MODEL NO.: TM080TDHG01-00

ISSUED DATE: 2015-06-25

VERSION: Ver. 1.0

■ **Preliminary Specification**
□ **Final Product Specification**

Customer :

Approved by	Notes

SHANGHAI AVIC Confirmed :

Prepared by	Checked by	Approved by
Junwen Du 2015/06/25	Longping Deng 2015/06/25	Feng Qin 2015/06/25

This technical specification is subjected to change without notice.

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Record of Revision

Rev	Issued Date		Editor
1.0	2015-06-25	Preliminary Specification Release	Junwen Du

1 General Specifications

1.1 General Specifications

2 Feature		Spec
Display Spec.	Size	8 inch
	Resolution	1024×768
	Technology Type	a-Si
	Pixel Configuration	R.G.B. Stripe
	Pixel pitch(mm)	0.158(H) ×0.158(V)
	Display Mode	TM with Normally White
	Surface Treatment	Clear
	Viewing Direction	10:30 o'clock
	Gray Scale Inversion Direction	4:30 o'clock
Mechanical Characteristics	LCM (W x H x D) (mm)	183.0x141.0x3.40
	Active Area(mm)	162.05 x 121.54
	With /Without TSP	Without TSP
	Matching Connection Type	TBD
	LED Numbers	27 LEDS
	Weight (g)	189g
Electrical Characteristics	Interface	LVDS
	Color Depth	16.7M
	Driver IC	OTA7159A+OTD9160A

Note 1: Viewing direction for best image quality is different from TFT definition. There is a 180 degree shift.

Note 2: Requirements on Environmental Protection: Q/S0002

Note 3: LCM weight tolerance: ± 5%

2 Input/Output Terminals

2.1 INPUT TERMINALS PIN ASSIGNMENT

Pin No.	Symbol	I/O (Note1)	Description	Remark
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	Note1
28	SELB	I	6bit/8bit mode select No	Note2
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	Note3
34	U/D	I	Vertical inversion N	Note3
35	VGL	P	Gate OFF Voltage	

36	CABCEN1	I	CABC H/W enable	Note4
37	CABCEN0	---	No connection	Note4
38	VGH	P	Gate ON Voltage	
39	LED+	P	LED Anode	
40	LED+	P	LED Anode	

I/O----definition, I----Input, O----Output, P----Power, No used I/O pin please fix to GND level

Note1: PWM output after CABC function;

Note2: LVDS mode 6bits/8bits input select pin,If LVDS input data in 6 bits,SELB must be set To high,If LVDS input data in 8 bits,SELB must be set to low,

Note3: When L/R="0",set right to left scan direction, L/R="1" set left to right scan direction When U/D="0",set top to bottom scan direction, U/D="1" set bottom to top scan direction

Note4: CABC function enable/disable, set to low:disable,set to high:enable.

3 Absolute Maximum Ratings

AGND=GND=0V, Ta = 25℃

Item	Symbol	MIN	MAX	Unit	Remark
Power Supply Voltage 1	VCC	-0.3	7.0	V	Base on IC Spec
Power Supply Voltage 2	AVDD	-0.5	15	V	Base on IC Spec
Power Supply Voltage 3	VGH	-0.3	+42	V	Base on IC Spec
Power Supply Voltage 4	VGL	VGH-42	+0.3	V	Base on IC Spec
Power Supply Voltage 4	VCOM	2.75	4.75	V	Base on Test
Back Light Forward Current	I_{LED}	170	190	mA	For each LED
Operating Temperature	T_{OPR}	-20	70	℃	Base on RA
Storage Temperature	T_{STG}	-30	80	℃	Base on RA

4 Electrical Characteristics

4.1 Recommended Operating Condition

AGND=GND=0V, Ta = 25℃

Item	Symbol	Min	Typ.	Max	Unit	Remark
Digital Supply Voltage	DVDD	2.7	3.3	3.6	V	-
Analog Supply Voltage	AVDD	11.3	11.5	11.7	V	-
Gate On Voltage	VGH	19.5	20.0	20.5	V	-
Gate Off Voltage	VGL	-7.5	-7.0	-6.5	V	-
Common Electrode Driving Signal	VCOM	(2.75)	(3.75)	(4.75)	V	-

4.2 Power Consumption

AGND=GND=0V, Ta = 25℃

Item	Symbol	Condition	Min	Typ.	Max	Unit	Remark
Digital Supply Current	I_{VCC}	DVDD=3.3V	-	42.181		mA	-
Analog Supply Current	I_{AVDD}	AVDD=11.5V	-	52.33		mA	-
Gate On Current	I_{VGH}	VGH=20.0V	-	0.804		mA	-
Gate Off Current	I_{VGL}	VGL=-7.0V	-	0.832		mA	-
Power Consumption	Pane l& Gamma		-	753		mW	-

Note1: Checkered Black pattern for Typ.

4.3 Recommended Driving Condition for Backlight

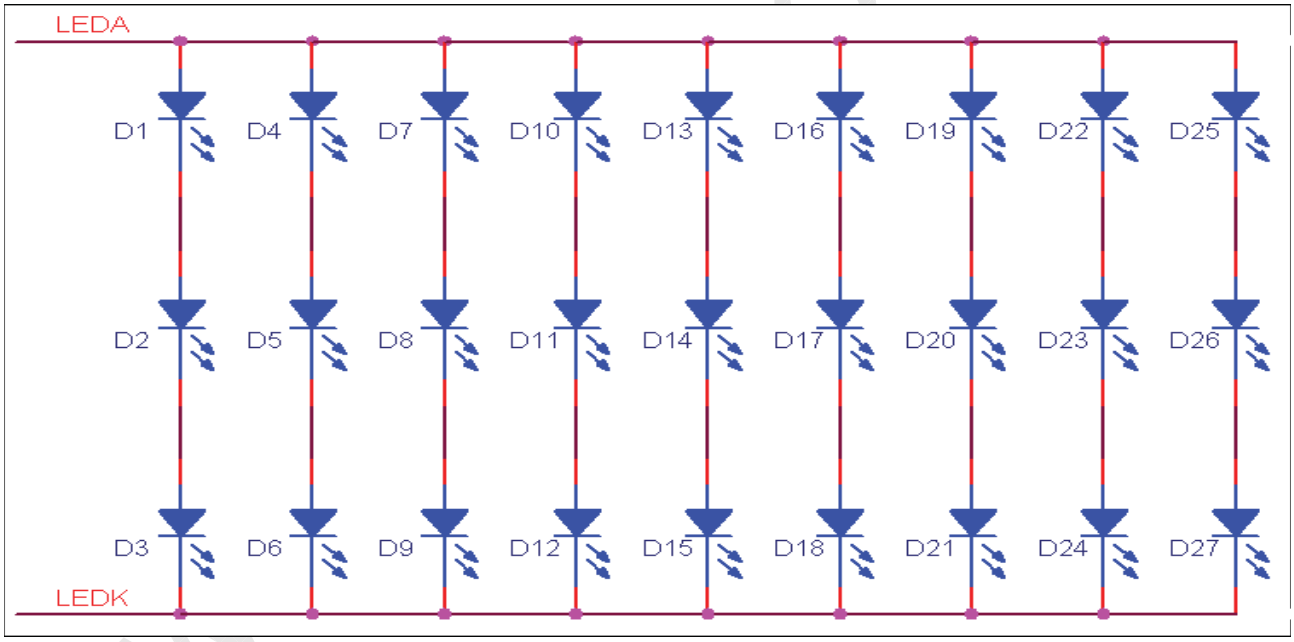
Ta=25℃

Item	Symbol	Min	Typ	Max	Unit	Remark
Forward Current	I_F	-	180		mA	27LEDs (3 LED Serial, 9 LED Parallel)
Forward Voltage	V_F	9.0	9.9	10.5	V	
Backlight Power Consumption	W_{BL}	-	1.782		W	
Operating Life Time	-	20,000	30,000	-	Hrs	I_F =20mA

Note1: The LED driving condition is defined for each LED module (3 LED Serial, 9 LED Parallel).For each LED: I_F (1/9) =20mA, V_F (1/3) =3.3V.

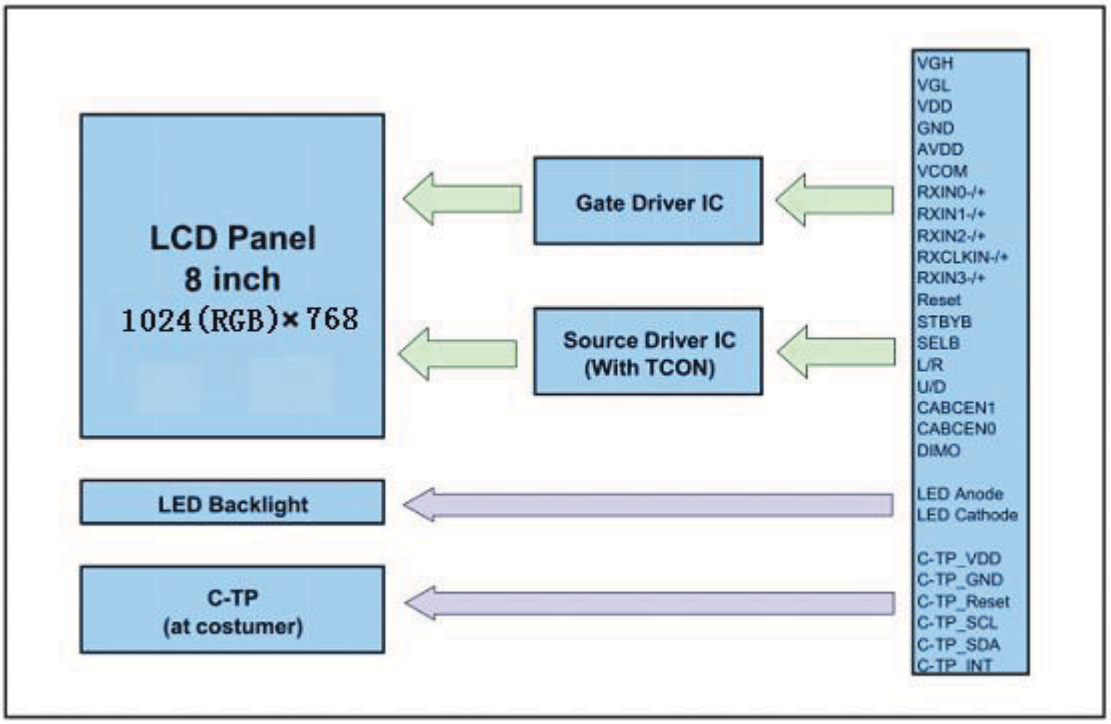
Note2: Under LCM operating, the stable forward current should be inputted. And forward voltage is for reference only.

Note3: I_F is defined for one channel LED.Optical performance should be evaluated at Ta=25℃ only If LED is driven by high current, high ambient temperature & humidity condition. The life time of LED will be reduced.Operating life means brightness goes down to 50% initial brightness. Typical operating life time is estimated data.



Note4: The LED driving condition is defined for each LED module

4.4 Block Diagram



LCD module diagram

5 Interface Timing

5.1 AC Electrical Characteristics (For TTL input mode)

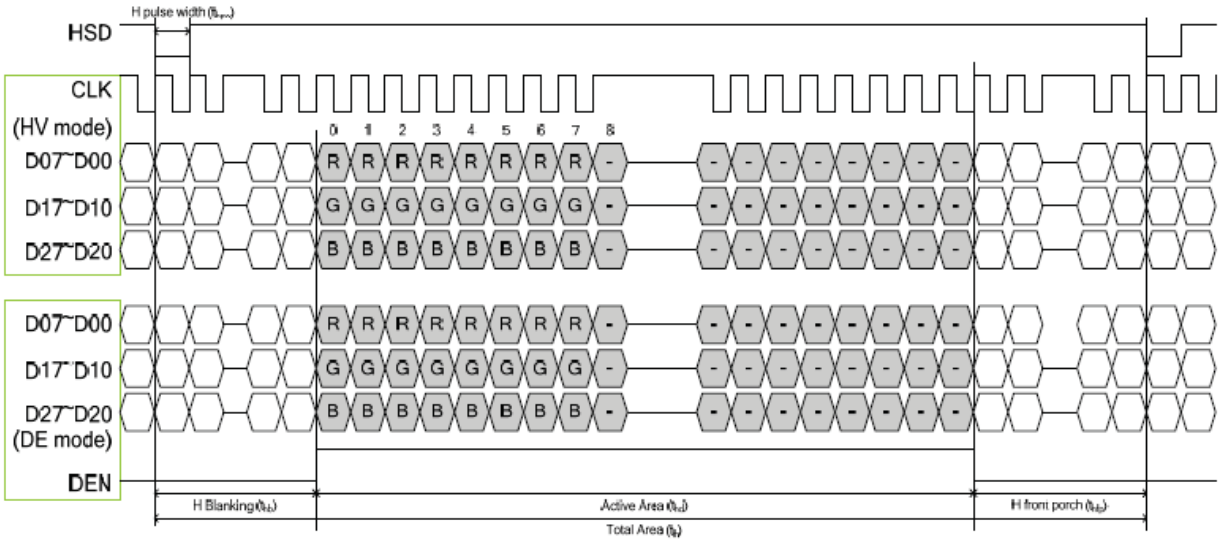
(VDD=3.3V, VDDA=13.5V, VSS=VSSA=0V, TA=-20 to +85℃)

Parameter	Symbol	MIN.	Typ.	MAX.	UNIT	Conditions
VDD Power On Slew rate	T	-	-	20	ms	From GND to 90% VDD
RSTB pulse width	T	10	-	-	us	

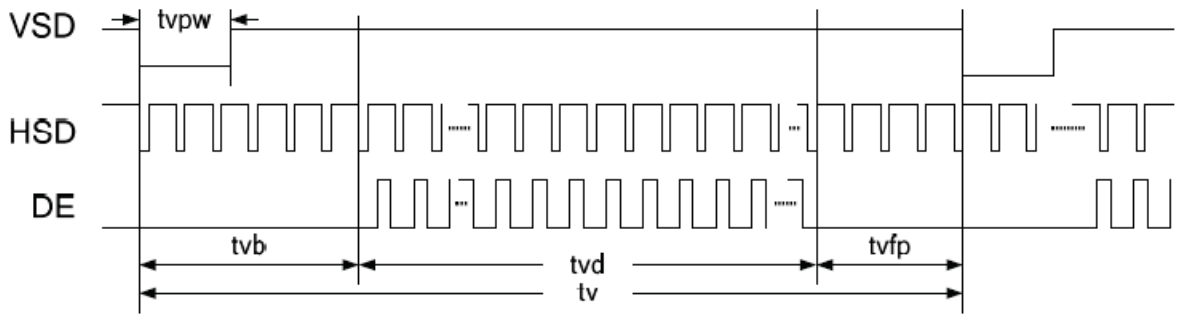
AC Electrical Characteristics

5.2 Data input format

- **Horizontal timing**



● **Vertical timing**



● **DE Mode**

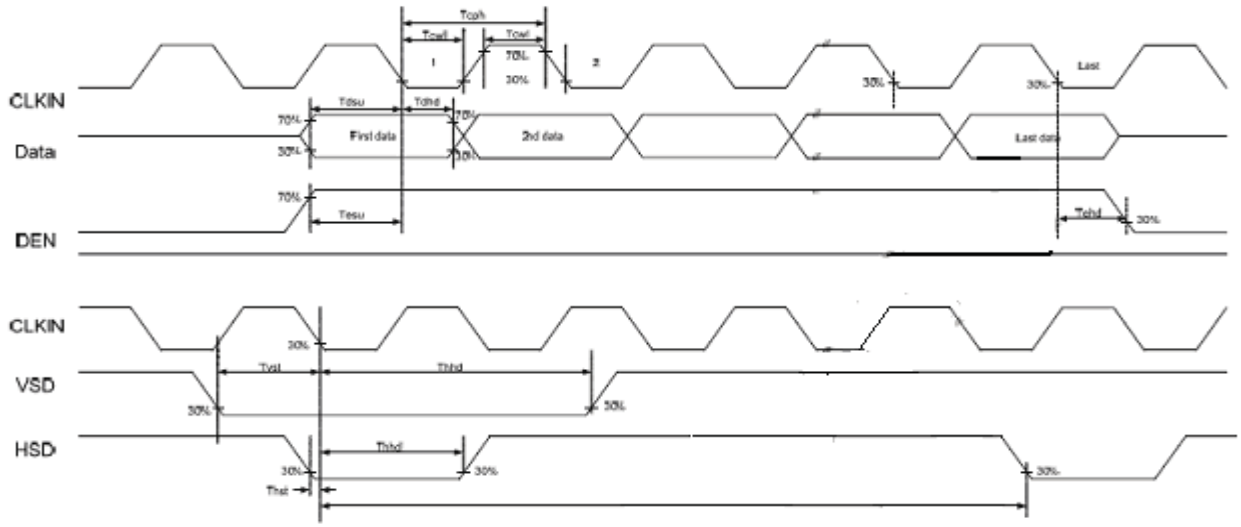
Parameter	Symbol	Value			Unit
		Min.	TYP.	MAX.	
DCLK Frequency	fclk	52	65	71	MHz
H Active	thd		1024		DCLK
H Total	th	1114	1344	1400	DCLK
HSYNC blanking	thb	90	320	376	DCLK
V Active	tvd		768		th
V Total	tv	778	806	845	th
VSYNC blanking	tvb	10	38	77	th

Parameter	Symbol	SPEC			Unit
		Min.	Typ.	Max.	
Horizontal Display Area	Thd		1024		Dclk
DCLK frequency	fclk	52	65	71	MHz
One Horizontal line	th	1114	1344	1400	Dclk
HS pulse width	thpw	1	-	140	Dclk
HS Back porch(blanking)	thb	-	160	-	Dclk
HS Front Porch	thfp	-	160	-	Dclk

● **Vertical timing**

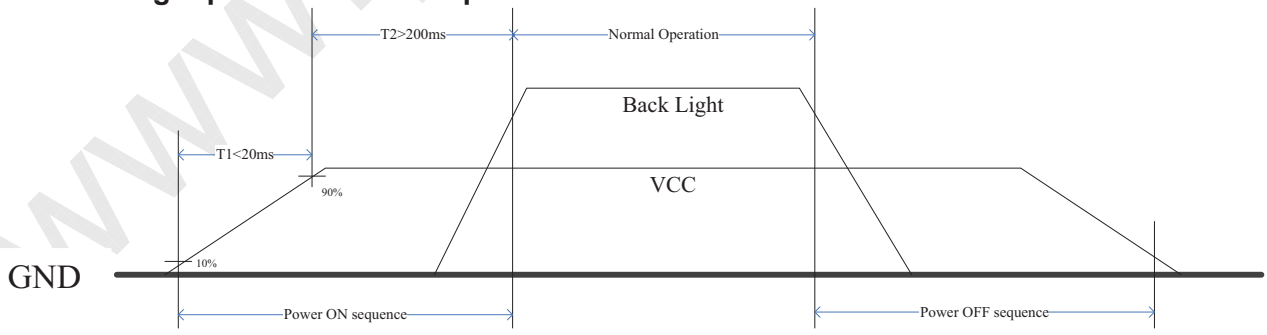
Parameter	Symbol	SPEC			Unit
		Min.	Typ.	Max.	
Vertical Display Area	tvd		768		th
VS period time	tv	792	806	840	th
VS pulse width	tvpw	1	-	20	th
VS Back Porch (Blanking)	tvb	-	23	-	th
VS Front Porch	tvfp	-	15	-	th

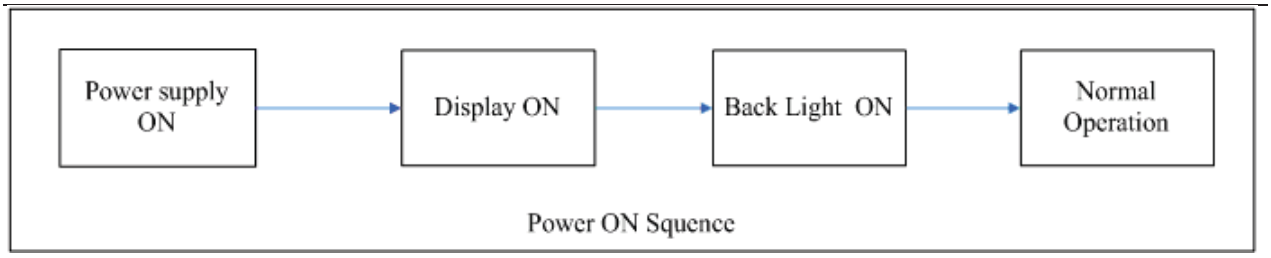
5.3 Input clock and data timing waveform

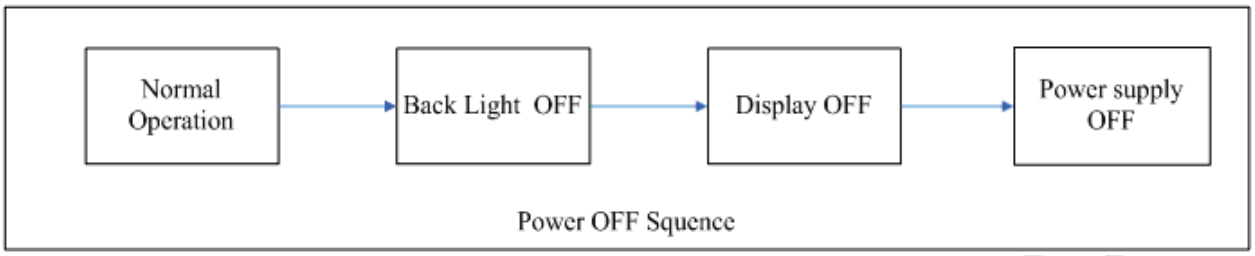


5.4 Power ON/OFF Sequence

5.4.1 Back Light power ON/OFF sequence

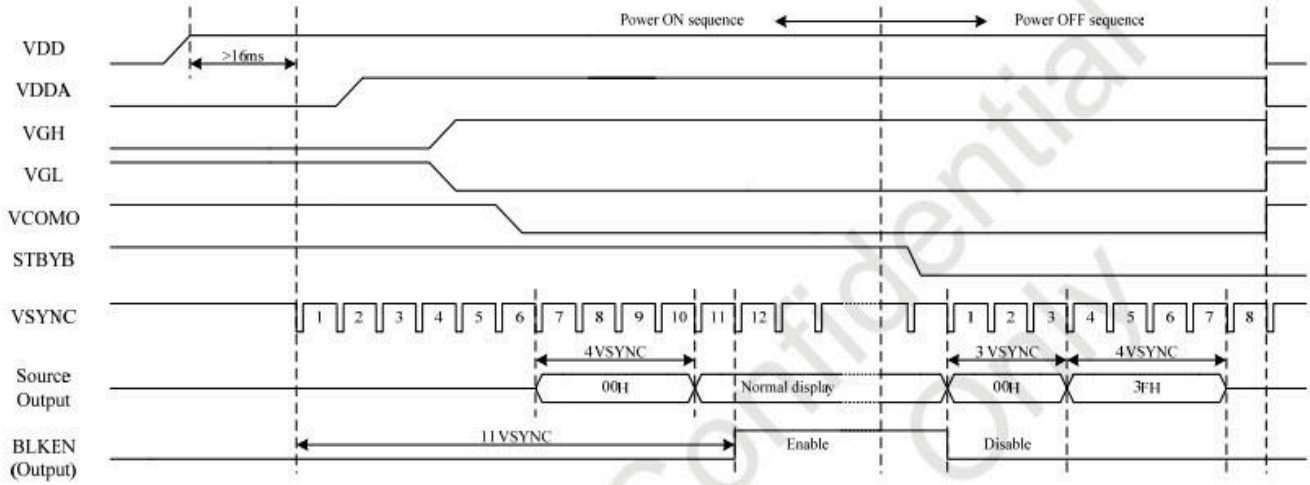




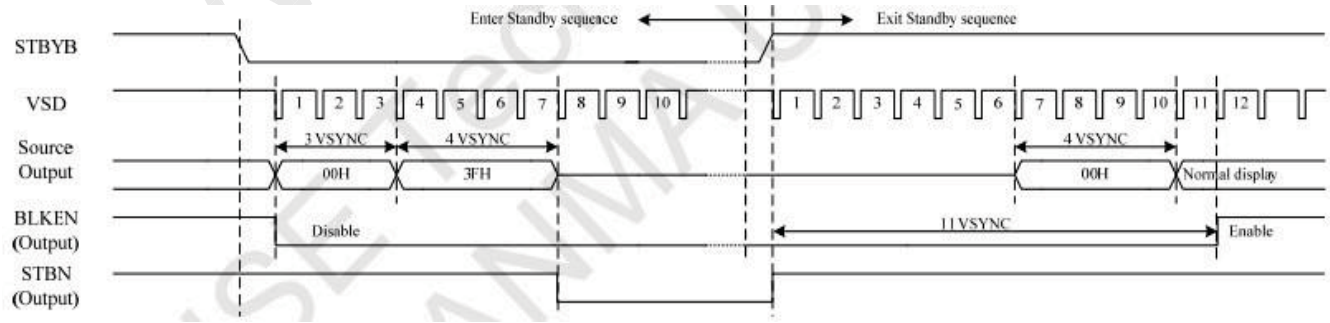


Back Light Power ON/OFF sequence

5.4.2 System power ON/OFF sequence



5.4.3 Enter and exit standby mode sequence



6 Optical Characteristics

Ta=25℃

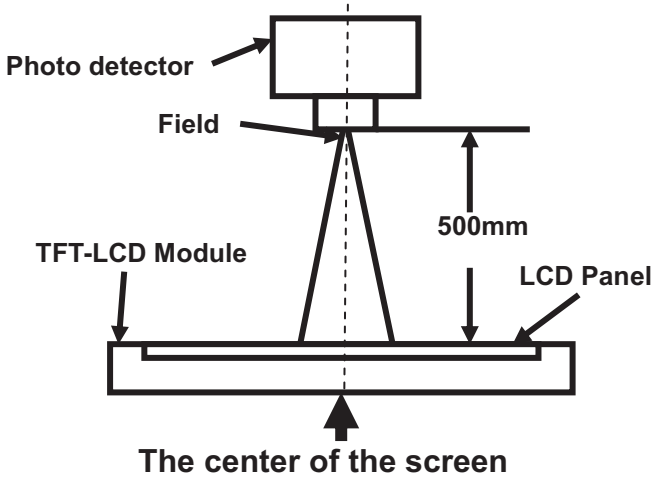
Item		Symbol	Condition	Min	Typ.	Max	Unit	Remark
View Angles		θT	CR≧10	70	80	-	Degree	Note 2
		θB		70	80	-		
		θL		70	80	-		
		θR		70	80	-		
Contrast Ratio		CR	θ=0°	600	700	-	-	Note1 Note3
Response Time		T_{ON}	25℃	-	20	30	ms	Note1 Note4
		T_{OFF}						
Chromaticity	White	x	Backlight is on	0.258	0.308	0.358	-	Note5 Note1
		y		0.275	0.325	0.375		
	Red	x		0.530	0.580	0.630		
		y		0.291	0.341	0.391		
	Green	x		0.302	0.352	0.402		
		y		0.533	0.583	0.633		
	Blue	x		0.107	0.157	0.207		
		y		0.048	0.098	0.148		
NTSC		-	-	45	50	-	%	Note5
Luminance		L	-	350	400	-	cd/m^2	Note1 Note7
Uniformity		U		70	75	-	%	Note1 Note6

Test Conditions:

1. The ambient temperature is 25℃.
2. The test systems refer to Note 1 and Note2.
3. The Transmittance and NTSC are the emulated values base on the panel with normal EWV polarizer and C-Light, and when using LED back light they will be to decrease about 0.3%.

Note 1: Definition of optical measurement system.

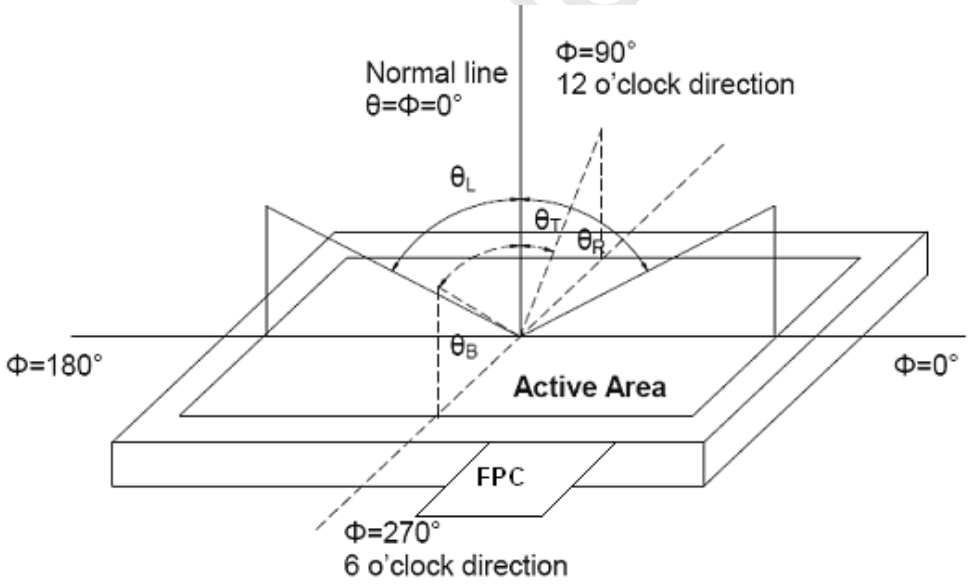
The optical characteristics should be measured in dark room. After 5 Minutes operation, the optical properties are measured at the center point of the LCD screen. All input terminals LCD panel must be ground when measuring the center area of the panel.



Item	Photo detector	Field
Contrast Ratio	BM-5A	1°
Luminance		
Lum Uniformity		
Chromaticity	SR-3A	
Response Time	TRD100	-

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)。



Note 3: Definition of contrast ratio

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

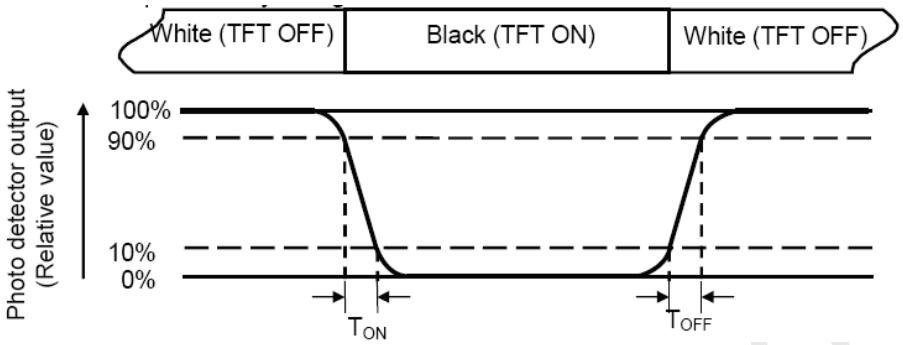
“White state “: The state is that the LCD should drive by Vwhite.

“Black state”: The state is that the LCD should drive by Vblack.

Vwhite: To be determined Vblack: To be determined.

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 (T_{ON}) is the time between photo detector output intensity changed from 90% to 10%. And fall time (T_{OFF}) is the time between photo detector output intensity changed from 10% to 90%.



Note 5: Definition of color chromaticity (CIE1931)

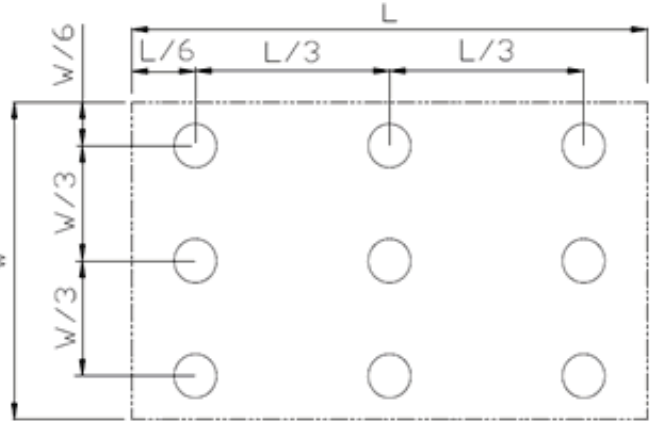
Color coordinates measured at center point of LCD.

Note 6: Definition of luminance uniformity

Active area is divided into 9 measuring areas (Refer Fig. 2). 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.

Note 7: Definition of luminance

Measure the luminance of white state at center point.

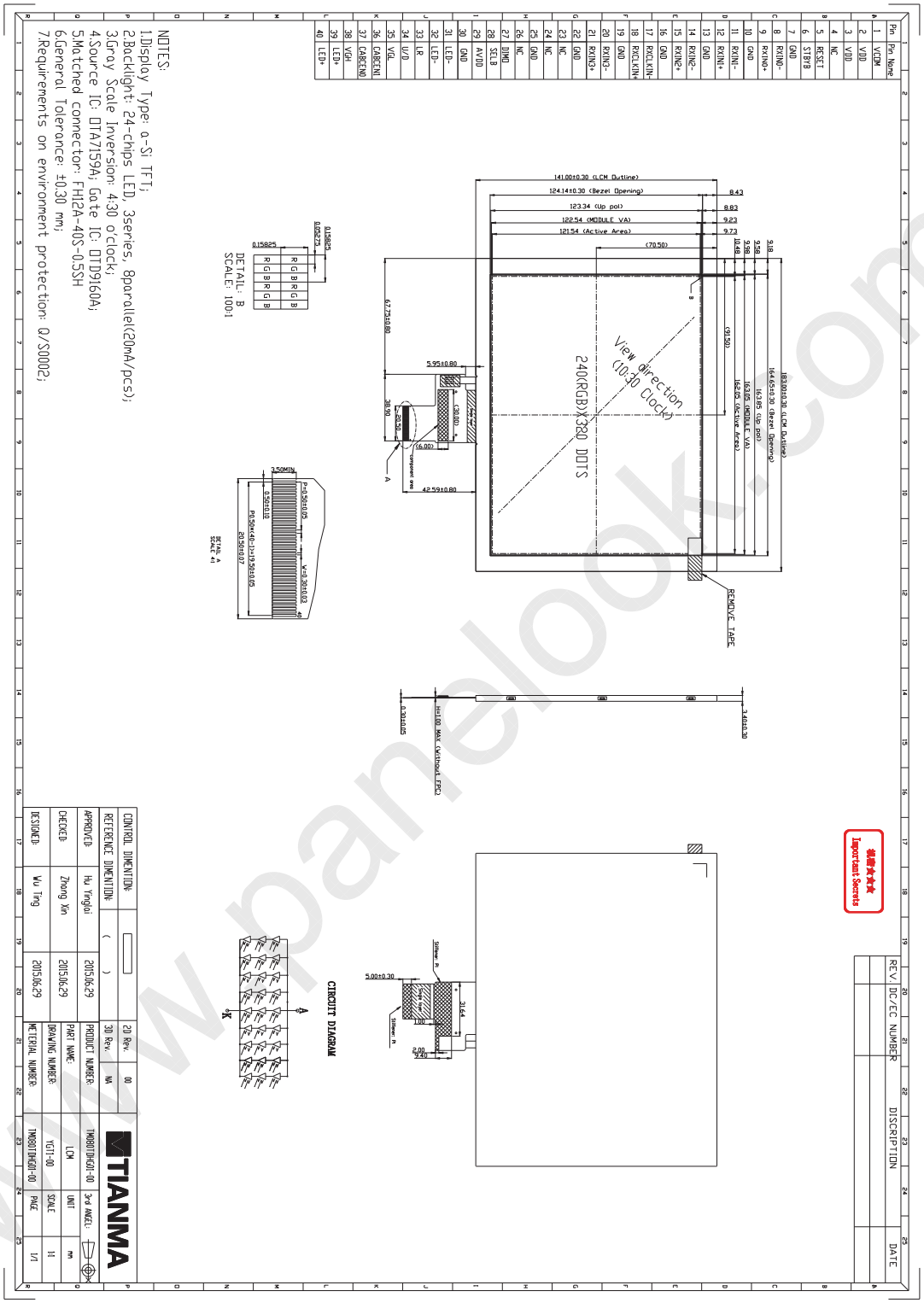
7 Environmental / Reliability Test

No.	Test Item	Condition	Remarks
1	High Temperature Operation	Ts = +70℃, 120 hours (Note1)	IEC60068-2-1:2007 GB2423.2-2008
2	Low Temperature Operation	Ta = -20℃, 120 hours (Note2)	IEC60068-2-1:2007 GB2423.1-2008
3	High Temperature Storage	Ta = +80℃, 120 hours	IEC60068-2-1:2007 GB2423.2-2008
4	Low Temperature Storage	Ta = -30℃, 120 hours	IEC60068-2-1:2007 GB2423.1-2008
5	Storage at High Temperature and Humidity	Ta = +60℃, 90% RH max, 120hours	IEC60068-2-78 :2001 GB/T2423.3—2006
6	Thermal Shock (non-operation)	-30℃ 30 min ~ +80℃ 30 min, Change time:5min, 20 Cycle	Start with cold temperature, End with high temperature, IEC60068-2-14:1984,GB2423.22-2002
7	ESD	C=150pF, R=330Ω, 5point/panel Air: ±8Kv, 5times; Contact: ±4Kv, 5times (Environment: 15℃~35℃, 30%~60%. 86Kpa~106Kpa)	IEC61000-4-2:2001 GB/T17626.2-2006
8	Vibration Test	Frequency range: 10~55Hz Stroke: 1.5mm Sweep: 10Hz~55Hz~10Hz 2 hours for each direction of X.Y.Z. (6 hours for total)	IEC60068-2-6:1982 GB/T2423.10—1995
9	Mechanical Shock (Non Op)	Half Sine Wave 60G 6ms, ±X, ±Y, ±Z 3times for each direction	IEC60068-2-27:1987 GB/T2423.5—1995
10	Package Drop Test	Height: 80cm, 1corner, 3edges, 6surfaces	IEC60068-2-32:1990 GB/T2423.8—1995

Note1: Ts is the temperature of panel's surface.

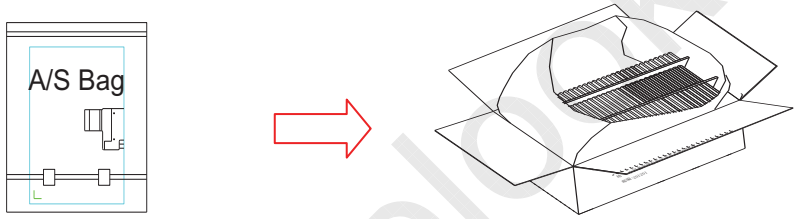
Note2: Ta is the ambient temperature of samples.

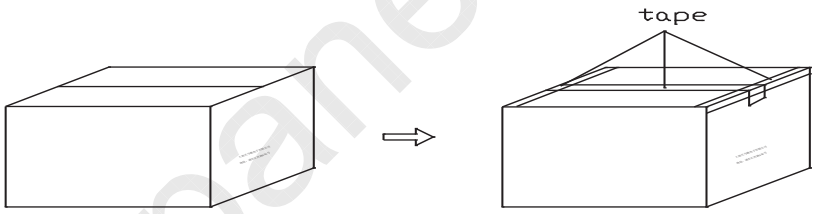
8 Mechanical Drawing



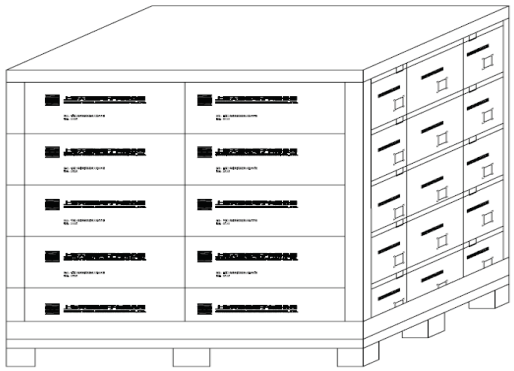
9 Packing Drawing

No	Item	Model (Material)	Dimensions(mm)	Unit Weight(Kg)	Quantity	Remark
1	LCM module	TM080TDHG01-00	183X141X3.4	0.189	48	
2	Partition_1	Corrugated paper	527X348X217	1.323	1	
3	Anti-static Bag	PE	161X253X0.05	0.001	48	Anti-static
4	Dust-Proof Bag	PE	700X545	0.06	1	
5	Partition_2	Corrugated Paper	505X332X4.0	0.098	2	
6	Corrugated Bar	Corrugated paper	348X173	0.028	6	
7	Carton	Corrugated paper	544X365X250	1.12	1	
8	Total weight	11.035±5%				





纸箱堆叠数案 2*3/每层*共 5 层



10 Precautions for Use of LCD Panels

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 Panel 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
- Ketone
- Aromatic solvents

10.1.6 Do not attempt to disassemble the LCD Panel.

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 Panels.

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 Panel 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 Panels, avoid exposure to direct sunlight or to the light of fluorescent lamps.

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

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

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

10.3 Transportation Precautions

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