



# LED Display Product Data Sheet LTP-12188M-04

Spec No.: DS30-2002-056

Effective Date: 03/23/2002

Revision: -

**LITE-ON DCC**

**RELEASE**

BNS-OD-FC001/A4

**FEATURES**

- \* 1.22 inch (31.0 mm) MATRIX HEIGHT.
- \* LOW POWER REQUIREMENT.
- \* SINGLE PLANE, WIDE VIEWING ANGLE.
- \* SOLID STATE RELIABILITY.
- \* 8x8 ARRAY WITH X-Y SELECT.
- \* COMPATIBLE WITH USASCII AND EBCDIC CODES.
- \* STACKABLE HORIZONTALLY.

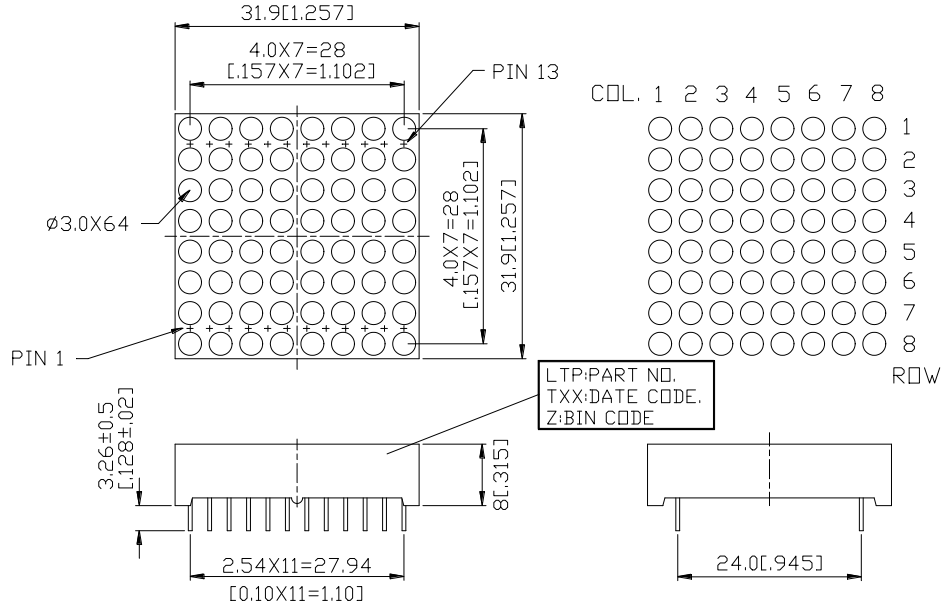
**DESCRIPTION**

The LTP-12188M-04 is a 1.22 inch (31.0 mm) matrix height 8x8 dot matrix display. This device is multi-color applicable display. The green LED chips, which are made from GaP on a transparent GaP substrate. The Red Orange LED chips, which are made from GaAsP on a transparent GaP substrate. The device has gray face and white dots.

**DEVICE**

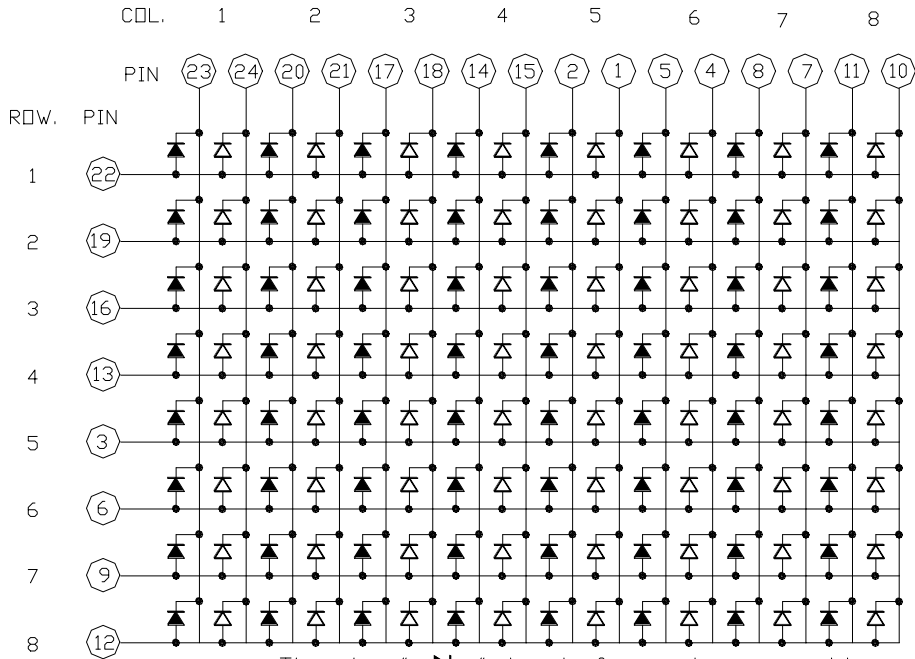
<b>PART NO.</b>	<b>DESCRIPTION</b>
MULTI-COLOR	ANODE ROW
LTP-12188M-04	CATHODE COLUMN

## PACKAGE DIMENSIONS



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

## INTERNAL CIRCUIT DIAGRAM



The sign "  $\blacktriangle$  " stands for red orange chips.  
The sign "  $\blacktriangledown$  " stands for green chips.

**PIN CONNECTION**

NO	CONNECTION	NO	CONNECTION
1	CATHODE COL. 5 GREEN	13	ANODE ROW. 4
2	CATHODE COL. 5 RED ORANGE	14	CATHODE COL. 4 RED ORANGE
3	ANODE ROW. 5	15	CATHODE COL. 4 GREEN
4	CATHODE COL. 6 GREEN	16	ANODE ROW. 3
5	CATHODE COL. 6 RED ORANGE	17	CATHODE COL. 3 RED ORANGE
6	ANODE ROW. 6	18	CATHODE COL. 3 GREEN
7	CATHODE COL. 7 GREEN	19	ANODE ROW. 2
8	CATHODE COL. 7 RED ORANGE	20	CATHODE COL. 2 RED ORANGE
9	ANODE ROW. 7	21	CATHODE COL. 2 GREEN
10	CATHODE COL. 8 GREEN	22	ANODE ROW. 1
11	CATHODE COL. 8 RED ORANGE	23	CATHODE COL. 1 RED ORANGE
12	ANODE ROW 8	24	CATHODE COL. 1 GREEN

### ABSOLUTE MAXIMUM RATING AT Ta=25°C

PARAMETER	GREEN	Red Orange	UNIT
Average Power Dissipation Per Dot	36	36	mW
Peak Forward Current Per Dot	100	100	mA
Average Forward Current Per Dot	13	13	mA
Derating Linear From 25°C Per Dot	0.17	0.17	mA/°C
Reverse Voltage Per Dot	5	5	V
Operating Temperature Range	-35°C to +85°C		
Storage Temperature Range	-35°C to +85°C		
Solder Temperature: max 260°C for max 3sec at 1.6mm[1/16inch] below seating plane.			

### ELECTRICAL / OPTICAL CHARACTERISTICS AT Ta=25°C

#### GREEN

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity	I <sub>v</sub>	1500	4000		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
			3.0	3.7		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	4000		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>		2.0	2.6	V	I <sub>F</sub> =20mA
			2.6	3.4		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 (Commission Internationale De L'Eclairage) eye-response curve.

**TYPICAL ELECTRICAL / OPTICAL CHARACTERISTIC CURVES**

(25°C Ambient Temperature Unless Otherwise Noted)

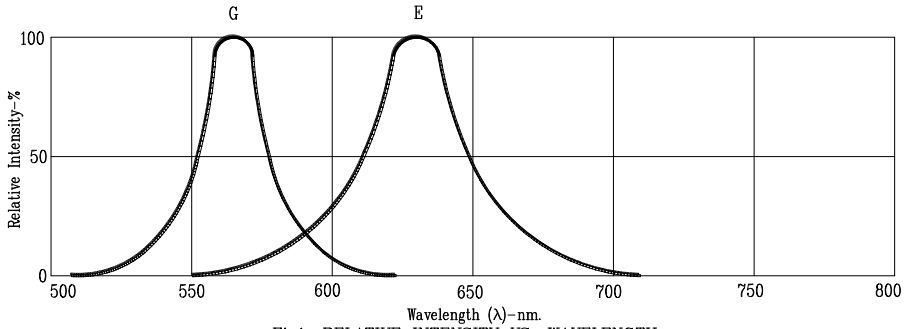


Fig1. RELATIVE INTENSITY VS. WAVELENGTH

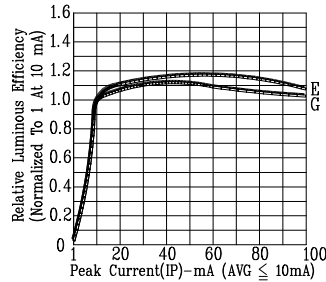


Fig2. RELATIVE LUMINOUS EFFICIENCY (LUMINOUS INTENSITY PER UNIT CURRENT) VS. PEAK CURRENT (REFRESH RATE 1KHz)

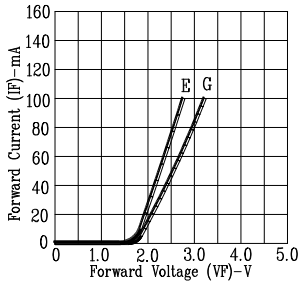


Fig3. FORWARD CURRENT VS. FORWARD VOLTAGE

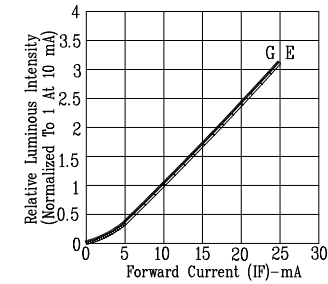


Fig4. RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT

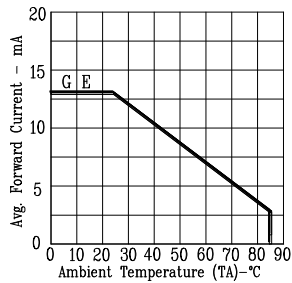


Fig5. MAX. AVERAGE FORWARD CURRENT VS. AMBIENT TEMPERATURE.

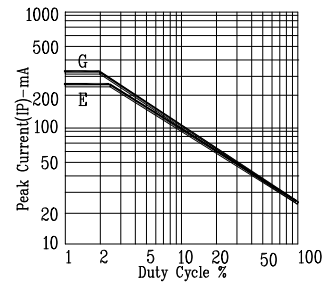


Fig6. MAX. PEAK CURRENT VS. DUTY CYCLE % (REFRESH RATE 1KHz)

NOTE: G=GREEN E=RED ORANGE