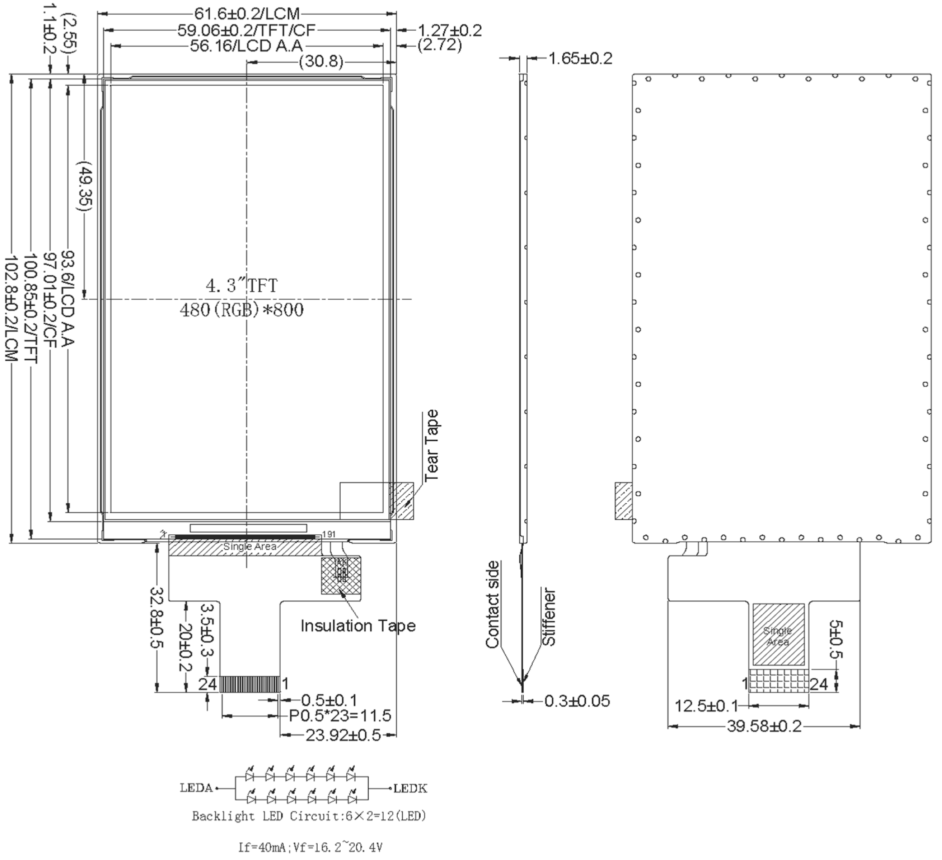


Backlight LED Circuit:6×2=12(LED)

If=40mA;Vf=16.2~20.4V

General Tolerance±				
DIM \ Level	1	2	3	4
0-5	0.05	0.1	0.1	0.2
5-10	0.05	0.1	0.1	0.2
10-50	0.05	0.1	0.2	0.3
50-100	0.1	0.2	0.3	0.5
100-150	0.1	0.2	0.5	0.8
Level Seclect				◎

NO.	PIN NAME
1	GND
2	LEDK
3	LEDA
4	GND
5	VCC
6	IOVCC
7	SPI_CS
8	SPI_SCL
9	GND
10	SPI_SDI
11	GND
12	R0
13	R1
14	R2
15	R3
16	R4
17	R5
18	GND
19	ENABLE
20	DOTCLK
21	HSYNC
22	VSYNC
23	RESET
24	GND

NOTES:
1. Display size:4.3"TFT IPS
2. Viewing direction:full view
3. Display mode:Transmissive/Normal Black/Anti-glare
4. Operation temperature:-20° C~+70° C
5. Storage temperature:-30° C~+80° C
6. Driver IC:GC9503C
7. Power supply voltage:2.8 V
8. Backlight :White(12LED)/18.6(TYP)V/40mA
9. LCM Luminance:340(TYP)cd/m²
10. Interface type:SPI+RGB
11. RoHS must be complied
* The dimension with mark brackets "()" just for reference

Compliance: RohS III (2015/863/EU)

Tolerances:

Date	Name
11/24	dr

YDP LCD I 430 SR

knitter-switch

30 55 87

Page
1/24

Modifications	Date	Name

PRODUCT SPECIFICATION

4.3" Mono TFT LCD MODULE

MODEL: YDP LCD I 430 SR Ver: 1.0

< ◇> Preliminary Specification

< ◆> Finally Specification

CUSTOMER'S APPROVAL	
CUSTOMER :	
SIGNATURE:	**DATE:**

APPROVED BY	**PM REVIEWED**	**PD REVIEWED**	**PREPARED BY**
TFT Y.B 20240224	TFT S.G.H 20240224	TFT 周福云 20240224	TFT L.L 20240224

Revision History

Revision	Date	Originator	Detail	Remarks
Ver 1.0	2024.02.24	LL	Initial Release	

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)	4.3"	
LCD type	IPS TFT	
Display Mode	Transmissive/Normal Black	
Resolution	480 RGB x 800	Pixels
View Direction	FULL VIEW	Best Image
Module Outline	61.6(H) x 102.8 (V) x 1.65(T)	mm
Active Area	56.16(H) x 93.6(V)	mm
Pixel Pitch	117(H) x 117(V)	um
Pixel Arrangement	RGB Vertical stripe	
Polarizer Surface Treatment	Anti-Glare	
Display Colors	64 grayscale color	
Interface	3 SPI + 6bit RGB	
Driver IC	GC9503C	
With or Without Touch Panel	With	
Operating Temperature	**-20～70**	℃
Storage Temperature	**-30～80**	℃
Weight	TBD	g

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

3. Absolute Maximum Ratings

GND=0V, Ta=25°C

Item	Symbol	Min.	Max.	Unit
Supply Voltage	IOVCC	-0.3	4.6	V
	VCC	-0.3	4.6	3.3
Storage temperature	T_{STG}	-30	+80	°C
Operating temperature	T_{OP}	-20	+70	°C

Note 1: If Ta below 50°C, the maximal humidity is 90%RH, if Ta over 50°C, 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	IOVCC	1.65	1.8	3.3	V
	VCC	2.5	2.8	3.3	V
Logic Low input voltage	V_{IL}	-0.3	-	0.3*IOVCC	V
Logic High input voltage	V_{IH}	0.7*IOVCC	-	IOVCC	V
Logic Low output voltage	V_{OL}	0	-	0.2*IOVCC	V
Logic High output voltage	V_{OH}	0.8*IOVCC	-	IOVCC	V
Current Consumption All White	$V_{CC+IOVCC}$	-	TBD	-	mA

5. Backlight Characteristic

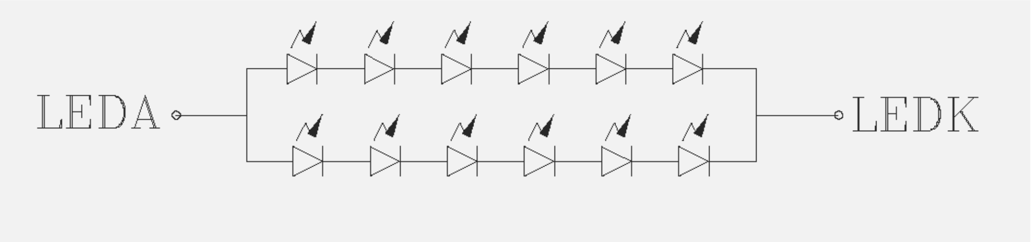
5.1. Backlight Characteristics

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Forward Voltage	V_F	Ta=25 ºC, I_F=20mA/LED	16.8	**18.6**	**20.4**	V
Forward Current	I_F	Ta=25 ºC, V_F=3.1V/LED	-	**40**	-	mA
Power dissipation	P_D		-	**744**	-	mW
Uniformity	Avg		-	80	-	%
LED working life(25℃)	-		-	30,000	-	Hrs
Drive method	**Constant current**					
LED Configuration	12 White LEDs (6 LEDs in one string and 2 groups in parallel)					

Note: 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. Optical Characteristics

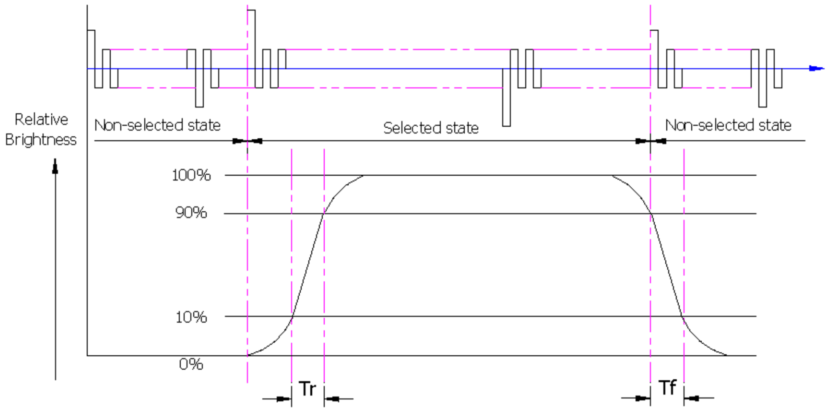
6.1. Optical Characteristics

Ta=25°C, VCC=2.8V

	Item		Symbol	Condition	Specification			Unit
					Min.	Typ.	Max.	
Backlight On (Transmissive Mode)	Luminance on TFT(I_f =20mA/LED)		Lv	Normally viewing angle θx = φY =0°	**272**	**340**	-	cd/m^2
	Contrast ratio(See 6.3)		CR		1000	1500	-	
	Response time (See 6.2)		T_R+T_F		-	35	40	Ms
	Chromaticity Transmissive (See6.5)	Red	X_R		-	**TBD**	-	
			Y_R		-	**TBD**	-	
		Green	X_G		-	**TBD**	-	
			Y_G		-	**TBD**	-	
		Blue	X_B		-	**TBD**	-	
			Y_B		-	**TBD**	-	
		White	X_W		-	**TBD**	-	
			Y_W		-	**TBD**	-	
	Viewing Angle (See 6.4)	Horizontal	θX+	Center CR≥10	**70**	**80**	**-**	Deg.
			θX-		**70**	**80**	**-**	
		Vertical	φY+		**70**	**80**	**-**	
			φY-		**70**	**80**	**-**	
	NTSC Ratio(Gamut)				65	70	-	

6.2. Definition of Response Time

6.2.1. Normally Black Type (Negative)

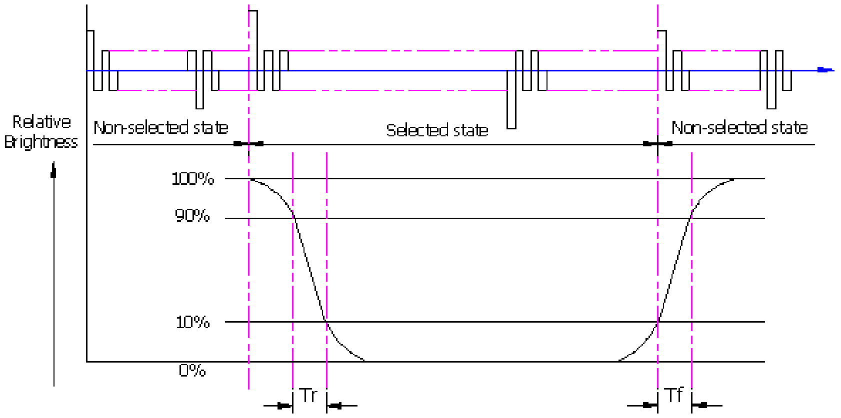


Tr is the time it takes to change form non-selected stage with relative luminance 10% to selected state with relative luminance 90%;

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

6.2.2. 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

6.3. Definition of Contrast Ratio

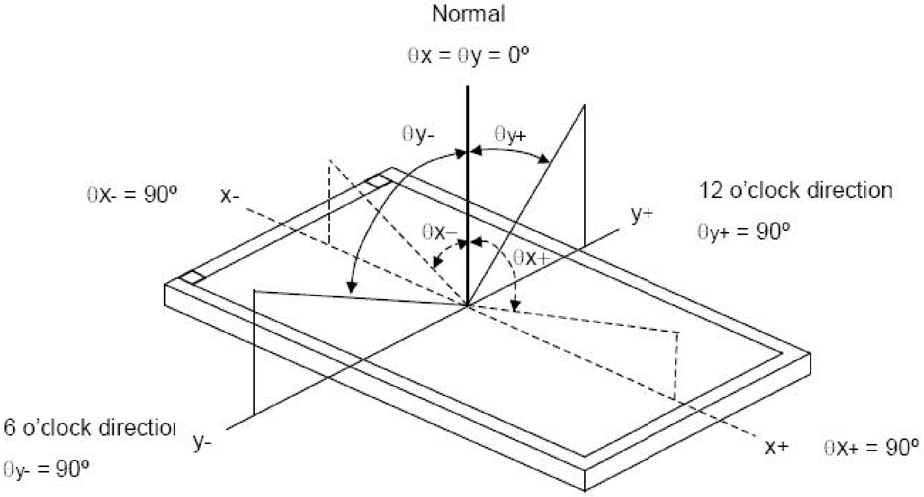
Contrast is measured perpendicular to display surface in reflective and transmissive mode.

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

6.4. Definition of Viewing Angles



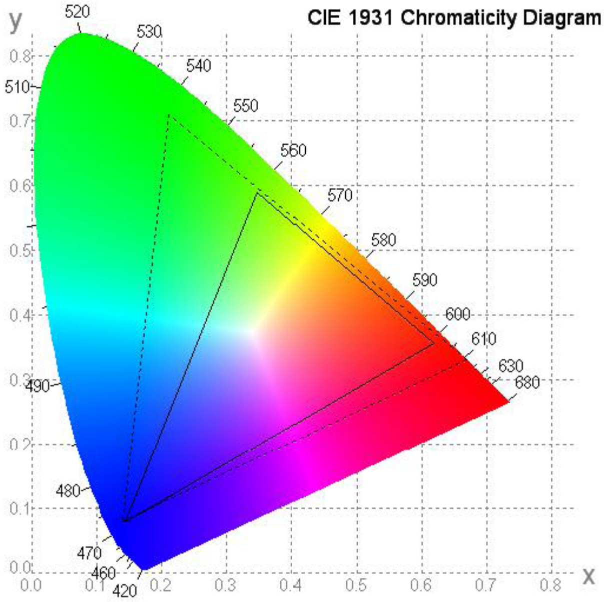
Measuring machine: LCD-5100 or EQUI

6.5. 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)



6.6. Definition of Surface Luminance, Uniformity and Transmittance

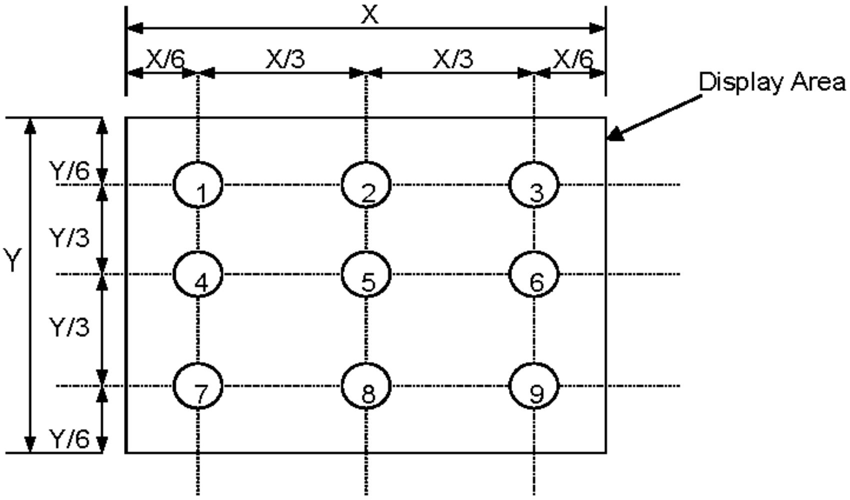
Using the transmissive mode measurement approach, measure the white screen luminance of the display panel and backlight.

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

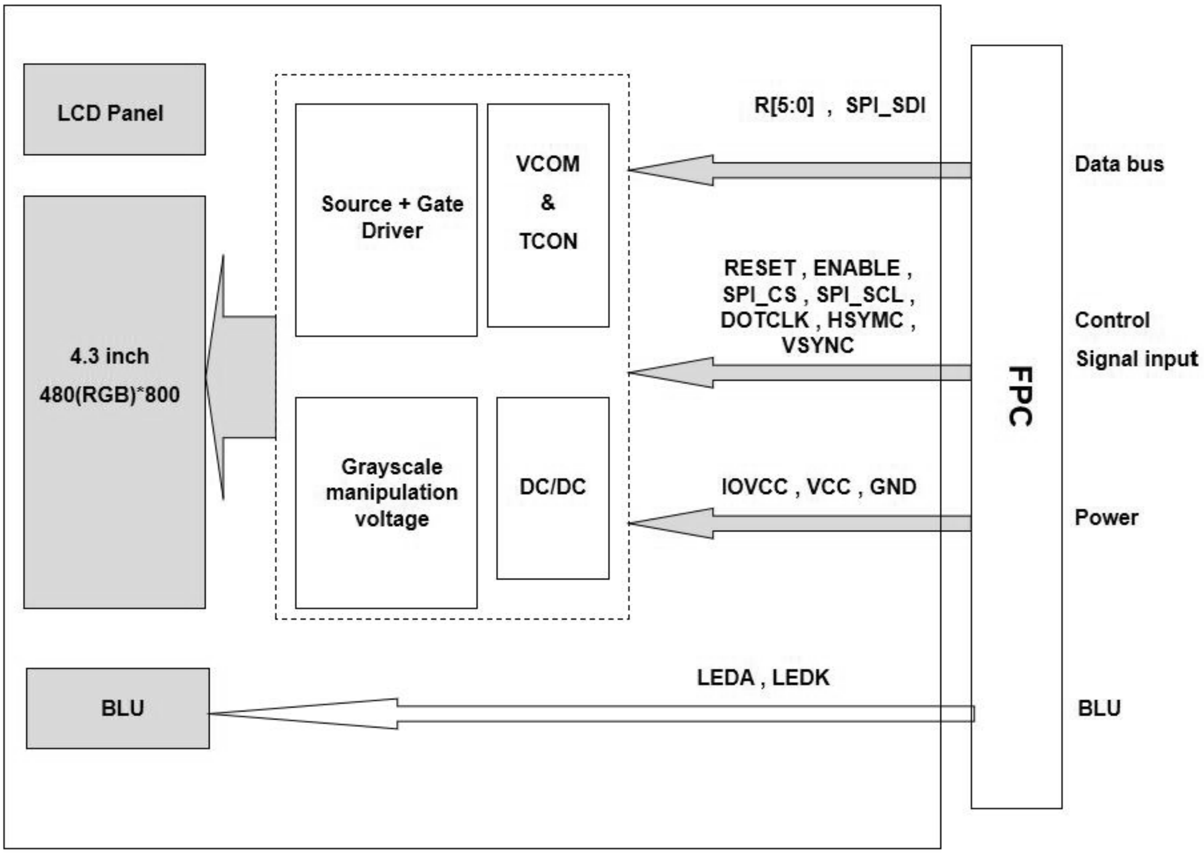
6.6.2. Uniformity = Minimal (L_{P1}:L_{P9}) / Maximal (L_{P1}:L_{P9}) * 100%

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

Note: Measuring machine: BM-7



7. Block Diagram and Power Supply

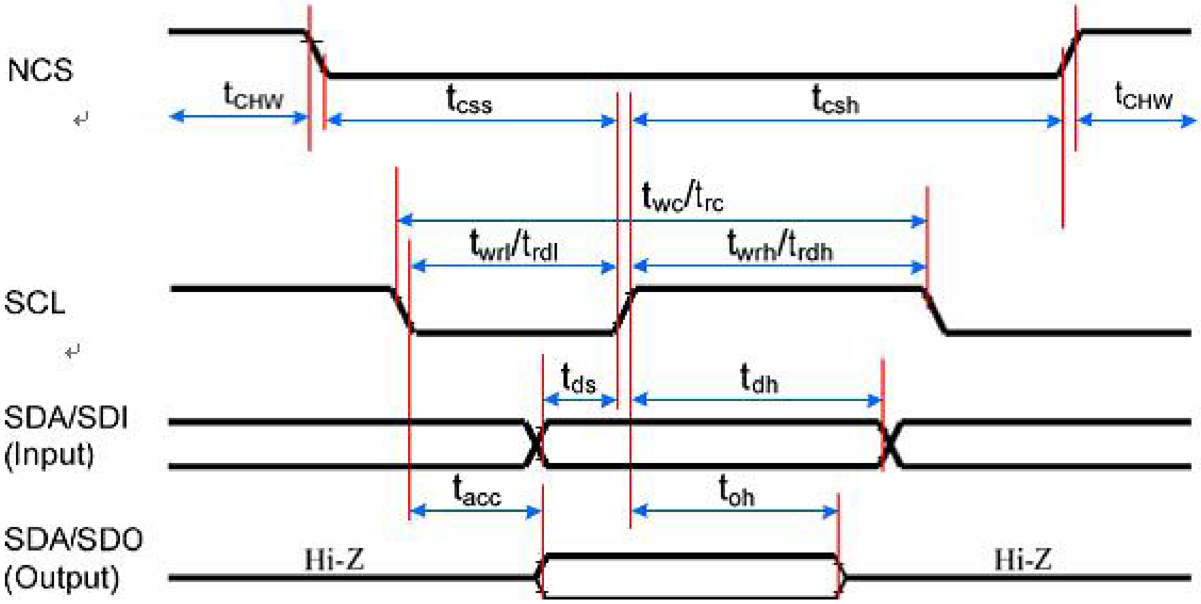


8. Interface Pins Definition

No.	Symbol	Function	Remark
1	GND	Ground	
2	LEDK	Backlight cathode	
3	LEDA	Backlight anode	
4	GND	Ground	
5	VCC	Power Supply	
6	IOVCC	Digital supply	
7	SPI_CS	Chip select signal	
8	SPI_SCL	Serial Clock	
9	GND	Ground	
10	SPI_SDI	Serial data input pin.	
11	GND	Ground	
12	R0	R0-G0-B0 Data	
13	R1	R1-G1-B1 Data	
14	R2	R2-G2-B2 Data	
15	R3	R3-G3-B3 Data	
16	R4	R4-G4-B4 Data	
17	R5	R4-G4-B4 Data	
18	GND	Ground	
19	ENABLE	Data enable pin	
20	DOTCLK	Data Clock	
21	HSYNC	Horizontal Synchronous Signal	
22	VSYNC	Vertical Synchronous Signal	
23	RESET	Reset pin.	
24	GND	Ground	

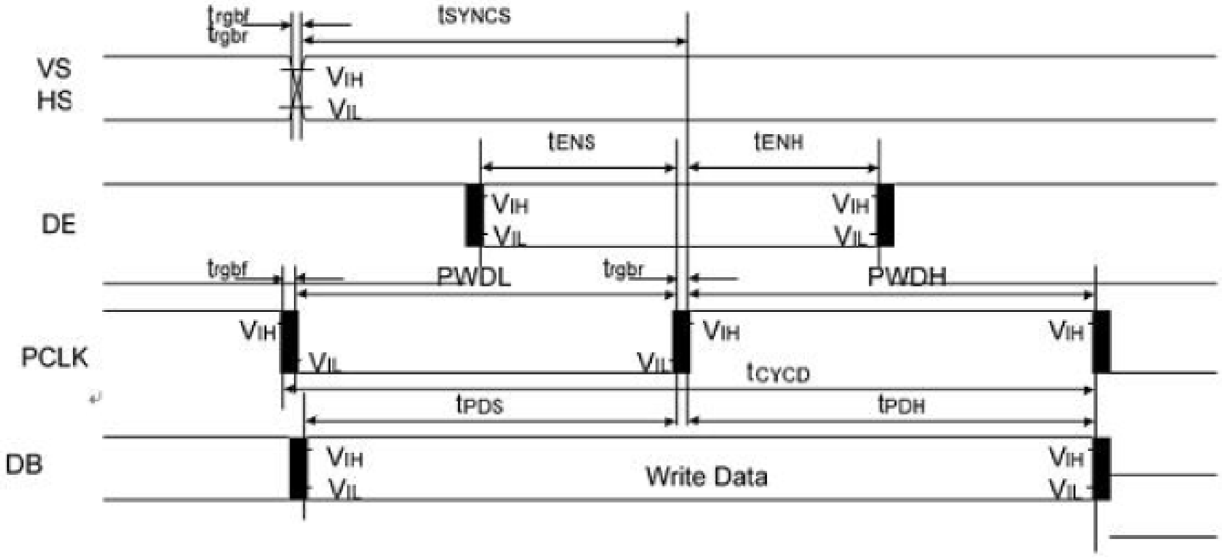
9. AC Characteristics

9.1. Display Serial Interface Timing Characteristics (3-line SPI system)



Signal	Symbol	Parameter	min	max	Unit	Description
CSX	tcss	Chip select time (Write)	15	-	ns	
	tcsh	Chip select hold time (Read)	15	-	ns	
	tCHW	CS "H" pulse width	40	-	ns	
SCL	twc	Serial clock cycle (Write)	30	-	ns	
	twrh	SCL "H" pulse width (Write)	10	-	ns	
	twrl	SCL "L" pulse width (Write)	10	-	ns	
	trc	Serial clock cycle (Read)	150	-	ns	
	trdh	SCL "H" pulse width (Read)	60	-	ns	
	trdl	SCL "L" pulse width (Read)	60	-	ns	
SDA/SDO (Output)	tacc	Access time (Read)	10	100	ns	For maximum CL=30pF
	toh	Output disable time (Read)	15	100	ns	For minimum CL=8pF
SDA/SDI (Input)	tds	Data setup time (Write)	10	-	ns	
	tdh	Data hold time (Write)	10	-	ns	

9.2. Parallel RGB Input Timing Table



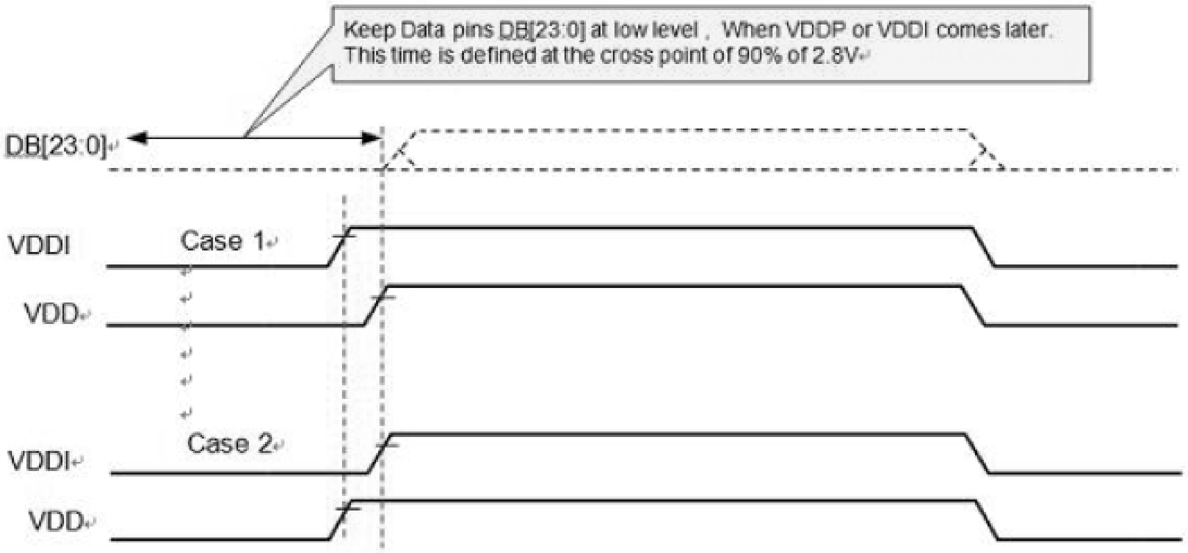
Signal	Symbol	Parameter	min	max	Unit	Description
	tSYNCS	VS/HS setup time	5	-	ns	24/18/16-bit bus RGB interface mode
	tSYNCH	VS/HS hold time	5	-	ns	
DE	tENS	DE setup time	5	-	ns	
	tENH	DE hold time	5	-	ns	
DB	tPOS	Data setup time	5	-	ns	
	tPDH	Data hold time	5	-	ns	
PCLK	PWDH	PCLK high-level period	13	-	ns	
	PWDL	PCLK low-level period	13	-	ns	
	tCYCD	PCLK cycle time	28	-	ns	
	trgbr , trgbf	PCLK,HS,VS rise/fall time	-	15	ns	

9.3. Power ON/OFF Sequence

VDDI and VDD can be applied (or powered down) in any order. During the power off sequences, if LCD is in the Sleep Out mode, VDD and VDDI must be powered down with minimum 120msec, and if LCD is in the Sleep In mode, VDD and VDDI can be powered down with minimum 0msec after RESX has been released. CSX can be applied at any timing or can be permanently grounded. RESX has priority over CSX.

Note:

1. There will be no damage to GC9503CV if the power sequences are not met.
2. There will be no abnormal visible effects on the display panel during the Power On/Off Sequences.
3. There will be no abnormal visible effects on the display between end of Power On Sequence and before receiving Sleep Out command. Also between receiving Sleep In command and Power Off Sequence.
4. If RESX line is not held stable by host during Power On Sequence as defined in Sections 7.1 and 7.2, then it will be necessary to apply a Hardware Reset (RESX) after Host Power On Sequence is complete to ensure correct operation. Otherwise function is not guaranteed.
5. Keep data pins DB[23:0] at low level, when VDD or VDDI comes later



10. Quality Assurance

10.1.Purpose

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

10.2.Standard for Quality Test

10.2.1. Sampling Plan:
GB2828.1-2012
Single sampling, general inspection level II

10.2.2. Sampling Criteria:
Visual inspection: AQL 1.5
Electrical functional: AQL 0.65.

10.2.3. Reliability Test:
Detailed requirement refer to Reliability Test Specification.

10.3.Nonconforming Analysis & Disposition

10.3.1. Nonconforming analysis:

- 10.3.1.1. Customer should provide overall information of non-conforming sample for their complaints.
- 10.3.1.2. After receipt of detailed information from customer, the analysis of nonconforming parts usually should be finished in one week.
- 10.3.1.3. If cannot finish the analysis on time, customer will be notified with the progress status.

10.3.2. Disposition of nonconforming:

- 10.3.2.1. Non-conforming product over PPM level will be replaced.
- 10.3.2.2. The cause of non-conformance will be analyzed. Corrective action will be discussed and implemented.

10.4.Agreement Items

Shall negotiate with customer if the following situation occurs:

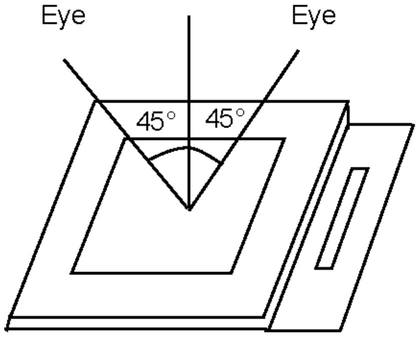
10.4.1. There is any discrepancy in standard of quality assurance.
10.4.2. Additional requirement to be added in product specification.
10.4.3. Any other special problem.

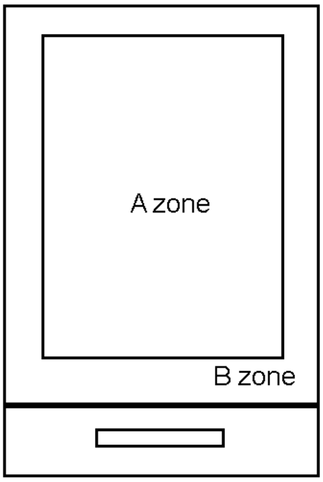
10.5.Standard of the Product Visual Inspection

10.5.1. Appearance inspection:

- 10.5.1.1. The inspection must be under illumination about 1000 – 1500 lx, and the distance of view must be at 30cm ± 2cm.
- 10.5.1.2. The viewing angle should be 45° from the vertical line without reflection light or follows customer's viewing angle specifications.

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



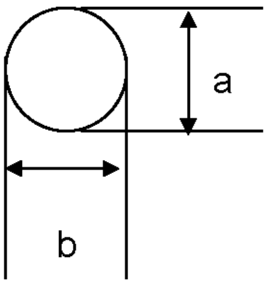


10.5.2. Basic principle:

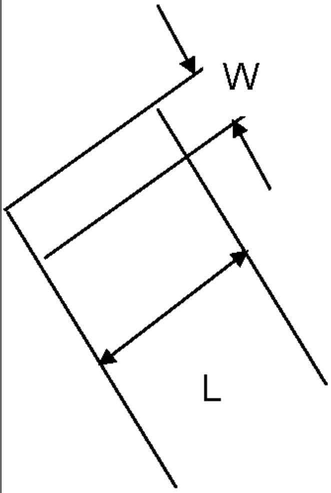
10.5.2.1. A set of sample to indicate the limit of acceptable quality level must be discussed by both us and customer when there is any dispute happened.

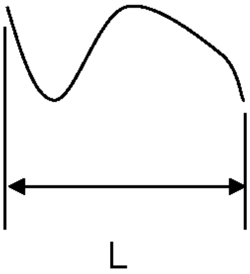
10.5.2.2. New item must be added on time when it is necessary.

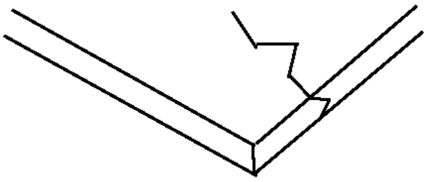
10.6.Inspection Specification for the TFT module

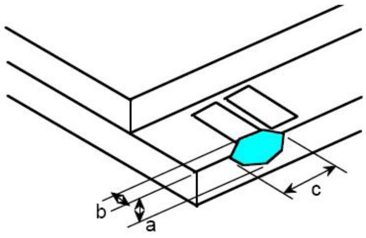
<table>
<tr><th>No.</th><th>Item</th><th>Criteria (Unit: mm)</th></tr>
<tr><td>01</td><td>Black / White spot
Foreign material (Round type)
Pinholes
Stain
Particles inside cell.
(Minor defect)</td><td>

<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>
$\varphi = (a + b)/2$
Distance between 2 defects should more than 3mm apart.</td></tr>
<tr><td>02</td><td>Electrical Defect
(Minor defect)</td><td><table>
<tr><th></th><th>Display Area</th><th>Total</th><th></th></tr>
<tr><td>Bright dot</td><td>0</td><td>0</td><td>Note1</td></tr>
<tr><td>Dark dot</td><td>N≤2</td><td>N≤2</td><td></td></tr>
<tr><td>Total dot</td><td>N≤2</td><td>N≤2</td><td></td></tr>
<tr><td>Mura</td><td colspan="2">Not visible through 5% ND filters.</td><td>Note2</td></tr>
</table>
Remark:
1. Bright dot caused by scratch and foreign object accords to item 1.</td></tr>
</table>

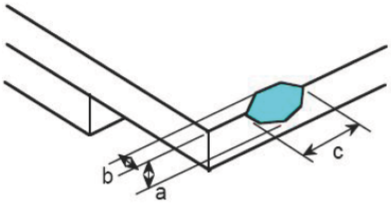
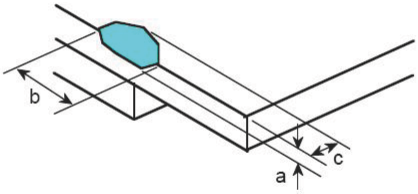
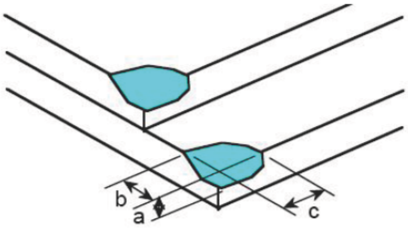
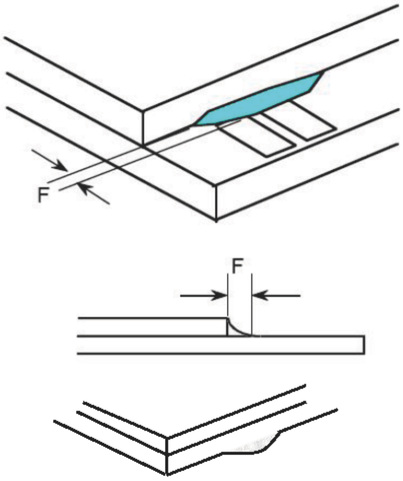
<table>
<tr>
<td>03</td>
<td>Black and White line
Scratch
Foreign material
(Line type)
(Minor defect)</td>
<td>


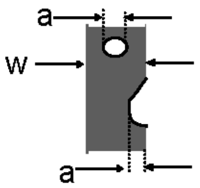


<table>
<tr><th>Length</th><th>Width</th><th>Acc. Qty</th></tr>
<tr><td>/</td><td>W ≦ 0.03</td><td>Ignore</td></tr>
<tr><td>L ≦ 2.5</td><td>0.03 ＜ W ≦ 0.05</td><td>3</td></tr>
<tr><td>L ≦ 2.5</td><td>0.05 ＜ W ≦ 0.10</td><td>2</td></tr>
<tr><td>/</td><td>0.1 ＜ W</td><td></td></tr>
<tr><td colspan="2">Total</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><th>Diameter</th><th>Acc. Qty</th></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><th>Diameter</th><th>Acc. Qty</th></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.

10.7.Classification of Defects

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

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

10.8.Identification/marking criteria

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

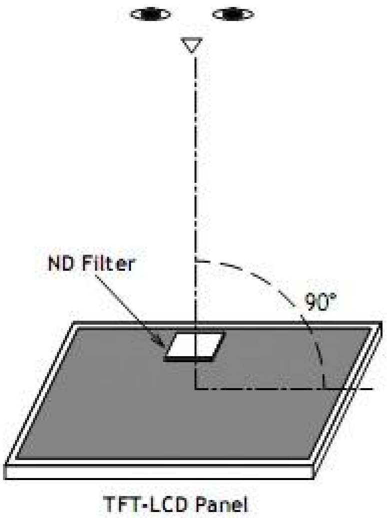
10.9.Packing

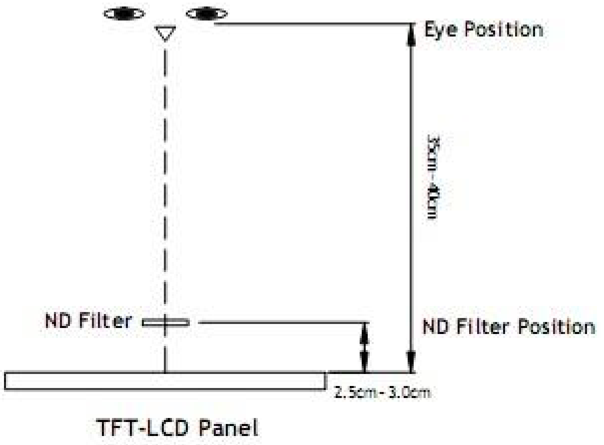
10.9.1. There should be no damage of the outside carton box, each packaging box should have one identical label.

10.9.2. Modules inside package box should have compliant mark.

10.9.3. 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.

11. 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℃, 60min, 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.	-	GB/T5170.14 -2009
8	Electrical Static Discharge	Air:±4KV 150pF/330Ω 5 times Contact:±2KV 150pF/330Ω 5 times	2	GB/T17626.2 -2018
9	**Drop Test (Packaged)**	Height:80 cm,1 corner, 3 edges, 6 surfaces.	-	GB/T2423.8 -1995

Note1. No defection cosmetic and operational function allowable.

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

12. Precautions and Warranty

12.1. Safety

12.1.1. 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.

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

12.2. Handling

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

12.2.2. 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.

12.3. Storage

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

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

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

12.4.1. Pins of LCD and Backlight

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

12.4.1.2. Recommended Soldering Conditions

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

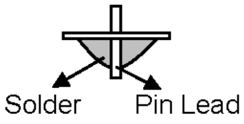
Maximum Solder Temperature: 370℃

Maximum Solder Time: 3s at the maximum temperature

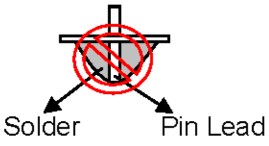
Recommended Soldering Temp: 350±20℃

Typical Soldering Time: ≤3s

12.4.1.3. Solder Wetting



Recommended



Not Recommended

12.4.2. Pins of EL

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

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

12.4.2.3. Recommended Soldering Conditions

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

Recommended Solder Temperature: 270～290℃

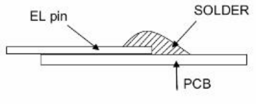
Typical Soldering Time: ≤2s

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

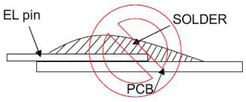
12.4.2.4. No horizontal press on the EL leads during soldering.

12.4.2.5. 180° bend EL leads three times is not allowed.

12.4.2.6. Solder Wetting

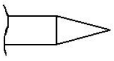


Recommended

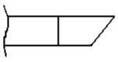


Not Recommended

12.4.2.7. The type of the solder iron:

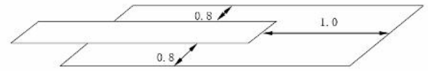


Recommended



Not Recommended

12.4.2.8. Solder Pad



12.5. Operation

12.5.1. Do not drive LCD with DC voltage

12.5.2. Response time will increase below lower temperature

12.5.3. Display may change color with different temperature

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

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

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

12.5.7. 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.

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

12.6. Static Electricity

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

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

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

12.7. Limited Warranty

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

12.7.2. 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.

12.7.3. 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.

13. Packaging

TBD