PRODUCT SPECIFICATION

CDTECH Model: **S070SWV35ED-DC164**

CUSTOMER Model: -

Description: **7.0 ” TFT-LCD Module with CTP**

Version: **1.0**

CDTECH	PREPARED BY	CHECKED BY	APPROVED BY
SIGNATURE			
DATE	2025.5.8	2025.5.8	2025.5.8

	SIGNATURE	DATE
CUSTOMER APPROVAL		

Record of Revisions

Version	Revise Date	Description	Page
1.0	2025-2-7	First Release	-
	2025-5-8	Update VGL value	4

Contents

1. General Specifications

1.1 LCM General Information

Item	Specification	Unit
LCD Size	7.0	inch
Number of Pixels	800(H) RGB x 480 (V)	pixels
Display Mode	Normally White	-
Viewing Direction	12 o' clock	-
Interface	LVDS	-
Display Colors	16.7M	colors
Outline Dimension	165.00 (H) x 100.00 (V) x 7.32 (D)	mm
Active Area	154.08 (H) x 85.92 (V)	mm
Pixel Pitch	0.1926 (H) x 0.1790 (V)	mm
Driver IC	HX8664+HX8264	-
Operation Temperature	-20~70	℃
Storage Temperature	-30~80	℃

1.2 Touch Panel Information

Item	Specification
Touch Structure	G+G
Bonding Type with LCM	Perimeter Bonding
Driver IC	MXT640T
Interface	I²C
Touch Count Max	5 Points
Surface treatment	-
Surface hardness	6H
I2C slave address	0x4A
Origin of coordinate	Top Left Corner

Note1:Requirements on environmental protection RoHS compliant.

2. Absolute Maximum Ratings

Item	Symbol	MIN.	MAX.	Unit	Note
Analog Supply voltage	DVDD	-0.3	5.0	V	Note 1

Note 1:Permanent damage may occur to the LCD module if beyond this specification.
Functional operation should be restricted to the conditions described under normal operating conditions.

3. Elecrical Characteristics

3.1 Recommended Operating Condition for TFT LCD

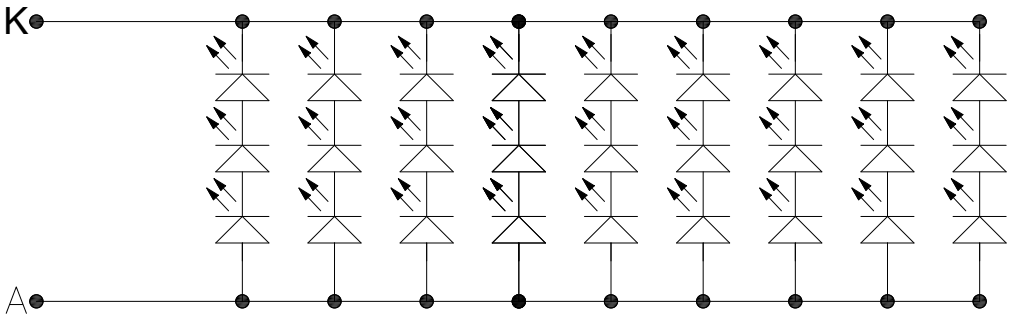
Item	Symbol	Min.	Typ.	Max.	Unit	Note
Analog Supply voltage	DVDD	3.0	3.3	3.6	V	
Analog supply current	I_{DVDD}	120	180	230	mA	DVDD=3.3V (picture)
Power supply for LCD	AVDD	10.2	10.4	10.6	V	
	VGH	15.3	16.0	16.7	V	
	VGL	-7.7	-7.0	-6.3	V	
	VCOM	2.8	3.8	4.8	V	
Logic input voltage	VIH	0.7*DVDD	-	DVDD	V	
	VIL	GND	-	0.3*DVDD	V	

3.2 Recommended Driving Condition for Backlight

Item	Symbol	Min.	Typ.	Max.	Unit	Note
Driving Current	I_F	-	270	-	mA	
Driving Voltage	V_F	8.1	-	10.2	V	
Power consumption	W_{BL}	2.187	-	2.754	W	
LED Life-Time	N/A	-	50,000	-	Hours	Ta=25℃ Note 1

Note 1:LED lifetime is defined as the module brightness decay 50% of original brightness at Ta=25 degree, typical current.

Note 2:LED circuit :



3.3 Touch Panel

Item	Symbol	Min.	Typ.	Max.	Unit	Note
Power Supply voltage	VDD	-	3.3	-	V	
Analog supply current	I_{VDD}	10	15	20	mA	VDD=3.3V
Input high-level voltage	VIH	0.7*VDD	-	VDD	V	
Input low -level voltage	VIL	GND	-	0.3*VDD	V	

4. Interface Pin Assignment

4.1 LCM Pin Assignment

No.	Symbol	Description
1	VCOM	Common Voltage
2	DVDD	Power supply
3	DVDD	Power supply
4	NC	No connection
5	RESET	Global reset pin
6	STBYB	Standby mode. Normally pulled high STBYB="1", normal operation.(Default) STBYB="0",timing controller, source driver will turn off ,all output areHigh-Z
7	GND	Ground
8	LVDS_D0-	- LVDS differential data input
9	LVDS_D0+	+ LVDS differential data input
10	GND	Ground
11	LVDS_D1-	- LVDS differential data input
12	LVDS_D1+	+ LVDS differential data input
13	GND	Ground
14	LVDS_D2-	- LVDS differential data input
15	LVDS_D2+	+ LVDS differential data input
16	GND	Ground
17	LVDS_CLK-	-LVDS differential clock input
18	LVDS_CLK+	+LVDS differential clock input
19	GND	Ground
20	LVDS_D3-	- LVDS differential data input
21	LVDS_D3+	+ LVDS differential data input
22	GND	Ground
23-24	NC	No connection
25	GND	Ground
26-28	NC	No Connect
29	AVDD	Power for Analog Circuit
30	GND	Ground
31-32	LED-	Power for LED backlight (Cathode)
33	L/R	Source Right or Left sequence control. Normally pull high.
34	U/D	Gate Up or Down scan control. Normally pull low.
35	VGL	Gate off Voltage
36-37	NC	No connection
38	VGH	Gate on Voltage
39-40	LED+	Power for LED backlight (Anode)

4.2 Touch FPC Pin Assignment

No.	Symbol	Description
1	GND	Ground
2	VDD	Power supply for CTP
3	SDA	I2C data input and output for CTP
4	SCL	I2C clock input for CTP
5	RST	Global reset pin for CTP
6	INT	Interrupt signal for CTP
7	Test_NC	No connection
8	VSS_GND	Ground

5. Interface Characteristics

5.1 Power Sequence

To prevent the device damage from latch up, the power on/off sequence shown below must be followed.

Power ON: VDD, GND → AVDD, AVSS → V1 to V14
Power OFF: V1 to V14 → AVDD, AVSS → VDD, GND

5.1.1 Power on/off control

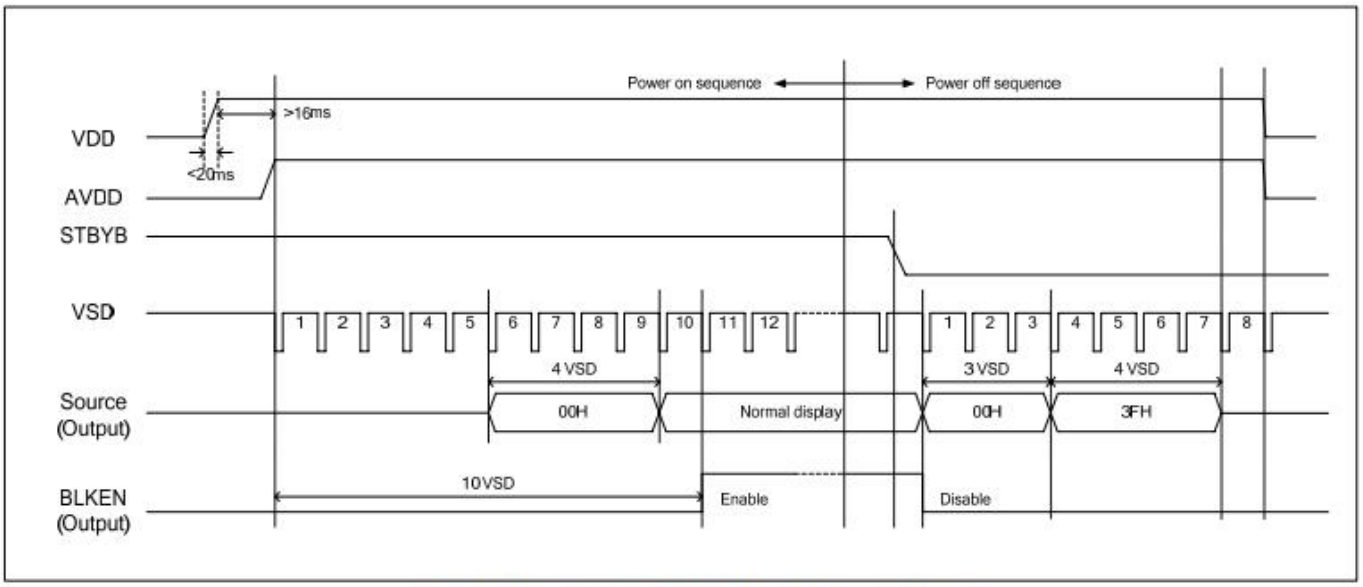


Figure 9.1: Power on/off timing sequence

5.1.2 Enter and exit standby mode sequence

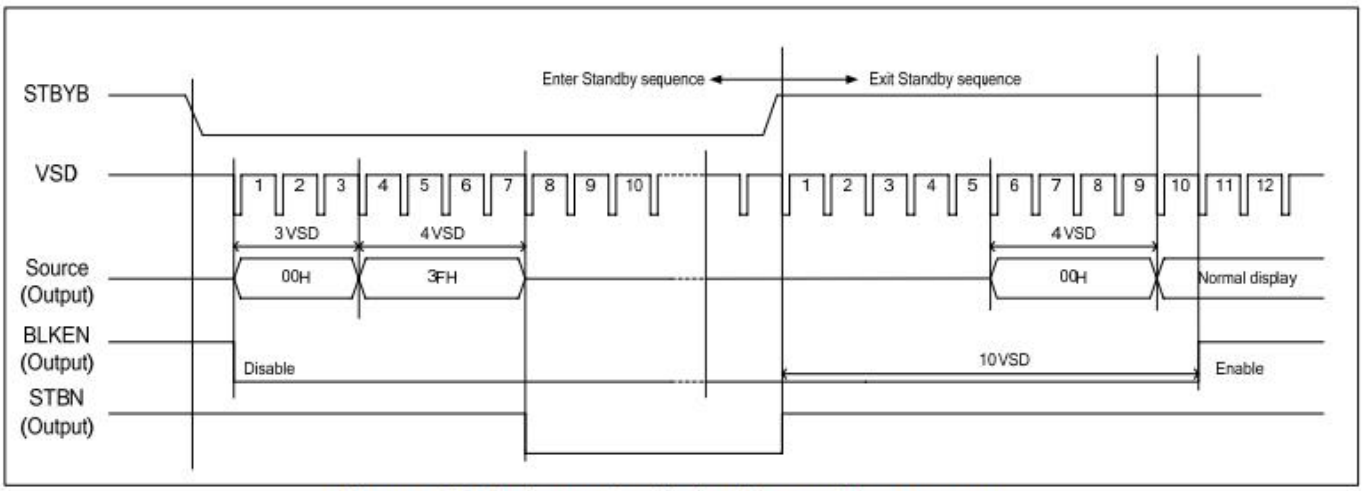


Figure 9.2: Enter and exit standby mode sequence

5.2 DC Characteristics

Parameter	Symbol	Spec.			Unit	Condition
		Min.	Typ.	Max.		
Power supply voltage	VDD	2.7	3.3	3.6	V	-
Power supply voltage	AVDD	6.5	-	13.5	V	AVDD-V1 ≧ 0.5V
Low level input voltage	V_{IL}	0	-	0.3VDD	V	For Digital Circuit
High level input voltage	V_{IH}	0.7VDD	-	VDD	V	For Digital Circuit
Output low voltage	V_{OL}	-	-	GND+0.4	V	I_{OL}=400μA
Output high voltage	V_{OH}	VDD-0.4	-	-	V	I_{OH}=-400μA
Pull low/high resistance	R_i	200K	250K	300K	Ohm	For the digital input pin @VDD=3.3V
Input leakage current	Ii	-	-	+/- 1	μA	For Digital Circuit
Digital Operation current	Idd	-	5	10	mA	Fclk=50MHz,FLD=48KHz,VDD=3.3V CABC function disable, No load
Digital stand-by current	Ist1	-	10	50	μA	Clock & all functions are stopped
Analog Operating current	Idda	-	5	10	mA	No load,Fclk=50MHz,FLD = 48KHz @ AVDD = 10V, V1=8V, V14 = 0.4V
Analog Stand-by current	Ist2	-	10	50	μA	No load,Clock & all functions are stopped
Input level of V1 ~ V7	Vref1	0.4*AVDD	-	AVDD-1	V	Gamma correction voltage input
Input level of V8 ~ V14	Vref2	0.1	-	0.6*AVDD	V	Gamma correction voltage input
Output Voltage deviation	Vod1	-	+/-20	+/-35	mV	Vo=AGND+0.1V ~ AGND+0.5V & Vo=AVDD-0.5V ~ AVDD-0.1V
Output Voltage deviation	Vod2	-	+/-15	+/-20	mV	Vo=AGND+0.5V ~ AVDD-0.5V
Output Voltage Offset between Chips	Voc	-	-	+/- 20	mV	Vo=AGND+0.5V ~ AVDD-0.5V
Dynamic Range of Output	Vdr	0.1	-	AVDD-0.1	V	SO1 ~ SO1200
Sinking Current of Outputs	IOLy	80	-	-	μA	SO1~SO1200; Vo= 0.1V vs. 1.0V, AVDD=13.5V
Driving Current of Outputs	IOHy	80	-	-	μA	SO1 ~ SO1200 ; Vo = 0.1V vs. 12.5V , AVDD=13.5V
Resistance of Gamma Table	Rg	0.7*Rn	1.0*Rn	1.3*Rn	ohm	Rn:Internal gamma resistor
Dcmp Buffer Output Voltage variation	VDvar	-	-	-180	mV	AVDD=13.5V,C=1μF AVDD-0.5 ≦ GMI 1/2 ≦ AVDD-0.1 Isink = -3.5mA
		-	-	180	mV	AVDD=13.5V,C=1μF 0.1 ≦ GMI 1/2 ≦ 0.5 Isource = 3.5mA , Isink = -3.5mA
		-	-	+/-90	mV	AVDD=13.5V,C=1μF 0.5 ≦ GMI 1/2 ≦ AVDD-0.5 Isource = 3.5mA , Isink = -3.5mA

5.3 AC Characteristics

5.3.1 AC electrical characteristics

Parameter	Symbol	Spec.			Unit
		Min.	Typ.	Max.	
HS setup time	Thst	8	-	-	ns
HS hold time	Thhd	8	-	-	ns
VS setup time	Tvst	8	-	-	ns
VS hold time	Tvhd	8	-	-	ns
Data setup time	Tdsu	8	-	-	ns
Data hold time	Tdhd	8	-	-	ns
DE setup time	Tesu	8	-	-	ns
DE hold time	Tehd	8	-	-	ns
VDD Power On Slew rate	TPOR	-	-	20	ms
RSTB pulse width	TRst	10	-	-	μs
CLKIN cycle time	Tcph	20	-	-	ns
CLKIN pulse duty	Tcwh	40	50	60	%
Output stable time	Tsst	-	-	6	μs

5.3.2 Data input format

- **Horizontal timing**

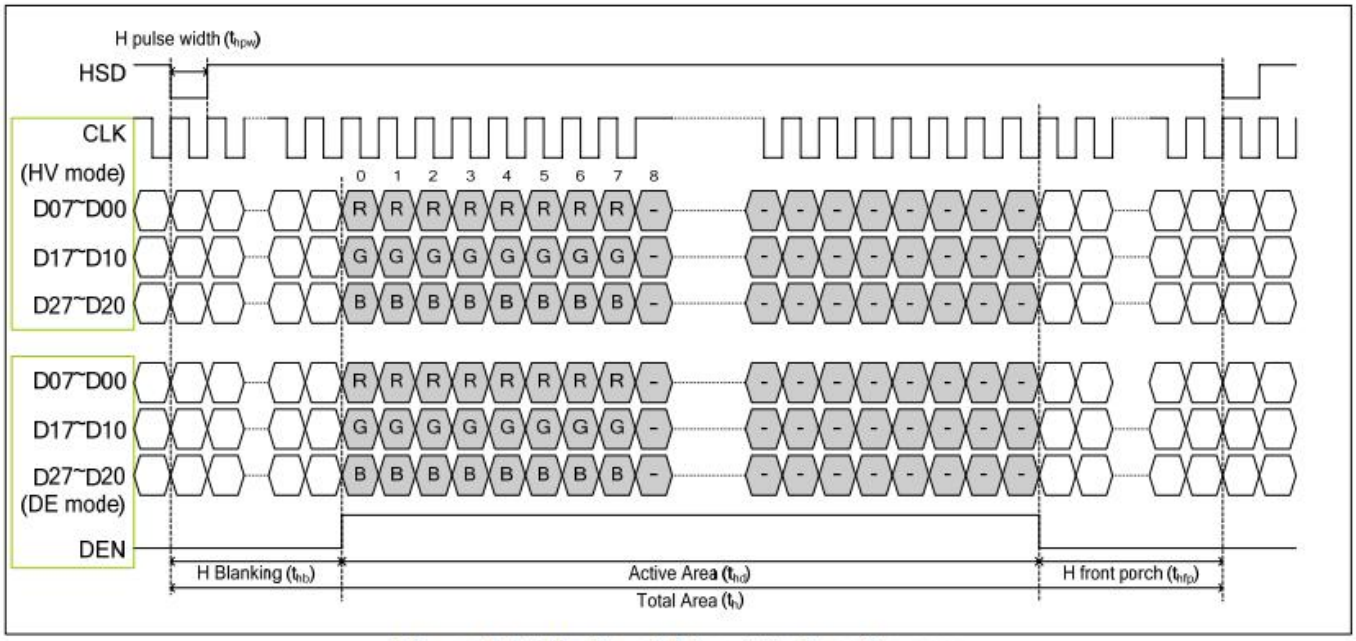


Figure 11.1 Horizontal input timing diagram

- **Vertical Timing**

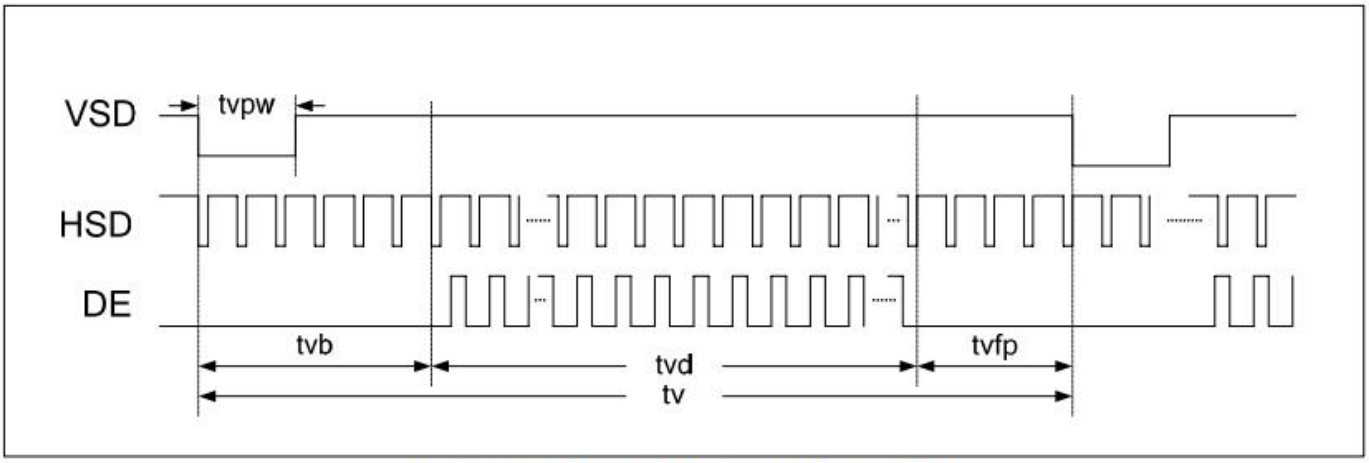


Figure 11.2: Vertical input timing diagram

5.3.3 Resolution :800x480

- **Horizontal Timing**

Parameter	Symbol	Spec.			Unit
		Min.	Typ.	Max.	
Horizontal Display Area	thd	-	800	-	DCLK
DCLK frequency	fclk	-	33.3	50	MHz
One Horizontal Line	th	862	1056	1200	DCLK
HS pulse width (Min.)	thpw		1		DCLK
HS pulse width (Typical.)	thpw		-		DCLK
HS pulse width (Max.)	thpw		40		DCLK
HS Back Porch (Blanking)	thb	46	46	46	DCLK
HS Front Porch	thfp	16	210	354	DCLK
DE mode Blanking	th-thd	45	256	400	DCLK

- **Vertical Timing**

Parameter	Symbol	Spec.			Unit
		Min.	Typ.	Max.	
Vertical Display Area	tvd		480		TH
VS period time	tv	510	525	650	TH
VS pulse width	tvpw	1	-	20	TH
VS Back Porch (Blanking)	tvb	23	23	23	TH
VS Front Porch	tvfp	7	22	147	TH
DE mode Blanking	tv-tvd	4	45	170	TH

5.4 Waveform

5.4.1 Parallel 24-bit RGB mode

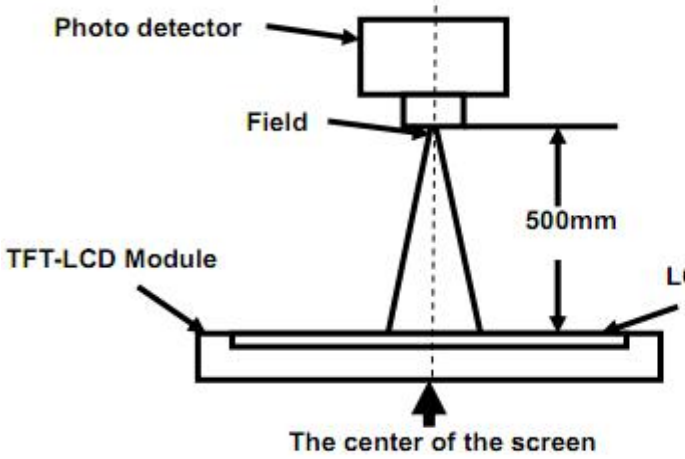
Parameter	Symbol	Spec.			Unit	Conditions
		Min.	Typ.	Max.		
CLKIN Frequency	Fclk	-	40	50	MHz	VDD = 3.0V ~ 3.6V
CLKIN Cycle Time	Tclk	20	25	-	ns	-
CLKIN Pulse Duty	Tcwh	40	50	60	%	Tclk
Time from HSD to Source Output	Thso	-	20	-	CLKIN	-
Time from HSD to LD	Thld	-	20	-	CLKIN	-
Time from HSD to STV	Thstv	-	2	-	CLKIN	-
Time from HSD to CKV	Thckv	-	20	-	CLKIN	-
Time from HSD to OEV	Thoev	-	4	-	CLKIN	-
LD Pulse Width	Twld	-	10	-	CLKIN	-
CKV Pulse Width	Twckv	-	66	-	CLKIN	-
OEV Pulse Width	Twoev	-	74	-	CLKIN	-

6. Optical Specifications

Item	Symbol	Condition	Min.	Typ.	Max.	Unit	Note
Viewing Angle (CR≥10) B/L ON	θ_T	Φ=90°(12 o'clock)	40	50	-	deg	Note2
	θ_B	Φ=270°(6 o'clock)	60	70	-	deg	Note2
	θ_L	Φ=180°(9 o'clock)	60	70	-	deg	Note2
	θ_R	Φ=0°(3 o'clock)	60	70	-	deg	Note2
Response Time	T_{ON}	Normal θ=Φ=0°	-	10	20	msec	Note4
	T_{OFF}		-	15	30	msec	Note4
Contrast Ratio	CR		400	500	-	-	Note1 Note3
Color Chromaticity	W_X		TBD	TBD	TBD	-	Note1 Note5
	W_Y		TBD	TBD	TBD	-	Note1 Note5
Luminance	L		750	850	-	cd/m²	Note1 Note7
Luminance Uniformity	Y_U		75	80	-	%	Note1 Note6
NTSC	-		-	-	-	%	-

Note 1:Definition of optical measurement system

The optical characteristics should be measured in dark room. After 5 minutes operation, the optical properties are measured at the center point of the LCD screen. All input terminals LCD panel must be ground when measuring the center area of the panel.



Item	Photo detector	Field
Contrast Ratio	SR-3A	1°
Luminance		
Chromaticity		
Lum Uniformity		
Response Time	BM-7A	2°

Fig 1

Note 2: Definition of viewing angle range and measurement system.
viewing angle is measured at the center point of the LCD by CONOSCOPE(ergo-80).

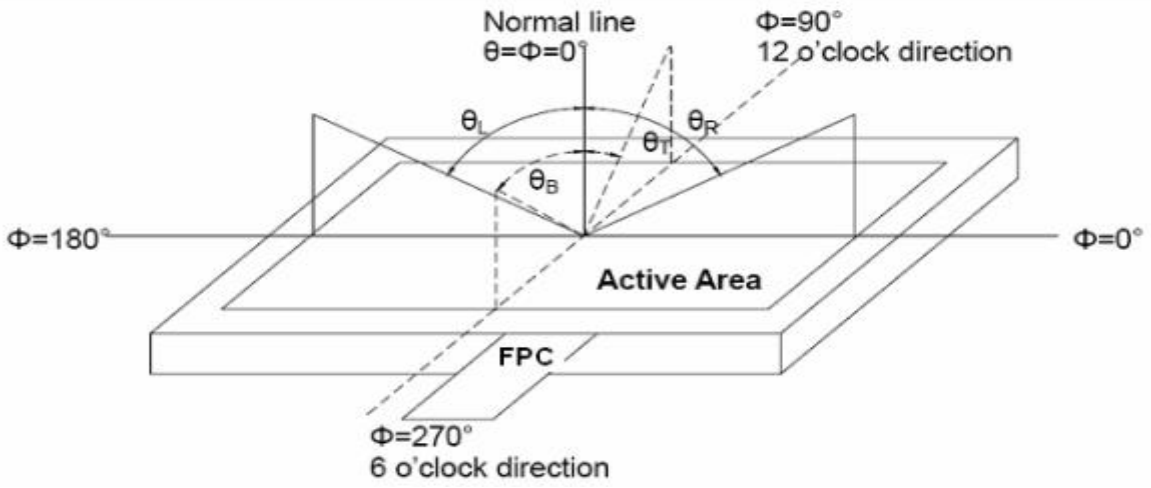


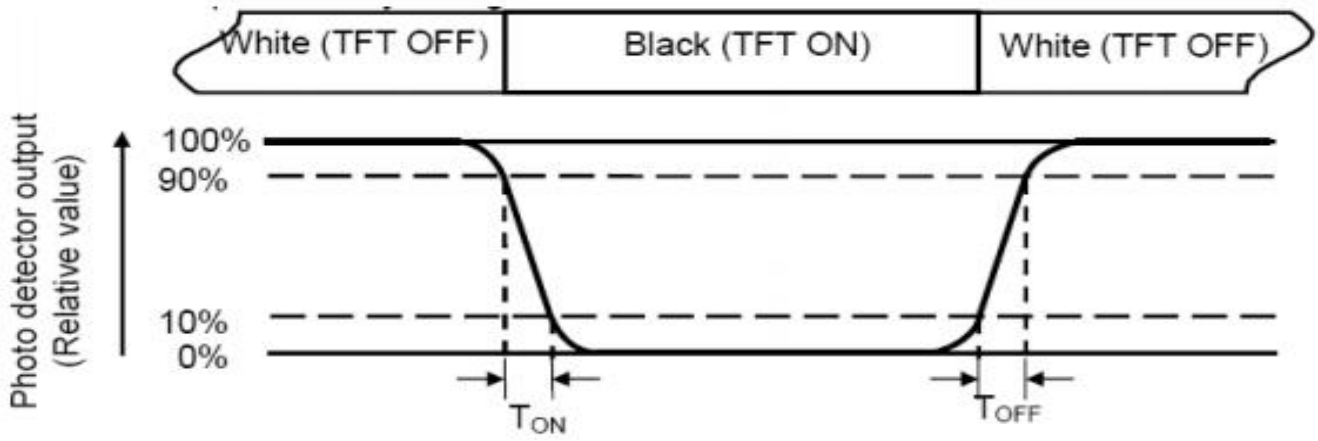
Fig 2 Definition of viewing angle

Note 3: Definition of contrast ratio

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

Note 4: Definition of Response time

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



Note 5: Definition of color chromaticity (CIE1931)

Color coordinates measured at center point of LCD.

Note 6: Definition of Luminance Uniformity

The luminance uniformity in surface luminance is determined by measuring luminance at each test position 1 through n, and then dividing the maximum luminance of n points luminance by minimum luminance of n points luminance.For more information see FIG.3-a/b

Note 7:Surface luminance is the luminance with all pixels displaying white.

Lv = Average Surface Luminance with all white pixels(P1,P2,P3, ...,Pn)

For more information see FIG.3-a/b

Note 8:

H,V : Active area(see Figure b)

Light spot size ⌀ =5mm(BM-5) or ⌀ =7.7mm (BM-7)50cm distance or compatible distance from the LCD surface to detector lens. test spot position : see Figure b.

measurement instrument : TOPCON's luminance meter SR-3A or BM-7 or compatible (see Figure 1).

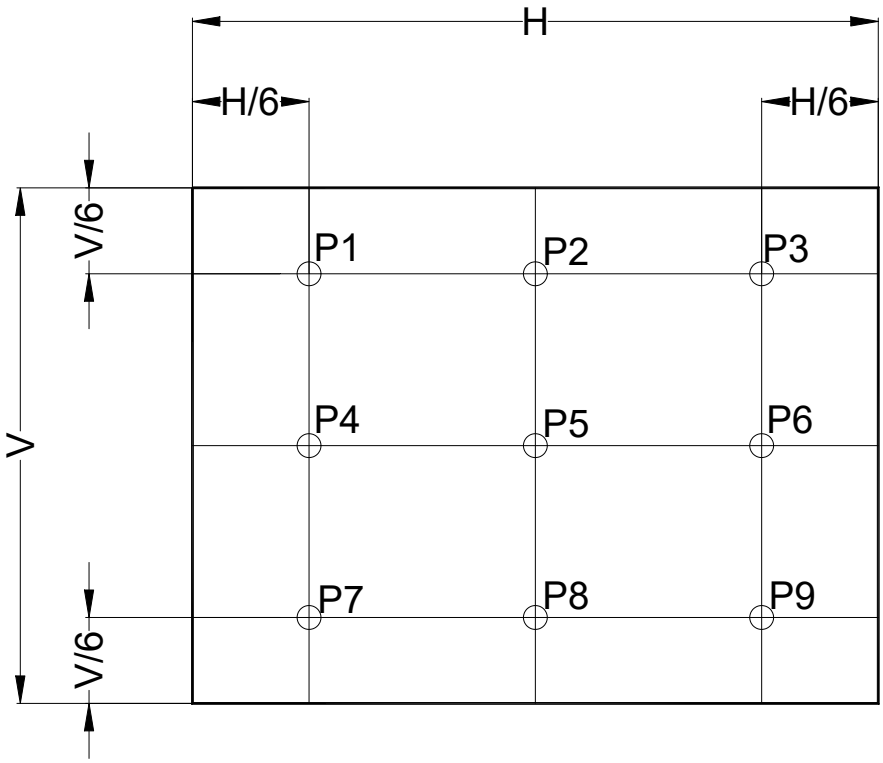


Fig. 3-b Definition of points

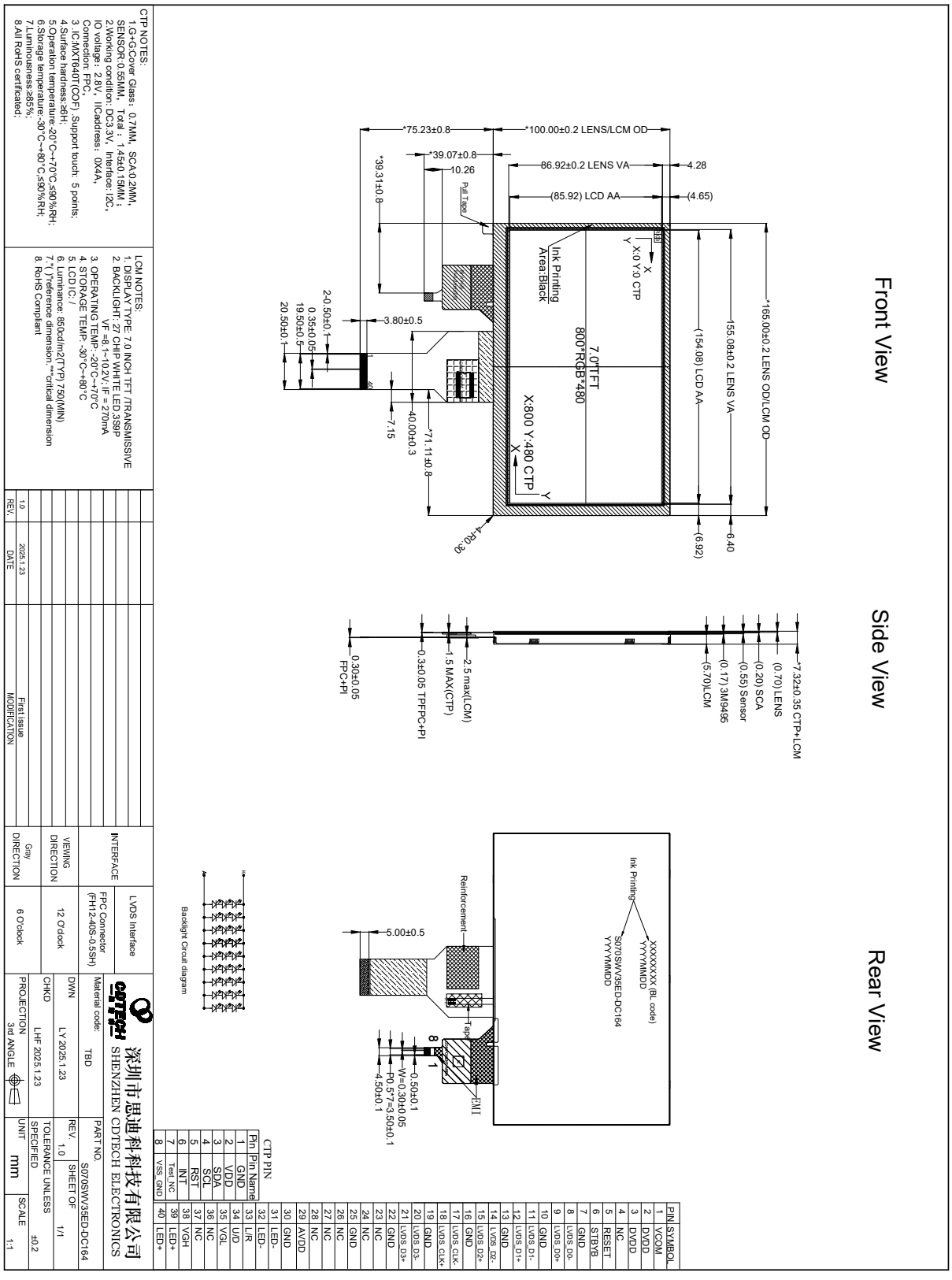
7. Reliability Test Items

Test Item	Test Conditions	
High Temperature Storage	Ta= +80℃	96hrs
Low Temperature Storage	Ta= -30℃	96hrs
High Temperature Operation	Ta= +70℃	96hrs
Low Temperature Operation	Ta= -20℃	96hrs
High Temperature and Humidity Storage	Ta= +60℃, 90% RH	96hrs
Thermal Shock (Non-operation)	-30℃/30 min ~ +80℃/30 min for 20 cycles Start with cold temperature end with high temperature	
Electro Static Discharge	Contact = ± 4 kV, class B Air = ± 8 kV, class B R=330Ω,C=150pF	
Vibration	Sweep: 10Hz~55Hz~10Hz Stroke: 1.5mm 2 hrs for each direction of X .Y. Z.	
Mechanical Shock	60G 6ms,±X,±Y,±Z 3 times for each direction	
Package Drop Test	Height: 60 cm 1 corner, 3 edges, 6 surfaces	

Notes: The test result shall be evaluated after the sample has been left at room temperature and humidity for 2 hours without load. No condensation shall be accepted. The sample will not be accepted if appear these defects:

1). Air bubble in the LCD
2). Seal leak or Glass crack
3). Non display or abnormal display
4). Brightness reduction >50%

8. Mechanical Drawing



CTP NOTES:
1.G+G:Cover Glass: 0.7MM, SCA:0.2MM, SENSOR:0.55MM, Total：1.45±0.15MM；
2.Working condition: DC3.3V, Interface: I2C, IO voltage：2.8V, IICaddress：0X4A,
Connection: FPC, Support touch: 5 points;
3.IC:HX8407(COF), Support touch: 5 points;
4.Surface hardness:≥6H;
5.Operation temperature:-20°C~+70°C,≤90%RH;
6.Storage temperature:-30°C~+80°C,≤90%RH;
7.Luminousness:≥85%;
8.All RoHS certificated;

LCM NOTES:
1. DISPLAY TYPE: 7.0 INCH TFT /TRANSMISSIVE
2. BACKLIGHT: 27 CHIP WHITE LED 3S9P
VF =8.1~10.2V; IF = 270mA
3. OPERATING TEMP.: -20°C~+70°C
4. STORAGE TEMP: -30°C~+80°C
5. LCD IC: /
6. Luminance: 850cd/m2(TYP) 750(MIN)
7.*( ):reference dimension **:critical dimension
8. RoHS Compliant

REV.	DATE	MODIFICATION
1.0	2025.1.23	First Issue

INTERFACE	LVDS Interface
	FPC Connector (FH12-40S-0.5SH)
VIEWING DIRECTION	12 O'clock
Gray DIRECTION	6 O'clock

CTP PIN	
Pin	Pin Name
1	GND
2	VDD
3	VGL
4	SDA
5	SCL
6	RST
7	INT
8	Test_NC
9	VSS_GND

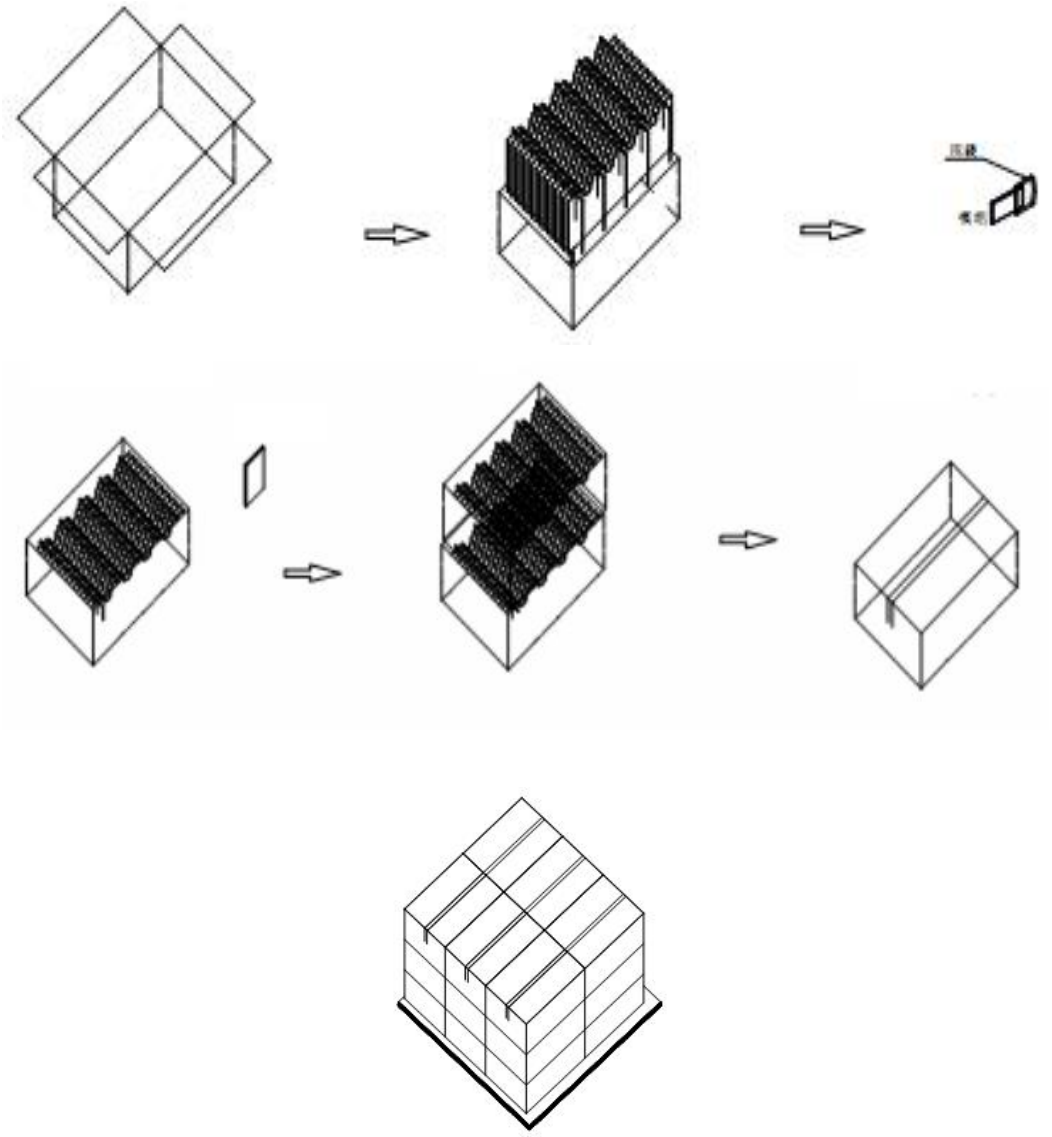
PIN	SYMBOL
1	VCOM
2	DVDD
3	DVDD
4	NC
5	RESET
6	STBYB
7	GND
8	LVDS_D0-
9	LVDS_D0+
10	GND
11	LVDS_D1-
12	LVDS_D1+
13	GND
14	LVDS_D2-
15	LVDS_D2+
16	GND
17	LVDS_CLK-
18	LVDS_CLK+
19	GND
20	LVDS_D3-
21	LVDS_D3+
22	GND
23	NC
24	NC
25	GND
26	NC
27	NC
28	NC
29	AVDD
30	GND
31	LED-
32	LED-
33	LR
34	U/D
35	VGL
36	NC
37	NC
38	VGH
39	LED+
40	LED+

Material code:	TBD
DWN	LY 2025.1.23
CHKD	LHF 2025.1.23
PROJECTION	3rd ANGLE
UNIT	mm
SCALE	1:1

深圳市思迪科科技有限公司
SHENZHEN CDTECH ELECTRONICS
PART NO. S070SWV35ED-DC164
REV. 1.0 SHEET OF 1/1
TOLERANCE UNLESS SPECIFIED ±0.2

9. Packing

Packing Method



10. Precautions for Use of LCD modules

10.1 Handling Precautions

10.1.1. The display panel is made of glass. Do not subject it to a mechanical shock by dropping it from a high place, etc.

10.1.2. If the display panel is damaged and the liquid crystal substance inside it leaks out, be sure not to get any in your mouth, if the substance comes into contact with your skin or clothes, promptly wash it off using soap and water.

10.1.3. Do not apply excessive force to the display surface or the adjoining areas since this may cause the color tone to vary.

10.1.4. The polarizer covering the display surface of the LCD module is soft and easily scratched. Handle this polarizer carefully.

10.1.5. If the display surface is contaminated, breathe on the surface and gently wipe it with a soft dry cloth. If still not completely clear, moisten cloth with one of the following solvents:

- Isopropyl alcohol
- Ethyl alcohol

Solvents other than those mentioned above may damage the polarizer. Especially, do not use the following:

- Water
- Ketene
- Aromatic solvents

10.1.6. Do not attempt to disassemble the LCD Module.

10.1.7. If the logic circuit power is off, do not apply the input signals.

10.1.8. To prevent destruction of the elements by static electricity, be careful to maintain an optimum work environment.

10.1.8.1. Be sure to ground the body when handling the LCD Modules.

10.1.8.2. Tools required for assembly, such as soldering irons, must be properly ground.

10.1.8.3. To reduce the amount of static electricity generated, do not conduct assembly and other work under dry conditions.

10.1.8.4. The LCD Module is coated with a film to protect the display surface. Be care when peeling off this protective film since static electricity may be generated.

10.2 Storage Precautions

10.2.1.When storing the LCD modules,avoid exposure to direct sunlight or to the light of fluorescent lamps.

10.2.2.The LCD modules should be stored under the storage temperature range if the LCD modules will be stored for a long time,the recommend condition is :

Temperature : 0℃ ~40℃ Relatively humidity: ≤80%

10.2.3.The LCD modules should be stored in the room without acid, alkali and harmful gas.

10.3 Transportation Precautions

The LCD modules should be no falling and violent shocking during transportation, and also should avoid excessive press, water, damp and sunshine.

10.4 Packaging instructions

When the customers using trays, they have to stack the adjacent trays in a 180° staggered to prevent pressure that could cause product damage.