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# LED Display Product Data Sheet LTP-2C44F-01

Spec No.: DS-30-97-133

Effective Date: 10/27/2000

Revision: -

**LITE-ON DCC**

**RELEASE**

BNS-OD-FC001/A4

**FEATURES**

- \* 1.854-inch (47.10-mm) MATRIX HEIGHT.
- \* CONTINUOUS UNIFORM DOTS.
- \* LOW POWER REQUIREMENT.
- \* EXCELLENT CHARACTERS AND APPEARANCE.
- \* SOLID STATE RELIABILITY.
- \* 4x4 ARRAY WITH X-Y SELECT.
- \* WIDE VIEWING ANGLE.
- \* CATEGORIZED FOR LUMINOUS INTENSITY.
- \* EPOXY TYPE.

**DESCRIPTION**

The LTP-2C44F-01 is a 1.854 inch (47.10 mm) matrix height 4x4 dot matrix display. The LTP-2C44F-01 is a full color applicable display and has gray face white dots. This display utilizes AlGaAs red, green and blue LED chips. The AlGaAs red LED chips are made from AlGaAs on a non-transparent GaAs substrate, the green LED chips are made from GaP on a GaP substrate, the blue LED chips are made from GaN on a SiC substrate.

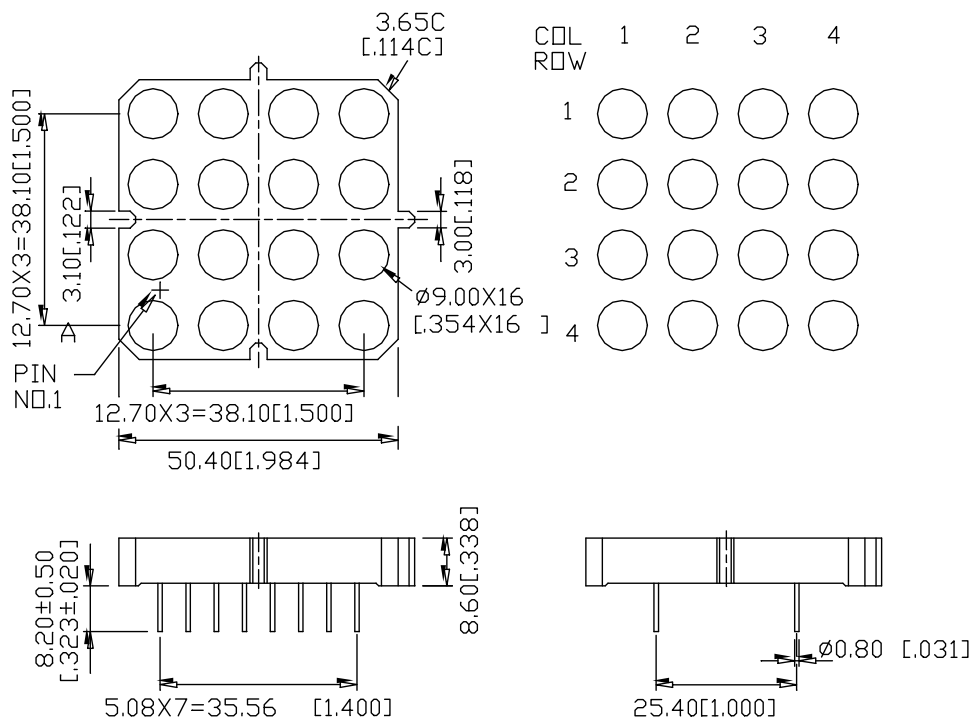
**DEVICE**

<b>PART NO.</b>	<b>DESCRIPTION</b>
FULL COLOR	ANODE ROW
LTP-2C44F-01	CATHODE COLUMN

**\*CAUTION :**

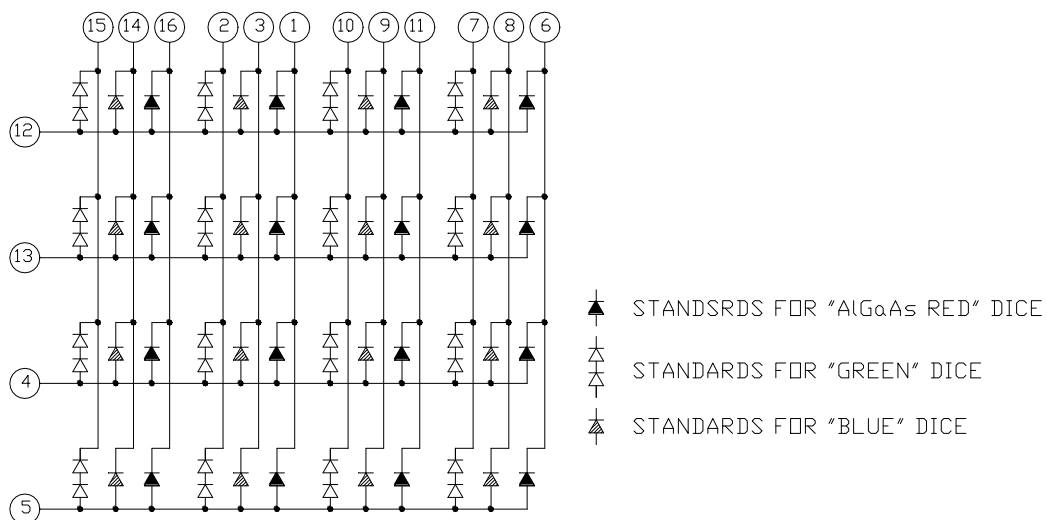
The LEDs will be damaged by the static electricity. Anti-electrostatic equipment is recommended when holding the LED. The application must be grounded.

## 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>
1	CATHODE COLUMN 2 AlGaAs RED
2	CATHODE COLUMN 2 GREEN
3	CATHODE COLUMN 2 BLUE
4	ANODE ROW 3
5	ANODE ROW 4
6	CATHODE COLUMN 4 AlGaAs RED
7	CATHODE COLUMN 4 GREEN
8	CATHODE COLUMN 4 BLUE
9	CATHODE COLUMN 3 BLUE
10	CATHODE COLUMN 3 GREEN
11	CATHODE COLUMN 3 AlGaAs RED
12	ANODE ROW 1
13	ANODE ROW 2
14	CATHODE COLUMN 1 BLUE
15	CATHODE COLUMN 1 GREEN
16	CATHODE COLUMN 1 AlGaAs RED

## ABSOLUTE MAXIMUM RATING AT Ta=25°C

PARAMETER	AlGaAs RED	GREEN	BLUE	UNIT
Average Power Dissipation Per Dot	36	64	54	mW
Peak Forward Current Per Dot	100	90	40	mA
Average Forward Current Per Dot	14	11	5	mA
Derating Linear From 25°C Per Dot	0.19	0.15	0.06	mA/°C
Reverse Voltage Per Dot	5	10	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

### AlGaAs Red

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity	I <sub>v</sub>	3000	7800		μcd	I <sub>p</sub> =80mA 1/16Duty
Peak Emission Wavelength	λ <sub>p</sub>		660		nm	I <sub>F</sub> =20mA
Spectral Line Half-Width	Δλ		35		nm	I <sub>F</sub> =20mA
Dominant Wavelength	λ <sub>d</sub>		638		nm	I <sub>F</sub> =20mA
Forward Voltage any Dot	V <sub>F</sub>		1.8	2.4	V	I <sub>F</sub> =20mA
			2.0	3.1		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-m</sub>			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.

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

Green

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity	I <sub>v</sub>	3000	6200		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>		4.2	5.2	V	I <sub>F</sub> =20mA
			6.0	7.4		I <sub>F</sub> =80mA
Reverse Current any Dot	I <sub>R</sub>			100	μA	V <sub>R</sub> =10V
Luminous Intensity Matching Ratio	I <sub>v-m</sub>			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.

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

Blue

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity	I <sub>v</sub>	1370	4500		μcd	I <sub>p</sub> =80mA 1/16Duty
Peak Emission Wavelength	λ <sub>p</sub>		430		nm	I <sub>F</sub> =20mA
Spectral Line Half-Width	Δλ		65		nm	I <sub>F</sub> =20mA
Dominant Wavelength	λ <sub>d</sub>		468		nm	I <sub>F</sub> =20mA
Forward Voltage any Dot	V <sub>F</sub>		3.8	4.5	V	I <sub>F</sub> =20mA
			4.8	5.6		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-m</sub>			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)

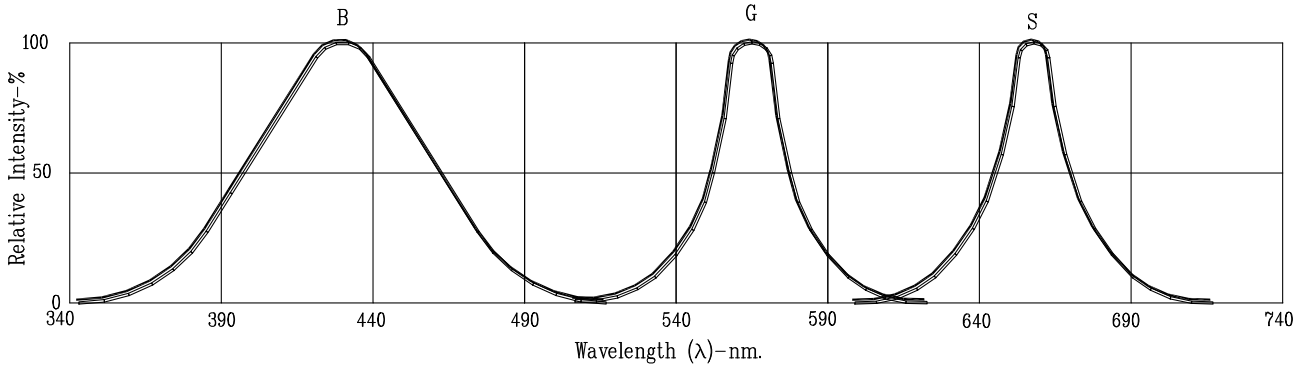


Fig1. RELATIVE INTENSITY VS. WAVELENGTH

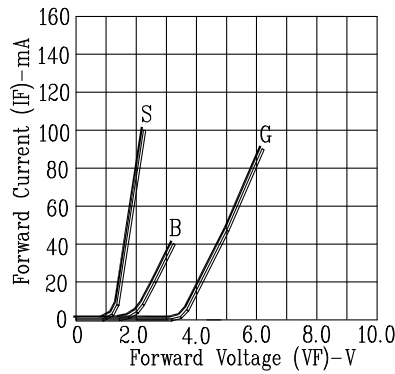


Fig2. FORWARD CURRENT VS. FORWARD VOLTAGE

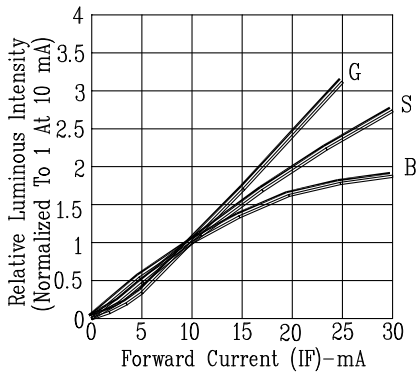


Fig3. RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT

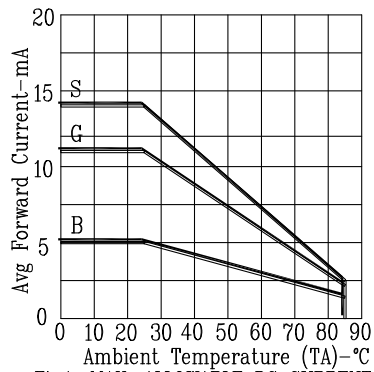


Fig4. MAX. ALLOWABLE DC CURRENT VS. AMBIENT TEMPERATURE.

NOTE: S=AlGaAs RED. G=GREEN B=BLUE