



# LED Display Product Data Sheet LTP-2657AA-NB

Spec No.: DS-30-99-499

Effective Date: 06/30/2000

Revision: -

**LITE-ON DCC**

**RELEASE**

BNS-OD-FC001/A4

**FEATURES**

- \* 2.0 inch ( 50.8 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.

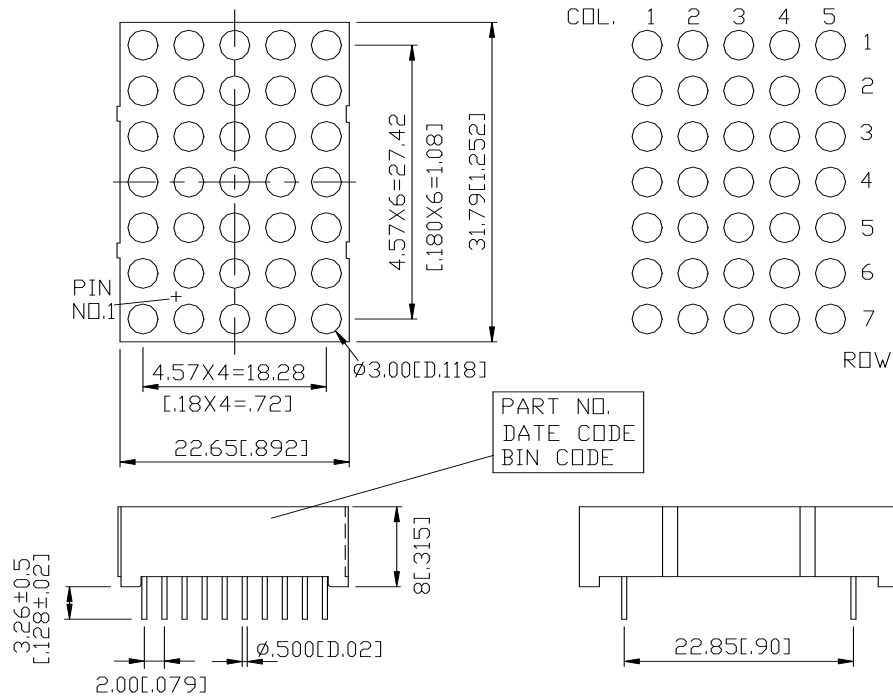
**DESCRIPTION**

The LTP-2657AA-NB is a 2.0 inch (50.8 mm) matrix height 5×7 dot matrix display. This device utilizes red orange and green LED chips, the green LED chips are made from GaP on GaP substrate , the red orange LED chips are made from GaAsP on GaP substrate, and has a black face and white dot color.

**DEVICE**

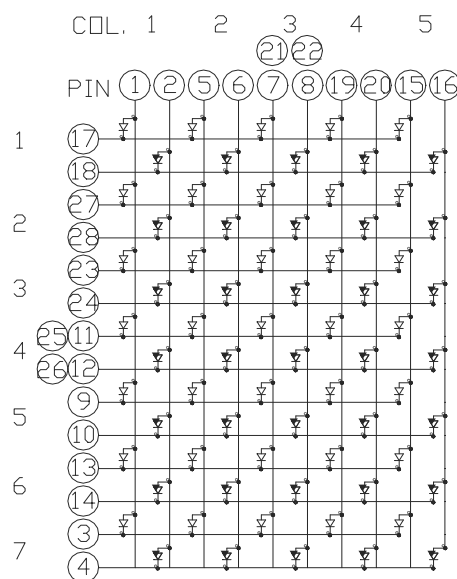
<b>PART NO.</b>	<b>DESCRIPTION</b>
RED ORANGR & GREEN	ANODE COLUMN
LTP-2657AA-NB	CATHODE ROW

## PACKAGE DIMENSIONS



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

## INTERNAL CIRCUIT DIAGRAM



**PIN CONNECTION**

<b>No.</b>	<b>CONNECTION</b>	<b>No.</b>	<b>CONNECTION</b>
1.	ANODE COLUMN 1 GREEN	2.	ANODE COLUMN 1 RED ORANGE
3.	CATHODE ROW 7 GREEN	4.	CATHODE ROW 7 RED ORANGE
5.	ANODE COLUMN 2 GREEN	6.	ANODE COLUMN 2 RED ORANGE
7.	ANODE COLUMN 3 GREEN	8.	ANODE COLUMN 3 RED ORANGE
9.	CATHODE ROW 5 GREEN	10.	CATHODE ROW 5 RED ORANGE
11.	CATHODE ROW 4 GREEN	12.	CATHODE ROW 4 RED ORANGE
13.	CATHODE ROW 6 GREEN	14.	CATHODE ROW 6 RED ORANGE
15.	CATHODE ROW 5 GREEN	16.	ANODE COLUMN 5 RED ORANGE
17.	CATHODE ROW 1 GREEN	18.	CATHODE ROW 1 RED ORANGE
19.	ANODE COLUMN 4 GREEN	20.	ANODE COLUMN 4 RED ORANGE
21.	ANODE COLUMN 3 GREEN	22.	ANODE COLUMN 3 RED ORANGE
23.	CATHODE ROW 3 GREEN	24.	CATHODE ROW 3 RED ORANGE
25.	CATHODE ROW 4 GREEN	26.	CATHODE ROW 4 RED ORANGE
27.	CATHODE ROW 2 GREEN	28.	CATHODE ROW 2 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>	1780	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
			3.0	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>	1780	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>		2.0	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)

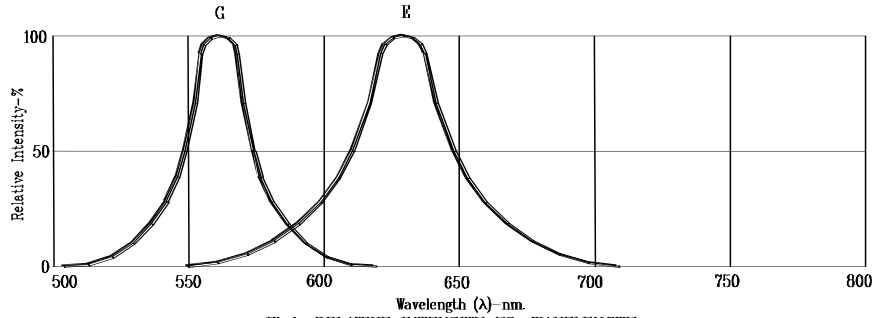


Fig1. RELATIVE INTENSITY VS. WAVELENGTH

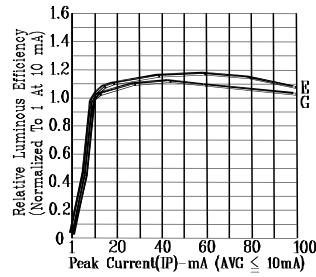


Fig2. RELATIVE LUMINOUS EFFICIENCY (LUMINOUS INTENSITY PER UNIT CURRENT) VS. PEAK CURRENT (REFRESH RATE 1KHz)

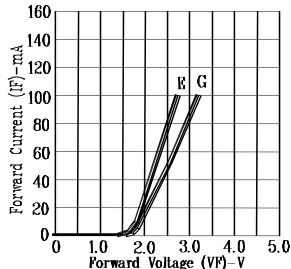


Fig3. FORWARD CURRENT VS. FORWARD VOLTAGE

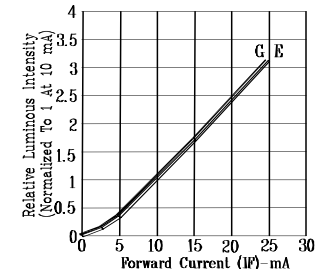


Fig4. RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT

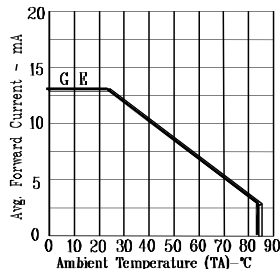


Fig5. MAX AVERAGE FORWARD CURRENT VS. AMBIENT TEMPERATURE

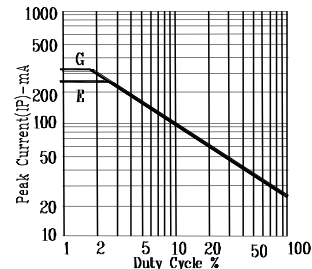


Fig6. MAX. PEAK CURRENT VS. DUTY CYCLE % (REFRESH RATE 1KHz)

NOTE: G=GREEN E=RED ORANGE