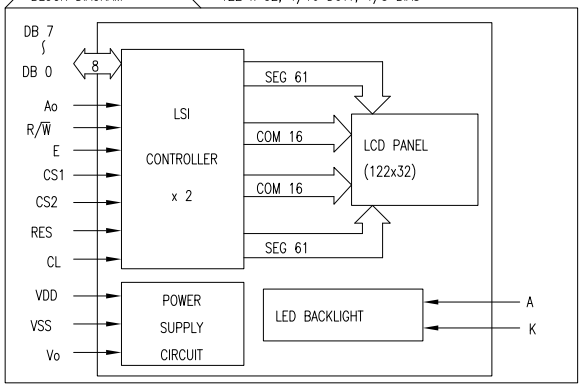
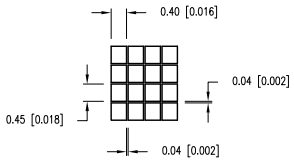
PART NUMBER	LCM–H12232GSF	REV.	A
DATE	E.C.N. NUMBER AND REVISION COMMENTS		REV.
08.26.14	E.C.N. #11922.		A

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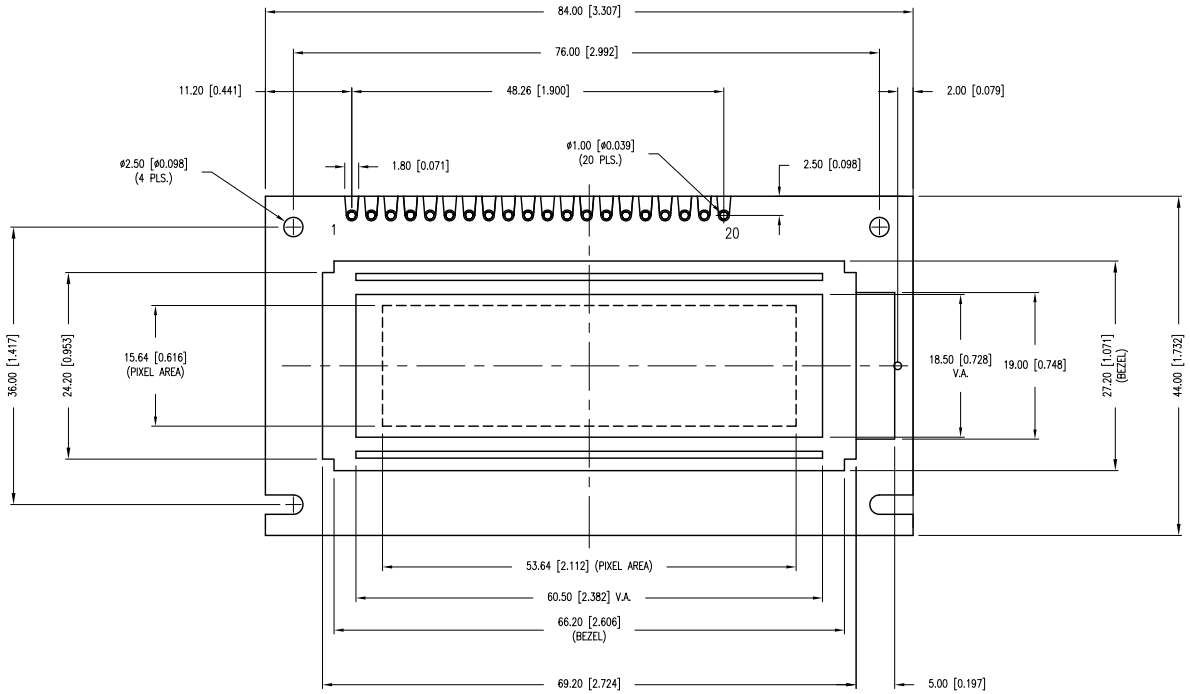
BLOCK DIAGRAM 122 x 32, 1/16 DUTY, 1/5 BIAS

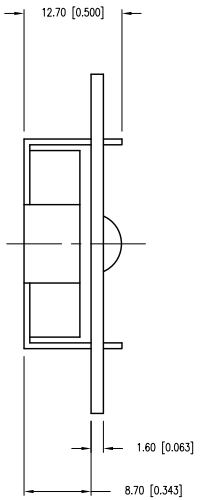


PIXEL DETAIL



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

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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.

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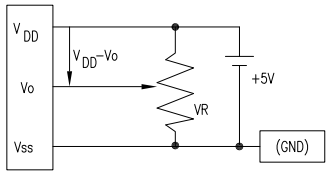
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PIN CONFIGURATION

PIN NO.	SYMBOL	LEVEL	FUNCTION	
1	Vss	–	POWER SUPPLY	GND (0V)
2	V_{DD}	–		5V
3	Vo	–		FOR LCD DRIVE
4	Ao	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 SIGANL FOR IC2	
7	CL	H/L	CLOCK INPUT (2kHz)	
8	E	H/L	ENABLE SIGNAL (NO PULL-UP RESISTOR)	
9	R/$\overline{W}$	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}-Vo: LCD DRIVING VOLTAGE

VR: 10KΩ~20KΩ



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/$\overline{W}$	t_{AS6}	20	–	ns
SYSTEM CYCLE TIME		Ao	t_{CYC6}	1000	–	ns
DATA SETUP TIME		D0~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)	E	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}-Vss	–	–	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	Vf	–	–	4.2	4.6	V
	CURRENT	If	–	–	170	330	mA
	POWER CUNSUMPTION	PD	–	–	710	–	mW
	LUMINOUS	L	If=170mA	70	–	–	cd/m^2
	COLOR	–	YELLOW GREEN	–	–	–	nm

*ONLY APPLIES TO MODULES WITH BACKLIGHT

**APPLIED TO TERMINALS DB0~DB7

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

ABSOLUTE MAXIMUM RATINGS

ITEM	SYMBOL	TEST CONDITION	STANDARD VALUE		UNIT
			MIN	MAX	
SUPPLY VOLTAGE FOR LOGIC	V_{DD}-Vss	Ta=25°C	4.75	5.25	V
SUPPLY VOLTAGE FOR LCD DRIVE	V_{DD}-Vo	–	4.8@50°C	5.2@0°C	V
INPUT VOLTAGE	V_I	Ta=25°C	Vss	V_{DD}	V
OPERATING TEMPERATURE	Topr	LCM-H	-20	70	°C
STORAGE TEMPERATURE	Tstg	LCM-H	-30	85	°C

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