

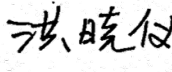
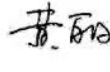
PRODUCT SPECIFICATION

CDTECH Model: **S043BWQ99HP-FC42**

CUSTOMER Model: **-**

Description: **4.3 " TFT-LCD Module with CTP**

Version: **1.0**

CDTECH	PREPARED BY	CHECKED BY	APPROVED BY
SIGNATURE			
DATE	2026.7.8	2026.7.8	2026.7.8

CUSTOMER APPROVAL	SIGNATURE	DATE

[illegible]



Contents

1. General Specifications	4
2. Absolute Maximum Ratings	5
3. Electrical Characteristics	5
4. Interface Pin Assignment	7
5. Interface Characteristics	8
6. Optical Specifications	12
7. Reliability Test Items	16
8. Mechanical Drawing	17
9. Packing	18
10. Precautions for Use of LCD modules	19

1. General Specifications

1.1 LCM General Information

Item	Specification	Unit
LCD Size	4.3	inch
Number of Pixels	480 (H) RGB x 272 (V)	pixels
Display Mode	Normally Black	-
Viewing Direction	Free	-
Interface	MCU	-
Display Colors	16.7M	colors
Outline Dimension	105.50 (H) x 67.20 (V) x 4.56 (D)	mm
Active Area	95.04 (H) x 53.86 (V)	mm
Pixel Pitch	0.1980 (H) x 0.1980 (V)	mm
Driver IC	NV3041A	-
Operation Temperature	-30~85	°C
Storage Temperature	-30~85	°C

1.2 Touch Panel Information

Item	Specification
Touch Structure	G+G
Bonding Type with LCM	OCA Optical Bonding
Driver IC	GT911
Interface	I ² C
Touch Count Max	5 Points
Surface treatment	-
Surface hardness	6H
I2C slave address	0x28
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	VCI	-0.3	4.6	V	Note 1
Digital supply voltage	IOVCC	-0.3	4.6	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. Electrical Characteristics

3.1 Recommended Operating Condition for TFT LCD

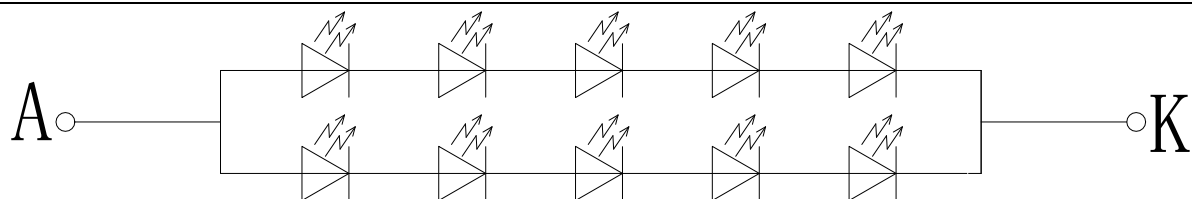
Item	Symbol	Min.	Typ.	Max.	Unit	Note
Analog Supply voltage	VCI	3.0	3.3	3.6	V	
Analog supply current	I _{VCI}	-	20	30	mA	VCI=3.3V (white)
Logic supply voltage	IOVCC	1.65	1.8	3.3	V	
Logic input voltage	VIH	0.7*IOVCC	-	IOVCC	V	
	VIL	GND	-	0.3*IOVCC	V	

3.2 Recommended Driving Condition for Backlight

Item	Symbol	Min.	Typ.	Max.	Unit	Note
Driving Current	I _F	-	40	-	mA	
Driving Voltage	V _F	13.5	-	17	V	
Power consumption	W _{BL}	0.54	-	0.68	W	
LED Life-Time	N/A	-	50,000	-	Hours	Ta=25°C 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	2.8	-	3.3	V	
Analog supply current	I_{VDD}	-	16.5	-	mA	VDD=3.3V
Input high-level voltage	VIH	$0.7 \cdot VDD$	-	VDD	V	
Input low -level voltage	VIL	GND	-	$0.3 \cdot VDD$	V	

4. Interface Pin Assignment

4.1 LCM Pin Assignment

No.	Symbol	Description
1	LED A	Power for LED backlight (Anode)
2	LED A	Power for LED backlight (Anode)
3	LED K	Power for LED backlight (Cathode)
4	LED K	Power for LED backlight (Cathode)
5	VCI	Power supply for analog circuit
6	IOVCC	Power supply for digital interface I/O pins
7	GND	Ground
8	RESET	Global reset pin
9	GND	Ground
10	CS	Chip select
11	WRX	Clock input
12	RXD	MCU interface read enable input,
13	DCX	Data or Command flag DCX = "H" is data DCX = "L" is command
14	GND	Ground
15-22	D0-D7	Data bus
23	GND	Ground
24	TE	Tearing effect output pin is used to synchronize MCU frame writing, activated by S/W command. When this pin is not activated (TE function OFF), this pin is GND level.
25	XR(NC)	No connection
26	YD(NC)	No connection
27	XL(NC)	No connection
28	YU(NC)	No connection
29	NC	No connection
30	NC	No connection

4.2 Touch FPC Pin Assignment

No.	Symbol	Description
1	GND	Ground
2	SDA	I2C data input and output for CTP
3	SCL	I2C clock input for CTP
4	VDD	Power supply for CTP
5	INT	Interrupt signal for CTP
6	RST	Reset Pin for CTP

5. Interface Characteristics

5.1 Power Sequence

Power On Sequence

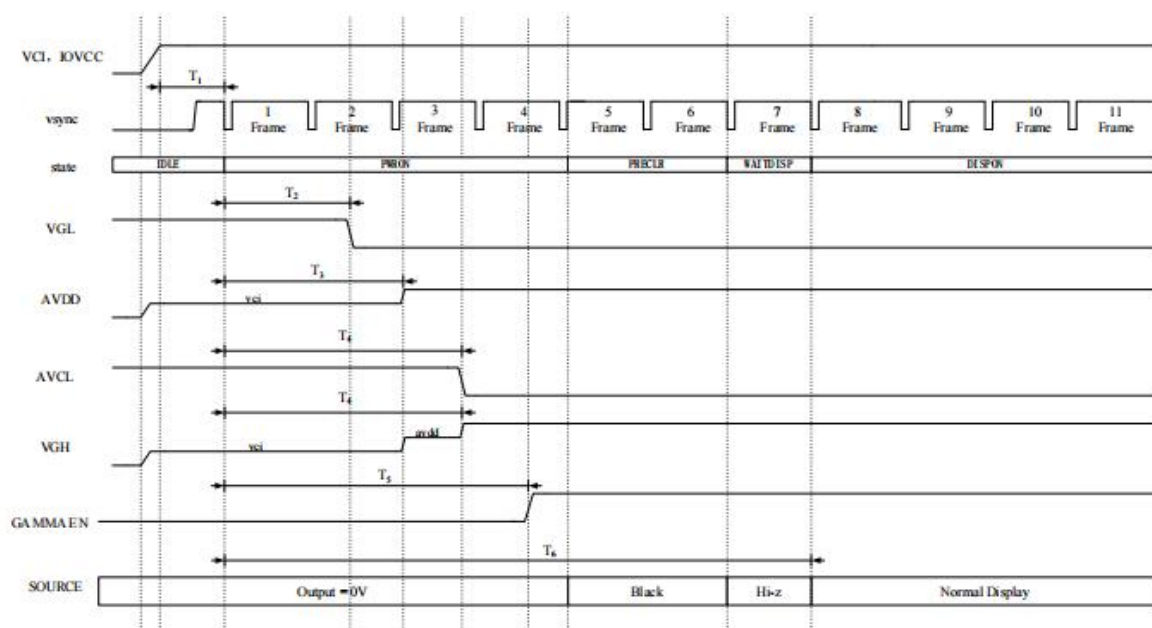


Figure 9-1

Symbol	Description	Min. Time	Unit
T_1	Time from stable VCI, IOVCC (reset finished) set-up to Command "11H"	Decide by 11H command	ms
T_2	Time from Command "11H" to VGL voltage stabilization	23	ms
T_3	Time from Command "11H" to AVDD voltage stabilization	30.7	ms
T_4	Time from Command "11H" to AVCL/VGH voltage stabilization	40.8	ms
T_5	Gamma output enable	55.3	ms
T_6	Source normal display	Decide by 29H command	ms

Table 9-1

Power Off Sequence

When host sends “10H” command, State from WAIT_PD to PWRDOWN, in which power disabled sequentially.

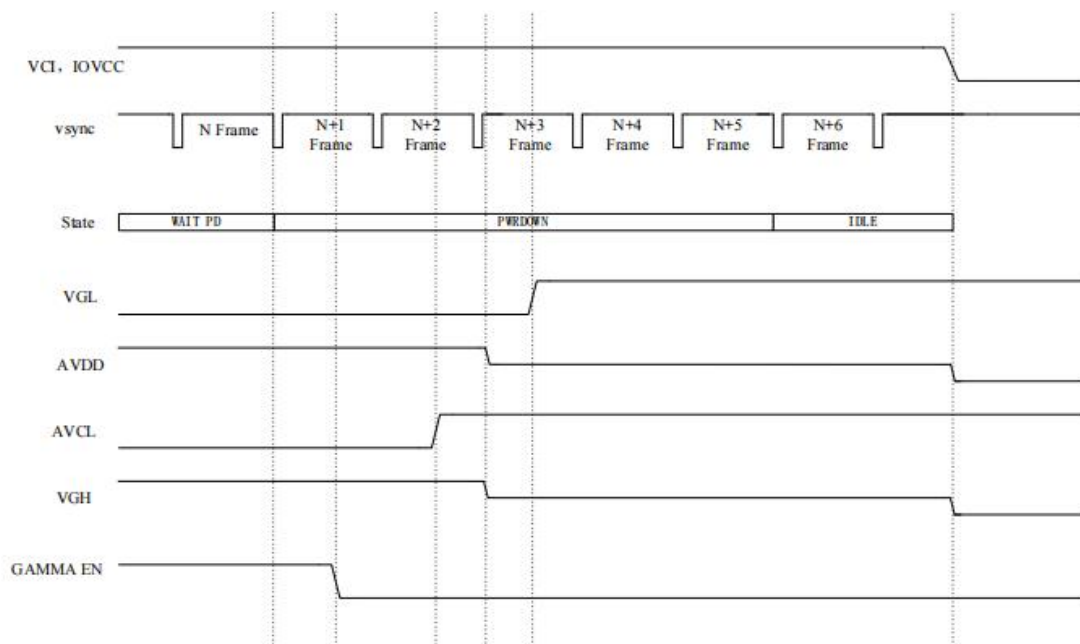


Figure 9-2

5.2 AC Characteristics

Parallel MCU 16/9/8-bit BUS

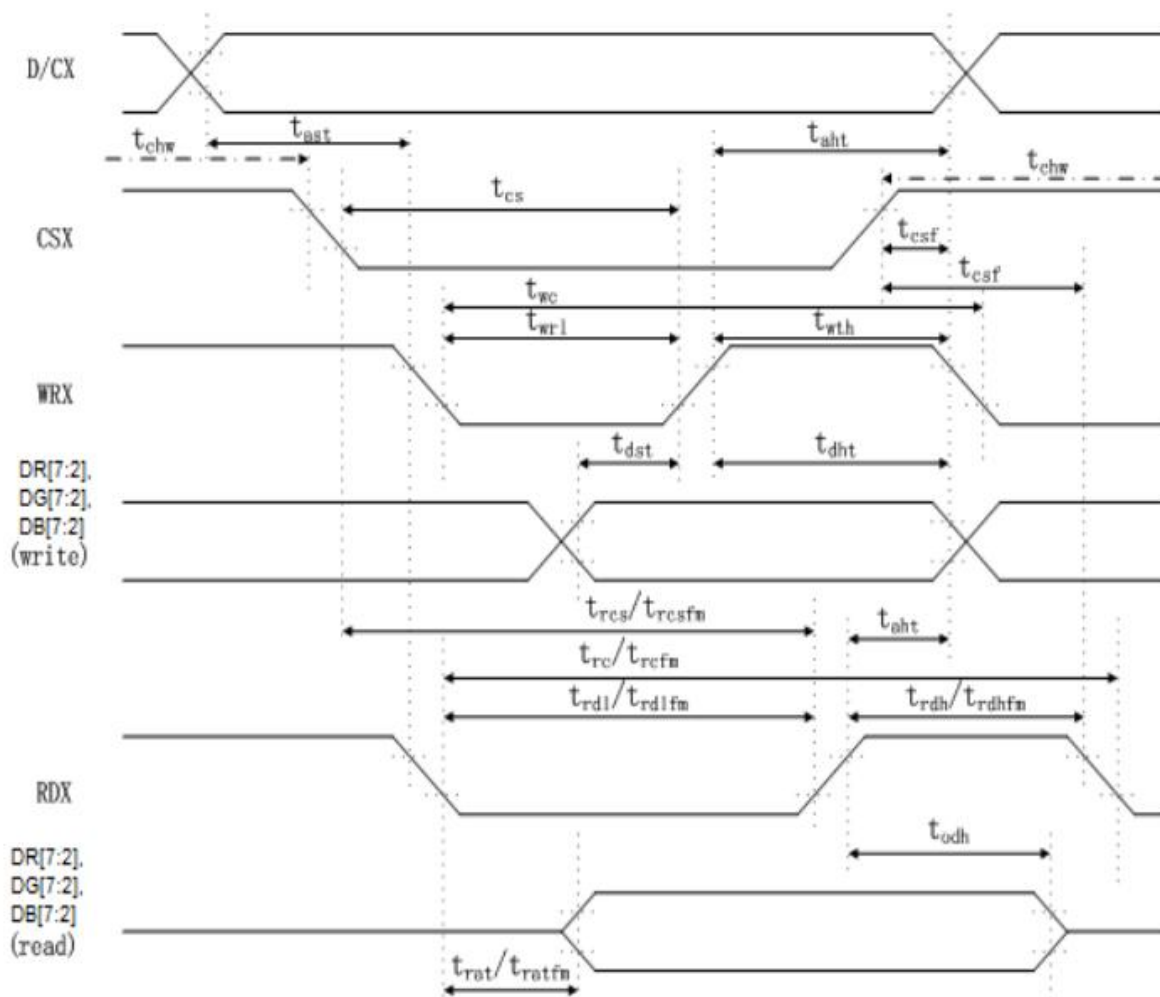


Figure 8-3-1

Note: Logic high and low levels are specified as 30% and 70% of IOVCC for Input signals.

Signal	Symbol	Parameter	MIN	MAX	UNIT	Description
D/CX	T _{AST}	Address Setup Time	0		ns	
	T _{AHT}	Address Hold Time (W/R)	10		ns	
CSX	T _{CHW}	“S” “H” Pulse Width	25		ns	
	T _{CS}	Chip Select Setup Time(W)	10		ns	
	T _{RCS}	Chip Select Setup Time (Read ID)	45		ns	
	T _{RCSFM}	Chip Select Setup Time (Read FM)	355		ns	
	T _{CSF}	Chip Select Wait Time (W/R)	10		ns	
WRX	T _{WC}	Write Cycle	50		ns	MCU 16 Bit Format (5-6-5):

Signal	Symbol	Parameter	MIN	MAX	UNIT	Description
						$T_{wc} > 100\text{ns}$ (see “6.4.8.”) MCU 16 Bit Format (6-6-6): $T_{wc} > 66\text{ns}$ (see “6.4.9.” Figure 6.4.9.4) Other Format $T_{wc} > 50\text{ns}$
	T_{WRH}	Control Pulse H Duration	$T_{wc} / 2$		ns	
	T_{WRL}	Control Pulse L Duration	$T_{wc} / 2$		ns	
RDX	T_{RC}	Read Cycle(ID)	160		ns	When Read ID
	T_{RDH}	Control Pulse H Duration(ID)	$T_{RC} / 2$		ns	
	T_{RDL}	Control Pulse L Duration(ID)	$T_{RC} / 2$		ns	
RDX	T_{RCFM}	Read Cycle(FM)	450		ns	When Read From Frame Memory
	T_{RDHFM}	Control Pulse H Duration(FM)	$T_{RCFM} / 2$		ns	
	T_{RDLFM}	Control Pulse L Duration(FM)	$T_{RCFM} / 2$		ns	
DR[7:2], DG[7:2], DB[7:2]	T_{DST}	Data Setup Time	10		ns	CLmax=30pF Clmin=8pF
	T_{DHT}	Data Hold Time	10		ns	
	T_{RAT}	Read Access Time(ID)		40	ns	
	T_{RATFM}	Read Access Time(FM)		340	ns	
	T_{ODH}	Output Disable Time	20		ns	

Table 8-3-1 AC characteristics of parallel MCU in asynchronous mode

Note 1: IOVCC 1.65 to 3.3V, VCI=2.6 to 3.3V, AGND=DGND=0V, Ta=-30 to 70 °C (to +85°C no damage)

Note 2: This input signal rise time and fall time (T_r , T_f) is specified at 15 ns or less. Logic high and low levels are specified as 30% and 70% of IOVCC for input signals

6. Optical Specifications

Item	Symbol	Condition	Min.	Typ.	Max.	Unit	Note
Viewing Angle (CR≥10) B/L ON	θ_T	$\Phi=90^\circ$ (12 o'clock)	80	85	-	deg	Note2
	θ_B	$\Phi=270^\circ$ (6 o'clock)	80	85	-	deg	Note2
	θ_L	$\Phi=180^\circ$ (9 o'clock)	80	85	-	deg	Note2
	θ_R	$\Phi=0^\circ$ (3 o'clock)	80	85	-	deg	Note2
Response Time	T_{ON}	Normal $\theta=\Phi=0^\circ$	-	15	17	msec	Note4
	T_{OFF}		-	15	17	msec	Note4
Contrast Ratio	CR		-	800	1000	-	Note1 Note3
Color Chromaticity	W_X		TBD	TBD	TBD	-	Note1 Note5
	W_Y		TBD	TBD	TBD	-	Note1 Note5
Luminance	L		300	380	-	cd/m ²	Note1 Note7
Luminance Uniformity	Y_U		75	80	-	%	Note1 Note6
NTSC	-		40	50	-	%	-

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.

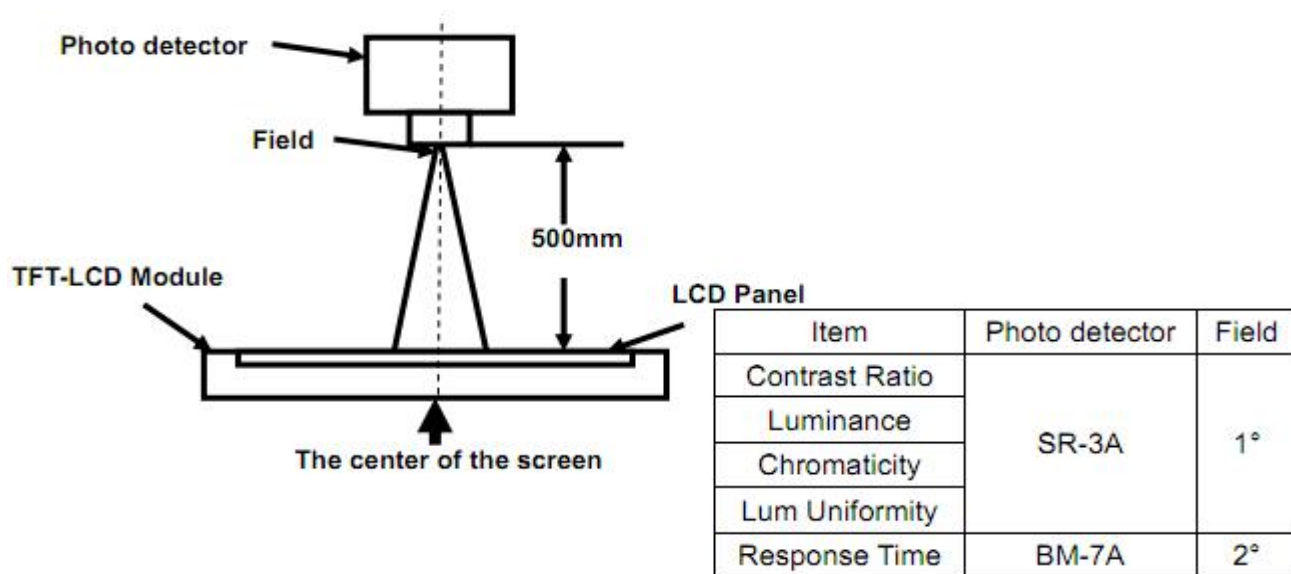


Fig 1

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).

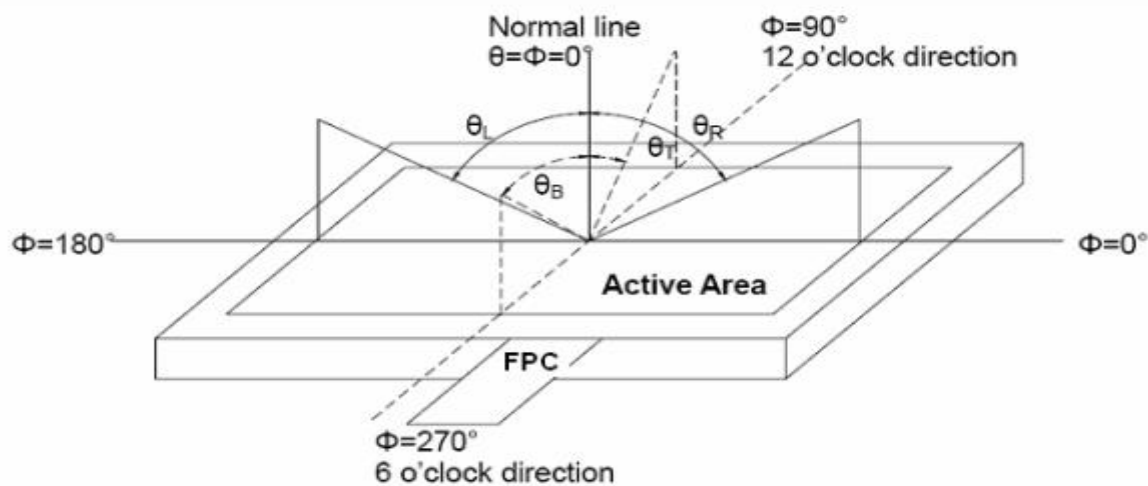


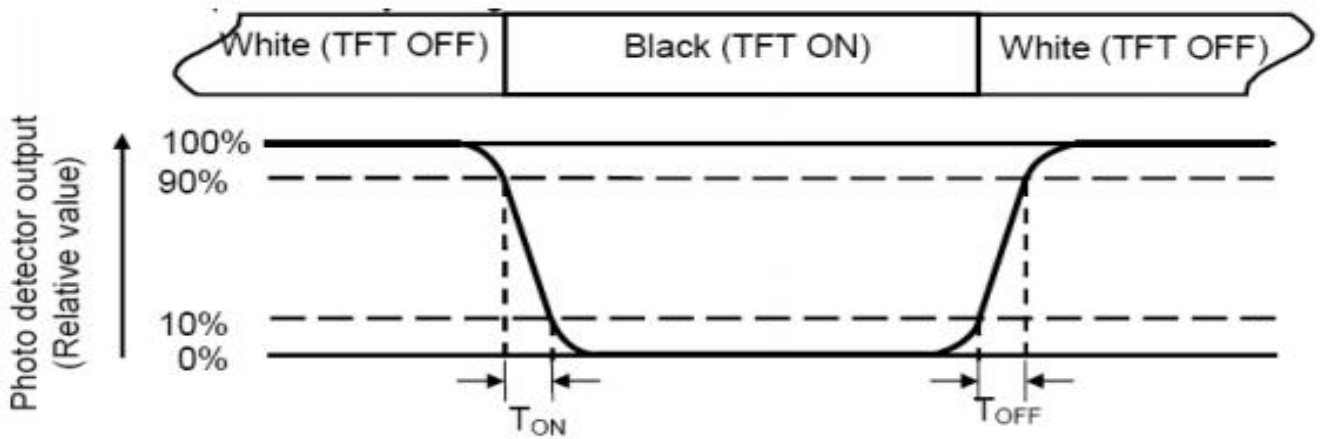
Fig 2 Definition of viewing angle

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.

L_v = Average Surface Luminance with all white pixels ($P_1, P_2, P_3, \dots, P_n$)

For more information see FIG.3-a/b

Note 8:

H,V : Active area(see Figure a)

Light spot size $\varnothing = 5\text{mm}$ (BM-5) or $\varnothing = 7.7\text{mm}$ (BM-7) 50cm distance or test spot position : see Figure a.

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

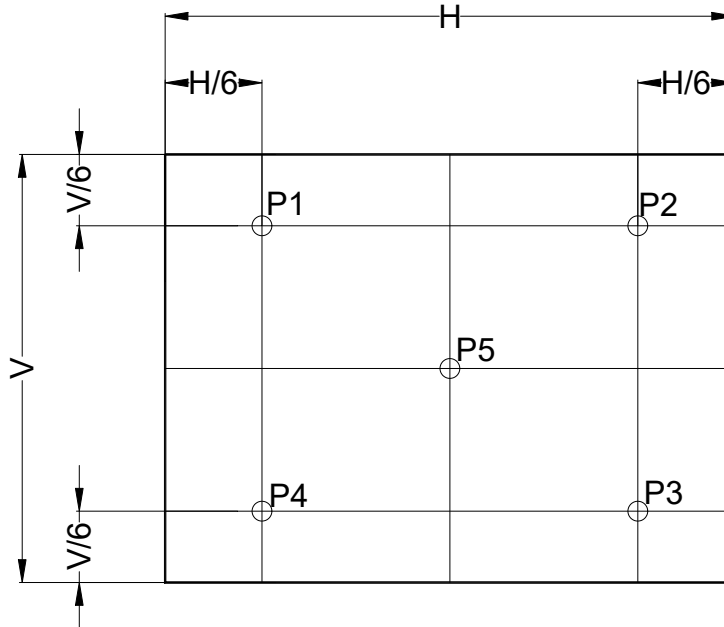


Fig. 3-a Definition of points

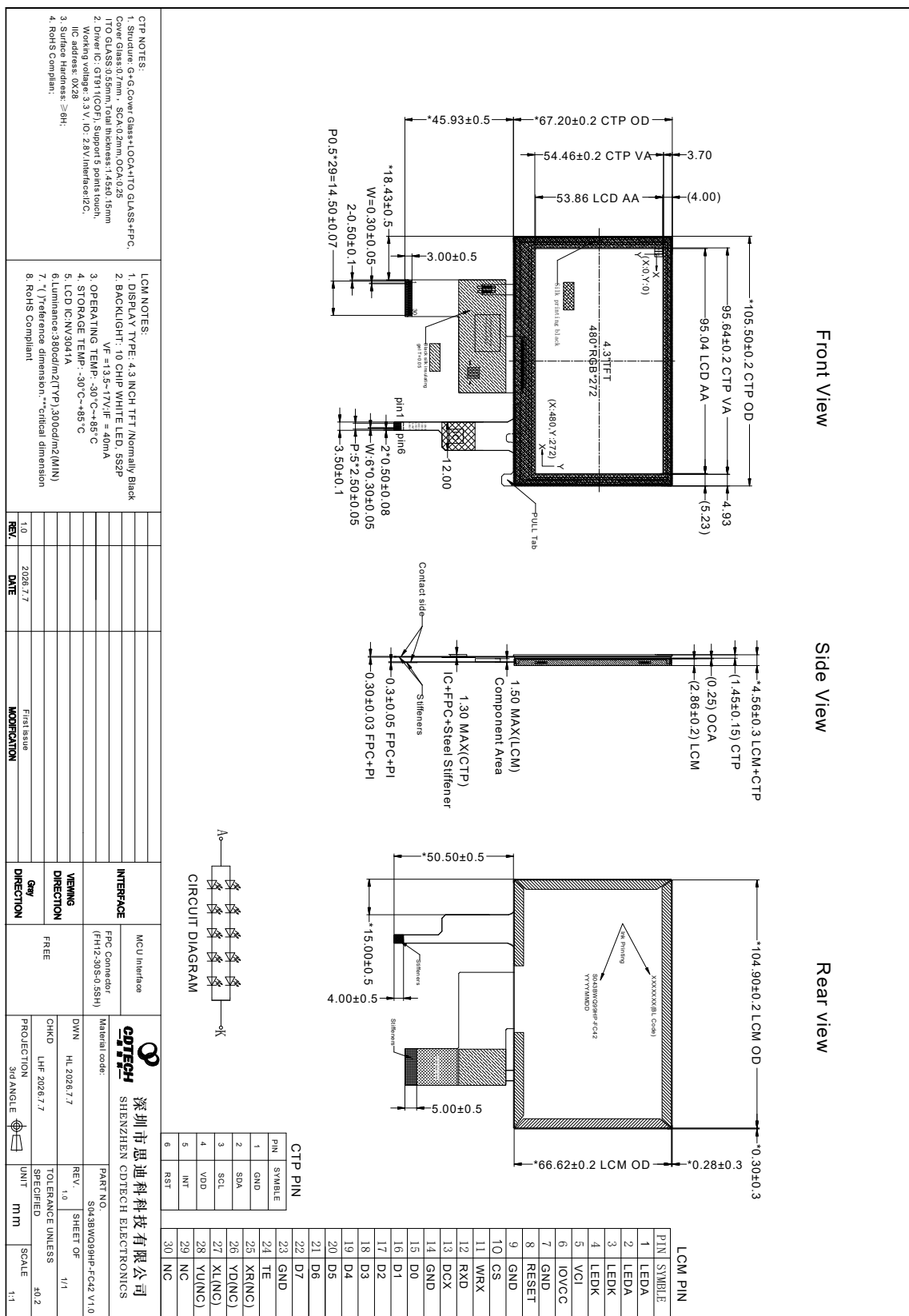
7. Reliability Test Items

Test Item	Test Conditions
High Temperature Storage	Ta= +85℃ 96hrs
Low Temperature Storage	Ta= -30℃ 96hrs
High Temperature Operation	Ta= +85℃ 96hrs
Low Temperature Operation	Ta= -30℃ 96hrs
High Temperature and Humidity Storage	Ta= +60℃, 90% RH 96hrs
Thermal Shock (Non-operation)	-30℃/30 min ~ +85℃/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:

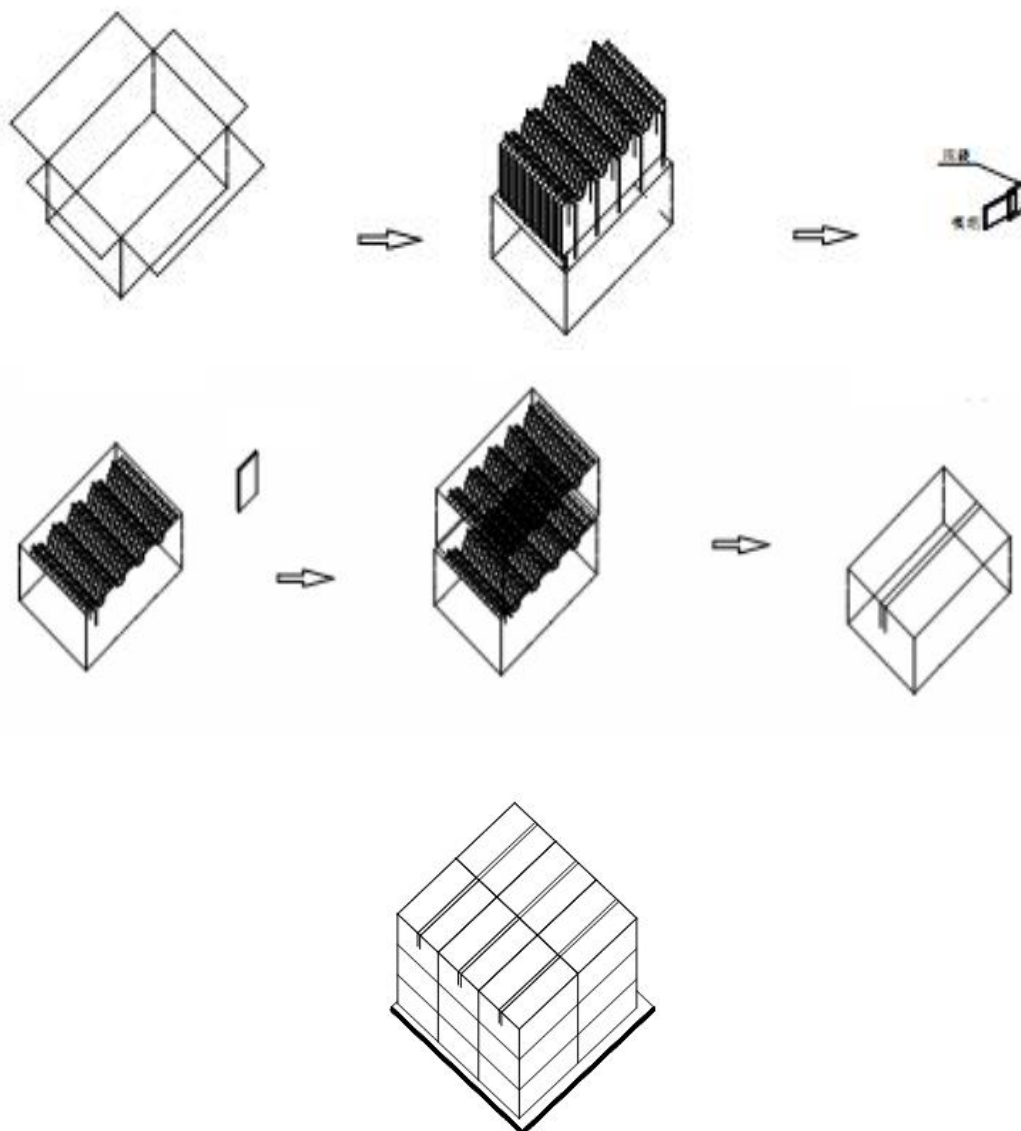
- 1). Air bubble in the LCD
- 2). Seal leak or Glass crack
- 3). Non display or abnormal display
- 4). Brightness reduction >50%

8. Mechanical Drawing



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.