

5 ϕ 5 $\times$ 7 Single Color & Multicolor Dot Matrix LED Displays

LTP-2057A/2157A

2657AA/2757AA

Series

Features

- 2.0 inch (50.80mm) matrix height.
- Low power requirement.
- Single plane, wide viewing angle.
- Solid state reliability.
- 5 $\times$ 7 array with X-Y select
- Compatible with usascII and ebcidc codes.
- Stackable horizontally.
- Choices of two matrix orientation
- Cathode row or cathode column.
- Easy mounting on P.C. board.
- Categorized for luminous intensity.
- Single color displays have the choices of four bright colors-green/yellow/red orange/AlGaAs red.
- Multicolor displays are applicable to three bright colors : green, red orange and yellow (green and red orange mixed)

Description

The LTP-2X57A series are 2.0 inch (50.80mm)matrix height 5 $\times$ 7 dot matrix displays.

The LTP-2657AA/2757AA are multicolor applicable displays. The multicolor displays have gray face and white dots.

The LTP-2057/2157A series are single color displays.

The green, yellow, red orange and AlGaAs red displays have gray face and white dots.

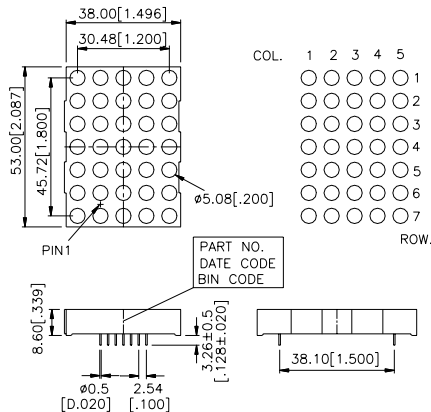
The green series devices utilize LED chips which are made from GaP on a transparent GaP substrate.

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

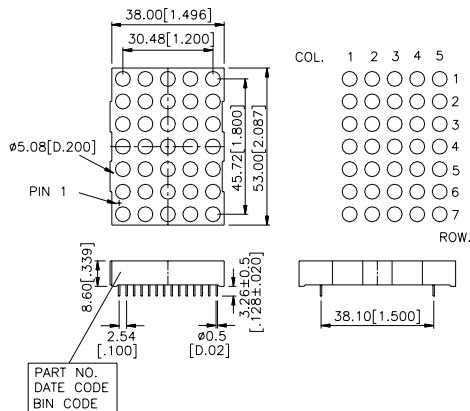
The AlGaAs red series devices utilize LED chips which are made from AlGaAs on a non-transparent GaAs substrate.

Package Dimensions

A. LTP-2057A/2157A



B. LTP-2657AA/2757AA



Notes : All dimensions are in millimeters(inches).
Tolerance : $\pm 0.25\text{mm}$ (0.01") unless otherwise noted.

Devices

Part No. LTP-					Description	Package Dimension	Internal Circuit Diagram
Green	Yellow	Red Orange	AlGaAs Red	Multi Color			
2057AG	2057AY	2057AE	2057AC	—	Anode Column, Cathode Row	A	A
2157AG	2157AY	2157AE	2157AC	—	Cathode Column, Anode Row	A	B
—	—	—	—	2657AA	Anode Column, Cathode Row	B	C
—	—	—	—	2757AA	Cathode Column, Anode Row	B	D

Pin Connection

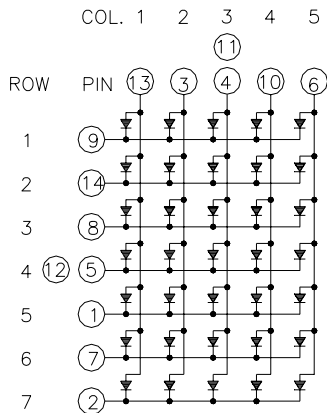
Pin No.	Connection	
	A. LTP-2057A	B. LTP-2157A
1	Cathode Row 5	Anode Row 5
2	Cathode Row 7	Anode Row 7
3	Anode Column 2	Cathode Column 2
4	Anode Column 3*1	Cathode Column 3*1
5	Cathode Row 4*2	Anode Row 4*2
6	Anode Column 5	Cathode Column 5
7	Cathode Row 6	Anode Row 6
8	Cathode Row 3	Anode Row 3
9	Cathode 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.

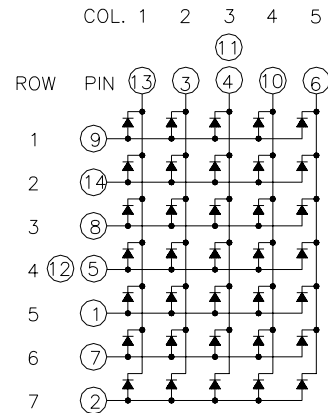
Pin No.	Connection	
	C. LTP-2657AA	D. LTP-2757AA
1	Anode Column 1 Green	Cathode Column 1 Green
2	Anode Column 1 Red Orange	Cathode Column 1 Red Orange
3	Cathode Row 7 Green	Anode Row 7 Green
4	Cathode Row 7 Red Orange	Anode Row 7 Red Orange
5	Anode Column 2 Green	Cathode Column 2 Green
6	Anode Column 2 Red Orange	Cathode Column 2 Red Orange
7	Anode Column 3 Green	Cathode Column 3 Green
8	Anode Column 3 Red Orange	Cathode Column 3 Red Orange
9	Cathode Row 5 Green	Anode Row 5 Green
10	Cathode Row 5 Red Orange	Anode Row 5 Red Orange
11	Cathode Row 4 Green	Anode Row 4 Green
12	Cathode Row 4 Red Orange	Anode Row 4 Red Orange
13	Cathode Row 6 Green	Anode Row 6 Green
14	Cathode Row 6 Red Orange	Anode Row 6 Red Orange
15	Anode Column 5 Green	Cathode Column 5 Green
16	Anode Column 5 Red Orange	Cathode Column 5 Red Orange
17	Cathode Row 1 Green	Anode Row 1 Green
18	Cathode Row 1 Red Orange	Anode Row 1 Red Orange
19	Anode Column 4 Green	Cathode Column 4 Green
20	Anode Column 4 Red Orange	Cathode Column 4 Red Orange
21	Anode Column 3 Green	Cathode Column 3 Green
22	Anode Column 3 Red Orange	Cathode Column 3 Red Orange
23	Cathode Row 3 Green	Anode Row 3 Green
24	Cathode Row 3 Red Orange	Anode Row 3 Red Orange
25	Cathode Row 4 Green	Anode Row 4 Green
26	Cathode Row 4 Red Orange	Anode Row 4 Red Orange
27	Cathode Row 2 Green	Anode Row 2 Green
28	Cathode Row 2 Red Orange	Anode Row 2 Red Orange

Internal Circuit Diagrams

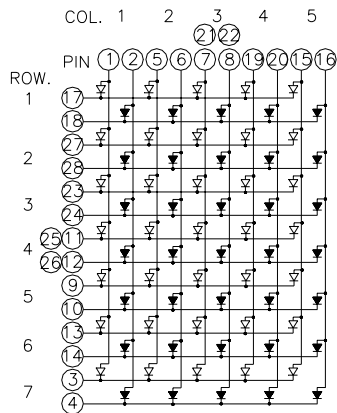
A. LTP-2057A



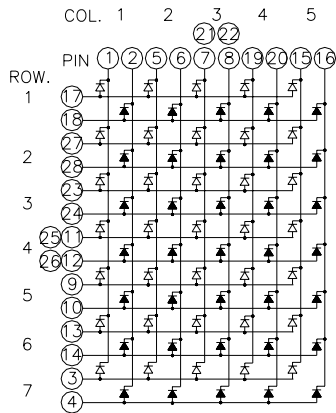
B. LTP-2157A



C. LTP-2657AA



D. LTP-2757AA



Notes : The Sign "⬆️" stands for Green color chips.
The Sign "➡️" stands for Red Orange color chips.

Absolute Maximum Ratings at Ta=25°C

Parameter	Green	Yellow	Red Orange	AlGaAs Red	Unit
Average Power Dissipation Per Dot	36	32	36	36	mW
Peak Forward Current Per Dot	100	80	100	125	mA
Average Forward Current Per Dot Derating Linear from 25°C Per Dot	13 0.17	10 0.12	13 0.17	15 0.20	mA mA/°C
Reverse Voltage Per Dot	5	5	5	5	V
Operating Temperature Range	-35°C to +85°C				
Storage Temperature Range	-35°C to +85°C				
Solder Temperature 1/16 Inch Below Seating Plane for 3 Seconds at 260°C					

Electrical/Optical Characteristics at Ta=25°C

LTP-2057AG/2157AG & LTP-2657AA/2757AA(Green)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Average Luminous Intensity	I _v	1780	4000		μ cd	I _p =80mA 1/16 Duty
Peak Emission Wavelength	λ _P		565		nm	I _f =20mA
Spectral Line Half-Width	Δλ		30		nm	I _f =20mA
Dominant Wavelength	λ _d		569		nm	I _f =20mA
Forward Voltage, any Dot	V _F		2.1	2.6	V	I _f =20mA
			3.0	3.7	V	I _f =80mA
Reverse Current, any Dot	I _R			100	μ A	V _R =5V
Luminous Intensity Matching Ratio	I _{v-m}			2:1		I _f =10mA

LTP-2057AY/2157AY

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Average Luminous Intensity	I _v	1780	4800		μ cd	I _p =80mA 1/16 Duty
Peak Emission Wavelength	λ _P		585		nm	I _f =20mA
Spectral Line Half-Width	Δλ		35		nm	I _f =20mA
Dominant Wavelength	λ _d		588		nm	I _f =20mA
Forward Voltage, any Dot	V _F		2.1	2.6	V	I _f =20mA
			3.0	3.7	V	I _f =80mA
Reverse Current, any Dot	I _R			100	μ A	V _R =5V
Luminous Intensity Matching Ratio	I _{v-m}			2:1		I _f =10mA

LTP-2057AE/2157AE & LTP-2657AA/2757AA(Red Orange)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Average Luminous Intensity	I _v	1780	4800		μ cd	I _p =80mA 1/16 Duty
Peak Emission Wavelength	λ _P		630		nm	I _f =20mA
Spectral Line Half-Width	Δλ		40		nm	I _f =20mA
Dominant Wavelength	λ _d		621		nm	I _f =20mA
Forward Voltage, any Dot	V _F		2.0	2.6	V	I _f =20mA
			2.6	3.4	V	I _f =80mA
Reverse Current, any Dot	I _R			100	μ A	V _R =5V
Luminous Intensity Matching Ratio	I _{v-m}			2:1		I _f =10mA

LTP-2057AC/2157AC

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Average Luminous Intensity	I _v	6300	12000		μ cd	I _p =80mA 1/16 Duty
Peak Emission Wavelength	λ _P		660		nm	I _f =20mA
Spectral Line Half-Width	Δλ		35		nm	I _f =20mA
Dominant Wavelength	λ _d		638		nm	I _f =20mA
Forward Voltage, any Dot	V _F		1.8	2.4	V	I _f =20mA
			2.0	2.7	V	I _f =80mA
Reverse Current, any Dot	I _R			100	μ A	V _R =5V
Luminous Intensity Matching Ratio	I _{v-m}			2:1		I _f =10mA

Note: Luminous intensity is measured with a light sensor and filter combination that approximates the CIE (Commission Internationale De L'Eclairage) eye-response curve.

Typical Electrical/Optical Characteristic Curves (25°C Ambient Temperature Unless Otherwise Noted)

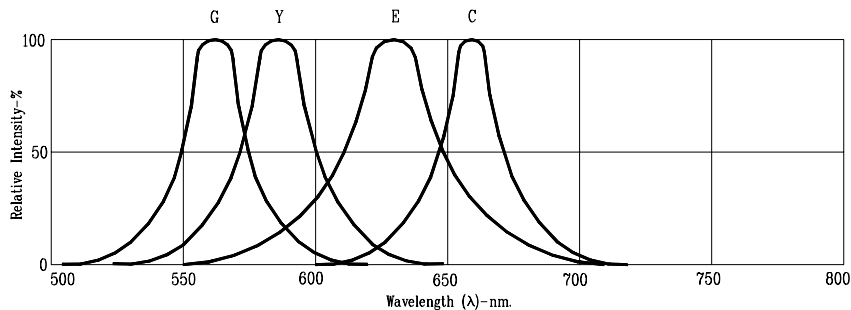


Fig1. RELATIVE INTENSITY VS. WAVELENGTH

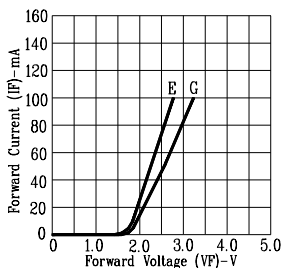


Fig2. FORWARD CURRENT VS. FORWARD VOLTAGE

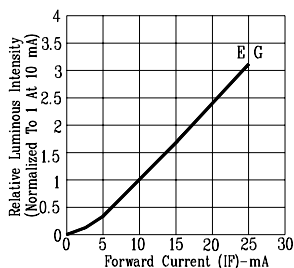


Fig3. RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT

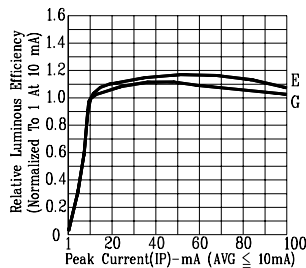


Fig4. RELATIVE LUMINOUS EFFICIENCY (LUMINOUS INTENSITY PER UNIT CURRENT) VS. PEAK CURRENT

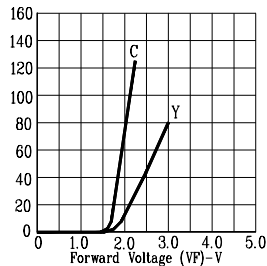


Fig5. FORWARD CURRENT VS. FORWARD VOLTAGE

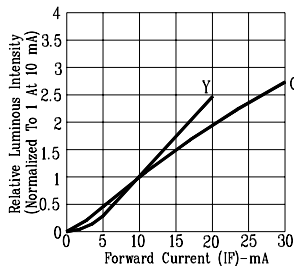


Fig6. RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT

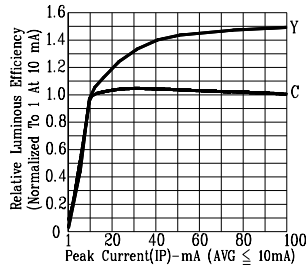


Fig7. RELATIVE LUMINOUS EFFICIENCY (LUMINOUS INTENSITY PER UNIT CURRENT) VS. PEAK CURRENT

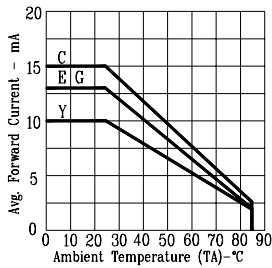


Fig8. MAX. AVERAGE FORWARD CURRENT VS. AMBIENT TEMPERATURE.

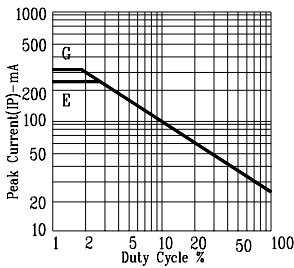


Fig9. MAX. PEAK CURRENT VS. DUTY CYCLE % (REFRESH RATE 1KHz)

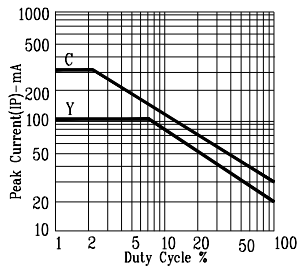


Fig10. MAX. PEAK CURRENT VS. DUTY CYCLE % (REFRESH RATE 1KHz)

NOTE: G=GREEN E=RED ORANGE C=AlGaAs RED Y=YELLOW (REFRESH RATE 1KHz)