深圳市一众显示科技有限公司

SHEN ZHEN TEAM SOURCE DISPLAY TECH. CO, TD.

TFT-LCD Module Specification

Module NO.: TST070WSOE-E02

Version： V1.0

☐ APPROVAL FOR SPECIFICATION ☐ APPROVAL FOR SAMPLE

For Customer’s Acceptance：	
Approved by	Comment

Team Source Display：		
Presented by	Reviewed by	Organized by

Version No.	Date	Content	Remark
V1.0	2021-11-16	First Released	

Contents

1. GENERAL DESCRIPTION

1.1 Product Introduction

TST070WSOE-E02 is a color active matrix thin film transistor(TFT) liquid crystal display(LCD) single chip and Sub Chips that uses amorphous silicon TFT as a switching device. This TFT LCD panel has a 6.95 inch diagonally measured active display area with WSVGA resolution (1024 horizontal by 600 vertical pixels)

1.2 Product Features

- 6.95” TFT-LCD Panel
- Supported WSVGA Resolution
- Compatible with ROHS Standard

1.3 General Information

Item	Specification	Unit	Note
Active Area	154.2144(H)*85.92 (V)	mm	Single chip
Cell Size	161.8144(H)*94.52(V)	mm	Single chip
Number of Pixels	1024 *RGB* 600	pixel	Single chip
Pixel Pitch (Sub Pixel)	50.2×143.2	um	Single chip
Pixel Arrangement	RGB Island	-	
Display Mode	Normally White	-	
Glass Thickness (Array/CF)	0.4/0.4	mm	
Response Time	25(Typ.)	ms	
Module Dimension	164.9×100	mm	
White Luminance	220 (Typ.)	cd/m^2	
Contrast Ratio	800:1(Typ.)	-	
NTSC	50(Typ.)	%	
Driver IC	EK73217BCGA	-	Reference
Interface	RGB	-	

2. ABSOLUTE MAXIMUM RATINGS

The followings are maximum values which, if exceeded, may cause damage to the unit.

Item	Symbol	Value			Unit
		Min.	Typ.	Max.	
Digital Power Supply Voltage	VDD	--	3.3	--	V
Analog Power Supply Voltage	AVDD	--	12	--	
TFT Gate ON Voltage	VGH	14.5	15	15.5	V
TFT Gate OFF Voltage	VGL	-10.5	-10	-9.5	V
TFT Common Voltage	Vcom	4.05	4.55	5.05	V
Operating Temperature	Top	-20	--	70	℃
Storage Temperature	Tst	-20	--	70	℃

Note：

1. That the stress exceeds the Limiting Value listed above it may cause the driver IC permanent damage. These values are for stress only.IC should be operated under the DC/AC Characteristic conditions for normal operation. If these conditions are not met, IC operation may be error and the reliability may be deteriorated.
2. Parameters are valid over operating temperature range unless otherwise specified. All voltages are with respect to VSS unless otherwise noted.
3. Insure the voltage levels of VDDI, VDD, PVDD always matches the correct relation: 3.0V≦ VDDI VDD = PVDD ≦ 3.6V
4. VIN should be less than or equal to 3.6V. (VIN ≤ 3.6V)

3. BACKLIGHT CHARACTERISTICS

Item	Symbol	Min	Typ	Max	Unit	Condition
Forward voltage	Vf	8.4	9.6	10.5	V	If=120mA
Luminance	Lv	5500	6000	-	cd/m^2	If=120mA
Number of LED	--	18			Piece	--
Connection mode	P	3 serial 6 parallel			--	--
Uniformity	--	80	85	--	%	--

4. ELECTRICAL SPECIFICATIONS

4.1 Interface Connector

Pin No.	Symbol	Description	Remarks
1	LED+	LED Anode	-
2,3	LED+	LED Anode	-
4	LED-	LED Cathode	-
5	LED-	LED Cathode	-
6	GND	Ground	-
7	VCOM	Common Voltage	-
8	DVDD	Digital Power	-
9	MODE	DE/SYNC mode select.	-
10	DE	Data Enable signal	-
11	VS	Vertical sync input. Negative polarity	-
12	HS	Horizontal sync input. Negative polarity	-
13	B7	Blue Data	-
14	B6	Blue Data	-
15	B5	Blue Data	-
16	B4	Blue Data	-
17	B3	Blue Data	-
18	B2	Blue Data	-
19	B1	Blue Data	-
20	B0	Blue Data	-
21	G7	Green Data	-
22	G6	Green Data	-
23	G5	Green Data	-
24	G4	Green Data	-
25	G3	Green Data	-
26	G1	Green Data	-
27	G0	Green Data	-

28	R7	Red Data	-
29	R6	Red Data	-
30	R5	Red Data	-
31	R4	Red Data	-
32	R3	Red Data	-
33	R2	Red Data	-
34	R1	Red Data	-
35	R0	Red Data	-
36	GND	Ground	-
37	DCLK	Colock signal	-
38	GND	Ground	-
39	L/R	Left or Right Display Control	-
40	U/D	Up / Down Display Control	-
41	VGH	Positive Power for TFT	
42	VGL	Negative Power for TFT	
43	AVDD	Analog Power	
44	RESET	Global reset pin. (3.3V)	
45	NC	Not connect	
46	VCOM	Common Voltage	
47	DITH	Dithering setting	
48	GND	Ground	
49	NC	Not connection	
50	NC	Not connection	

4.2 Parallel RGB input timing

4.2.1 DE mode

Parameter	Symbol	Spec.			Unit
		Min.	Typ.	Max.	
DCLK Frequency	fclk	40.8	51.2	67.2	MHz
Horizontal Display Area	thd		1024		DCLK
HSD Period	th	1114	1344	1400	DCLK
HSD Blanking	thb+ thfp	90	320	376	DCLK
Vertical Display Area	tvd		600		T_H
VSD Period	tv	610	635	800	T_H
VSD Blanking	tvbp+ tvfp	10	35	200	T_H

4.2.2 HV mode

Horizontal timing

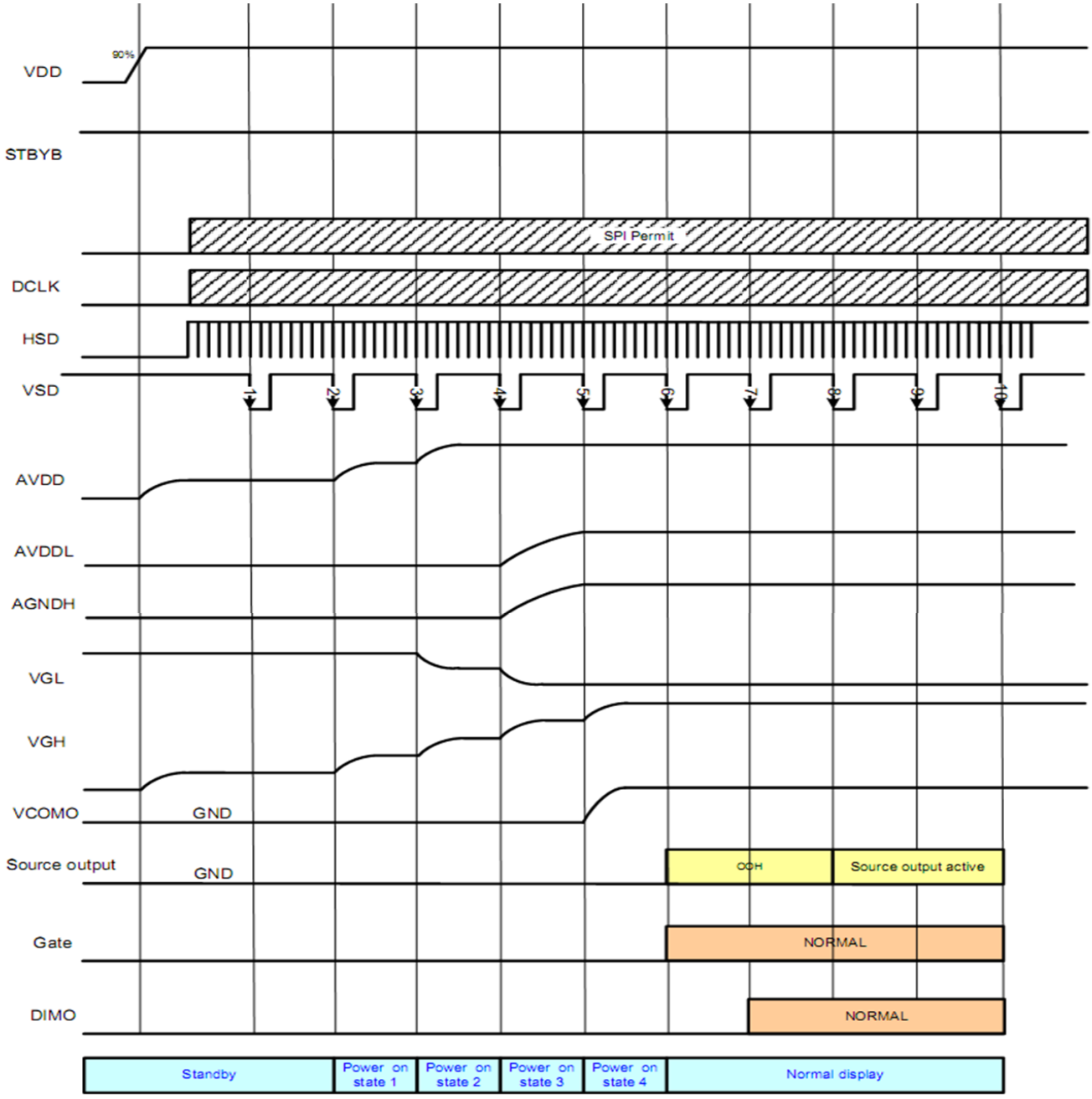
Parameter	Symbol	Spec.			Unit
		Min.	Typ.	Max.	
DCLK Frequency	fclk	44.9	51.2	63	MHz
Horizontal Display Area	thd		1024		DCLK
HSD Period	th	1200	1344	1400	DCLK
HSD Pulse Width	thpw	1	-	140	DCLK
HSD Back Porch	thbp		160		DCLK
HSD Front Porch	thfp	16	160	216	DCLK

Vertical timing

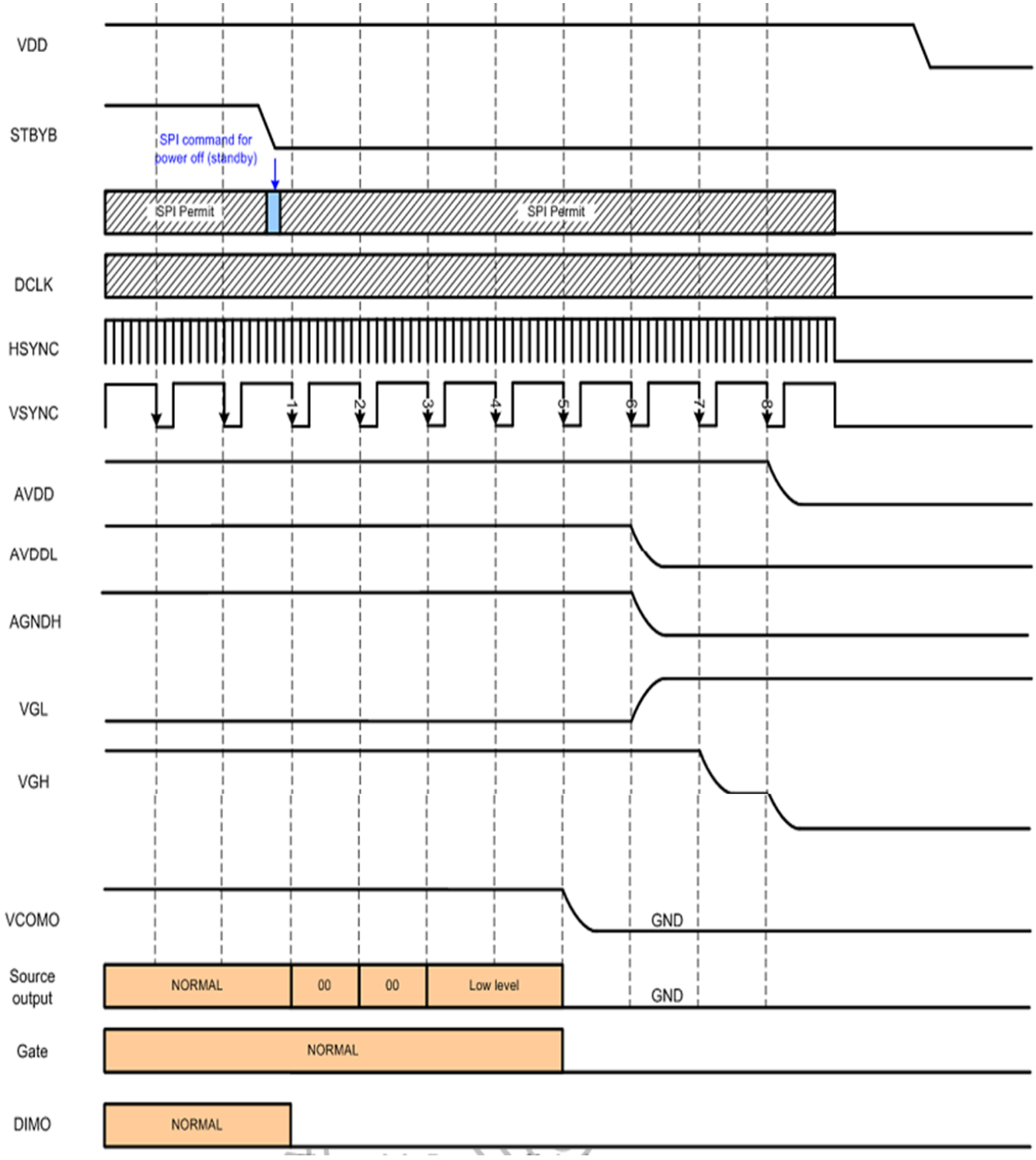
Parameter	Symbol	Spec.			Unit
		Min.	Typ.	Max.	
Vertical Display Area	tvd		600		T_H
VSD Period	tv	624	635	750	T_H
VSD Pulse Width	tvpw	1	-	20	T_H
VSD Back Porch	tvbp		23		T_H
VSD Front Porch	tvfp	1	12	127	T_H

4.3 Power on / Power off Sequence

4.3.1 Power on sequence



4.3.2 Power off sequence



5. OPTICAL CHARACTERISTICS

5.1 Optical Specification

Item		Symbol	Condition	Min.	Typ.	Max.	Unit	Note
Contrast		CR	θ =0°	600	800	-	-	(1)(2)
Response time		T_{R+} T_F			25	40	ms	(1)(3)
Color gamut	(%)	NTSC		45	50	-	%	(1)(2)
Color chromaticity (CIE1931)	White	W_x		-0.02	0.278	+0.02	-	(1)(4)
		W_y			0.291			
	Red	R_x			0.582			
		R_Y			0.361			
	Green	G_x			0.320			
		G_Y			0.572			
	Blue	B_x			0.155			
		B_Y			0.050			
Viewing angle	Hor.	Θ_L	CR>10	—	45	—	Deg	(1)(4) Measuring withPolarizer
		Θ_R		—	45	—		
	Ver.	Θ_U		—	20	—		
		Θ_D		—	45	—		
White Color Temperature	-		θ =0°	8000	9000	10000	K	-
White Luminance	-		θ =0°	180	220	-	cd/m^2	-
Luminance Uniformity	-		9 Points	75	80	-	%	-

Note:

(1).Measurement Setup:

The LCD module should be stabilized at given ambient temperature (25℃) for 30 minutes to avoid abrupt temperature changing during measuring. In order to stabilize the luminance, the measurement should be executed after lighting backlight 30 minutes in the windless room.

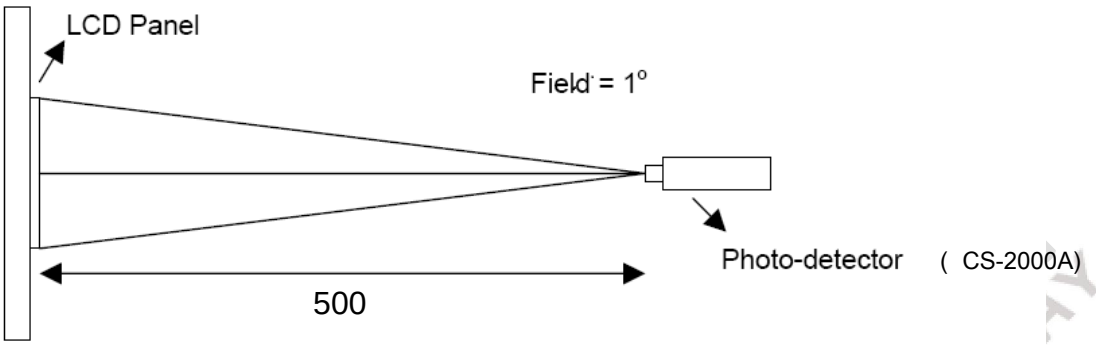


Figure 6 Measurement Setup

(2). Definition of Viewing Angle:

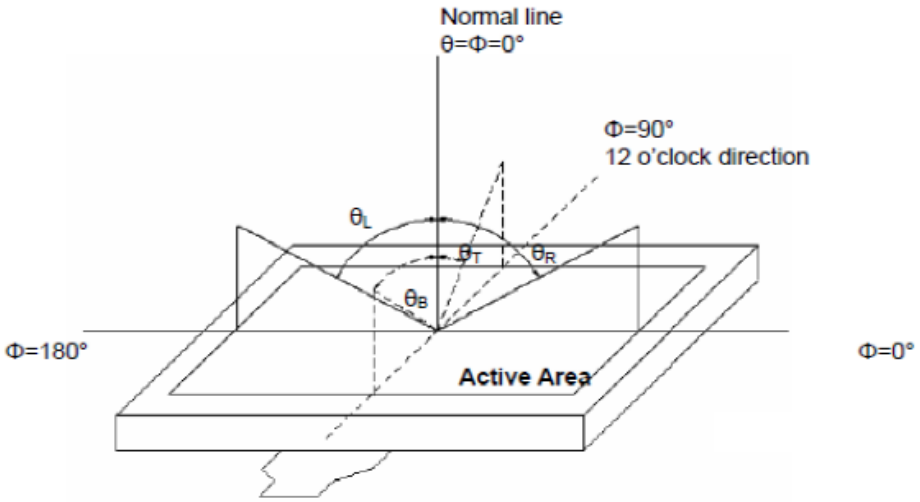


Figure 7 Definition of Viewing Angle

(3). Definition of Contrast Ratio (CR): measured at the center point of panel

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

(4). Definition of Response Time: Sum of T_R and T_F

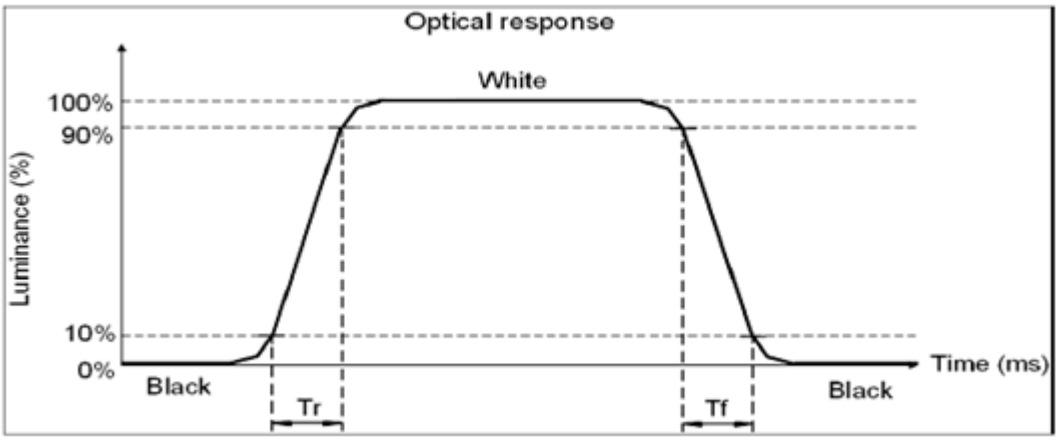


Figure 8 Definition of Response Time

(5). Definition of Luminance of White
Measure the luminance of White pattern (Ref.: Active Area)
Display Luminance=L1 (center point)
H—Active Area Width, V—Active Area Height, L—Luminance

(6). Definition of Luminance Uniformity (Ref.: Active Area)
Measure the luminance of White pattern at 9 points.
Luminance Uniformity= Min. (L1, L2, ... L5) / Max.(L1, L2, ... L5)
H—Active Area Width, V—Active Area Height, L—Luminance

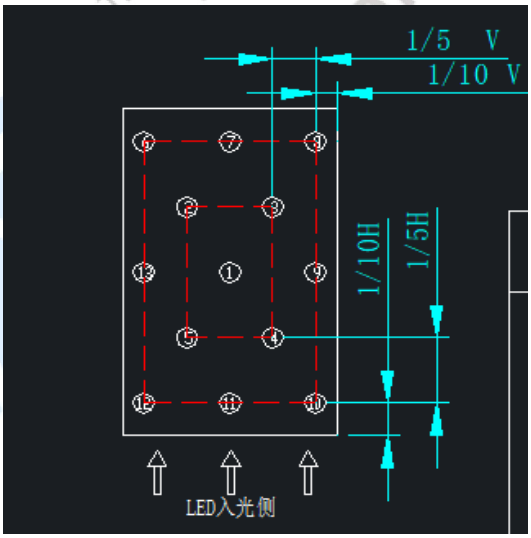
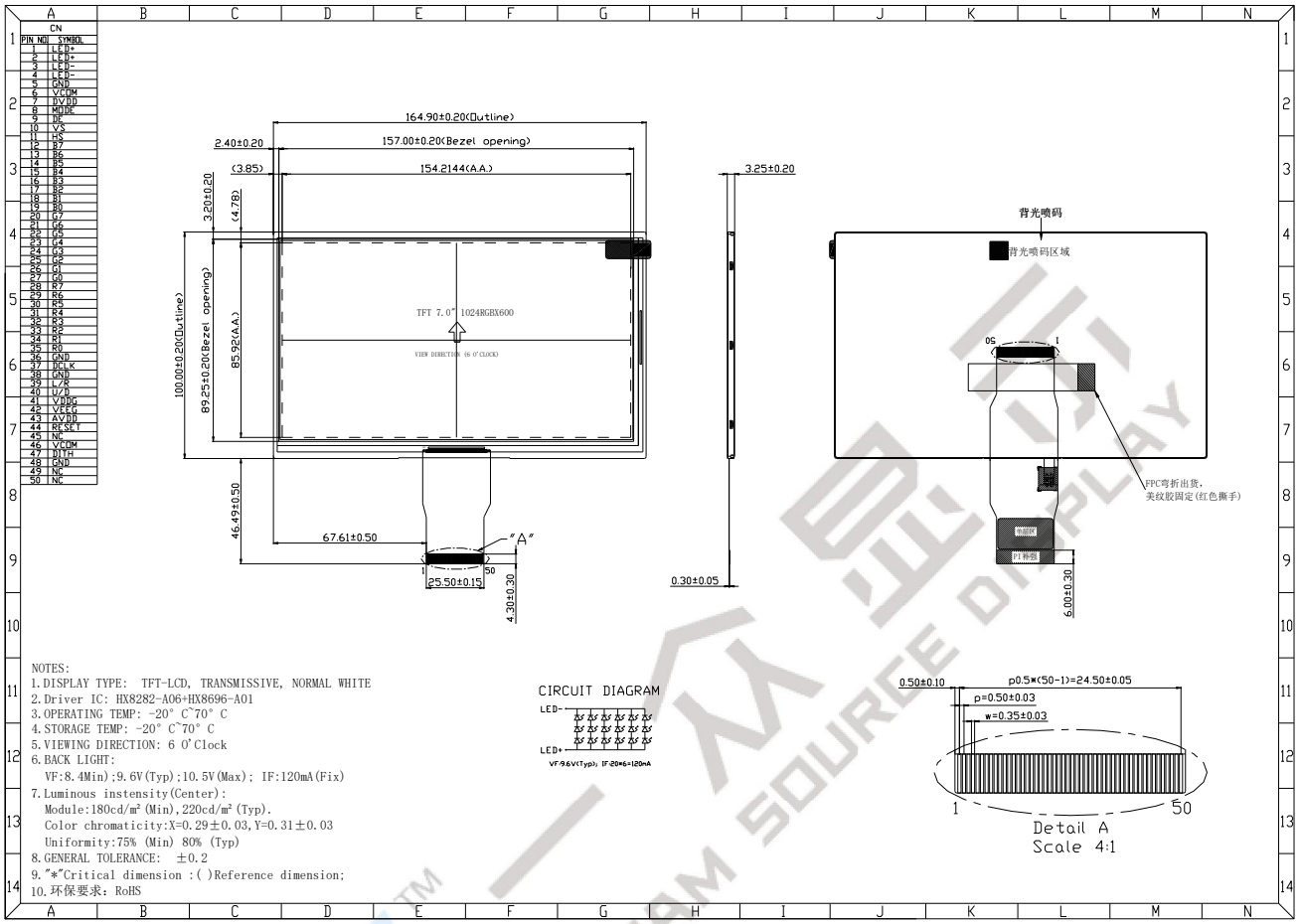


Figure 9 Measurement Locations of 5/13

6. OUTLINE DIMENSION



7. RELIABILITY TEST ITEMS

No.	Item	Conditions	Remark
1	High Temperature Storage	+70 ℃, 96h	-
2	Low Temperature Storage	-20 ℃, 96h	-
3	High Temperature Operation	+70 ℃, 96h	-
4	Low Temperature Operation	-20 ℃, 96h	-
5	HighTemperature & Humidity Operation	+40 ℃, 90%RH, 96h	-
6	Thermal shock	Ta= -20℃↔70℃(0.5hr),10cycle	-

Note: (1) All tests above are practiced at module type.

(2) There is no display function NG issue occurred, all the cosmetic specification is judged before the reliability stress.

(3)Before judgement, please release 2hours in normal conditio n when the test is finished .

8. PACKAGE SPECIFICATION

TBD