






All Shore Industries, Inc.  
ASI-T-24012DF-A--I-D/A

# DATA SHEET

**Acceptance**

ISSUE	VERSION	APPROVER	CHECKER	ENGINEER
	<b>A</b>			

History of Version

Version	Contents	Date	Note
A	新品	2008.06.06	Spec.

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### 1.1 Absolute Maximum Ratings

Characteristic	Symbol	Min.	TYP.	Max.	Unit	Note
Power supply Voltage	VDD	-0.3	-	+4.0	V	
LCDGenerator supply voltage	VDD2	-0.3	-	+4.0		
Analong ciucuit supply voltage	VDD3	-0.3		+4.0		
Voltage difference between Vdd and vdd2/3	VDD2/3-VDD	----	-	1.6	V	
LCDgenerated Voltage(-30°C-+80°C)	VLCD	-0.3		17.0	V	
Any input voltage	VIN	-0.4		VDD+0.5	V	
Operating temperature	TOPR	-20	-	+70	°C	
Storage temperature	TSTR	-30	-	80	°C	
Static electricity	Be sure that you are grounded when handing LCM					

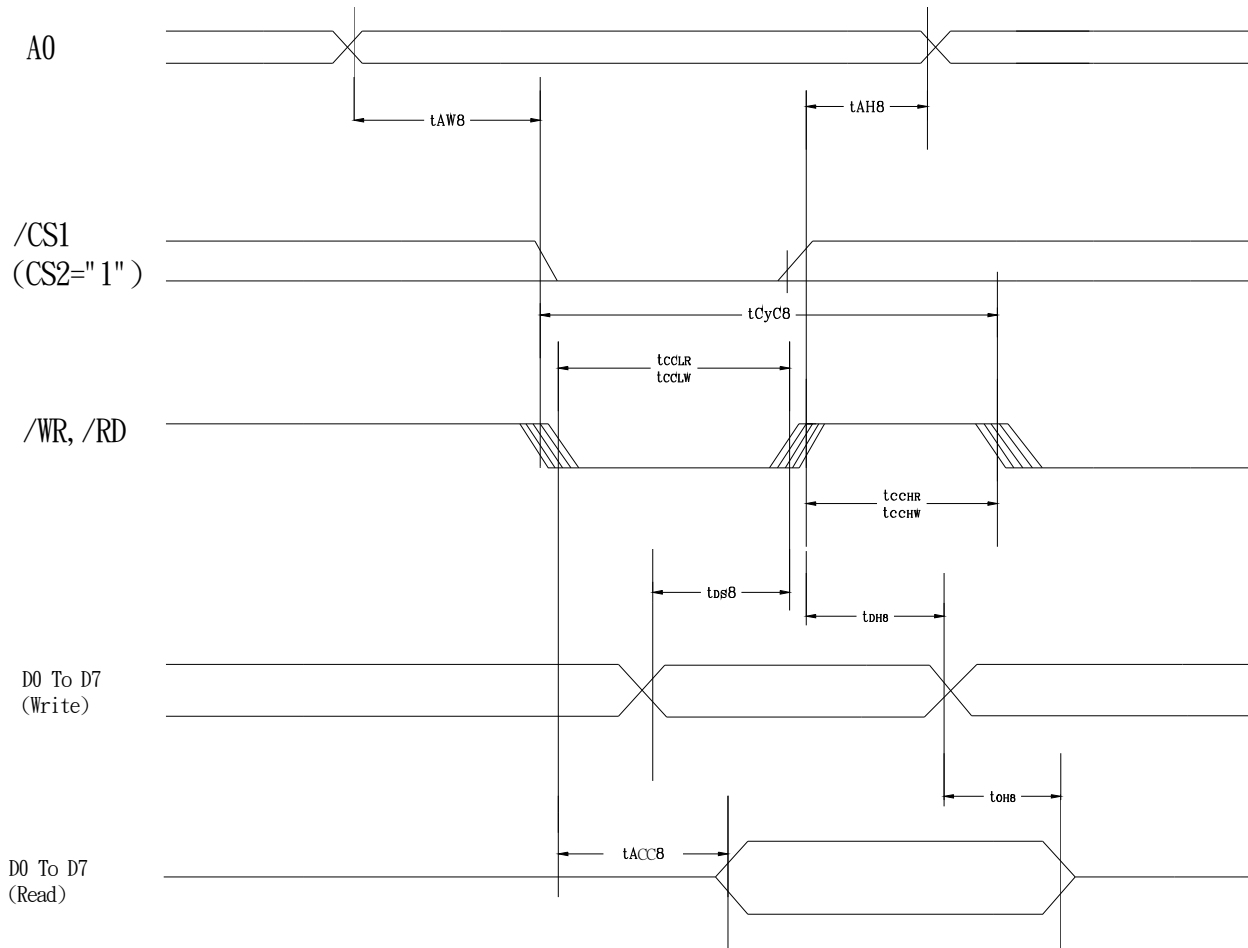
### 1.2 DC Electrical Characteristics

(VDD = 3.0v±10%, VSS = 0V)

Item	Symbol	Condition	Rating			Unit	Applicable Pin
			Min.	Typ.	Max.		
Supply for digital circuit	VDD		2.7	3	3.3	V	
Supply for bias & pump	VDD2/3		2.7	3	3.3	V	
Charge pump output LCD data voltage	VLCD			14	16	V	
Input logic High	VIH		0.8*Vdd	-		V	
Input logic low	VIL			-	0.2*VDD	V	
output logic High	VOH		0.8*Vdd	-		V	
output logic low	VOL			-	0.2*VDD	V	
Input leakage current	IIL		-	-	1.5	mA	
SEG output impedance	RON	VLCD=12.5.V	-	1.5	3.0	KΩ	
Com output impedance R0(COM)	R0(COM)	VLCD=9		1.5	3.0	KΩ	

### 1.3 Timing Characteristics

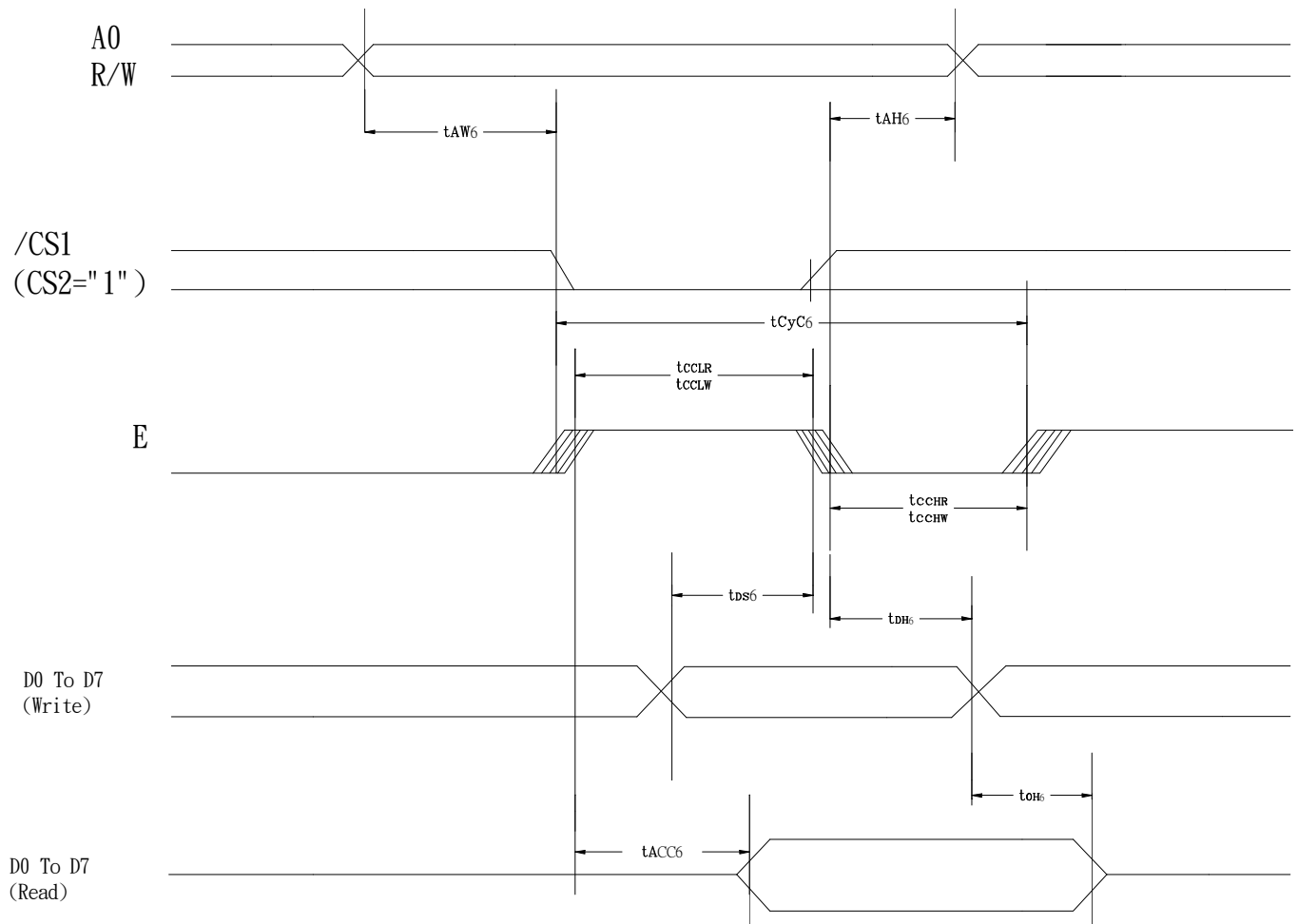
#### 1.3-1 Parallel 8080-series Interface Timing Characteristics



(VDD=3.3v, Ta=25°C)

Item	Signal	Symbol	Condition	Rating		Units
				Min	Max	
Address hold time	A0	tAH8		0		Ns
Address setup time		tAW8		0		
System cycle time		TCYC8		240		
Enable L pulse width(WRITE)	WR	tCCLW		80		
Enable H pulse width(WRITE)		tCCHR		80		
Enable L pulse width(READ)	RD	tCCLR		140		
Enable H pulse width (READ)		tCCHW		80		
WRITE Data setup time	D0ToD7	tDS8		40		
WRITE Address hold time		tDH8		0		
READ access time		tACC8	CL=100pF	-	70	
READ Output disable time		tOH8	CL=100pF	5	50	

1.3-2 Parallel 6800-series Interface Timing Characteristics



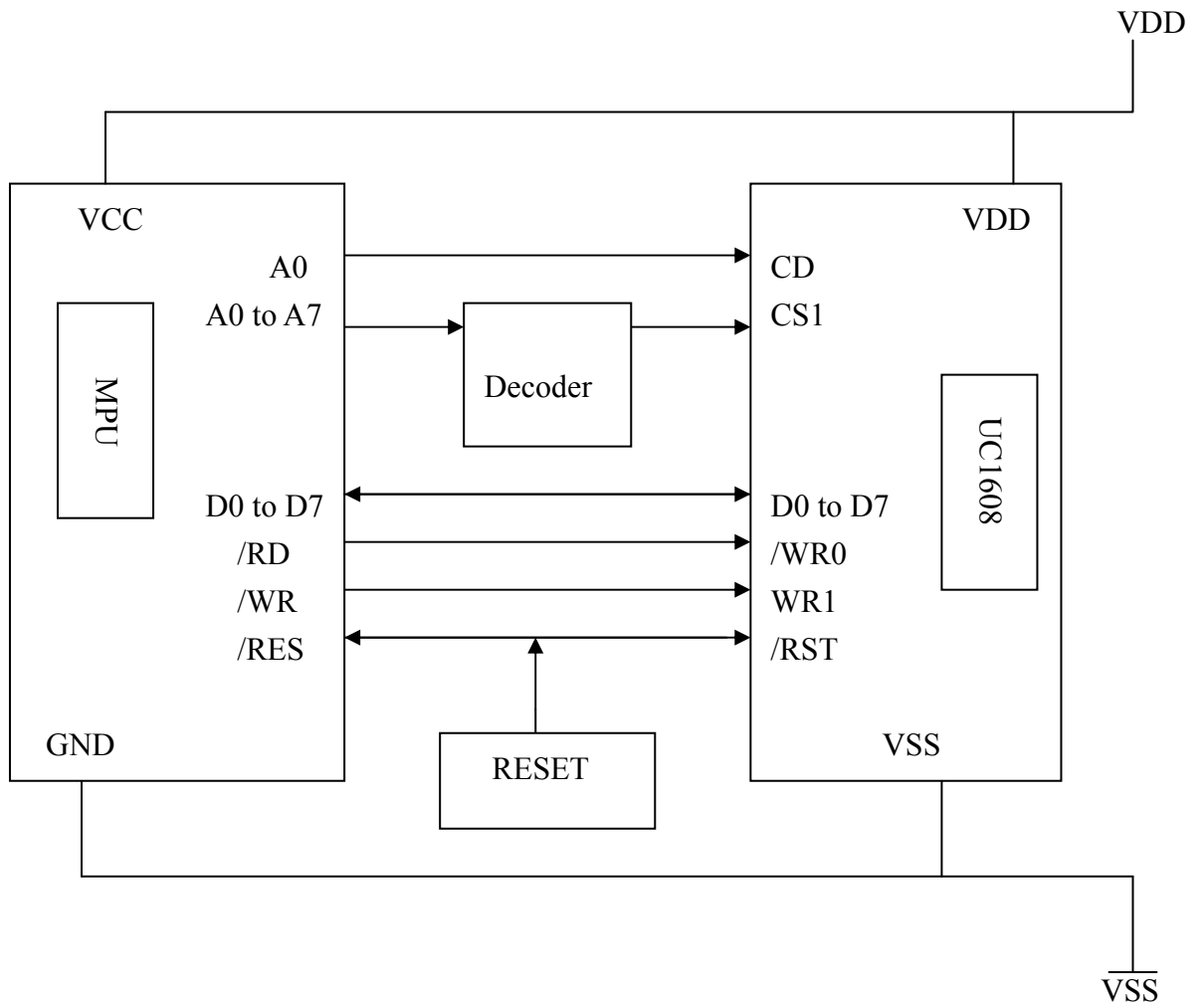
(VDD=3.3v, Ta=25°C)

Item	Signal	Symbol	Condition	Rating		Units
				Min	Max	
Address hold time	A0	Tah6		0		Ns
Address setup time		TAW6		0		
System cycle time		TCYC6		240		
Enable L pulse width(WRITE)	WR	tCCLW		80		
Enable H pulse width(WRITE)		tCCHR		80		
Enable L pulse width(READ)	RD	tCCLR		80		
Enable H pulse width (READ)		tCCHW		140		
WRITE Data setup time	D0ToD7	tDS6		40		
WRITE Address hold time		tDH6		10	-	
READ access time		tACC6	CL=100pF	-	70	
READ Output disable time		tOH6	CL=100pF	5	50	

**1.4 Interface Pin Description**

Pin No	Symbol	I/O	Function
26	NC		No Connect
25	K	PWR	Power supply 2.7V-3.3V.
24	A	PWR	Ground
22-23	BM0 BM1	I	Bus mode: The interface bus mode is determined by BM(1:0). See the IC specifications.
21	/CS1	I	This is the chip select signal. when /CS1=H, then the chip select becomes active, and data/command I/O is enabled.
20	RST	I	When /RES is set to L, the settings are initialized. The reset operation is performed by the /RES signal level.
19	CD	I	Select control data or Display data for read/write operation. in S9 mode . “L” control data “H” display data.
17-18	WR1 WR0	I	WR (1:0)controls the read /write operations of the host interface . see host interface section for more detail.
9-16	D7-D0	I/O	Bi-directional bus for both serial and parallel host interface .see IC specation
8	VDD	PWR	Power supply 2.7V-3.3V.
7	VSS	GND	Ground.
6	VBIAS	I	This is the reference voltage to generate the actual SEG driving voltage. Vbias can be used to fine tune Vlcd by external variable resistors .internal resistor network has been provided to simplify external trimming circuit. In COF application, connect a small bypass capacitor between vbias and vss to reduce noise.
5	VLCD	PWR	Main LCD power supply. Connect these pins together. A by-pass capacitor C1 is optional. When C1 is used.connect C1 between VLCD and VSS ,and keep the resistance under 300Ω
1-4	VB1-,VB1+ VB0-,VB0+	PWR	LCD bias voltage. Connect capacitors of Cbx value between Vbx+ and Vbx-. See the IC specifications

**1.5 Interface to MPU**



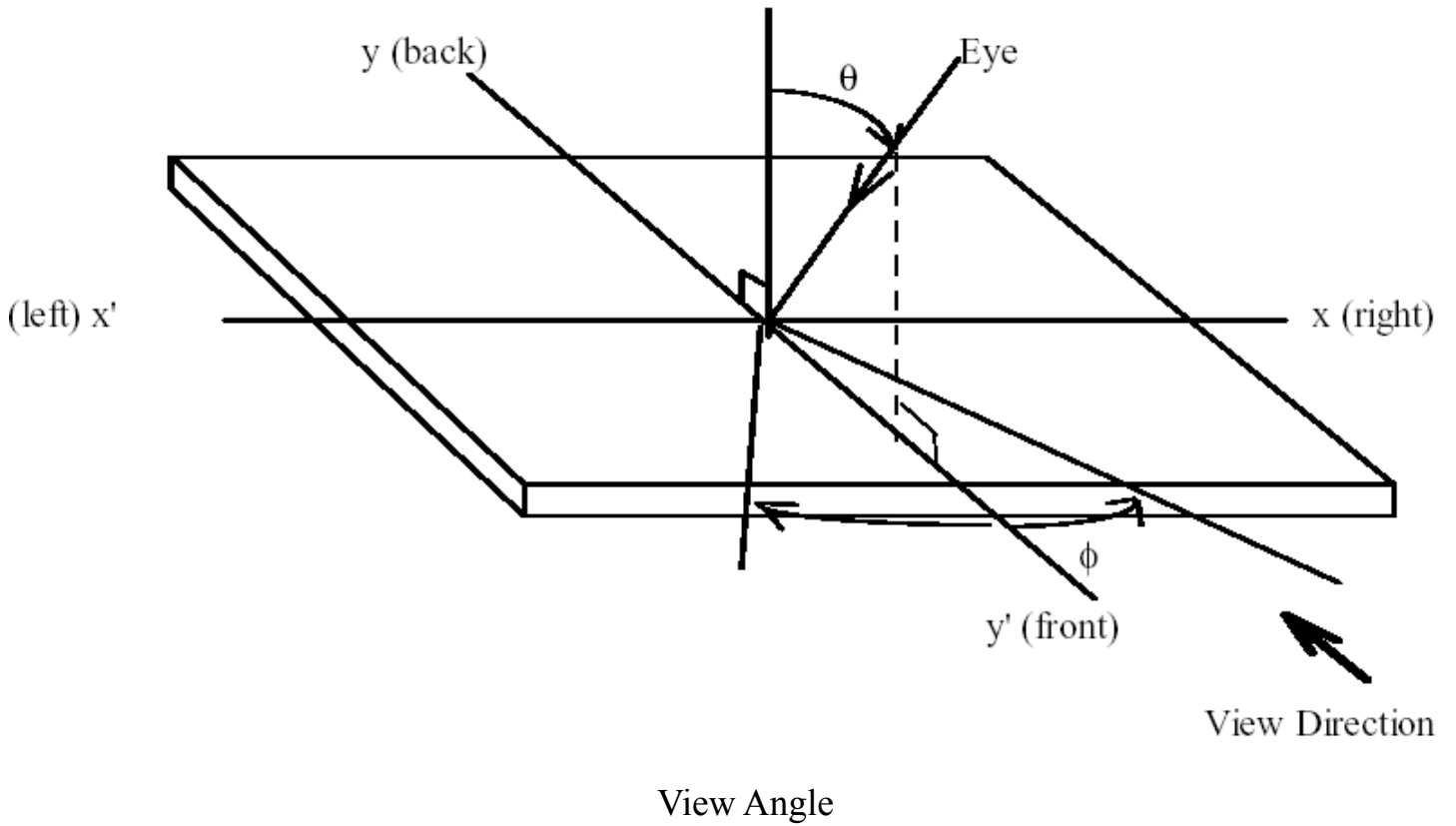
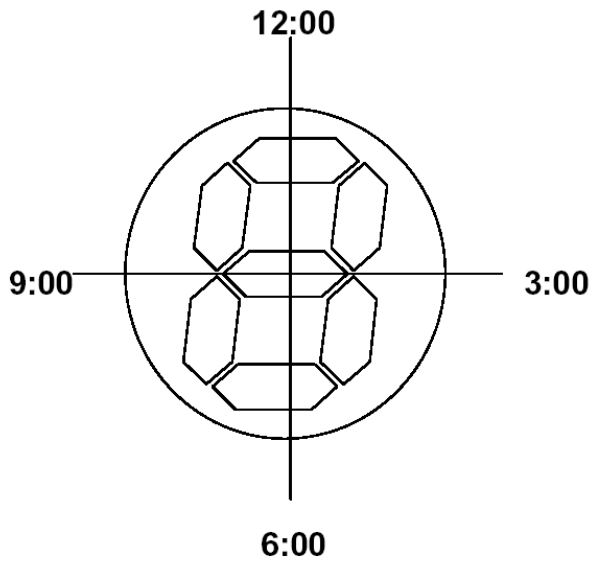
**(2) Electro-optical Units**

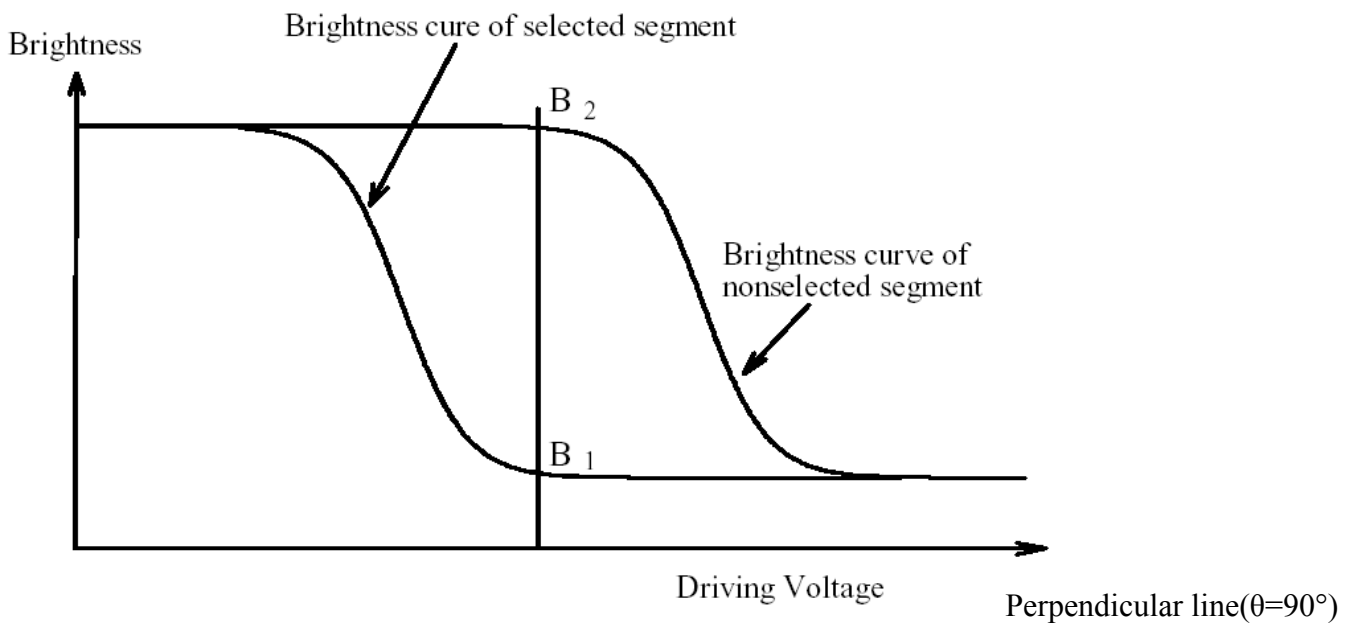
**2.1 Electro-optical Characteristics**

ITEM	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT
OPERATING VOLTAGE FOR LCD	$V_{LCD}$	$T_a=25^{\circ}C$	13.7	14.0	14.3	V
DRIVE METHOD	DUTY,BIAS	1/128,1/12				
PIXEL COLOR	Black					
LCD TYPE	FSTN(Positive/Transflective)					
VIEW DIRECTION	6 O'CLOCK					
Operation TEMP.	-20~70°C					
Stotage TEMP.	-30~80°C					

2.2 Optical Definitions

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$$\text{Contrast Ratio} = \frac{\text{Brightness are nonselected sgment}(B2)}{\text{Brightness are selected segment}(B1)}$$

Contrast Ration(CR)

### (3) Mechanical Units

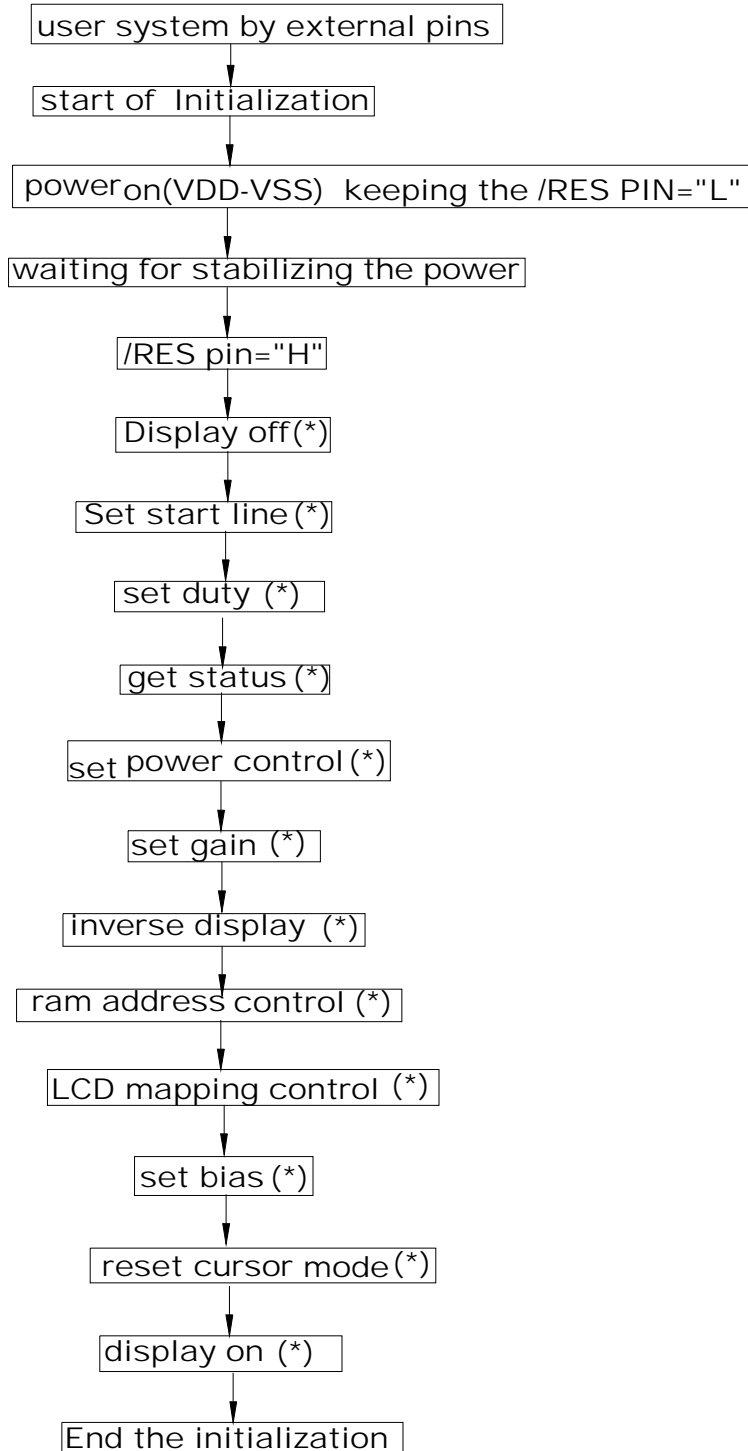
#### 3.1 Mechanical Specification

ITEM	STANDARD VALUE	UNIT
Number of dots	240×128	-
Module dimension	67.2(W)×105.5(H) ×4.5(max)	mm
VIEWING AREA	55.5(W)×98.7(H)	mm
EFFECTIVE DISPLAY AREA	50.53(W) ×89.97(H)	mm
DOT SIZE	0.345(W) ×0.365 (H)	mm
DOT PITCH	0.375 (W) ×0.395 (H)	mm
LCD TYPE	FSTN (Positive / TRANSFLECTIVE)	
DRIVER METHOD	Duty: 1/128 Bias: 1/12	
VIEWING DIRECTION	6 O'clock	
DRIVER IC	UC1608	

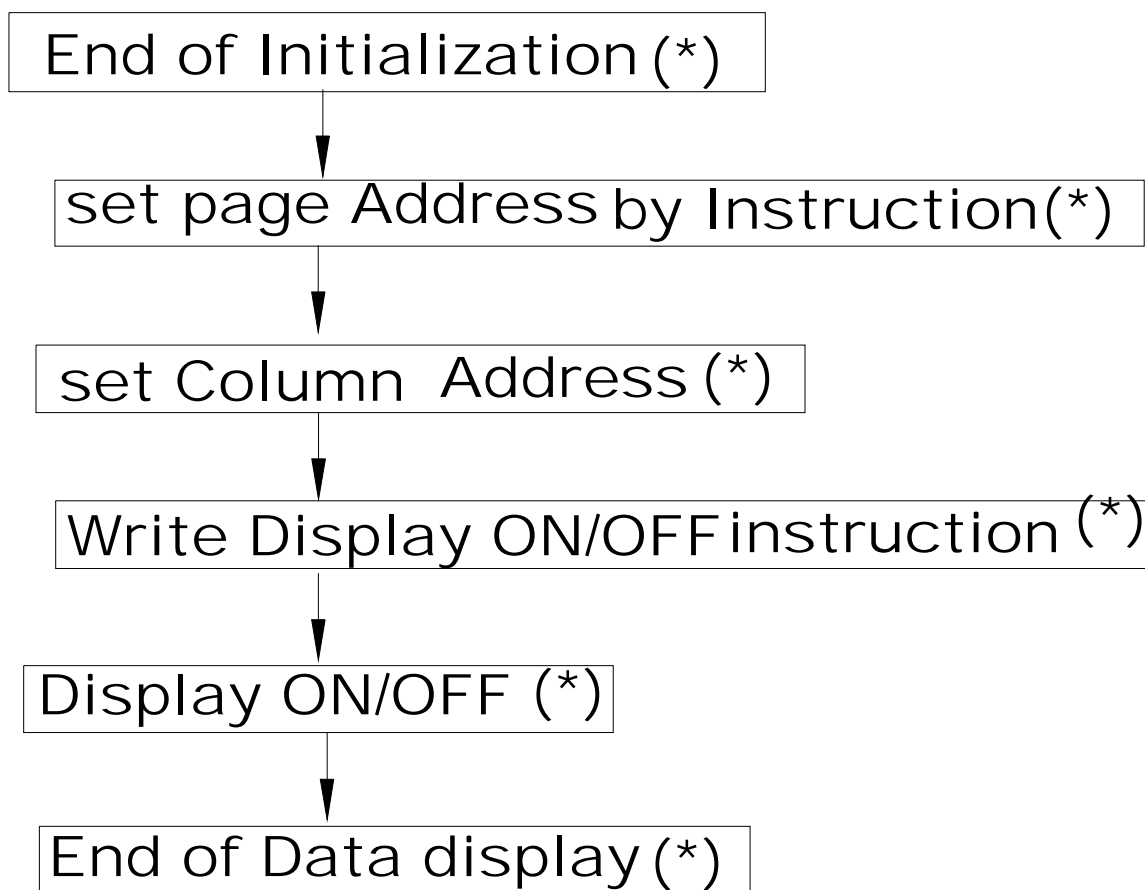


**(4) Soft Units**

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**4.1 Referential Instruction Setup Flow: Initializing without the built-in Power Supply Circuits**

## Referential Initialization setupFlow :data I





## 5.1 Precautions in Use of LCM

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### 5.1 Precautions in Use of LCM

#### 5.1-1 Handing of LCM

- Don't give external shock.
- Don't apply excessive force on the surface.
- Liquid in LCD is hazardous substance. Must not lick and swallow. When the liquid is attach to your hand, skin, cloth etc. Wash it out thoroughly and immediately.
- Don't operate it above the absolute maximum rating.
- Don't disassemble the LCM

#### 5.1-2 Storage

- Store in an ambient temperature of 5°C to 45°C, and in a relative humidity of 40% to 60%. Don't expose to sunlight or fluorescent light.
- Storage in a clean environment, free from dust, active gas, and solvent.
- Store in anti-static electricity container.
- Store without any physical load.

#### 5.1-3 Soldering

- Use the high quality solder. (60-63% tin mixed with lead)
- Iron: no higher than 260°C and less than 3-4 sec during soldering.
- Soldering: only to the I/O terminals.
- Rewiring: no more than 3 times.

#### 5.1-4 Assembly

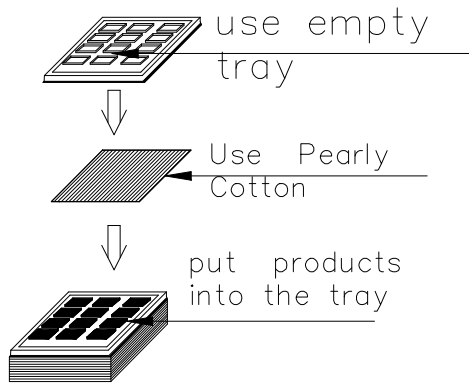
The front polarizer is covered with a protective foil which should be removed before use.

(6)Package

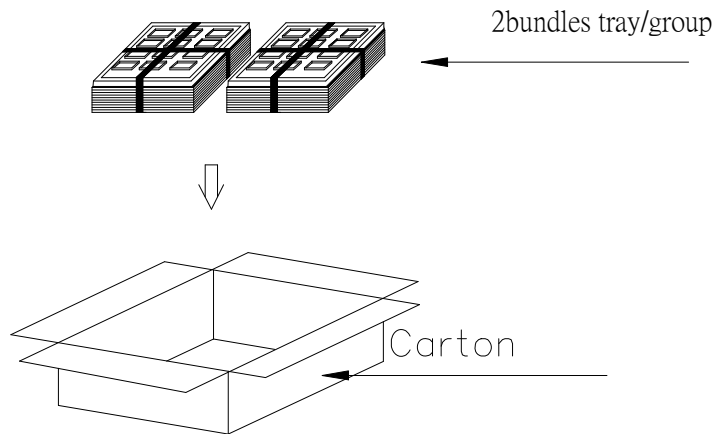
6.1 Packling

Packaging

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