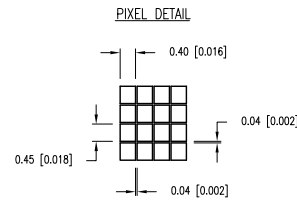
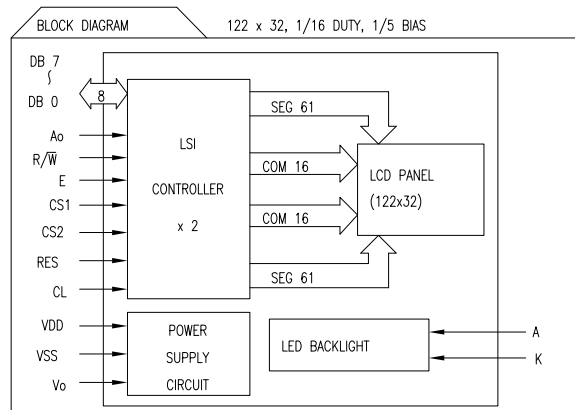
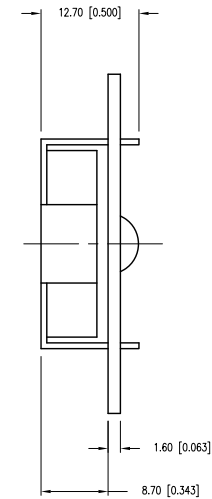
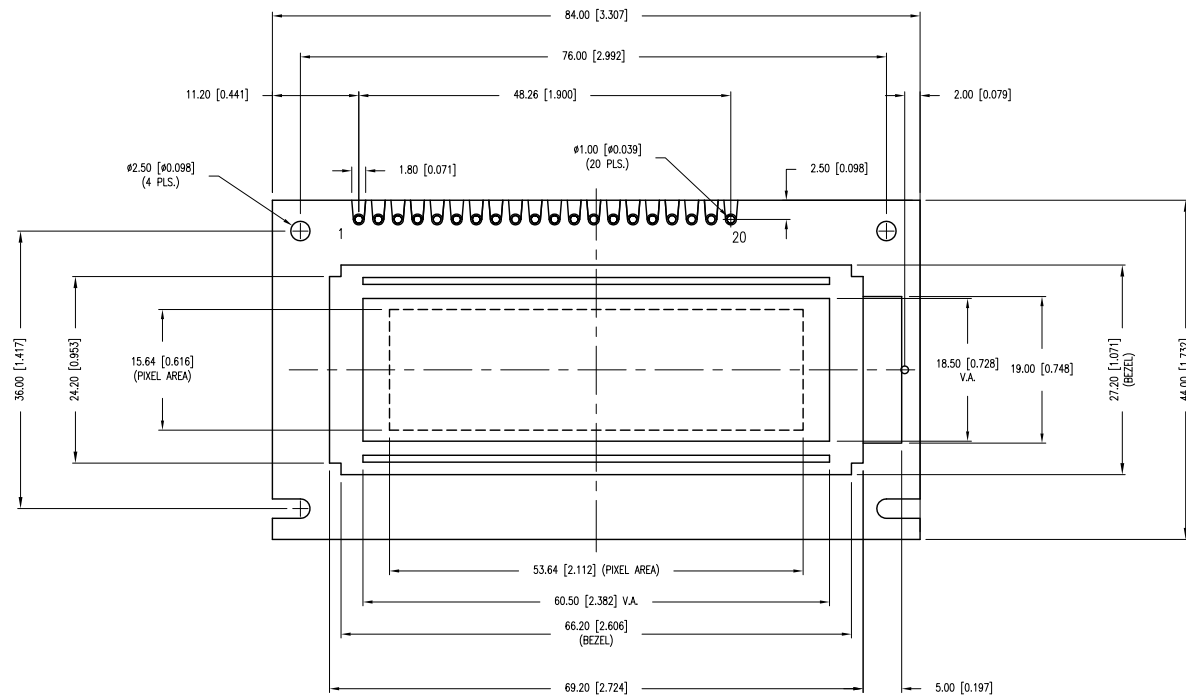


PART NUMBER	LCM-H12232GSF	REV.	A
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08.26.14	E.C.N. #11922.		A

A



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

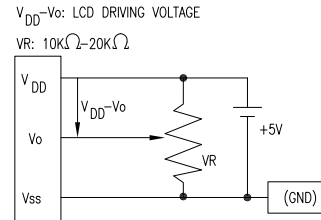


\*UNLESS OTHERWISE SPECIFIED TOLERANCES PER DECIMAL PRECISION ARE: X=±1 (±0.039), X.X=±0.5 (±0.020), X.XX=±0.25 (±0.010), X.XXX=±0.127 (±0.005). LEAD SIZE=±0.05 (±0.002), LEAD LENGTH=±0.75 (±0.030). MIN= +DECIMAL PRECISION -0.00 MAX.= +0.00 -DECIMAL PRECISION

	290 E. HELEN ROAD PALATINE, IL 60067-6976 PHONE: +1.847.359.2790 FAX: +1.847.359.6538 WEB: WWW.LUMEX.COM	122 x 32 DOT MATRIX GRAPHIC MODULE, STN BLUE, LED BACKLIGHT, 1/16 DUTY, 1/5 BIAS.  **THE SPECIFICATIONS MAY CHANGE AT ANY TIME WITHOUT NOTICE DUE TO NEW MATERIALS OR PRODUCT IMPROVEMENT.** 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.		DATE:	06.01.10	DRAWN BY:	JH
				PAGE:	1 OF 2	CHKD BY:	BC
				SCALE:	N/A	APRVD BY:	SA
				UNIT:	mm [INCH]		Ⓟ

PART NUMBER	LCM-H12232GSF	REV.	A
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PIN CONFIGURATION				
PIN NO.	SYMBOL	LEVEL	FUNCTION	
1	V <sub>SS</sub>	—	POWER SUPPLY	GND (0V)
2	V <sub>DD</sub>	—		5V
3	V <sub>O</sub>	—		FOR LCD DRIVE
4	A <sub>O</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>O</sub>	t <sub>CYC6</sub>	1000	—	ns
DATA SETUP TIME	DO~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		t <sub>ACC6</sub>	—	90	ns
ENABLE PULSE WIDTH	(READ)	E	t <sub>EW</sub>	100	—
	(WRITE)			80	—

ELECTRICAL CHARACTERISTICS		V <sub>DD</sub> =4.5V to 5.5V, T <sub>A</sub> =25°C				
ITEM		SYMBOL	CONDITION	STANDARD VALUE		
				MIN.	TYP.	MAX.
SUPPLY VOLTAGE FOR LOGIC		V <sub>DD</sub> -V <sub>SS</sub>	—	—	5.0	—
SUPPLY CURRENT FOR LOGIC		I <sub>DD</sub>	V <sub>DD</sub> =5V	—	—	3.0
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	—	—
	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	P <sub>D</sub>	—	—	710	—
	LUMINOUS	L	I <sub>f</sub> =170mA	70	—	—
	COLOR	—	YELLOW GREEN	—	—	—

\*ONLY APPLIES TO MODULES WITH BACKLIGHT

\*\*APPLIED TO TERMINALS DB0~DB7

\*\*\*APPLIED TO TERMINALS E, A<sub>O</sub>, DB0~DB7

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-H	-20	70	°C
STORAGE TEMPERATURE	T <sub>stg</sub>	LCM-H	-30	85	°C

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				UNIT: mm [INCH]	Ⓟ

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