AZ DISPLAYS, INC.

COMPLETE LCD SOLUTIONS

SPECIFICATIONS FOR
LIQUID CRYSTAL DISPLAY

PART NUMBER: AGM1212N SERIES
DATE: APRIL 04, 2007

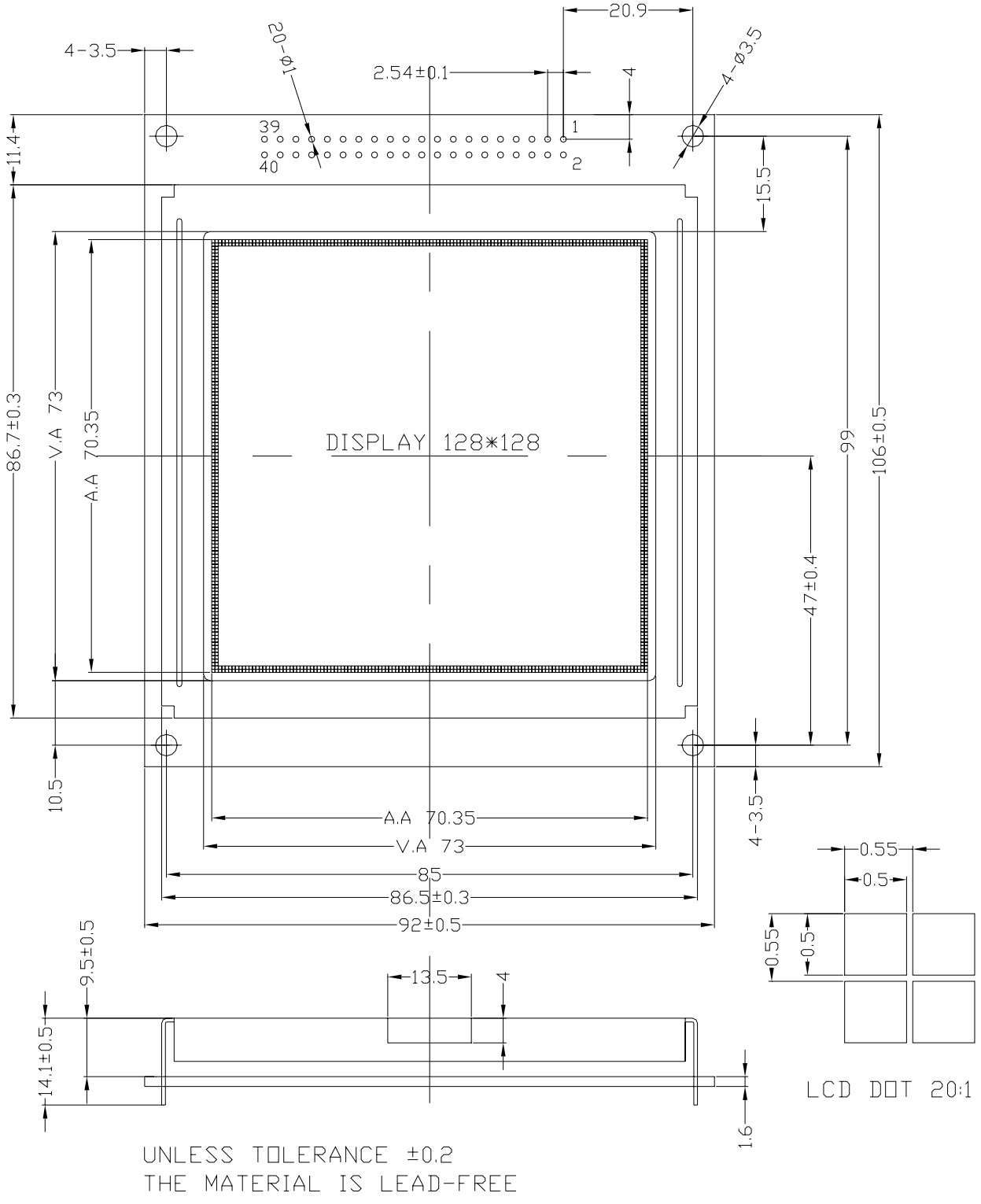
1. FUNCTIONS

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℃
Storage temperature	: -25 to +75℃
Controller IC	: T6963C
Driver IC	: S6B0086

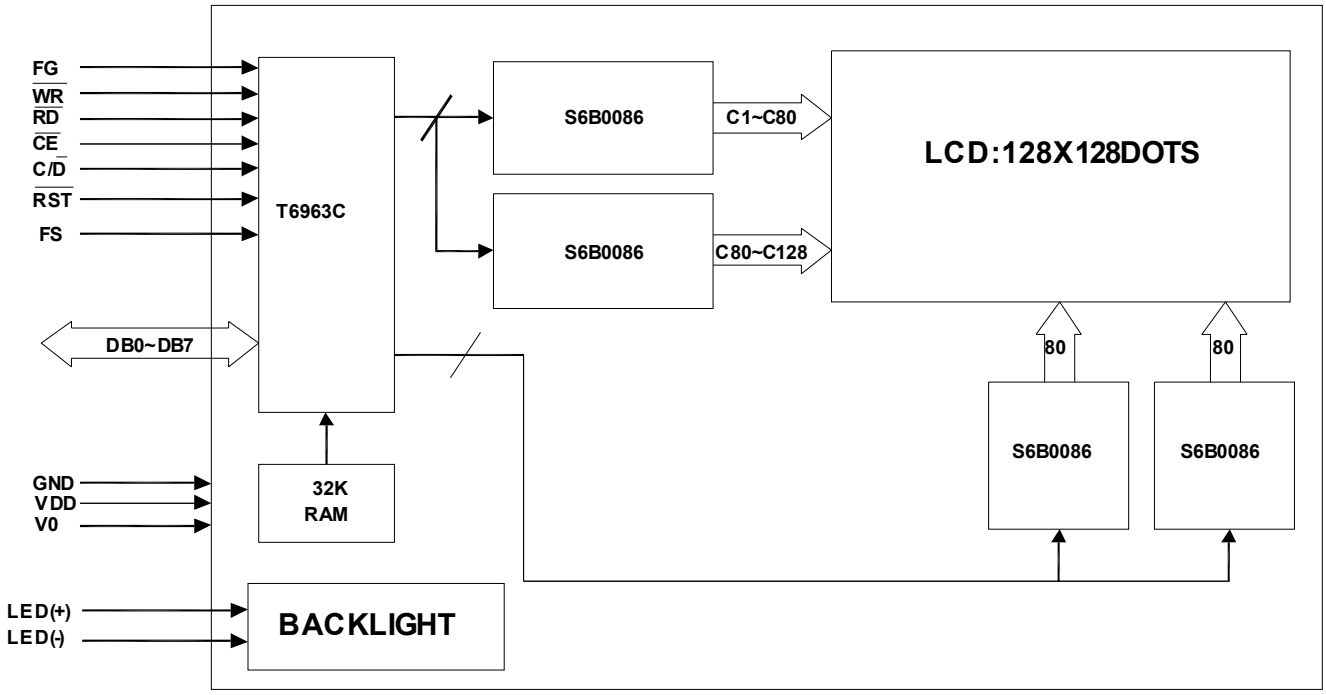
2. MODULE

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	: 0.05 mm

3. EXTERNAL DIMENSIONS



4. BLOCK DIAGRAM



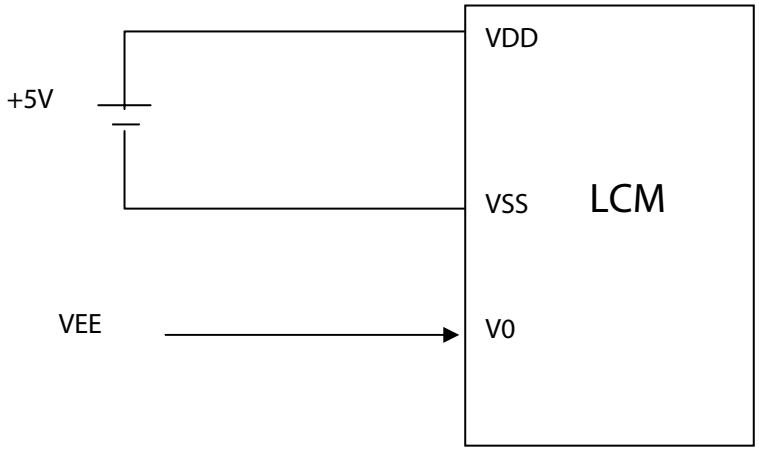
5. PIN ASSIGNMENT

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	VSS	Ground
4,6,8,10	DS00~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	VDD	Power supply for logic (+5V)
7	V0	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	DS04~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.

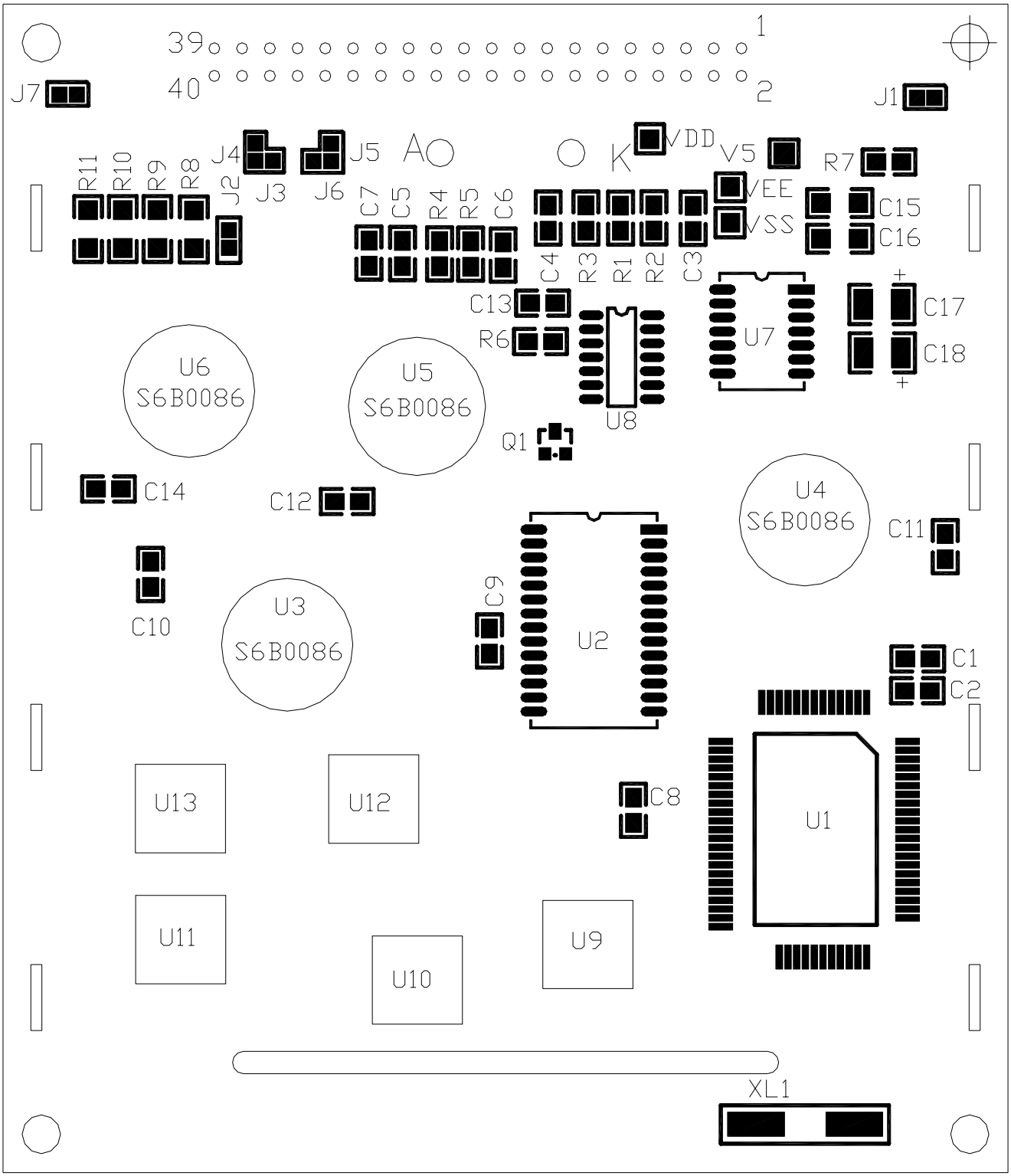
19,21,23,25, 27,29,31,33,	DB0 ~DB7	LCD data input/output. DB0(pin10) is LSB and DB7(pin17) is MSB.
20	END	A 4ms positive pulse generated at the end of a complete scan cycle (Max cycle time: 64ms)
22	TOUCH	A 2ms positive pulse when scanning reaches an identified touch position. It can be used as an interrupt.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

* If DS00 to DS06 is read at the "END, then the last touched position will be identified.

6. POWER SUPPLY



7.1 PCB DRAWING AND DESCRI PTION



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 / 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

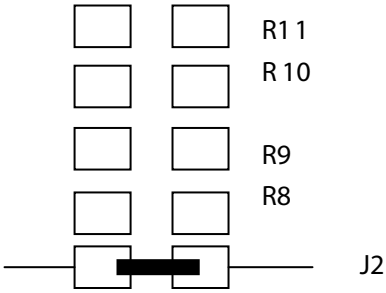
Note: In application module, J2=closed

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

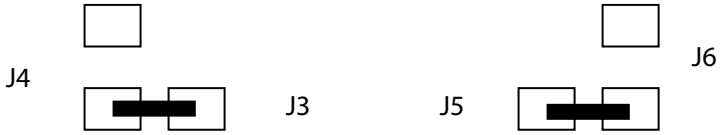
Note: In application module, R8 = R9= R10= R11=open

7.2 Example application

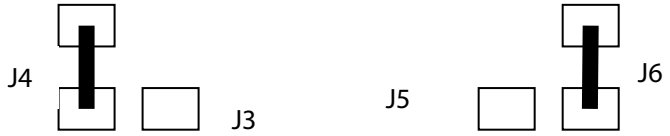
7-2-1. The LED resistor should be bridged as following.



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



7-2-3.The 37 pin is the cathodeand the 39 pin is the anodeas following.



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

8. ABSOLUTE MAXIMUM RATINGS(Vss=0V , Ta=25℃)

PARAMETER	SYMBOL	RATING	UNIT
Supply Voltage (Logic)	V_{DD}	-0.3 to 7.0	V
Input voltage	V_{IN}	-0.3 to VDD +0.3	V
Operating Temperature	Topr	-20 to +70	℃
Storage Temperature	Tstg	-25 to +75	℃

9. ELECTRICAL CHARACTERISTICS

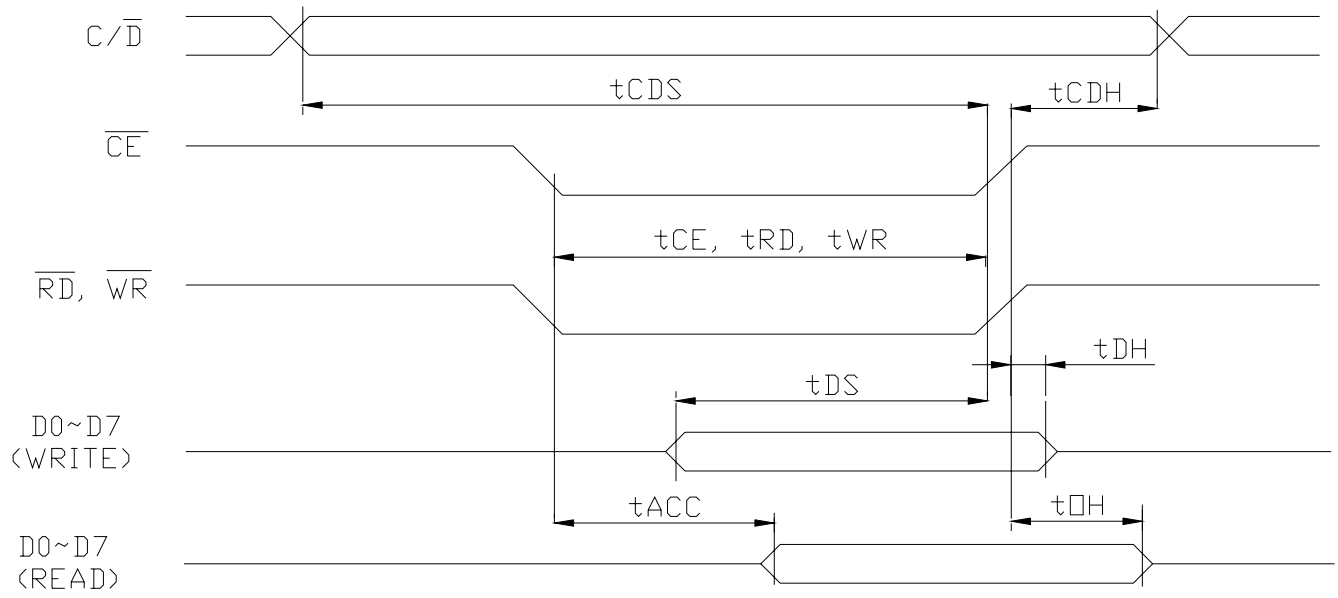
1). DC Characteristics

Ta=25℃, VSS=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±10%	V_{DD}-2.2	-	V_{DD}	V
Low Level Input Voltage	V_{IL}	V_{DD}=5.0V±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	uA

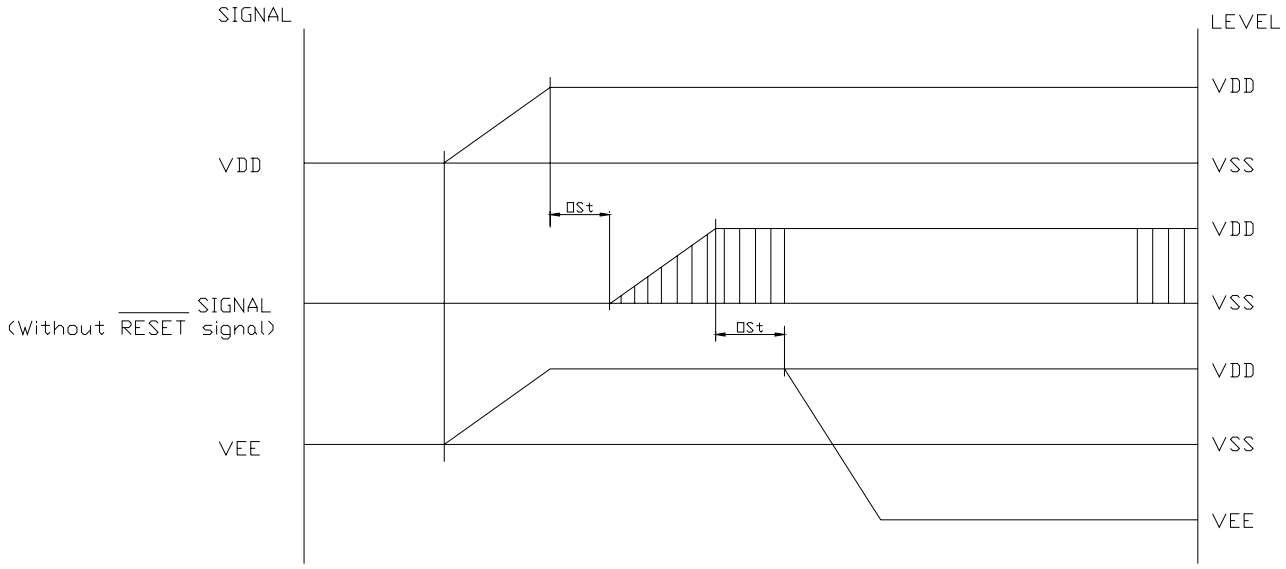
2). AC Characteristics

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

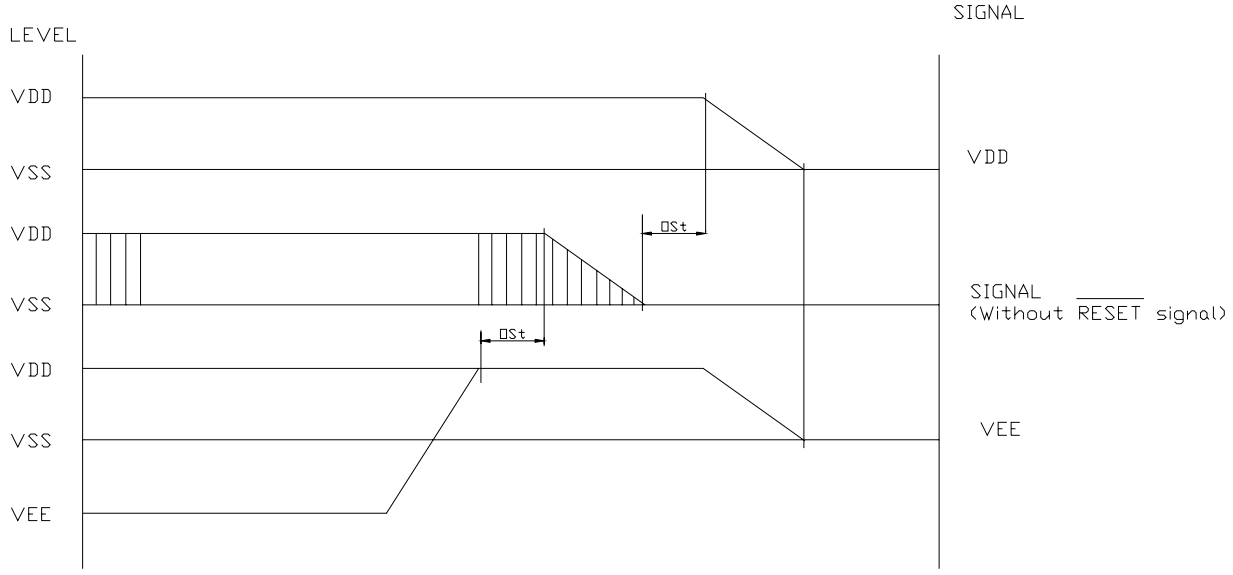


3). Power Supply ON/OFF Sequence

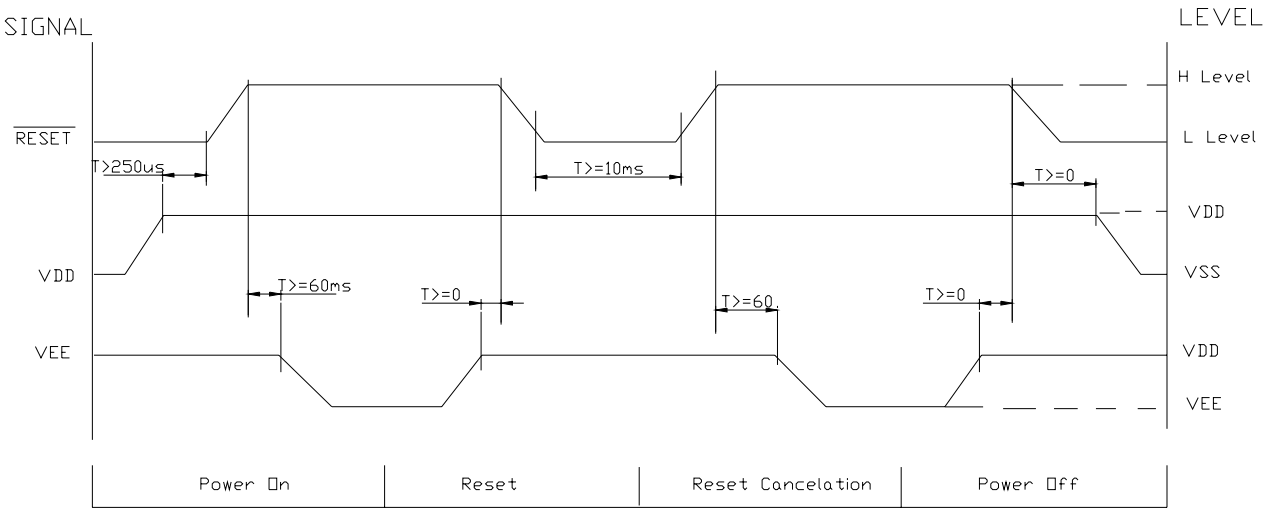
ON Sequence



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 altemate signal for LCD driving (M) is unstable or RESET is active, DC componert will be supplied to the LCD panel. This may cause damage to the LCD module.

10. BACKLIGHT ELECTRICAL/ OPTICAL SPECIFICATIONS

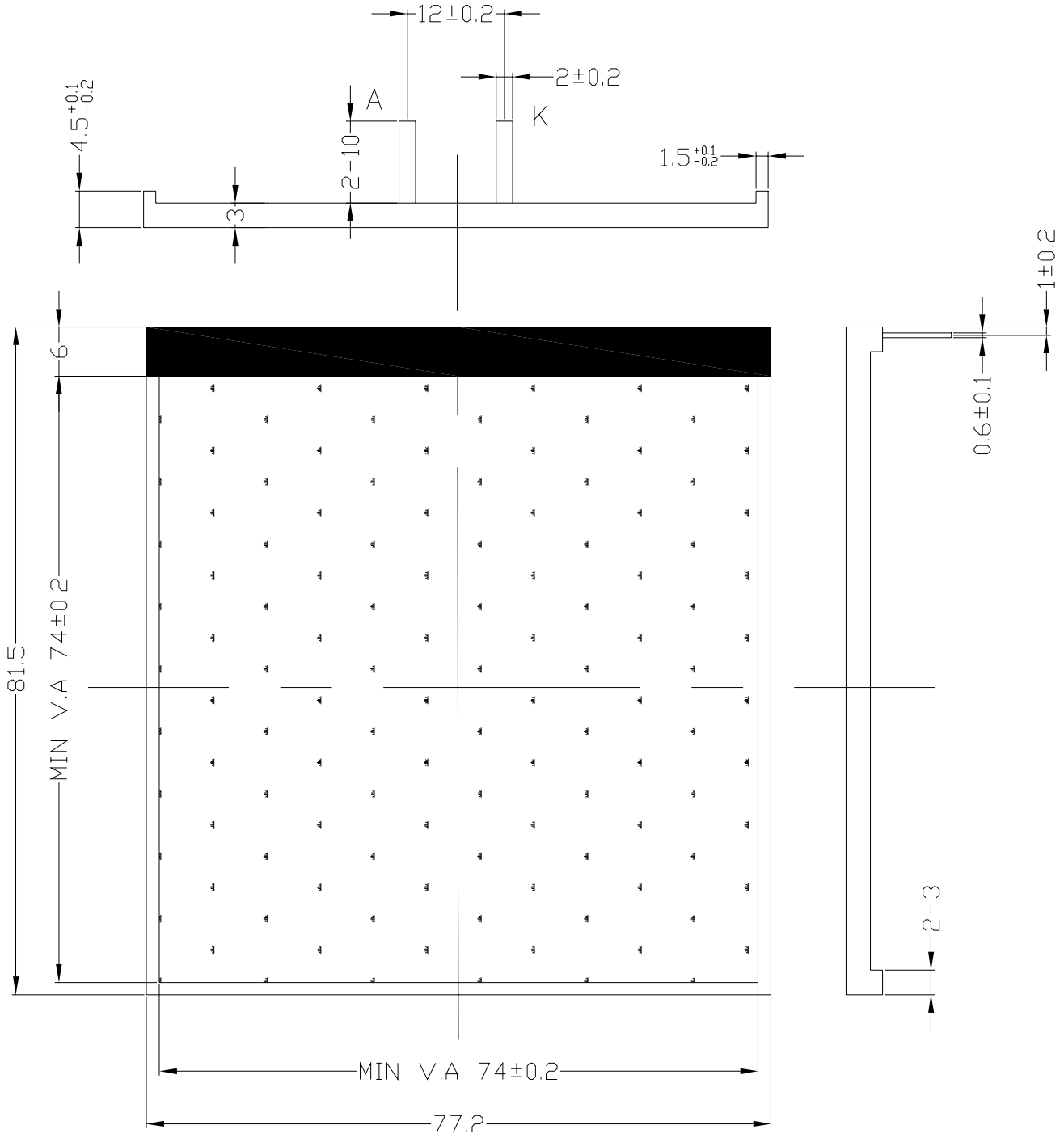
10.1 Absolute Maximum Ratings (Ta=25℃)

Item Symbol		Conditions	Rating	Unit
Absolute Maximum Forward Current	Ifm		75	mA
Peak Forward Current	Ifp	1 Msec Plus 10% Duty Cycle	180	mA
Reverse Voltage	Vr		1	V
Power Dissipation	Pd		225	mW

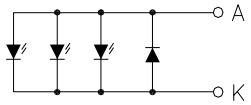
10.2 Backlight Electro/Optical Characteristics

Item Symbol		Min.	Typ.	Max.	Unit	Condifion
Forward Voltage	Vf	2.9	3.2 3.5		V	If=45mA
Reverse Current	Ir		30		uA	Vr=0.8V
Peak Wave Length	λp				nm	
Spectral Line Half Width	Δλ				nm	
Luminance Lv			TBD		cd/m^2	If=45mA
BacklightColor	White					

10.3 Backlight Drawing



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



1x3=3