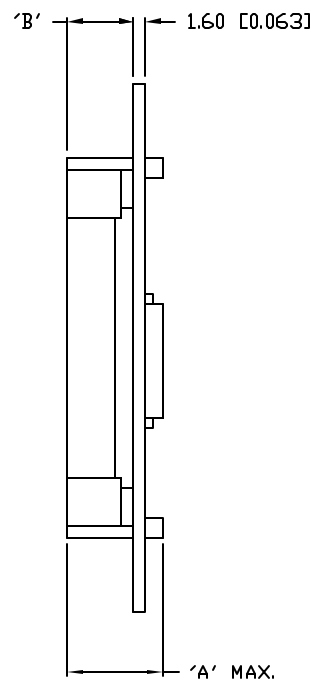
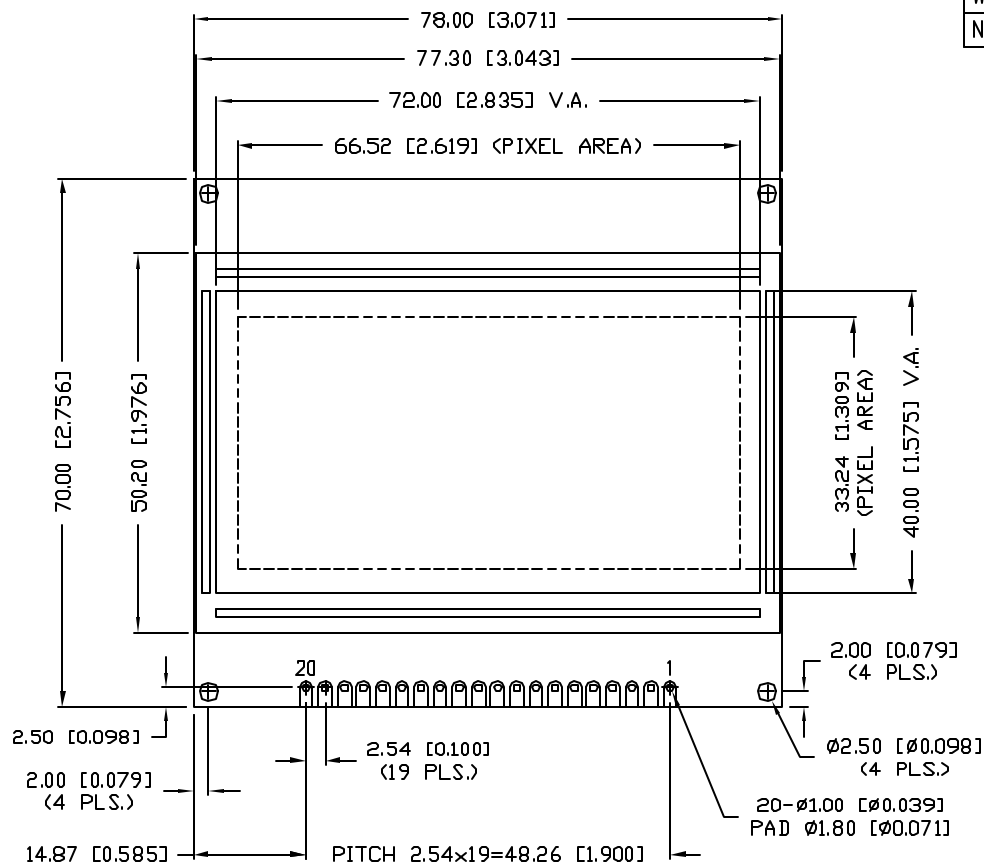


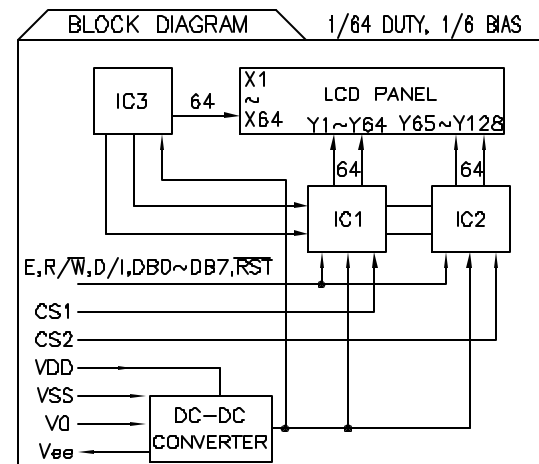
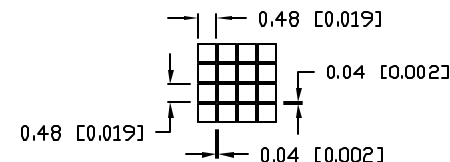
P/N PREFIX/SUFFIX TABLE			
LGM-X	DXX	DESCRIPTION	
STANDARD	S	SR	STN, REFLECTIVE
HIGH TEMP.	H	SF	STN, TRANSFLECTIVE(W/ BACKLIGHT)

REV.	E.C.N. NUMBER AND REVISION COMMENTS	DATE

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



PIXEL DETAIL



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

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

REV.	PART NUMBER
	LCM-X12864GXX/C

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128 x 64 DOT MATRIX GRAPHIC MODULE, 1/64 DUTY,  
1/6 BIAS, WITH NEGATIVE CHARGE PUMP.

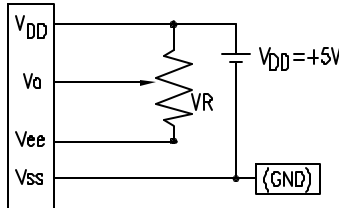
**RELIABILITY NOTE**  
OUR MANY YEARS OF EXPERIENCE DATA ACCUMULATION INDICATE THAT SOLDER HEAT IS A MAJOR CAUSE OF EARLY AND FUTURE FAILURE. PLEASE PAY ATTENTION TO YOUR SOLDERING PROCESS.

DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
SA/BC			9-1-98
			PAGE: 1 OF 2
			SCALE: N/A

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>0</sub>	-		FOR LCD DRIVE
4	D/I	H/L	REGISTER SELECT SIGNAL H: DATA INPUT L: INSTRUCTION INPUT	
5	R/W	H/L	H: DATA READ (MODULE-->MPU) L: DATA WRITE (MODULE<--MPU)	
6	E	H,H->L	ENABLE	
7~14	DB0~DB7	H/L	DATA BUS	
15	CS1	H/L	CHIP SELECTION SIGNAL FOR IC1	
16	CS2	H/L	CHIP SELECTION SIGNAL FOR IC2	
17	RST	-	RESET SIGNAL (ACTIVE "LOW")	
18	V <sub>EE</sub>	-	OUTPUT VOLTAGE FOR LCD DRIVING	
19	A	-	ANODE	LED BACKLIGHT
20	K	-	CATHODE	LED BACKLIGHT

V<sub>DD</sub>-V<sub>0</sub>: LCD DRIVING VOLTAGE  
VR: 10KΩ-20KΩ



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>	
	LOW	V <sub>IL</sub>	-	0	-	0.3*V <sub>DD</sub>	
*LED BACKLIGHT	VOLTAGE	V <sub>f</sub>	I <sub>f</sub> =300mA	-	4.2	4.5	V
	CURRENT	I <sub>f</sub>	-	-	300	-	mA
	POWER CONSUMPTION	PD	-	-	1260	-	mW
	LUMINOUS	L	I <sub>f</sub> =300mA	60	90	-	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>	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

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

REV.		PART NUMBER	<b>LCM-X12864GXX/C</b>
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