



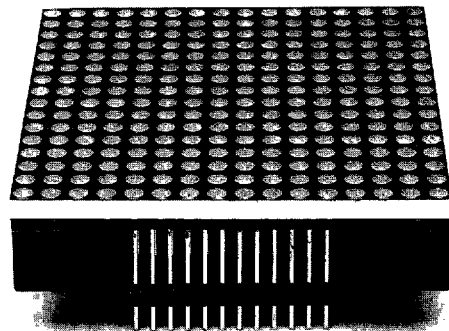
# LTP-251FFA SERIES

T-41-35

## 2.5" 16x16 MULTICOLOR DOT MATRIX DISPLAYS

### FEATURES

- 2.52 INCH (64.0 mm) DIGIT HEIGHT.
- LOW POWER REQUIREMENT.
- HIGH CONTRAST.
- HIGH BRIGHTNESS.
- WIDE VIEWING ANGLE.
- SOLID STATE RELIABILITY.
- CATEGORIZED FOR LUMINOUS INTENSITY.
- I.C. COMPATIBLE.
- EASY MOUNTING ON P.C. BOARD.
- AIR TYPE.



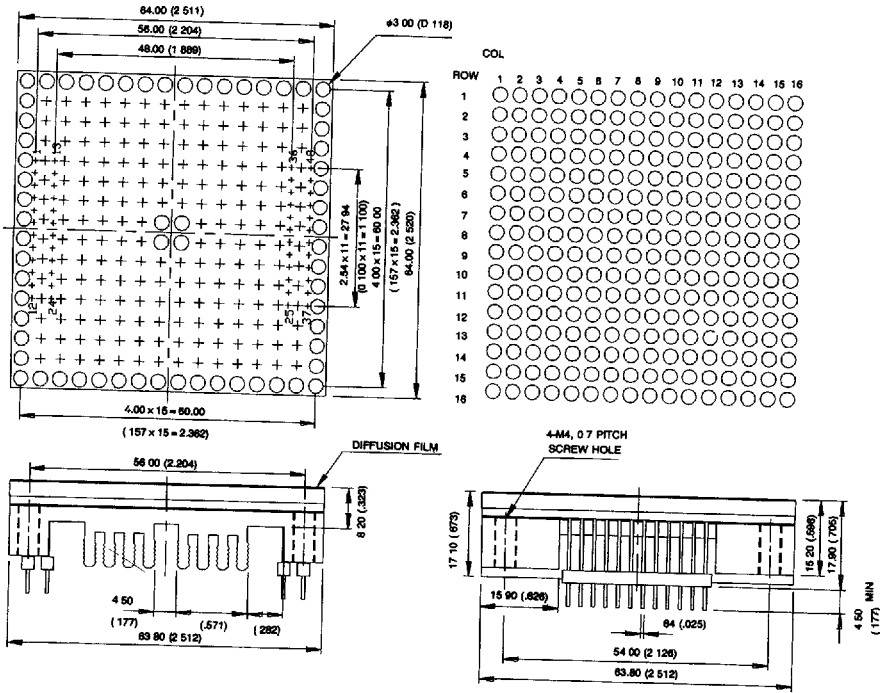
### DEVICE

PART NO.	APPEARANCE			SOURCE COLOR	DRIVE MODE
	FACE	SEGMENT	TAPE		Multiplex Anode Row
LTP-251FFA	Black	White	Diffuse	Green, Orange	

### ABSOLUTE MAXIMUM RATINGS AT T<sub>A</sub> = 25°C

PARAMETER	GREEN	ORANGE	UNIT
Average Power Dissipation Per Dot Peak Forward Current Per Dot (1/16 Duty cycle, 0.1mS Pulse Width)	22.5 100	22.5 100	mW mA
Derating Linear From 25°C Per Dot	0.8	0.8	mA/°C
Reverse Voltage Per Dot	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			

# PACKAGE DIMENSIONS

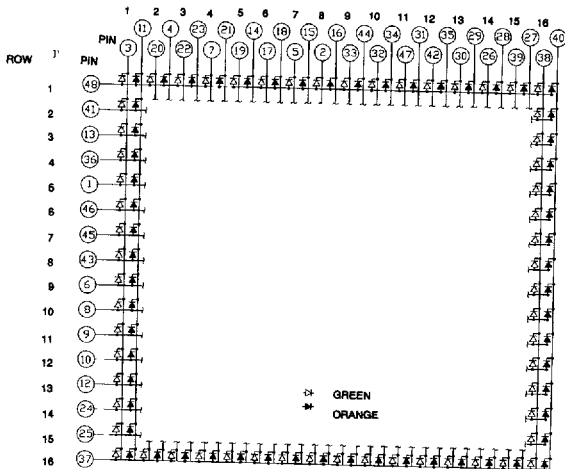


## NOTES:

All dimensions are in millimeters (inches.) tolerance are:

1. Lead length (from seating plane) minimum value +1.00mm (0.040"), -0.00mm (0.000").
2. ±0.25mm (0.010") unless otherwise noted.

## INTERNAL CIRCUIT DIAGRAM



DOT MATRIX DISPLAYS

# PIN CONNECTION

NO.	CONNECTION	NO.	CONNECTION
1	ROW. 5 ANODE	26	COL. 14 CATHODE GREEN
2	COL. 8 CATHODE GREEN	27	COL. 15 CATHODE ORANGE
3	COL. 1 CATHODE GREEN	28	COL. 14 CATHODE ORANGE
4	COL. 2 CATHODE ORANGE	29	COL. 13 CATHODE ORANGE
5	COL. 7 CATHODE GREEN	30	COL. 13 CATHODE GREEN
6	ROW. 9 ANODE	31	COL. 11 CATHODE ORANGE
7	COL. 4 CATHODE GREEN	32	COL. 10 CATHODE GREEN
8	ROW. 10 ANODE	33	COL. 9 CATHODE GREEN
9	ROW. 11 ANODE	34	COL. 10 CATHODE ORANGE
10	ROW. 12 ANODE	35	COL. 12 CATHODE ORANGE
11	COL. 1 CATHODE ORANGE	36	ROW. 4 ANODE
12	ROW. 13 ANODE	37	ROW. 16 ANODE
13	ROW. 3 ANODE	38	COL. 16 CATHODE GREEN
14	COL. 5 CATHODE ORANGE	39	COL. 15 CATHODE GREEN
15	COL. 7 CATHODE ORANGE	40	COL. 16 CATHODE ORANGE
16	COL. 8 CATHODE ORANGE	41	ROW. 2 ANODE
17	COL. 6 CATHODE GREEN	42	COL. 12 CATHODE GREEN
18	COL. 6 CATHODE ORANGE	43	ROW. 8 ANODE
19	COL. 5 CATHODE GREEN	44	COL. 9 CATHODE ORANGE
20	COL. 2 CATHODE GREEN	45	ROW. 7 ANODE
21	COL. 4 CATHODE ORANGE	46	ROW. 6 ANODE
22	COL. 3 CATHODE GREEN	47	COL. 11 CATHODE GREEN
23	COL. 3 CATHODE ORANGE	48	ROW. 1 ANODE
24	ROW. 14 ANODE	49	
25	ROW. 15 ANODE	50	

# ELECTRICAL OPTICAL CHARACTERISTICS AND CURVES AT $T_A = 25^\circ\text{C}$ LTP-251 FFA (GREEN)

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity	$I_v$	900	4000		$\mu\text{cd}$	$I_F = 80 \text{ mA}$ 1/16 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, Per Chip	$V_F$		2.1	2.8	V	$I_F = 20 \text{ mA}$
Reverse Current, Per Chip	$I_R$			100	$\mu\text{A}$	$V_R = 5\text{V}$
Luminous Intensity Matching Ratio	$I_v\text{-m}$			2:1		$I_F = 80 \text{ mA}$ 1/16 DUTY

## NOTES:

Luminous intensity is measured with a light sensor and filter combination that approximates the CIE (Commission international DE L'clairage) eye-response curve.

## TYPICAL ELECTRICAL/OPTICAL CHARACTERISTIC CURVES

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

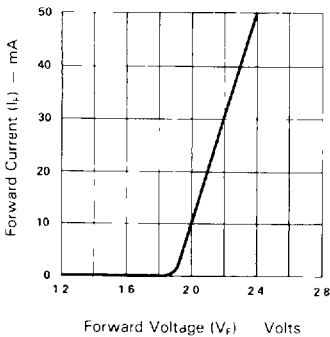


Fig 1 FORWARD CURRENT Vs FORWARD VOLTAGE

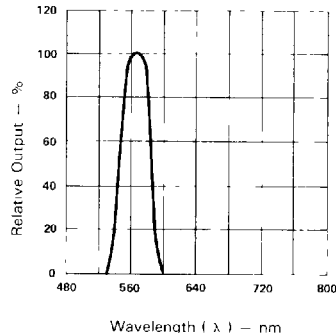


Fig 2 SPECTRAL RESPONSE

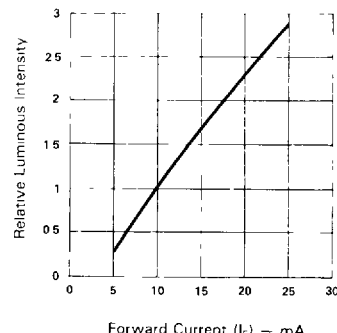


Fig 3 RELATIVE LUMINOUS INTENSITY Vs FORWARD CURRENT (PER SEGMENT)

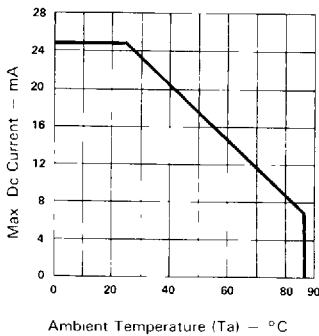


Fig 4 MAX ALLOWABLE DC CURRENT PER SEG Vs AMBIENT TEMPERATURE

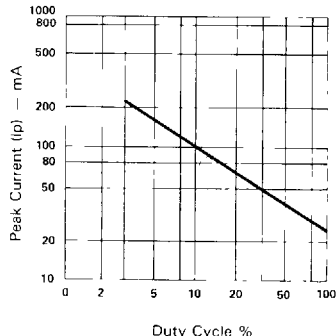


Fig 5 MAX PEAK CURRENT Vs DUTY CYCLE % (REFRESH RATE - F = 1 KHz)

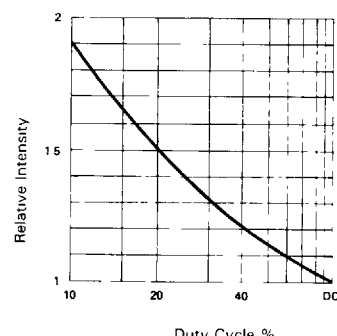


Fig 6 LUMINOUS INTENSITY Vs DUTY CYCLE % (AVERAGE  $I_F = 10\text{mA}$  PER SEG)

DOT MATRIX  
DISPLAYS

## ELECTRICAL OPTICAL CHARACTERISTICS AND CURVES AT TA = 25°C LTP-251 FFA (ORANGE)

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity	$I_v$	900	4000		$\mu\text{cd}$	$I_F = 80 \text{ mA } 1/16 \text{ DUTY}$
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, Per Chip	$V_F$		2.1	2.8	V	$I_F = 20 \text{ mA}$
Reverse Current, Per Chip	$I_r$			100	$\mu\text{A}$	$V_r = 5\text{V}$
Luminous Intensity Matching Ratio	$I_v\text{-m}$			2:1		$I_F = 80 \text{ mA } 1/16 \text{ DUTY}$

### NOTES:

Luminous intensity is measured with a light sensor and filter combination that approximates the CIE (Commission international DE L'clairage) eye-response curve.

## TYPICAL ELECTRICAL/OPTICAL CHARACTERISTIC CURVES

(25°C Ambient Temperature Unless Otherwise Noted)

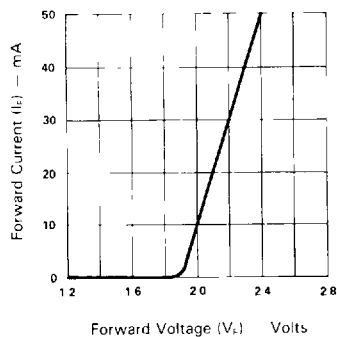


Fig 1 FORWARD CURRENT VS FORWARD VOLTAGE

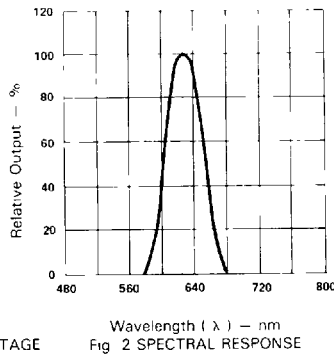


Fig 2 SPECTRAL RESPONSE

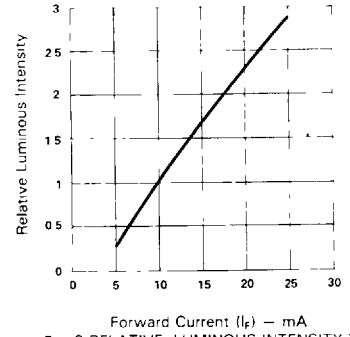


Fig 3 RELATIVE LUMINOUS INTENSITY VS FORWARD CURRENT (PER SEGMENT)

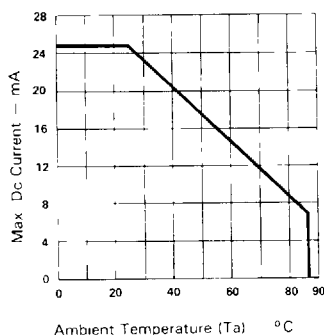


Fig 4 MAX ALLOWABLE DC CURRENT PER SEG VS AMBIENT TEMPERATURE

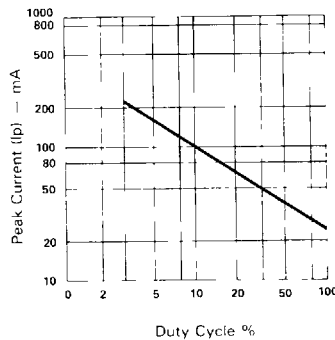


Fig 5 MAX PEAK CURRENT VS DUTY CYCLE % (REFRESH RATE - F = 1 KHz)

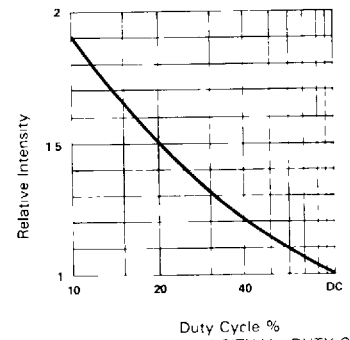


Fig 6 LUMINOUS INTENSITY VS DUTY CYCLE% (AVERAGE  $I_F = 10\text{mA PER SEG}$ )