LITEON

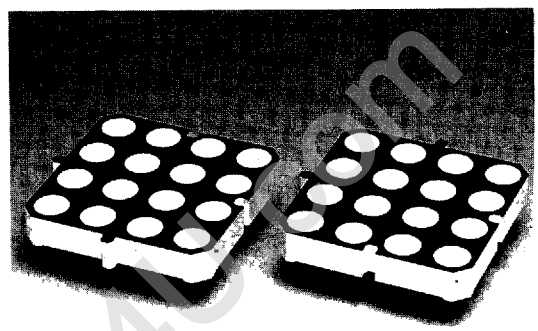
LTP-2344 2044 A3 SERIES

T-41-35

2.0" 4x4 SINGLE COLOR & MULTICOLOR DOT MATRIX DISPLAYS

FEATURES

- 2.0 INCH (50.80mm) MATRIX HEIGHT.
- LOW POWER REQUIREMENT.
- HIGH CONTRAST.
- HIGH BRIGHTNESS.
- SINGLE PLANE, WIDE VIEWING ANGLE.
- SOLID STATE RELIABILITY.
- 4x4 ARRAY WITH X-Y SELECT.
- COMPATIBLE WITH USASCII AND EBCDIC CODES.
- STACKABLE HORIZONTALLY.
- CHOICE OF TWO MATRIX ORIENTATION CATHODE ROW OR CATHODE COLUMN.
- EASY MOUNTING ON P.C. BOARD.
- CATEGORIZED FOR LUMINOUS INTENSITY.
- SINGLE COLOR DISPLAYS HAVE THE CHOICE OF THREE BRIGHT COLORS-GREEN/YELLOW/ ORANGE.
- MULTICOLOR DISPLAYS ARE APPLICABLE TO THREE BRIGHT COLORS· GREEN, ORANGE AND YELLOW (GREEN AND ORANGE MIXED).



DESCRIPTION

The LTP-2x44 series are 2.0 inch (50.80mm) matrix-height 4x4 dot matrix displays.

The LTP-2044A_3 are multicolor applicable displays. The multicolor displays have gray face and white dot color.

The LTP-2344 series are single color displays. The bright red green, yellow and orange displays have gray face and white dot color. The high efficiency red displays have red face and red dot color.

The green series devices are made from GaP on a utilize LED chips which transparent GaP substrate.

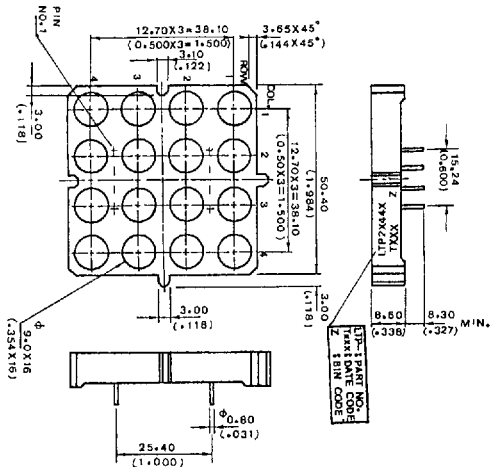
The yellow, orange and high efficiency red series devices utilize LED chips which are made from GaAsP on a transparent GaP substrate.

DEVICES

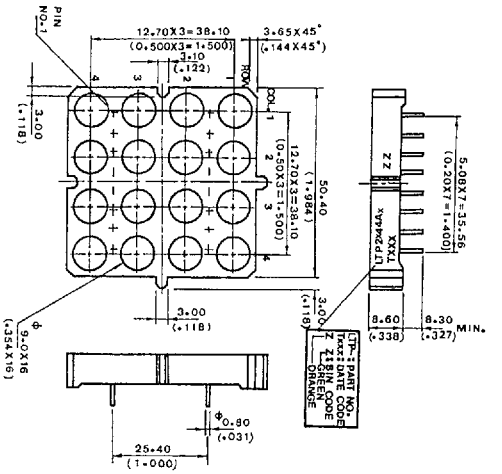
PART NO. LTP–				DESCRIPTION	PACKAGE DIMENSION	INTERNAL CIRCUIT DIAGRAM
GREEN	YELLOW	ORANGE	MULTI-COLOR			
2344G	2344Y	2344E	–	Anode Row, Cathode Column	A	A
–	–	–	2044A_3	Anode Row, Cathode Column	B	B

PACKAGE DIMENSIONS

A. LTP-2344



B. LTP-2044A$_3$



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

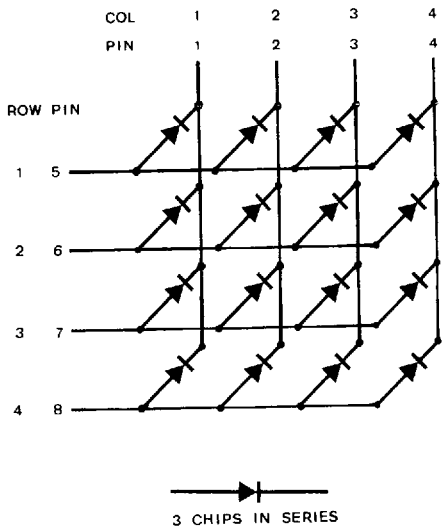
1. Lead length (from seating plane): minimum valum $\frac{+1.00}{-0.00}$ mm ($\frac{+0.040''}{-0.000''}$) 2. $\frac{\pm 0.25\text{mm}}{(0.010'')}$ unless otherwise noted.

PIN CONNECTION

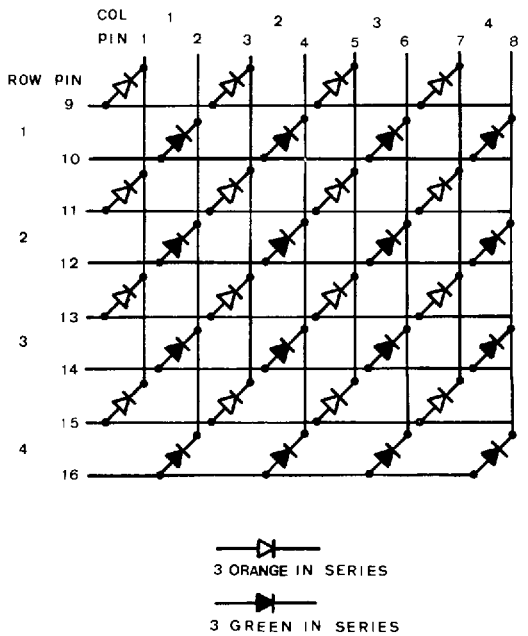
PIN NO.	CONNECTION	
	A. LTP-2344	B. LTP-2044A$_3$
1	Cathode Column 1	Cathode orange Column 1
2	Cathode Column 2	Cathode Green Column 1
3	Cathode Column 3	Cathode orange Column 2
4	Cathode Column 4	Cathode Green Column 2
5	Anode Row 1	Cathode orange Column 3
6	Anode Row 2	Cathode Green Column 3
7	Anode Row 3	Cathode orange Column 4
8	Anode Row 4	Cathode Green Column 4
9		Anode orange Row 1
10		Anode Green Row 1
11		Anode orange Row 2
12		Anode Green Row 2
13		Anode orange Row 3
14		Anode Green Row 3
15		Anode orange Row 4
16		Anode Green Row 4

INTERNAL CIRCUIT DIAGRAM

A. LTP-2344



B. LTP-2044A$_3$



ABSOLUTE MAXIMUM RATINGS AT T_A = 25°C

PARAMETER	GREEN	YELLOW	ORANGE	UNIT
Power Dissipation Per Dot	150	180	150	mW
Peak Forward Current Per Dot (1/10 Duty Cycle, 0.1ms Pulse Width)	75	80	75	mA
Continuous Forward Current Per Dot	18	20	18	mA
Derating Linear From 25°C Per Dot	0.26	0.24	0.26	mA/°C
Reverse Voltage Per Dot	15	15	15	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
LTP-2344G/2044A_3 (GREEN)

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity	Iv	5.0	11.0		mcd	IP = 48 mA 1/8 DUTY
Peak Emission Wavelength	λp		565		nm	IF = 20 mA
Spectral Line Half-Width	Δλ		30		nm	IF = 20 mA
Forward Voltage, any Dot	VF		6.3	8.4	V	IF = 20 mA
Reverse Current, any Dot	IR			100	μA	VR = 15V
Luminous Intensity Matching Ratio	Iv-m			2:1		IF = 20 mA

TYPICAL ELECTRICAL/OPTICAL CHARACTERISTIC CURVES

(25° C Ambient Temperature Unless Otherwise Noted)

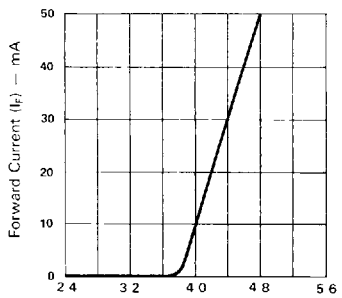


Fig 1 FORWARD CURRENT Vs FORWARD VOLTAGE

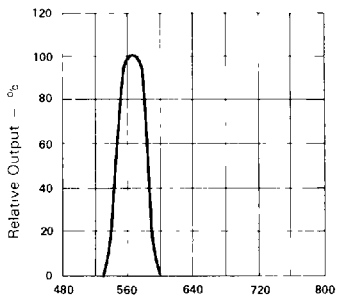


Fig 2 SPECTRAL RESPONSE

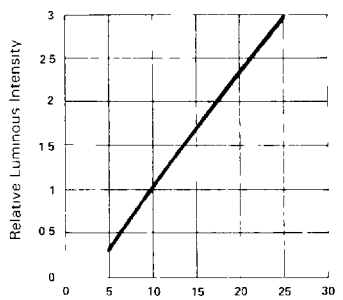


Fig 3 RELATIVE LUMINOUS INTENSITY Vs FORWARD CURRENT (PER SEGMENT)

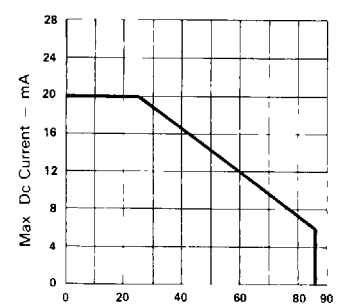


Fig 4 MAX. ALLOWABLE DC CURRENT PER SEG Vs AMBIENT TEMPERATURE

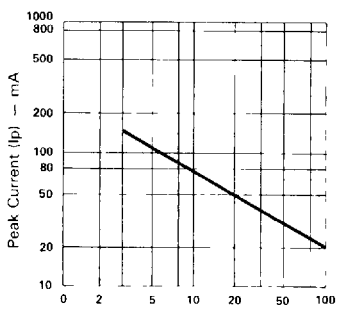


Fig 5 MAX. PEAK CURRENT Vs DUTY CYCLE % (REFRESH RATE F = 1 KHz)

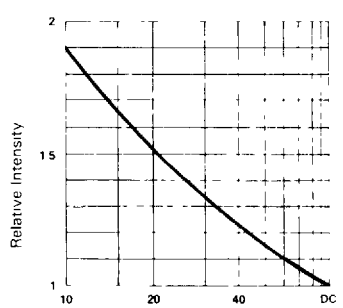


Fig 6 LUMINOUS INTENSITY Vs DUTY CYCLE % (AVERAGE I_F = 10mA PER SEG.)

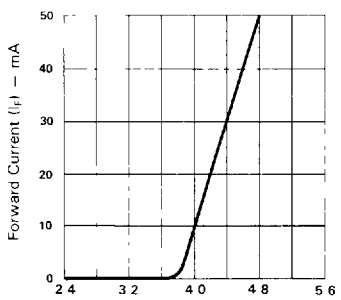
DOT MATRIX DISPLAYS

ELECTRICAL/OPTICAL CHARACTERISTICS AT T_A = 25°C
LTP-2344Y

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity	Iv	5.0	9.0		mcd	IP = 48mA 1/8 DUTY
Peak Emission Wavelength	λp		585		nm	IF = 20 mA
Spectral Line Half-Width	Δλ		35		nm	IF = 20 mA
Forward Voltage, any Dot	VF		6.3	8.4	V	IF = 20 mA
Reverse Current, any Dot	IR			100	μA	VR = 15V
Luminous Intensity Matching Ratio	Iv-m			2:1		IF = 20 mA

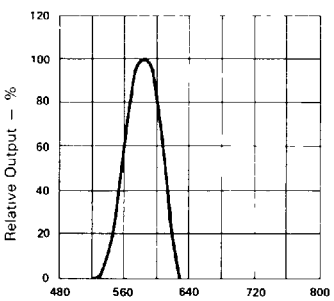
TYPICAL ELECTRICAL/OPTICAL CHARACTERISTIC CURVES

(25° C Ambient Temperature Unless Otherwise Noted)



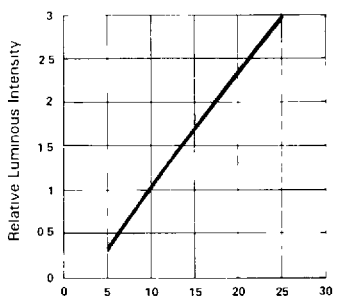
Forward Voltage (V_F) — Volts

Fig 1 FORWARD CURRENT Vs FORWARD VOLTAGE



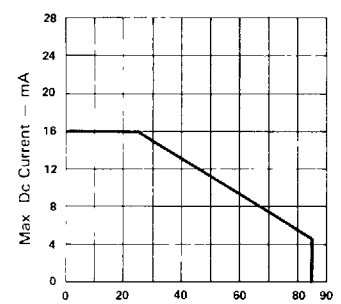
Wavelength (λ) — nm

Fig 2 SPECTRAL RESPONSE



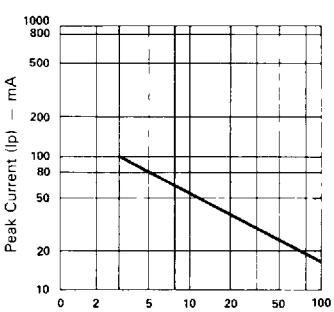
Forward Current (I_F) — mA

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



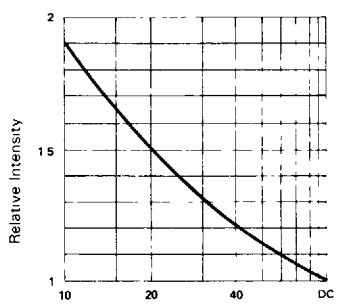
Ambient Temperature (Ta) °C

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 %

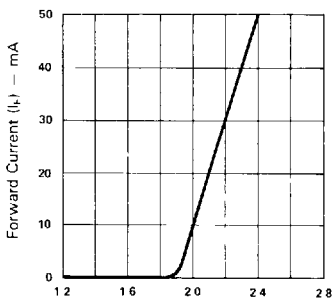
Fig 6 LUMINOUS INTENSITY Vs DUTY CYCLE % (AVERAGE I_F = 10mA PER SEG)

ELECTRICAL/OPTICAL CHARACTERISTICS AT T_A = 25°C
LTP-2344E/2044A_3 (ORANGE)

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity	Iv	5.0	11.0		mcd	IF = 48 mA 1/8 DUTY
Peak Emission Wavelength	λp		630		nm	IF = 20 mA
Spectral Line Half-Width	Δλ		35		nm	IF = 20 mA
Forward Voltage, any Dot	VF		6.3	8.4	V	IF = 20 mA
Reverse Current, any Dot	IR			100	μA	VR = 15V
Luminous Intensity Matching Ratio	Iv-m			2:1		IF = 20 mA

TYPICAL ELECTRICAL/OPTICAL CHARACTERISTIC CURVES

(25°C Ambient Temperature Unless Otherwise Noted)



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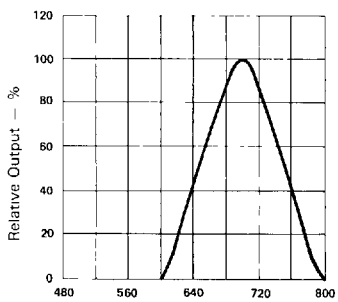

Fig 2 SPECTRAL RESPONSE

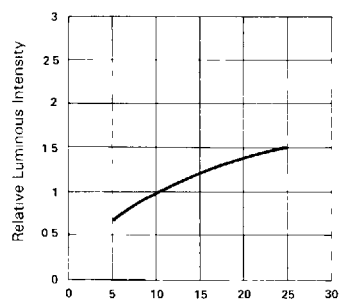

Fig 3 RELATIVE, LUMINOUS INTENSITY Vs FORWARD CURRENT (PER SEGMENT)

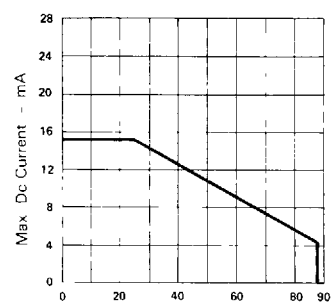

Fig 4 MAX. ALLOWABLE DC CURRENT PER SEG Vs AMBIENT TEMPERATURE

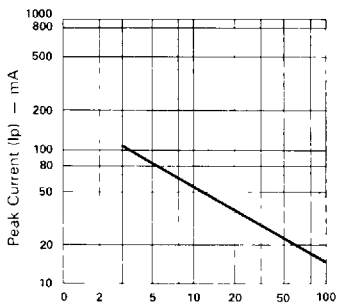

Fig 5 MAX. PEAK CURRENT Vs DUTY CYCLE % (REFRESH RATE F 1 KHz)