1. Summary

This technical specification applies to 8.0“color TFT-LCD panel. This product is composed of TFT LCD panel, driver ICs, and FPC and . This module follows RoHS

2. Features

High Resolution: 1,440,000 Dots (800 RGB x 600).

Application: Industrial Display, Instrument, Game Machine application and other electronic products which require high quality flat panel displays.

3. General Specifications

No.	Item	Specification	Unit
1	Screen Size	8(Diagonal)	inch
2	Display Resolution	800 RGB x 600	pixel
3	Dot Pitch	0.0675 (H) x 0.2025(V)	mm
4	Pixel Pitch	0.2025(H) x 0.2025(V)	mm
5	Active Area	162(H) x 121.5(V)	mm
6	Outline Dimension	170.90(W) x 132.40(H) x 1.43(D)	mm
7	Pixel Configuration	RGB-Stripe	--
8	Color Depth	16.7M	colors
9	LCD Type	TM TN	--
10	Interface Type	TTL	--
11	Surface Treatment	Anti-glare	--
12	View direction (Gray inversion)	6 o’clock	--
13	Weight	65	g

4. Absolute Maximum Rating

(Ta = 25 ± 2℃)

Item	Symbol	Values		Unit	Note
		Min.	Max.		
Storage Temperature	T_{ST}			℃	
Operation Temperature	T_{OP}			℃	
Digital Supply Voltage	VCC	-0.5	5	V	(1),(2)
Analog Power Supply Voltage	AVDD	-0.5	15	V	(1),(2)
TFT Device on voltage	V_{GH}	-0.3	42	V	(1),(2)
TFT Device off voltage	V_{GL}	V_{GH} - 42	0.3	V	(1),(2)

Note:

(1) voltages listed above are with respective to GND= 0V

(2) Device is subject to be damaged permanently if stresses beyond those absolute maximum ratings listed above.

5. Electrical Characteristics

5-1. Operating Conditions:

(Ta = 25 ± 2℃)

Item	Symbol	Values			Unit	Note
		Min.	Typ.	Max.		
Digital Power Supply Voltage	VCC	3.0	3.3	3.6	V	(1)
Analog Power Supply Voltage	AVDD	10.2	10.4	10.6	V	(1)
Digital Operating Current	I_{CC}	-	(20)	-	mA	(2)
Analog Operating Current	I_{AVDD}		(25)		mA	(3)
Frame Frequency	F_{Frame}	-	60	-	Hz	(4)
TFT Device on voltage	V_{GH}	-	(16)	-	V	(5)
TFT Device off voltage	V_{GL}	-	(-7)	-	V	(5)
Common Power Supply Voltage	Vr	-	(4)	-	V	(6)
Logic High Input Voltage	V_{IH}	0.7 V_{cc}	-	V_{cc}	V	
Logic Low Input Voltage	V_{IL}	0	-	0.3 V_{cc}	V	

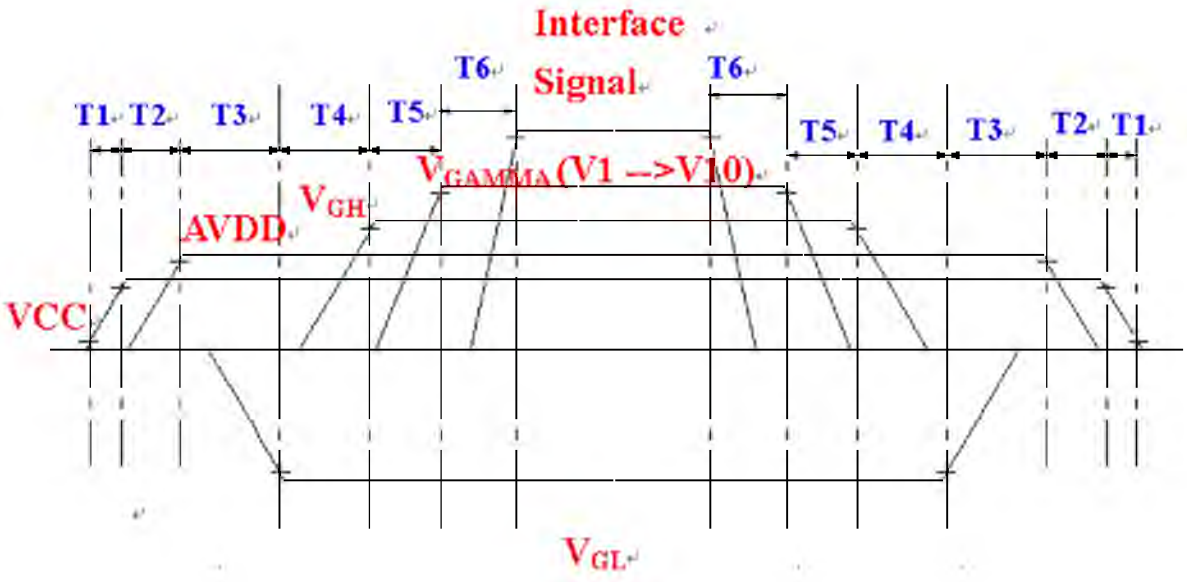
Note:

(1) Test condition: VCC = 3.3 volts ; Test Pattern : Black

(2) Please adjust VCOM to make the flicker level be minimum.

6. AC Characteristics

6.1. Power On/Off Sequence



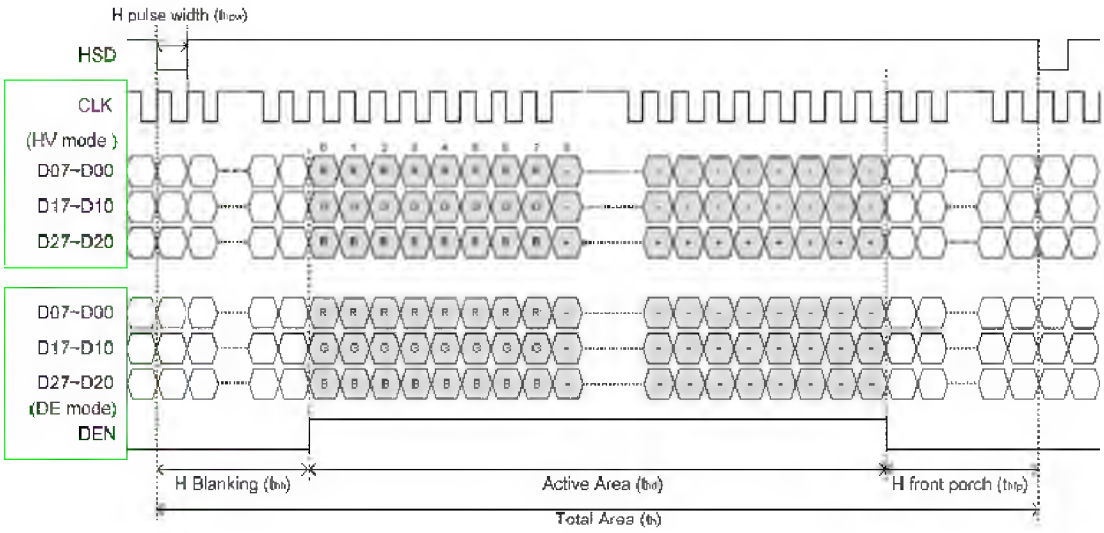
	Min.	Typ.	Max.	Unit
T1	-	-	20	ms
T2	16	-	-	ms
T3	> 0			ms
T4	>0			ms
T5	>0			ms
T6	>0			ms

6.2. Timing Characteristics

Horizontal Timing

Parameter	Symbol	Spec			Unit
		Min.	Typ.	Max.	
Horizontal Display Area	thd	-	800	-	CLK
CLK Frequency	fclk	-	40	50	MHz
One Horizontal Line	th	862	1056	1200	CLK
HS Pulse Width	thpw	1	-	40	CLK
HS Back Porch	thb		46		CLK
HS Front Porch	thfp	16	210	354	CLK

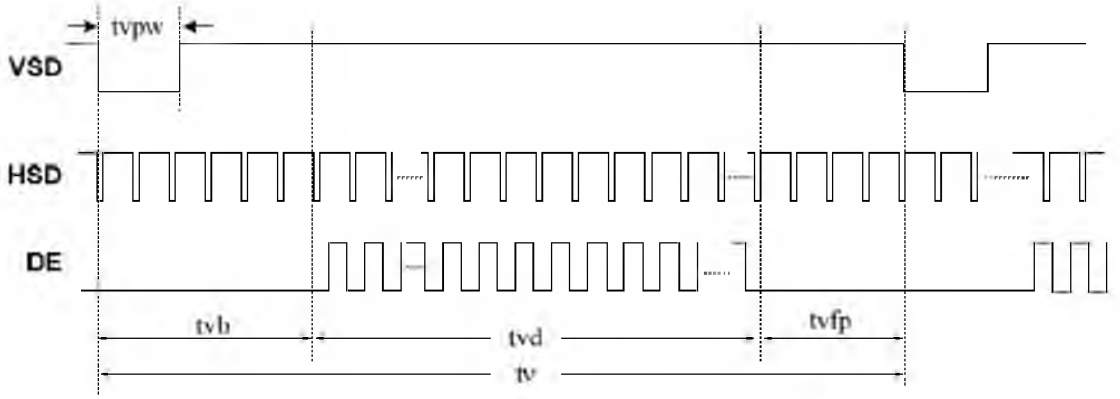
Horizontal input timing



Vertical Timing

Parameter	Symbol	Spec			Unit
		Min.	Typ.	Max.	
Vertical Display Area	tvd	-	600	-	th
VS Period Time	tv	624	635	700	th
VS Pulse Width	tvpw	1	-	20	th
VS Back Porch	tvb		23		th
VS Front Porch	tvfp	1	12	77	th

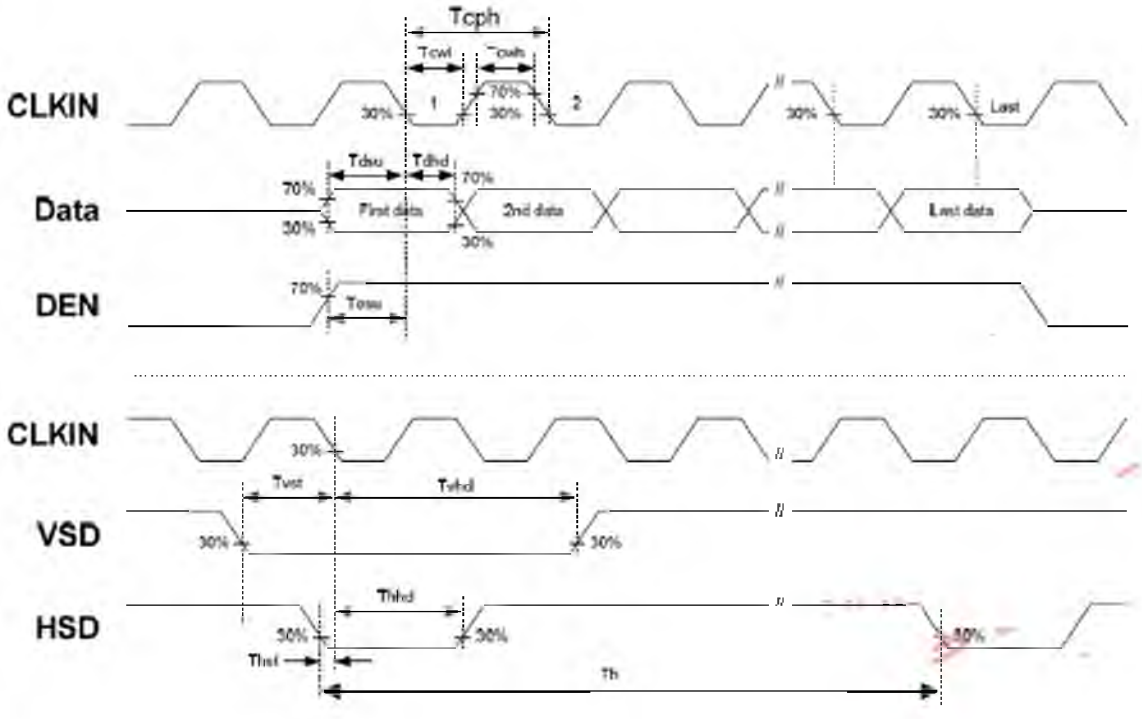
Vertical input timing



6.3. AC Electrical Characteristics

VDD=3.0 to 3.6V，AVDD=6.5 to 13.5V,GND=AGND=0V,TA=20 to +85℃

Parameter	Symbol	Min	Typ	Max	Unit	Condition
VDD Power On Slew rate	T_{POR}	-	-	20	ms	From 0v to 90VDD
RSTB pulse width	T_{Rst}	1	-	-	ms	CLKIN=40MHZ
CLKIN cycle time	Tcph	20			ns	
CLKIN pulse duty	Tcwh	40	50	60	%	
VSD setup time	Tvst	8	-	-	ns	
VSD hold time	Tvhd	8	-	-	ns	
HSD setup time	Thst	8	-	-	ns	
HSD hold time	Thhd	8	-	-	ns	
Data set-up time	Tdsu	8	-	-	ns	D0【7:0】,D1【7:0】,D2【7:0】to CLKIN
Data hold time	Tdhd	8	-	-	ns	D0【7:0】,D1【7:0】,D2【7:0】to CLKIN
DEN setup time	Tesu	8	-	-	ns	
DEN hold time	Tehd	8	-	-	ns	
Output stable time	Tsst	-		6	us	10%Tto 90%target voltage. CL=120pF,R=10K ohm



7. Optical Characteristics (Light Source : CHE Backlight, For reference only)

(Ta = 25 ± 2℃)

Item		Symbol	Conditions	Specifications			Unit	Note
				Min.	Typ.	Max.		
Contrast Ratio		CR	Viewing normal angle θ= 0° Φ= 0° B/L On	400	500	--	--	(2),(4),(6)
Response time		T_r		--	10	--	ms	(3)
Response time		T_f		--	15	--	ms	(3)
Chromaticity		Red		--	0.578	0.628	0.678	--
Chromaticity Viewing Angle	Red	Ry		0.294	0.344	0.394	--	(2)(5)(6)
	Green	Gx		0.289	0.339	0.389	--	
	Green	Gy		0.538	0.588	0.638	--	
	Blue	Bx		0.104	0.154	0.204	--	
	Blue	By		0.081	0.131	0.181	--	
	White	Wx		0.26	0.31	0.36	--	
	White	Wy		0.28	0.33	0.38	--	
	Hor.	θ_L		60	70	--	deg.	
NTSC	Ver.	θ_R	--	60	70	--		(1)
	Ver.	Φ_T		40	50	--		
	--	Φ_B		60	70	--		
	--	--		50	--	%		
Uniformity		--	--	70	75	--	%	(7)

(Ta = 25 ± 2℃, I_F=20mA)

Note:

(1) Definition of viewing angle range

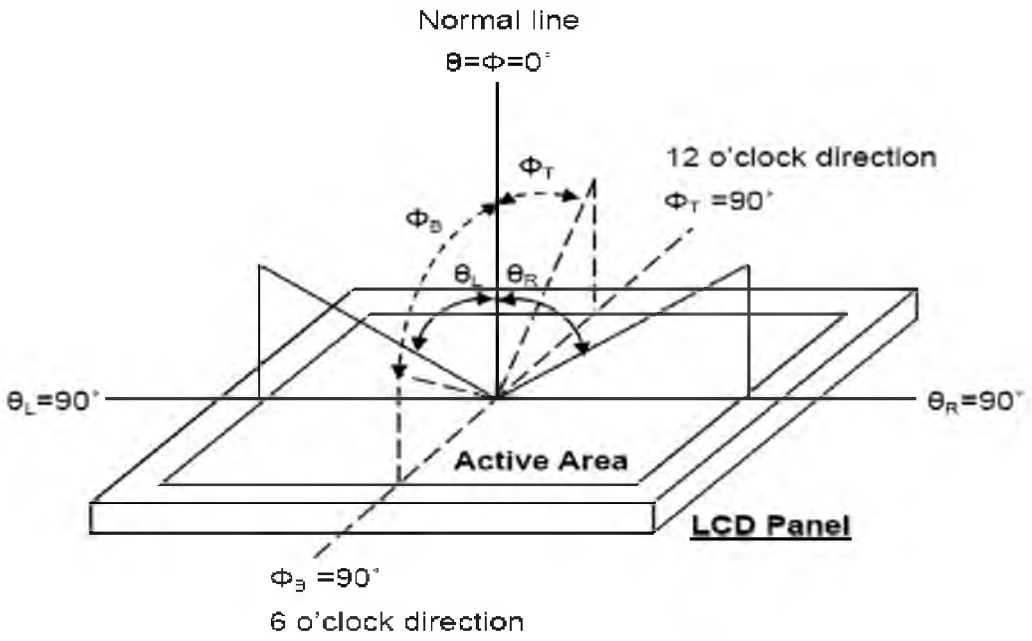


Fig. 7-1 Definition of viewing angle

(2) Test equipment setup:

After stabilizing and leaving the panel alone at a driven temperature for 10 minutes, the measurement should be executed. Measurement should be executed in a stable, windless, and dark room. Optical specifications are measured by Topcon BM-7 luminance meter 1.0° field of view at a distance of 50cm and normal direction.

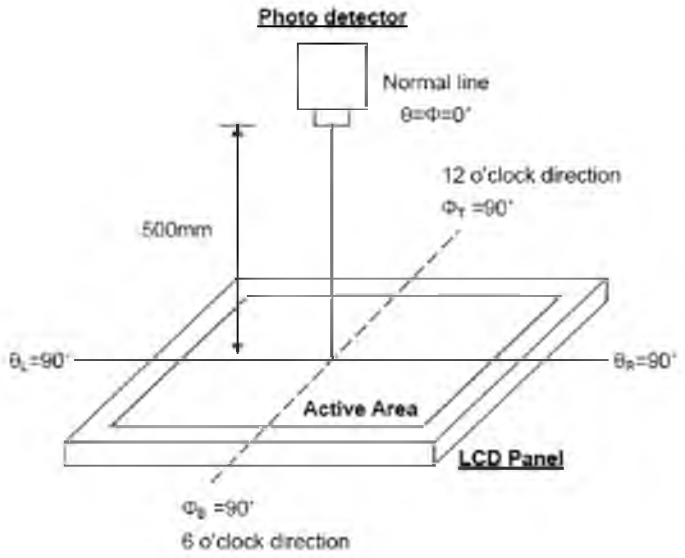


Fig. 7-2 Optical measurement system setup

(3) Definition of Response time:

The response time is defined as the LCD optical switching time interval between “White” state and“Black” state. Rise time, Tr, is the time between photo detector output intensity changed from 90% to 10% . And fall time, Tf, is the time between photo detector output intensity changed from10% to 90% .

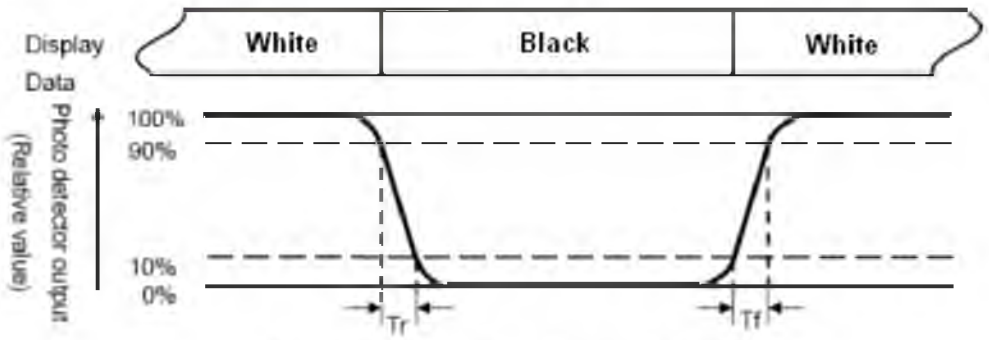


Fig. 8-3 Definition of response time

(4) Definition of contrast ratio:

The contrast ratio is defined as the following expression.

$$\text{Contrast ratio (CR)} = \frac{\text{Luminance measured when LCD on the “White” state}}{\text{Luminance measured when LCD on the “Black” state}}$$

(5) Definition of color chromaticity (CIE 1931)

Color coordinates measured at the center point of LCD

(6) Measured at the center area of the panel when all the input terminals of LCD panel are electrically opened.

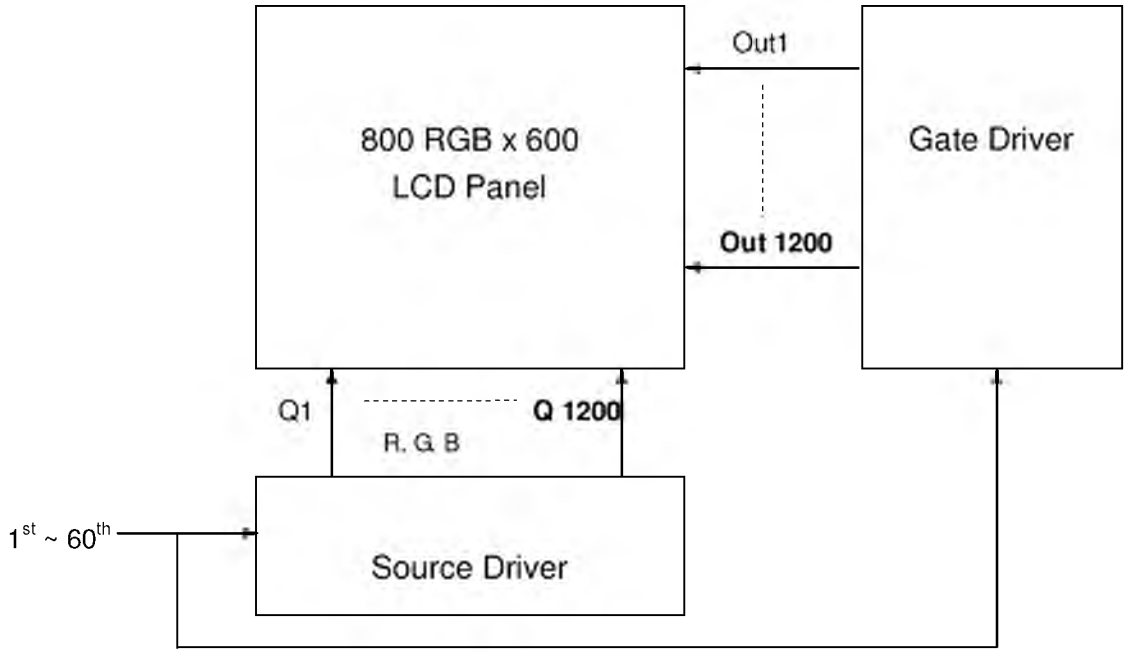
$$\text{(7) Uniformity (U)} = \frac{\text{Brightness (min)}}{\text{Brightness (max)}} \times 100\%$$

8. Interface Pin Connection

Pin No.	Symbol	I/O	Function
1	NC	-	No connection
2	NC	-	No connection
3	NC	-	No connection
4	NC	-	No connection
5	GND	P	Power ground
6	VCOM	I	Common voltage
7	VCC	P	Power for Digital circuit
8	MODE	I	DE/SYNC mode select
9	DE	I	Data Input Enable
10	VS	I	Vertical Sync Input
11	HS	I	Horizontal Sync Input
12	B7	I	Blue data(MSB)
13	B6	I	Blue data
14	B5	I	Blue data
15	B4	I	Blue data
16	B3	I	Blue data
17	B2	I	Blue data
18	B1	I	Blue data
19	B0	I	Blue data(LSB)
20	G7	I	Green data (MSB)
21	G6	I	Green data
22	G5	I	Green data
23	G4	I	Green data
24	G3	I	Green data
25	G2	I	Green data
26	G1	I	Green data
27	G0	I	Green data (LSB)
28	R7	I	Red data (MSB)
29	R6	I	Red data
30	R5	I	Red dat
31	R4	I	Red data
32	R3	I	Red data
33	R2	I	Red data
34	R1	I	Red data
35	R0	I	Red data (LSB)
36	GND	P	Power ground
37	DCLK	I	Sample clock

38	GND	P	Power ground
39	L/R	I	Right/ left selection
40	U/D	I	Up/down selection
41	VGH	P	Gate ON voltage
42	VGL	P	Gate OFF voltage
43	AVDD	P	Power for Analog circuit
44	RESET	I	Global reset pin.
45	NC		No connection
46	VCOM	I	Common voltage
47	DITHB	I	Dithering function
48	GND	p	Power ground
49	NC		No connection
50	NC		No connection

9. Block Diagram



10. Quality Assurance

No.	Test Items	Test Condition	Note
1	High Temperature Storage Test	Ta=80℃ Dry 240h	
2	Low Temperature Storage Test	Ta=-30℃ Dry 240h	
3	High Temperature Operation Test	Ta=70℃ Dry 240h	
4	Low Temperature Operation Test	Ta=-20℃ Dry 240h	
5	High Temperature and High Humidity Operation Test	Ta=60℃ 90%RH 240h	
6	Electro Static Discharge Test	Panel surface / FPC input Contact / Air：±200V machine mode，150pF，330Ω	Non-operating
7	Thermal Shock Test	-30℃(0.5Hr) ~ +80℃(0.5Hr) for 100 cycles	

Note:

(1) The test samples have recovery time for 4 hours at room temperature before the function check. In the standard conditions, there is no display function NG issue occurred.

(2) All the cosmetic specifications are judged before the reliability stress.

11. Outline Drawing