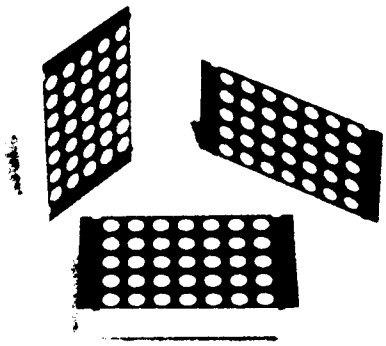
LITE-ON LED SPECIALIST

LTP-1057A 1157A SERIES

1.2" 5×7 DOT MATRIX DISPLAYS

FEATURES

- 1.2 INCH (30.48mm) DISPLAY HEIGHT.
- CHOICE OF FIVE BRIGHT COLORS-RED/GREEN/ ORANGE/HIGH EFFICIENCY RED.
- LOW POWER REQUIREMENT.
- HIGH CONTRAST.
- HIGH BRIGHTNESS.
- SINGLE PLANE, WIDE VIEWING ANGLE.
- SOLID STATE RELIABILITY.
- 5×7 ARRAY WITH X-Y SELECT.
- COMPATIBLE WITH USASCII AND EBCDIC CODES.
- STACKABLE HORIZONTALLY.
- SHOICE OF TWO MATRIX ORIENTATION CATH-ODE ROW, OR CATHODE COLUMN.
- EASY MOUNTING ON P.C. BOARD.
- CATEGORIZED FOR LUMINOUS INTENSITY.



DESCRIPTION

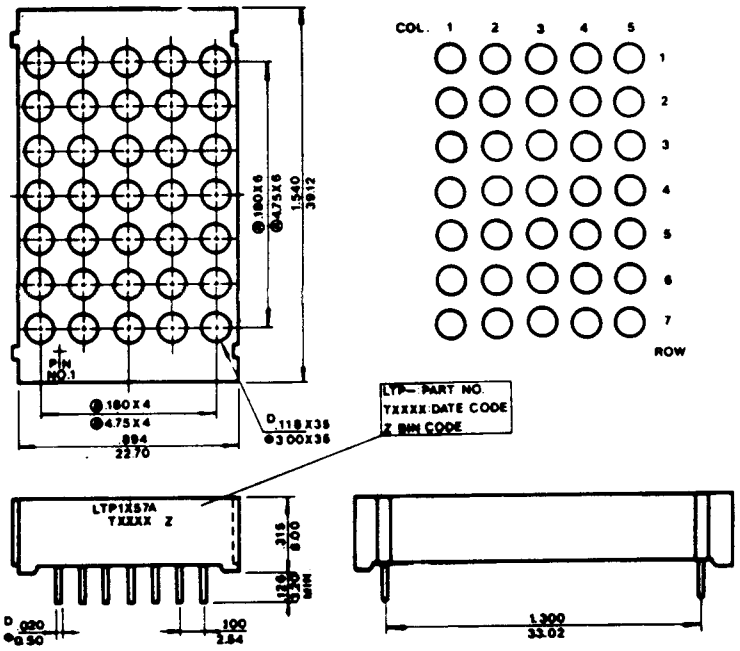
The LTP—1057A/1157A series are 1.2 inch (30.48mm) height 5×7 dot matrix displays.

The red series devices utilize LED chips which are made from GaAsP on a GaAs substrate. 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. 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.

DEVICES

PART NO. LTP—					DESCRIPTION	INTERNAL CIRCUIT DIAGRAM
RED	GREEN	YELLOW	ORANGE	HI.-EFF. RED		
1057AR	1057AG	1057AY	1057AE	1057AHR	Anode Column, Cathode Row	A
1157AR	1157AG	1157AY	1157AE	1157AHR	Cathode Column, Anode Row	B

PACKAGE DIMENSIONS



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

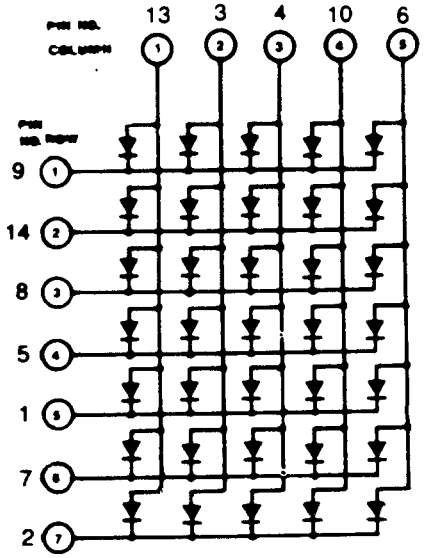
PIN CONNECTION

PIN NO.	CONNECTION	
	A.LTP—1057A	B.LTP—1157A
1	Cathode Row 5	Anode Row 5
2	Cathode Row 7	Anode Row 7
3	Anode Coolumn 2	Cathode Column 2
4	Anode Column 3*1	Cathode Column 3*1
5	Cathode Row 4*2	Anode Row 4*2
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*1	Cathode Column 3*1
12	Cathode Row 4*2	Anode Row 4*2
13	Anode Column 1	Cathode Column 1
14	Cathode Row 2	Anode Row 2

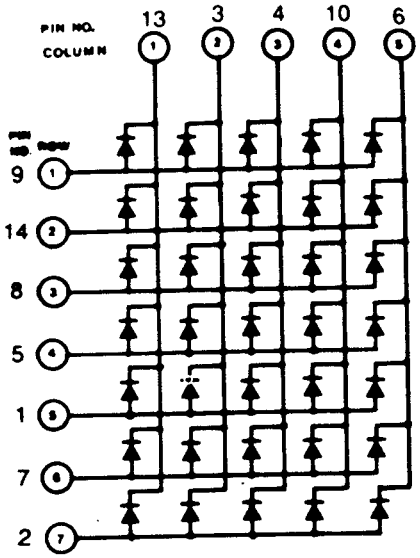
NOTES: 1. Pin 4 & 11 are internally connected.
2. Pin 5 & 12 are internally connected.

INTERNAL CIRCUIT DIAGRAM

A. LTP—1057A



B. LTP—1157A



ABSOLUTE MAXIMUM RATINGS AT $T_A = 25°C$

PARAMETER	RED	GREEN	YELLOW	ORANGE	HI.-EFF. RED	UNIT
Power Dissipation Per Dot	55	75	60	75	75	mW
Peak Forward Current Per Dot (1/10 Duty Cycle, 0.1ms Pulse Width)	160	100	80	100	100	mA
Continuous Forward Current Per Dot	25	25	20	25	25	mA
Derating Linear From 25°C Per Dot	0.3	0.3	0.24	0.3	0.3	mA/°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 1/16inch Below Seating Plane for 3 Seconds at 260°C						

LTP—1057AE/1157AE

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity *1, 2	Iv	800	2000		μcd	IF = 10mA
Peak Emission Wavelength	λP		630		nm	IF = 20mA
Spectral Line Half-Width	△λ		40		nm	IF = 20mA
Forward Voltage, any Dot	VF		2.1	2.8	V	IF = 20mA
Reverse Current, any Dot	IR			100	μA	VR = 5V
Luminous Intensity Matching Ratio	Iv—m			2:1		IF = 20mA

LTP—1057AHR/1157AHR

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity *1, 2	Iv	800	2000		μcd	IF = 10mA
Peak Emission Wavelength	λP		635		nm	IF = 20mA
Spectral Line Half-Width	△λ		40		nm	IF = 20mA
Forward Voltage, any Dot	VF		2.1	2.8	V	IF = 20mA
Reverse Current, any Dot	IR			100	μA	VR = 5V
Luminous Intensity Matching Ratio	Iv—m			2:1		IF = 20mA

NOTES: 1. 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:

BIN CODE	D	E	F	G	H	I	J	K	L	M	N	P	Q	R
RANGE μcd @ 10mA	210 – 290	291 – 370	371 – 480	481 – 630	631 – 820	821 – 1100	1101 – 1370	1371 – 1780	1781 – 2300	2301 – 3000	3001 – 3900	3901 – 5100	5101 – 6600	OVER 6601

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. Clean only in water, isopropanol, ethanol, freon TF or TE (or equivalent).

ELECTRICAL/OPTICAL CHARACTERISTICS AT $T_A = 25°C$

LTP—1057AR/1157AR

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity *1, 2	I_V	200	500		μcd	$I_F = 10mA$
Peak Emission Wavelength	λP		655		nm	$I_F = 20mA$
Spectral Line Half-Width	$\triangle\lambda$		24		nm	$I_F = 20mA$
Forward Voltage, any Dot	V_F		1.7	2.0	V	$I_F = 20mA$
Reverse Current, any Dot	I_R			100	μA	$V_R = 5V$
Luminous Intensity Matching Ratio	I_V—m			2:1		$I_F = 20mA$

LTP—1057AG/1157AG

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity *1, 2	I_V	800	2000		μcd	$I_F = 10mA$
Peak Emission Wavelength	λP		565		nm	$I_F = 20mA$
Spectral Line Half-Width	$\triangle\lambda$		30		nm	$I_F = 20mA$
Forward Voltage, any Dot	V_F		2.1	2.8	V	$I_F = 20mA$
Reverse Current, any Dot	I_R			100	μA	$V_R = 5V$
Luminous Intensity Matching Ratio	I_V—m			2:1		$I_F = 20mA$

LTP—1057AY/1157AY

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity *1, 2	I_V	200	1700		μcd	$I_F = 10mA$
Peak Emission Wavelength	λP		585		nm	$I_F = 20mA$
Spectral Line Half-Width	$\triangle\lambda$		35		nm	$I_F = 20mA$
Forward Voltage, any Dot	V_F		2.1	2.8	V	$I_F = 20mA$
Reverse Current, any Dot	I_R			100	μA	$V_R = 5V$
Luminous Intensity Matching Ratio	I_V—m			2:1		$I_F = 20mA$

(25 C Ambient Temperature Unless Otherwise Noted)

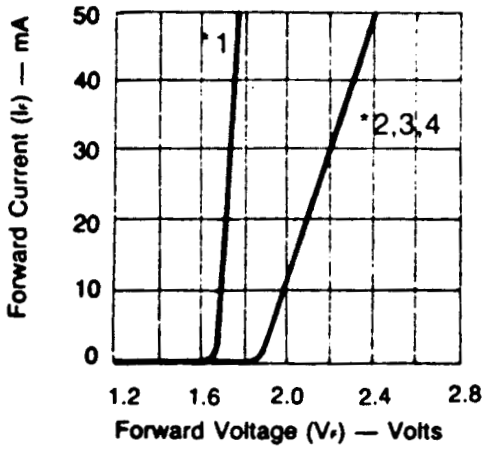


Fig.1 FORWARD CURRENT Vs. FORWARD VOLTAGE.

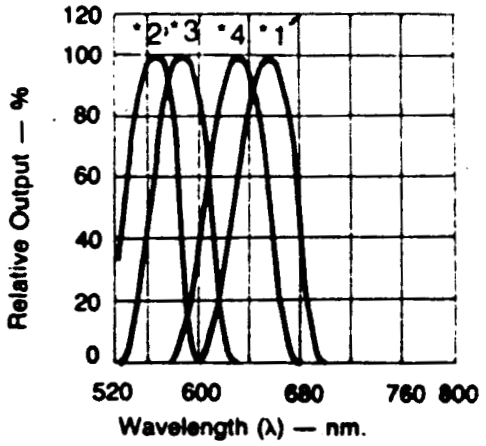


FIG:2 SPECTRAL RESPONSE.

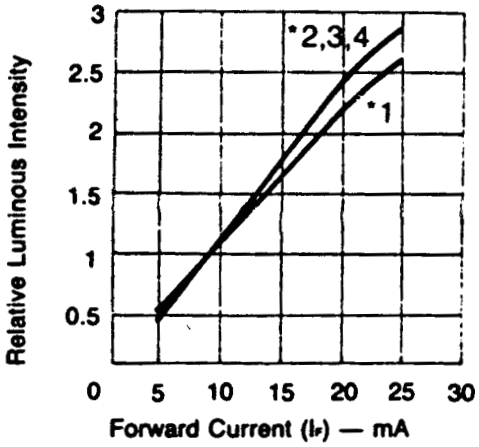


Fig.3 RELATIVE LUMINOUS INTENSITY Vs. FORWARD CURRENT (PER SEGMENT).

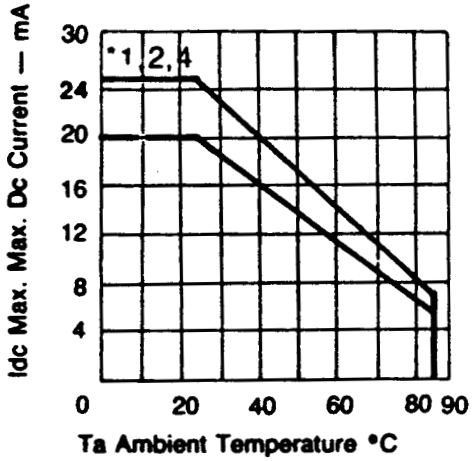


Fig.4 MAX. ALLOWABLE DC CURRENT PER SEG. Vs. AMBIENT TEMPERATURE.

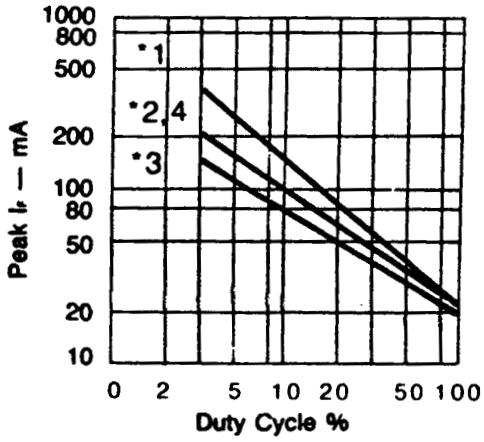


Fig.5 MAX. PEAK CURRENT Vs. DUTY CYCLE. (f-REFRESH RATE IKHz)

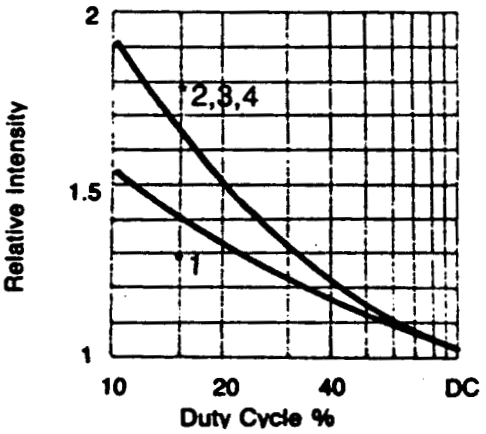


Fig.6 LUMINOUS INTENSITY Vs. DUTY CYCLE (IF PER SEG. 10 mA AVERAGE).

NOTES: 1: LTP—1057AR/1157AR 2: LTP- 1057AG/1157AG 3: LTP—1057AY/1157AY
4: LTP—1057AE/1157AE/1057AHR/1157AHR