

Features

- 1.85 inch (47.0mm) matrix height.
- Low power requirement.
- Single plane, wide viewing angle.
- 8 $\times$ 8 array with X-Y select
- Compatible with usascII and ebcidc 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-18X88 series are 1.85 inch (47.0mm)matrix height 8 $\times$ 8 dot matrix displays.

The LTP-18188A are multicolor applicable displays.

The multicolor displays have black face and white dots.

The LTP-18088 series are single color displays. The green, yellow, red orange and AlGaAs red displays have black face and white dots.

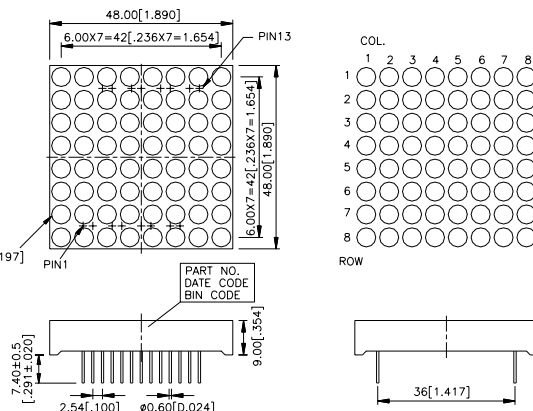
The green series devices utilize LED chips which are made from GaP on a transparent GaP substrate.

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

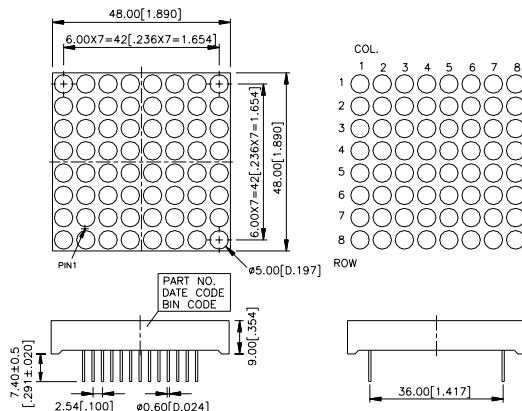
The AlGaAs red series devices utilize LED chips which are made from AlGaAs on a non-transparent GaAs substrate.

Package Dimensions

A. LTP-18088



B. LTP-18188A



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

Devices

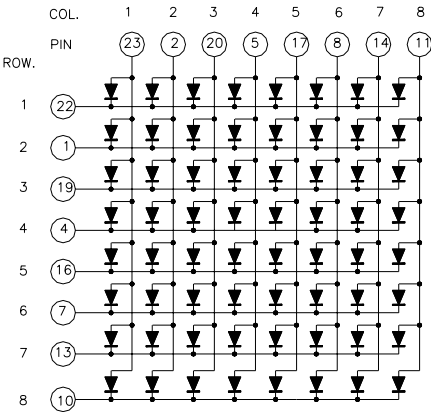
Part No. LTP-					Description	Package Dimension	Internal Circuit Diagram
Green	Yellow	Red Orange	AlGaAs Red	Multi Color			
18088G	18088Y	18088E	18088C	—	Anode Column, Cathode Row	A	A
—	—	—	—	18188A	Anode Column, Cathode Row	B	B

Pin Connection

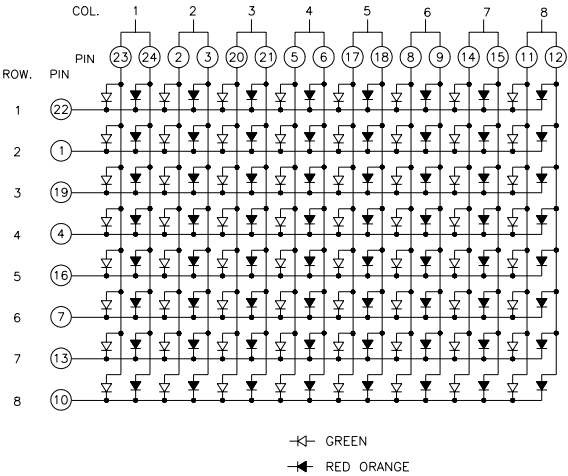
Pin No.	Connection	
	A. LTP-18088	B. LTP-18188A
1	Cathode Row 2	Cathode Row 2
2	Anode Column 2	Anode Column 2 Green
3	No Pin	Anode Column 2 Red Orange
4	Cathode Row 4	Cathode Row 4
5	Anode Column 4	Anode Column 4 Green
6	No Pin	Anode Column 4 Red Orange
7	Cathode Row 6	Cathode Row 6
8	Anode Column 6	Anode Column 6 Green
9	No Pin	Anode Column 6 Red Orange
10	Cathode Row 8	Cathode Row 8
11	Anode Column 8	Anode Column 8 Green
12	No Pin	Anode Column 8 Red Orange
13	Cathode Row 7	Cathode Row 7
14	Anode Column 7	Anode Column 7 Green
15	No Pin	Anode Column 7 Red Orange
16	Cathode Row 5	Cathode Row 5
17	Anode Column 5	Anode Column 5 Green
18	No Pin	Anode Column 5 Red Orange
19	Cathode Row 3	Cathode Row 3
20	Anode Column 3	Anode Column 3 Green
21	No Pin	Anode Column 3 Red Orange
22	Cathode Row 1	Cathode Row 1
23	Anode Column 1	Anode Column 1 Green
24	No Pin	Anode Column 1 Red Orange

Internal Circuit Diagrams

A. LTP-18088



B. LTP-18188A



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-18088G/18188A(Green)

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		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-18088Y

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	3.4	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-18088E/18188A(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

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 (Commision Internationale De L'Eclairage) eye-response curve.

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

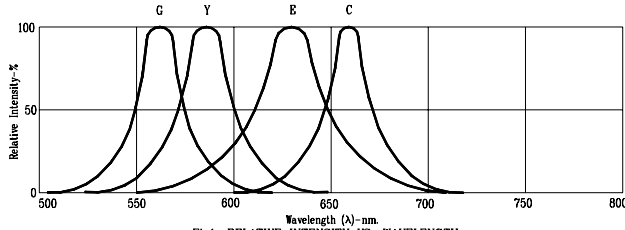


Fig1. RELATIVE INTENSITY VS. WAVELENGTH

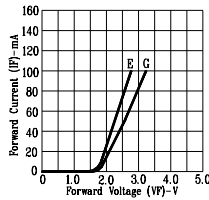


Fig2. FORWARD CURRENT VS. FORWARD VOLTAGE

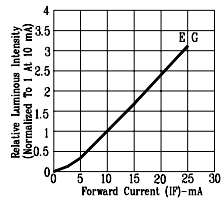


Fig3. RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT

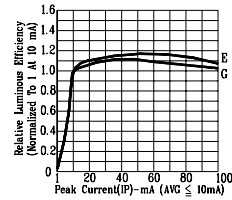


Fig4. RELATIVE LUMINOUS EFFICIENCY (LUMINOUS INTENSITY PER UNIT CURRENT) VS. PEAK CURRENT

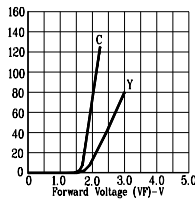


Fig5. FORWARD CURRENT VS. FORWARD VOLTAGE

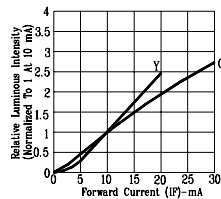


Fig6. RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT

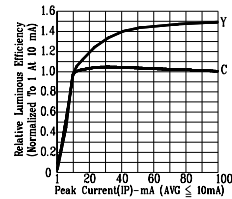


Fig7. RELATIVE LUMINOUS EFFICIENCY (LUMINOUS INTENSITY PER UNIT CURRENT) VS. PEAK CURRENT

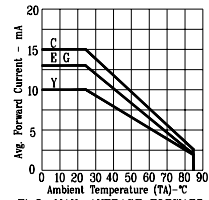


Fig8. MAX. AVERAGE FORWARD CURRENT VS. AMBIENT TEMPERATURE

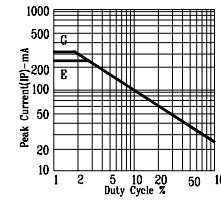


Fig9. MAX. PEAK CURRENT VS. DUTY CYCLE % (REFRESH RATE 1KHz)

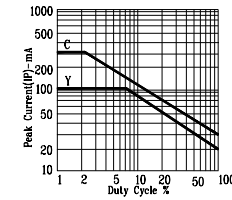


Fig10. MAX. PEAK CURRENT VS. DUTY CYCLE % (REFRESH RATE 1KHz)

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