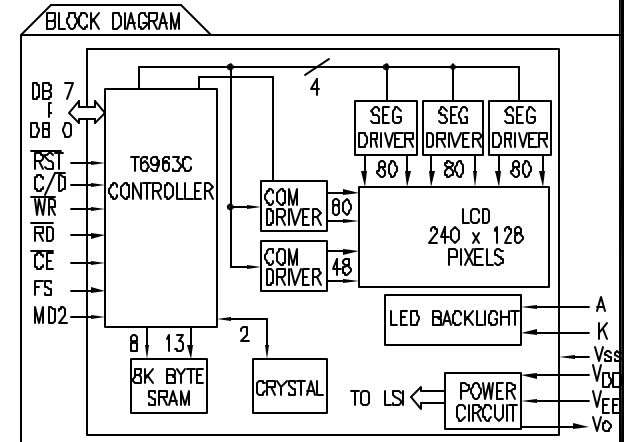
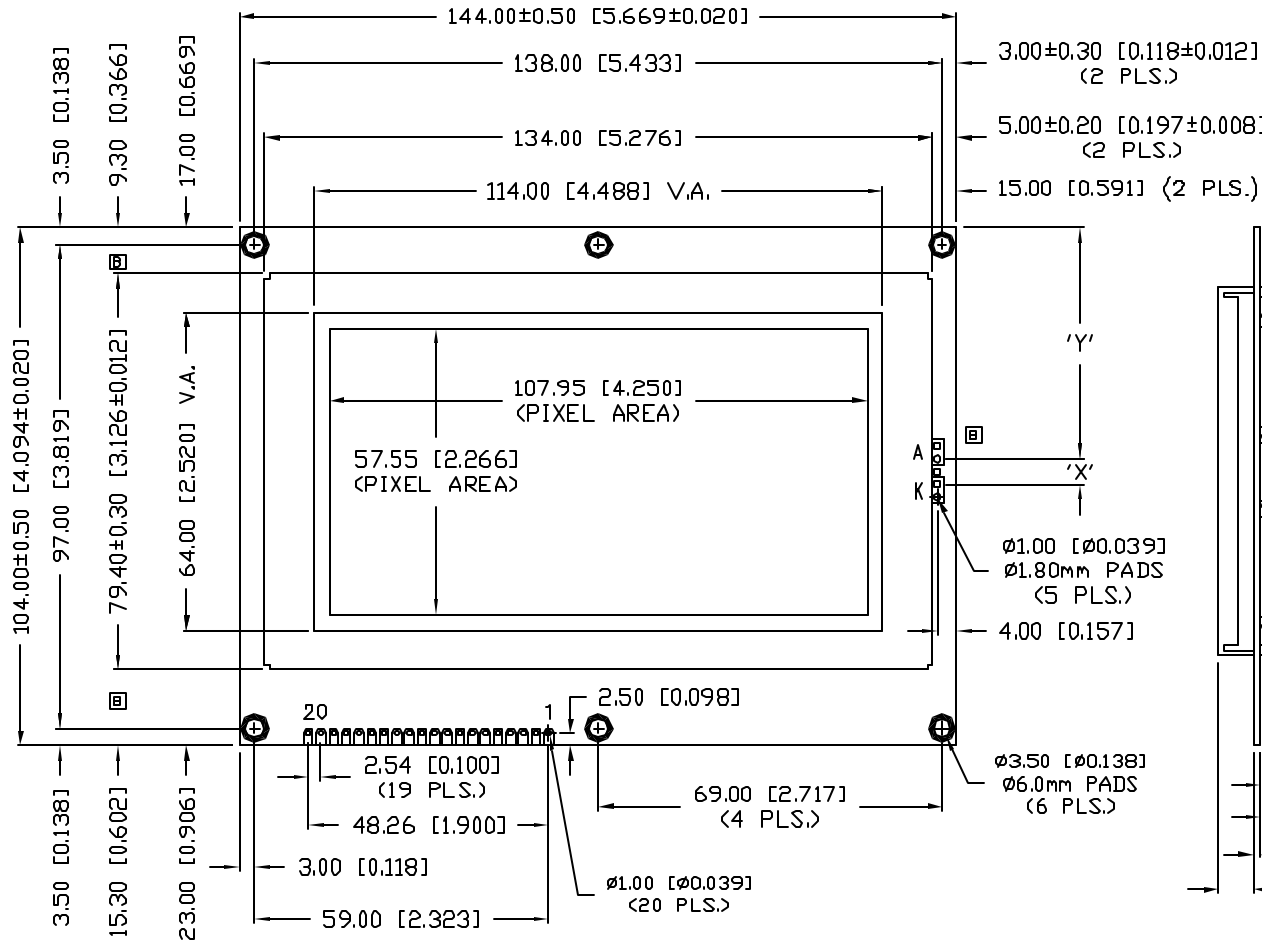
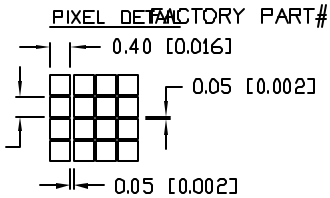


PART NUMBER		REV.
LCM-X240128GXX(-X)		C
REV.	E.C.N. NUMBER AND REVISION COMMENTS	DATE
A	E.C.N. #10BRDR. & REDRAWN.	9.10.98
B	E.C.N. #10516.	5.10.99
C	E.C.N. #10BRDR. & #10969.	3.14.03

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



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), X.X=±0.5 (±0.020), X.XX=±0.25 (±0.010), X.XXX=±0.127 (±0.005). LEAD SIZE=±0.05 (±0.002), LEAD LENGTH=±0.75 (±0.030), MIN=+0.00, MAX=-0.00

REV.	PART NUMBER
C	LCM-X240128GXX(-X)

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240 x 128 DOT MATRIX GRAPHIC MODULE,
 1/128 DUTY.

RELIABILITY NOTE
 OUR MANY YEARS OF EXPERIENCE DATA ACCUMULATION INDICATE THAT SOLDER HEAT IS A MAJOR CAUSE OF EARLY AND FUTURE FAILURE. PLEASE PAY ATTENTION TO YOUR SOLDERING PROCESS.

DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
CT			7.7.98
			PAGE: 1 OF 2
			SCALE: N/A

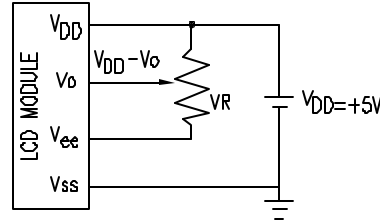
FACTORY PART#

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

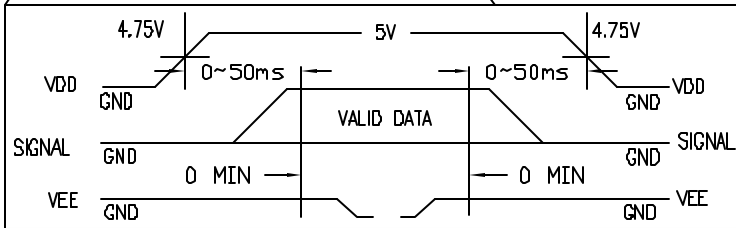
ABSOLUTE MAXIMUM RATINGS

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
 V_R : 10K Ω - 20K Ω



TIMING OF POWER SUPPLY AND INTERFACE SIGNAL



PIN CONFIGURATION

PIN #	SYMBOL	LEVEL	FUNCTION
1	V_{SS}	-	GROUND (0V)
2	V_{DD}	-	POWER SUPPLY FOR LOGIC CIRCUIT
3	V_o	-	OPERATING VOLTAGE FOR LCD DRIVING
4	C/\bar{D}	H/L	\overline{WR} ="L", C/\bar{D} ="H": COMMAND WRITE, "L": DATA WRITE \overline{RD} ="L", C/\bar{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	\overline{CE}	L	CHIP ENABLE
16	\overline{RST}	L	RESET
17	V_{EE}	-	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)	$T_a=0^\circ C$	$V_{DD}-V_o$	-	+19.4	-	V	
	$T_a=25^\circ C$	$\Phi=10^\circ C$	-	+18.5	-	V	
	$T_a=50^\circ C$	$e=0^\circ C$	-	+16.2	-	V	
CLOCK OSCILLATION FREQUENCY	f_{osc}	-	5	-	MHZ		
*LED BACKLIGHT	VOLTAGE	$I_f=900mA$	V_f	-	4.2	4.6	V
	CURRENT	-	I_f	-	900	-	mA
	POWER CONSUMPTION	-	PD	-	3.8	-	W
	LUMINOUS	$I_f=900mA$	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/\bar{D} , DB0~DB7, \overline{RES} , MD2.
 NOTE (2): APPLIED TO TERMINALS: DB0~DB7.
 NOTE (3): RECOMMENDED LCD DRIVING VOLTAGE MAY FLUCTUATE ABOUT $\pm 1.0V$ BY EACH MODULE.
 NOTE (4): $V_{DD}-V_{SS}=5.0V$, $V_{DD}-V_o=20.6V$.

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

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