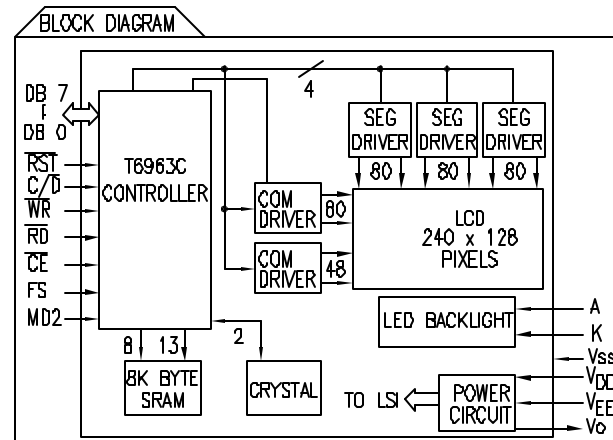
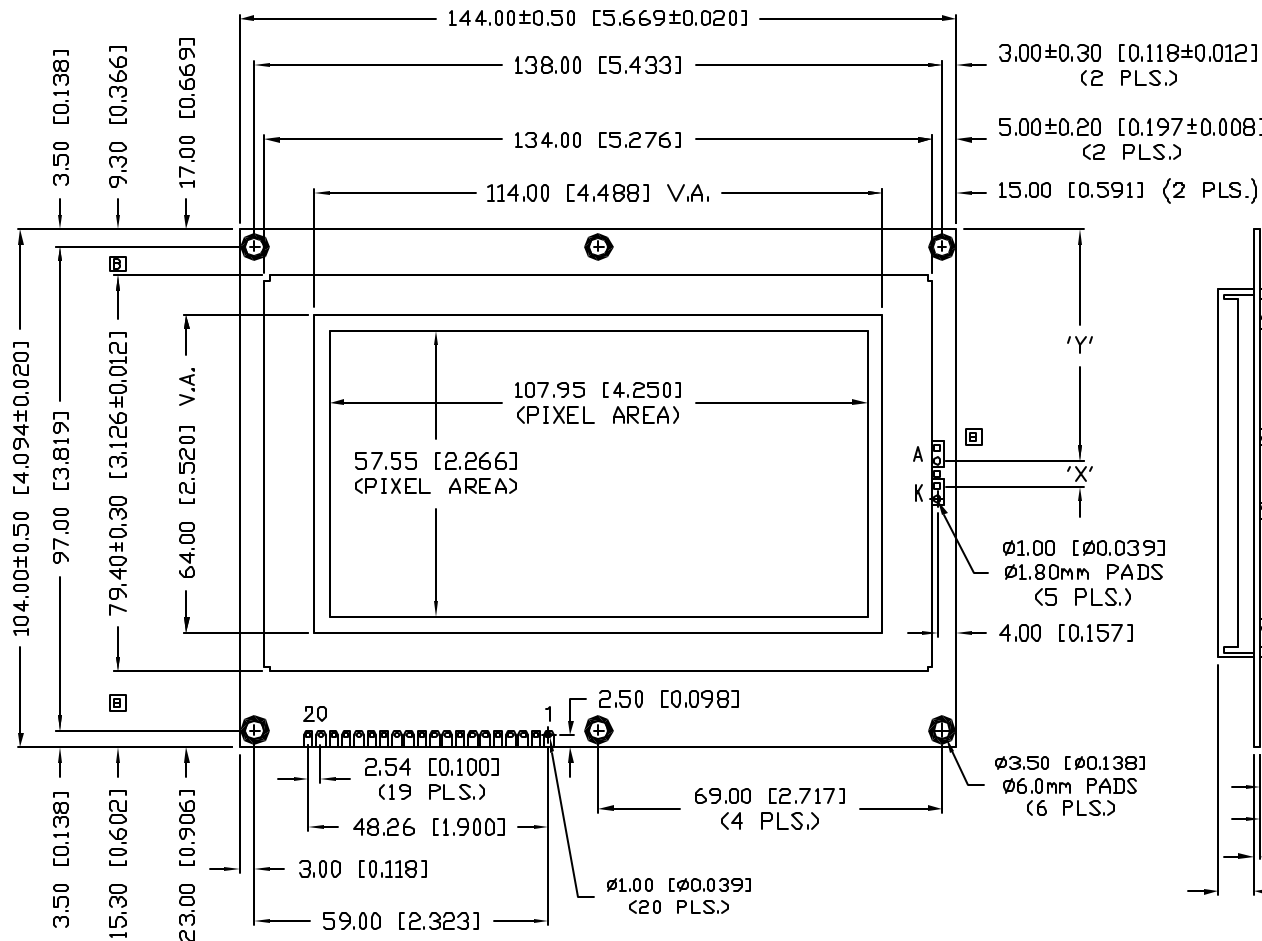
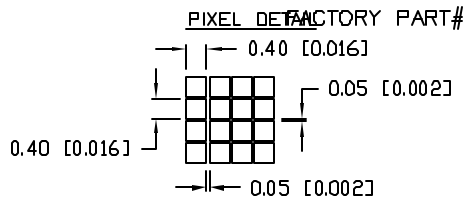


PART NUMBER		REV.
LCM-X240128GXX(-X)		C
REV.	E.C.N. NUMBER AND REVISION COMMENTS	DATE
A	E.C.N. #10BRDR. & REDRAWN.	9.10.98
B	E.C.N. #10516.	5.10.99
C	E.C.N. #10BRDR. & #10969.	3.14.03

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), 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=+0.00 DECIMAL PRECISION MAX=-0.00 DECIMAL PRECISION

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

**CONFIDENTIAL INFORMATION**  
 THE INFORMATION CONTAINED IN THIS DOCUMENT IS THE PROPERTY OF LUMEX INC. EXCEPT AS SPECIFICALLY AUTHORIZED IN WRITING BY LUMEX INC., THE HOLDER OF THIS DOCUMENT SHALL KEEP ALL INFORMATION CONTAINED HEREIN CONFIDENTIAL AND SHALL PROTECT SAME IN WHOLE OR IN PART FROM DISCLOSURE AND DISSEMINATION TO ALL THIRD PARTIES.



290 E. HELEN ROAD  
 PALATINE, IL 60067-6976  
 PHONE: +1.847.359.2790  
 US WEB: www.lumex.com  
 TW WEB: www.lumex.com.tw

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

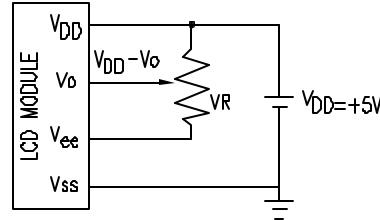
FACTORY PART#

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

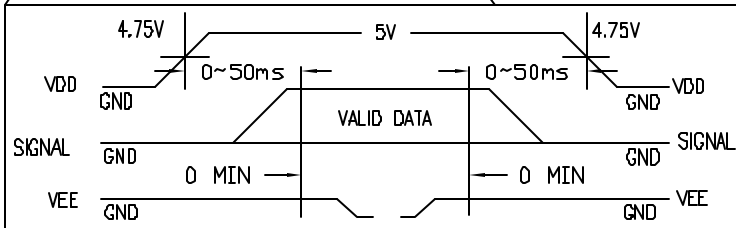
ABSOLUTE MAXIMUM RATINGS

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 $\Omega$  - 20K $\Omega$



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 <sup>2</sup>
	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):  $V_{DD}-V_{SS}=5.0V$ ,  $V_{DD}-V_o=20.6V$ .

\*UNLESS OTHERWISE SPECIFIED TOLERANCES PER DECIMAL PRECISION ARE: X= $\pm 1$  ( $\pm 0.039$ ), XX= $\pm 0.5$  ( $\pm 0.020$ ), XXX= $\pm 0.25$  ( $\pm 0.010$ ), XXXX= $\pm 0.127$  ( $\pm 0.005$ ). LEAD SIZE= $\pm 0.05$  ( $\pm 0.002$ ), LEAD LENGTH= $\pm 0.75$  ( $\pm 0.030$ ), MIN.= +DECIMAL PRECISION -0.00, MAX.= +0.00 -DECIMAL PRECISION

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

**CONFIDENTIAL INFORMATION**  
 THE INFORMATION CONTAINED IN THIS DOCUMENT IS THE PROPERTY OF LUMEX INC. EXCEPT AS SPECIFICALLY AUTHORIZED IN WRITING BY LUMEX INC., THE HOLDER OF THIS DOCUMENT SHALL KEEP ALL INFORMATION CONTAINED HEREIN CONFIDENTIAL AND SHALL PROTECT SAME IN WHOLE OR IN PART FROM DISCLOSURE AND DISSEMINATION TO ALL THIRD PARTIES.

**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.

290 E. HELEN ROAD  
 PALATINE, IL 60067-6976  
 PHONE: +1.847.359.2790  
 US WEB: www.lumex.com  
 TW WEB: www.lumex.com.tw

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