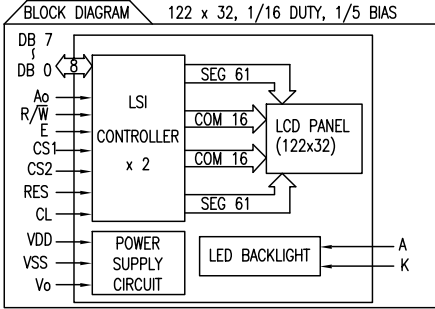
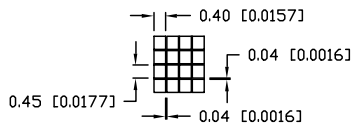


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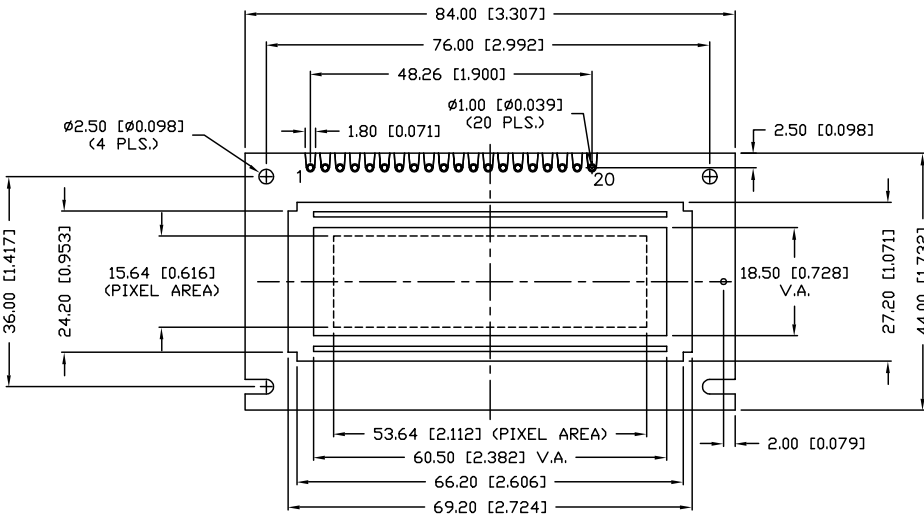


PIXEL DETAIL

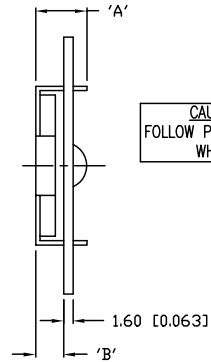


PART NUMBER		REV.
LCM-X12232GXX		B
REV.	E.C.N. NUMBER AND REVISION COMMENTS	DATE
A	E.C.N. #10433./	6-8-98
B	E.C.N. #10BRDR. & REDRAWN.	10-2-98

P/N PREFIX/SUFFIX TABLE		
LCM-X	DXX	DESCRIPTION
STANDARD	S	SR STN, REFLECTIVE
HIGH TEMP.	H	SF STN, TRANSFLECTIVE(W/ BACKLIGHT)



TYPE	DIM.	A	B
WITH BACKLIGHT		12.7	8.7
NO BACKLIGHT		8.8	4.8



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

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\*UNLESS OTHERWISE SPECIFIED TOLERANCE IS ±0.25mm (±0.010")

REV.	PART NUMBER
B	LCM-X12232GXX
122 x 32 DOT MATRIX GRAPHIC MODULE, 1/16 DUTY, 1/5 BIAS.	

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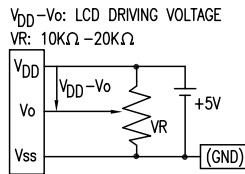
**RELIABILITY NOTE**  
OUR MANY YEARS OF EXPERIENCE DATA ACCUMULATION INDICATE THAT SOLDER HEAT IS A MAJOR CAUSE OF EARLY AND FUTURE FAILURE. PLEASE PAY ATTENTION TO YOUR SOLDERING PROCESS.

<b>LUMEX INCORPORATED</b>		290 E. HELLEN ROAD PALATINE, ILLINOIS 60067 PHONE: 1-847-359-2790 WEB: HTTP://WWW.LUMEX.COM	
DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE: 4-6-98
SA/BC			PAGE: 1 OF 2
			SCALE: N/A

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PART NUMBER		REV.
LCM-X12232GXX		B
REV.	E.C.N. NUMBER AND REVISION COMMENTS	DATE
	SEE PAGE #1./	

PIN CONFIGURATION			FUNCTION
1	V <sub>SS</sub>	-	POWER SUPPLY GND (0V) 5V FOR LCD DRIVE
2	V <sub>DD</sub>	-	
3	V <sub>O</sub>	-	
4	A <sub>0</sub>	H/L	REGISTER SELECT SIGNAL H: DATA INPUT L: INSTRUCTION INPUT
5	CS1	H,H->L	CHIP SELECT SIGNAL FOR IC1
6	CS2	H,H->L	CHIP SELECT SIGNAL FOR IC2
7	CL	H/L	CLOCK INPUT (2kHz)
8	E	H/L	ENABLE SIGNAL (NO PULL-UP RESISTOR)
9	R/W	H/L	H: DATA READ (MODULE->-MPU) L: DATA WRITE (MODULE<-MPU)
10~17	DB0~DB7	H/L	DATA BIT 0-7
18	RST	L	RESET SIGNAL
19	A	-	ANODE LED BACKLIGHT
20	K	-	CATHODE LED BACKLIGHT



READ/WRITE TIMING FOR 68 PORT MPU					
PARAMETER	SIGNAL	SYMBOL	MIN	MAX	UNIT
ADDRESS HOLD TIME	CS	t <sub>AH6</sub>	10	-	ns
ADDRESS SETUP TIME	R/W	t <sub>AS6</sub>	20	-	ns
SYSTEM CYCLE TIME	A <sub>0</sub>	t <sub>CYC6</sub>	1000	-	ns
DATA SETUP TIME	D0~D7	t <sub>DS6</sub>	80	-	ns
DATA HOLD TIME		t <sub>DH6</sub>	10	-	ns
OUTPUT DISABLE TIME		t <sub>OH6</sub>	10	60	ns
ACCESS TIME	E	t <sub>ACC6</sub>	-	90	ns
ENABLE PULSE WIDTH		(READ) (WRITE)	t <sub>EW</sub>	100	-
			80	-	ns

ELECTRICAL CHARACTERISTICS		V <sub>DD</sub> =4.5V to 5.5V, T <sub>A</sub> =25°C				
ITEM	SYMBOL	CONDITION	STANDARD VALUE			UNIT
			MIN.	TYP.	MAX.	
SUPPLY VOLTAGE FOR LOGIC	V <sub>DD</sub> -V <sub>SS</sub>	-	-	5.0	-	V
SUPPLY CURRENT FOR LOGIC	I <sub>DD</sub>	V <sub>DD</sub> =5V	-	-	3.0	mA
INPUT VOLTAGE**	HIGH	V <sub>IH</sub>	-	0.2	-	V <sub>DD</sub>
	LOW	V <sub>IL</sub>	-	0	-	0.8
OUTPUT VOLTAGE***	HIGH	V <sub>OH</sub>	I <sub>OH</sub> =-3mA	2.4	-	V
	LOW	V <sub>OL</sub>	I <sub>OL</sub> =3mA	-	-	0.4
*LED BACKLIGHT	VOLTAGE	V <sub>f</sub>	-	-	4.2	4.6
	CURRENT	I <sub>f</sub>	-	-	170	330
	POWER CONSUMPTION	PD	-	-	710	-
	LUMINOUS	L	I <sub>f</sub> =170mA	70	-	-
	COLOR	-	-	-	-	-

ABSOLUTE MAXIMUM RATINGS					
ITEM	SYMBOL	TEST CONDITION	STANDARD VALUE		UNIT
SUPPLY VOLTAGE FOR LOGIC	V <sub>DD</sub> -V <sub>SS</sub>	T <sub>a</sub> =25°C	4.75	5.25	V
SUPPLY VOLTAGE FOR LCD DRIVE	V <sub>DD</sub> -V <sub>O</sub>	-	4.8@50°C	5.2@0°C	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

\*ONLY APPLIES TO MODULES WITH BACKLIGHT  
 \*\*APPLIED TO TERMINALS DB0~DB7  
 \*\*\*APPLIED TO TERMINALS E, A<sub>0</sub>, DB0~DB7

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REV. B	PART NUMBER LCM-X12232GXX	<p><b>CONFIDENTIAL INFORMATION</b></p> <p>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.</p> <p><b>RELIABILITY NOTE</b></p> <p>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.</p>	<p><b>LUMEX INCORPORATED</b></p> <p>290 E. HELLEN ROAD                  PALATINE, ILLINOIS 60067                  PHONE: 1-847-359-2790                  WEB: HTTP://WWW.LUMEX.COM</p>
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		PAGE: 2 OF 2 SCALE: N/A	