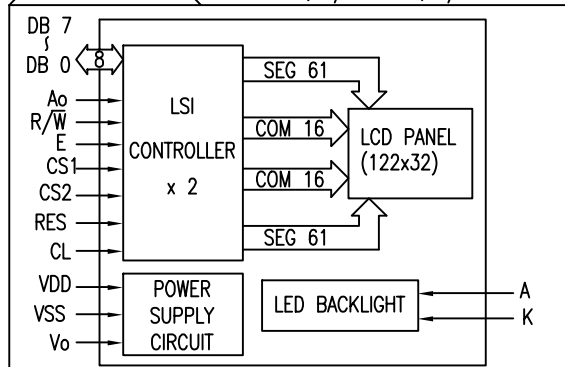


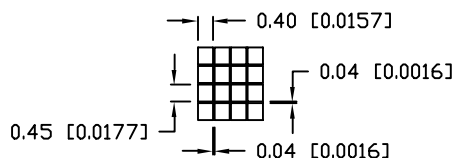
UNCONTROLLED DOCUMENT

A B

BLOCK DIAGRAM 122 x 32, 1/16 DUTY, 1/5 BIAS



PIXEL DETAIL



PART NUMBER

LCM-X12232GXX

REV.

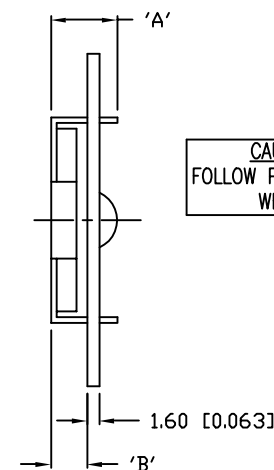
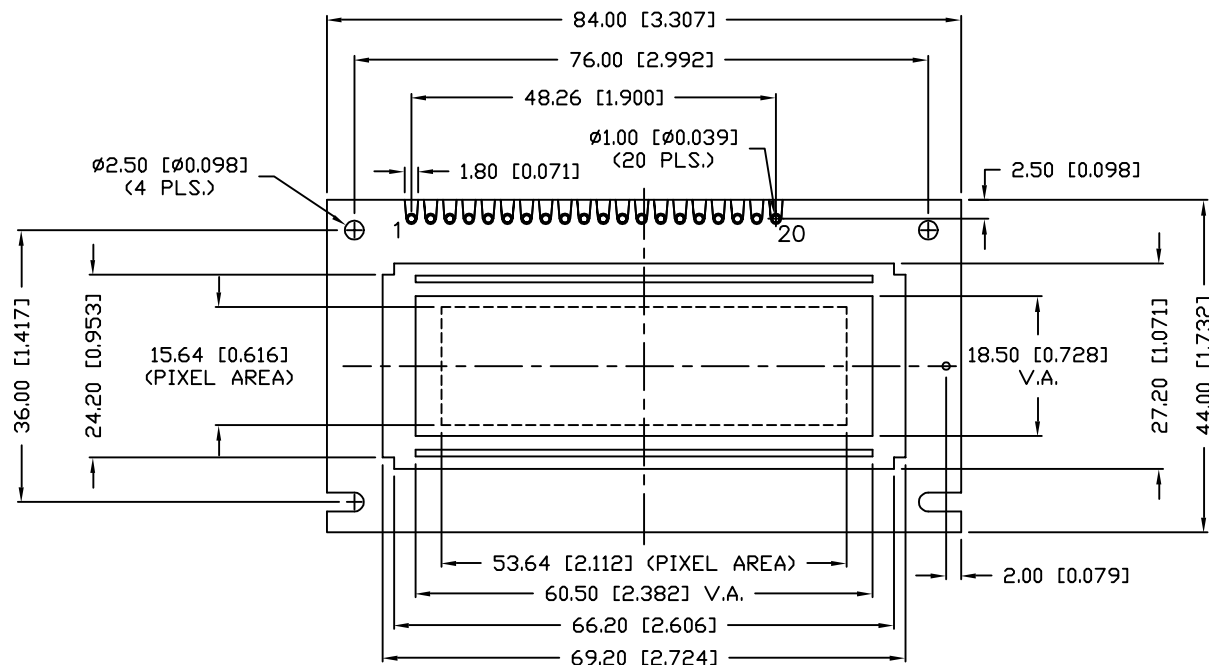
B

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	DX	DESCRIPTION
STANDARD	S	SR STN, REFLECTIVE
HIGH TEMP.	H	SF STN, TRANSLUCTIVE(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.

UNCONTROLLED DOCUMENT

*UNLESS OTHERWISE SPECIFIED TOLERANCE IS $\pm 0.25\text{mm}$ ($\pm 0.010"$)

REV. B PART NUMBER 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.

LUMEX
INCORPORATED

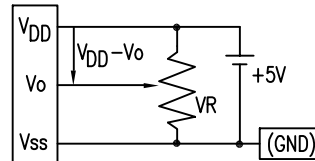
290 E. HELLEN ROAD
PALATINE, ILLINOIS 60067
PHONE: 1-847-359-2790
WEB: HTTP://WWW.LUMEX.COM

DRAWN BY: SA/BC CHECKED BY: APPROVED BY: DATE: 4-6-98
PAGE: 1 OF 2
SCALE: N/A

PIN CONFIGURATION			FUNCTION	
PIN NO.	SYMBOL	LEVEL		
1	V _{SS}	—	POWER SUPPLY	GND (0V)
2	V _{DD}	—		5V
3	V _O	—		FOR LCD DRIVE
4	A _O	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

V_{DD}-V_O: LCD DRIVING VOLTAGE

VR: 10KΩ-20KΩ



PART NUMBER
LCM-X12232GXX

REV.

B

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

READ/WRITE TIMING FOR 68 PORT MPU

PARAMETER	SIGNAL	SYMBOL	MIN	MAX	UNIT
ADDRESS HOLD TIME	CS	t _{AH6}	10	—	ns
ADDRESS SETUP TIME	R/W	t _{AS6}	20	—	ns
SYSTEM CYCLE TIME	A _O	t _{CYC6}	1000	—	ns
DATA SETUP TIME	DO~D7	t _{DS6}	80	—	ns
DATA HOLD TIME		t _{DH6}	10	—	ns
OUTPUT DISABLE TIME		t _{OH6}	10	60	ns
ACCESS TIME		t _{ACC6}	—	90	ns
ENABLE PULSE WIDTH	(READ)	t _{EW}	100	—	ns
	(WRITE)		80	—	ns

ELECTRICAL CHARACTERISTICS

V_{DD}=4.5V to 5.5V, T_A=25°C

ITEM		SYMBOL	CONDITION	STANDARD VALUE			UNIT
				MIN.	TYP.	MAX.	
SUPPLY VOLTAGE FOR LOGIC		V _{DD} -V _{SS}	—	—	5.0	—	V
SUPPLY CURRENT FOR LOGIC		I _{DD}	V _{DD} =5V	—	—	3.0	mA
INPUT VOLTAGE**	HIGH	V _{IH}	—	0.2	—	V _{DD}	V
	LOW	V _{IL}	—	0	—	0.8	V
OUTPUT VOLTAGE***	HIGH	V _{OH}	I _{OH} =-3mA	2.4	—	—	V
	LOW	V _{OL}	I _{OL} =3mA	—	—	0.4	V
*LED BACKLIGHT	VOLTAGE	V _f	—	—	4.2	4.6	V
	CURRENT	I _f	—	—	170	330	mA
	POWER CONSUMPTION	PD	—	—	710	—	mW
	LUMINOUS	L	I _f =170mA	70	—	—	cd/m ²
	COLOR	—	—	—	—	—	nm

*ONLY APPLIES TO MODULES WITH BACKLIGHT

□ **APPLIED TO TERMINALS DB0~DB7

***APPLIED TO TERMINALS E, A_O, DB0~DB7

ABSOLUTE MAXIMUM RATINGS

ITEM	SYMBOL	TEST CONDITION	STANDARD VALUE		UNIT
			MIN	MAX	
SUPPLY VOLTAGE FOR LOGIC	V _{DD} -V _{SS}	T _a =25°C	4.75	5.25	V
SUPPLY VOLTAGE FOR LCD DRIVE	V _{DD} -V _O	—	4.8@50°C	5.2@0°C	V
INPUT VOLTAGE	V _I	T _a =25°C	V _{SS}	V _{DD}	V
OPERATING TEMPERATURE	T _{opr}	LCM-S	0	50	°C
		LCM-H	-20	70	°C
STORAGE TEMPERATURE	T _{stg}	LCM-S	-20	70	°C
		LCM-H	-30	85	°C

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