LITEON®
OPTOELECTRONICS

LED Display

Product Data Sheet

LTP-12088M-03

Spec No.: DS30-2008-0184

Effective Date: 03/04/2009

Revision: A

LITE-ON DCC

RELEASE

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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

LED DISPLAY

LTP-12088M-03
DATA SHEET

Rev	Description	By
01	RDR Original Spec	Phanomkorn J. July 31, 2008
02	Change the test condition on page 4-6 to Ip=80mA, 2msec1/8 Duty	Phanomkorn J. August 19, 2008
03	Paper Correction	Phanomkorn J. October 15, 2008
-	NPPR Original Spec	Phanomkorn J. December 03, 2008
A	Add pin φ on page 2 of 8	Phanomkorn J. January 29, 2009

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D A T E : January 29, 2009

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FEATURES

∗1.22 inch (31.0 mm) MATRIX HEIGHT.
∗LOW POWER REQUIREMENT.
∗SINGLE PLANE, WIDE VIEWING ANGLE.
∗SOLID STATE RELIABILITY.
∗8×8 ARRAY WITH X-Y SELECT.
∗COMPATIBLE WITH USASCII AND EBCDIC CODES.
∗STACKABLE HORIZONTALLY.
∗CATEGORIZED FOR LUMINOUS INTENSITY.
∗**LEAD-FREE PACKAGE(ACCORDING TO ROHS)**

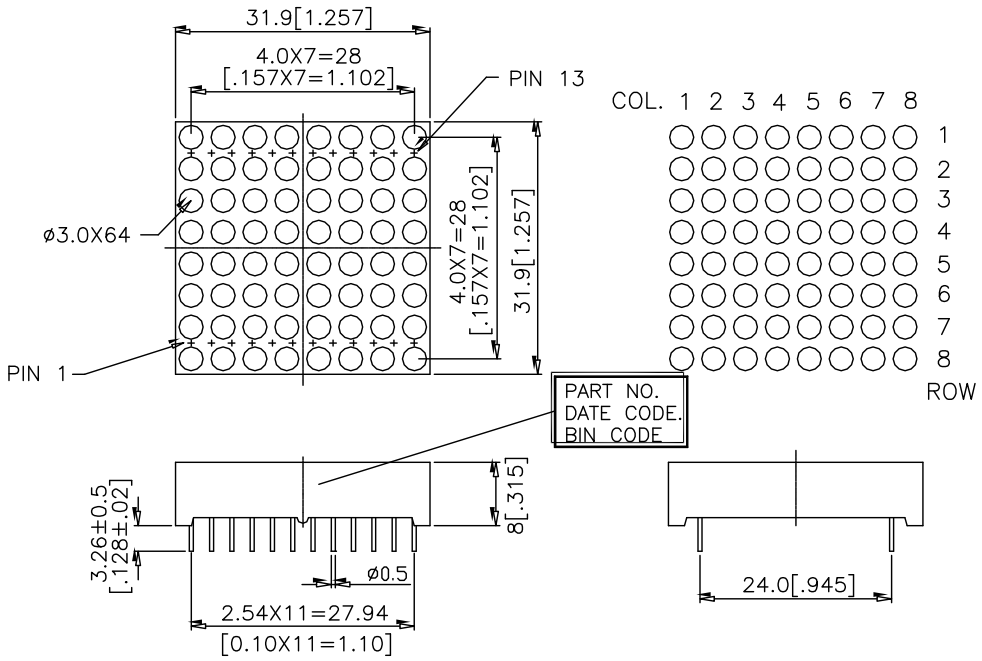
DESCRIPTION

The LTP-12088M-03 is a 1.22 inch (31.0 mm) matrix height 8 ×8 dot matrix display. This device is multi-color applicable display. The AlInGaP Green LED chips, which are made from AlInGaP on GaAs substrate. The AlInGaP Hyper Red LED chips, which are made from AlInGaP on GaAs substrate. The device has black face and white dot color. The product is binned by luminous intensity and dominant wavelength in the red mode of operation.

DEVICE

PART NO.	DESCRIPTION
MULTI-COLOR	Anode Column
LTP-12088M-03	Cathode Row

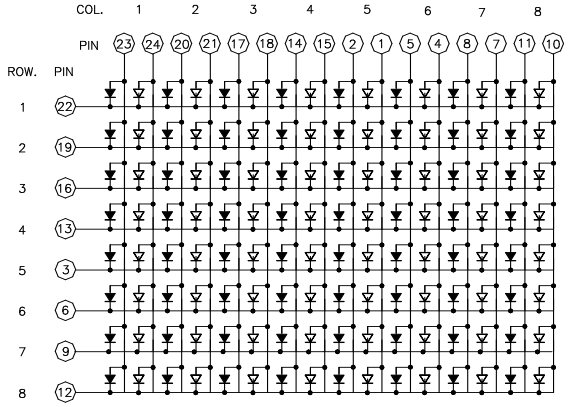
PACKAGE DIMENSIONS



NOTES: 1. All dimensions are in millimeters. Tolerances are± 0.25 mm (0.01“) unless otherwise noted.

2. Pin tip’s shift tolerance is +/- 0.4 mm.
3. Foreign material on segment ≦10mils
4. Ink contamination (surface) ≦20mils
5. Bending≦1/100
6. Bubble in segment ≦10mils

INTERNAL CIRCUIT DIAGRAM



The sign ” ▶ ”stands for AlInGaP Hyper Red chips.
The sign ” ▷ ”stands for AlInGaP Green chips.

PIN CONNECTION

NO	CONNECTION	NO	CONNECTION
1	ANODE COLUMN 5 AlInGaP GREEN	13	CATHODE ROW 4
2	ANODE COLUMN 5 AlInGaP HYPER RED	14	ANODE COLUMN 4 AlInGaP HYPER RED
3	CATHODE ROW 5	15	ANODE COLUMN 4 AlInGaP GREEN
4	ANODE COLUMN 6 AlInGaP GREEN	16	CATHODE ROW 3
5	ANODE COLUMN 6 AlInGaP HYPER RED	17	ANODE COLUMN 3 AlInGaP HYPER RED
6	CATHODE ROW 6	18	ANODE COLUMN 3 AlInGaP GREEN
7	ANODE COLUMN 7 AlInGaP GREEN	19	CATHODE ROW 2
8	ANODE COLUMN 7 AlInGaP HYPER RED	20	ANODE COLUMN 2 AlInGaP HYPER RED
9	CATHODE ROW 7	21	ANODE COLUMN 2 AlInGaP GREEN
10	ANODE COLUMN 8 AlInGaP GREEN	22	CATHODE ROW 1
11	ANODE COLUMN 8 AlInGaP HYPER RED	23	ANODE COLUMN 1 AlInGaP HYPER RED
12	CATHODE ROW 8	24	ANODE COLUMN 1 AlInGaP GREEN

ABSOLUTE MAXIMUM RATING AT Ta=25°C

PARAMETER	AlInGaP GREEN	UNIT
Average Power Dissipation Per Dot	70	mW
Peak Forward Current Per Dot	60	mA
Average Forward Current Per Dot Derating Linear From 25℃ Per Dot	25 0.28	mA mA/℃
Reverse Voltage Per Dot	5	V
Operating Temperature Range	-35℃ to +105℃	
Storage Temperature Range	-35℃ to +105℃	
Soldering Conditions: 1/16 inch below seating plane for 3 seconds at 260°C or of temperature unit (during assembly) not over max. temperature rating above.		

ELECTRICAL / OPTICAL CHARACTERISTICS AT Ta=25°C

AlInGaP GREEN

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity	I_V	9000	22000		μcd	I_p=80mA, T_p =2 ms, 1/8 Duty
Peak Emission Wavelength	λp		571		nm	I_F=20mA
Spectral Line Half-Width	Δλ		15		nm	I_F=20mA
Dominant Wavelength	λd		572		nm	I_F=20mA
Forward Voltage any Dot	V_F		2.05	2.6	V	I_F=20mA
			2.3	2.8		I_F=80mA
Reverse Current any Dot	I_R			100	μA	V_R=5V
Luminous Intensity Matching Ratio (Similar Light Area)	I_V-m			2:1		I_p=80mA T_p =2 ms, 1/8 Duty

Note: Luminous intensity is measured with a light sensor and filter combination that approximates the CIE (Commission International De L'Eclairage) eye-response curve.

ABSOLUTE MAXIMUM RATING AT Ta=25°C

PARAMETER	AlInGaP HYPER RED	UNIT
Average Power Dissipation Per Dot	70	mW
Peak Forward Current Per Dot	90	mA
Average Forward Current Per Dot Derating Linear From 25℃ Per Dot	25 0.28	mA mA/℃
Reverse Voltage Per Dot	5	V
Operating Temperature Range	-35℃ to +105℃	
Storage Temperature Range	-35℃ to +105℃	
Soldering Conditions: 1/16 inch below seating plane for 3 seconds at 260°C or of temperature unit (during assembly) not over max. temperature rating above.		

ELECTRICAL / OPTICAL CHARACTERISTICS AT Ta=25°C

AlInGaP HYPER RED

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity	I_V	17000	24000		μcd	I_P=80mA T_P =2 ms, 1/8 Duty
Peak Emission Wavelength	λp		650		nm	I_F=20mA
Spectral Line Half-Width	Δλ		20		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		I_F=80mA
Reverse Current any Dot	I_R			100	μA	V_R=5V
Luminous Intensity Matching Ratio (Similar Light Area)	I_V-m			2:1		I_P=80mA T_P =2 ms, 1/8 Duty

Note: Luminous intensity is measured with a light sensor and filter combination that approximates the CIE (Commission International De L'Eclairage) eye-response curve.

ELECTRICAL / OPTICAL CHARACTERISTICS AT Ta=25°C

Amber = AlInGaP HYPER RED + AlInGaP GREEN

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Average Luminous Intensity	I_V	28000	32000		μcd	I_P=80mA T_P =2 ms, 1/8 Duty
Peak Emission Wavelength	λp		611		nm	I_F=20mA
Spectral Line Half-Width	Δλ		17		nm	I_F=20mA
Dominant Wavelength	λd		605		nm	I_F=20mA
Forward Voltage any Dot (AlInGap Green)	V_F		2.05	2.6	V	I_F=20mA
Forward Voltage any Dot (AlInGap Hyper Red)			2.1	2.6		I_F=20mA
Reverse Current any Dot	I_R			100	μA	V_R=5V
Luminous Intensity Matching Ratio (Similar Light Area)	I_V-m			2:1		I_P=80mA T_P =2 ms, 1/8 Duty

Note: Luminous intensity is measured with a light sensor and filter combination that approximates the CIE (Commission International De L'Eclairage) eye-response curve.

TYPICAL ELECTRICAL / OPTICAL CHARACTERISTIC CURVES

(25°C Ambient Temperature Unless Otherwise Noted)

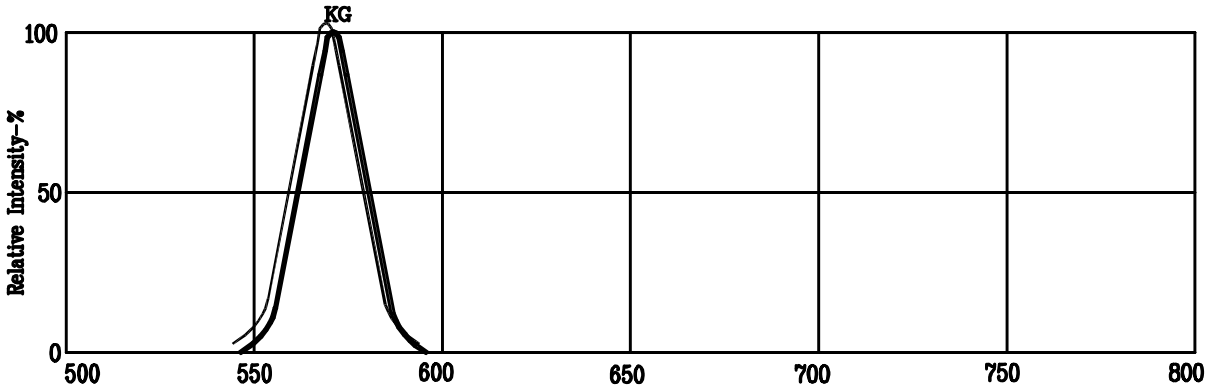


Fig1.Spectral Emission

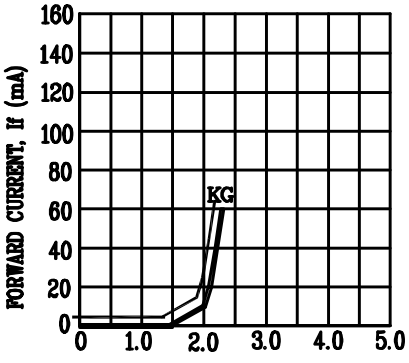


Fig2. Forward Current vs. Forward Voltage

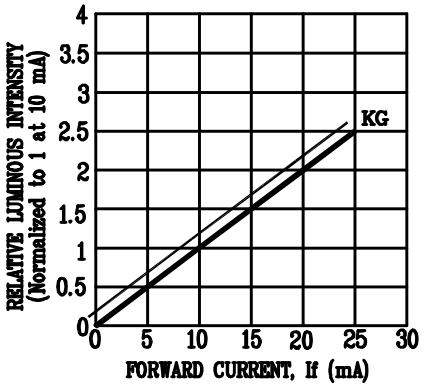


Fig3. Relative Luminous Intensity vs. DC Forward Current

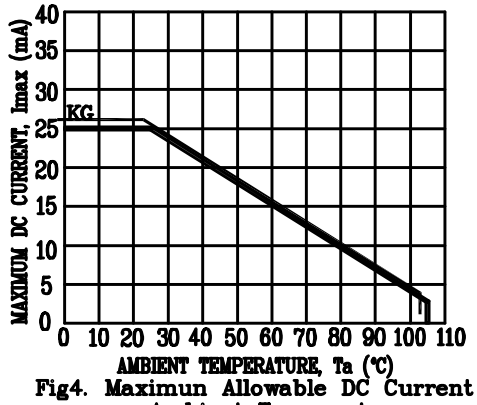


Fig4. Maximun Allowable DC Current vs. Ambient Temperature

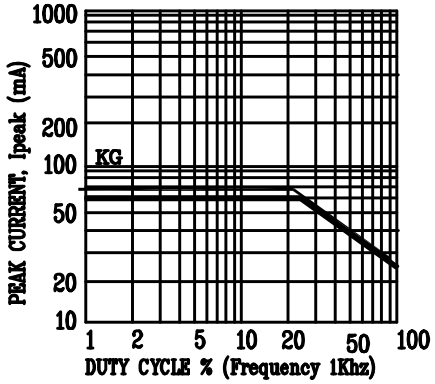


Fig5. Maximum Peak Current vs. Duty Cycle %

NOTE : KG=AlInGaP Green

TYPICAL ELECTRICAL / OPTICAL CHARACTERISTIC CURVES

(25°C Ambient Temperature Unless Otherwise Noted)

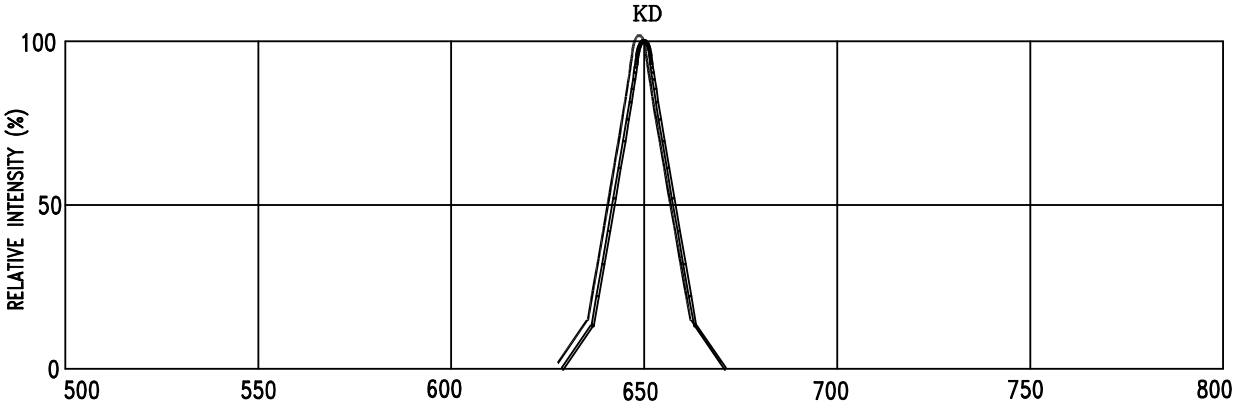


Fig1.Spectral Emission

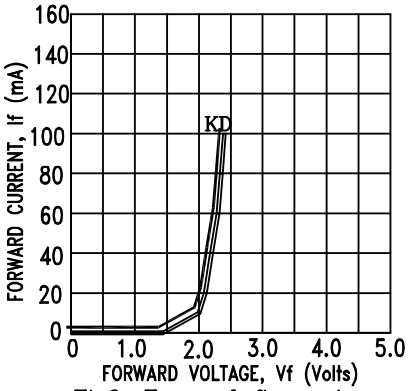


Fig2. Forward Current vs. Forward Voltage

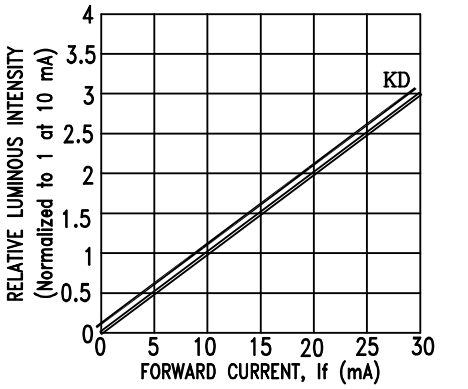


Fig3. Relative Luminous Intensity vs. DC Forward Current

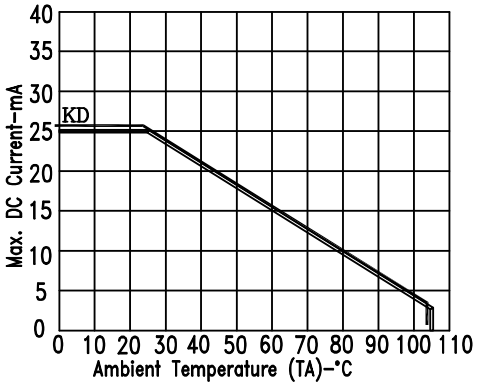


Fig5. MAX. ALLOWABLE DC CURRENT VS. AMBIENT TEMPERATURE.

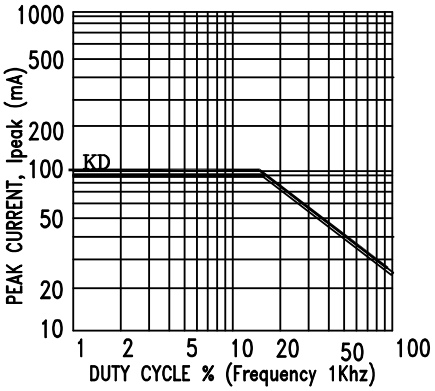


Fig5. Maximum Peak Current vs. Duty Cycle %

NOTE : KD=AlInGaP HYPER RED