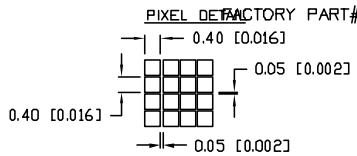


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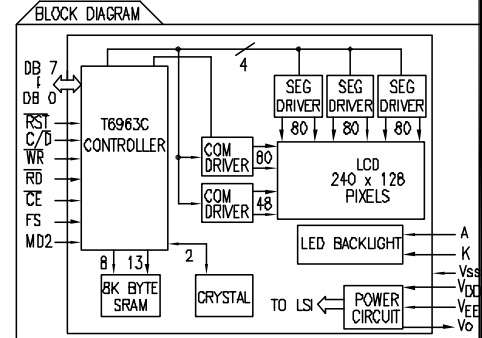
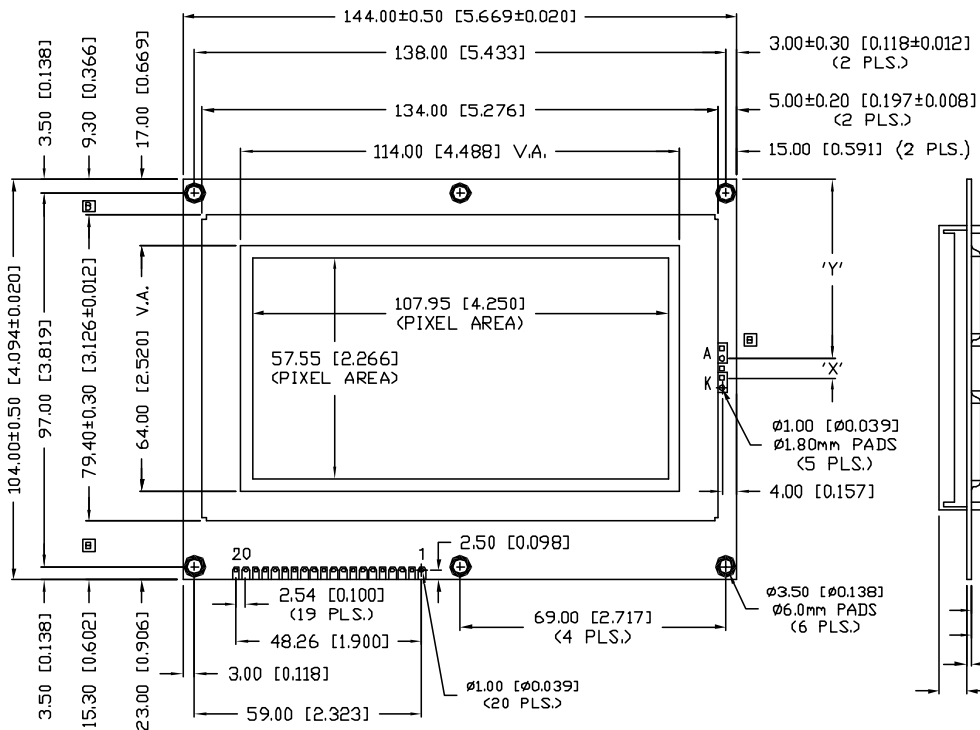
PART NUMBER
LCM-X240128GXX(-X)

REV.
C

P/N PREFIX/SUFFIX TABLE		
LCM-X	GXX	DESCRIPTION
STANDARD	S	SR STN, REFLECTIVE
		SF STN, TRANSFLECTIVE W/LED BACKLIGHT
HIGH TEMP.	H	WF-C FSTN, TRANSFLECTIVE W/CCFL BACKLIGHT
		WF-L FSTN, TRANSFLECTIVE W/WHITE EL BACKLIGHT



REV.	E.C.N. NUMBER AND REVISION COMMENTS	DATE
A	E.C.N. #10BRDR. & REDRAWN.	9.10.98
B	E.C.N. #10516.	5.10.99
C	E.C.N. #10BRDR. & #10969.	3.14.03



TYPE	DIM.	A	B*	B**	X	Y
REFLECTIVE OR EL	5.2	3.5	8.4	15.24	41.38	
LED	10	3.5	8.4	5.08	46.46	
CCFL	10	3.5	8.4	-	-	

B*: WITHOUT NV+TC.
B**: WITH NV+TC.
NV-NEGATIVE VOLTAGE SUPPLY
TC-TEMPERATURE COMPENSATION

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

*UNLESS OTHERWISE SPECIFIED TOLERANCES PER DECIMAL PRECISION ARE: X=±1 (±0.039), XX=±0.5 (±0.020), XXX=±0.25 (±0.010), XXXX=±0.127 (±0.005). LEAD SIZE=±0.05 (±0.002), LEAD LENGTH=±0.75 (±0.030), MIN. DECIMAL PRECISION MAX. DECIMAL PRECISION

REV.	PART NUMBER
C	LCM-X240128GXX(-X)
240 x 128 DOT MATRIX GRAPHIC MODULE, 1/128 DUTY.	

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RELIABILITY NOTE
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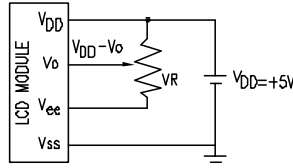
FACTORY PART#

REV.	E.C.N. NUMBER AND REVISION COMMENTS	DATE
	SEE PAGE 1.	

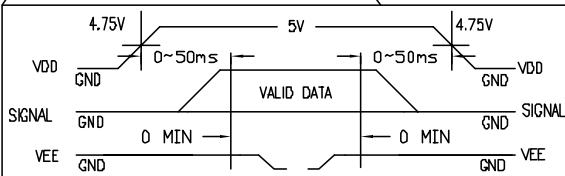
ABSOLUTE MAXIMUM RATINGS

ITEM	SYMBOL	MIN.	MAX.	UNIT
POWER SUPPLY FOR LOGIC	$V_{DD}-V_{SS}$	0	6.5	V
POWER SUPPLY FOR LCD DRIVING	$V_{DD}-V_{EE}$	0	22.0	V
INPUT VOLTAGE	V_I	V_{SS}	V_{DD}	V
STATIC ELECTRICITY			100	V

$V_{DD}-V_o$: LCD DRIVING VOLTAGE
VR: 10K Ω -20K Ω



TIMING OF POWER SUPPLY AND INTERFACE SIGNAL



PIN CONFIGURATION

PIN #	SYMBOL	LEVEL	FUNCTION
1	Vss	-	GROUND (0V)
2	VDD	-	POWER SUPPLY FOR LOGIC CIRCUIT
3	Vo	-	OPERATING VOLTAGE FOR LCD DRIVING
4	C/D	H/L	\overline{WR} ="L", C/D="H": COMMAND WRITE, "L": DATA WRITE \overline{RD} ="L", C/D="H": STATUS READ, "L": DATA READ
5	\overline{RD}	L	DATA READ
6	\overline{WR}	L	DATA WRITE
7~14	DB0~DB7	H/L	DATA BUS LINE
15	CE	L	CHIP ENABLE
16	RST	L	RESET
17	Vee	-	POWER SUPPLY FOR LCD DRIVING
18	MD2	H/L	COLUMNS SELECT: "H": 32 COLUMNS, "L": 40 COLUMNS
19	FS	H/L	FONT SELECT: "H": 6*8 PIXEL/FONT, "L": 8*8 PIXEL/FONT
20	N.C.	-	
	A	-	POWER SUPPLY FOR LED BACKLIGHT (ANODE)
	K	-	POWER SUPPLY FOR LED BACKLIGHT (CATHODE)

OPTO-ELECTRICAL CHARACTERISTICS

ITEM	SYMBOL	STANDARD VALUE			UNIT	
		MIN.	TYP.	MAX.		
POWER SUPPLY VOLTAGE FOR LOGIC	$V_{DD}-V_{SS}$	+4.75	+5.0	+5.25	V	
NEGATIVE POWER SUPPLY VOLTAGE FOR LCD DRIVE	$V_{EE}-V_{SS}$	-15.5	-16.0	-16.5	V	
INPUT VOLTAGE: NOTE (1)	H LEVEL	V_{IH}	2.2	-	V	
	L LEVEL	V_{IL}	0	0.8	V	
OUTPUT VOLTAGE: NOTE (2)	H LEVEL	V_{OH}	2.4	V_{DD}	V	
	L LEVEL	V_{OL}	0	0.4	V	
POWER SUPPLY CURRENT FOR LOGIC:	NOTE (4)	I_{DD}	-	12.0	mA	
POWER SUPPLY CURRENT FOR LCD DRIVE: NOTE (4)		I_{EE}	-	5.0	mA	
RECOMMENDED LCD DRIVING VOLTAGE: (NOTE 3)	$T_a=0^\circ\text{C}$	$V_{DD}-V_o$	-	+19.4	V	
	$T_a=25^\circ\text{C}$	$\phi=10^\circ\text{C}$	-	+18.5	V	
	$T_a=50^\circ\text{C}$	$e=0^\circ\text{C}$	-	+16.2	V	
CLOCK OSCILLATION FREQUENCY		fosc	-	5	MHZ	
*LED BACKLIGHT	VOLTAGE	$f=900\text{mA}$	V_f	-	4.2, 4.6	V
	CURRENT		I_f	-	900	mA
	POWER CONSUMPTION		PD	-	3.8	W
	LUMINOUS	$f=900\text{mA}$	L	60	-	cd/m ²
COLOR				574	nm	

*ONLY APPLIES TO MODULES WITH BACKLIGHT
NOTE (1): APPLIED TO TERMINALS: FS, CE, \overline{WR} , \overline{RD} , C/D, DB0~DB7, \overline{RES} , MD2.
NOTE (2): APPLIED TO TERMINALS: DB0~DB7.
NOTE (3): RECOMMENDED LCD DRIVING VOLTAGE MAY FLUCTUATE ABOUT $\pm 1.0\text{V}$ BY EACH MODULE.
NOTE (4): $V_{DD}-V_{SS}=5.0\text{V}$, $V_{DD}-V_o=20.6\text{V}$.

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