PRODUCT SPECIFICATION

3.0” TFT LCD MODULE
MODEL: YDP LCD I 300 SR

ROHS

< ◇> Preliminary Specification

< ◆> Finally Specification

CUSTOMER’S APPROVAL	
CUSTOMER :	
SIGNATURE:	DATE:

APPROVED BY	PM REVIEWED	PD REVIEWED	PREPARED BY

knitter-switch

Revision History

Revision	Date	Originator	Detail	Remarks
1.0	2018.04.19	ZDT	Initial Release	
1.1	2020.03.02	ZDT	Add Weight Add Current Consumption Add Chromaticity Transmissive Modify Inspection Specification Modify Criteria	P4 P5 P6 P19 P21
1.2	2020.07.07	ZJW	Modify AC Characteristics Modify Reliability Specification	P13 P21

Table of Contents

1. General Description

The specification is a transmissive type color active matrix liquid crystal display (LCD) which uses amorphous thin film transistor (TFT) as switching devices. This product is composed of a TFT-LCD panel, driver Ics and a backlight unit.

2. Module Parameter

Features	Details	Unit
Display Size(Diagonal)	3.0”	
LCD type	IPS TFT	
Display Mode	Transmissive /Normally Black	
Resolution	360 RGB x 640	Pixels
View Direction	Full viewing	Best Image
Module Outline	43.24(H) x 75.9(V) x 2.5(T) (Note1)	mm
Active Area	36.7(H) x 65.3(V)	mm
Pixel Pitch	102(H) x 102(V)	um
Pixel Arrangement	RGB Vertical stripe	
Polarizer surface treatment	Glare	
Display Colors	16.7M	
Interface	SPI+24 bit RGB	
Driver IC	ST7701S	
With or without the touch panel	Without	
Operating Temperature	**-20～70**	ºC
Storage Temperature	**-30～80**	ºC
Weight	12	g

Note 1: Inclusive hooks, posts, FFC/FPC tail etc.

3. Absolute Maximum Ratings

V_{SS}=0V, Ta=25ºC

Item	Symbol	Min.	Max.	Unit
Supply Voltage	VCC	-0.3	4.6	V
	IOVCC	-0.3	4.6	V
Storage temperature	T_{STG}	**-30**	**80**	ºC
Operating temperature	T_{OP}	**-20**	**70**	ºC

Note 1: If Ta below 50ºC, the maximal humidity is 90%RH, if Ta over 50ºC, absolute humidity should be less than 60%RH.

Note 2: The response time will be extremely slow when the operating temperature is around -10℃, and the back ground will become darker at high temperature operating.

4. DC Characteristics

Item		Symbol	Min.	Typ.	Max.	Unit
Supply Voltage		VCI	2.5	2.8	3.6	V
		IOVCC	1.65	1.8	3.3	
Logic low level input voltage		VIH	0.7*IOVCC		IOVCC	
Logic low level input voltage		VIL	GND		0.3*IOVCC	
Logic low level input voltage		VOH	0.8*IOVCC		IOVCC	
Logic low level input voltage		VOL	GND		0.2*IOVCC	
Current Consumption All white	Logic	I_{CC+} I_{IN}	-	38	-	mA
	Analog					

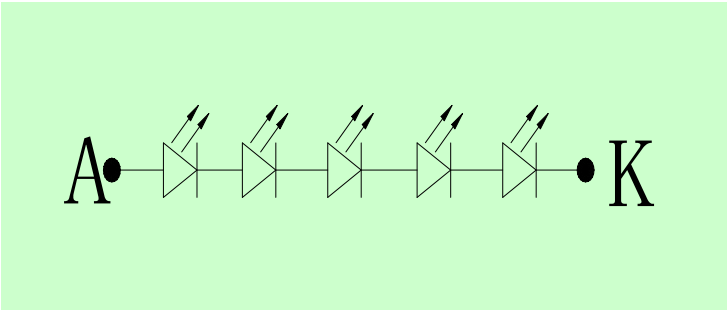
5. Backlight Characteristic

5.1. Backlight Characteristics

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Forward Voltage	V_F	Ta=25 ºC, I_F=20mA/LED	14	**16**	17	V
Forward Current	I_F	Ta=25 ºC, V_F=3.2V/LED	-	**20**	-	mA
Power dissipation	P_D	-	-	**320**	-	mW
Uniformity	Avg	-	-	80	-	%
LED working life(25℃)			-	30000	-	Hrs
Drive method	**Constant current**					
LED Configuration	5 White LEDs (5 LEDs in one string)					

Note1：LED life time defined as follows: The final brightness is at 50% of original brightness.
The environmental conducted under ambient air flow, at Ta=25±2 ºC,60%RH±5%, I_F=20mA/LED.

5.2. Backlighting circuit



6. Touch Screen Panel Specifications

Without TP

7. Optical Characteristics

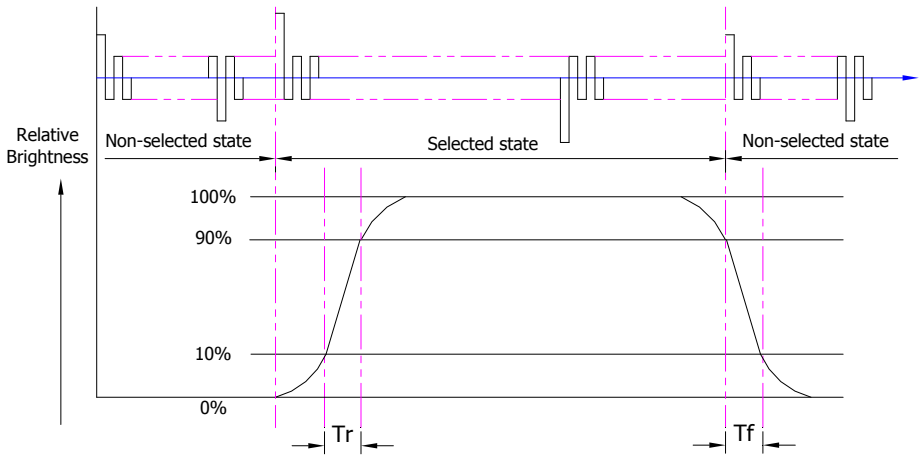
7.1. Optical Characteristics

Ta=25ºC, VCC=2.8V

	Item		Symbol	Condition	Specification			Unit
					Min.	Typ.	Max.	
Backlight On (Transmissive Mode)	Luminance on TFT(I_f =20mA/LED)		Lv		**240**	**300**	-	cd/m²
	Contrast ratio(See 7.3)		CR		600	800	-	
	Response time (See 7.2)		TR+TF		-	30	45	ms
	Chromaticity Transmissive (See 7.5)	Red	XR		**0.562**	**0.612**	**0.662**	
			YR		**0.304**	**0.354**	**0.404**	
		Green	XG		**0.237**	**0.287**	**0.337**	
			YG		**0.566**	**0.616**	**0.666**	
		Blue	XB		**0.091**	**0.141**	**0.191**	
			YB		**0.043**	**0.093**	**0.143**	
		White	XW		**0.176**	**0.226**	**0.276**	
			YW		**0.276**	**0.326**	**0.376**	
	Viewing Angle (See 7.4)	Horizontal	θX+	Center CR≥10	-	**80**	-	Deg.
			θX-		-	**80**	-	
		Vertical	φY+		-	**80**	-	
			φY-		-	**80**	-	
	NTSC ratio（Color gamut）				54	60	-	%

7.2. Definition of Response Time

7.2.1. Normally Black Type (Negative)

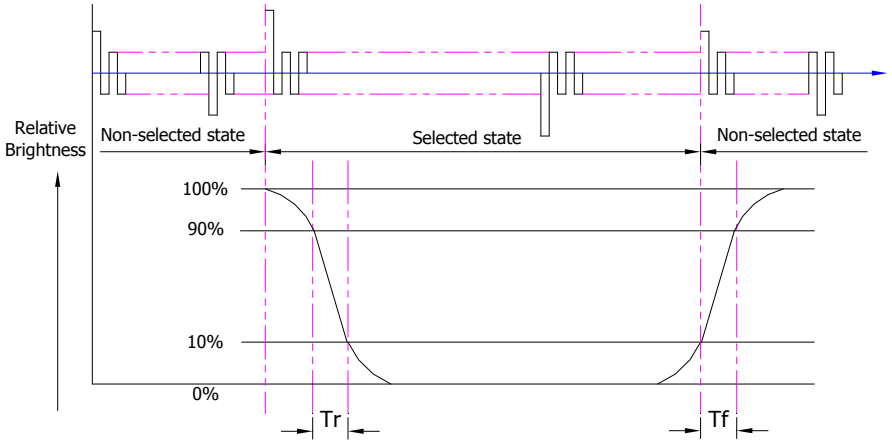


Tr is the time it takes to change form non-selected stage with relative luminance 10% to selected state with relative luminance 90%;

Tf is the time it takes to change from selected state with relative luminance 90% to non-selected state with relative luminance 10%.

Note : Measuring machine: LCD-5100

7.2.2. Normally White Type (Positive)



Tr is the time it takes to change form non-selected stage with relative luminance 90% to selected state with relative luminance 10%;

Tf is the time it takes to change from selected state with relative luminance 10% to non-selected state with relative luminance 90%;

Note: Measuring machine: LCD-5100 or EQUI

7.3. Definition of Contrast Ratio

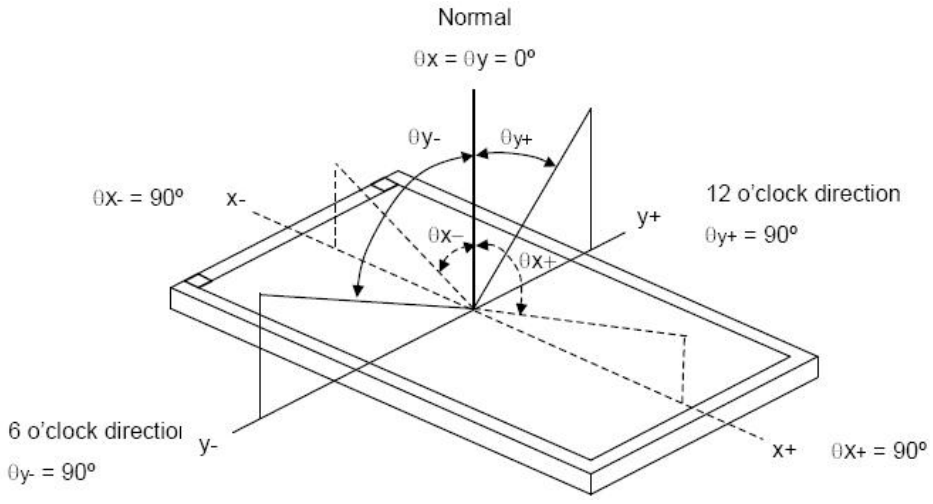
Contrast is measured perpendicular to display surface in reflective and transmissive mode.

The measurement condition is:

Measuring Equipment	Eldim or Equivalent
Measuring Point Diameter	3mm//1mm
Measuring Point Location	Active Area centre point
Test pattern	A: All Pixels white
	B: All Pixel black
Contrast setting	Maximum

Definitions: CR (Contrast) = Luminance of White Pixel / Luminance of Black Pixel

7.4. Definition of Viewing Angles



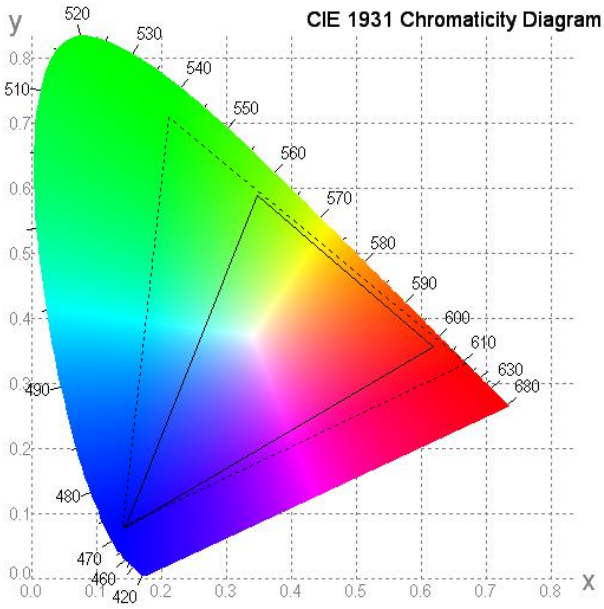
Measuring machine: LCD-5100 or EQUI

7.5. Definition of Color Appearance

R,G,B and W are defined by (x, y) on the IE chromaticity diagram

NTSC=area of RGB triangle/area of NTSC triangleX100%

Measuring picture: Red, Green, Blue and White (Measuring machine: BM-7)



7.6. Definition of Surface Luminance, Uniformity and Transmittance

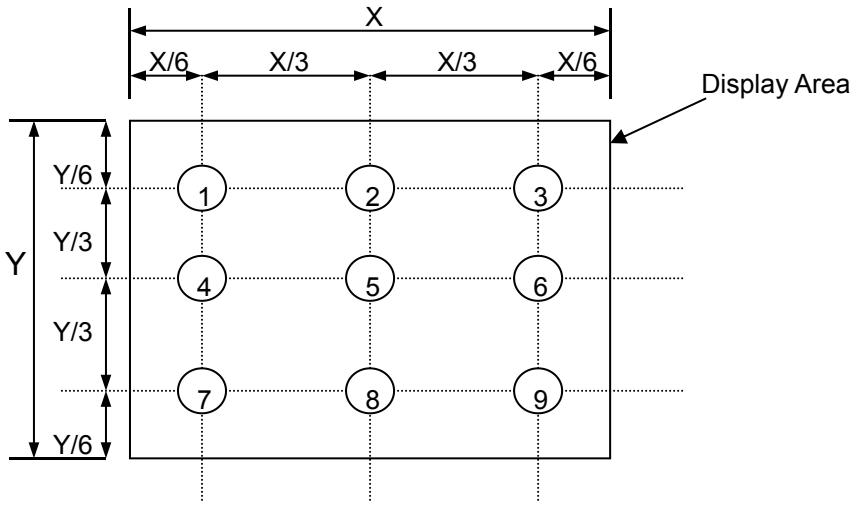
Using the transmissive mode measurement approach, measure the white screen luminance of the display panel and backlight.

7.6.1. Surface Luminance: L_V = average (L_{P1}:L_{P9})

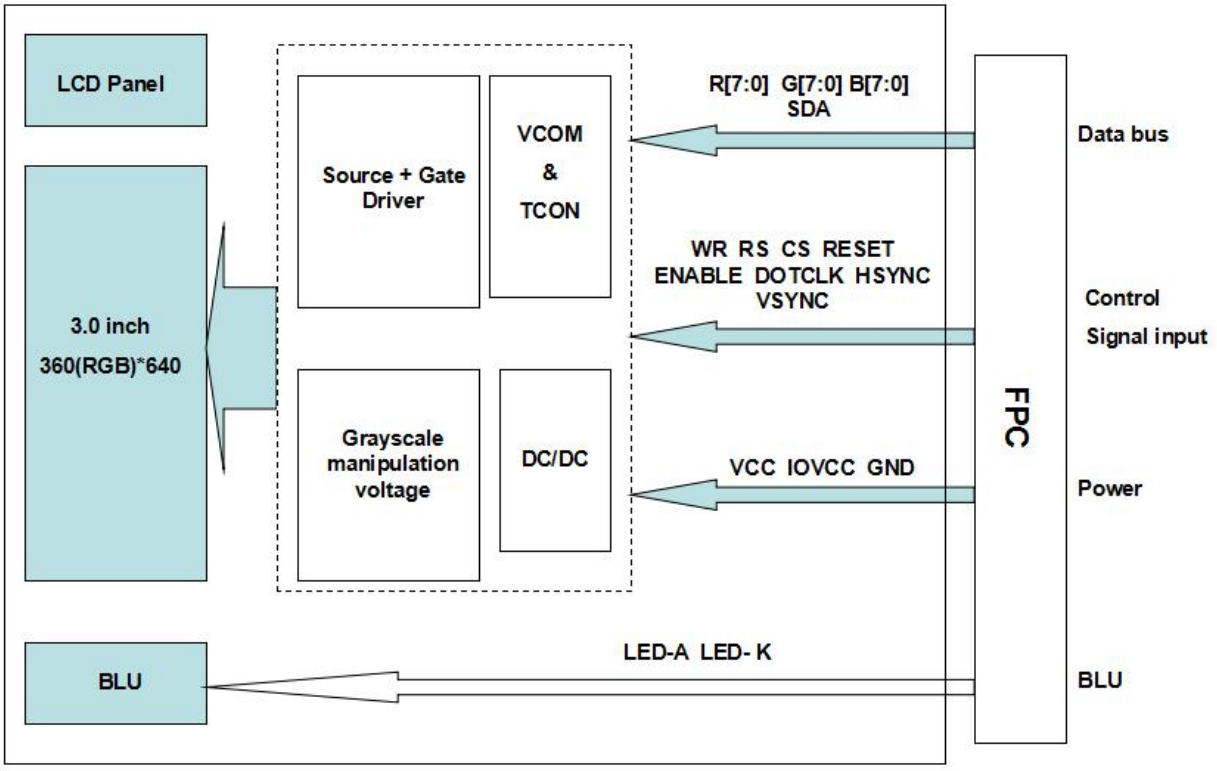
7.6.2. Uniformity = Minimal (L_{P1}:L_{P9}) / Maximal (L_{P1}:L_{P9}) * 100%

7.6.3. Transmittance = L_V on LCD / L_V on Backlight * 100%

Note: Measuring machine: BM-7



8. Block Diagram and Power Supply



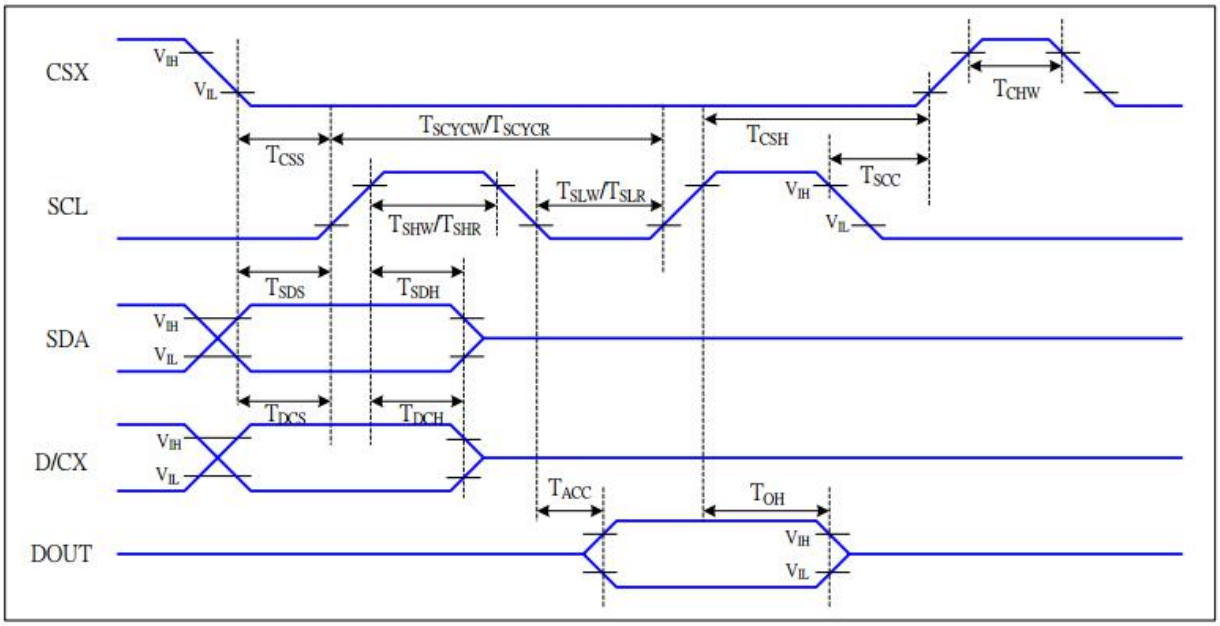
9. Interface Pins Definition

No.	Symbol	Function	Note
1	LEDK	Cathode	
2	LEDA	Anode	
3	NC/YU	No connection	
4	NC/XR	No connection	
5	NC/YD	No connection	
6	NC/XL	No connection	
7	GND	Ground	
8	VCC	Power supply	
9	IOVCC	Power supply	
10	TE	For IC Test	O
11	SDA	Serial data input/output bidirectional pin for SPI Interface	
12	WR	(SCL) Serial clock	
13	CS	A chip select signal. Low: the chip is selected and accessible	
14	RESET	Reset input	
15	R7	Data bus	
16	R6	Data bus	
17	R5	Data bus	
18	R4	Data bus	
19	R3	Data bus	
20	R2	Data bus	
21	R1	Data bus	
22	R0	Data bus	
23	G7	Data bus	
24	G6	Data bus	
25	G5	Data bus	
26	G4	Data bus	
27	G3	Data bus	
28	G2	Data bus	
29	G1	Data bus	
30	G0	Data bus	
31	B7	Data bus	
32	B6	Data bus	
33	B5	Data bus	
34	B4	Data bus	
35	B3	Data bus	
36	B2	Data bus	
37	B1	Data bus	
38	B0	Data bus	
39	ENABLE	Data enable signal for RGB interface operation	
40	DOTCLK	Dot clock signal for RGB interface operation	

41	HSYNC	Line synchronizing signal for RGB interface operation	
42	VSYNC	Frame synchronizing signal for RGB interface operation	
43	RS	- The SPI interface (DCX): The signal for command or parameter select. Low: Command High: Parameter	
44	RD	NC	
45	GND	Ground	

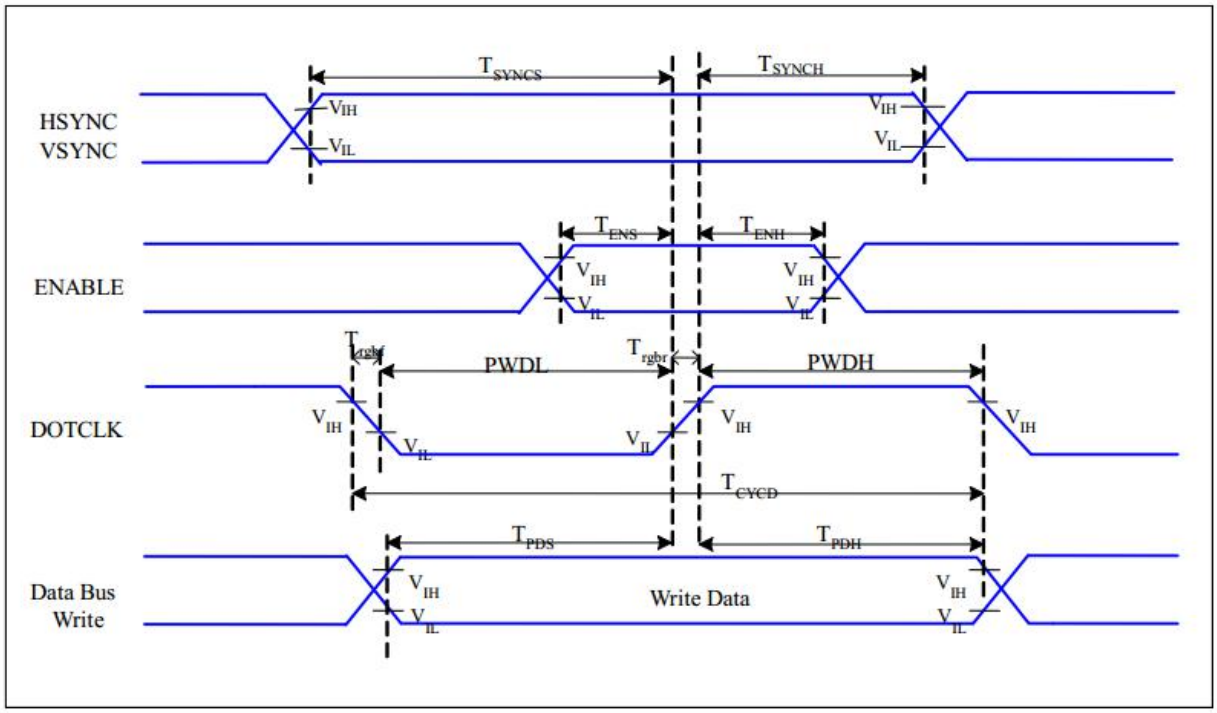
10. AC Characteristics

1） Serial Interface Characteristics (4-line serial):



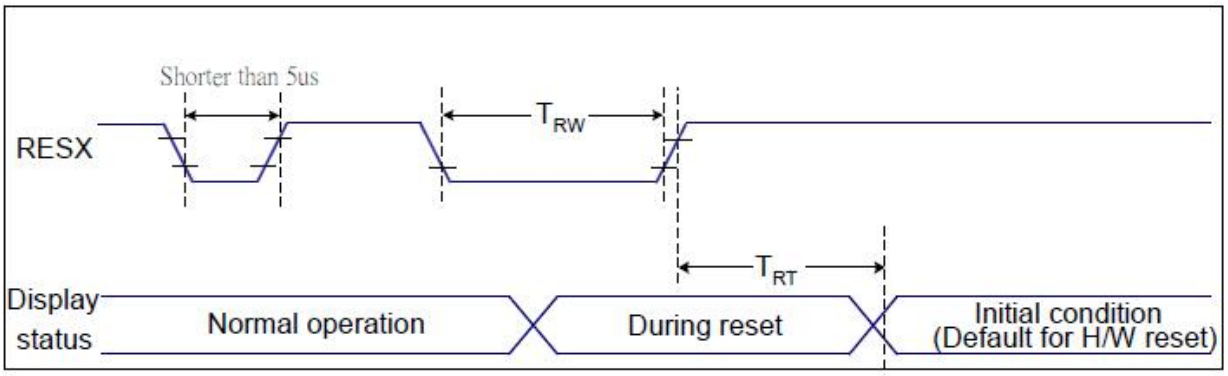
Signal	Symbol	Parameter	MIN	MAX	Unit	Description
CSX	T_{CSS}	Chip select setup time (write)	15		ns	
	T_{CSH}	Chip select hold time (write)	15		ns	
	T_{CSS}	Chip select setup time (read)	60		ns	
	T_{SCC}	Chip select hold time (read)	65		ns	
	T_{CHW}	Chip select “H” pulse width	40		ns	
SCL	T_{SCYCW}	Serial clock cycle (Write)	66		ns	-write command & data ram
	T_{SHW}	SCL “H” pulse width (Write)	15		ns	
	T_{SLW}	SCL “L” pulse width (Write)	15		ns	
	T_{SCYCR}	Serial clock cycle (Read)	150		ns	-read command & data ram
	T_{SHR}	SCL “H” pulse width (Read)	60		ns	
	T_{SLR}	SCL “L” pulse width (Read)	60		ns	
D/CX	T_{DCS}	D/CX setup time	10		ns	
	T_{DCH}	D/CX hold time	10		ns	
SDA (DIN)	T_{SDS}	Data setup time	10		ns	
	T_{SDH}	Data hold time	10		ns	

2） RGB Interface Characteristics



Signal	Symbol	Parameter	MIN	MAX	Unit	Description
HSYNC, VSYNC	T_{SYNCS}	VSYNC, HSYNC Setup Time	5	-	ns	
ENABLE	T_{ENS}	Enable Setup Time	5	-	ns	
	T_{ENH}	Enable Hold Time	5	-	ns	
DOTCLK	PWDH	DOTCLK High-level Pulse Width	15	-	ns	
	PWDL	DOTCLK Low-level Pulse Width	15	-	ns	
	T_{CYCD}	DOTCLK Cycle Time	33	-	ns	
	Trghr, Trghf	DOTCLK Rise/Fall time	-	15	ns	
DB	T_{PDS}	PD Data Setup Time	5	-	ns	
	T_{PDH}	PD Data Hold Time	5	-	ns	

11. Reset Timing



Related Pins	Symbol	Parameter	MIN	MAX	Unit
RESX	TRW	Reset pulse duration	10	-	us
	TRT	Reset cancel	-	5 (Note 1, 5)	ms
				120(Note 1, 6, 7)	ms

Notes:

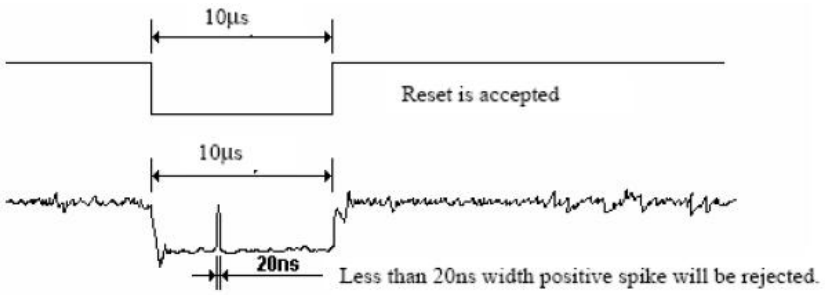
1. The reset cancel includes also required time for loading ID bytes, VCOM setting and other settings from NVM (or similar device) to registers. This loading is done every time when there is HW reset cancel time (tRT) within 5 ms after a rising edge of RESX.

2. Spike due to an electrostatic discharge on RESX line does not cause irregular system reset according to the table below:

RESX Pulse	Action
Shorter than 5us	Reset Rejected
Longer than 9us	Reset
Between 5us and 9us	Reset starts

3. During the Resetting period, the display will be blanked (The display is entering blanking sequence, which maximum time is 120 ms, when Reset Starts in Sleep Out –mode. The display remains the blank state in Sleep In –mode.) and then return to Default condition for Hardware Reset.

4. Spike Rejection also applies during a valid reset pulse as shown below:



5. When Reset applied during Sleep In Mode.

6. When Reset applied during Sleep Out Mode.

7. It is necessary to wait 5msec after releasing RESX before sending commands. Also Sleep Out command cannot be sent for 120msec.

12. Quality Assurance

12.1. Purpose

This standard for Quality Assurance assures the quality of LCD module products supplied to customer.

12.2. Standard for Quality Test

12.2.1. Sampling Plan:

GB2828.1-2012

Single sampling, general inspection level II

12.2.2. Sampling Criteria:

Visual inspection: AQL 1.5.

Electrical functional: AQL 0.65.

12.2.3. Reliability Test:

Detailed requirement refer to Reliability Test Specification.

12.3. Nonconforming Analysis & Disposition

12.3.1. Nonconforming analysis:

12.3.1.1. Customer should provide overall information of non-conforming sample for their complaints.

12.3.1.2. After receipt of detailed information from customer, the analysis of nonconforming parts usually should be finished in one week.

12.3.1.3. If cannot finish the analysis on time, customer will be notified with the progress status.

12.3.2. Disposition of nonconforming:

12.3.2.1. Non-conforming product over PPM level will be replaced.

12.3.2.2. The cause of non-conformance will be analyzed. Corrective action will be discussed and implemented.

12.4. Agreement Items

Shall negotiate with customer if the following situation occurs:

12.4.1. There is any discrepancy in standard of quality assurance.

12.4.2. Additional requirement to be added in product specification.

12.4.3. Any other special problem.

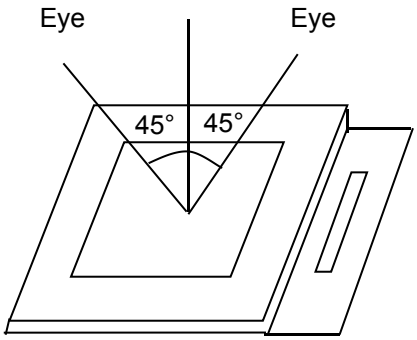
12.5. Standard of the Product Visual Inspection

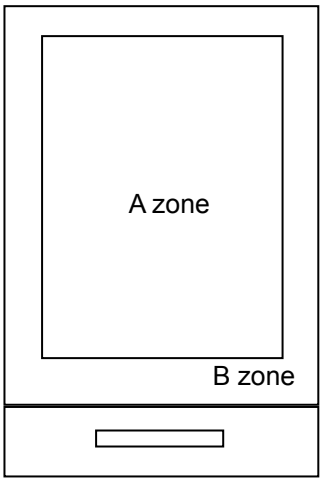
12.5.1. Appearance inspection:

12.5.1.1. The inspection must be under illumination about 1000 – 1500 lx, and the distance of view must be at 30cm ± 2cm.

12.5.1.2. The viewing angle should be 45° from the vertical line without reflection light or follows customer's viewing angle specifications.

12.5.1.3. Definition of area: A Zone: Active Area, B Zone: Viewing Area,



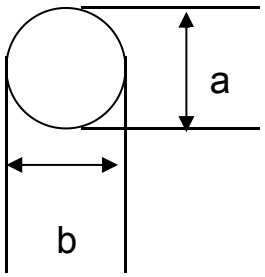


12.5.2. Basic principle:

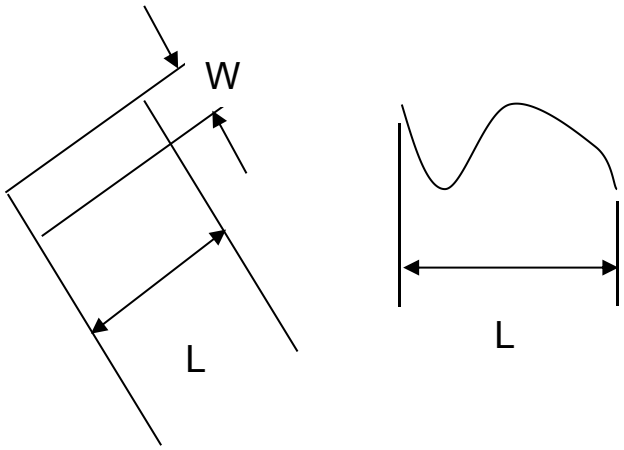
12.5.2.1. A set of sample to indicate the limit of acceptable quality level must be discussed by both us and customer when there is any dispute happened.

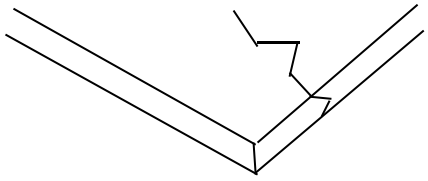
12.5.2.2. New item must be added on time when it is necessary.

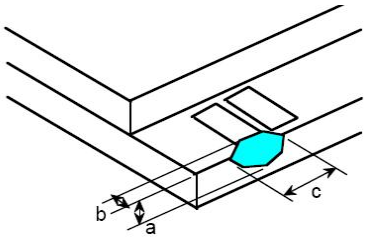
12.6.Inspection Specification

<table>
<tr><th>No.</th><th>Item</th><th>Criteria (Unit: mm)</th></tr>
<tr><td>01</td><td>Black / White spot
Foreign material
(Round type)
Pinholes
Stain
Particles inside cell.
(Minor defect)</td><td>


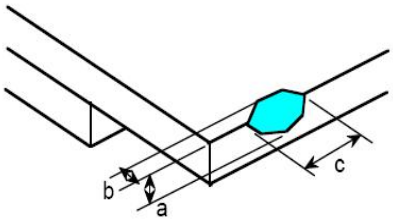
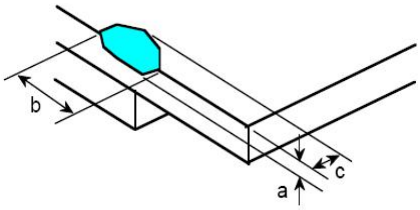
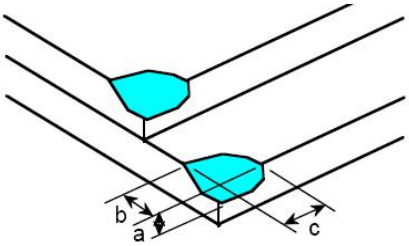
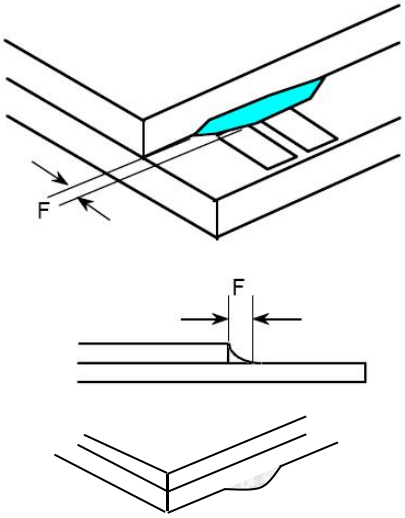
<table>
<tr><th>Area / Size</th><th>Acc. Qty</th></tr>
<tr><td>φ≤0.10</td><td>Ignore</td></tr>
<tr><td>0.10<φ≤0.15</td><td>2</td></tr>
<tr><td>0.15<φ≤0.25</td><td>1</td></tr>
<tr><td>0.25<φ</td><td>0</td></tr>
<tr><td>Total</td><td>2 no include φ≤ 0.10</td></tr>
</table>
φ= (a + b) /2
Distance between 2 defects should more than 3mm apart.
</td></tr>
<tr><td>02</td><td>Electrical Defect
(Minor defect)</td><td>
<table>
<tr><td></td><td>Display Area</td><td>Total</td><td rowspan="4">Note1</td></tr>
<tr><td>Bright dot</td><td>0</td><td>0</td></tr>
<tr><td>Dark dot</td><td>N≤2</td><td>N≤2</td></tr>
<tr><td>Total dot</td><td>N≤2</td><td>N≤2</td></tr>
<tr><td>Mura</td><td colspan="2">Not visible through 5% ND filters.</td><td>Note 2</td></tr>
</table>
Remark:
1. Bright dot caused by scratch and foreign object accords to item 1.
</td></tr>
</table>

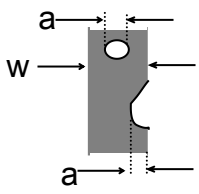
<table>
<tr>
<td>03</td>
<td>Black and White line
Scratch
Foreign material
(Line type)
(Minor defect)</td>
<td>


<table>
<tr><th>Length</th><th>Width</th><th>Acc. Qty</th></tr>
<tr><td>/</td><td>W ≦ 0.03</td><td>Ignore</td></tr>
<tr><td>L ≦ 2.5</td><td>0.03 ＜ W ≦ 0.5</td><td>3</td></tr>
<tr><td>L ≦ 2.5</td><td>0.05 ＜ W ≦ 0.10</td><td>2</td></tr>
<tr><td>/</td><td>0.1 ＜ W</td><td>0</td></tr>
<tr><td colspan="2">Total</td><td>3</td></tr>
</table>
Distance between 2 defects should more than 3mm apart. Scratches not viewable through the back of the display are acceptable.
</td>
</tr>
<tr>
<td>04</td>
<td>Glass Crack
(Minor defect)</td>
<td>

Crack is potential to enlarge, any type is not allowed.
</td>
</tr>
</table>

<table>
<tr>
<td>05</td>
<td>Glass Chipping Pad Area:
(Minor defect)


</td>
<td>
<table>
<tr><th>Length and Width</th><th>Acc. Qty</th></tr>
<tr><td>c > 3.0, b< 1.0</td><td>1</td></tr>
<tr><td>c< 3.0, b< 1.0</td><td>3</td></tr>
<tr><td colspan="2">a<Glass Thickness</td></tr>
</table>
</td>
</tr>
</table>

<table>
<tr>
<td>06</td>
<td>Glass Chipping Rear of Pad Area:
(Minor defect)
 
</td>
<td><table>
<tr><th>Length and Width</th><th>Acc. Qty</th></tr>
<tr><td>c > 3.0, b< 1.0</td><td>1</td></tr>
<tr><td>c< 3.0, b< 1.0</td><td>2</td></tr>
<tr><td>c< 3.0, b< 0.5</td><td>4</td></tr>
<tr><td colspan="2">a<Glass Thickness</td></tr>
</table></td>
</tr>
<tr>
<td>07</td>
<td>Glass Chipping Except Pad Area:
(Minor defect)
 
</td>
<td><table>
<tr><th>Length and Width</th><th>Acc. Qty</th></tr>
<tr><td>c > 3.0, b< 1.0</td><td>1</td></tr>
<tr><td>c< 3.0, b< 1.0</td><td>2</td></tr>
<tr><td>c< 3.0, b< 0.5</td><td>4</td></tr>
<tr><td colspan="2">a<Glass Thickness</td></tr>
</table></td>
</tr>
<tr>
<td>08</td>
<td>Glass Corner Chipping:
(Minor defect)
 
</td>
<td><table>
<tr><th>Length and Width</th><th>Acc. Qty</th></tr>
<tr><td>c < 3.0, b< 3.0</td><td>Ignore</td></tr>
<tr><td colspan="2">a<Glass Thickness</td></tr>
</table></td>
</tr>
<tr>
<td>09</td>
<td>Glass Burr:
(Minor defect)
 
</td>
<td><table>
<tr><th>Length</th><th>Acc. Qty</th></tr>
<tr><td>F < 1.0</td><td>Ignore</td></tr>
</table>
Glass burr don’t affect assemble and module dimension.</td>
</tr>
</table>

<table>
<tr><td>10</td><td>FPC Defect:
(Minor defect)
 
</td><td>10.1 Dent, pinhole width a<w/3.
(w: circuitry width.)
10.2 Open circuit is unacceptable.
10.3 No oxidation, contamination and distortion.</td></tr>
<tr><td>11</td><td>Bubble on Polarizer
(Minor defect)</td><td><table><tr><td>Diameter</td><td>Acc. Qty</td></tr><tr><td>φ≤0.20</td><td>Ignore</td></tr><tr><td>0.20 <φ≤0.30</td><td>4</td></tr><tr><td>0.30 <φ≤0.50</td><td>1</td></tr><tr><td>0.50 < φ</td><td>None</td></tr></table></td></tr>
<tr><td>12</td><td>Dent on Polarizer
(Minor defect)</td><td><table><tr><td>Diameter</td><td>Acc. Qty</td></tr><tr><td>φ≤0.20</td><td>Ignore</td></tr><tr><td>0.20 <φ≤0.30</td><td>4</td></tr><tr><td>0.30 <φ≤0.50</td><td>1</td></tr><tr><td>0.50 < φ</td><td>None</td></tr></table></td></tr>
<tr><td>13</td><td>Bezel</td><td>13.1 No rust, distortion on the Bezel.
13.2 No visible fingerprints, stains or other contamination.</td></tr>
<tr><td>14</td><td>PCB</td><td>14.1 No distortion or contamination on PCB terminals.
14.2 All components on PCB must same as documented on the BOM/component layout.
14.3 Follow IPC-A-600F.</td></tr>
<tr><td>15</td><td>Soldering</td><td>Follow IPC-A-610C standard</td></tr>
<tr><td>16</td><td>Electrical Defect
(Major defect)</td><td>The below defects must be rejected.
16.1 Missing vertical / horizontal segment,
16.2 Abnormal Display.
16.3 No function or no display.
16.4 Current exceeds product specifications.
16.5 LCD viewing angle defect.
16.6 No Backlight.
16.7 Dark Backlight.
16.8 Touch Panel no function.</td></tr>
</table>

Remark: LCD Panel Broken shall be rejected. Defect out of LCD viewing area is acceptable.

12.7. Classification of Defects

12.7.1 Visual defects (Except no / wrong label) are treated as minor defect and electrical defect is major.

12.7.2 Two minor defects are equal to one major in lot sampling inspection.

12.8. Identification/marking criteria

Any unit with illegible / wrong /double or no marking/ label shall be rejected.

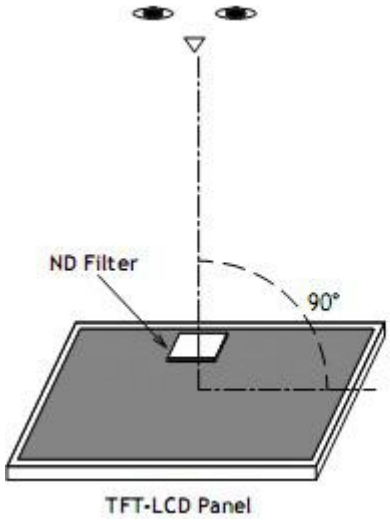
12.9. Packaging

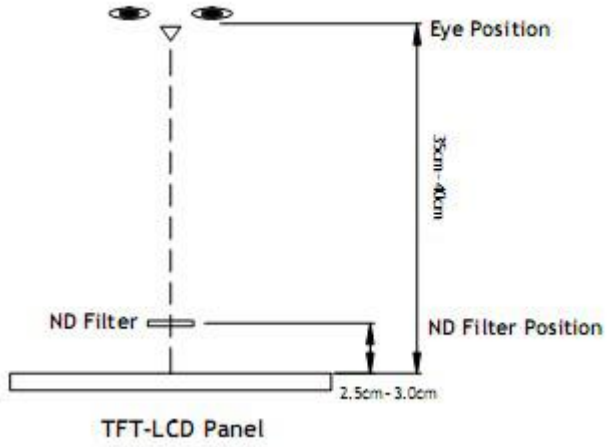
12.9.1 There should be no damage of the outside carton box, each packaging box should have one identical label.

12.9.2 Modules inside package box should have compliant mark.

12.9.3 All direct package materials shall offer ESD protection.

Note1: Bright dot is defined as the defective area of the dot is larger than 50% of one sub-pixel area.





Bright dot: The bright dot size defect at black display pattern. It can be recognized by 2% transparency of filter when the distance between eyes and panel is 350mm±50mm.

Dark dot: Cyan, Magenta or Yellow dot size defect at white display pattern. It can be recognized by 5% transparency of filter when the distance between eyes and panel is 350mm±50mm.

Note2: Mura on display which appears darker / brighter against background brightness on parts of display area.

13. Reliability Specification

No	Item	Condition	Quantity	Criteria
1	High Temperature Operating	**70℃, 96Hrs**	2	GB/T2423.2 -2008
2	Low Temperature Operating	**-20℃, 96Hrs**	2	GB/T2423.1 -2008
3	High Humidity Storage	**50℃, 90%RH, 96Hrs**	2	GB/T2423.3 -2016
4	High Temperature Storage	**80℃, 96Hrs**	2	GB/T2423.2 -2008
5	Low Temperature Storage	**-30℃, 96Hrs**	2	GB/T2423.1 -2008
6	Thermal Cycling Test Storage	**-20℃, 60min~70℃, 30min, 20 cycles.**	2	GB/T2423.22 -2012
7	Packing vibration	Frequency range:10Hz~50Hz Acceleration of gravity:5G X, Y, Z 30 min for each direction.	2	GB/T5170.14 -2009
8	Electrical Static Discharge	Air:±4KV 150pF/330Ω 5 times	2	GB/T17626.2 -2018
		Contact:±2KV 150pF/330Ω 5 times		
9	Drop Test (Packaged)	Height:80 cm,1 corner, 3 edges, 6 surfaces.	2	GB/T2423.8 -1995

Note1. No defection cosmetic and operational function allowable.

Note2. Total current Consumption should be below double of initial value.

14. Precautions and Warranty

14.1. Safety

14.1.1. The liquid crystal in the LCD is poisonous. Do not put it in your mouth. If the liquid crystal touches your skin or clothes, wash it off immediately using soap and water.

14.1.2. Since the liquid crystal cells are made of glass, do not apply strong impact on them. Handle with care.

14.2. Handling

14.2.1. Reverse and use within ratings in order to keep performance and prevent damage.

14.2.2. Do not wipe the polarizer with dry cloth, as it might cause scratch. If the surface of the LCD needs to be cleaned, wipe it swiftly with cotton or other soft cloth soaked with petroleum IPA, do not use other chemicals.

14.3. Storage

14.3.1. Do not store the LCD module beyond the specified temperature ranges.

14.3.2. Strong light exposure causes degradation of polarizer and color filter

14.4. Metal Pin (Apply to Products with Metal Pins)

14.4.1. Pins of LCD and Backlight

14.4.1.1. Solder tip can touch and press on the tip of Pin LEAD during the soldering

14.4.1.2. Recommended Soldering Conditions

Solder Type: Sn96.3~94-Ag3.3~4.3-Cu0.4~1.1

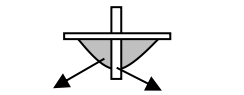
Maximum Solder Temperature: 370℃

Maximum Solder Time: 3s at the maximum temperature

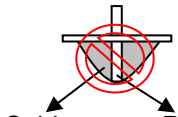
Recommended Soldering Temp: 350±20℃

Typical Soldering Time: ≤3s

14.4.1.3. Solder Wetting



Recommended



Not Recommended

14.4.2. Pins of EL

14.4.2.1. Solder tip can touch and press on the tip of EL leads during soldering.

14.4.2.2. No Solder Paste on the soldering pad on the motherboard is recommended.

14.4.2.3. Recommended Soldering Conditions

Solder type: Nippon Alimit Leadfree SR-34, size 0.5mm

Recommended Solder Temperature: 270～290℃

Typical Soldering Time: ≤2s

Minimum solder distance from EL lamp (body):2.0mm

14.4.2.4. No horizontal press on the EL leads during soldering.

14.4.2.5. 180° bend EL leads three times is not allowed.

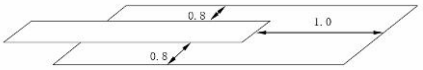
14.4.2.6. Solder Wetting

Recommended Not Recommended

14.4.2.7. The type of the solder iron:

Recommended Not Recommended

14.4.2.8. Solder Pad



14.5. Operation

14.5.1. Do not drive LCD with DC voltage

14.5.2. Response time will increase below lower temperature

14.5.3. Display may change color with different temperature

14.5.4. Mechanical disturbance during operation, such as pressing on the display area, may cause the segments to appear “fractured”.

14.5.5. Do not connect or disconnect the LCM to or from the system when power is on.

14.5.6. Never use the LCM under abnormal condition of high temperature and high humidity.

14.5.7. Module has high frequency circuits. Sufficient suppression to the electromagnetic interface shall be done by system manufacturers. Grounding and shielding methods may be important to minimize the interference.

14.5.8. Do not display the fixed pattern for long time（we suggest the time not longer than one hour） because it may develop image sticking due to the TFT structure.

14.6. Static Electricity

14.6.1. CMOS LSIs are equipped in this unit, so care must be taken to avoid the electro-static charge, by ground human body, etc.

14.6.2. The normal static prevention measures should be observed for work clothes and benches.

14.6.3. The module should be kept into anti-static bags or other containers resistant to static for storage.

14.7. Limited Warranty

14.7.1. Our warranty liability is limited to repair and/or replacement. We will not be responsible for any consequential loss.

14.7.2. If possible, we suggest customer to use up all modules in six months. If the module storage time over twelve months, we suggest that recheck it before the module be used

14.7.3. . After the product shipped, any product quality issues must be feedback within three months, otherwise, we will not be responsible for the subsequent or consequential events.

15. Packaging

TBD

16. Outline Drawing