

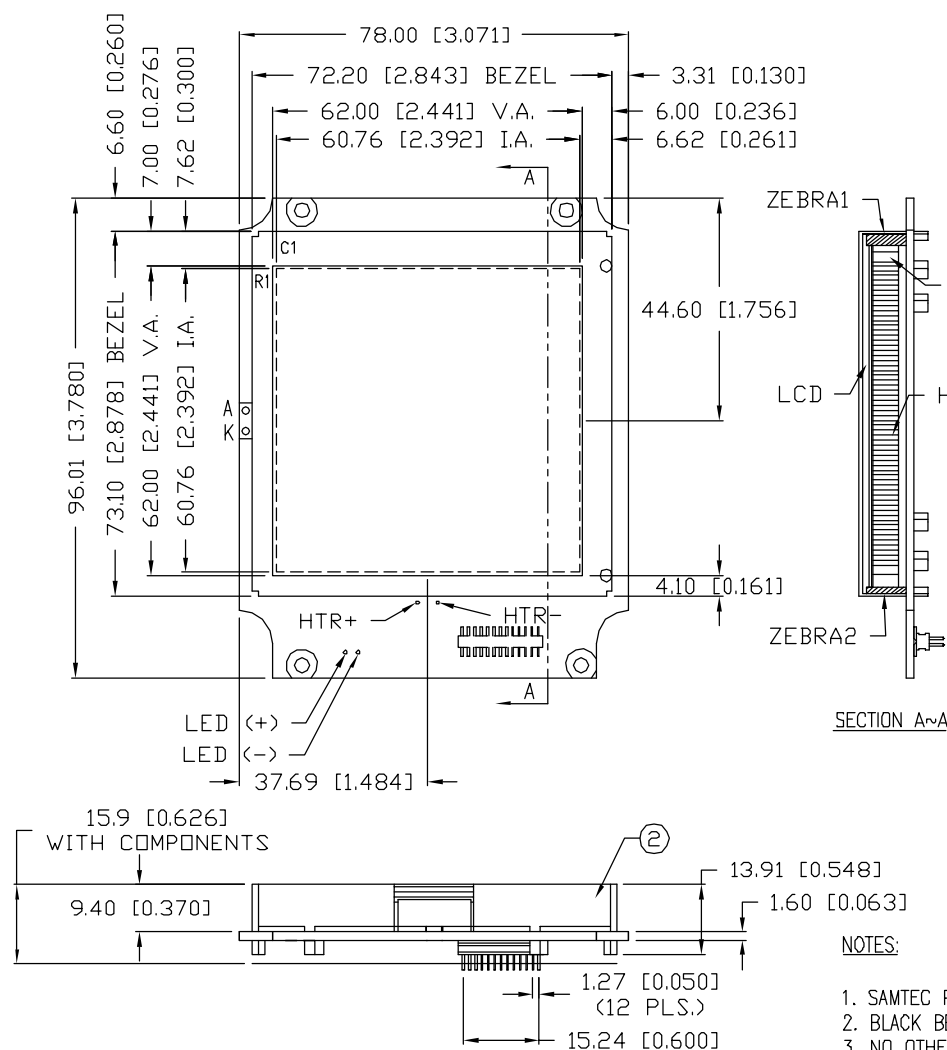
UNCONTROLLED DOCUMENT

PART NUMBER
LCM-H160160GWF/B

REV.

C

REV.	E.C.N. NUMBER AND REVISION COMMENTS	DATE
A	E.C.N. #11016.	7.15.03
B	E.C.N. #11051.	10.11.03
C	E.C.N. #11095.	2.19.04

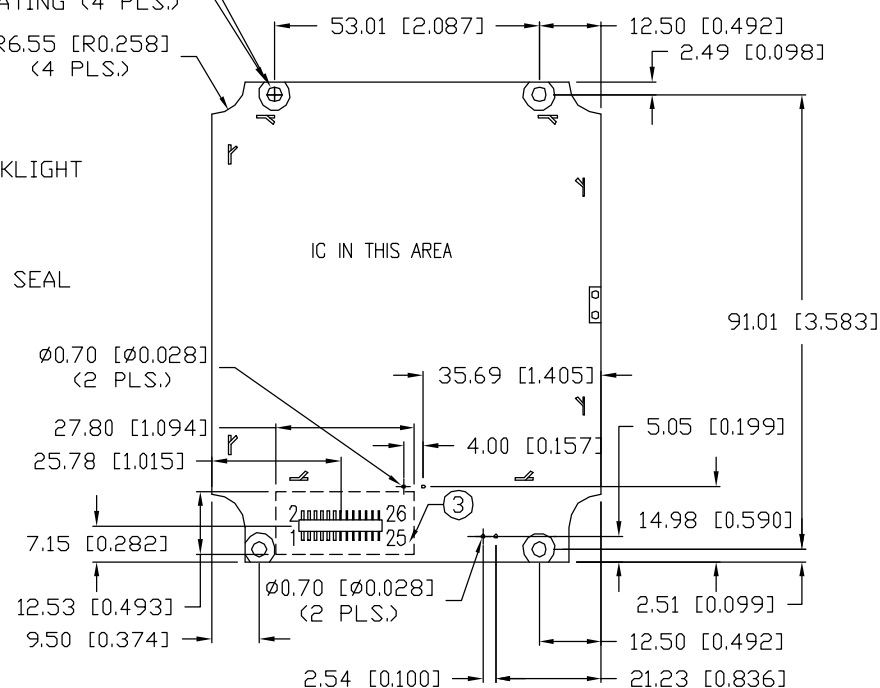


SECTION A~A

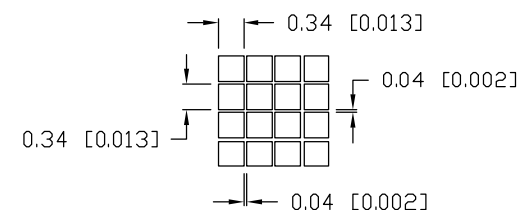
NOTES:

1. SAMTEC PART# FTSH-113-01-L-DV-K.
2. BLACK BEZEL.
3. NO OTHER COMPONENTS IN THIS AREA.

$\phi 3.00$ [$\phi 0.118$]
 (4 PLS.)
 $\phi 6.35$ [$\phi 0.250$]
 PLATING (4 PLS.)
 $R6.55$ [$R0.258$]
 (4 PLS.)



PIXEL DETAIL



*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.

C

PART NUMBER

LCM-H160160GWF/B

160 x 160 DOT MATRIX GRAPHIC MODULE, 3.3V LOGIC SUPPLY,
1/160 DUTY, 1/12 BIAS, DC-DC, FSTN, HEATER,
TRANSFLECTIVE, LED BACKLIGHT, VLCD=18.6V, 6:00 VIEW.

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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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CT			PAGE: 1 OF 3
			SCALE: N/A

REV.	E.C.N. NUMBER AND REVISION COMMENTS	DATE
	SEE PAGE 1.	

PIN CONFIGURATION

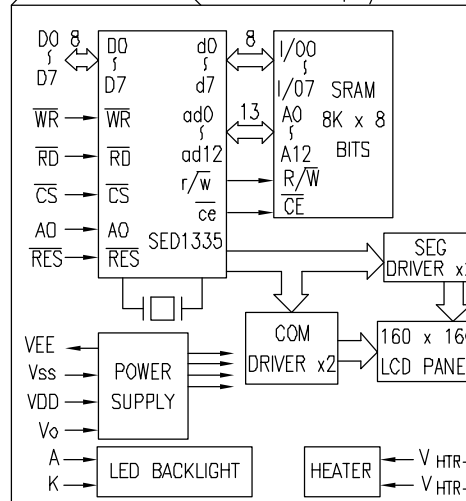
PIN NO.	SYMBOL	LEVEL	FUNCTION	
1	V _{SS}	0V	GND	
2	V _{DD}	3.3V	SUPPLY VOLTAGE FOR LOGIC	
3	V _O	—	CONTRAST VOLTAGE FOR LCD DRIVE(VARIABLE)	
4	R _D	L	READ SIGNAL	
5	W _R	L	WRITE SIGNAL	
6	C _S	L	CHIP SELECT	
7	A0	H/L	DATA TYPE SELECT	
8~15	DB0~DB7	H/L	DATA BUS	
16	RES	L	RESET SIGNAL (NOTE 1)	
17	VEE	—	POWER SUPPLY VOLTAGE FOR LCD	
18	V _{SS}	0V	GND	
19	A	4.2V	ANODE	LED BACKLIGHT
20	K	GND	CATHODE	LED BACKLIGHT
21	LED (+)	3.5V	LED ANODE	
22	LED (−)	GND	LED CATHODE	
23	VHTR+	+5V	HEATER VOLTAGE	
24	VHTR+	+5V	HEATER VOLTAGE	
25	VHTR−	GND	HEATER VOLTAGE	
26	VHTR−	GND	HEATER VOLTAGE	

WARNING:

1. $\overline{\text{RES}}$ IS A SCHMITT TRIGGER INPUT. THE PULSEWIDTH ON $\overline{\text{RES}}$ MUST BE AT LEAST 200 μs . PULSES OF MORE THAN A FEW SECONDS WILL CAUSE DC VOLTAGES TO BE APPLIED TO THE LCD PANEL.

BLOCK DIAGRAM

160 x 160, 1/160 DUTY



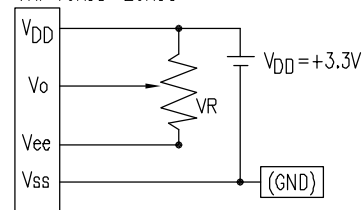
CAUTION: STATIC SENSITIVE DEVICE
FOLLOW PROPER E.S.D. HANDLING PROCEDURES
WHEN WORKING WITH THIS PART.

NOTES:

1. PART SHALL BE A 160 X 160 CHIP ON BOARD(C.O.B), FSTN, TRANSFLECTIVE POSITIVE MODE LCD.
2. A CHIP ON BOARD (C.O.B) OR CHIP ARRAY TYPE/GREEN LED BACKLIGHT SHALL BE USED BEHIND THE LCD.
3. PART SHALL HAVE A LCD HEATER INSTALLED BETWEEN LCD GLASS AND LED BACKLIGHT. LCD HEATER WILL BE DRIVEN EXTERNALLY. PART NUMBER H24751 OR EQUIVALENT.
4. PART SHALL WITHSTAND A STORAGE TEMPERATURE OF -30°C TO +85°C AND AN OPERATING TEMPERATURE -20°C TO +70°C. NOTE: IT IS POSSIBLE THAT LCD WILL SEE MORE EXTREME STORAGE AND OPERATING TEMPERATURES (ie. -40°C TO +85°C).
5. CONTROLLER SHALL BE AN EPSON SED1335.
6. THE POLARIZERS SHALL ALLOW FOR READABILITY WITH POLARIZED SUNGLASSES.
7. VIEWING QUADRANT SHALL BE OPTIMIZED LOOKING PERPENDICULAR AND TOWARDS 6:00 O'CLOCK.
8. THE CONTRAST RATIO SHALL BE 5 TO 1(min.) @ 25°C WITHIN A CONE 30 DEGREES FROM PERPENDICULAR EXCEPT IN THE QUADRANT CENTERED @ 12:00 O'CLOCK.
9. A PROTECTIVE FILM SHALL BE APPLIED TO THE FRONT FACE TO PROTECT AGAINST SCRATCHING DURING SHIPPING & HANDLING.
10. A BUILT IN NEGATIVE CHARGE PUMP SHALL BE ON BOARD.

$V_{DD}-V_0$: LCD DRIVING VOLTAGE

VR: $10\text{K}\Omega - 20\text{K}\Omega$



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ELECTRICAL CHARACTERISTICS

 $V_{DD}=2.7V$ to $4.5V$, $T_A=25^{\circ}C$

PARAMETER		SYMBOL	CONDITION	STANDARD VALUE			UNIT
				MIN.	TYP.	MAX.	
SUPPLY VOLTAGE		V_{DD}	—	2.7	3.3	4.5	V
SUPPLY CURRENT		I_{DD}	$V_{DD}=3.3V$	—	3.5	—	mA
INPUT VOLTAGE* (TTL)	HIGH	V_{IH}	—	$0.5V_{DD}$	—	V_{DD}	V
	LOW	V_{IL}	—	V_{SS}	—	$0.2V_{DD}$	V
OUTPUT VOLTAGE* (TTL)	HIGH	V_{OH}	$I_{OH}=-5.0mA$	2.4	—	—	V
	LOW	V_{OL}	$I_{OH}=5.0mA$	—	—	$V_{SS}+0.4$	V
INPUT VOLTAGE** (CMOS)	HIGH	V_{IH}	—	$0.8V_{DD}$	—	V_{DD}	V
	LOW	V_{IL}	—	V_{SS}	—	$0.2V_{DD}$	V
OUTPUT VOLTAGE** (CMOS)	HIGH	V_{OH}	$I_{OH}=-2.0mA$	$V_{DD}-0.4$	—	—	V
	LOW	V_{OL}	$I_{OH}=1.6mA$	—	—	$V_{SS}+0.4$	V
LED BACKLIGHT	VOLTAGE	V_f	$I_f=800mA$	—	4.2	4.5	V
	CURRENT	I_f	—	—	800	—	mA
	POWER CONSUMPTION	PD	—	—	2.1	—	W
	LUMINOUS	L	—	—	60	—	cd/m ²
WAVELENGTH		λ_p	$I_f=20mA$ EA.	570	—	575	nm

B

B C

ABSOLUTE MAXIMUM RATINGS

ITEM	SYMBOL	TEST CONDITION	STANDARD VALUE		UNIT
			MIN	MAX	
POWER SUPPLY VOLTAGE	$V_{DD}-V_{SS}$	$T_a=25^{\circ}C$	-0.3	7.0	V
INPUT VOLTAGE	V_{IN}	—	-0.3	$V_{DD}+0.3$	V
OPERATING TEMPERATURE	T_{opr}	—	-20	70	$^{\circ}C$
STORAGE TEMPERATURE	T_{stg}	—	-30	85	$^{\circ}C$

*D0~D7, A0, /CS, /RD, /WR ARE TTL-LEVEL INPUTS.

**YD, XD0~XD3, XSCL, LP, WF, YDIS ARE CMOS LEVEL INPUTS.

NOTES:

- FOR TIMING DIAGRAM AND INTERFACE OPTIONS,
PLEASE REFER TO SED1335 FOR DETAILS.

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