

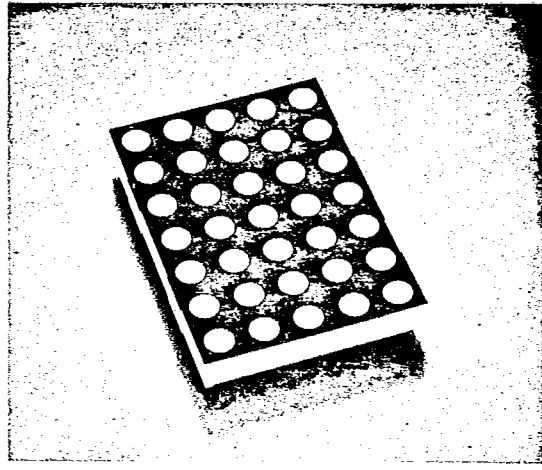


LTP- 4057AX/4157AX SERIES 4257AA/4357AA

4" 5 x 7 SINGLE COLOR & MULTICOLOR
DOT MATRIX DISPLAYS

FEATURES

- 4" INCH (101.6mm) MATRIX HEIGHT.
- LOW POWER REQUIREMENT.
- HIGH CONTRAST.
- HIGH BRIGHTNESS.
- SINGLE PLANE, WIDE VIEWING ANGLE.
- 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.
- CATEGORIZED FOR LUMINOUS INTENSITY.
- SINGLE COLOR DISPLAYS HAVE THE CHOICE OF FOUR BRIGHT COLORS-GREEN / YELLOW / ORANGE / HIGH EFFICIENCY RED.
- MULTICOLOR DISPLAYS ARE APPLICABLE TO-THREE BRIGHT COLORS: GREEN, ORANGE AND YELLOW (GREEN AND ORANGE MIXED).



DESCRIPTION

The LTP-4x57A series are 1.2 inch (30.48 mm) matrix height 5 x 7 dot matrix displays.

The LTP-4257AA/4357AA are multicolor applicable displays. The multicolor displays have gray face and white dot color.

The LTP-4057A/4157A series are single color displays. The 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 utilize LED chips which are made from GaP on a 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.

ALPHANUMERIC DISPLAYS & DOT MATRIX DISPLAYS

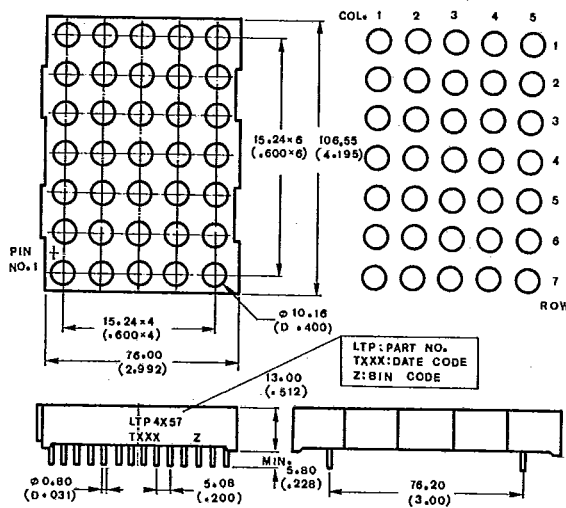
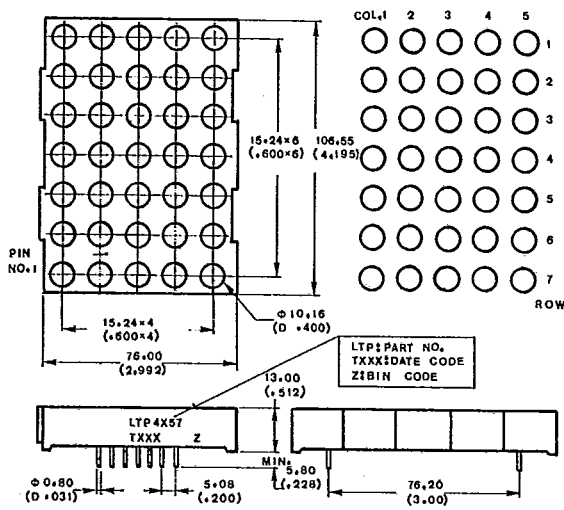
DEVICES

PART NO. LTP-					DESCRIPTION	PACKAGE DIMENSION	INTERNAL CIRCUIT DIAGRAM
GREEN	YELLOW	ORANGE	HI. EFF. RED	MULTI-COLOR			
4057AG	4057AY	4057AE	4057AHR	—	Anode Column, Cathode Row	A	A
4157AG	4157AY	4157AE	4157AHR	—	Cathode Column, Anode Row	A	B
—	—	—	—	4257AA	Anode Column, Cathode Row	B	C
—	—	—	—	4357AA	Cathode Column, Anode Row	B	D

PACKAGE DIMENSIONS

A. LTP-4057A/4157A

B. LTP-4257AA/4357AA



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

PIN CONNECTION

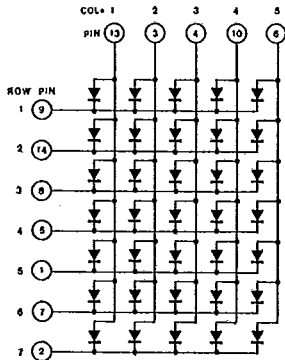
PIN NO.	CONNECTION	
	A. LTP-4057A	B. LTP-4157A
1	Cathode Row 5	Anode Row 5
2	Cathode Row 7	Anode Row 7
3	Anode Column 2	Cathode Column 2
4	Anode Column 3	Cathode Column 3
5	Cathode Row 4	Anode Row 4
6	Anode Column 5	Cathode Column 5
7	Cathode Row 6	Anode Row 6
8	Cathode Row 3	Anode Row 3
9	Cathode Row 1	Anode Row 1
10	Anode Column 4	Cathode Column 4
11	Anode Column 3	Cathode Column 3
12	Cathode Row 4	Anode Row 4
13	Anode Column 1	Cathode Column 1
14	Cathode Row 2	Anode Row 2

PIN NO.	CONNECTION	
	C. LTP-4257AA	D. LTP-4357AA
1	Anode Column 1 Green	Cathode Column 1 Green
2	Anode Column 1 Orange	Cathode Column 1 Orange
3	Cathode Row 7 Green	Anode Row 7 Green
4	Cathode Row 7 Orange	Anode Row 7 Orange
5	Anode Column 2 Green	Cathode Column 2 Green
6	Anode Column 2 Orange	Cathode Column 2 Orange
7	Anode Column 3 Green	Cathode Column 3 Green
8	Anode Column 3 Orange	Cathode Column 3 Orange
9	Cathode Row 5 Green	Anode Row 5 Green
10	Cathode Row 5 Orange	Anode Row 5 Orange
11	Cathode Row 4 Green	Anode Row 4 Green
12	Cathode Row 4 Orange	Anode Row 4 Orange
13	Cathode Row 6 Green	Anode Row 6 Green
14	Cathode Row 6 Orange	Anode Row 6 Orange
15	Anode Column 5 Green	Cathode Column 5 Green
16	Anode Column 5 Orange	Cathode Column 5 Orange
17	Cathode Row 1 Green	Anode Row 1 Green
18	Cathode Row 1 Orange	Anode Row 1 Orange
19	Anode Column 4 Green	Cathode Column 4 Green
20	Anode Column 4 Orange	Cathode Column 4 Orange
21	Anode Column 3 Green	Cathode Column 3 Green
22	Anode Column 3 Orange	Cathode Column 3 Orange
23	Cathode Row 3 Green	Anode Row 3 Green
24	Cathode Row 3 Orange	Anode Row 3 Orange
25	Cathode Row 4 Green	Anode Row 4 Green
26	Cathode Row 4 Orange	Anode Row 4 Orange
27	Cathode Row 2 Green	Anode Row 2 Green
28	Cathode Row 2 Orange	Anode Row 2 Orange

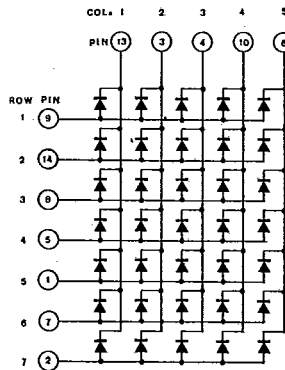
ALPHANUMERIC DISPLAYS &
DOT MATRIX DISPLAYS

INTERNAL CIRCUIT DIAGRAM

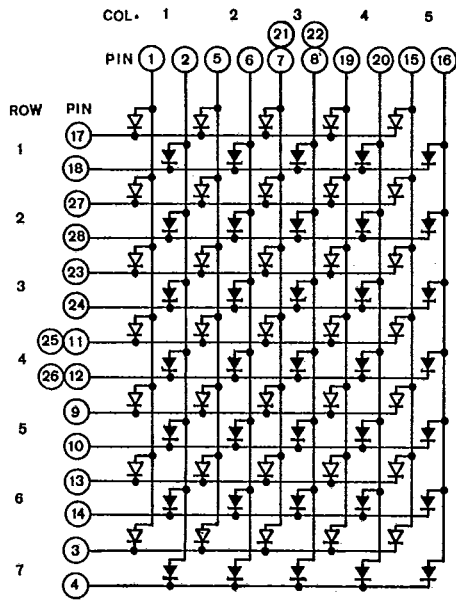
A. LTP-4057A



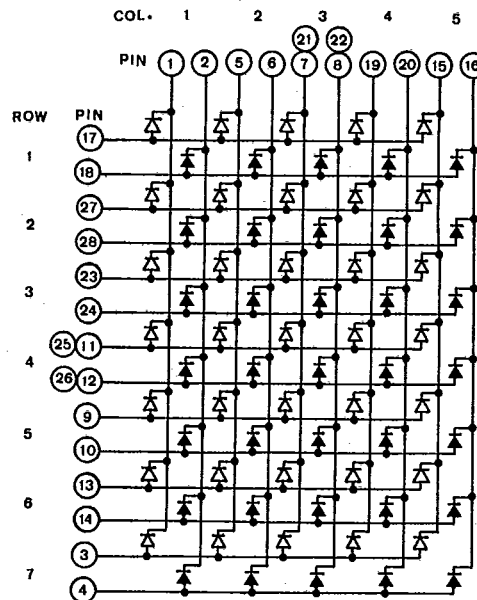
B. LTP-4157A



C. LTP-4257AA



D. LTP-4357AA



NOTE: The sign "→" stands for ORANGE color chips
 The sign "↔" stands for GREEN color chips

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

PARAMETER	GREEN	YELLOW	ORANGE	HI-EFF RED	UNIT
Power Dissipation Per Dot	120	100	120	120	mW
Peak Forward Current Per Dot (1/10 Duty Cycle, 0.1ms Pulse Width)	80	60	80	80	mA
Continuous Forward Current Per Dot	20	16	20	20	mA
Derating Linear From 25°C Per Dot	0.24	0.2	0.24	0.24	mA/°C
Reverse Voltage Per Dot	10	10	10	10	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 Sec. at 260°C					

ELECTRICAL/OPTICAL CHARACTERISTICS AT TA = 25°C
LTP-4057AG/4157AG & 4257AA/4357AA (GREEN)

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST COND.
Average Luminous Intensity	I_v	2000	8000		μcd	$I_p = 48 \text{ mA}$ 1/8 DUTY
Peak Emission Wavelength	λ_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		4.2	5.6	V	$I_F = 20 \text{ mA}$
Reverse Current, any Dot	I_R			100	μA	$V_R = 10\text{V}$
Luminous Intensity Matching Ratio	$I_v\text{-m}$			2:1		$I_F = 20 \text{ mA}$

Note: The BIN brightness classification see page 5-70, LTP-4057AG/4157AG categorize D and LTP-4257AA/4357AA categorize D-1.

TYPICAL ELECTRICAL/OPTICAL CHARACTERISTIC CURVES

(25° Ambient Temperature Unless Otherwise Noted)

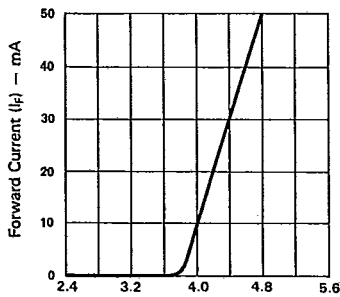


Fig. 1 FORWARD CURRENT Vs. FORWARD VOLTAGE.

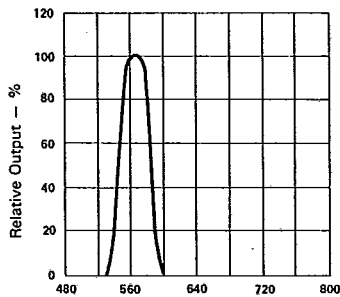


Fig. 2 SPECTRAL RESPONSE.

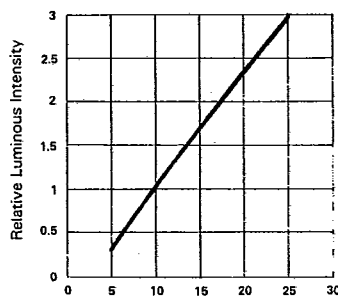


Fig. 3 RELATIVE LUMINOUS INTENSITY Vs. FORWARD CURRENT (PER SEGMENT).

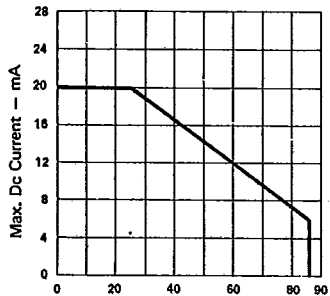


Fig. 4 MAX. ALLOWABLE DC CURRENT PER SEG. Vs AMBIENT TEMPERATURE.

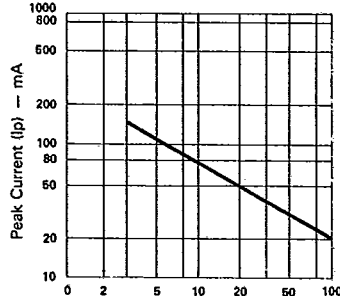


Fig. 5 MAX. PEAK CURRENT Vs. DUTY CYCLE.% (REFRESH RATE - F = 1 KHz)

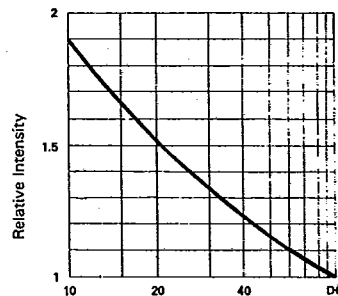


Fig. 6 LUMINOUS INTENSITY Vs. DUTY CYCLE% (AVERAGE $I_F = 10\text{mA}$ PER SEG.)

ALPHANUMERIC DISPLAYS & DOT MATRIX DISPLAYS

ELECTRICAL/OPTICAL CHARACTERISTICS AT TA = 25°C
LTP-4057AY/4157AY

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST COND
Average Luminous Intensity	I_v	1200	8000		μcd	$I_p = 48 \text{ mA}$ 1/8 DUTY
Peak Emission Wavelength	λ_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		4.2	5.6	V	$I_F = 20 \text{ mA}$
Reverse Current, any Dot	I_R			100	μA	$V_R = 10\text{V}$
Luminous Intensity Matching Ratio	$I_v\text{-m}$			2:1		$I_F = 20 \text{ mA}$

Note: The BIN brightness classification see page 5-70, category D

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

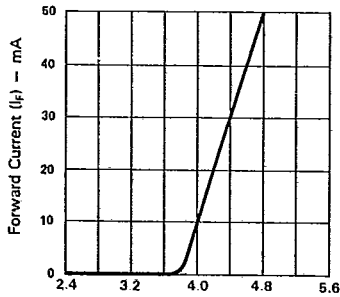


Fig. 1 FORWARD CURRENT Vs. FORWARD VOLTAGE.

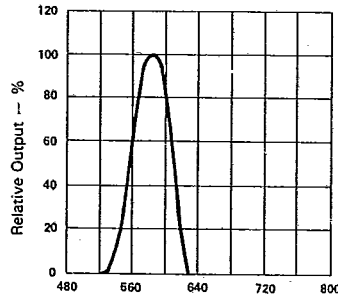


Fig. 2 SPECTRAL RESPONSE.

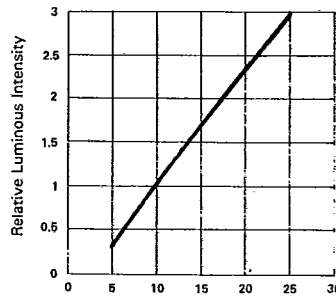


Fig. 3 RELATIVE LUMINOUS INTENSITY Vs. FORWARD CURRENT (PER SEGMENT).

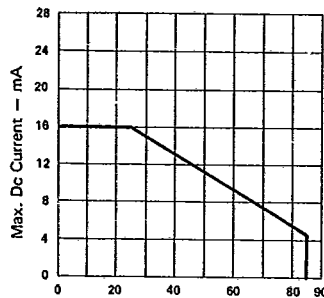


Fig. 4 MAX. ALLOWABLE DC CURRENT PER SEG. Vs AMBIENT TEMPERATURE.

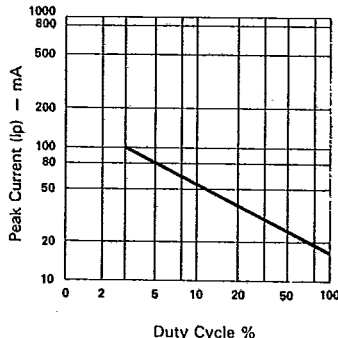


Fig. 5 MAX. PEAK CURRENT Vs. DUTY CYCLE.% (REFRESH RATE - F = 1 KHz)

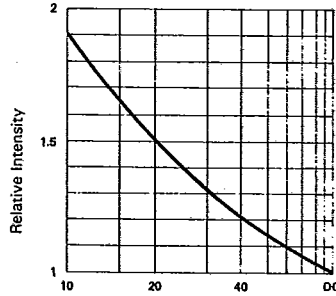


Fig. 6 LUMINOUS INTENSITY Vs. DUTY CYCLE.% (AVERAGE $I_f = 10\text{mA}$ PER SEG.)

ELECTRICAL/OPTICAL CHARACTERISTICS AT TA = 25°C
LTP-4057AE/4157AE & 4257AA/4357AA (ORANGE)

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST COND.
Average Luminous Intensity	I_v	2000	8000		μcd	$I_p = 48 \text{ mA}$ 1/8 DUTY
Peak Emission Wavelength	λ_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		4.2	5.6	V	$I_F = 20 \text{ mA}$
Reverse Current, any Dot	I_R			100	μA	$V_R = 10\text{V}$
Luminous Intensity Matching Ratio	$I_v\text{-m}$			2:1		$I_F = 20 \text{ mA}$

Note: The BIN brightness classification see page 5-70, LTP-4057AE/4157AE categorize D and LTP-4257AA/4357AA categorize D-1.

TYPICAL ELECTRICAL/OPTICAL CHARACTERISTIC CURVES

(25°C Ambient Temperature Unless Otherwise Noted)

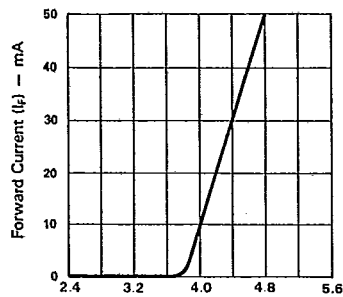


Fig. 1 FORWARD CURRENT Vs. FORWARD VOLTAGE.

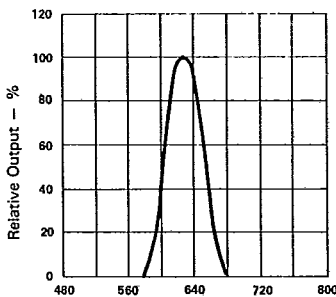


Fig. 2 SPECTRAL RESPONSE.

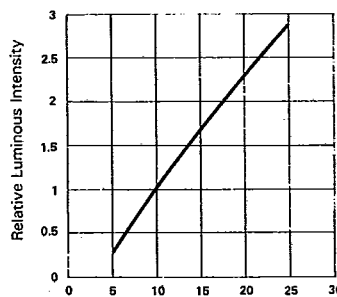


Fig. 3 RELATIVE LUMINOUS INTENSITY Vs. FORWARD CURRENT (PER SEGMENT).

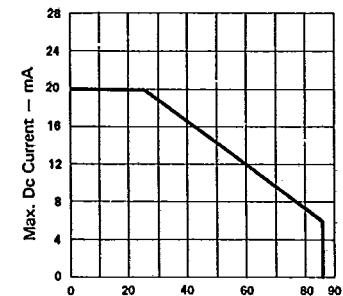


Fig. 4 MAX. ALLOWABLE DC CURRENT PER SEG. Vs AMBIENT TEMPERATURE.

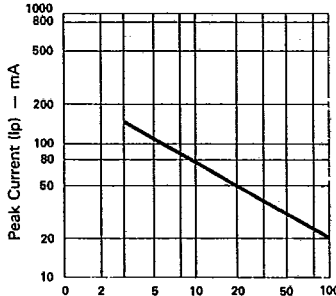


Fig. 5 MAX. PEAK CURRENT Vs. DUTY CYCLE.% (REFRESH RATE - F = 1 KHz)

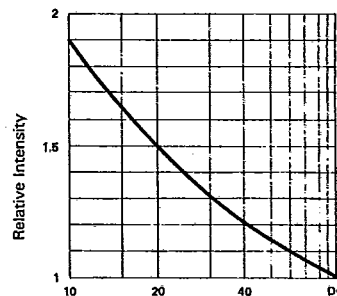


Fig. 6 LUMINOUS INTENSITY Vs. DUTY CYCLE.% (AVERAGE $I_F = 10\text{mA}$ PER SEG.)

ALPHANUMERIC DISPLAYS &
 DOT MATRIX DISPLAYS

ELECTRICAL/OPTICAL CHARACTERISTICS AT $T_A = 25^\circ\text{C}$
LTP-4057AHR/4157AHR

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST COND
Average Luminous Intensity	I_v	2000	8000		μcd	$I_p = 48 \text{ mA}$ 1/8 DUTY
Peak Emission Wavelength	λ_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		4.2	5.6	V	$I_F = 20 \text{ mA}$
Reverse Current, any Dot	I_R			100	μA	$V_R = 10\text{V}$
Luminous Intensity Matching Ratio	$I_v\text{-m}$			2:1		$I_F = 20 \text{ mA}$

Note: The BIN brightness classification see page 5-70, categorize D

TYPICAL ELECTRICAL/OPTICAL CHARACTERISTIC CURVES

(25°C Ambient Temperature Unless Otherwise Noted)

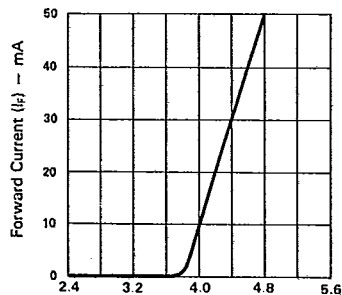


Fig. 1 FORWARD CURRENT Vs. FORWARD VOLTAGE.

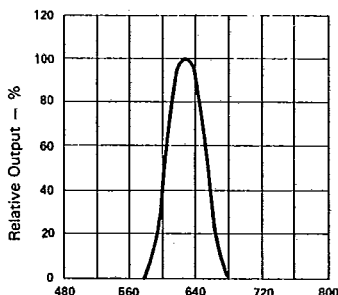


Fig. 2 SPECTRAL RESPONSE.

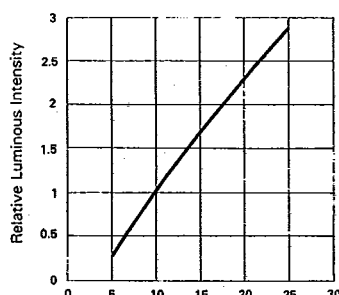


Fig. 3 RELATIVE LUMINOUS INTENSITY Vs. FORWARD CURRENT (PER SEGMENT).

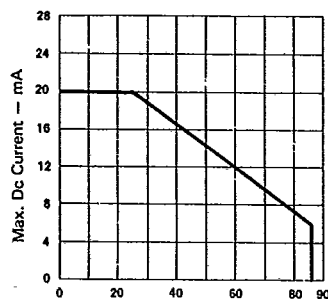


Fig. 4 MAX. ALLOWABLE DC CURRENT PER SEG. Vs AMBIENT TEMPERATURE.

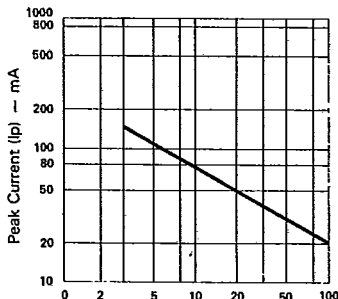


Fig. 5 MAX. PEAK CURRENT Vs. DUTY CYCLE.% (REFRESH RATE - F = 1 KHz)

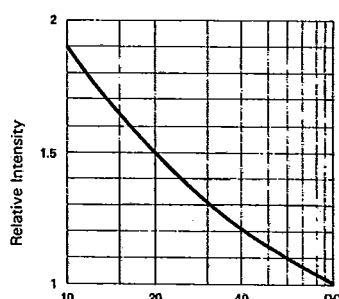


Fig. 6 LUMINOUS INTENSITY Vs. DUTY CYCLE% (AVERAGE $I_f = 10\text{mA}$ PER SEG.)

- NOTES: 1. Clean only in water, isopropanol, ethanol, freon TF (or equivalent).
 2. Luminous intensity is measured with a light sensor and filter combination that approximates the CIE (Commission Internationale De L'Eclairage) eye-response curve.
 3. The average luminous intensity is obtained by summing the luminous intensity of each segment and dividing by the total number of segments. The displays are categorized for luminous intensity with the intensity category designated by a letter located on the side of the package. The BIN brightness classification is as follows:

CATEGORY D:

BIN CODE	A	B	C	D	E	F	G	H	I	J	K
RANGE (μ cd)	80~ 156	104.8~ 204	136.8~ 264	168~ 348	232.8~ 444	296.8~ 576	384.8~ 756	504.8~ 984	656.8~ 1320	880.8~ 1644	1096.8~ 2136

BIN CODE	L	M	N	P	Q	R1	S	T1	U	V
RANGE (μ cd)	1424.8~ 2760	1840.8~ 3600	2400.8~ 4680	3120.8~ 6120	4080.8~ 8004	5336.8~ 10404	6936.8~ 13524	9016.8~ 16860	11720.8~ 22800	15200~ 29568

CATEGORY D-1

BIN CODE	D	E	F	G	H	I	J	K
RANGE (μ cd)	568.8~ 984	656.8~ 1140	760.8~ 1320	880.8~ 1524	1016.8~ 1764	1176.8~ 2040	1360.8~ 2352	1568.8~ 2712

BIN CODE	L	M	N	P	Q	R	S	T
RANGE (μ cd)	1808.8~ 3120	2080.8~ 3600	2400.8~ 4140	2760.8~ 4764	3176.8~ 5484	3656.8~ 6312	4208.8~ 7260	4840.8~ 8352

BIN CODE	U	V	W	X	Y	Z	Z1
RANGE (μ cd)	5568.8~ 9600	6400.8~ 11040	7360.8~ 12696	8464.8~ 14604	9736.8~ 16800	11200.8~ 19320	12880~ 25392

CATEGORY F:

BIN CODE	3	2	1	A	B	C	D	E	F	G	H
RANGE	183.3~ 384	267.5~ 456	317.5~ 540	375.8~ 624	434.2~ 756	525.8~ 1080	750.8~ 1500	1042.5~ 2100	1459.2~ 2940	2042.5~ 4116	2859.2~ 5340

ALPHANUMERIC DISPLAYS &
DOT MATRIX DISPLAYS