SPECIFICATIONS
FOR
LCD MODULE

CUSTOMER	
MODEL	**SCT080005-V01**
CUSTOMER APPROVED	

APPROVED BY	CHECKED BY	ORGANIZED BY
	Lr.Yin	**Wf.Luo**

RECORDS OF REVISIONS

Version	Content	Date
A0	First Issue	2020-10-21

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1. General Description

This Module SCT080005-V01 is TFT Liquid Crystal Display Module. This specification covers the delivery requirements for the liquid crystal display module delivered by quality to Customer.

1.1. Mechanical & Display Specifications

Item	Standard value	Unit
LCD Size	8	inch
Dot Matrix	1024(RGB) $\times$768	pixel
Module Size	174.00 $\times$136.00 $\times$2.45	mm
Active Area	162.05 $\times$121.54	mm
Dot Pitch	0.15825 $\times$0.15825	mm
Pixel Configuration	R.G.B. Stripe	-
Color depth	16.7M	-
Display Mode	Normally Black, Transmissive	-
Technology Type	a-Si	-
Viewing Direction	All	-
Gray Scale Inversion Direction	All	-
Driver IC	TBD	-
Interface	LVDS	-
LED Numbers	33 LEDs	-
Weight	TBD	g

1.2. Interface Pin

Pin No.	Symbol	Type	Description
1	VCOM	P	Common Voltage
2	VDD	P	Power Voltage for digital circuit
3	VDD	P	Power Voltage for digital circuit
4	NC	-	No connection
5	Reset	I	Global reset pin
6	STBYB	I	Standby mode, normally pulled high STBYB = "1", normal operation STBYB = "0", timing controller, source driver will turn off, all output are High-Z
7	GND	P	Ground
8	RXIN0-	I	- LVDS differential data input
9	RXIN0+	I	+ LVDS differential data input
10	GND	P	Ground
11	RXIN1-	I	- LVDS differential data input
12	RXIN1+	I	+ LVDS differential data input
13	GND	P	Ground
14	RXIN2-	I	- LVDS differential data input
15	RXIN2+	I	+ LVDS differential data input
16	GND	P	Ground
17	RXCLKIN-	I	- LVDS differential clock input
18	RXCLKIN+	I	+ LVDS differential clock input
19	GND	P	Ground
20	RXIN3-	I	- LVDS differential data input
21	RXIN3+	I	+ LVDS differential data input
22	GND	P	Ground
23	NC	-	No connection
24	NC	-	No connection
25	GND	P	Ground
26	NC	-	No connection
27	DIMO	O	Backlight CABC controller signal output
28	SELB	I	6bit/8bit mode select
29	AVDD	P	Power for Analog Circuit
30	GND	P	Ground
31	LED-	P	LED Cathode
32	LED-	P	LED Cathode
33	L/R	I	Horizontal inversion
34	U/D	I	Vertical inversion
35	VGL	P	Gate OFF Voltage
36	CABCEN1	I	CABC H/W enable
37	CABCEN0	I	CABC H/W enable
38	VGH	P	Gate ON Voltage
39	LED+	P	LED Anode

40	LED+	P	LED Anode

Note1: TYPE definition: I-----Input O---Output P----Power/Ground

Note2: If LVDS input data is 6 bits ,SELB must be set to High;

If LVDS input data is 8 bits ,SELB must be set to Low.

Note3: When CABC_EN="00", CABC OFF.

When CABC_EN="01", user interface image.

When CABC_EN="10", still picture.
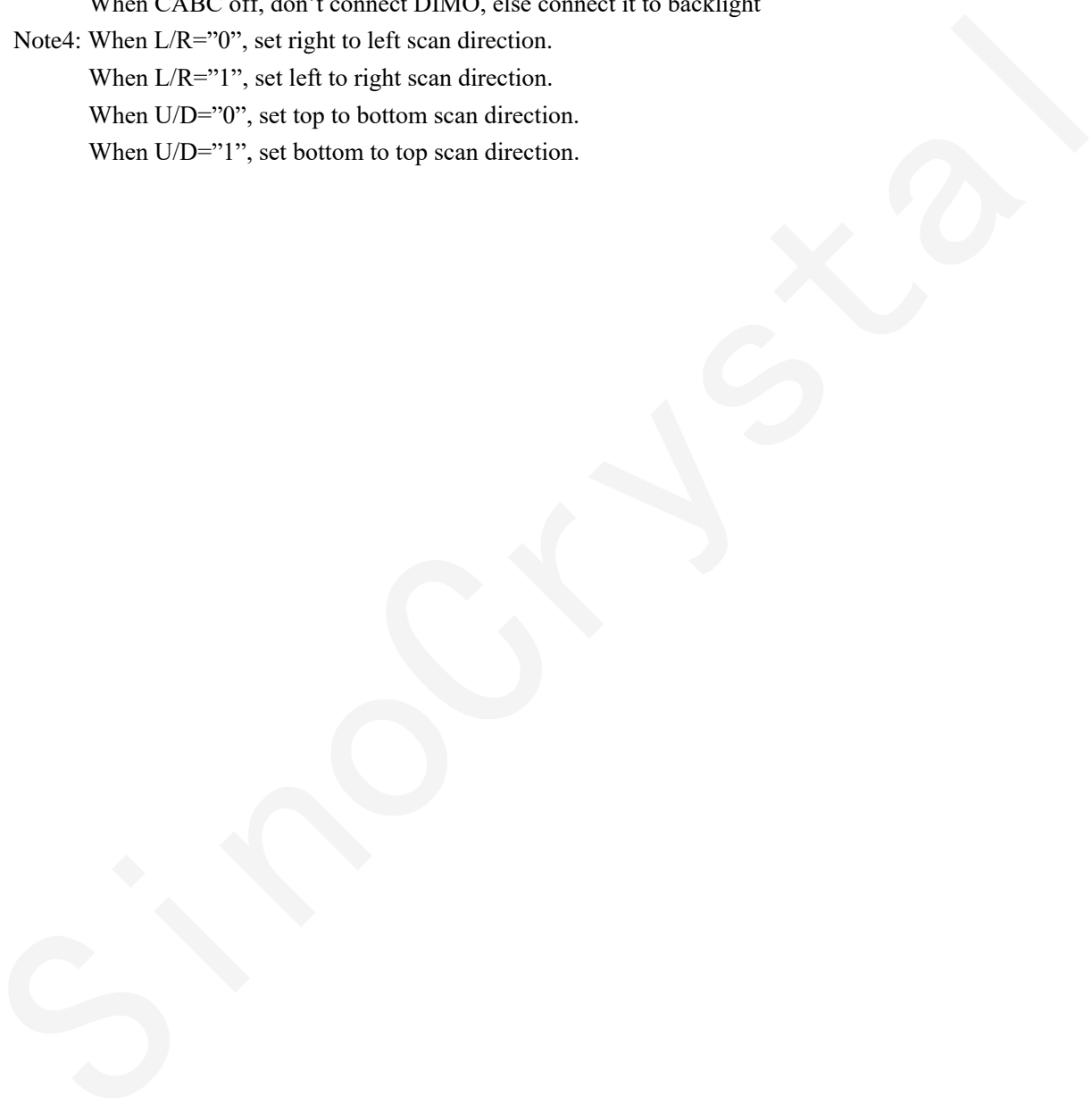
When CABC_EN="11", moving image.

When CABC off, don't connect DIMO, else connect it to backlight

Note4: When L/R="0", set right to left scan direction.

When L/R="1", set left to right scan direction.

When U/D="0", set top to bottom scan direction.

When U/D="1", set bottom to top scan direction.

2. Electrical Characteristics

2.1. Absolute Maximum Rating

Item	Symbol	Min.	Max.	Unit	Remark
Power Supply Voltage	VDD	-0.3	5	V	
	AVDD	6.5	13.5	V	
	VGH	-0.3	40	V	
	VGL	-20	0.3	V	
	VGH-VGL	-	40	V	
Input Signal Voltage	V_{IN}	-0.3	VDD	V	Note 1
Operating Temperature	T_{OPR}	-10	+60	℃	Ambient
Storage Temperature	T_{STG}	-20	+70	℃	Ambient

Note1: VIN represent IO

2.2. DC Electrical Characteristics

2.2.1. Driving TFT LCD Panel

GND=0V, Ta=25℃

Item	Symbol	Min.	Typ.	Max.	Unit	Remark
Power Supply Voltage	VDD	3.0	3.3	3.6	V	
	AVDD	9.8	10	10.2	V	
	VGH	18.6	18.9	19.2	V	
	VGL	-8.1	-7.8	-7.5	V	
Logic High level input voltage	V_{IH}	0.7VDD	-	VDD	V	
Logic Low level input voltage	V_{IL}	0	-	0.3VDD	V	
Power Consumption	I_{CC}	-	TBD	-	mA	

2.2.2. Driving Backlight

Ta=25℃

Item	Symbol	Min.	Typ.	Max.	Unit	Remark
Forward Current	I_F	198	220	242	mA	Note1
Forward Current Voltage	V_F	8.3	9.3	10.2	V	
Operating Life Time	-	-	20000	-	hrs	

Note 1: One LED: I_F =20mA.

2.3. AC Electrical Characteristics

2.3.1. AC Electrical Characteristics

Parameter	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Differential input high Threshold voltage	R_{xVTH}	-	-	+0.1	V	R_{XVCM}=1.2V
Differential input low Threshold voltage	R_{xVTL}	-0.1	-	-	V	
Input voltage range (singled-end)	R_{xVIN}	0	-	2.4	V	
Differential input common mode voltage	R_{xVCM}	$|V_{ID}|/2$	-	$2.4-|V_{ID}|/2$	V	
Differential voltage	$|V_{ID}|$	0.2	-	0.6	V	
Differential input leakage current	RV_{xliz}	-10	-	+10	uA	
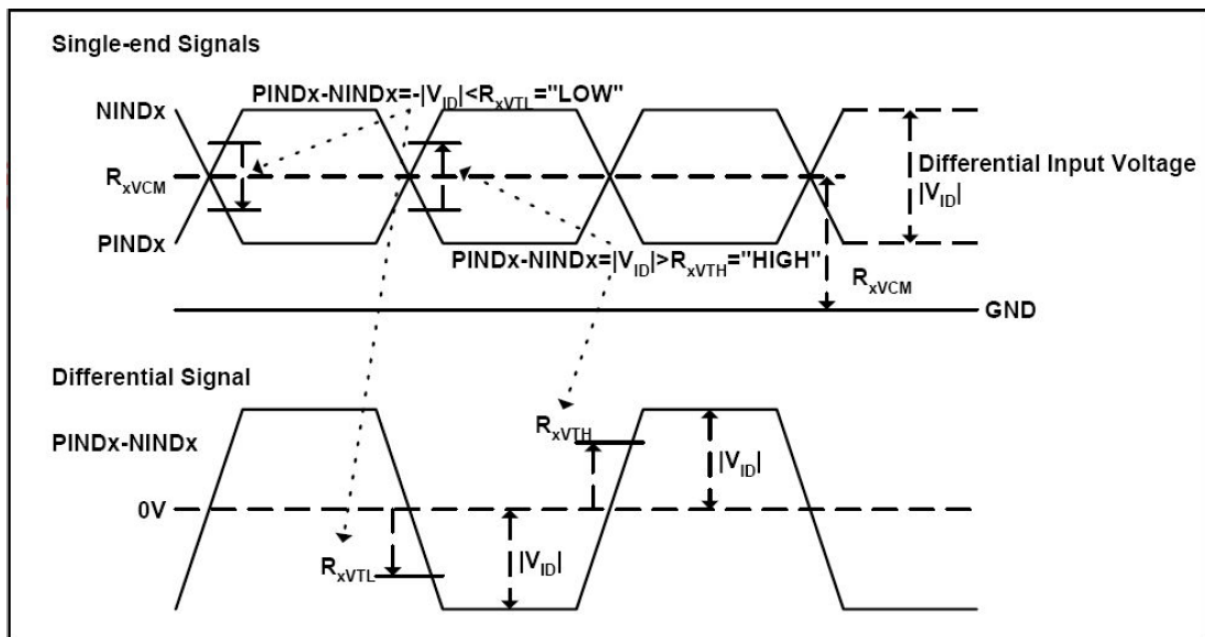
2.3.2. Timing

Item	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Clock Frequency	fclk	52	65	71	MHz	Frame rate =TBD
Horizontal display area	thd	1024				
HS period time	th	1114	1344	1400	DCLK	
HS Blanking	thb+thfp	90	320	376	DCLK	
Vertical display area	tvd	768				
VS period time	tv	778	806	845	H	
VS Blanking	tvb+tvfp	10	38	77	H	
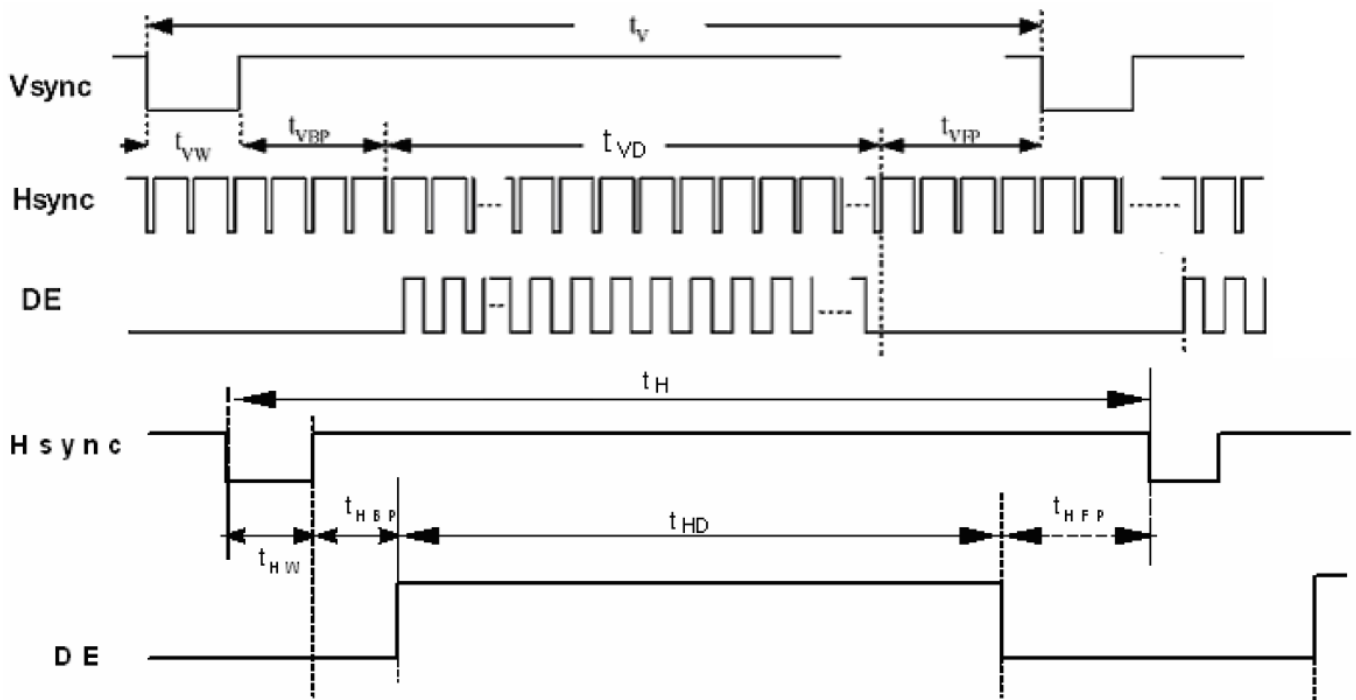
2.3.3. Data Input Format

6bit LVDS Input

IND0	R0	G0	R5	R4	R3	R2	R1	R0	G0
IND1	G1	B1	B0	G5	G4	G3	G2	G1	B1
IND2	B2	DE	-	-	B5	B4	B3	B2	DE

8bit LVDS Input

IND0	R0	G0	R5	R4	R3	R2	R1	R0	G0
IND1	G1	B1	B0	G5	G4	G3	G2	G1	B1
IND2	B2	DE	-	-	B5	B4	B3	B2	DE
IND3	R6	-	B7	B6	G7	G6	R7	R6	-
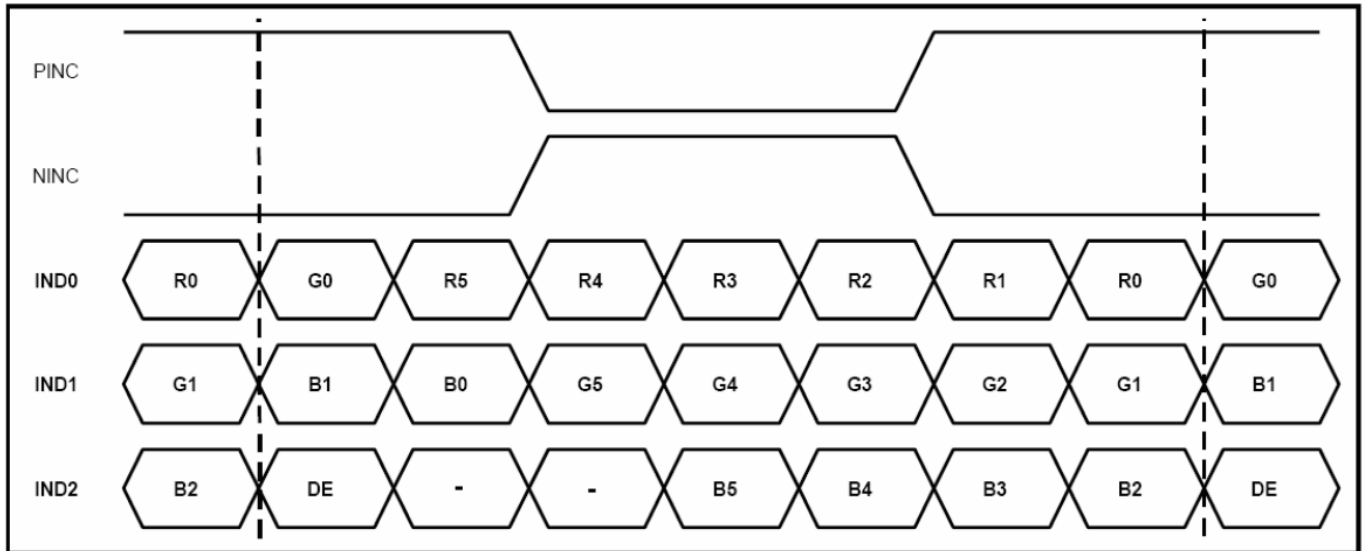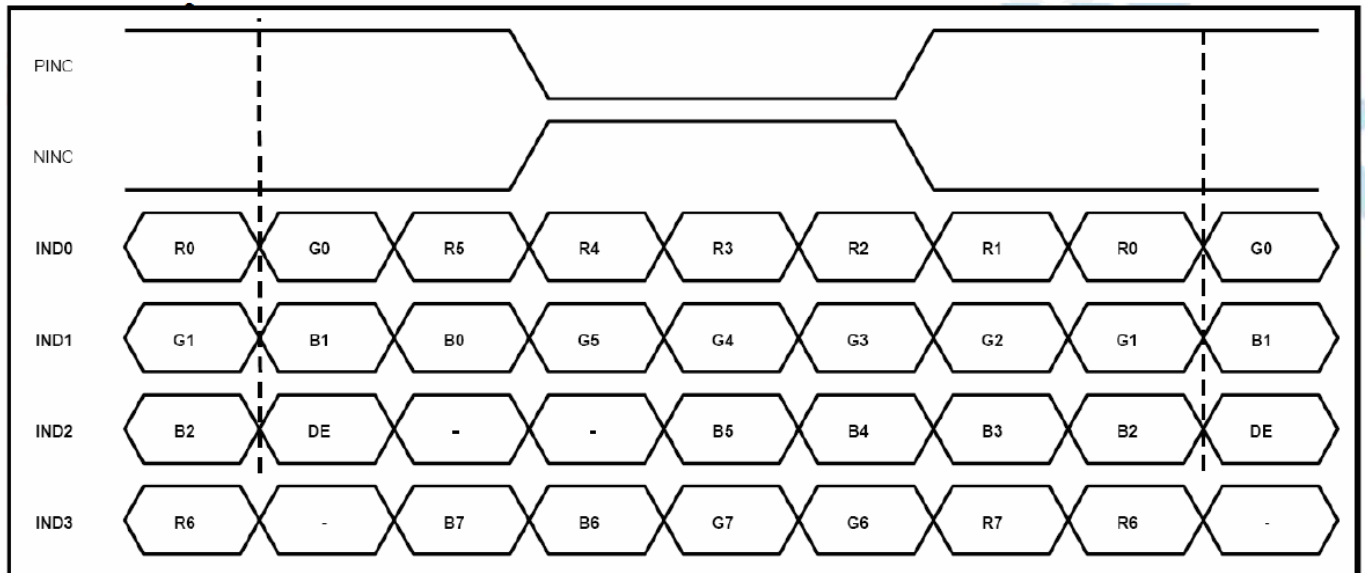
Note: Support DE timing mode only, SYNC mode not supported

3. Optical Characteristics

Item		Symbol	Condition	Min.	Typ.	Max.	Unit	Remark
Viewing angle		θL	CR≥10	75	85	-	degree	Note5
		θR		75	85	-		
		θT		75	85	-		
		θB		75	85	-		
Contrast Ratio		CR	θ=0° optimal	600	800	-	-	Note3
Response Time		T_R	Ta=25℃	-	10	20	ms	Note2
		T_F		-	15	30		
Color Chromaticity	White	x	θ=0°	-0.05	0.288	+0.05	-	Note6
		y			0.326			
	Red	x			-			
		y			-			
	Green	x			-			
		y			-			
	Blue	x			-			
		y			-			
Uniformity		U	θ=0°	70	80	-	%	Note7
Luminance		L	I_F=Typ.	300	350	-	cd/m²	Note8

Note:

1. Test equipment setup

After stabilizing and leaving the panel alone at a given temperature for 30 minutes, the measurement should be executed. Measurement should be executed in a stable, windless, and dark room. Optical specifications are measured by Topcon BM-5A with a viewing angle of 1 °at a distance of 50cm and normal direction.

2. Definition of response time: TR and TF

The figure below is the output signal of the photo detector.
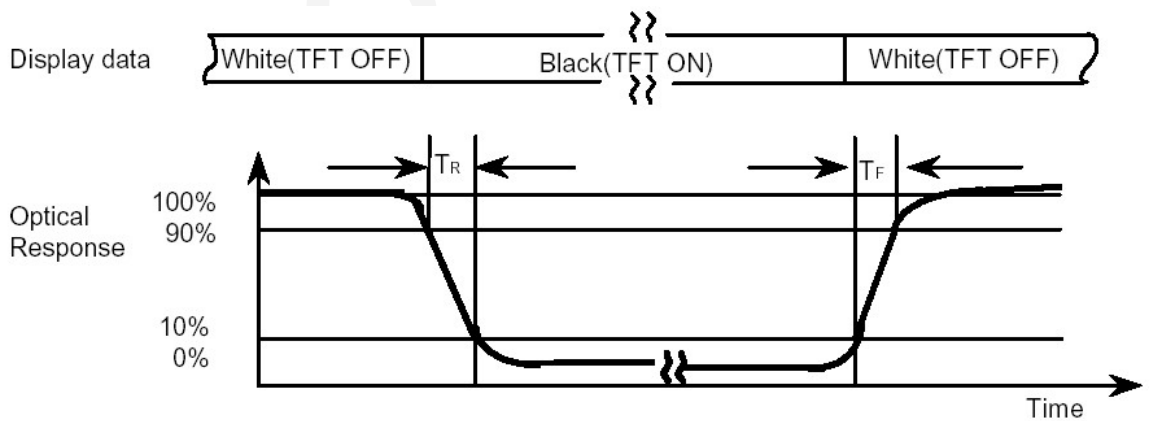
3.Definition of contrast ratio

$$CR= \frac{\text{Luminance with all pixel white}}{\text{Luminance with all pixel black}}$$

4.The 100% transmission is defined as the transmission of LCD panel when all the input terminals of module are electrically opened.

5. Definition of viewing angle:
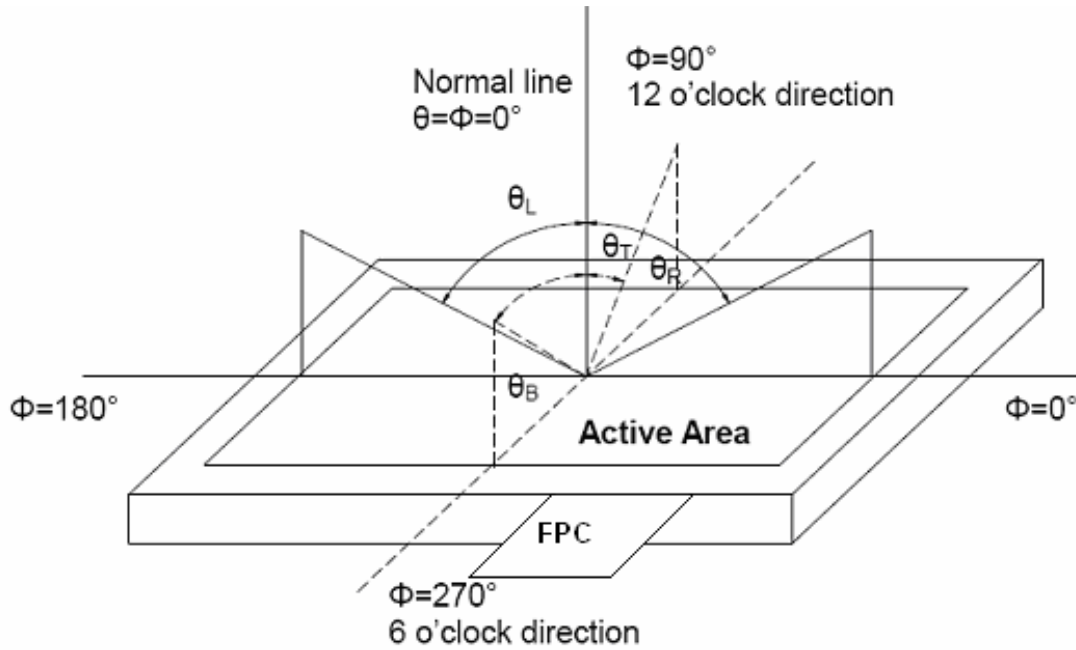
6. Definition of color chromaticity (CIE1931)

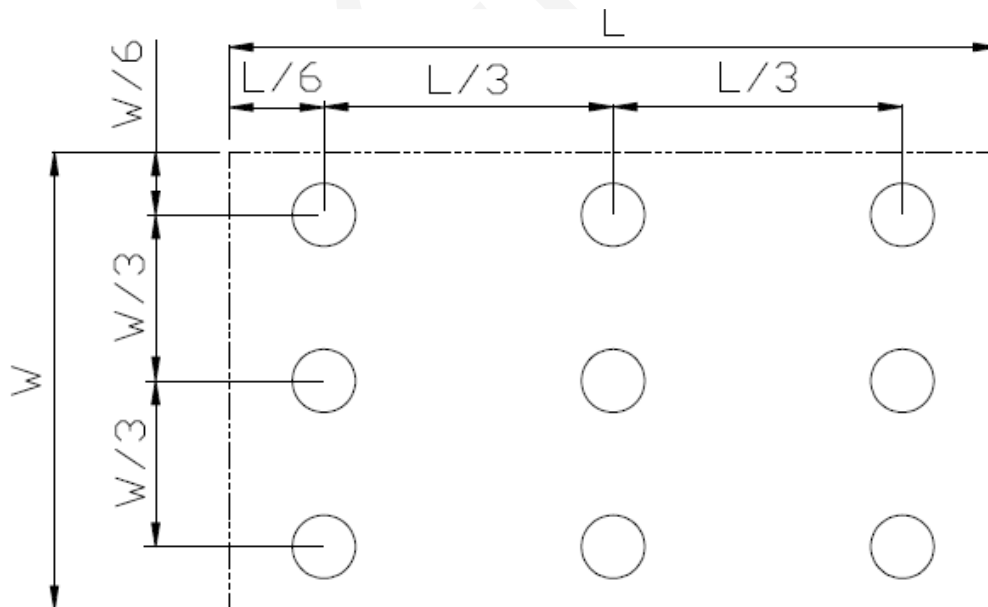Color coordinates measured at center point of LCD.

7. Definition of Luminance Uniformity

Active area is divided into 9 measuring areas (Refer Fig.). Every measuring point is placed at the center of each measuring area.

Luminance Uniformity(U) = Lmin / Lmax

L-------Active area length

W----- Active area width

Lmax: The measured maximum luminance of all measurement position.

Lmin: The measured minimum luminance of all measurement position.

8. Definition of Luminance:

Measure the luminance of white state at center point.

4. Reliability

4.1. Reliability Condition

No.	Item	Condition	Remark
1	High temperature Operating	60℃, 240hrs	Finish product (With polarizer)
2	Low temperature Operating	-10℃, 240hrs	Finish product (With polarizer)
3	High temperature Storage	70℃, 240hrs	Finish product (With polarizer)
4	Low temperature Storage	-20℃, 240hrs	Finish product (With polarizer)
5	High temperature & Humidity Storage	40℃, 90%RH, 240hrs	Finish product (With polarizer)
6	Thermal Shock Storage (No operation)	-30℃, 30min. <=> 80℃,30min. 100 Cycles	Finish product (With polarizer)
7	ESD Test	Voltage: +8KV R:330Ω, C:150pF Air discharge, 10 times	Finish product (With polarizer)
8	Vibration Test	0.015G*G/Hz from 5-200HZ, -6dB/Octave from 200-500HZ 2 hours for each direction of X. Y. Z. (6 hours for total)	Finish product (With polarizer)
9	Drop Test	Packed, 60cm free fall 1 corner, 3 edges, 6 surfaces	Finish product (With polarizer)

*One single product test for only one item.
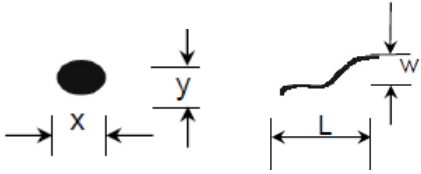
* Judgment after test: keep in room temperature for more than 2 hours.

 - Current consumption < 2 times of initial value

 - Contrast > 1/2 initial value

 - Function: work normally

4.2. Inspection plan

Class	Item	Judgment	Class
Packing & Indicate	1.Outside and inside package	"Model no.", "lot no." and" quantity" should indicate on the package.	Minor
	2.Model mixed and quantity	Other model mixed ...... rejected. Quantity short or over ...... rejected.	Critical
	3.Product indication	"Model no." should indicate on the product	Major
Assembly	4.Dimension,LCD glass scratch and scribe defect	According to specification or drawing	Major
Appearance	5.Viewing area	Polarizer edge or LCD's sealing line is visible in the viewing area ...... rejected	Minor
	6.Blemish,black spot, white spot in the LCD and LCD glass cracks	According to standard of visual inspection (inside viewing area)	Minor
	7.Blemish,black spot White spot and scratch on the polarizer	According to standard of visual inspection (inside viewing area)	Minor
	8.Bubble in polarizer	According to standard of visual inspection (inside viewing area)	Minor
	9.LCD's rainbow color	Strong deviation color (or Newton ring) of LCD ...... rejected. Or according to limited sample (if needed, and inside viewing area)	Minor
	10.FPC	Burned area or wrong part number is on FPC. The symbol, character, and mark of FPC are unidentifiable. The stripped solder mask, A>1.0mm. 0.3mm < stripped solder mask or visible circuit, A<1.0mm,and the number is ≧4 pieces. Particle between circuits in solder mask. Circuit is peeled off or cracked. Any circuit risen or exposed. 0.2mm< Area of solder ball, A is ≦0.4mm,the number of solder ball is ≧3 pieces. The magnitude of solder ball, A is > 0.4mm.	Minor
Electrical	11.Electrical and optical characteristics (contrast, VOP, chromaticity etc.)	According to standard of visual inspection (inside viewing area)	Critical
	12.Missing pattern	Missing dot, line, character ...... rejected	Critical
	13.Short circuit, wrong pattern display	Non display, wrong pattern display, current consumption out of specification ...... rejected	Critical
	14.Pin hole, pattern deformity	According to standard of visual inspection	Minor
	15.Black spot, white spot, black line, white line, slant line, background uneven, color uneven	Strong deviation color ...... rejected Or according to limited sample full off screen (all black) ...... disregards	Minor
	16.Stick image (retention image)	Fixed test picture within two hours ...... rejected	Minor

4.3. Standard of visual inspection

Class	Item	Judgment
Minor	Blemish, black spot, white spot in the LCD. Blemish, black spot, white spot and scratch on the polarizer. Round type Line type	(A) Round type Unit: mm | Diameter (mm)	Acceptable Quantity
---	---
0.25 < A	0 | Note: A = (x + y)/2 (mm) (B) Line type Unit: mm | Length	Width	Acceptable Quantity
-	W ≦ 0.03	Acceptable
L<5	0.03<W ≦ 0.07	3
L<5	0.03<W ≦ 0.07	1
-	0.07<W	Follow round type	
Minor	Bubble in polarizer	Unit: mm | Diameter (mm)	Acceptable Quantity
---	---
A < 0.3	Acceptable
0.3 < A < 0.5	1
0.5 < A	0	
Minor	Pin hole, Pattern deformity	Unit: mm | Diameter (mm)	Acceptable Quantity
---	---
0.4 < A	0	

5. Precautions

5.1. Handling Precautions

(1) Protect the panel from static, it may cause damage to the CMOS Gate Array IC.

(2) Use fingerstalls with soft gloves in order to keep display clean during the incoming inspection and assembly process.

(3) If the liquid crystal material leaks from the panel, it should be kept away from the eyes or mouth. In case of contact with hands, legs or clothes, it must be washed away thoroughly with soap.

(4) The desirable cleaners are water, IPA (Isopropyl Alcohol) or Hexane. Don't use Ketone type materials (ex. Acetone), Ethyl alcohol, Toluene, Ethyl acid or Methyl chloride. It might permanent damage to the polarizer due to chemical reaction.

(5) Pins of I/F connector shall not be touched directly with bare hands.

(6) Refrain from strong mechanical shock and / or any force to the panel. In addition to damage, this may cause improper operation or damage to the panel.

(7) Note that polarizers are very fragile and could be easily damaged. Do not press or scratch the surface harder than a B pencil lead.

(8) Wipe off water droplets or oil immediately. If you leave the droplets for a long time, staining and discoloration may occur.

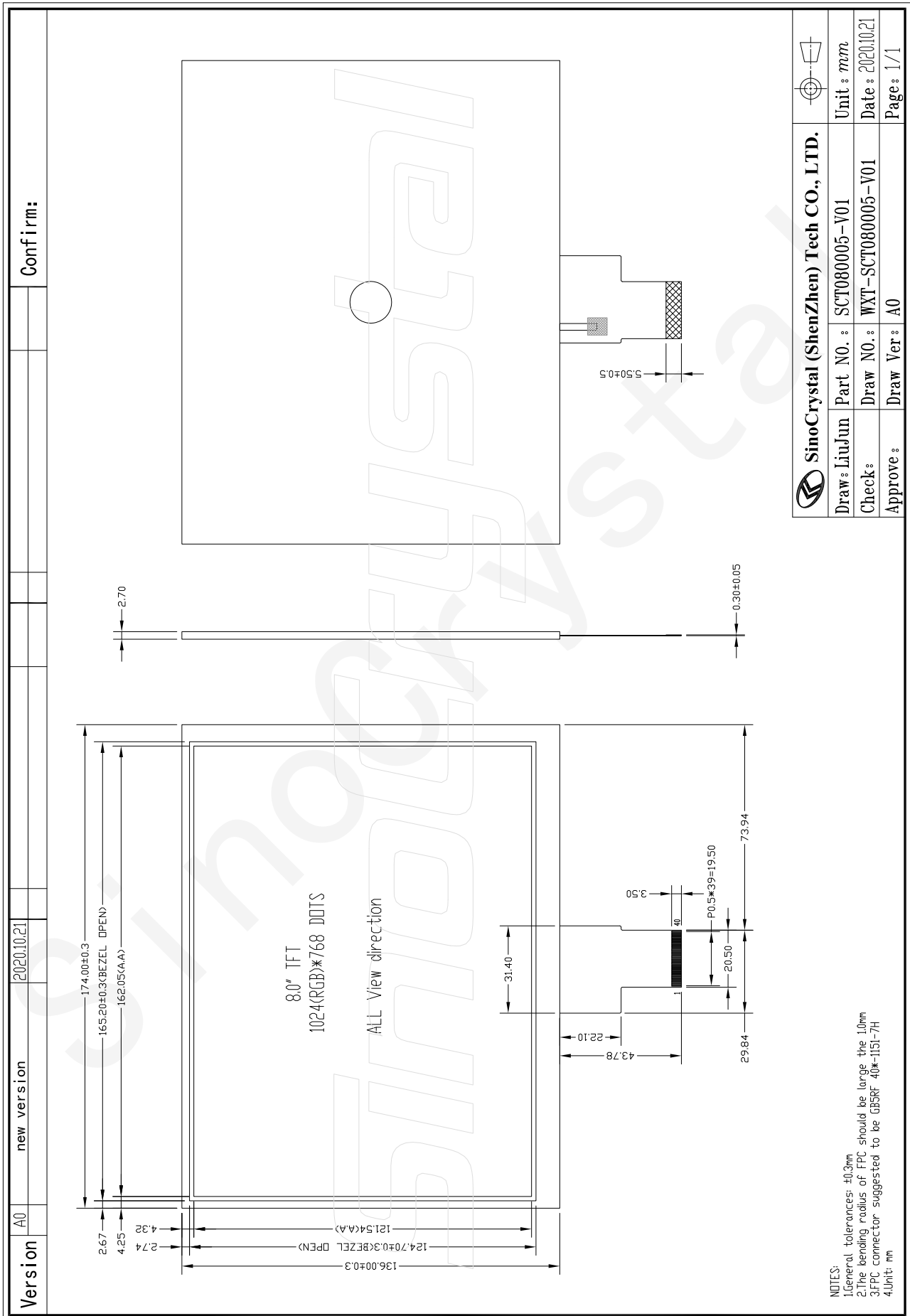(9) If the surface of the polarizer is dirty, clean it using some absorbent cotton or soft cloth.

5.2. Storage Precautions

(1) Do not leave the panel in high temperature, and high humidity for a long time. It is highly recommended to store the panel with temperature from 0 to 35℃ and relative humidity of less than 70%.

(2) The panel shall be stored in a dark place. It is prohibited to apply sunlight or fluorescent light during the store.

5.3. Operation Precautions

(1) The LCD shall be operated within the limits specified. Operation at values outside of these limits may shorten life, and/or harm display images.

(2) Do not exceed the absolute maximum rating value. (the supply voltage variation, Input voltage variation in part contents and environmental temperature and so on). Otherwise the panel may be damaged.

(3) If the panel displays the same pattern continuously for a long period of time, it can be the situation when the image" Sticks" to the screen.

6. Outline Dimension

Draw: LiuJun	Part NO.: SCT080005-V01	Unit: mm
Check:	Draw NO.: WXT-SCT080005-V01	Date: 2020.10.21
Approve:	Draw Ver: A0	Page: 1/1

SinoCrystal (ShenZhen) Tech CO., LTD.

NOTES:
1.General tolerances: ±0.3mm
2.The bending radius of FPC should be large the 1.0mm
3.FPC connector suggested to be GB5RF 40*1151-7H
4.Unit: mm

7. Packing method

7.1. Packing Quantity

TBD.

7.2. Flowing chart

TBD.