



# LED Display Product Data Sheet LTP-2844A3-01

Spec No.: DS-30-93-063

Effective Date: 01/16/2001

Revision: -

**LITE-ON DCC**

**RELEASE**

BNS-OD-FC001/A4

**FEATURES**

- \* 2 inch ( 47.1 mm) MATRIX HEIGHT.
- \* LOW POWER REQUIREMENT.
- \* SINGLE PLANE, WIDE VIEWING ANGLE
- \* SOLID STATE RELIABILITY.
- \* 4x4 ARRAY WITH X-Y SELECT.
- \* COMPATIBLE WITH USASCLL AND EBCDIC CODES.
- \* STACKABLE HORIZONTALLY.
- \* CATEGORIZED FOR LUMINOUS INTENSITY.

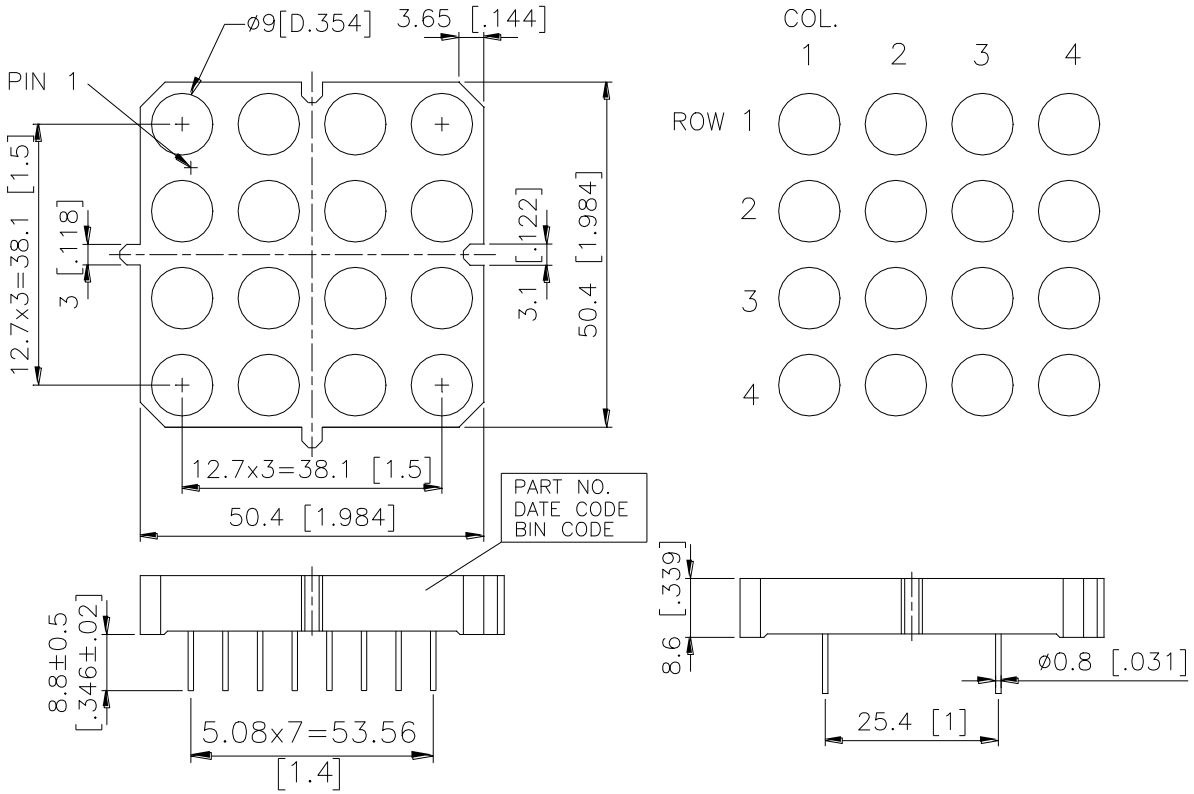
**DESCRIPTION**

The LTP-2844A3-01 is a 2 inch (47.1 mm) matrix height 4x4 dot matrix display. This device is multicolor applicable display, which has black face and white dot color. 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.

**DEVICE**

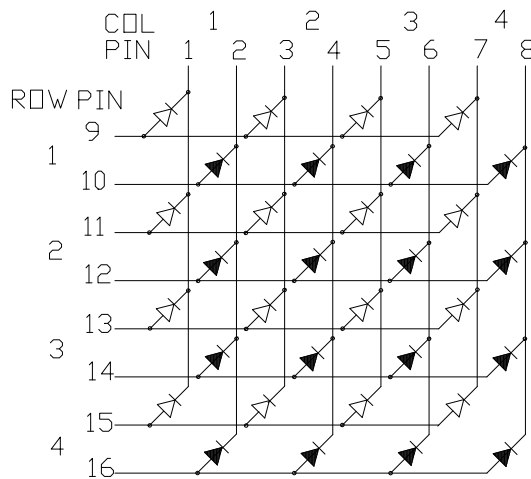
| <b>PART NO.</b>    | <b>DESCRIPTION</b> |
|--------------------|--------------------|
| Red Orange & Green | Cathode Column     |
| LTP-2844A3-01      | Anode Row          |

## PACKAGE DIMENSIONS



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

## INTERNAL CIRCUIT DIAGRAM



- STANDS FOR 3 RED ORANGE CHIPS IN SERIES.
- STANDS FOR 3 GREEN CHIPS IN SERIES.

**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 (RED ORANGE)    |
| 10         | ANODE ROW 1 (GREEN)         |
| 11         | ANODE ROW 2 (RED ORANGE)    |
| 12         | ANODE ROW 2 (GREEN)         |
| 13         | ANODE ROW 3 (RED ORANGE)    |
| 14         | ANODE ROW 3 (GREEN)         |
| 15         | ANODE ROW 4 (RED ORANGE)    |
| 16         | ANODE ROW 4 (GREEN)         |

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

| PARAMETER   | GREEN          | RED ORANGE | UNIT  |
|---|----------------|------------|-------|
| Average Power Dissipation Per Dot                                       | 96             |            | mW    |
| Peak Forward Current Per Dot  | 90             |            | mA    |
| Average Forward Current Per Dot   | 11             |            | mA    |
| Derating Linear From 25°C Per Dot                                       | 0.15           |            | mA/°C |
| Reverse Voltage Per Dot   | 15             |            | 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>   | 4400 | 11000 |      | μcd  | I <sub>p</sub> =80mA<br>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>   |      | 6.3   | 7.8  | V    | I <sub>F</sub> =20mA             |
|                                   |                  |      | 6     | 11.1 | V    | I <sub>F</sub> =80mA             |
| Reverse Current any Dot           | I <sub>R</sub>   |      |       | 100  | μA   | V <sub>R</sub> =15V              |
| Luminous Intensity Matching Ratio | I <sub>v-m</sub> |      |       | 2:1  |      | I <sub>p</sub> =80mA<br>1/16DUTY |

#### RED ORANGE

| PARAMETER                         | SYMBOL           | MIN. | TYP.  | MAX. | UNIT | TEST CONDITION                   |
|-----------------------------------|------------------|------|-------|------|------|----------------------------------|
| Average Luminous Intensity        | I <sub>v</sub>   | 4400 | 11000 |      | μcd  | I <sub>p</sub> =80mA<br>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>   |      | 6     | 7.8  | V    | I <sub>F</sub> =20mA             |
|                                   |                  |      | 7.8   | 10.2 | V    | I <sub>F</sub> =80mA             |
| Reverse Current any Dot           | I <sub>R</sub>   |      |       | 100  | μA   | V <sub>R</sub> =15V              |
| Luminous Intensity Matching Ratio | I <sub>v-m</sub> |      |       | 2:1  |      | I <sub>p</sub> =80mA<br>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)

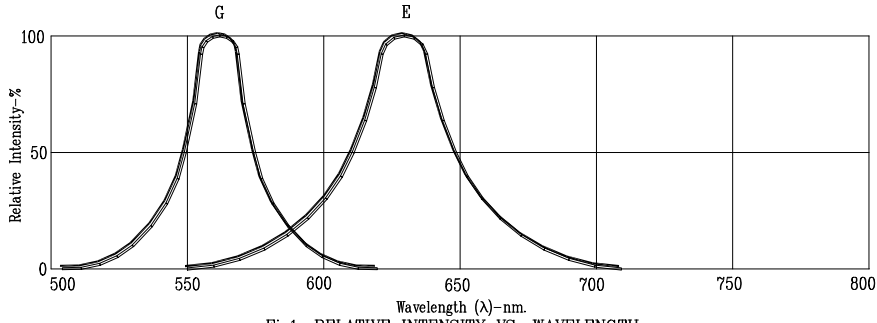


Fig1. RELATIVE INTENSITY VS. WAVELENGTH

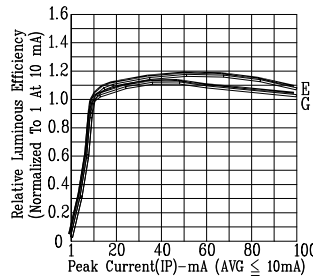


Fig2. RELATIVE LUMINOUS EFFICIENCY (LUMINOUS INTENSITY PER UNIT CURRENT) VS. PEAK CURRENT (REFRESH RATE 1KHz)

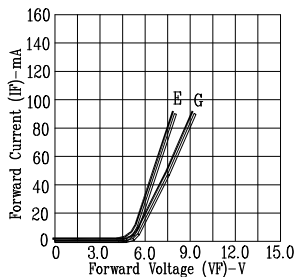


Fig3. FORWARD CURRENT VS. FORWARD VOLTAGE

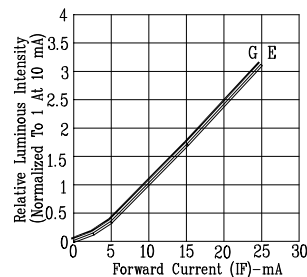


Fig4. RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT

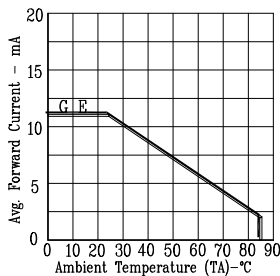


Fig5. MAX. AVERAGE FORWARD CURRENT VS. AMBIENT TEMPERATURE.

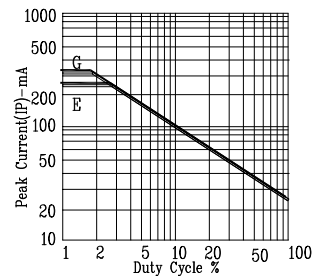


Fig6. MAX. PEAK CURRENT VS. DUTY CYCLE % (REFRESH RATE 1KHz)

NOTE: G=GREEN & E=RED ORANGE