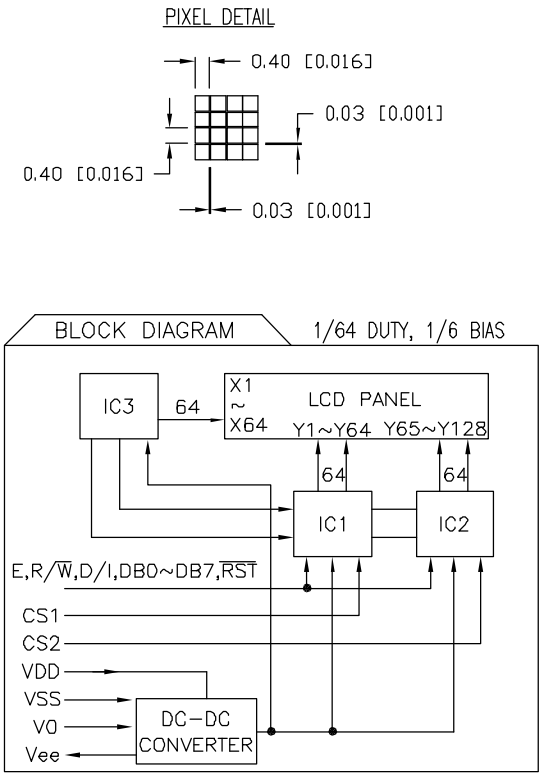
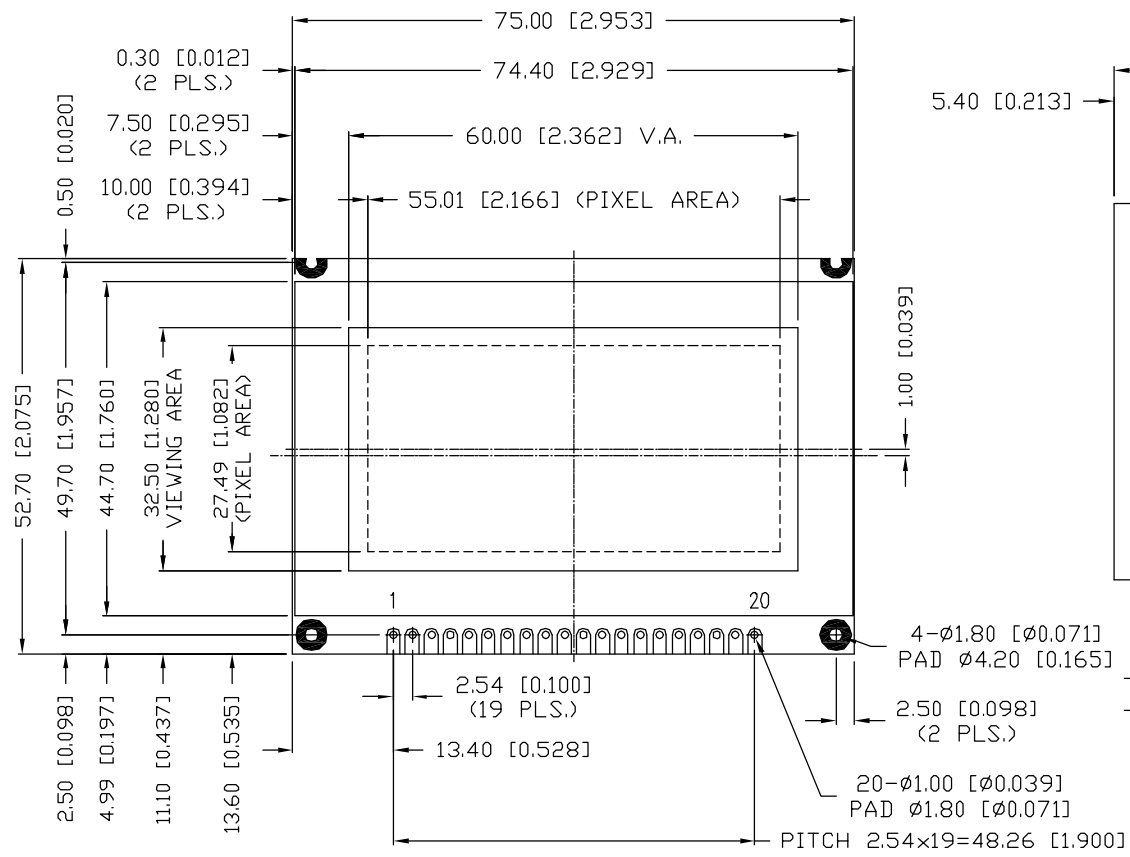


UNCONTROLLED DOCUMENT

PART NUMBER		REV.
LCM-H12864GSF/H-Y		B
REV.	E.C.N. NUMBER AND REVISION COMMENTS	DATE
A	E.C.N. #11017.	7.17.03
B	E.C.N. #11148.	4.20.07

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 MAX.= +0.00 -DECIMAL PRECISION

UNCONTROLLED DOCUMENT

REV.	PART NUMBER
B	LCM-H12864GSF/H-Y
128 x 64 DOT MATRIX GRAPHIC MODULE, 1/64 DUTY, 1/6 BIAS, WITH NEGATIVE CHARGE PUMP, EXTENDED TEMP., STN, YELLOW BACKGROUND.	

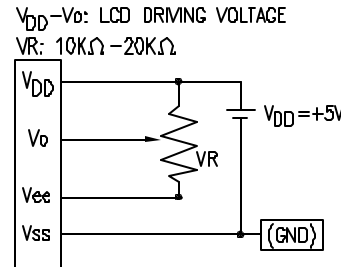
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**RELIABILITY NOTE**  
OUR MANY YEARS OF EXPERIENCE DATA ACCUMULATION INDICATE THAT SOLDER HEAT IS A MAJOR CAUSE OF EARLY AND FUTURE FAILURE. PLEASE PAY ATTENTION TO YOUR SOLDERING PROCESS.

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		SCALE:	N/A

PART NUMBER		REV.
LCM-H12864GSF/H-Y		B
REV.	E.C.N. NUMBER AND REVISION COMMENTS	DATE
B	SEE PAGE 1.	

PIN CONFIGURATION				
PIN NO.	SYMBOL	LEVEL	FUNCTION	
1	V <sub>DD</sub>	-	POWER SUPPLY	5V
2	V <sub>SS</sub>	-		GND (0V)
3	V <sub>0</sub>	-		FOR LCD DRIVE
4-11	DB0~DB7	H/L	DATA BUS	
12	CS1	H/L	CHIP SELECTION SIGNAL FOR IC1	
13	CS2	H/L	CHIP SELECTION SIGNAL FOR IC2	
14	RST	-	RESET SIGNAL (ACTIVE "LOW")	
15	R/W	H/L	DATA READ/WRITE	H:READ L:WRITE
16	D/I	H/L	REGISTER SELECT SIGNAL	H:DATA L:INSTRUCTION
17	E	H->L	ENABLE	
18	V <sub>EE</sub>	-	OUTPUT VOLTAGE FOR LCD DRIVING	
19	A	-	ANODE	LED BACKLIGHT
20	K	-	CATHODE	LED BACKLIGHT



READ/WRITE TIMING FOR MPU INTERFACE				
PARAMETER	SYMBOL	MIN	MAX	UNIT
ADDRESS HOLD TIME	t <sub>AH</sub>	10	-	ns
ADDRESS SETUP TIME	t <sub>AS</sub>	140	-	ns
E CYCLE TIME	t <sub>CYC</sub>	1000	-	ns
E HIGH LEVEL WIDTH	t <sub>WEH</sub>	450	-	ns
E LOW LEVEL WIDTH	t <sub>WEL</sub>	450	-	ns
DATA SETUP TIME	t <sub>DSW</sub>	200	-	ns
DATA HOLD TIME (READ)	t <sub>DHR</sub>	20	-	ns
DATA DELAY TIME	t <sub>DDR</sub>	-	320	ns
DATA HOLD TIME (WRITE)	t <sub>DHW</sub>	10	-	ns
E RISE TIME	t <sub>R</sub>	-	25	ns
E FALL TIME	t <sub>F</sub>	-	25	ns

ELECTRICAL CHARACTERISTICS		V <sub>DD</sub> =4.75V to 5.25V, 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>	-	4.75	5.0	5.25	V	
SUPPLY CURRENT FOR LOGIC	I <sub>DD</sub>	V <sub>DD</sub> =5V	-	8.0	-	mA	
INPUT VOLTAGE	HIGH	V <sub>IH</sub>	0.7*V <sub>DD</sub>	-	V <sub>DD</sub>	V	
	LOW	V <sub>IL</sub>	0	-	0.3*V <sub>DD</sub>	V	
*EDGE LIT LED BACKLIGHT	VOLTAGE	V <sub>f</sub>	I <sub>f</sub> =60mA	-	4.2	4.5	V
	CURRENT	I <sub>f</sub>	-	-	60	-	mA
	POWER CONSUMPTION	PD	-	-	252	-	mW
	LUMINOUS	L	I <sub>f</sub> =60mA	-	2	-	cd/m <sup>2</sup>
	COLOR	-	-	-	-	-	nm

\*ONLY APPLIES TO MODULES WITH BACKLIGHT

ABSOLUTE MAXIMUM RATINGS					
ITEM	SYMBOL	TEST CONDITION	STANDARD VALUE		UNIT
			MIN	MAX	
SUPPLY VOLTAGE FOR LOGIC	V <sub>DD</sub> -V <sub>SS</sub>	T <sub>a</sub> =25°C	-	7.0	V
SUPPLY VOLTAGE FOR LCD DRIVE	V <sub>DD</sub> -V <sub>0</sub>	-	10.8@40°C	12.4@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>	-	-20	70	°C
STORAGE TEMPERATURE	T <sub>stg</sub>	-	-30	85	°C

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