

LITEON

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

LTP-4057A/4157A Series
4257AA/4357AA

Features

- 4.0 inch (101.6mm) matrix height.
- Low power requirement.
- Single plane, wide viewing angle.
- 5 $\times$ 7 array with X-Y select.
- Compatible with usascII and ebcII codes.
- Stackable vertically and 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-4X57A series are 2.0 inch (50.80mm)matrix height 5 $\times$ 7 dot matrix displays.

The LTP-4257AA/4357AA are multicolor applicable displays.

The multicolor displays have gray face and white dots.

The LTP-4057A/4157A series are single color displays.

The green, red orange displays have gray face and white dot color.

The AlGaAs red devices have red face and white dots.

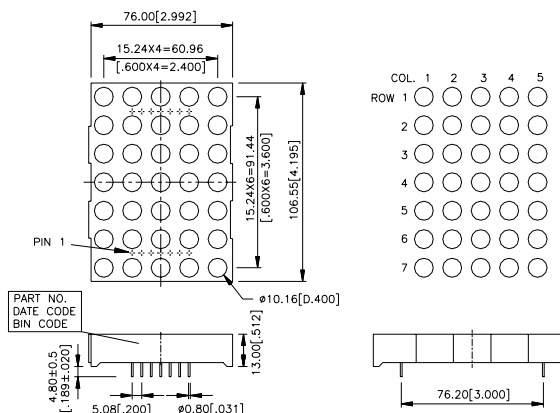
The green series devices utilize LED chipse which are made from GaP on a transparent GaP substrate.

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

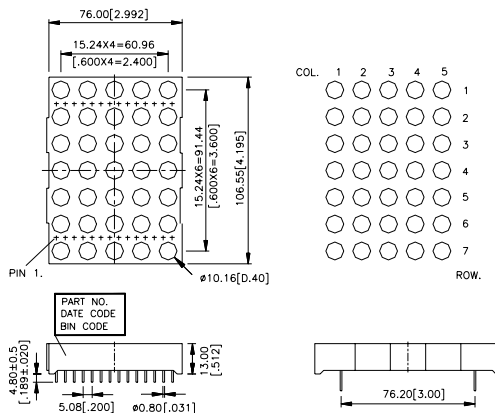
The AlGaAs Red series devices utilize LED chips which are made from AlGaAs on a non-transparent GaAs substrate.

Package Dimensions

A. LTP-4057A/4157A



B. LTP-4257AA/4357AA



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

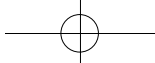
Devices

Part No. LTP-					Description	Package Dimension	Internal Circuit Diagram
Green	Yellow	Red Orange	AlGaAs Red	Multi Color			
4057AG	4057AY	4057AE	4057AC	—	Anode Column, Cathode Row	A	A
4157AG	4157AY	4157AE	4157AC	—	Cathode Column, Anode Row	A	B
—	—	—	—	4257AA	Anode Column, Cathode Row	B	C
—	—	—	—	4357AA	Cathode Column, Cathode Row	B	D

Pin Connection

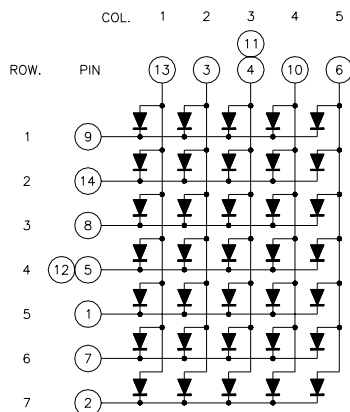
Pin No.	Connection	
	A. LTP-4057A	B. LTP-4157A
1	Cathode Row 5	Anode Row 5
2	Cathode Row 7	Anode Row 7
3	Anode Column 2	Cathode Column 2
4	Anode Column 3	Cathode Column 3
5	Cathode Row 4	Anode Row 4
6	Anode Column 5	Cathode Column 5
7	Cathode Row 6	Anode Row 6
8	Cathode Row 3	Anode Row 3
9	Cathode Row 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 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

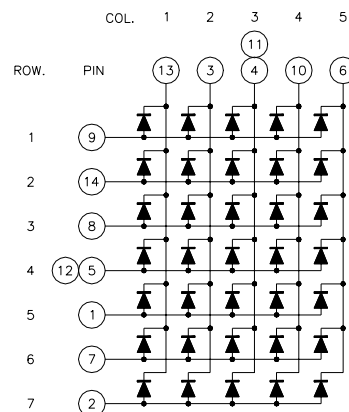


Internal Circuit Diagrams

A. LTP-4057A

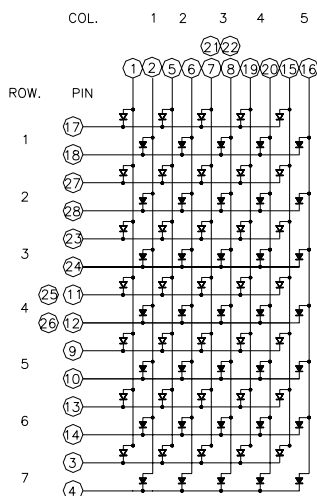


B. LTP-4157A

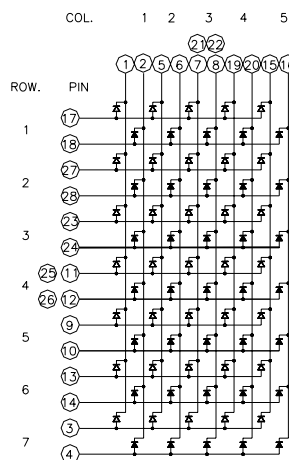


Note : The Sign " ▶ " Stands For 2 Chips in Series.

C. LTP-4257AA



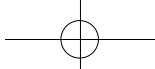
D. LTP-4357AA



Notes : The Sign " ▶ " stands for Green color 2 chips sceries.
The Sign " ▶ " stands for Red Orange color 2 chips sceries.

Absolute Maximum Ratings at Ta=25°C

Parameter	Green	Yellow	Red Orange	AlGaAs Red	Unit
Average Power Dissipation Per Dot	64	60	64	64	mW
Peak Forward Current Per Dot (1/10 Duty Cycle, 0.1ms Pulse Width)	90	80	90	110	mA
Average Forward Current Per Dot Derating Linear from 25°C Per Dot	11 0.15	8 0.11	11 0.15	14 0.19	mA mA/°C
Reverse Voltage Per Dot	10	10	10	10	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-4057AG/4157AG & LTP-4257AA/4357AA (Green)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Average Luminous Intensity	I _v	3000	9600		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		4.2	5.2	V	I _F =20mA
			6	7.4	V	I _F =80mA
Reverse Current, any Dot	I _R			100	μ A	V _R =10V
Luminous Intensity Matching Ratio	I _{v-m}			2:1		I _P =80mA 1/16 Duty

LTP-4057AY/4157AY

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Average Luminous Intensity	I _v	3000	9600		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		4.2	5.2	V	I _F =20mA
			6.0	7.4	V	I _F =80mA
Reverse Current, any Dot	I _R			100	μ A	V _R =10V
Luminous Intensity Matching Ratio	I _{v-m}			2:1		I _P =80mA 1/16 Duty

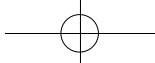
LTP-4057AE/4157AE & LTP-4257AA/4357AA (Red Orange)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Average Luminous Intensity	I _v	3000	9600		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		4	5.2	V	I _F =20mA
			5.2	6.8	V	I _F =80mA
Reverse Current, any Dot	I _R			100	μ A	V _R =10V
Luminous Intensity Matching Ratio	I _{v-m}			2:1		I _P =80mA 1/16 Duty

LTP-4057AC/4157AC

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Average Luminous Intensity	I _v	11600	20000		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		3.6	4.8	V	I _F =20mA
			4	6.2	V	I _F =80mA
Reverse Current, any Dot	I _R			100	μ A	V _R =10V
Luminous Intensity Matching Ratio	I _{v-m}			2:1		I _P =80mA 1/16 Duty

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)

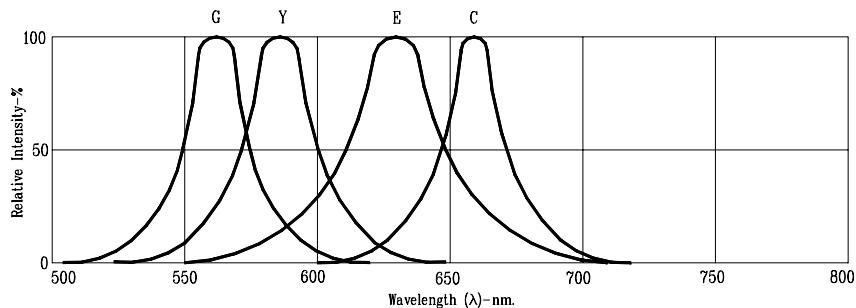


Fig1. RELATIVE INTENSITY VS. WAVELENGTH

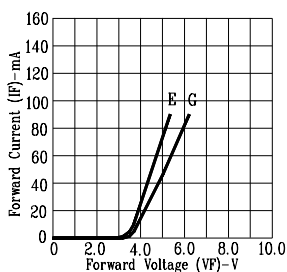


Fig2. FORWARD CURRENT VS. FORWARD VOLTAGE

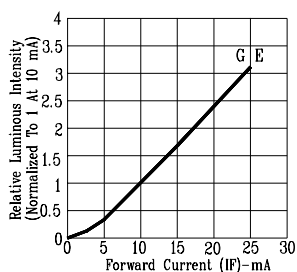


Fig3. RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT

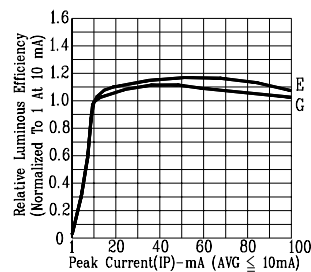


Fig4. RELATIVE LUMINOUS EFFICIENCY (LUMINOUS INTENSITY PER UNIT CURRENT) VS. PEAK CURRENT

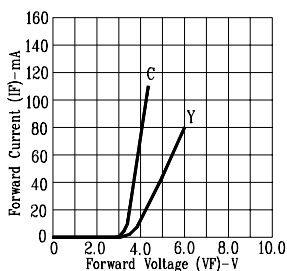


Fig5. FORWARD CURRENT VS. FORWARD VOLTAGE

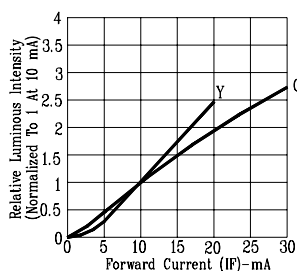


Fig6. RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT

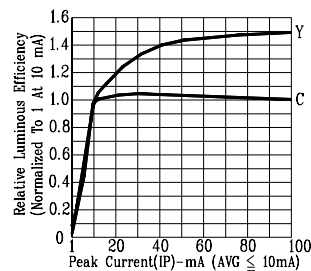


Fig7. RELATIVE LUMINOUS EFFICIENCY (LUMINOUS INTENSITY PER UNIT CURRENT) VS. PEAK CURRENT

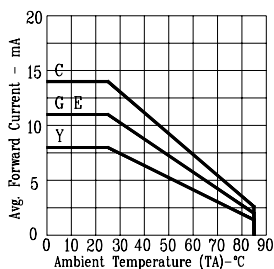


Fig8. MAX. AVERAGE FORWARD CURRENT VS. AMBIENT TEMPERATURE.

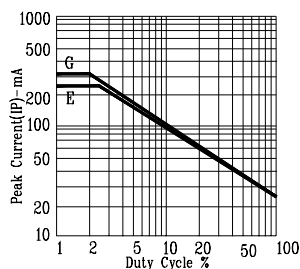


Fig9. MAX. PEAK CURRENT VS. DUTY CYCLE % (REFRESH RATE 1KHz)

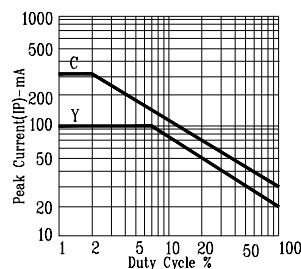


Fig10. MAX. PEAK CURRENT VS. DUTY CYCLE % (REFRESH RATE 1KHz)

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

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