



CLOVER DISPLAY LTD.

## LCD MODULE SPECIFICATION

**Model: CG12864A - \_ \_ - \_ \_ - \_ \_ - \_ \_**

Revision	02
Engineering	Timmy Kwan
Date	18 July 2011
Our Reference	X9040

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**MODE OF DISPLAY**

Display mode	Display condition	Viewing direction
STN : Yellow green	Reflective type	6 O' clock
Grey	Transflective type	12 O' clock
Blue (negative)	Transmissive type	3 O' clock
FSTN positive	Others	9 O' clock
FSTN negative		

**LCD MODULE NUMBER NOTATION:**

CG12864A- N N - S R - N 6 - T

| | | | | | |  
 (1) (2) (3) (4) (5) (6) (7) (8)

\*(1)---Model number of standard LCD Modules

\*(2)---Backlight type

N – No backlight  
 E – EL backlight  
 L – Side-lited LED backlight  
 M– Array LED backlight  
 C – CCFL

\*(3)---Backlight color

N – No backlight  
 A – Amber  
 B – Blue  
 O– Orange  
 W–White  
 Y – Yellow green  
 M – Mutli Colour

\*(4)---Display mode

T – TN  
 V – TN (Negative)  
 S – STN Yellow green  
 G – STN Grey  
 B – STN Blue (Negative)  
 F – FSTN  
 N – FSTN (Negative)

\*(5)---Rear polarizer type

R – Reflective  
 F – Transflective  
 T – Transmissive

\*(6)---Temperature range

N – Normal  
 W– Extended

\*(7)---Viewing direction

6 – 6 O'clock  
 2 – 12 O'clock  
 3 – 3 O'clock  
 9 – 9 O'clock

\*(8)---Special code for other requirements  
 (Can be omitted if not used)

**GENERAL DESCRIPTION**

Display mode : 128 X 64 dots, Graphic COG LCD module  
 Interface : Parallel/serial  
 Driving method : 1/65 duty, 1/9 bias  
 Controller IC : Ultrachip UC1701X or equivalent  
 For the detailed information, please refer to the IC specifications.

**MECHANICAL DIMENSIONS**

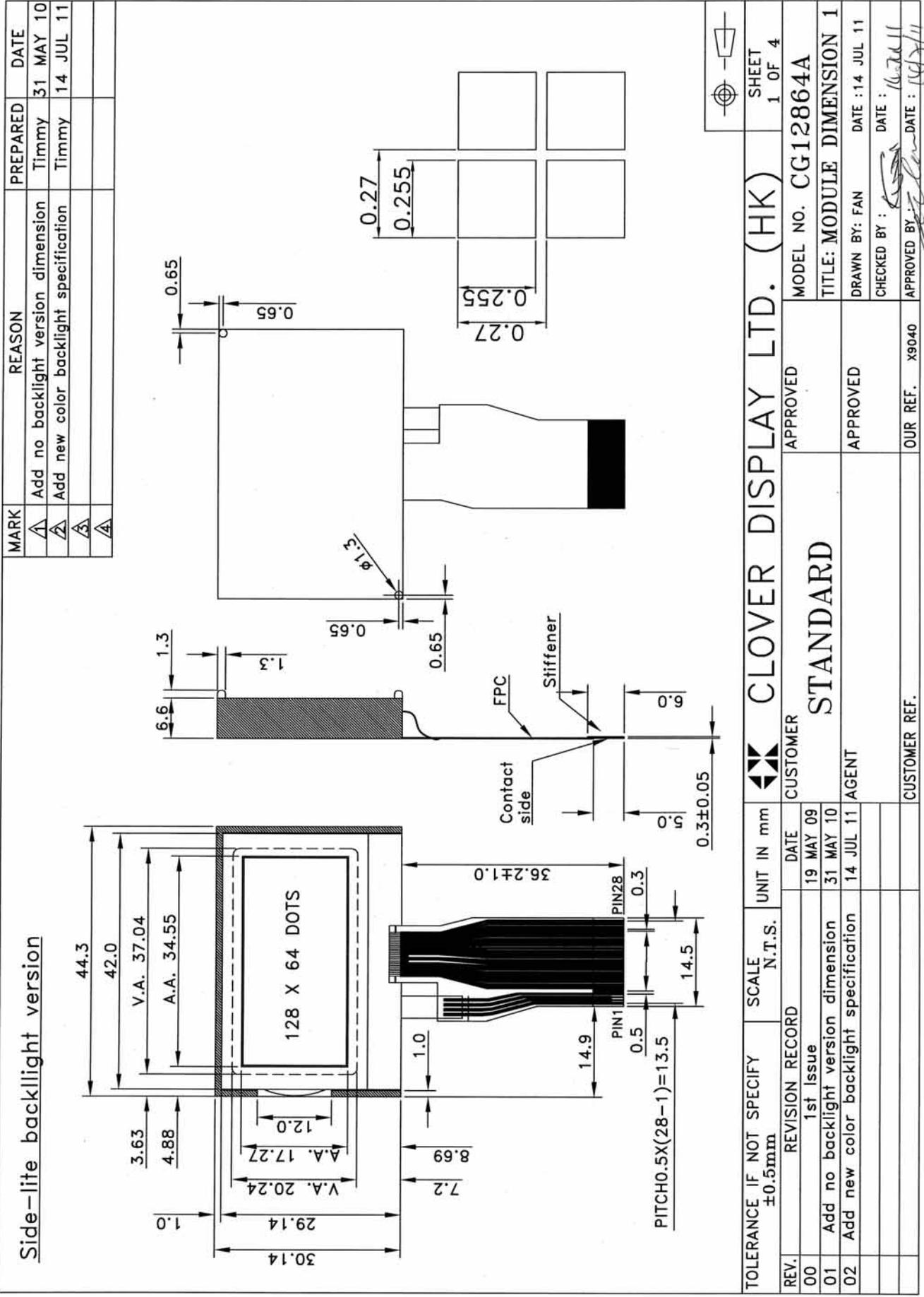
Item	Dimension	Unit	Item	Dimension	Unit
Outline Dimension			Dot Pitch	0.27(L)x0.27(W)	mm
No backlight	43.0(L) x29.14 (W) x2.1 (H)(MAX)	mm	Dot Size	0.255(L)x0.255(W)	mm
LED side-lited backlight	44.3(L) x30.14 (W) x 7.9(H)	mm	Viewing Area	37.04(L)x20.24(W)	mm

**CONNECTOR PIN ASSIGNMENT**

Pin No.	Symbol	Function	Pin No.	Symbol	Function
1	A	Supply voltage for backlight(+VE)	15	VDD	Power supply for logic(VDD)
2	K1	Supply voltage for backlight(-VE)	16	D7(SID)	Data bus(serial data)
3	*K2	For RGB	17	D6(SCK)	Data bus(serial clock)
4	*K3	For RGB	18	D5	Data bus
5	NC	No connection	19	D4	
6	BM1	Bus mode select	20	D3	
7	BM0		21	D2	
8	VLCDOUT	Main LCD power supply	22	D1	
9	VLCDIN		23	D0	
10	VB1+	LCD bias voltage	24	WR1	Read/write operation control
11	VB1-		25	WR0	
12	VB0-		26	CD	Register select
13	VB0+		27	RST	Reset
14	VSS	Power supply (0V)	28	CS0	Chip select

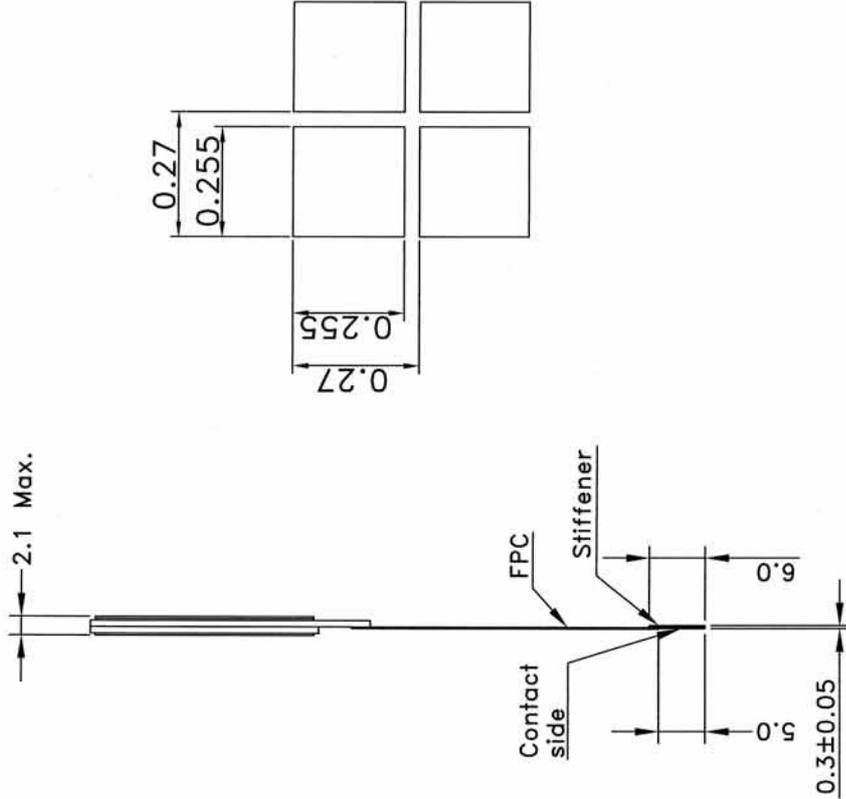
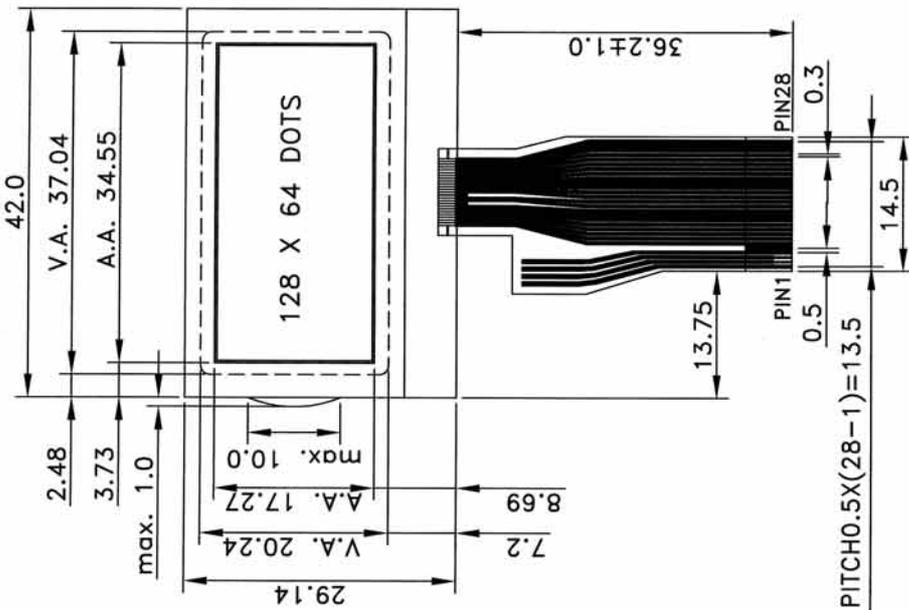
Note (\*): Pin 3, 4 are used for RGB backlight version

COUNTER DRAWING OF MODULE DIMENSION



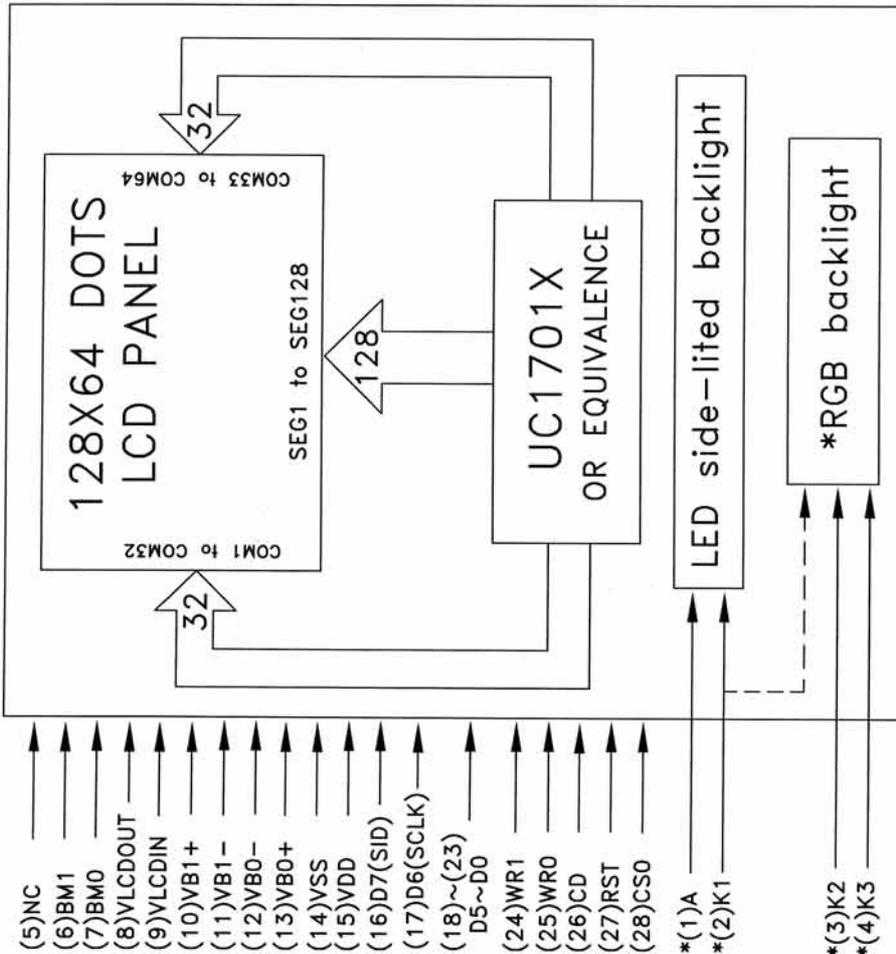
COUNTER DRAWING OF PIN OUT & BLOCK DIAGRAM

No backlight version 



TOLERANCE IF NOT SPECIFY ±0.5mm		SCALE N.T.S.	UNIT IN mm	CLOVER DISPLAY LTD. (HK)		SHEET 2 OF 4
REV.	REVISION RECORD	DATE	CUSTOMER	APPROVED	MODEL NO. CG12864A	
00	1st Issue	19 MAY 09	CUSTOMER	STANDARD	TITLE: MODULE DIMENSION 2	
01	Add no backlight version dimension	31 MAY 10	AGENT	APPROVED	DRAWN BY: FAN	DATE: 14 JUL 11
02	Add new color backlight specification	14 JUL 11			CHECKED BY: <i>[Signature]</i>	DATE: 16 Jul 11
					APPROVED BY: <i>[Signature]</i>	DATE: 14 Jul 11
			CUSTOMER REF.	OUR REF. X9040		

COUNTER DRAWING OF PIN OUT & BLOCK DIAGRAM



PIN NO.	SYMBOL	FUNCTION
*1	A	Supply voltage for backlight (+VE)
*2	K1	Supply voltage for backlight (-VE)
**3	K2	For RGB
**4	K3	For RGB
5	NC	No connection
6	BM1	Bus mode select
7	BM0	Bus mode select
8	VLCDOUT	Main LCD power supply
9	VLCDIN	Main LCD power supply
10	VB1+	LCD bias voltage
11	VB1-	LCD bias voltage
12	VB0-	LCD bias voltage
13	VB0+	LCD bias voltage
14	VSS	Power supply (0V)
15	VDD	Power supply for logic(VDD)
16	D7(SID)	Data bus (Serial data)
17	D6(SCLK)	Data bus (Serial clock)
18	D5	Data bus
19	D4	Data bus
20	D3	Data bus
21	D2	Data bus
22	D1	Data bus
23	D0	Data bus
24	WR1	Read/write operation control
25	WR0	Read/write operation control
26	CD	Register select
27	RST	Reset
28	CS0	Chip select

NOTE: \* for side-lite backlight version only  
 \*\* for RGB side-lite backlight version only

TOLERANCE IF NOT SPECIFY ±0.5mm		SCALE N.T.S.	UNIT IN mm	CLOVER DISPLAY LTD. (HK)		SHEET 3 OF 4
REV.	REVISION RECORD	DATE	DATE	APPROVED	MODEL NO. CG12864A	
00	1st Issue	19 MAY 09			TITLE: PIN OUT & BLOCK DIAGRAM	
01	Add no backlight version dimension	31 MAY 10		APPROVED	DRAWN BY: FAN	DATE: 14 JUL 11
02	Add new color backlight specification	14 JUL 11	AGENT		CHECKED BY: <i>[Signature]</i>	DATE: 16 Jul 11
					APPROVED BY: <i>[Signature]</i>	DATE: 14 Jul 11
				OUR REF. X9040		
					CUSTOMER REF.	

**ELECTRICAL CHARACTERISTICS**

Conditions: VSS=0V, Ta=25

Item	Symbol	MIN.	TYP.	MAX.	Unit
Supply Voltage for Logic	VDD	3.05	3.3	3.55	V
Supply Current for Logic	IDD	-	0.29	0.43	mA
Operating Voltage for LCD (*)	VLCD	8.55	9.0	9.45	V
'High' Level Input Voltage	VIH	0.8VDD	-	-	V
'Low' Level Input Voltage	VIL	-	-	0.2VDD	V

Note (\*): There is tolerance in optimum LCD driving voltage during production and it will be within the specified range.

**Side-lited LED BL:**

Constant voltage driving:

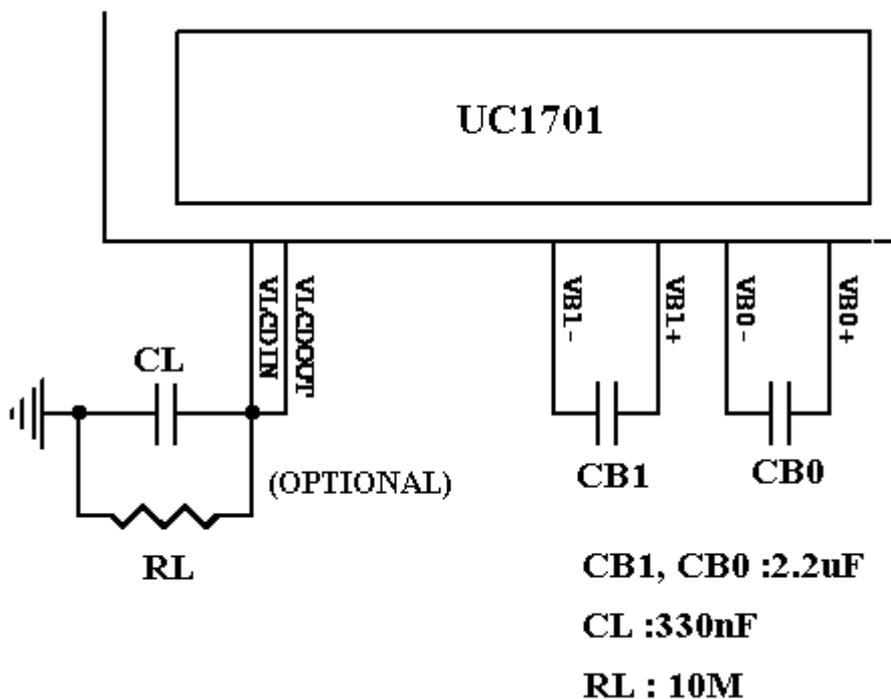
Item	Symbol	MIN.	TYP.	MAX.	Unit	Condition
Backlight current (White)	I <sub>BL</sub>	-	15	20	mA	V <sub>BL</sub> = 3.3V
Backlight current (Blue)	I <sub>BL</sub>	-	15	20	mA	V <sub>BL</sub> = 3.3V
Backlight current (Yellow Green)	I <sub>BL</sub>	-	24	30	mA	V <sub>BL</sub> = 3.3V
Backlight current (Red)	I <sub>BL</sub>	-	24	30	mA	V <sub>BL</sub> = 3.3V
Backlight current (Amber)	I <sub>BL</sub>	-	24	30	mA	V <sub>BL</sub> = 3.3V
Backlight current (Orange)	I <sub>BL</sub>	-	24	30	mA	V <sub>BL</sub> = 3.3V

**RGB BL:**

Constant voltage driving:

Item	Symbol	MIN.	TYP.	MAX.	Unit	Condition
Backlight current (Red)	I <sub>BL</sub>	-	10	15	mA	V <sub>BL</sub> = 4.0V
Backlight current (Green)	I <sub>BL</sub>	-	15	20	mA	V <sub>BL</sub> = 4.0V
Backlight current (Blue)	I <sub>BL</sub>	-	15	20	mA	V <sub>BL</sub> = 4.0V

**REFERENCE CIRCUIT EXAMPLE**



**ABSOLUTE MAXIMUM RATINGS**

Please make sure not to exceed the following maximum rating values under the worst application conditions

Item	Symbol	Rating (for normal temperature)	Rating (for wide temperature)	Unit
Supply Voltage	VDD	-0.3 to +4.0	-0.3 to +4.0	V
Input Voltage	VT	-0.4 to VDD +0.3	-0.4 to VDD +0.3	V
Operating Temperature	T <sub>opr</sub>	0 to 50	-20 to 70	
Storage Temperature	T <sub>stg</sub>	-10 to 60	-30 to 80	

**INSTRUCTIONS TABLE**

The following is a list of host commands supported by UC1701x

C/D: 0: Control, 1: Data  
W/R: 0: Write Cycle, 1: Read Cycle  
# Useful Data bits - Don't Care

	Command	C/D	W/R	D7	D6	D5	D4	D3	D2	D1	D0	Action	Default
1.	Write Data Byte	1	0	#	#	#	#	#	#	#	#	Write 1 byte	N/A
2.	Read Data Byte	1	1	#	#	#	#	#	#	#	#	Read 1 byte	N/A
3.	Get Status	0	1	BZ	MX	DE	RST	0	0	0	0	Get Status	--
4.	Set Column Address LSB	0	0	0	0	0	0	#	#	#	#	Set CA [3:0]	0
	Set Column Address MSB			0	0	0	1	#	#	#	#	Set CA [7:4]	0
5.	Set Power Control	0	0	0	0	1	0	1	#	#	#	Set PC[2:0]	000b
6.	Set Scroll Line	0	0	0	1	#	#	#	#	#	#	Set SL[5:0]	0
7.	Set Page Address	0	0	1	0	1	1	#	#	#	#	Set PA[3:0]	0
8.	Set V <sub>LCD</sub> Resistor Ratio	0	0	0	0	1	0	0	#	#	#	Set PC[5:3]	100b
9.	Set Electronic Volume (double-byte command)	0	0	1	0	0	0	0	0	0	1	Set PM[5:0]	20H
				0	0	#	#	#	#	#	#		
10.	Set All-Pixel-ON	0	0	1	0	1	0	0	1	0	#	Set DC[1]	0b
11.	Set Inverse Display	0	0	1	0	1	0	0	1	1	#	Set DC[0]	0b
12.	Set Display Enable	0	0	1	0	1	0	1	1	1	#	Set DC[2]	0b
13.	Set SEG Direction	0	0	1	0	1	0	0	0	0	#	Set LC[0]	0b
14.	Set COM Direction	0	0	1	1	0	0	#	-	-	-	Set LC[1]	0b
15.	System Reset	0	0	1	1	1	0	0	0	1	0	System Reset	N/A
16.	NOP	0	0	1	1	1	0	0	0	1	1	No operation	N/A
17.	Set LCD Bias Ratio	0	0	1	0	1	0	0	0	1	#	Set BR	0b
18.	Set Cursor Update Mode	0	0	1	1	1	0	0	0	0	0	AC3=1, CR=CA	N/A
19.	Reset Cursor Update Mode	0	0	1	1	1	0	1	1	1	0	AC3=0, CA=CR.	N/A
20.	Set Static Indicator OFF	0	0	1	0	1	0	1	1	0	0	NOP	N/A
21.	Set Static Indicator ON	0	0	1	0	1	0	1	1	0	1	NOP	N/A
	Set Static Indicator			-	-	-	-	-	-	-			
22.	Set Booster Ratio (double-byte command)	0	0	1	1	1	1	1	0	0	0	NOP	00b
				0	0	0	0	0	0	#	#		
23.	Set Power Save (compound command)	0	0	#	#	#	#	#	#	#	#	Display OFF & All Pixel ON	N/A
24.	Set Test Control (double-byte command)	0	0	1	1	1	1	1	1	TT		For UCI only Do NOT use	N/A
				-	#	#	#	#	#	#	#		
25.	Set Adv. Program Control 0 (double-byte command)	0	0	1	1	1	1	1	0	1	0	Set TC, WA[1:0]	90H
				#	0	0	1	0	0	#	#		
26.	Set Adv. Program Control 1 (double-byte command)	0	0	1	1	1	1	1	0	1	1	For UCI only Set APC1	N/A
				#	#	#	#	#	#	#	#		

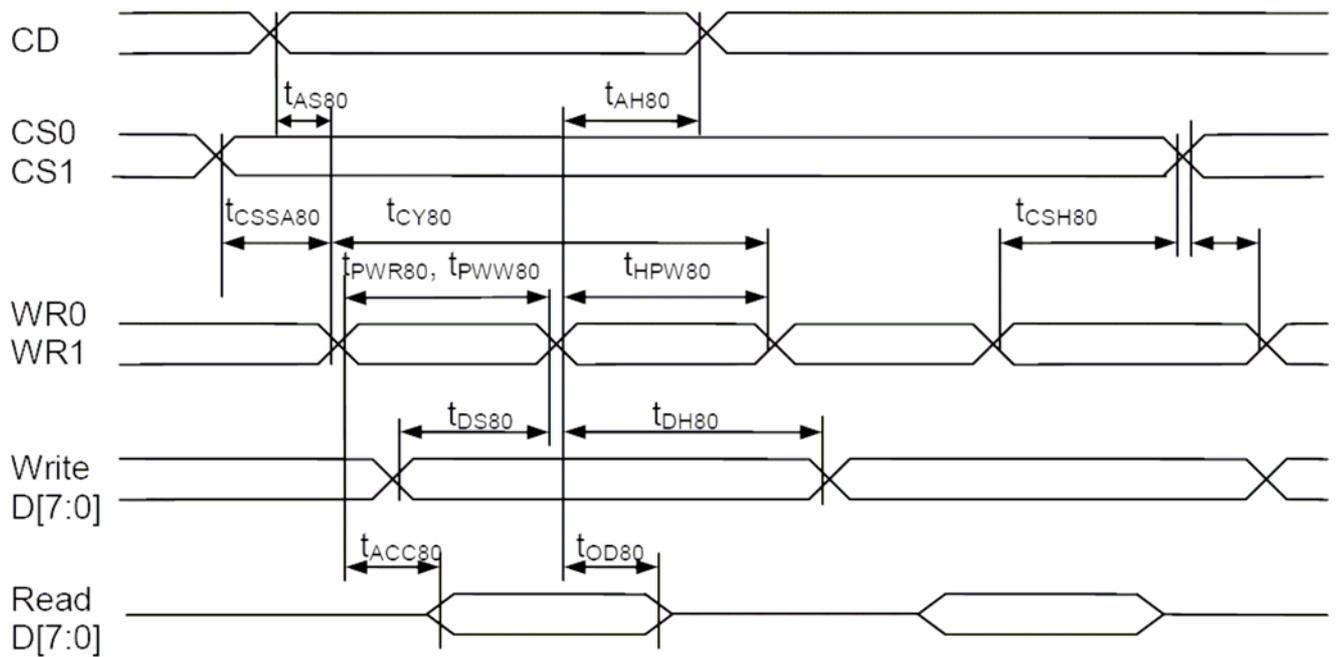
\* Other than commands listed above, all other bit patterns result in NOP (No Operation).

**RECOMMENDED INITIAL SETTINGS**

Set ADV. Program Control (double-byte command) : FAH, 90H  
Set SEG Direction : A0H  
Set COM Direction : C8H  
Set LCD Bias Ratio : A2H  
Set VLCD Resistor Ratio : 25H  
Set Power Control : 2FH  
Set Electronic Volume(double-byte command) : 81H , 19H  
Set Cursor Update Mode: E0H  
Set Page Address (page=0): B0H  
Set Scroll Line (row=0): 40H  
Set Column Address (column=0) (double-byte command) : 00H(LSB), 10H(MSB)  
Set Display Enable: AFH



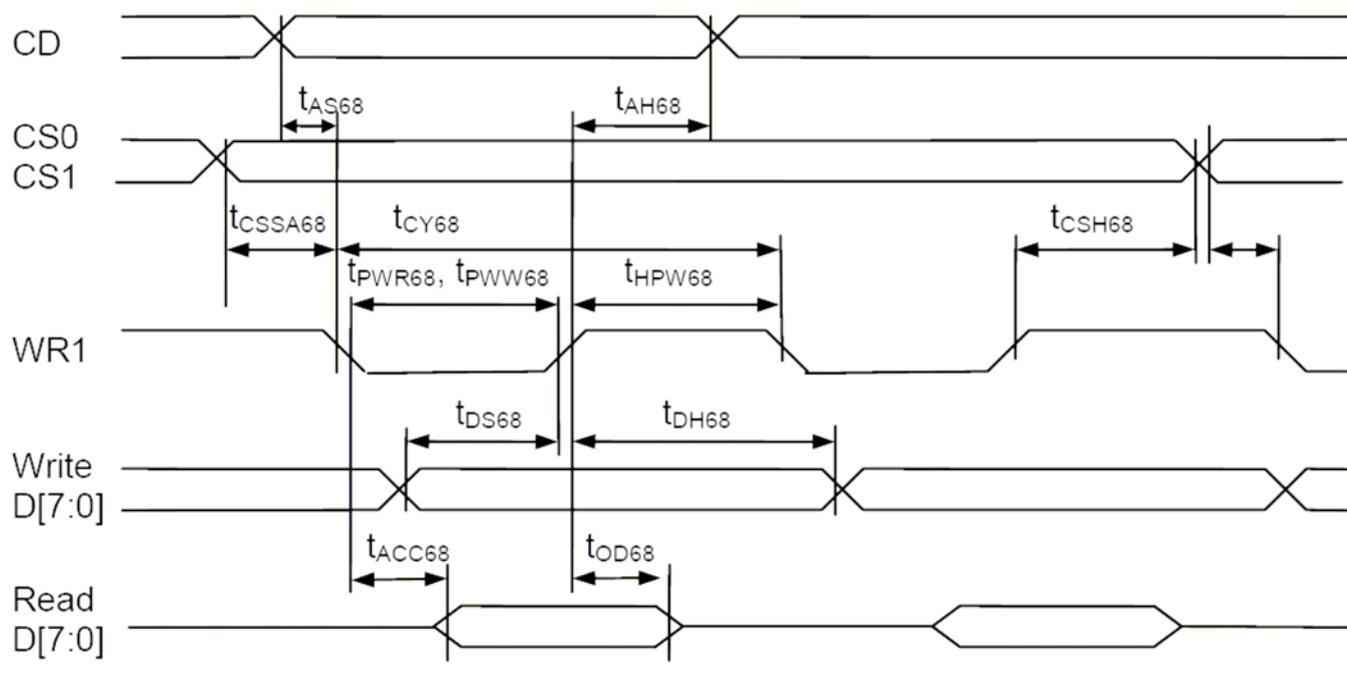
**PARALLEL INTERFACE TIMING DIAGRAM(8080 MODE)**



**PARALLEL INTERFACE TIMING CHARACTERISTICS (8080 MODE)**

Symbol	Signal	Description	Condition	Min.	Max.	Units
$t_{AS80}$ $t_{AH80}$	CD	Address	setup time hold time	0 5	-	nS
$t_{CSSA80}$ $t_{CSH80}$	CS1/CS0	Chip select	setup time hold time	5 5	-	nS
$t_{CY80}$		Cycle time	read write	120 80	-	nS
$t_{PWR80}$ $t_{PWW80}$	WR1 WR0	Pulse width	read write	60 40	-	nS
$t_{HPW80}$	WR0, WR1	High pulse width	read write	60 40	-	nS
$t_{DS80}$ $t_{DH80}$	D7~D0	Data	setup time hold time	30 0	-	nS
$t_{ACC80}$ $t_{OD80}$		Read access time Output disable time	$C_L = 100pF$	- 20	60 -	nS

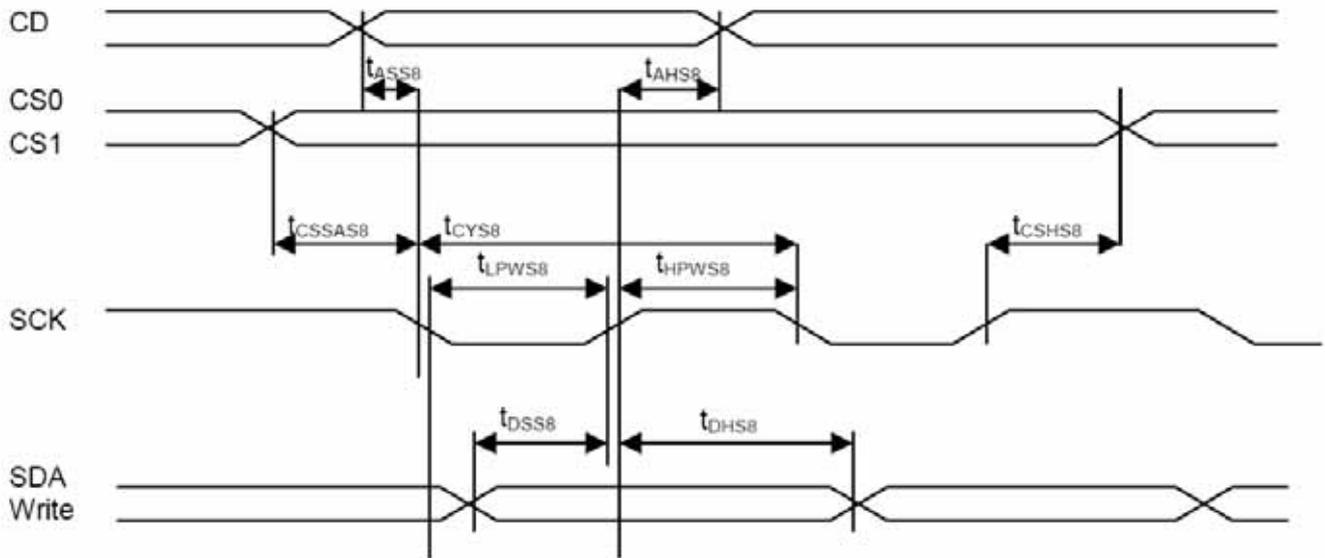
**PARALLEL INTERFACE TIMING DIAGRAM(6800 MODE)**



**PARALLEL INTERFACE TIMING CHARACTERISTICS (6800 MODE)**

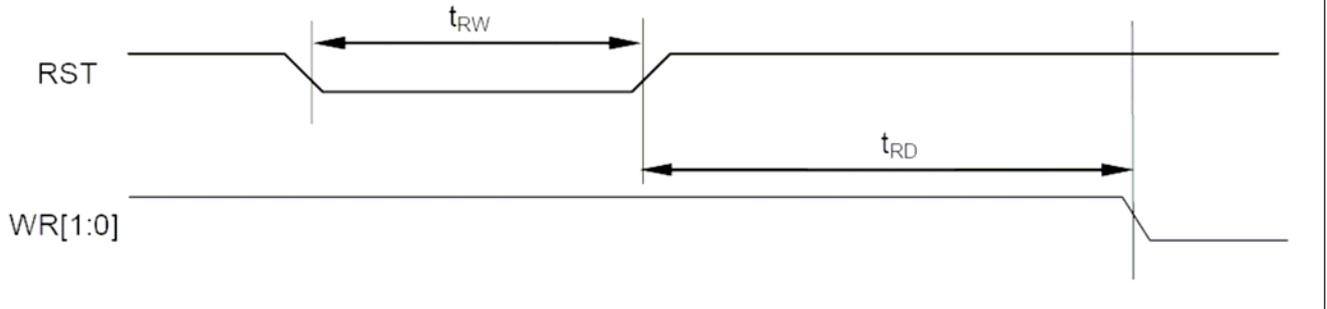
Symbol	Signal	Description	Condition	Min.	Max.	Units
$t_{AS68}$	CD	Address	setup time	0	-	nS
$t_{AH68}$			hold time	0	-	
$t_{CSSA68}$	CS1/CS0	Chip select	setup time	5	-	nS
$t_{CSH68}$			hold time	5	-	
$t_{CY68}$		System cycle time	read	120	-	nS
			write	80	-	
$t_{PWR68}$	WR1	Pulse width	read	60	-	nS
$t_{PWW68}$			write	40	-	
$t_{HPW68}$		High pulse width	read	60	-	nS
			write	40	-	
$t_{DS68}$	D7~D0	Data	setup time	30	-	nS
$t_{DH68}$			hold time	0	-	
$t_{ACC68}$		Read access time	$C_L = 100pF$	-	60	nS
$t_{OD68}$		Output disable time		50	-	

**SERIAL INTERFACE TIMING DIAGRAM (FOR S8)**



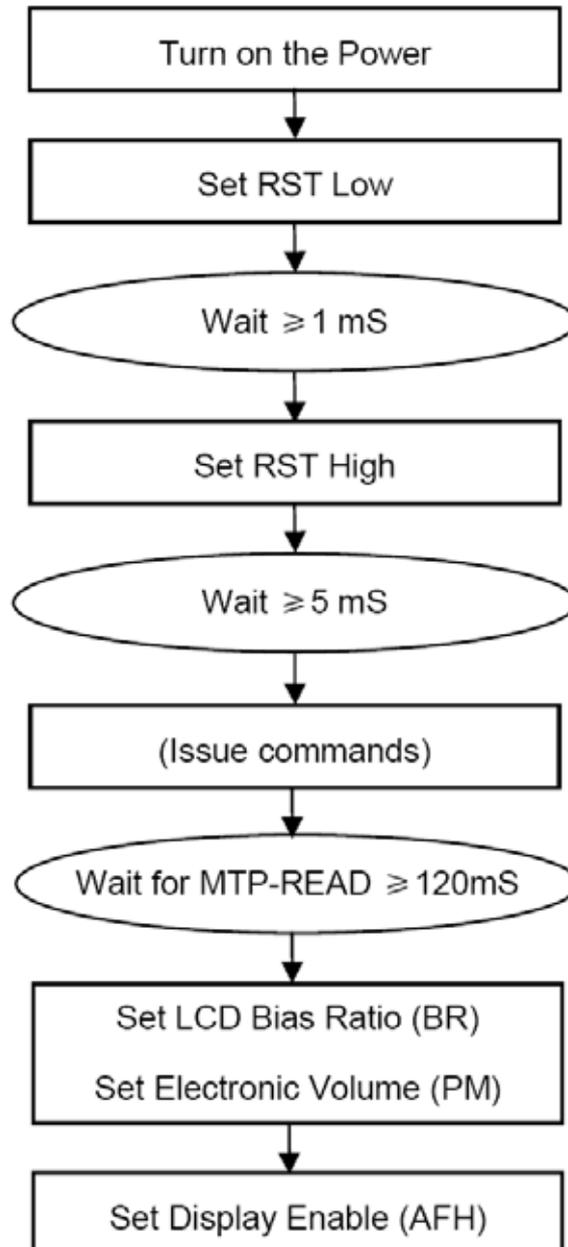
**SERIAL INTERFACE TIMING CHARACTERISTICS (FOR S8)**

Symbol	Signal	Description	Condition	Min.	Max.	Units
$t_{ASS8}$	CD	Address	setup time	0	-	nS
$t_{AHS8}$			hold time	0	-	
$t_{CSSAS8}$	CS1/CS0	Chip select	setup time	5	-	nS
$t_{CSHS8}$			hold time	5	-	
$t_{CYS8}$	SCK	Cycle time	read	100	-	nS
			write	30	-	
$t_{LPWS8}$		Low pulse width	read	50	-	nS
			write	15	-	
$t_{HPWS8}$	High pulse width	read	50	-	nS	
		write	15	-		
$t_{DSS8}$	SDA	Data	setup time	12	-	nS
$t_{DHS8}$			hold time	0	-	

**RESET TIMING DIAGRAM****RESET TIMING**

Symbol	Signal	Description	Condition	Min.	Max.	Units
$t_{RW}$	RST	Reset low pulse width		3	–	$\mu$ S
$t_{RD}$	RST, WR	Reset to WR pulse delay		6	–	mS

## INITIALIZING WITHOUT THE BUILT-IN POWER SUPPLY CIRCUITS



**ELECTRO-OPTICAL CHARACTERISTICS**

MEASURING CONDITION: POWER SUPPLY =  $V_{OP} / 64 \text{ Hz}$   
 TEMPERATURE =  $23 \pm 5 \text{ }^\circ\text{C}$   
 RELATIVE HUMIDITY =  $60 \pm 20 \%$

ITEM	SYMBOL	UNIT	TYP. STN
RESPONSE TIME	$T_{on}$	ms	220
	$T_{off}$	ms	280
CONTRAST RATIO	Cr	-	12
VIEWING ANGLE (Cr $\geq$ 2)	V3:00	$^\circ$	40
	V6:00	$^\circ$	70
	V9:00	$^\circ$	40
	V12:00	$^\circ$	50

THE ELECTRO-OPTICAL CHARACTERISTICS ARE MEASURED VALUE BUT NOT GUARANTEED ONES.

**RELIABILITY OF LCD MODULE**

ITEM	TEST CONDITION FOR NORMAL TEMPERATURE	TEST CONDITION FOR WIDE TEMPERATURE	TIME
High temperature operating	50 $^\circ\text{C}$	70 $^\circ\text{C}$	240 hours
Low temperature operating	0 $^\circ\text{C}$	-20 $^\circ\text{C}$	240 hours
High temperature storage	60 $^\circ\text{C}$	80 $^\circ\text{C}$	240 hours
Low temperature storage	-10 $^\circ\text{C}$	-30 $^\circ\text{C}$	240 hours
Temperature-humidity storage	40 $^\circ\text{C}$ 90% R.H.	60 $^\circ\text{C}$ 90% R.H.	96 hours
Temperature cycling	-10 $^\circ\text{C}$ to 60 $^\circ\text{C}$ 30 Min Dwell	-30 $^\circ\text{C}$ to 80 $^\circ\text{C}$ 30 Min Dwell	5 cycle
Vibration Test at LCM Level	Freq 10-55 Hz Sweep rate: 10-55-10 at 1 min Sweep mode Linear Displacement: 2 mm p-p 1 Hour each for X, Y, Z	Freq 10-55 Hz Sweep rate: 10-55-10 at 1 min Sweep mode Linear Displacement: 2 mm p-p 1 Hour each for X, Y, Z	—

**QUALITY STANDARD OF LCD MODULE**

<b>1.0</b>	<b>Sampling Method</b>		
	Sampling Plan : MIL STD 105 E Class of AQL : Level II/Single Sampling Critical : 0.25% Major 0.65% Minor 1.5%		
<b>2.0</b>	<b>Defect Group</b>	<b>Failure Category</b>	<b>Failure Reasons</b>
	Critical Defect 0.25%(AQL)	Malfunction	Open Short Burnt or dead component Missing part/improper part P.C.B. Broken
	Major Defect 0.65%(AQL)	Poor Insulation	Potential short High current Component damage or scratched or Lying too close improper coating
		Poor Conduction	Damage joint Wrong polarity Wrong spec. part Uneven/intermittent contact Loose part Copper peeling Rust or corrosion or dirt's
	Minor Defect 1.5%(AQL)	Cosmetic Defect	Minor scratch Flux residue Thin solder Poor plating Poor marking Crack solder Poor bending Poor packing Wrong size

**SAMPLING METHOD**

SAMPLING PLAN: MIL-STD 105E

CLASS OF AQL: LEVEL II/ SINGLE SAMPLING  
 MAJOR-0.65% MINOR – 1.5%

**QUALITY STANDARD**

DEFECT	CRITERIA	TYPE	FIGURE
SHORT CIRCUIT	-	MAJOR	-
MISSING SEGMENT	-	MAJOR	-
UNEVEN / POOR CONTRAST	-	MAJOR	-
CROSS TALK	-	MAJOR	-
PIN HOLE	$MAX(a,b) \leq 1 / 4 W$	MINOR	1
EXCESS SEGMENT	$MAX(c,d) \leq 1 / 4 T$	MINOR	1
BUBBLES	$d^* \geq 0.2$ QTY=0	MINOR	2
BLACKS SPOTS	$d \leq 0.3$ N.A.** $0.3 < d \leq 0.4$ QTY $\leq$ 1 $0.4 < d$ QTY=0	MINOR	2
LINE SCRATCHES	$x \geq 0.7$ $y \geq 0.05$ QTY=0	MINOR	3
BLACK LINE	$x \geq 0.7$ $y \geq 0.05$ QTY=0	MINOR	3

\*d = MAX (d<sub>1</sub>,d<sub>2</sub>)

\*\* N. A . = NOT APPLICABLE

DEFECT TABLE : B

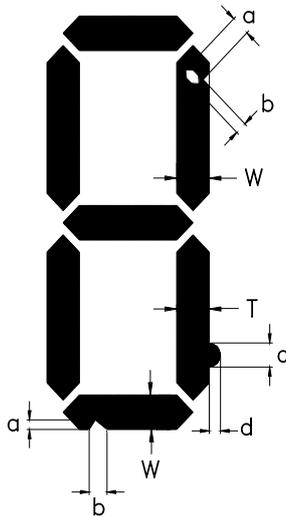
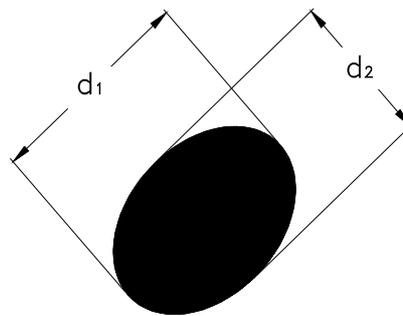
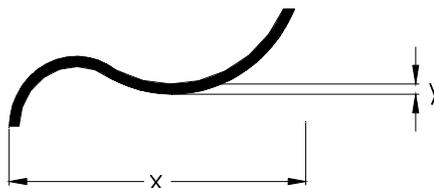


fig . 1



POLARIZER BUBBLES / SPOTS

fig . 2



LINE SCRATCHES / BLACK LINE

fig . 3

QUALITY STANDARD ( CONT . )

DEFECT		CRITERIA	TYPE	FIGURE
CHIPS	CONTACT EDGE	$e \leq 1/2T$ $f \leq 1/3W$ $g \leq 3.5$	MINOR	4
	BOTTOM GLASS	$p \leq 1.0$ $q \leq 3.5$ $r \leq 1/2T$		4
	CORNER	$a \leq 1.5$ $b \leq W$		4
	TOP GLASS	$a \leq 3.0$ $b \leq 1/3T$ $c \leq 1/2W$		5
GLASS PROTRUSION		$a \leq 1/4 W$	MINOR	6
RAINBOW		-	MINOR	-

UNLESS STATE OTHERWISE , ALL UNIT ARE IN MILLIMETER .

DEFECT TABLE : B

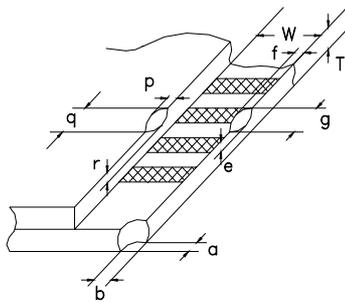


fig . 4

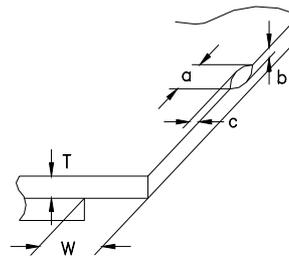


fig . 5

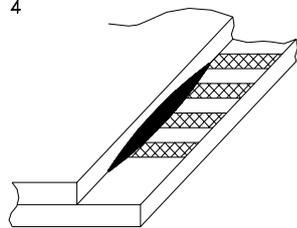
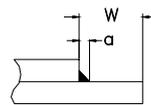


fig . 6



## HANDLING PRECAUTIONS

### (1) CAUTION OF LCD HANDLING & CLEANING

The polarizing plate on the surface of the panel is made from organic substances. Be very careful for chemicals not to touch the plate or it leads the polarizing plate to deteriorate.

If the use of a chemical is unavoidable, wipe the panel lightly with soft materials, such as gauze and absorbent cotton, soaked in a solvent.

\*Usable solvent: Alcohol (ethanol, IPA and the like)

\*Appropriate solvent: Ketones, ethyl alcohol

Avoid wiping with a dry cloth, since it could damage the surface of the polarizing plate and others.

### (2) CAUTION AGAINST STATIC CHARGE

The LCD modules use CMOS LSI drivers, so customers are recommended that any unused input terminal would be connected to  $V_{DD}$  or  $V_{SS}$ , do not input any signals before power is turned on, and ground your body, work/assembly areas, assembly equipment to protect against static electricity.

### (3) ESD PRECAUTION

Inputs and outputs are protected against electrostatic discharge in normal handling. However, to be totally safe, it is recommended to take normal precautions appropriate to handling LCM module. For example: product surface grounding. Always take ESD precaution when handling the *LCD Module*. Components are exposed for direct finger touches and can be damaged unless ESD precaution is taken.

### (4) PACKAGING

Avoid intense shock and falls from a height and do not operate or store them exposed to direct sunshine or high temperature/humidity for long periods.

### (5) CAUTION FOR OPERATION

The viewing angle can be adjusted by varying the LCD driving voltage  $V_O$ .

Driving voltage should be kept within specified range, excess voltage shortens display life.

Response time increases with decrease in temperature.

Display may turn black or dark Blue at temperature above its operational range; this is however not destructive and the display will return to normal once the temperature falls back to range.

Mechanical disturbance during operation (such as pressing on the viewing area) may cause the segments to appear "fractured". They will recover once the display is turned off.

Condensation at terminals will cause malfunction and possible electrochemical reaction. Relative humidity of the environment should therefore be kept below 60%.

### (6) SAFETY

Liquid crystal may leak out of a damaged LCD, it is recommended to wash off the liquid crystal by using solvents such as acetone or ethanol and should be burned up later.

If any liquid leak out of a damaged glass cell comes in contact with your hands, wash it off with soap and water immediately.

## WARRANTY

CLOVER will replace or repair any of her LCD module in accordance with her LCD specification for a period of one year from date of shipment. The warranty liability of Clover is limited to repair and/or replacement. Clover will not be responsible for any subsequent or consequential event.

**SPECIFICATION REVISION RECORD**

<b>Revision No.</b>	<b>Description</b>	<b>Date (DD/MM/YY)</b>
01	Update Counter Drawing to 01 on page 3-5 & Update Electrical Characteristic on page 6	30/03/11
02	Update Counter Drawing to 02 on page 3-5 & Update Electrical Characteristic on page 6	18/07/11