



# LED Display Product Data Sheet LTP-1357AA-NB

Spec No.: DS-30-99-516

Effective Date: 05/31/2000

Revision: -

**LITE-ON DCC**

**RELEASE**

BNS-OD-FC001/A4

**FEATURES**

- \* 1.2 inch ( 30.42 mm) MATRIX HEIGHT.
- \* LOW POWER REQUIREMENT.
- \* SINGLE PLANE, WIDE VIEWING ANGLE.
- \* SOLID STATE RELIABILITY.
- \* 5 ×7 ARRAY WITH X-Y SELECT.
- \* COMPATIBLE WITH USASCII AND EBCDIC CODES.
- \* STACKABLE HORIZONTALLY.
- \* CATEGORIZED FOR LUMINOUS INTENSITY.

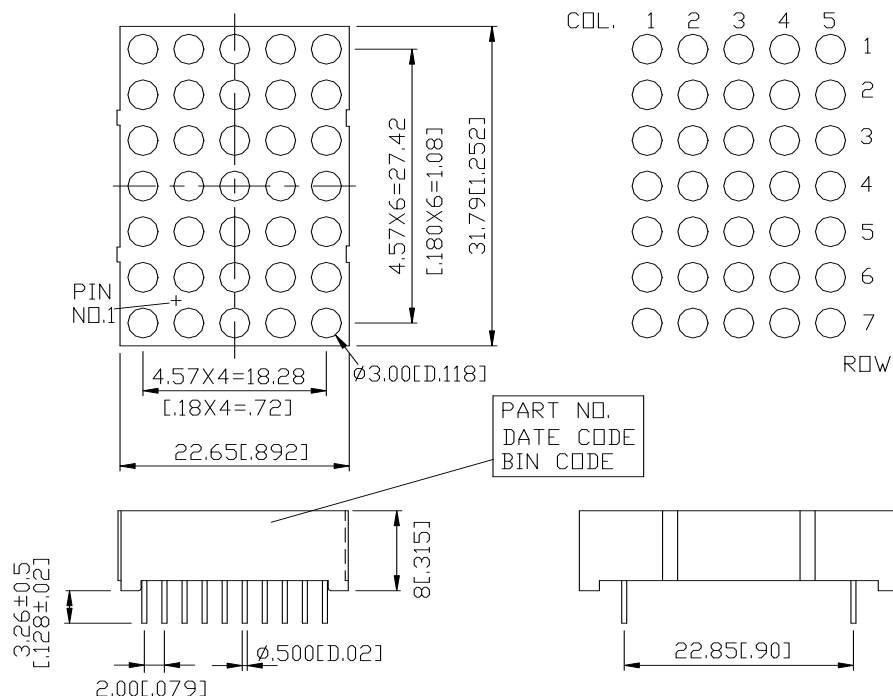
**DESCRIPTION**

The LTP-1357AA-NB is a 1.2 inch (30.42 mm) matrix height 5 × 7 dot matrix display. This device utilizes green and red orange LED chips, the green LED chips are made from GaP on a transparent GaP substrate , the red orange LED chips are made from GaAsP on a transparent GaP substrate, and has a black face and white dot color.

**DEVICE**

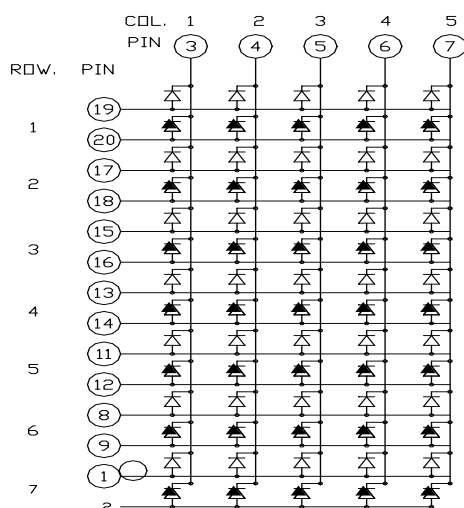
| <b>PART NO.</b>    | <b>DESCRIPTION</b> |
|--------------------|--------------------|
| RED ORANGR & GREEN | Cathode Column     |
| LTP-1357AA-NB      | Anode Row          |

## PACKAGE DIMENSIONS



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

## INTERNAL CIRCUIT DIAGRAM



THE SIGN "▲" STANDS FOR GREEN COLOR CHIPS.  
 THE SIGN "▲" STANDS FOR ORANGE COLOR CHIPS.

**PIN CONNECTION**

| <b>No.</b> | <b>CONNECTION</b>        |
|------------|--------------------------|
| 1          | ANODE ROW.7 GREEN        |
| 2          | ANODE ROW.7 RED ORANGE   |
| 3          | CATHODE COLUMN 1         |
| 4          | CATHODE COLUMN 2         |
| 5          | CATHODE COLUMN 3         |
| 6          | CATHODE COLUMN 4         |
| 7          | CATHODE COLUMN 5         |
| 8          | ANODE ROW.6 GREEN        |
| 9          | ANODE ROW.6 RED ORANGE   |
| 10         | NO CONNECTION            |
| 11         | CATHODE ROW.5 GREEN      |
| 12         | CATHODE ROW.5 RED ORANGE |
| 13         | ANODE ROW.4 GREEN        |
| 14         | ANODE ROW.4 RED ORANGE   |
| 15         | ANODE ROW.3 GREEN        |
| 16         | ANODE ROW.3 RED ORANGE   |
| 17         | ANODE ROW.2 GREEN        |
| 18         | ANODE ROW.2 RED ORANGE   |
| 19         | ANODE ROW.1 GREEN        |
| 20         | ANODE ROW.1 RED ORANGE   |

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

GREEN

| PARAMETER  | MAXIMUM RATING | 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 Segment  | 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<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>    |      | 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>F</sub> =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.

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

## RED ORANGE

| PARAMETER  | MAXIMUM RATING | 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 Segment  | 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**

## 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<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>    |      | 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>F</sub> =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 Temperature Unless Otherwise Noted)

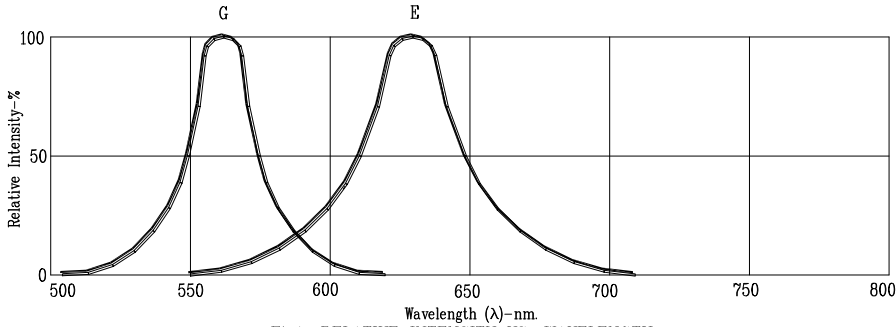


Fig1. RELATIVE INTENSITY VS. WAVELENGTH

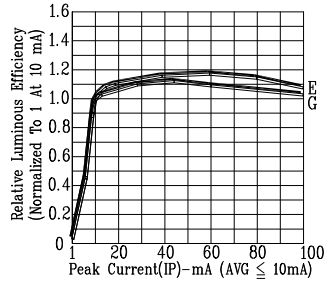


Fig2. RELATIVE LUMINOUS EFFICIENCY (LUMINOUS INTENSITY PER UNIT CURRENT) VS. PEAK CURRENT (REFRESH RATE 1KHz)

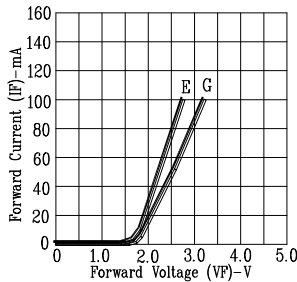


Fig3. FORWARD CURRENT VS. FORWARD VOLTAGE

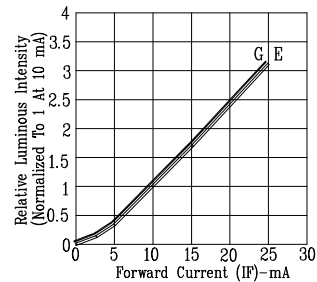


Fig4. RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT

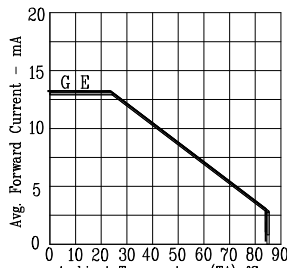


Fig5. MAX. AVERAGE FORWARD CURRENT VS. AMBIENT TEMPERATURE.

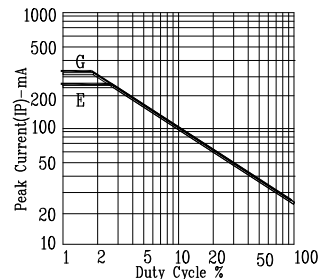


Fig6. MAX. PEAK CURRENT VS. DUTY CYCLE % (REFRESH RATE 1KHz)

NOTE: G=GREEN E=RED ORANGE