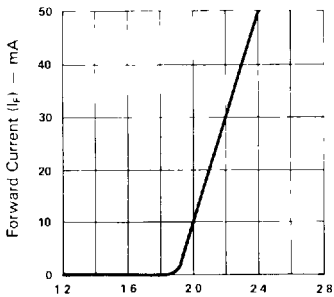


Fig 1 FORWARD CURRENT VS FORWARD VOLTAGE

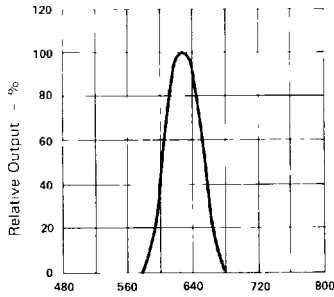


Fig 2 SPECTRAL RESPONSE

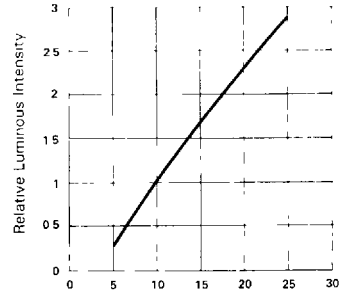


Fig 3 RELATIVE, LUMINOUS INTENSITY VS FORWARD CURRENT (PER SEGMENT)

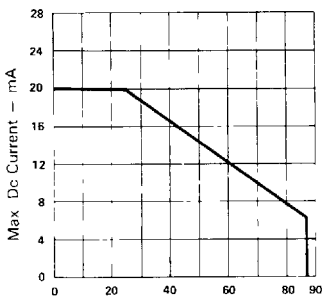


Fig 4 MAX ALLOWABLE DC CURRENT PER SEG VS AMBIENT TEMPERATURE

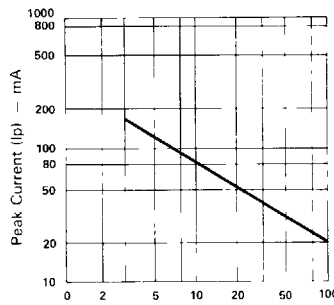


Fig 5 MAX PEAK CURRENT VS DUTY CYCLE % (REFRESH RATE  $f_r = 1\text{ kHz}$ )

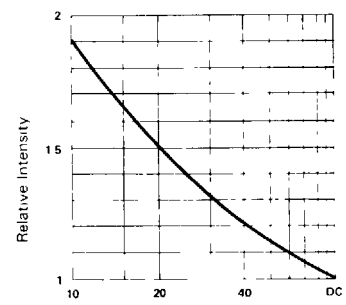


Fig 6 LUMINOUS INTENSITY VS DUTY CYCLE % (AVERAGE  $I_F = 10\text{ mA PER SEG}$ )

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

## LTP-747HR/757HR

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity	$I_v$	700	2000		$\mu\text{cd}$	$I_p = 48 \text{ mA}$ 1/8 DUTY
Peak Emission Wavelength	$\lambda_p$		635		nm	$I_F = 20 \text{ mA}$
Spectral Line Half-Width	$\Delta\lambda$		40		nm	$I_F = 20 \text{ mA}$
Forward Voltage, any Dot	$V_F$		2.1	2.8	V	$I_F = 20 \text{ mA}$
Reverse Current, any Dot	$I_R$			100	$\mu\text{A}$	$V_R = 5 \text{ V}$
Luminous Intensity Matching Ratio	$I_v\text{-m}$			2:1		$I_F = 20 \text{ mA}$

### TYPICAL ELECTRICAL/OPTICAL CHARACTERISTIC CURVES

( $25^\circ\text{C}$  Ambient Temperature Unless Otherwise Noted)

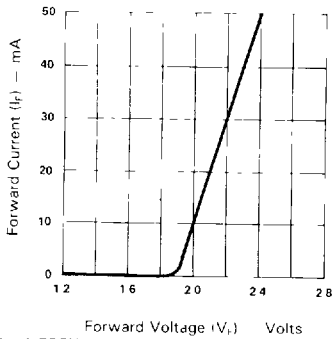


Fig 1 FORWARD CURRENT Vs FORWARD VOLTAGE

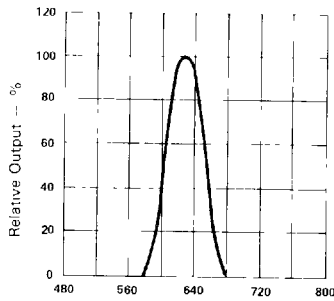


Fig 2 SPECTRAL RESPONSE

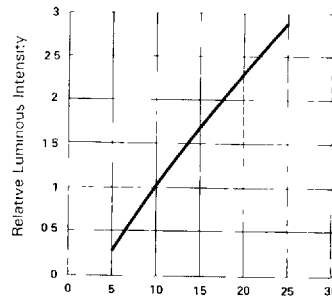


Fig 3 RELATIVE, LUMINOUS INTENSITY Vs FORWARD CURRENT (PER SEGMENT)

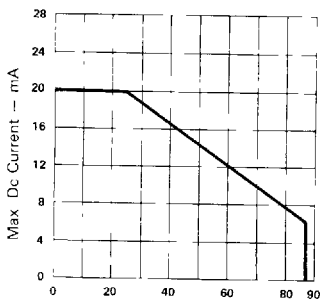


Fig 4 MAX ALLOWABLE DC CURRENT PER SEG Vs AMBIENT TEMPERATURE

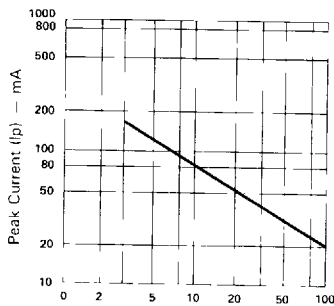


Fig 5 MAX PEAK CURRENT Vs DUTY CYCLE % (REFRESH RATE  $F = 1 \text{ KHz}$ )

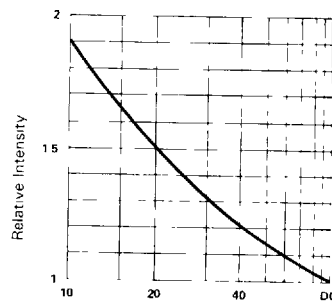


Fig 6 LUMINOUS INTENSITY Vs DUTY CYCLE % (AVERAGE  $I = 10 \text{ mA PER SEG}$ )

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