

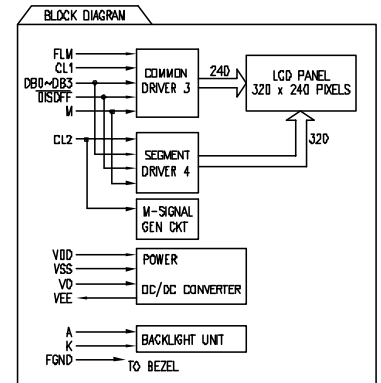
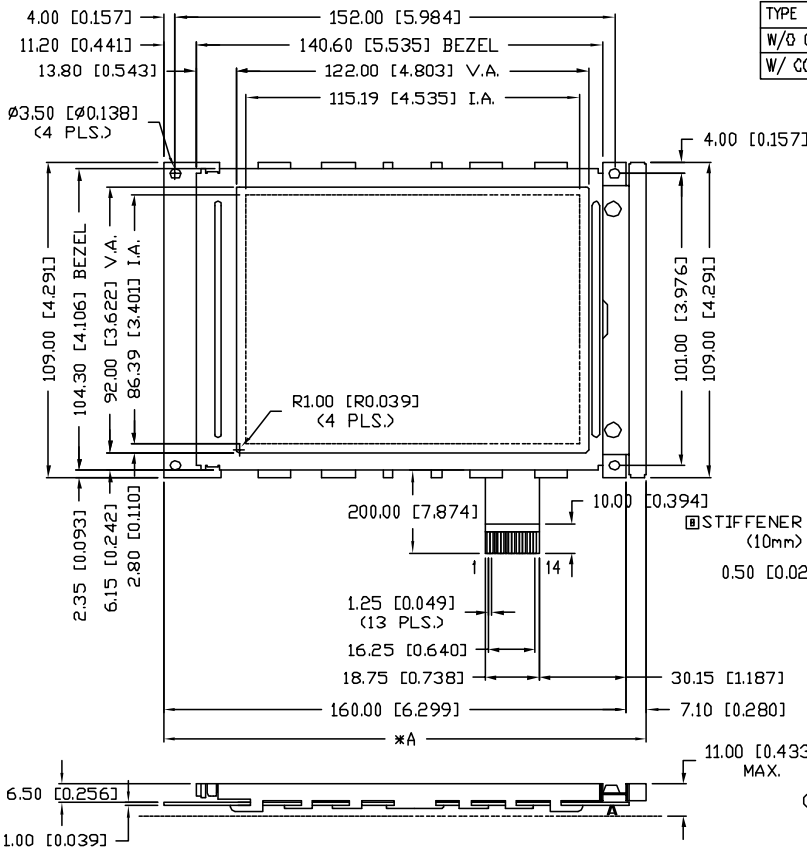
UNCONTROLLED DOCUMENT

PART NUMBER  
LCM-X320240GXX/B

REV.  
B

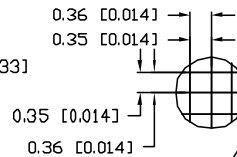
TYPE	*A
W/O CCFL	160.0
W/ CCFL	167.1

REV.	E.C.N. NUMBER AND REVISION COMMENTS	DATE
A	E.C.N. #11370	11.21.06
B	E.C.N. #11385	01.10.07



LCM-X	GXX/B	DESCRIPTION
STANDARD	S	SR/B STN, REFLECTIVE
HIGH TEMP.	H	WF/B-C FSTN, TRANSFLECTIVE(W/CCFL BACKLIGHT)

PIXEL DETAIL



CAUTION: STATIC SENSITIVE DEVICE  
FOLLOW PROPER E.S.D. HANDLING PROCEDURES  
WHEN WORKING WITH THIS PART.

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REV. B	PART NUMBER LCM-X320240GXX/B
320 x 240 DOT MATRIX, 1/4 VGA GRAPHIC MODULE, DC-DC, 1/240 DUTY.	

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**RELIABILITY NOTE**  
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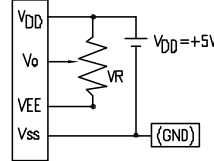
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PIN CONFIGURATION

PIN NO.	SYMBOL	LEVEL	FUNCTION
1~4	D0~D3	H/L	DATA BUS
5	DISP.OFF	H/L	H: ON, L: OFF
6	FLM	H	THE FLM SIGNAL INDICATES THE BEGINNING OF EACH DISPLAY CYCLE.
7	NC	-	-
8	CL1	H->L	DATA LATCH PULSE
9	CL2	H->L	DATA SHIFT CLOCK PULSE
10	V <sub>DD</sub>	-	POWER SUPPLY FOR LOGIC CIRCUIT
11	V <sub>SS</sub>	-	GND
12	V <sub>EE</sub>	-	POWER SUPPLY FOR LCD DRIVING CIRCUIT
13	V <sub>0</sub>	-	LCD CONTRAST VOLTAGE
14	FGND	-	FLM GND

V<sub>DD</sub>-V<sub>0</sub>: LCD DRIVING VOLTAGE  
VR: 10KΩ-20KΩ



ELECTRICAL CHARACTERISTICS

ITEM	SYMBOL	CONDITION	STANDARD VALUE			UNIT
			MIN.	TYP.	MAX.	
SUPPLY VOLTAGE FOR LOGIC	V <sub>DD</sub> -V <sub>SS</sub>	-	4.75	5.0	5.5	V
SUPPLY CURRENT FOR LOGIC	I <sub>DD</sub>	NOTE 1	-	16.0	25	mA
SUPPLY VOLTAGE FOR LCD DRIVER	V <sub>EE</sub> -V <sub>SS</sub>	-	22.4	23.5	24.3	V
SUPPLY CURRENT FOR LCD	I <sub>EE</sub>	NOTE 1	-	5.0	-	mA
INPUT VOLTAGE*	HIGH	V <sub>IH</sub>	-	2.2	-	V <sub>DD</sub>
	LOW	V <sub>IL</sub>	-	-	0.6	V
CCFL DRIVING VOLTAGE	V <sub>CCFL</sub>	T <sub>a</sub> =25°C	-	300	-	V <sub>rms</sub>
CCFL FREQUENCY	f <sub>CCFL</sub>	-	-	70	85	KHz
CCFL CURRENT	I <sub>CCFL</sub>	T <sub>a</sub> =25°C	4	5	6	mA
CCFL STARTING DISCHARGE VOLTS	-	T <sub>a</sub> =5°C	1000	-	-	V
BRIGHTNESS	-	SURFACE AREA	-	80	-	cd/m <sup>2</sup>
CCFL OPERATING LIFETIME	-	T <sub>a</sub> =25°C	-	10K	-	HOURS

NOTE 1: V<sub>DD</sub>-V<sub>SS</sub>=5.0V  
V<sub>DD</sub>-V<sub>0</sub>=23.5V

\*APPLIED TO TERMINALS FLM, CL1, CL2, D0~D3, DISPOFF.

ABSOLUTE MAXIMUM RATINGS

ITEM	SYMBOL	TEST CONDITION	STANDARD VALUE		UNIT
			MIN	MAX	
SUPPLY VOLTAGE FOR LOGIC	V <sub>DD</sub> -V <sub>SS</sub>	T <sub>a</sub> =25°C	-	7.0	V
SUPPLY VOLTAGE FOR LCD DRIVE	V <sub>DD</sub> -V <sub>0</sub>	T <sub>a</sub> =25°C	-	30	V
INPUT VOLTAGE	V <sub>I</sub>	T <sub>a</sub> =25°C	V <sub>SS</sub>	V <sub>DD</sub>	V
OPERATING TEMPERATURE	T <sub>opr</sub>	LCM-S	0	50	°C
		LCM-H	-20	70	°C
STORAGE TEMPERATURE	T <sub>stg</sub>	LCM-S	-20	70	°C
		LCM-H	-30	85	°C

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REV. B PART NUMBER LCM-X320240GXX/B

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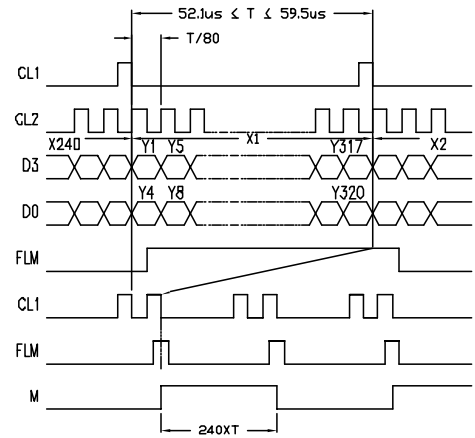
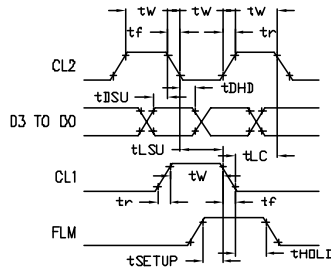
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TIMING SPECIFICATIONS

PARAMETER	SYMBOL	MIN	MAX	UNIT
CLOCK FREQUENCY	f <sub>CP</sub>	-	8	MHz
CLOCK PULSE WIDTH	t <sub>W</sub>	45	-	ns
RISE, FALL TIME	t <sub>R</sub> , t <sub>F</sub>	-	15	ns
DATA SET-UP TIME	t <sub>DSU</sub>	20	-	ns
DATA HOLD TIME	t <sub>DHD</sub>	20	-	ns
CL1 SET-UP TIME	t <sub>LSU</sub>	80	-	ns
CL1 → CL2 TIME	t <sub>LC</sub>	80	-	ns
FLM SET-UP TIME	t <sub>setup</sub>	100	-	ns
FLM HOLD TIME	t <sub>hold</sub>	100	-	ns
M DELAY TIME	t <sub>DF</sub>	-	300	ns



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