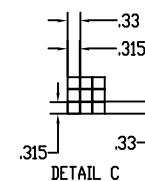
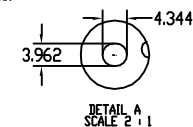
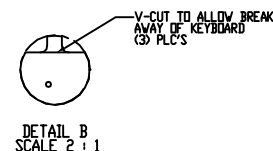
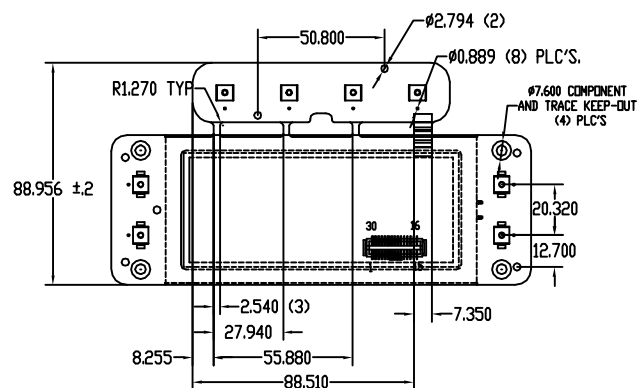
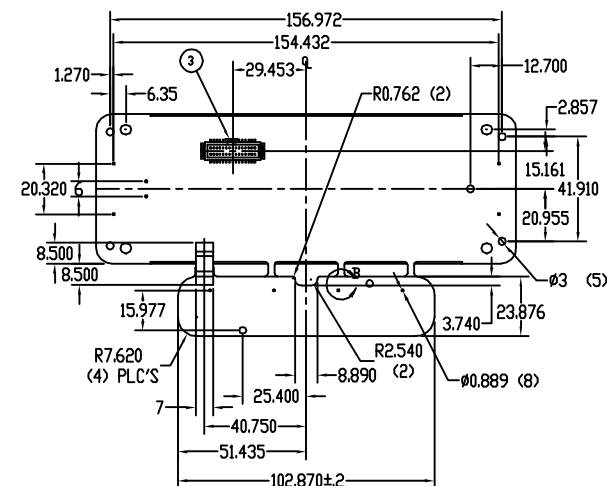
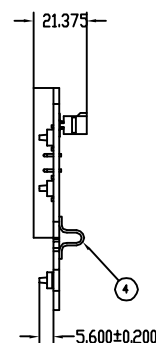
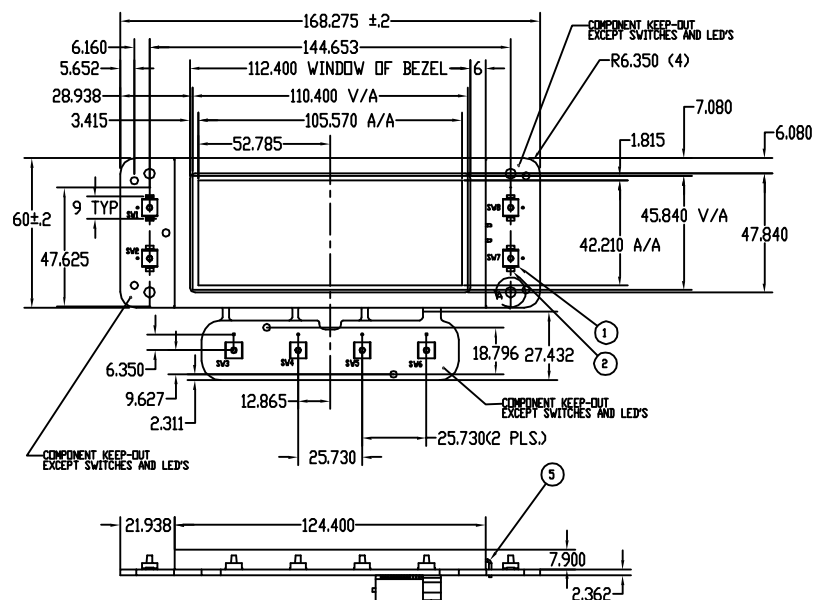


UNCONTROLLED DOCUMENT

PART NUMBER
LCM-H320128GSF-Y2REV.
B

REV.	E.C.N. NUMBER AND REVISION COMMENTS	DATE
A	E.C.N. #11148.	4.20.07
B	E.C.N. #11567.	05.06.09



5	HEATER, MINCO P/N H24173 OR WATLOW APPROVED EQV.	1
4	FLEX CONNECTOR, 6 POSITION 32mm LONG	1
3	CONNECTOR, AMP P/N 5-147377-3	1
2	LED, LUMEX SML-LX0805GC-TR	8
1	TACT SWITCH, ITT P/N KSC521J	8
ITEM	DESCRIPTION	QTY

NOTES:

1. RESOLUTION: 320X128 DOTS. DOT SIZE .315X.315. DOT PITCH .33 X .33. SEE DETAIL C
2. BACKLIGHTED YELLOW-GREEN
3. FRAME: SUS304 (S.S., 0.5T)
4. UNIT OF MEASURE: mm

*UNLESS OTHERWISE SPECIFIED TOLERANCE PER DECIMAL PRECISION IS: ±0.25 (±0.010)

REV.
BPART NUMBER
LCM-H320128GSF-Y2

320x128 GRAPHIC LCD MOD, STN YELLOW, LED BKLT, TRANSFLECTIVE, -40C TO 85C OPERATING TEMPERATURE, 1/128 DUTY, 1/13 BIAS, VLCD=18.1V, 6:00 VIEW.

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
Creating LED and LCD Solutions Together™

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: 10.27.05
			PAGE: 1 OF 5
			SCALE: N/A

UNCONTROLLED DOCUMENT

PART NUMBER		REV.
LCM-H320128GSF-Y2		B
REV.	E.C.N. NUMBER AND REVISION COMMENTS	DATE
	SEE PAGE #1	

ELECTRICAL CHARACTERISTICS VSS=0V, VDD=LVDD=3.3V - 0.3V, Ta=-40C~85C						
ITEM	SYMBOL	TEST CONDITION	STANDARD VALUE			UNIT
			MIN	TYP.	MAX.	
OPERATING VOLTAGE	V _{DD}	-	2.7	3.5	4.5	V
OPERATING VOLTAGE FOR LCD	V _{LCD}	-	-	18.1	-	V
INPUT LEAKAGE CURRENT	I _{LI}	V _I = V _{DD} · SEE PAGE 5	-	0.05	2.0	uA
OUTPUT LEAKAGE CURRENT	I _{LO}		-	0.10	5.0	uA
HIGH LEVEL OUTPUT VOLTAGE	V _{OHT}	I _{OHT} = -3.0mA SEE NOTE 1.	2.4	-	-	V
LOW LEVEL OUTPUT VOLTAGE	V _{OLT}	I _{OHT} = 3.0mA SEE NOTE 1.	V _{SS}	-	0.2 V _{SS}	V
HIGH LEVEL INPUT VOLTAGE	V _{IHT}	LV TTL LVL. V _{DD} =MAX	2.0	-	-	V
LOW LEVEL INPUT VOLTAGE	V _{ILT}	SEE NOTE 1	-	-	0.8	V
POSITIVE TRIGGER VOLTAGE	V _{T1+}	LV TTL SCHMITT	1.1	-	2.4	V
NEGATIVE TRIGGER VOLTAGE	V _{T1-}	LV TTL SCHMITT	0.6	-	1.8	V
HYSTERESIS VOLTAGE	V _{H1}	LV TTL SCHMITT	0.1	-	-	V
PULLDOWN RESISTANCE	R _{PD}	V _I =V _{DD}	20	50	120	koHM
OPERATING SUPPLY CURRENT	I _{OPR}	FOSC=10MHz NONLOADED 256x200 DOT	-	TBD	TBD	V
QUIESCENT SUPPLY CURRENT	I _{QH}	SLEEP MODE XCG1, CS#, RD#=VDD	-	-	35	uA

PIN CONFIGURATION			30 PIN CONNECTOR, AMP PART # 5-147377-3
PIN NO.	SYMBOL	FUNCTION	
1	VDD	POWER SUPPLY FOR LOGIC CIRCUIT	
2	VSS	GROUND	
3	/RD	8080 FAMILY INTERFACE ACTS AS THE ACTIVE-LOW READ STROBE	
4	/RW	8080 FAMILY INTERFACE ACTS AS THE ACTIVE-LOW WRITE STROBE	
5	A0	8080 FAMILY INTERFACE	
6	/RES	RST FUCTION TO SID13700	
7	/CS1	CHIP SELECT	
8~15	D0~D7	DATA BUS LINE	
16	/WAIT	BUSY STATUS FROM SID13700	
17	VSS	GROUND	
18	VLED	POWER SUPPLY FOR LED BACKLIGHT	
19	VLSS	POWER SUPPLY FOR LED BACKLIGHT (GND)	
20	VHTR+	POWER SUPPLY (+) FOR HEATER	
21	VHTR-	POWER SUPPLY (-) FOR HEATER	
22	VLEDKY	POWER SUPPLY FOR LED KEYPAD	
23	SW1	SWITCH # 1 INPUT	
24	SW2	SWITCH # 2 INPUT	
25	SW3	SWITCH # 3 INPUT	
26	SW4	SWITCH # 4 INPUT	
27	SW5	SWITCH # 5 INPUT	
28	SW6	SWITCH # 6 INPUT	
29	SW7	SWITCH # 7 INPUT	
30	SW8	SWITCH # 8 INPUT	

*UNLESS OTHERWISE SPECIFIED TOLERANCE PER DECIMAL PRECISION IS: ±0.25 (±0.010)

REV.	PART NUMBER	CONFIDENTIAL INFORMATION		 290 E. HELEN ROAD PALATINE, IL 60067-6976 PHONE: +1.847.359.2790 US WEB: www.lumex.com TW WEB: www.lumex.com.tw	
B	LCM-H320128GSF-Y2	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.			
320x128 GRAPHIC LCD MOD, STN YELLOW, LED BKLT, TRANSFLECTIVE, -40C TO 85C OPERATING TEMPERATURE, 1/128 DUTY, 1/13 BIAS, VLCD=18.1V, 6:00 VIEW.		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:
				JC	APPROVED BY:
					DATE: 10.28.05
					PAGE: 2 OF 5
					SCALE: N/A

PART NUMBER		REV.
LCM-H320128GSF-Y2		B
REV.	E.C.N. NUMBER AND REVISION COMMENTS	DATE
	SEE PAGE #1	

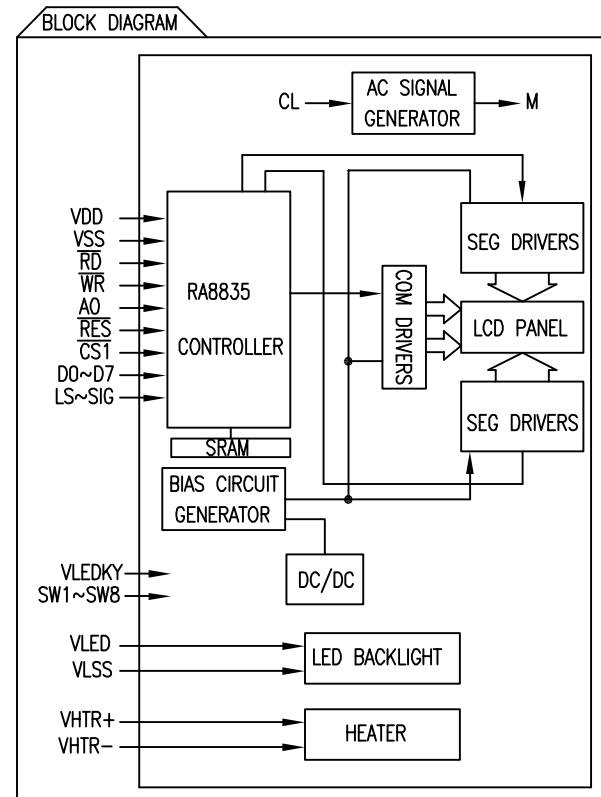
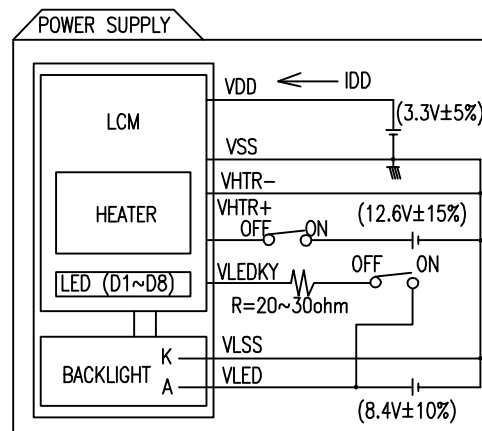
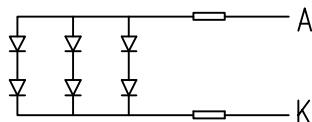
ABSOLUTE MAXIMUM LIMIT			
ITEM	SYMBOL	TEST CONDITION	UNIT
POWER SUPPLY VOLTAGE	HVDD	-0.3-7.0	V
	LVDD	-0.3-4.0	V
INPUT VOLTAGE	HVIN	-0.3-HVDD+0.5	V
	LVIN	-0.3-LVDD+0.5	V
OUTPUT VOLTAGE	HVOUT	-0.3-HVDD+0.5	V
	LVOUT	-0.3-LVDD+0.5	V
OUTPUT CURRENT PER PIN	IOUT	±30	mA
OPERATING TEMPERATURE	TOPR	-40 - 85	C
STORAGE TEMPERATURE	TSTG	-40 - 85	C
SOLDERING TEMP. AND TIME	TSOLDER	HEAT RESISTANCE RANK SE2	-

NOTES:

1. WHEN USING A POWER SUPPLY WITH HIGH IMPEDANCE, A LARGE POTENTIAL DIFFERENCE BETWEEN THE CHIP'S INTERNAL POWER SUPPLY VOLTAGE AND THE INPUT VOLTAGE MAY OCCUR, THUS MAKING THE POWER SUPPLY SUSCEPTIBLE TO LATCH-UP. THEREFORE, PAY PARTICULAR ATTENTION TO THE POWER SUPPLY AND ITS WIRING.
2. ALL THE VOLTAGE ARE BASED ON VSS=0V
3. THE SYMBOL H*** INDICATES 5 V-BLOCKS PINS, L*** INDICATES 3.3 V-BLOCKS PINS.

ELECTRICAL CHARACTERISTICS OF BACKLIGHT						
ITEM	SYMBOL	CONDITION	STANDARD VALUE			UNIT
			MIN	TYP.	MAX.	
PEAK FORWARD CURRENT	I _{fp}		-	-	100.0	mA
REVERSE VOLTAGE(PER LED)	V _r	I _r =10uA	-	-	4.0	V
FORWARD VOLTAGE	V _f	I _f =40mA	7.4	7.8	8.2	V
POWER CONSUMPTION	P _f		-	-	492	mW
LIFE TIME	L _i	I _f =40mA	-	40000	-	hrs
BACKLIGHT BRIGHTNESS		I _f =40mA		140	190	Cd/m ²
BACKLIGHT COLOR	WHITE LED + YELLOW FILTER		-	YELLOW GREEN	-	

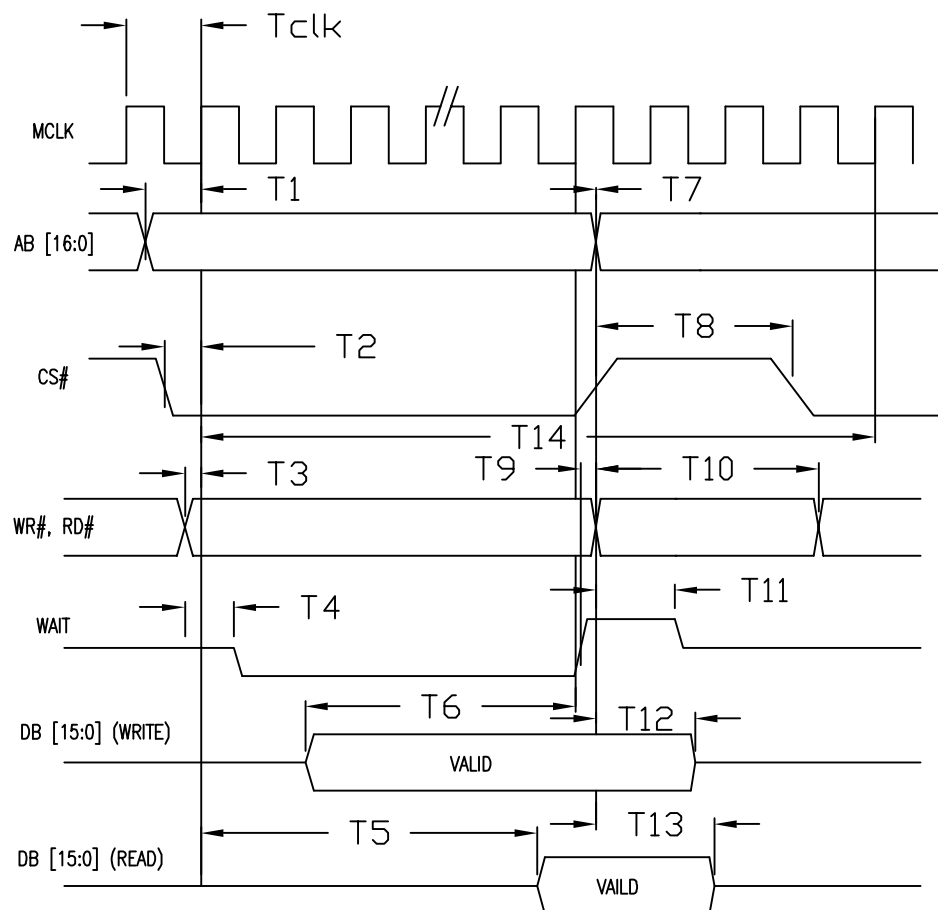
CIRCUIT DIAGRAM



*UNLESS OTHERWISE SPECIFIED TOLERANCE PER DECIMAL PRECISION IS: ±0.25 (±0.010)

REV.	PART NUMBER	CONFIDENTIAL INFORMATION		290 E. HELEN ROAD	
B	LCM-H320128GSF-Y2	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.		PALATINE, IL 60067-6976	
320x128 GRAPHIC LCD MOD, STN YELLOW, LED BKLT, TRANSFLECTIVE, -40C TO 85C OPERATING TEMPERATURE, 1/128 DUTY, 1/13 BIAS, VLCD=18.1V, 6:00 VIEW.		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.		PHONE: +1.847.359.2790	
		LUMEX Creating LED and LCD Solutions Together™		US WEB: www.lumex.com	
				TW WEB: www.lumex.com.tw	
		DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE: 10.28.05
		JC			PAGE: 3 OF 5
				SCALE: N/A	

TIMING DIAGRAM (GENERIC BUS/80-SERIES MPU)



AC CHARACTERISTICS

ITEM	SYMBOL	MIN	MAX	UNIT	CONDITION
BUS CLOCK FREQ.	fCLK	—	64	MHz	
ADDRESS SETUP TIME	TCLK	1/fCLK	—	ns	
AB [16:0] SETUP TO FIRST CLK RISE EDGE CS#=0 AND EITHER RD#=0 OR WR#=0	T1	12	—	ns	
CS# SETUP TO CLK RISING EDGE	T2	11	—	ns	
RD#, WR# SETUP CLK RISING EDGE	T3	11	—	ns	
RD#, WR# CHANGE TO WAIT# LOW	T4	1	7	ns	
RD# FALLING EDGE TO DB[15:0]	T5	3Tc+11	—	Tclk	
DB[15:0] SETUP 4TH RISING CLK AFTER CS#=0 AND WR#=0	T6	1	—	Tclk	
AB[16:0], CS# HOLD RD#, WR# RISE	T7	10	—	ns	
CS# DEASSERTED TO REASSERTED	T8	1Tclk	—	ns	—WHEN READ
—WHEN WRITE (NEXT CYCLE=WR)		2Tclk+10	—	ns	
—WHEN WRITE (NEXT CYCLE=RD)		5Tclk+10	—	ns	
WAIT# TO RD#, WR#	T9	0	—	ns	
CS# DEASSERTED TO REASSERTED	T10	1Tclk	—	ns	—WHEN READ
—WHEN WRITE (NEXT CYCLE=WR)		2Tclk+10	—	ns	
—WHEN WRITE (NEXT CYCLE=RD)		2Tclk+10	—	ns	
RISE EITHER RD# OR WR3 TO WAIT# HIGH IMPEDANCE 0.5 Tclk	T11	—	0.5	Tclk	
D[15:0] HOLD FROM WR# (WR CYCLE)	T12	1	—	ns	
D[15:0] HOLD FROM RD# (READ CYCLE)	T13	1	—	ns	
CYCLE LENGTH	T14	6	—	—	READ
WRITE(NEXT WR CYCLE)		7	—	—	
WRITE(NEXT RD CYCLE)		10	—	Tclk	

1. THE INPUT SIGNAL RISE & FALL TIME (TR, TF) ARE SPECIFIED @ 15ns OR LESS.
2. ALL TIMING IS SPECIFIED USING 20% AND 80% OF VDD AS STANDARD.

*UNLESS OTHERWISE SPECIFIED TOLERANCE PER DECIMAL PRECISION IS: ±0.25 (±0.010)

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



320x128 GRAPHIC LCD MOD, STN YELLOW, LED BKLT, TRANSFLECTIVE, -40C TO 85C OPERATING TEMPERATURE, 1/128 DUTY, 1/13 BIAS, VLCD=18.1V, 6:00 VIEW.

DRAWN BY: CHECKED BY: APPROVED BY: DATE: 10.28.05

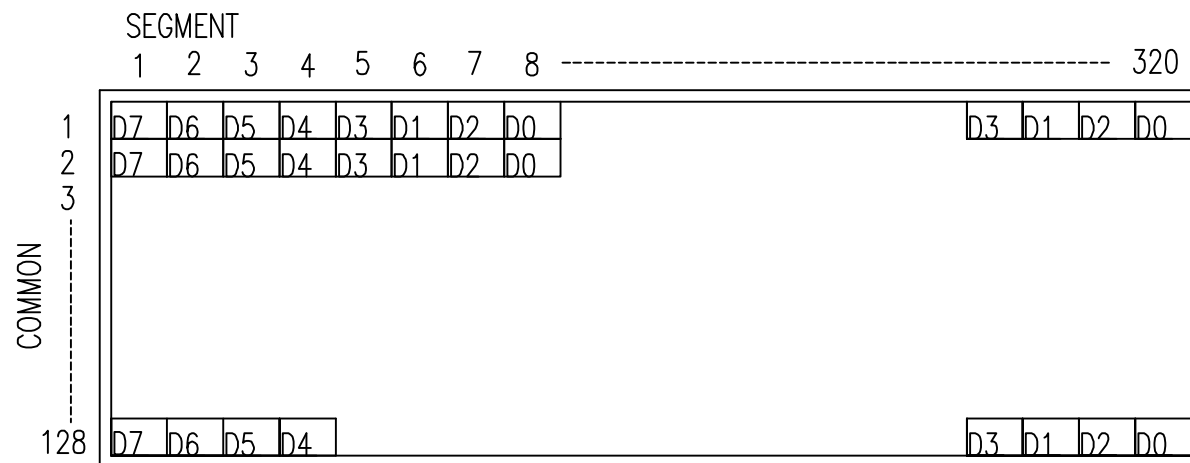
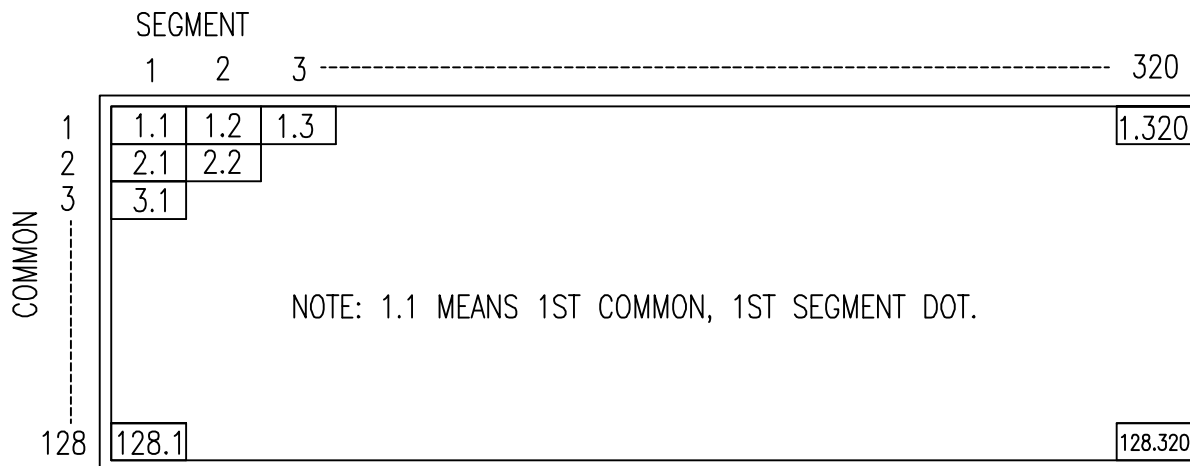
JC

PAGE: 4 OF 5
SCALE: N/A

UNCONTROLLED DOCUMENT

PART NUMBER		REV.
LCM-H320128GSF-Y2		B
REV.	E.C.N. NUMBER AND REVISION COMMENTS	DATE
	SEE PAGE #1	

DISPLAY PATTERN



UNCONTROLLED DOCUMENT

*UNLESS OTHERWISE SPECIFIED TOLERANCE PER DECIMAL PRECISION IS: ± 0.25 (± 0.010)

REV.	PART NUMBER	CONFIDENTIAL INFORMATION		290 E. HELEN ROAD	
B	LCM-H320128GSF-Y2	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.		PALATINE, IL 60067-6976	
320x128 GRAPHIC LCD MOD, STN YELLOW, LED BKLT, TRANSFLECTIVE, -40C TO 85C OPERATING TEMPERATURE, 1/128 DUTY, 1/13 BIAS, VLCD=18.1V, 6:00 VIEW.		RELIABILITY NOTE		PHONE: +1.847.359.2790	
		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.		US WEB: www.lumex.com	
				TW WEB: www.lumex.com.tw	
		DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE: 10.28.05
		JC			PAGE: 5 OF 5
				SCALE: N/A	

