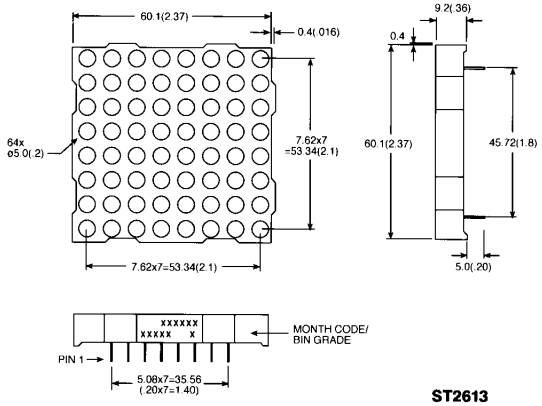
FAIRCHILD
SEMICONDUCTOR™

2.3″ 8×8
DOT MATRIX DISPLAYS

YELLOW GMA 2888C GMC 2888C
HER GMA 2988C GMC 2988C
GREEN GMA 2488C GMC 2488C
BICOLOR RED/GREEN GMC 2688C

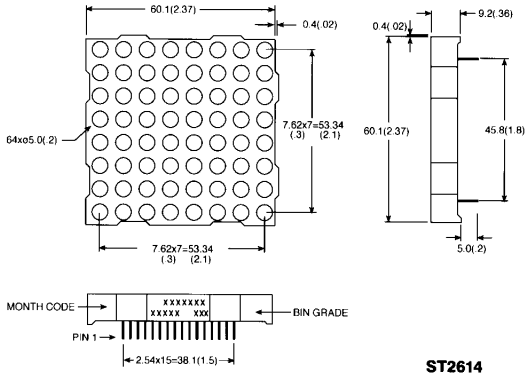
PACKAGE DIMENSIONS

A. GMX2X88C



ST2613

B. GMC2688C



ST2614

NOTES:
1. ALL PINS ARE 60.5 (.02).
2. DIMENSIONS IN MILLIMETERS (INCH), TOLERANCE IS ±0.25 (.01) UNLESS OTHERWISE NOTED.

DESCRIPTION

These are 8×8 dot matrix displays with large emitting area (0.2″ diameter) LED sources. The GMX2X88C series are single color displays with the exception of GMC2688C, a bicolor of red/green displays.

All displays have gray face and white dot color. Other face or dot colors are available with minimum requirement.

The X in GMX denotes row anode or row cathode.

FEATURES

- 2.3″ (58.4mm) character height
- Low power requirement
- High contrast & brightness
- Wide viewing angle 130°
- 8×8 array with X-Y select
- Compatible with USASCII and EBCDIC codes
- X-Y stackable
- Choice of two matrix orientation anode or cathode column
- Easy mounting on PCB
- Categorized for luminous intensity
- Single color displays have the choice of 3 bright color — yellow/orange/green
- Multicolor color displays are applicable to 3 bright color—greens, orange (HER) and yellow (green and HER mixed)

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ABSOLUTE MAXIMUM RATING (T_A=25°C unless otherwise specified)

	YELLOW	HER	GREEN	UNITS
Power dissipation per dot/color	60	70	75	mW
Peak forward current per dot/color (duty cycle 1/10, 10KHz)	80	100	100	mA
Continuous I_F per dot/color	20	25	25	mA
Reverse voltage V_R per dot/color	5	5	5	V
Operating and storage temperature range				−25°C to +85°C
Soldering time at 260°C (1/16 inch below seating plane)				3 sec

MODEL NUMBERS

PART NO.						
YELLOW	HER	GREEN	MULTI-COLOR	DESCRIPTION	PACKAGE DIMENSION	INTERNAL CIRCUIT DIAGRAM
GMC2888C	GMC2988C	GMC2488C		Anode column, cathode row	A	A
GMA2888C	GMA2988C	GMA2488C		Cathode column, anode row	A	B
			GMC2688C	Anode column, cathode row	B	C

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ELECTRICAL/OPTICAL CHARACTERISTICS (T_A=25°C Unless otherwise specified)
GMX 2888C

PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Average luminous intensity		3000		μcd	I_F=20 mA
Peak emission wavelength		585		nm	I_F=20 mA
Spectral line half-width		35		nm	I_F=20 mA
Forward voltage, any dot		2.1	2.8	V	I_F=20 mA
Reverse voltage, any dot			100	μA	V_R=5V

TYPICAL ELECTRICAL/OPTICAL CHARACTERISTIC CURVES
(T_A=25°C Unless otherwise specified)

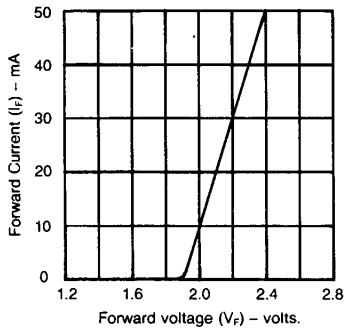

Fig. 1. Forward Current vs. Forward Voltage

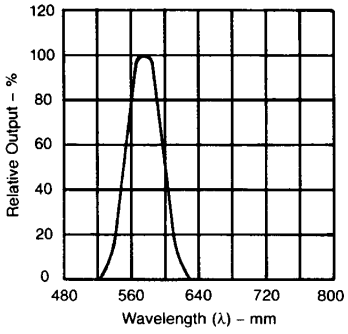

Fig. 2. Spectral Response

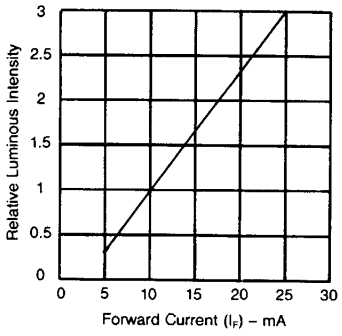

Fig. 3. Relative Luminous Intensity vs. Forward Current

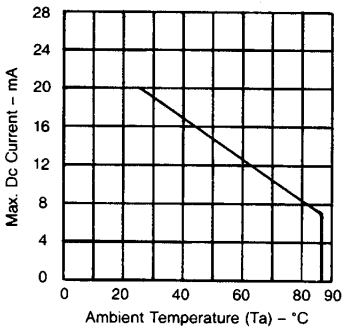

Fig. 4. Maximum Allowable DC Current Per Segment vs. A Function of Ambient Temperature

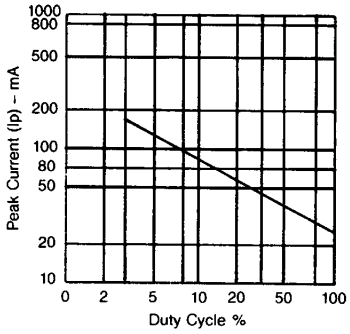

Fig. 5. Max Peak Current vs. Duty Cycle % (Refresh Rate f=1. KHz)

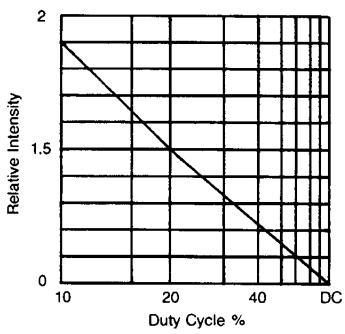

Fig. 6. Luminous Intensity vs. Duty Cycle % (Average 1=10 mA Per Seg.)

ELECTRICAL/OPTICAL CHARACTERISTICS (T_A=25°C Unless otherwise specified)
GMX 2988C

PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Average luminous intensity		3000		μcd	I_F=20 mA
Peak emission wavelength		635		nm	I_F=20 mA
Spectral line half-width		40		nm	I_F=20 mA
Forward voltage, any dot		2.1	2.8	V	I_F=20 mA
Reverse voltage, any dot			100	μA	V_R=5V

TYPICAL ELECTRICAL/OPTICAL CHARACTERISTIC CURVES
(T_A=25°C Unless otherwise specified)

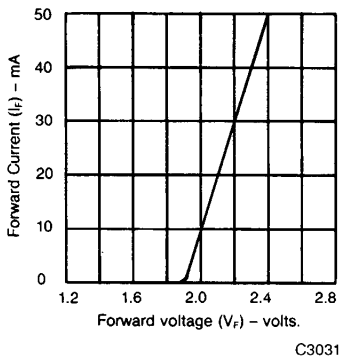

Fig. 1. Forward Current vs. Forward Voltage

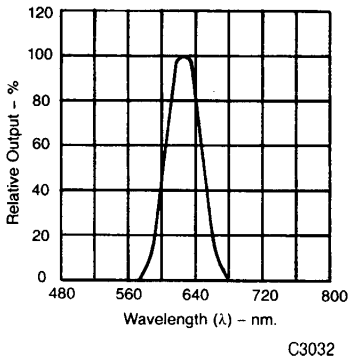

Fig. 2. Spectral Response

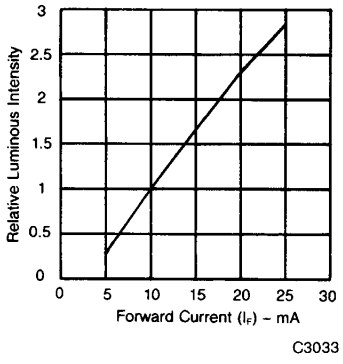

Fig. 3. Relative Luminous Intensity vs. Forward Current

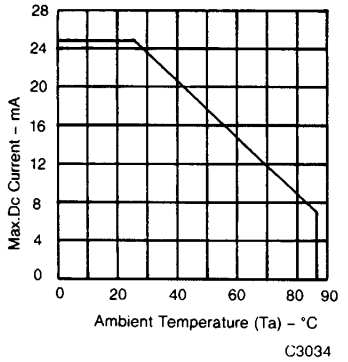

Fig. 4. Maximum Allowable DC Current Per Segment vs. A Function of Ambient Temperature

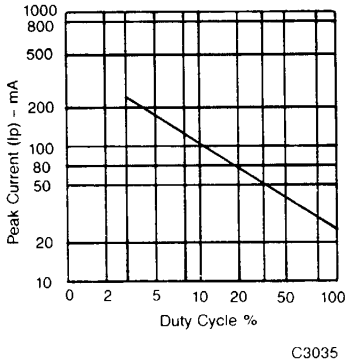

Fig. 5. Max. Peak Current vs. Duty Circle % (Refresh Rate F=1 KHz)

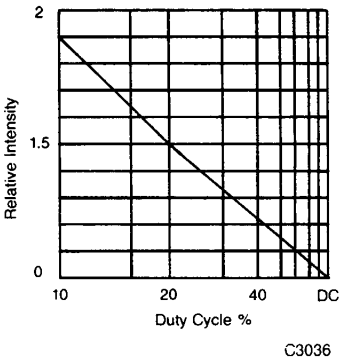

Fig. 6. Luminous Intensity vs. Duty Cycle

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ELECTRICAL/OPTICAL CHARACTERISTICS (T_A=25°C Unless otherwise specified)
GMX 2488C

PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Average luminous intensity		3000		μcd	I_F=20 mA
Peak emission wavelength		565		nm	I_F=20 mA
Spectral line half-width		30		nm	I_F=20 mA
Forward voltage, any dot		2.1	2.8	V	I_F=20 mA
Reverse voltage, any dot			100	μA	V_R=5V

TYPICAL ELECTRICAL/OPTICAL CHARACTERISTIC CURVES
(T_A=25°C Unless otherwise specified)

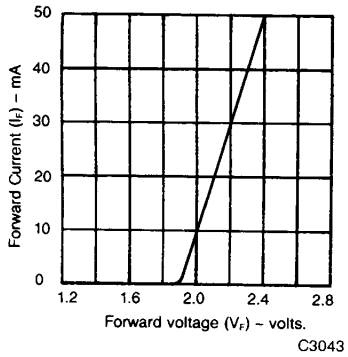

Fig. 1. Forward Current vs. Forward Voltage

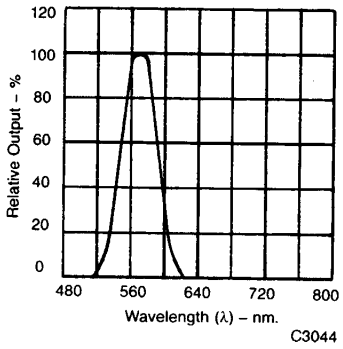

Fig. 2. Spectral Response

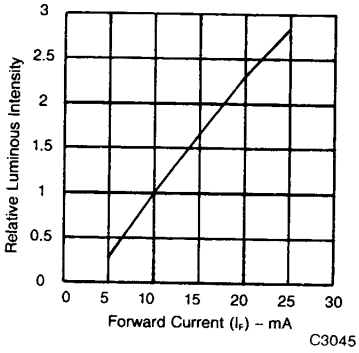

Fig. 3. Relative Luminous Intensity vs. Forward Current

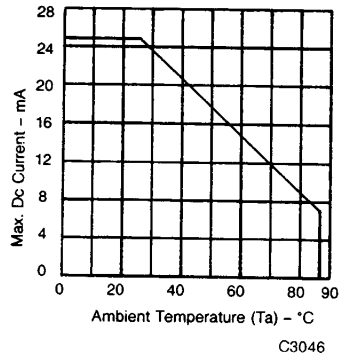

Fig. 4. Maximum Allowable DC Current Per Segment vs. A Function of Ambient Temperature

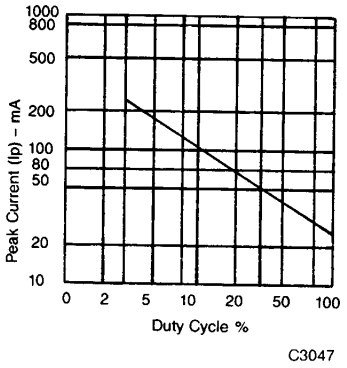

Fig. 5. Max Peak Current vs. Duty Cycle % (Refresh Rate f=1 KHz)

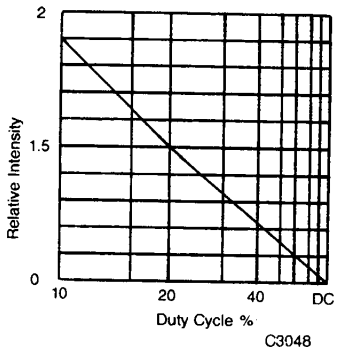

Fig. 6. Luminous Intensity vs. Duty Cycle % (Average 1=10 mA Per Seg.)

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PIN CONNECTION

PIN NO.	GMC2X88C	GMA2X88C	GMC2688C
1	Anode column 1	Cathode column 1	Anode Column 1b
2	Anode column 2	Cathode column 2	Anode column 1a
3	Anode column 3	Cathode column 3	Anode column 2b
4	Anode column 4	Cathode column 4	Anode column 2a
5	Cathode row 5	Anode row 5	Anode column 3b
6	Cathode row 6	Anode row 6	Anode column 3a
7	Cathode row 7	Anode row 7	Anode column 4b
8	Cathode row 8	Anode row 8	Anode column 4a
9	Anode column 8	Cathode column 8	Cathode row 5b
10	Anode column 7	Cathode column 7	Cathode row 5a
11	Anode column 6	Cathode column 6	Cathode row 6b
12	Anode column 5	Cathode column 5	Cathode row 6a
13	Cathode row 4	Anode row 4	Cathode row 7b
14	Cathode row 3	Anode row 3	Cathode row 7a
15	Cathode row 2	Anode row 2	Cathode row 8b
16	Cathode row 1	Anode row 1	Cathode row 8a
17			Anode column 8b
18			Anode column 8a
19			Anode column 7b
20			Anode column 7a
21			Anode column 6b
22			Anode column 6a
23			Anode column 5b
24			Anode column 5a
25			Cathode row 4b
26			Cathode row 4a
27			Cathode row 3b
28			Cathode row 3a
29			Cathode row 2b
30			Cathode row 2a
31			Cathode row 1b
32			Cathode row 1a

"a" for HER chip "b" for green chip

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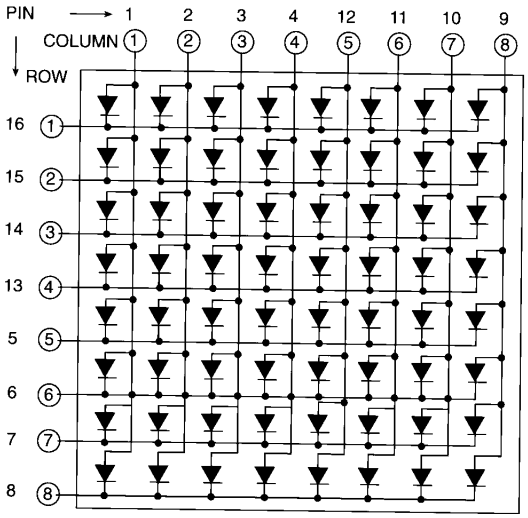
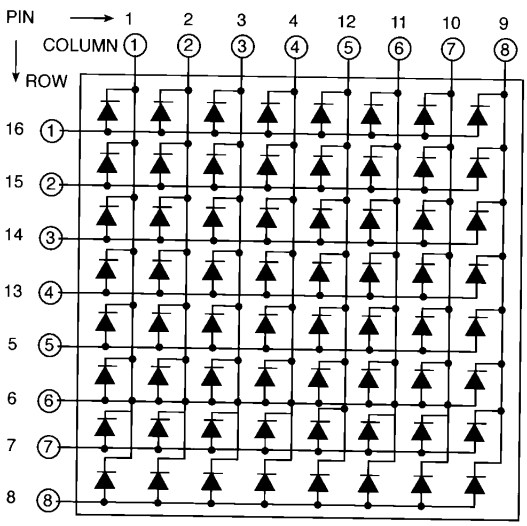
INTERNAL CIRCUIT DIAGRAM

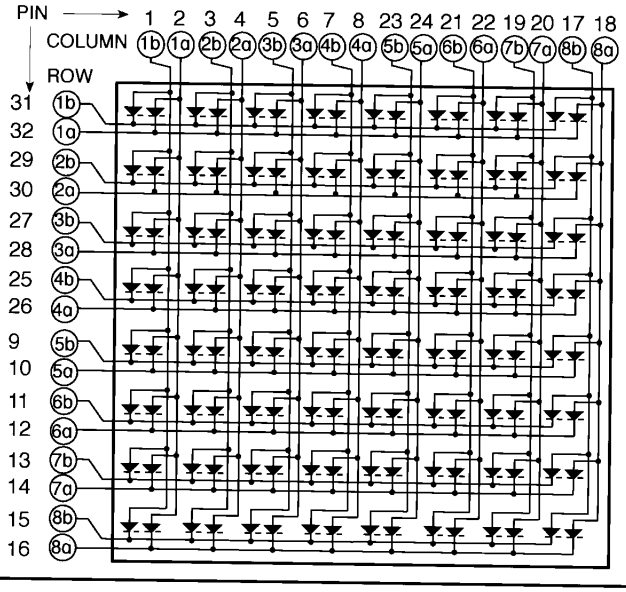
A. GMC2X88C



B. GMA2X88C



C. GMC2688C



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2. A critical component in any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.