LITEON®
OPTOELECTRONICS

LED Display

Product Data Sheet

LTP-181FFM

Spec No.: DS30-2002-092

Effective Date: 11/06/2002

Revision: B

LITE-ON DCC

RELEASE

BNS-OD-FC001/A4

LITE-ON Technology Corp. / Optoelectronics
No.90,Chien 1 Road, Chung Ho, New Taipei City 23585, Taiwan, R.O.C.
Tel: 886-2-2222-6181 Fax: 886-2-2221-1948 / 886-2-2221-0660
http://www.liteon.com/opto

FEATURES

* 1.86 inch (47.4 mm) MATRIX HEIGHT.
* LOW POWER REQUIREMENT.
* EXCELLENT CHARACTERS APPEARANCE.
* HIGH BRIGHTNESS & HIGH CONTRAST.
* WIDE VIEWING ANGLE.
* SOLID STATE RELIABILITY.
* STACKABLE VERTICALLY AND HORIZONTALLY.
* CATEGORIZED FOR LUMINOUS INTENSITY.

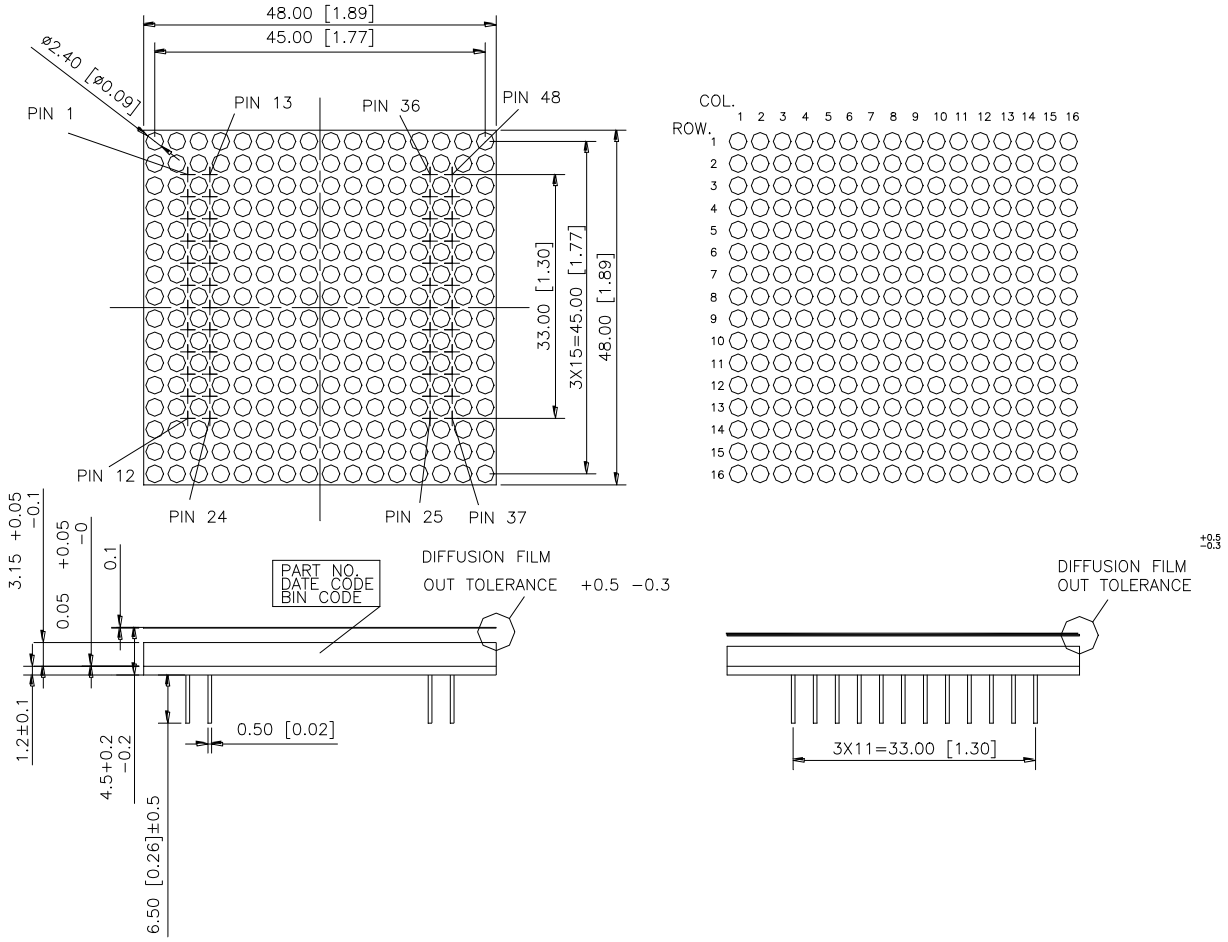
DESCRIPTION

The LTP-181FFM is a 1.86 inch (47.4 mm) matrix height 16x16 dot matrix display. This device utilizes Green & AlInGaP Hyper red LED chips.The green LED chips are made from GaP on GaP substrate.The AlInGaP Hyper red LED chips are made from AlInGaP on a non-transparent GaAs substrate ,and it has a black face and a diffusion film is added on it.

DEVICE

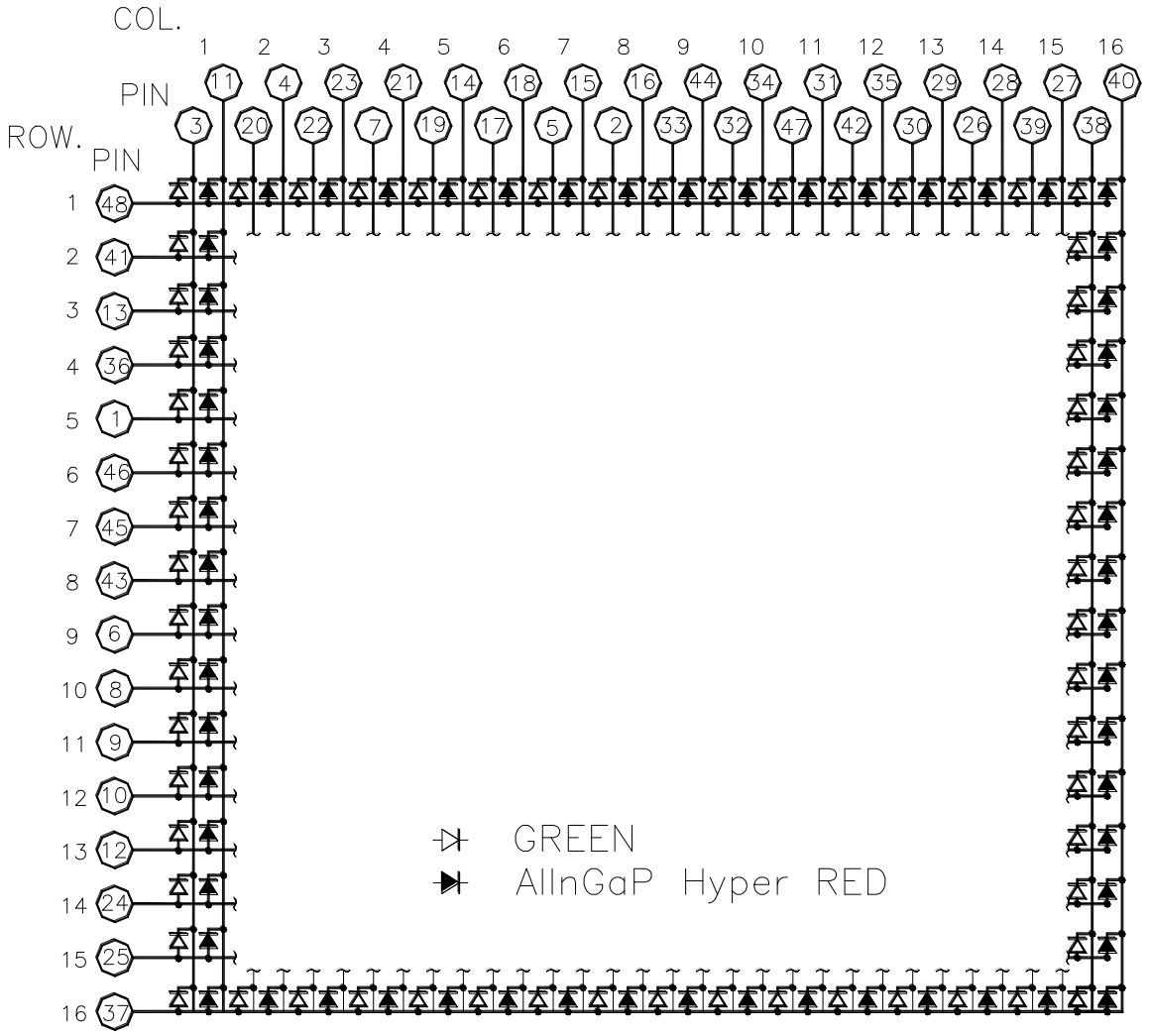
PART NO.	DESCRIPTION
Green & AlInGaP Hyper Red	16x16 Dot Matrix Anode
LTP-181FFM	Row Cathode Column

PACKAGE DIMENSIONS



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

INTERNAL CIRCUIT DIAGRAM



PIN CONNECTION

NO	CONNECTION	NO	CONNECTION
1	COMMON ANODE ROW 5	25	COMMON ANODE ROW 15
2	CATHODE COLUMN 8 GREEN	26	CATHODE COLUMN 14 GREEN
3	CATHODE COLUMN 1 GREEN	27	CATHODE COLUMN 15 RED
4	CATHODE COLUMN 2 RED	28	CATHODE COLUMN 14 RED
5	CATHODE COLUMN 7 GREEN	29	CATHODE COLUMN 13 RED
6	CATHODE COLUMN ROW 9	30	CATHODE COLUMN 13 GREEN
7	CATHODE COLUMN 4 GREEN	31	CATHODE COLUMN 11 RED
8	COMMON ANODE ROW 10	32	CATHODE COLUMN 10 GREEN
9	COMMON ANODE ROW 11	33	CATHODE COLUMN 9 GREEN
10	COMMON ANODE ROW 12	34	CATHODE COLUMN 10 RED
11	CATHODE COLUMN 1 RED	35	CATHODE COLUMN 12 RED
12	COMMON ANODE ROW 13	36	COMMON ANODE ROW 14
13	COMMON ANODE ROW 3	37	COMMON ANODE ROW 16
14	CATHODE COLUMN 5 RED	38	CATHODE COLUMN 16 GREEN
15	CATHODE COLUMN 7 RED	39	CATHODE COLUMN 15 GREEN
16	CATHODE COLUMN 8 RED	40	CATHODE COLUMN 16 RED
17	CATHODE COLUMN 6 GREEN	41	COMMON ANODE ROW 2
18	CATHODE COLUMN 6 RED	42	CATHODE COLUMN 12 GREEN
19	CATHODE COLUMN 5 GREEN	43	COMMON ANODE ROW 8
20	CATHODE COLUMN 2 GREEN	44	CATHODE COLUMN 1 RED
21	CATHODE COLUMN 4 RED	45	COMMON ANODE ROW 7
22	CATHODE COLUMN 3 GREEN	46	COMMON ANODE ROW 6
23	CATHODE COLUMN 3 RED	47	CATHODE COLUMN 11 GREEN
24	COMMON ANODE ROW 14	48	COMMON ANODE ROW 1

ABSOLUTE MAXIMUM RATING AT $T_A = 25^oC$

PARAMETER	Green	AlInGaP Hyper Red	UNIT
Average Power Dissipation Per Dot	36	40	mW
Peak Forward Current Per Dot	100	90	mA
Average Forward Current Per Dot	13	15	mA
Derating Linear From 25^0C Per Dot	0.17	0.2	$mA/^0C$
Reverse Voltage Per Dot	5	5	V
Operating Temperature Range	-35^0C to $+85^0C$		
Storage Temperature Range	-35^0C to $+85^0C$		
Solder Temperature 1/16 inch Below Seating Plane for 3 Seconds at 260^0C			

ELECTRICAL / OPTICAL CHARACTERISTICS AT $T_A = 25^oC$

Green

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity	I_V	500	1400		μcd	I_P=35mA 1/16DUTY
Peak Emission Wavelength	λp		565		nm	I_F=20mA
Spectral Line Half-Width	Δλ		30		nm	I_F=20mA
Dominant Wavelength	λd		569		nm	I_F=20mA
Forward Voltage any Dot	V_F		2.1	2.6	V	I_F=20mA
			3	3.7	V	I_F=80mA
Reverse Current any Dot	I_R			100	μA	V_R=5V
Luminous Intensity Matching Ratio	I_V-m			1.6:1		I_P=35mA 1/16DUTY

AlInGaP Hyper Red

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity	I_V	500	1500		μcd	I_P=15mA 1/16DUTY
Peak Emission Wavelength	λp		650		nm	I_F=20mA
Spectral Line Half-Width	Δλ		35		nm	I_F=20mA
Dominant Wavelength	λd		639		nm	I_F=20mA
Forward Voltage any Dot	V_F		2.1	2.6	V	I_F=20mA
			2.3	2.8	V	I_F=80mA
Reverse Current any Dot	I_R			100	μA	V_R=5V
Luminous Intensity Matching Ratio	I_V-m			1.6:1		I_P=15mA 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)

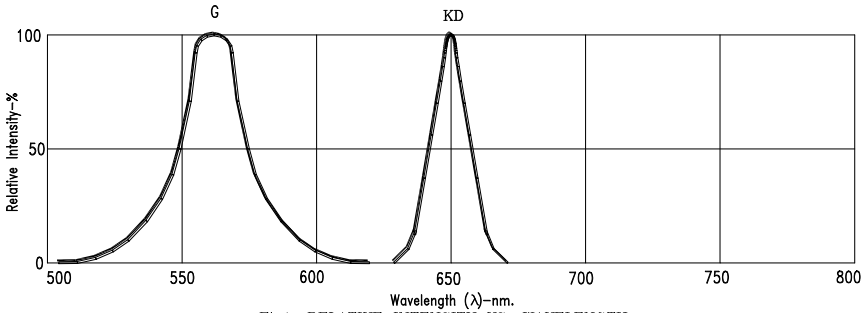


Fig1. RELATIVE INTENSITY VS. WAVELENGTH

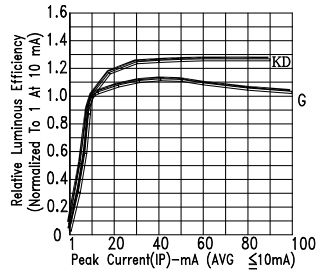


Fig2. RELATIVE LUMINOUS EFFICIENCY (LUMINOUS INTENSITY PER UNIT CURRENT) VS. PEAK CURRENT (REFRESH RATE 1KHz)

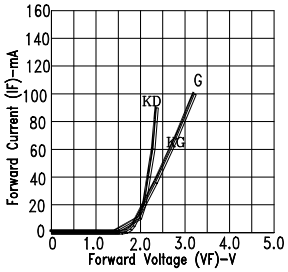


Fig3. FORWARD CURRENT VS. FORWARD VOLTAGE

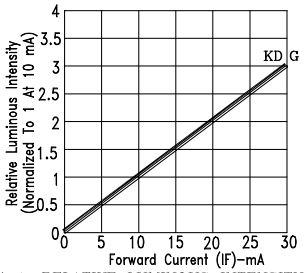


Fig4. RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT

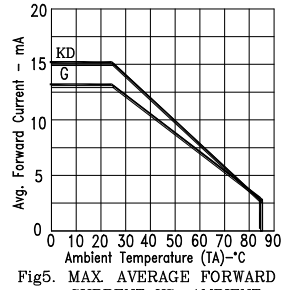


Fig5. MAX. AVERAGE FORWARD CURRENT VS. AMBIENT TEMPERATURE.

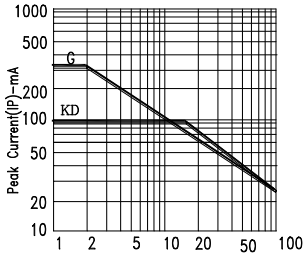


Fig6. MAX. PEAK CURRENT VS. DUTY CYCLE % (REFRESH RATE 1KHz)

NOTE : KD=AlInGaP HYPER RED
G=GREEN