

AZ DISPLAYS, INC.

COMPLETE LCD SOLUTIONS

SPECIFICATIONS FOR LIQUID CRYSTAL DISPLAY

PART NUMBER:
DATE:

AGM1212N SERIES
APRIL 04, 2007

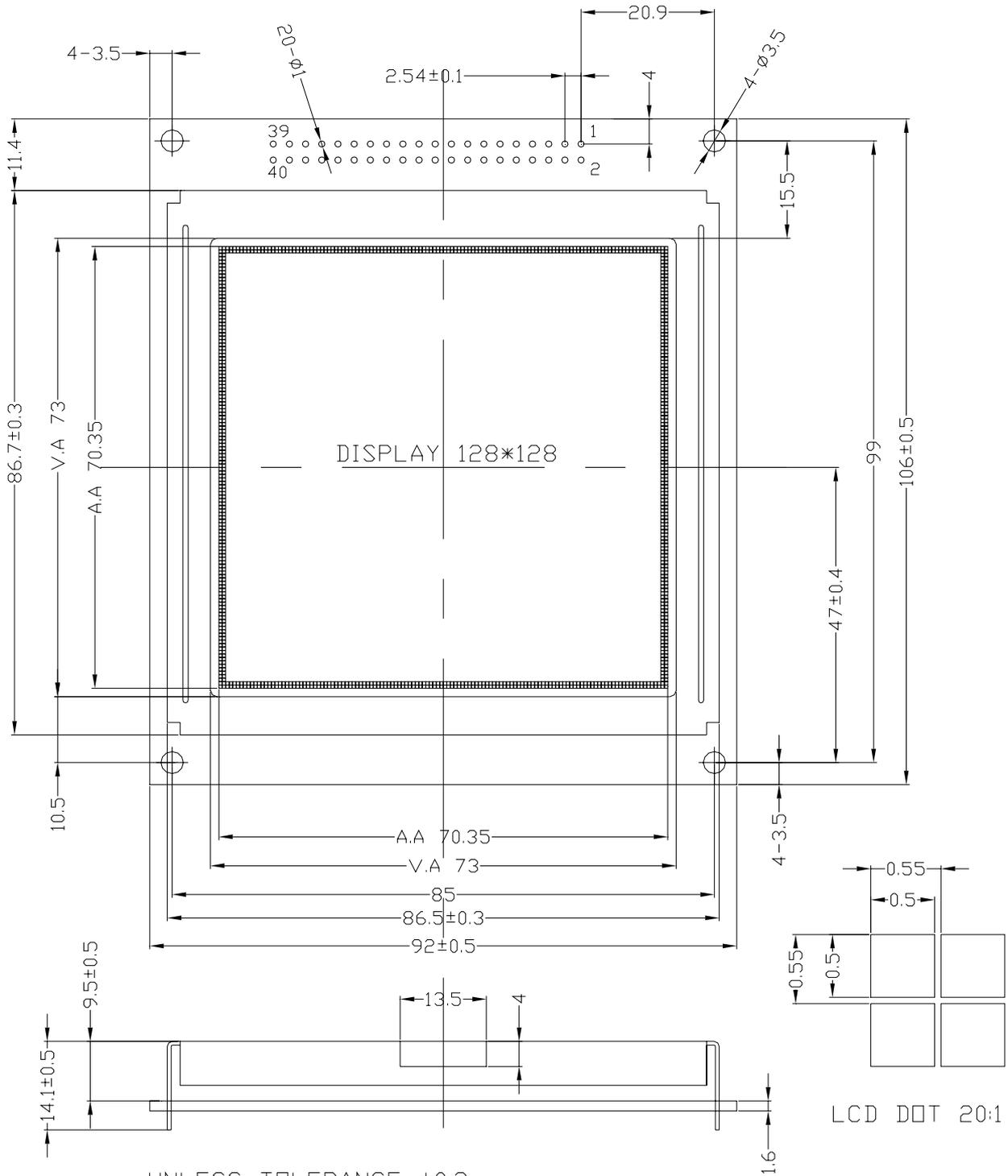
1. FUNCTIONS

Glass Thickness	: 1.1mm
Viewing Direction	: 6 O'clock
Driving Scheme	: 1/128Duty, 1/12 Bias
Power Supply for logic	: 5.0V
Backlight Color	: White
Display Content	: 128*128 Dots
V _{LCD}	: 18.5V
Operation Temperature	: -20 to +70°C
Storage temperature	: -25 to +75°C
Controller IC	: T6963C
Driver IC	: S6B0086

2. MODULE

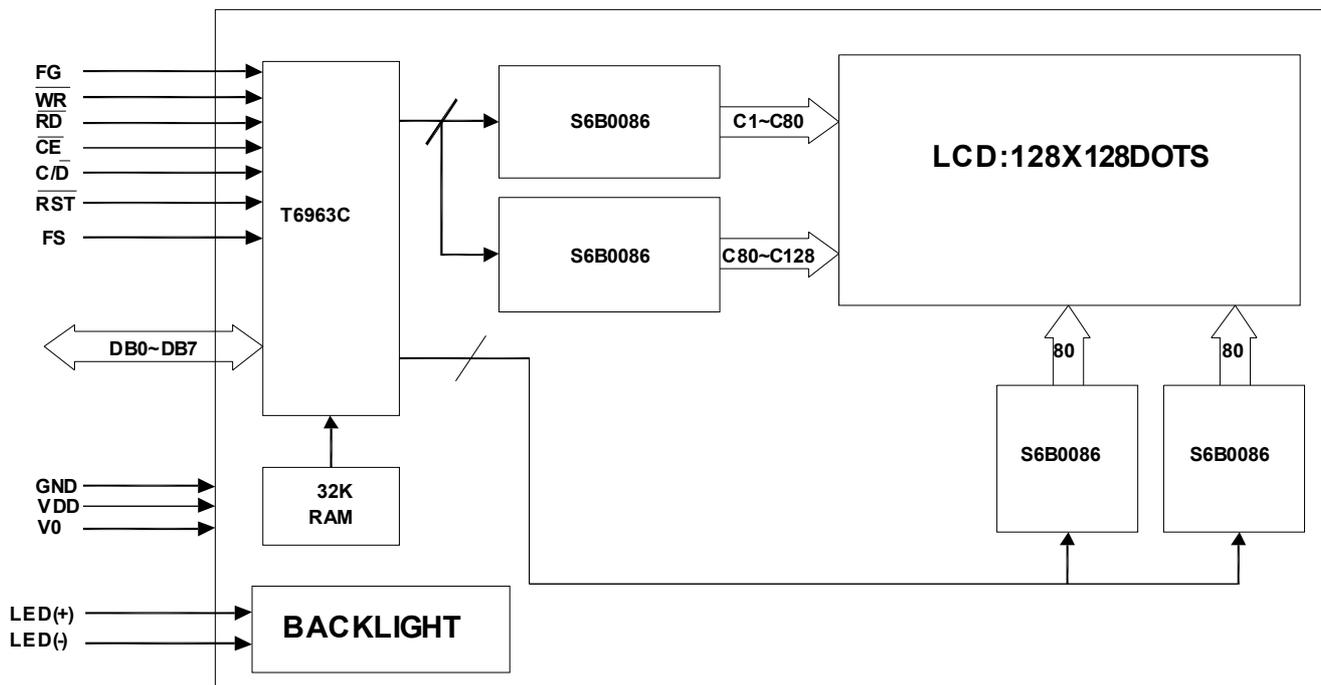
Module Size	: 106(L)*92(W)*14.1(H)mm
Viewing Area	: 73(L)mm*73(W)mm
Active Area	: 70.35(L)mm*70.35(W)mm
Dot Pitch	: 0.55(W)mm*0.55(H)mm
Dot Size	: 0.50(W)mm*0.50(H)mm
Dot Gap	: 0.05mm

3. EXTERNAL DIMENSIONS



UNLESS TOLERANCE ± 0.2
THE MATERIAL IS LEAD-FREE

4. BLOCK DIAGRAM



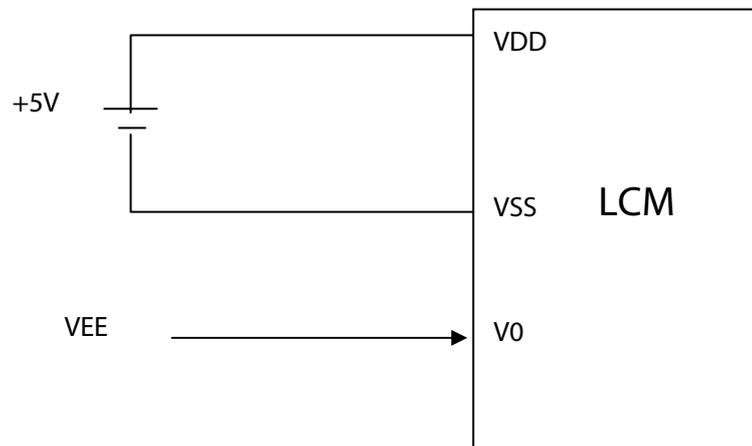
5. PIN ASSIGNMENT

NO.	SYMBOL	FUNCTION
1	FG	Frame ground
2	/CSCAN	Active LOW : Force column scan counter to run continuously in order to obtain a complete cycle
3	V _{SS}	Ground
4,6,8,10	D _{S00~DS03}	4 bits to indicate the column being scanned range 0 to 15 corresponding to COL1 to COL16, with DS00 as LSB. Output is latched at the most recently touched position. When read while "TOUCH" is positive, the touched column is identified.*
5	V _{DD}	Power supply for logic(+5V)
7	V ₀	Power supply for LCD drive
9	/WR	Write Command or data to module when "L"
11	/RD	Read Command or data from module when "L"
12,14,16	D _{S04~DS06}	3 bits to indicate the row being scanned range 0 to 7 corresponding to ROW1 to ROW8, with DS4 as LSB & DS6 as MSB. Output is latched at the most recently touched position. When read while "TOUCH" is positive, the touched column is identified.*
13	/CE	Enable LCD controller when "L"
15	C//D	Command/data select. "H" for command read/write. "L" for data read/write
17	/RST	LCD Controller reset. Controller initialize and DB00-DB07 are set to be high impedance when /RST is "L"
18	//SCAN	Active LOW : Standby to scan. Scanning will begin when a touch is identified at any of the sensing position, and will continue until touch is removed.

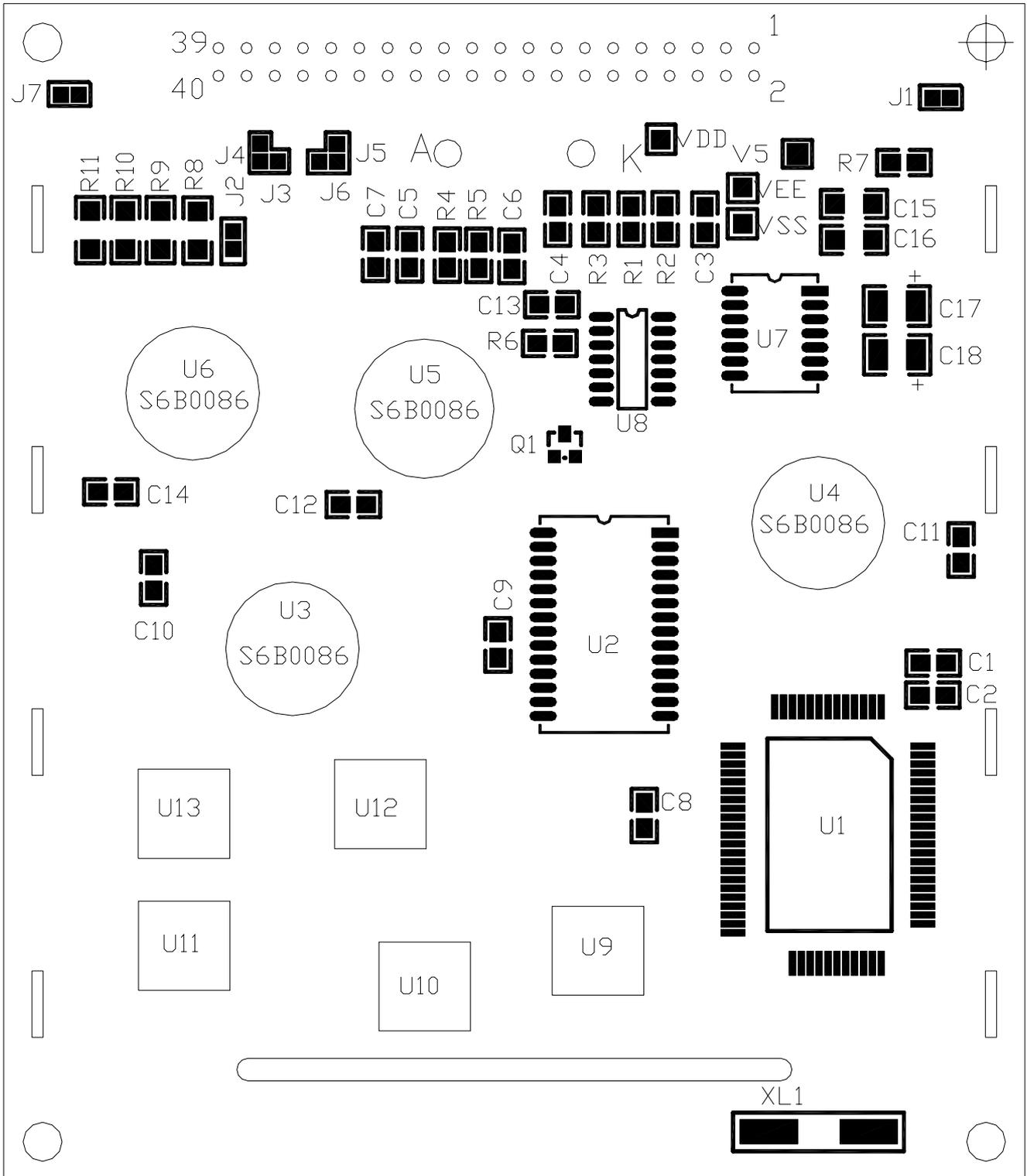
19,21,23,25, 27,29,31,33,		DB0 ~DB7	LCD data input/output. DB0(pin10) is LS B and DB7(pin17) is MSB .
20	EN	D	A 4ms positive pulse generated at the end of a complete scan cycle (Max cycle time: 64ms)
22	T	OUCH	A 2ms positive pulse when scanning reaches an identified touch position. It can be used as an interrupt.
24,26,28,30,3 2,34,36,38,40		NC. No	Connection
35		FS	Font select. "H" for 6x 8 font & " L " for 8x8 font
37	LED	+(A)	Please refer to item 8.1 PCB drawing and description
39	LED-(K)		

* If D 500 to DS06 is read at the "END, then the last touched position will be identified.

6. POWER SUPPLY



7.1 PCB DRAWING AND DESCRIPTION



Note: It is only a draft drawing to show the components on the PCB. We should update the drawing after the PCB sample is approved.

DESCRIPTION:

7-1-1.The polarity of the pin 37 and the pin 39:

symbol	symbol state	J3,J5	J6,	J4	LED Polarity	
					37 Pin	39 Pin
J6,J4	Each solder-bridge	Each closed		Each open	Anode	Cathode
J3,J5	Each solder-bridge	Each open		Each closed	Cathode	Anode

Note: In application module, J3=J5 =J2=closed,J4=J6= open.

7-1-2. The J1 is metal-bezel GND to module GND and J7 is mountingholes GND to module GND.

Note: In application module, J1= J7=closed

7-1-3.The LED resistor should be bridged when J2 is closed

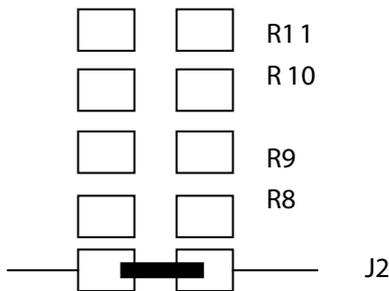
Note: In application module, J2=closed

7-1-4.The R8 and the R9, R10, R11 are the LED resistor.

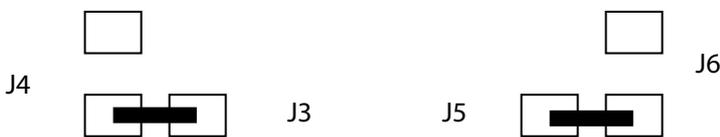
Note: In application module, R8 = R9= R10= R11=open

7.2 Example application

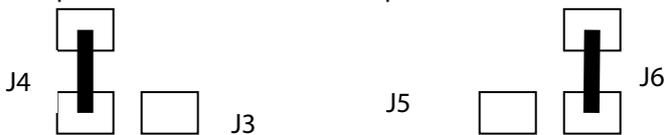
7-2-1. The LED resistor should be bridged as following.



7-2-2. The 37 pin is the anode and the 39 pin is the cathode as following.



7-2-3.The 37 pin is the cathode and the 39 pin is the anode as following.



7-2-4. The metal-bezel is on ground as following.



8. ABSOLUTE MAXIMUM RATINGS($V_{SS}=0V$, $T_a=25^{\circ}C$)

PARAMETER	SYMBOL	RATING	UNIT
Supply Voltage (Logic)	V_{DD}	-0.3 to 7.0	V
Input voltage	V_{IN}	-0.3 to $V_{DD} + 0.3$	V
Operating Temperature	T_{opr}	-20 to +70	$^{\circ}C$
Storage Temperature	T_{stg}	-25 to +75	$^{\circ}C$

9. ELECTRICAL CHARACTERISTICS

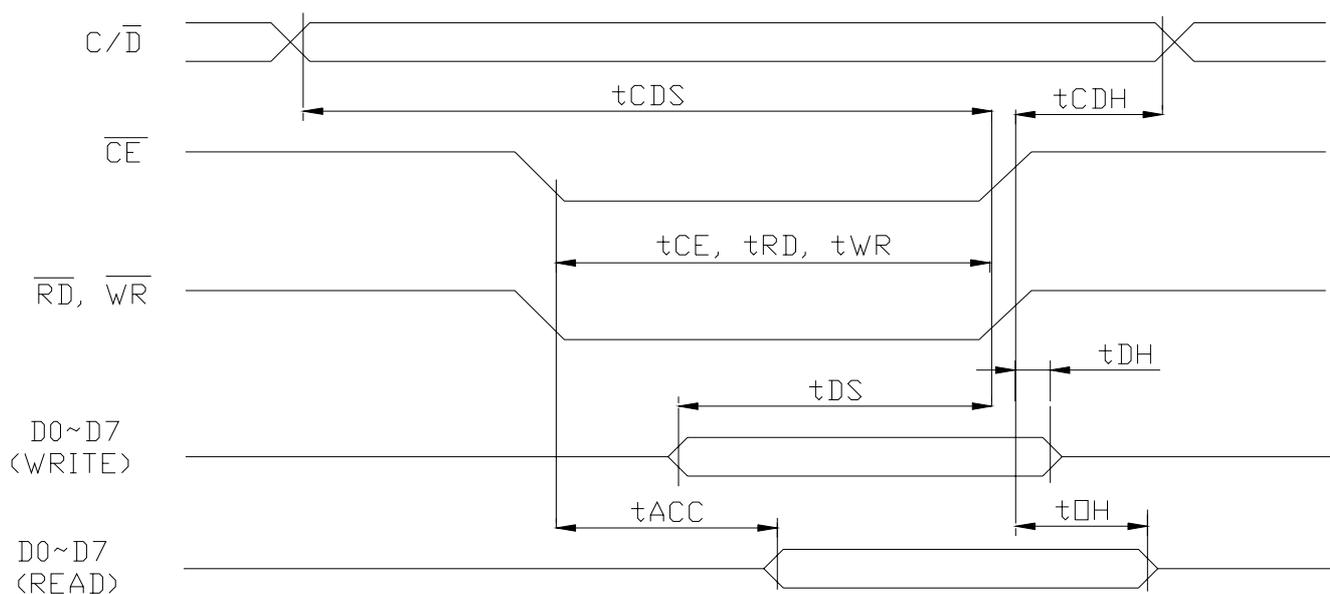
1). DC Characteristics

$T_a=25^{\circ}C, V_{SS}=0V$

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Supply Voltage (Logic)	$V_{DD}-V_{SS}$	-	4.5	5.0	5.5	V
High Level Input Voltage	V_{IH}	$V_{DD}=5.0V \pm 10\%$	$V_{DD}-2.2$	-	V_{DD}	V
Low Level Input Voltage	V_{IL}	$V_{DD}=5.0V \pm 10\%$	0	-	0.8	V
High Level Output Voltage	V_{OH}	$I_{OH}=0.75mA$	$V_{DD}-0.3$	-	V_{DD}	V
Low Level Output Voltage	V_{OL}	$I_{OL}=0.75mA$	0	-	0.3	V
Current Consumption(Operating)	$I_{DD(1)}$	$V_{DD}=5.0V$ $f_{OSC} = 3.0 MHz$	-	3.3	6.0	mA
Current Consumption(Halt)	$I_{DD(2)}$	$V_{DD}=5.0V$			3	μA

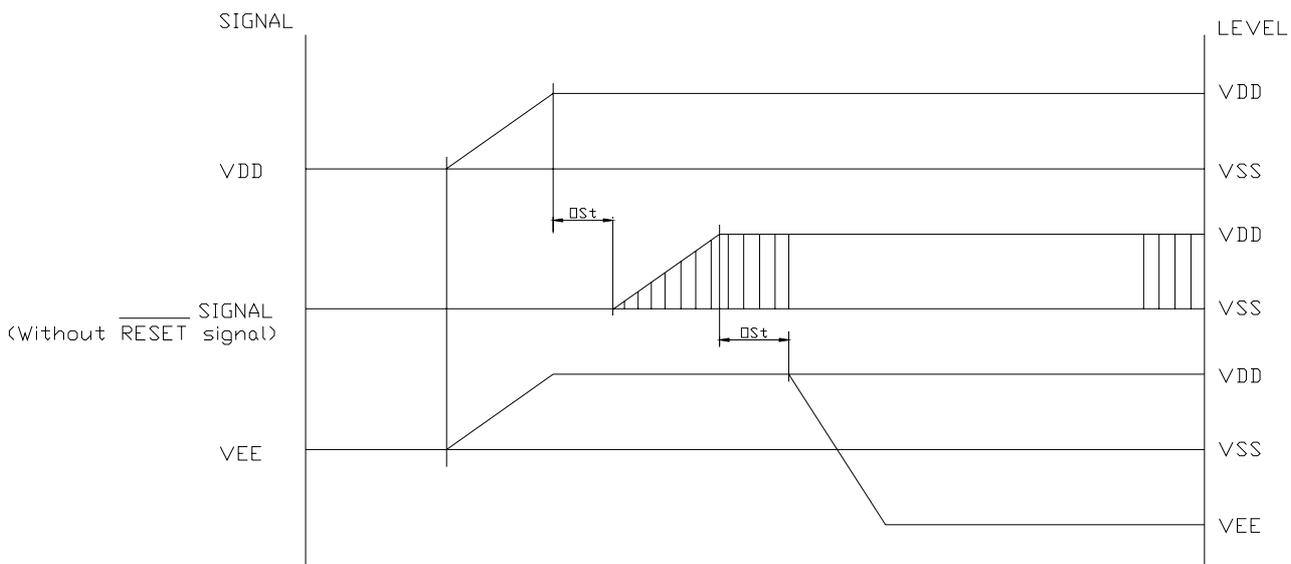
2). AC Characteristics

Parameter	Symbol	Min.	Max.	Units
C/D Setup Time	t_{CDS} 10	0	-	ns
C/D Hold Time	t_{CDH} 10		-	ns
CE, RD, WR Pulse Width	t_{CE}, t_{RD}, t_{WR} 80		-	ns
Data Setup Time	t_{DS} 80		-	ns
Data Hold Time	t_{DH} 40		-	ns
Access Time	t_{ACC} -		150	ns
Output Hold Time	t_{OH} 10		50	ns

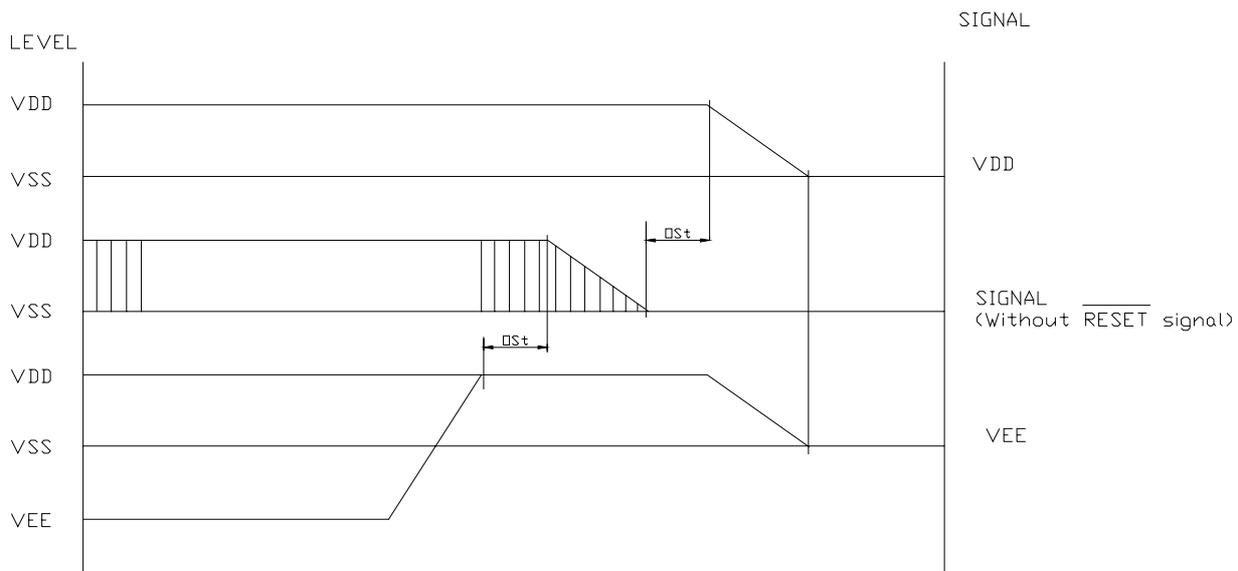


3). Power Supply ON/OFF Sequence

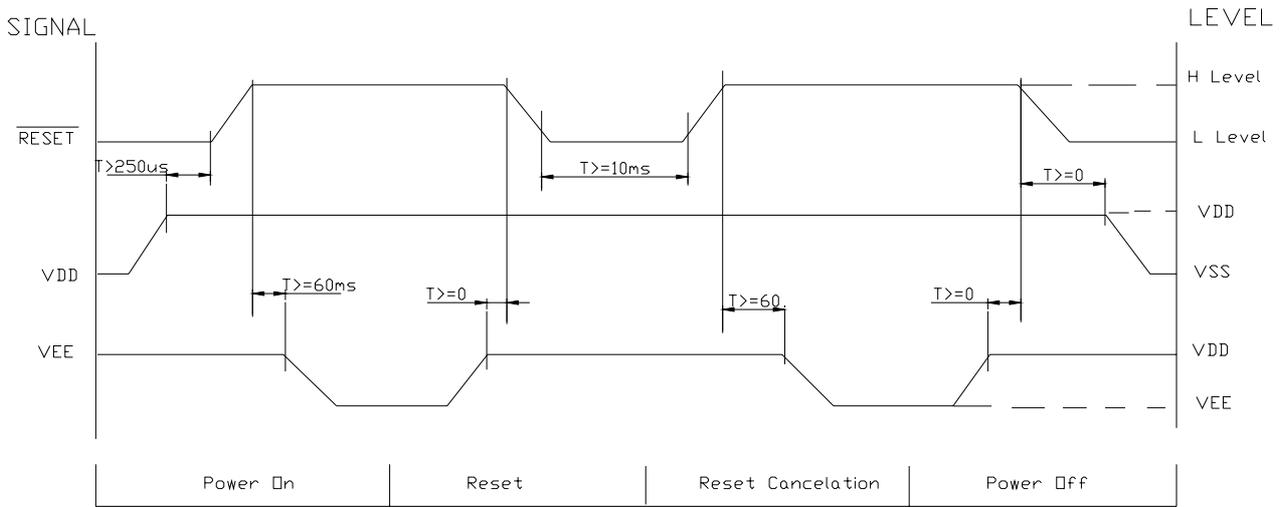
ON Sequence



OFF Sequence



Reset Sequence



Please maintain the above sequence when turning on and off the power supply of the module.

If VEE is supplied to the module while internal alternate signal for LCD driving (M) is unstable or RESET is active, DC component will be supplied to the LCD panel. This may cause damage to the LCD module.

10. BACKLIGHT ELECTRICAL/ OPTICAL SPECIFICATIONS

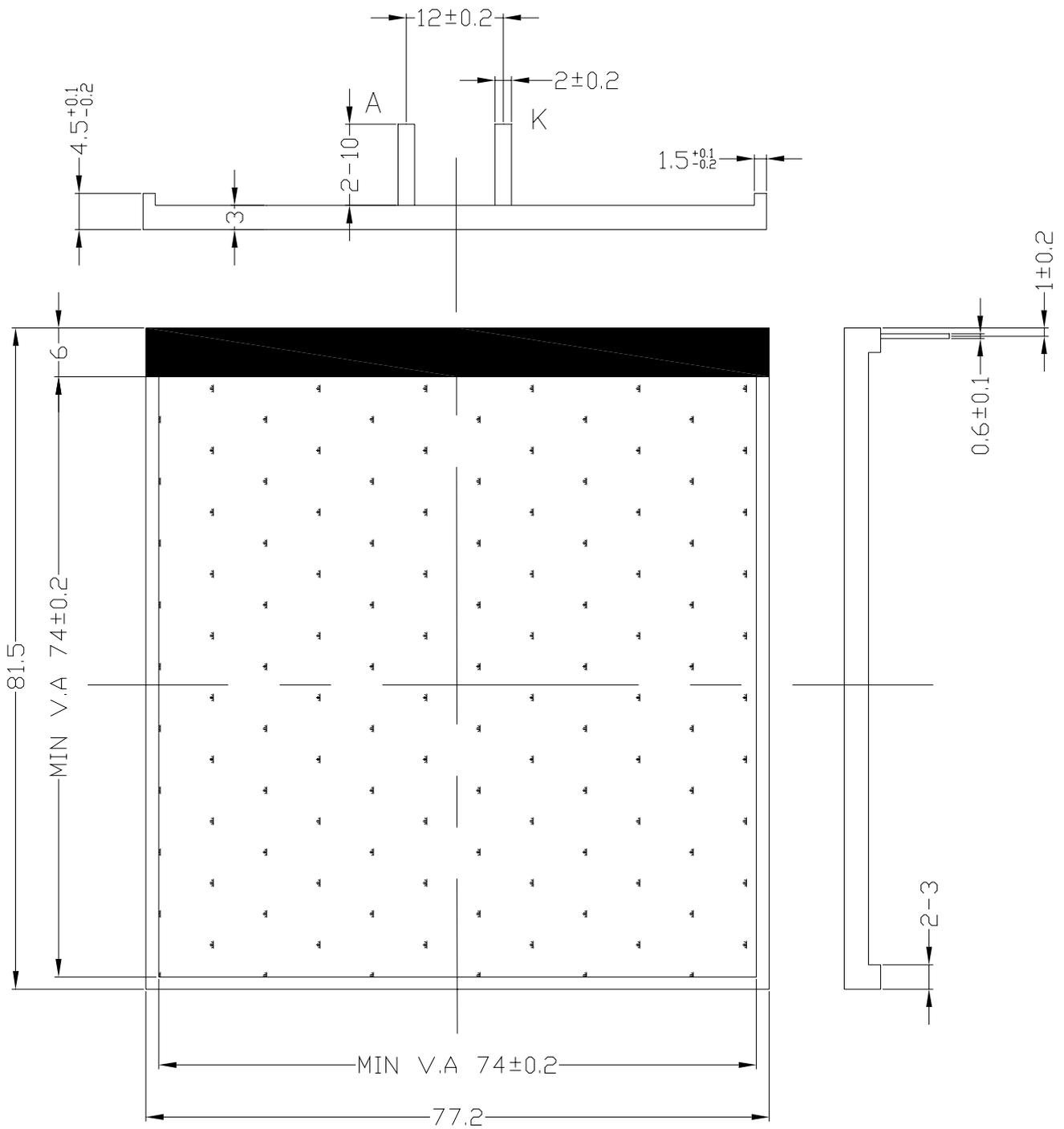
10.1 Absolute Maximum Ratings ($T_a=25^\circ C$)

Item	Symbol	Conditions	Rating	Unit
Absolute Maximum Forward Current	I_{fm}		75	mA
Peak Forward Current	I_{fp}	1 Msec Plus 10% Duty Cycle	180	mA
Reverse Voltage	V_r		1	V
Power Dissipation	P_d		225	mW

10.2 Backlight Electrical/Optical Characteristics

Item	Symbol	Min.	Typ.	Max.	Unit	Condition
Forward Voltage	V_f	2.9	3.2	3.5	V	$I_f=45mA$
Reverse Current	I_r		30		μA	$V_r=0.8V$
Peak Wave Length	λ_p				nm	
Spectral Line Half Width	$\Delta\lambda$				nm	
Luminance	L_v		TBD		cd/m^2	$I_f=45mA$
Backlight Color		White				

10.3 Backlight Drawing



UNLESS TOLERANCE ±0.3
 THE COLOR IS WHITE
 THE MATERIAL IS LEAD-FREE

