

**FEATURES**

- \* 2.34 inch ( 59.34 mm) MATRIX HEIGHT.
- \* LOW POWER REQUIREMENT.
- \* SINGLE PLANE, WIDE VIEWING ANGLE
- \* SOLID STATE RELIABILITY.
- \* 4x8 ARRAY WITH X-Y SELECT.
- \* COMPATIBLE WITH USASCLL AND EBCDIC CODES.
- \* STACKABLE HORIZONTALLY.
- \* CATEGORIZED FOR LUMINOUS INTENSITY.

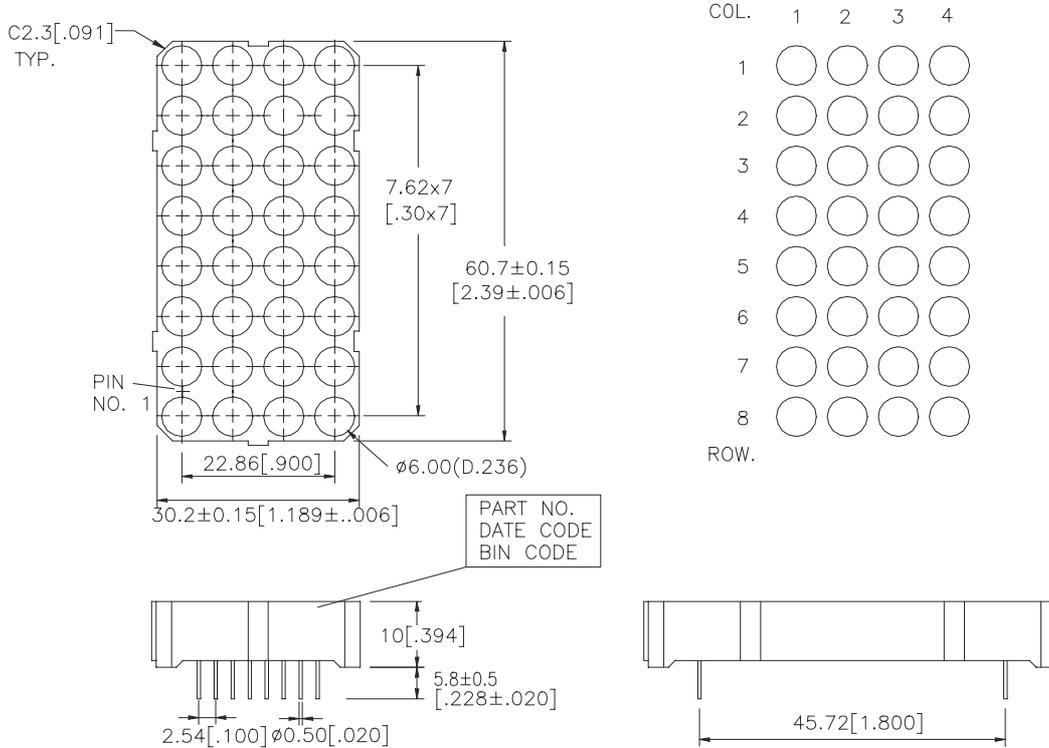
**DESCRIPTION**

The LTP-23548AA-NB is a 2.34 inch (59.34 mm) height dual color dot matrix display. This display utilizes red orange and green LED chips. The red orange LED chips are made from GaAsP on a transparent GaP substrate. The green LED chips are made from GaP on a transparent GaP substrate. And has a black face and white segments.

**DEVICE**

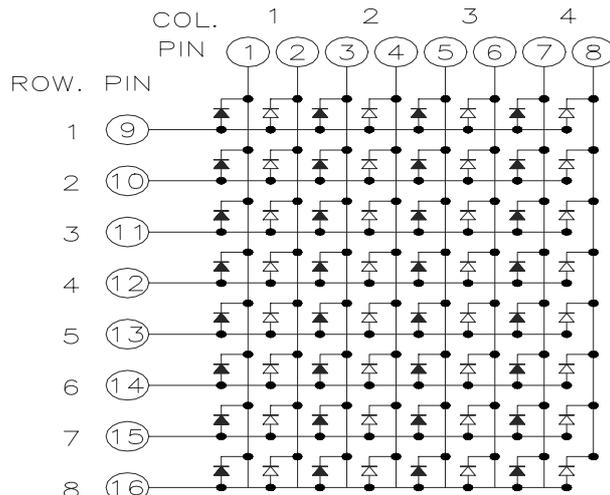
<b>PART NO.</b>	<b>DESCRIPTION</b>
Red Orange & Green	Cathode Column
LTP-23548AA-NB	Anode Row

## PACKAGE DIMENSIONS



NOTES: All dimensions are in millimeters. Tolerances are ± 0.25 mm (0.01") unless otherwise noted.

## INTERNAL CIRCUIT DIAGRAM



The sign "▲" stands for RED ORANGE color chips.  
The sign "▲" stands for GREEN color chips

**PIN CONNECTION**

<b>NO.</b>	<b>CONNECTION</b>
1	CATHODE COL. 1 (RED ORANGE)
2	CATHODE COL. 1 (GREEN)
3	CATHODE COL. 2 (RED ORANGE)
4	CATHODE COL. 2 (GREEN)
5	CATHODE COL. 3 (RED ORANGE)
6	CATHODE COL. 3 (GREEN)
7	CATHODE COL. 4 (RED ORANGE)
8	CATHODE COL. 4 (GREEN)
9	ANODE ROW 1
10	ANODE ROW 2
11	ANODE ROW 3
12	ANODE ROW 4
13	ANODE ROW 5
14	ANODE ROW 6
15	ANODE ROW 7
16	ANODE ROW 8

### ABSOLUTE MAXIMUM RATING AT T<sub>A</sub>=25°C

PARAMETER	GREEN	RED ORANGE	UNIT
Average Power Dissipation Per Dot	36		mW
Peak Forward Current Per Dot	100		mA
Average Forward Current Per Dot	13		mA
Derating Linear From 25°C Per Dot	0.17		mA/°C
Reverse Voltage Per Dot	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 T<sub>A</sub>=25°C

#### GREEN

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity	I <sub>v</sub>	1500	4800		μcd	I <sub>p</sub> =80mA 1/16DUTY
Peak Emission Wavelength	λ <sub>p</sub>		565		nm	I <sub>F</sub> =20mA
Spectral Line Half-Width	Δλ		30		nm	I <sub>F</sub> =20mA
Dominant Wavelength	λ <sub>d</sub>		569		nm	I <sub>F</sub> =20mA
Forward Voltage any Dot	V <sub>F</sub>		2.1	2.6	V	I <sub>F</sub> =20mA
			3	3.7	V	I <sub>F</sub> =80mA
Reverse Current any Dot	I <sub>R</sub>			100	μA	V <sub>R</sub> =5V
Luminous Intensity Matching Ratio	I <sub>v</sub> -m			2:1		I <sub>p</sub> =80mA 1/16DUTY

#### RED ORANGE

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity	I <sub>v</sub>	1500	4800		μcd	I <sub>p</sub> =80mA 1/16DUTY
Peak Emission Wavelength	λ <sub>p</sub>		630		nm	I <sub>F</sub> =20mA
Spectral Line Half-Width	Δλ		40		nm	I <sub>F</sub> =20mA
Dominant Wavelength	λ <sub>d</sub>		621		nm	I <sub>F</sub> =20mA
Forward Voltage any Dot	V <sub>F</sub>		2	2.6	V	I <sub>F</sub> =20mA
			2.6	3.4	V	I <sub>F</sub> =80mA
Reverse Current any Dot	I <sub>R</sub>			100	μA	V <sub>R</sub> =5V
Luminous Intensity Matching Ratio	I <sub>v</sub> -m			2:1		I <sub>p</sub> =80mA 1/16DUTY

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 Temperature Unless Otherwise Noted)

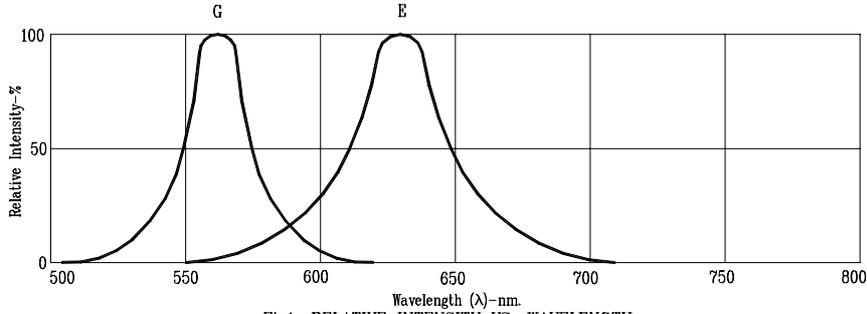


Fig1. RELATIVE INTENSITY VS. WAVELENGTH

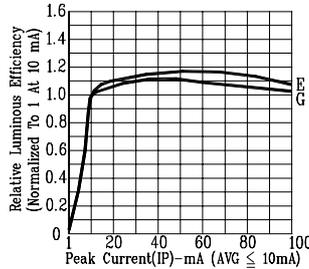


Fig2. RELATIVE LUMINOUS EFFICIENCY (LUMINOUS INTENSITY PER UNIT CURRENT) VS. PEAK CURRENT (REFRESH RATE 1KHz)

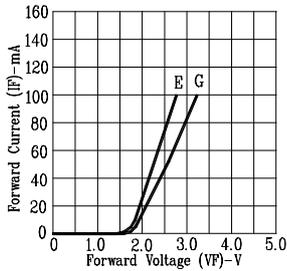


Fig3. FORWARD CURRENT VS. FORWARD VOLTAGE

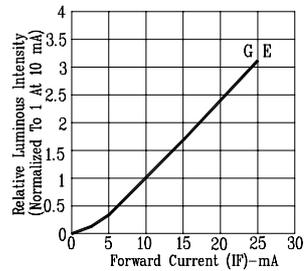


Fig4. RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT

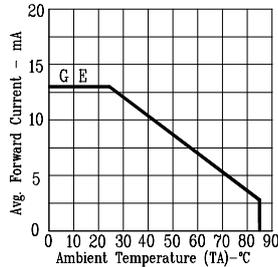


Fig5. MAX AVERAGE FORWARD CURRENT VS. AMBIENT TEMPERATURE.

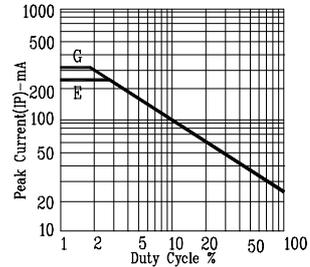


Fig6. MAX PEAK CURRENT VS. DUTY CYCLE % (REFRESH RATE 1KHz)

NOTE: G=GREEN & E=RED ORANGE