

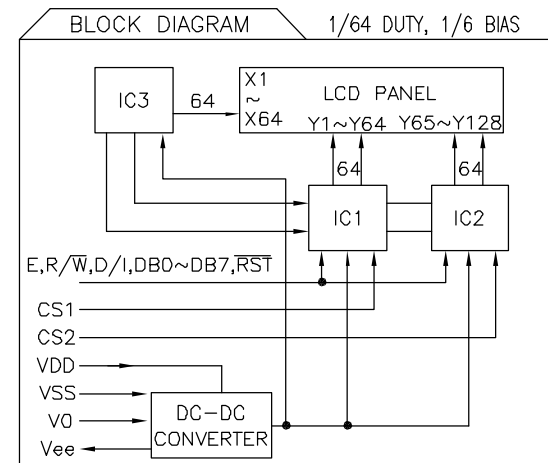
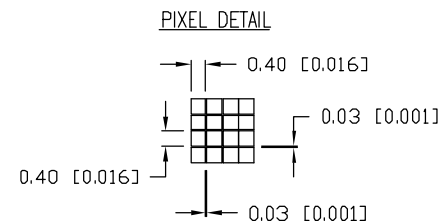
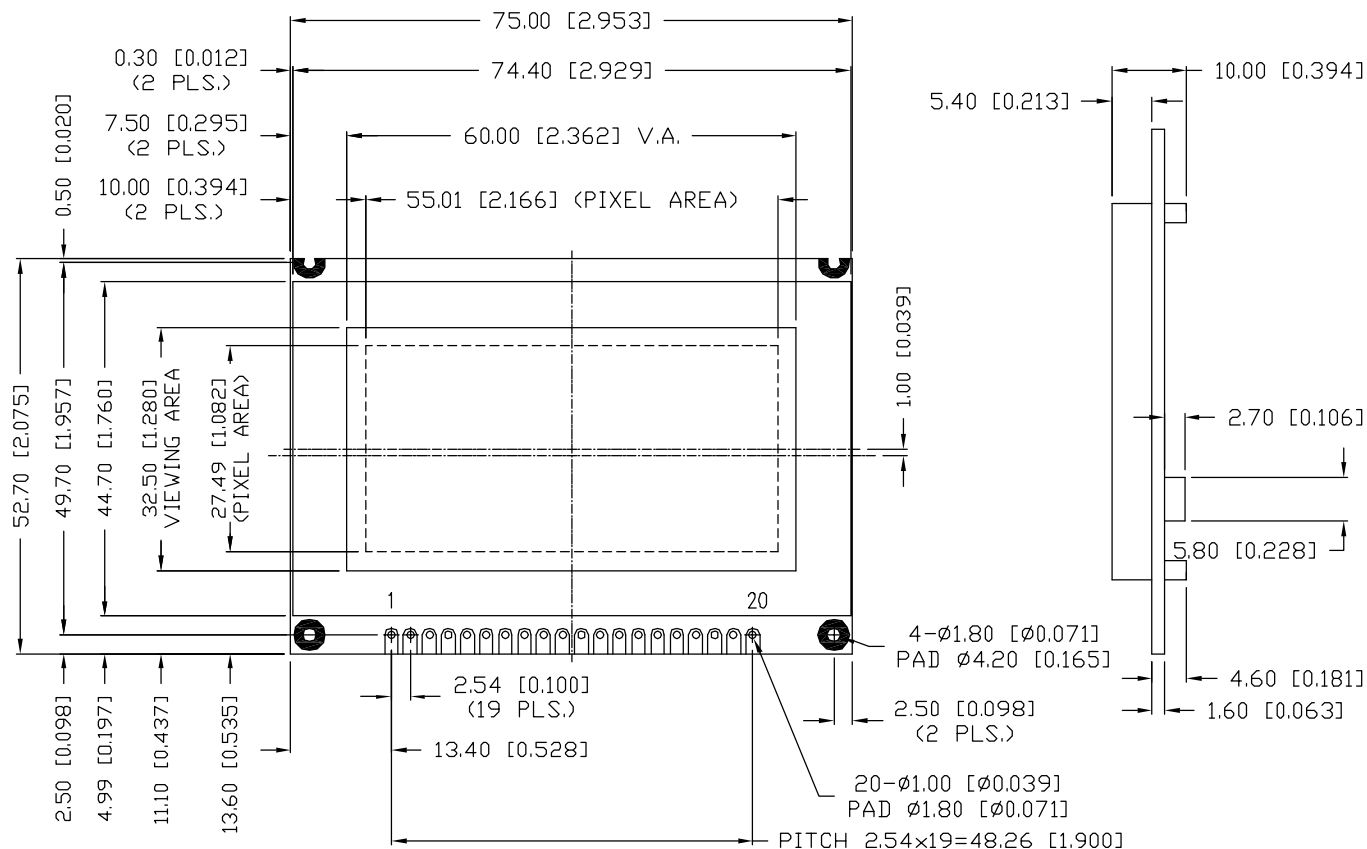
UNCONTROLLED DOCUMENT

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

PART NUMBER
LCM-H12864GSF/H-Y

REV.
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



*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

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.	

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.

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 INC.		290 E. HELEN ROAD PALATINE, IL 60067-6976 PHONE: +1.847.359.2790 US WEB: www.lumex.com TW WEB: www.lumex.com.tw	
DRAWN BY: JC	CHECKED BY:	APPROVED BY:	DATE: 2.4.99 PAGE: 1 OF 2 SCALE: N/A



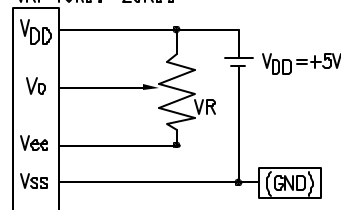
UNCONTROLLED DOCUMENT

PIN CONFIGURATION

PIN NO.	SYMBOL	LEVEL	FUNCTION	
1	V _{DD}	—	POWER SUPPLY	5V
2	V _{SS}	—		GND (0V)
3	V ₀	—		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 _{ee}	—	OUTPUT VOLTAGE FOR LCD DRIVING	
19	A	—	ANODE	LED BACKLIGHT
20	K	—	CATHODE	LED BACKLIGHT

V_{DD}-V₀: LCD DRIVING VOLTAGE

VR: 10KΩ-20KΩ



READ/WRITE TIMING FOR MPU INTERFACE

PARAMETER	SYMBOL	MIN	MAX	UNIT
ADDRESS HOLD TIME	t _{AH}	10	—	ns
ADDRESS SETUP TIME	t _{AS}	140	—	ns
E CYCLE TIME	t _{CYC}	1000	—	ns
E HIGH LEVEL WIDTH	t _{WEH}	450	—	ns
E LOW LEVEL WIDTH	t _{WEL}	450	—	ns
DATA SETUP TIME	t _{DSW}	200	—	ns
DATA HOLD TIME (READ)	t _{DHR}	20	—	ns
DATA DELAY TIME	t _{DDR}	—	320	ns
DATA HOLD TIME (WRITE)	t _{DHW}	10	—	ns
E RISE TIME	t _R	—	25	ns
E FALL TIME	t _F	—	25	ns

ELECTRICAL CHARACTERISTICS

V_{DD}=4.75V to 5.25V, T_A=25°C

ITEM	SYMBOL	CONDITION	STANDARD VALUE			UNIT
			MIN.	TYP.	MAX.	
SUPPLY VOLTAGE FOR LOGIC	V _{DD} -V _{SS}	—	4.75	5.0	5.25	V
SUPPLY CURRENT FOR LOGIC	I _{DD}	V _{DD} =5V	—	8.0	—	mA
INPUT VOLTAGE	HIGH	V _{IH}	—	0.7*V _{DD}	—	V _{DD}
	LOW	V _{IL}	—	0	—	0.3*V _{DD}
*EDGE LIT LED BACKLIGHT	VOLTAGE	V _f	I _f =60mA	—	4.2	4.5
	CURRENT	I _f	—	—	60	—
	POWER CONSUMPTION	P _D	—	—	252	—
	LUMINOUS	L	I _f =60mA	—	2	—
	COLOR	—	—	—	—	nm

*ONLY APPLIES TO MODULES WITH BACKLIGHT

ABSOLUTE MAXIMUM RATINGS

ITEM	SYMBOL	TEST CONDITION	STANDARD VALUE		UNIT
SUPPLY VOLTAGE FOR LOGIC	V _{DD} -V _{SS}	T _a =25°C	—	7.0	V
SUPPLY VOLTAGE FOR LCD DRIVE	V _{DD} -V ₀	—	10.8@40°C	12.4@0°C	V
INPUT VOLTAGE	V _I	T _a =25°C	V _{SS}	V _{DD}	V
OPERATING TEMPERATURE	T _{opr}	—	-20	70	°C
STORAGE TEMPERATURE	T _{stg}	—	-30	85	°C

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

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.

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.



290 E. HELEN ROAD
PALATINE, IL 60067-6976
PHONE: +1.847.359.2790
US WEB: www.lumex.com
TW WEB: www.lumex.com.tw

128 x 64 DOT MATRIX GRAPHIC MODULE, 1/64 DUTY,
1/6 BIAS, WITH NEGATIVE CHARGE PUMP,
EXTENDED TEMP., STN, YELLOW BACKGROUND.

DRAWN BY:

JC

CHECKED BY:

APPROVED BY:

DATE: 2.4.99

PAGE: 2 OF 2

SCALE: N/A