深圳市宇锡科技有限公司

SHENZHEN YOUSEE TECHNOLOG CO., LTD

DISPLAY SPECIFICATION

Product NO: (产品型号) YX07022362784SB

Customer : (客 户) _____

APPROVED BY CUSTOMER 客户签署栏	
Approved by 审核	Remark 备注

APPROVED BY YOUSEE 宇锡签署栏			
Prepared by 制作	Checked by 检查		Approved by 审核
	电 子	结 构	

深圳市宇锡科技有限公司

Shenzhen Yousee Technology Co.,Ltd

邹长城 LONG

Tel:15818552076

E-mail: zouchangcheng@youseelcd.com

Adress:深圳市西乡簕竹角鸿竹雍启 C 栋 5 楼，D 栋 2 楼

2F bldg D and 5F, bldg C, Hongzhu Yongqi, Lezhujiao, Xixiang, Shenzhen

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Contents

NO.	Contents	Page
---	Cover	1
---	Contents	2
---	Document Revision History	3
一	General Description	4
二	Absolute Maximum Ratings	5
三	Optical Characteristics	6
四	Block Diagram	9
五	Interface Pin Connection	10
六	Electrical Characteristics	11
七	Reliability Test Items	16
八	Outline Dimension	17
九	Packing Form	18
十	General Precaution	20

Document Revision History

Change No.	Date	Subject And Reason	Version No.	Responser
1	2019.04.19	New	01	申平

1.0 General Description

1.1 Introduction

WEIYAO Display model Y X07022362784SB is a color active matrix thin film transistor (TFT) liquid crystal display (LCD) that uses amorphous silicon TFT as a switching device. This model is composed of a TFT LCD panel and a driving circuit.This TFT LCD has a 7.0 (16:9) inch diagonally measured active display area with (1024 horizontal by600 vertical pixel) resolution.

1.2. Features

7 (16:9 diagonal) inch configuration
Compatible with NTSC & PAL system
Image Reversion: UP/DOWN and LEFT/RIGHT
ROHS design

1.3. General information

Item	Specification	Unit
Outline Dimension	165 (H) x 100 (V) x5.7(D)	mm
Display area	154.08 (H) x 85.92 (V)	mm
Number of Pixel	800RGB (H) x 480 (V)	pixels
Pixel pitch	0.0642 (H) x 0.1790 (V)s	mm
Pixel arrangement	RGB Vertical stripe	
Display mode	Normally white	
Color Filter Array	RGB vertical stripes	
Backlight	White LED	
Weight	TBD	g

2.0 Absolute Maximum Ratings

2.1 Electrical Absolute Rating

2.1.1 TFT LCD Module

Item	Symbol	Min.	Max.	Unit	Note
Power supply voltage	DV_{DD}	-0.3	5	V	GND=0
	AV_{DD}	-0.5	13.5	V	AGND=0
	VGH	0	30	V	
	VGL	-15	0		
Analog Signal Input Level	V_R, V_G, V_B	-0.2	AV_{DD}+0.2	V	
Logic Signal Input Level	V_I	-0.3	DV_{DD} +0.3	V	

Note (1) Stresses above those listed under "Absolute Maximum Rating" may cause permanent damage to the device. These are stress ratings only. Functional operation of this device at indicated in the operational sections(6.1) of this specification.

2.2 Environment Absolute Rating

Item	Symbol	Min.	Max.	Unit	Note
Operating Temperature	Topa	-20	70	℃	
Storage Temperature	Tstg	-30	80	℃	

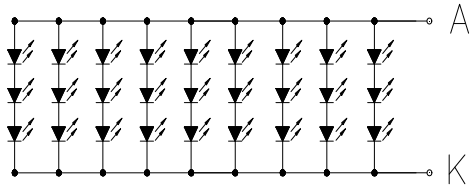
2.3 Back-light Unit:

PARAMETER	Sym.	Min.	Typ.	Max.	Unit	Test Condition	Note
LED Current	IF	–	180	–	mA	–	–
LED Voltage	VF	9	9.9	10.5	V	–	–
Life Time		–	25000	–	Hr.	I≦180mA	–
Color	White						

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.

(2)Ta=25±2℃

(3)Test condition: LED Current 180mA



LED 电路图 3串*9并=27 LED

3.0 Optical Characteristics

3.1 Optical specification

Item		Symbol	Condition	Min.	Typ.	Max.	Unit	Note
Threshold voltage		Vsat		—	2.48	—	V	(1)
		Vth		—	1.47	—	V	(1)
Luminous instensity				400	450		cd/m2	
Transmittance(With PZ)		T		—	8.91	—		
Contrast		CR		600	800	—		(2)(3)
Response time	Rising	T_R		—	5	7	msec	(2)(4)
	Falling	T_F		—	20	28		
Color gamut		S		—	49	—	%	C light
Color chromaticity (CIE1931)	White	W_x	Θ=0 Normal viewing angle	0.26	0.31	0.36		(2)(5) CF Glass C light
		W_y		0.28	0.33	0.38		
	Red	Rx		0.616	0.631	0.646		
		Ry		0.327	0.342	0.357		
	Green	Gx		0.306	0.321	0.336		
		Gy		0.538	0.553	0.568		
	Blue	Bx		0.133	0.148	0.163		
		By		0.173	0.188	0.203		
Viewing angle	Hor.	Θ_L	CR>10	70	80	—		
		Θ_R		70	80	—		
	Ver.	Θ_U		60	70	—		
		Θ_D		50	65	—		
Brightness uniformity		B_{UNI}	Θ=0	70	—	—	%	(6)
Optima View Direction		6 O' clock						(7)

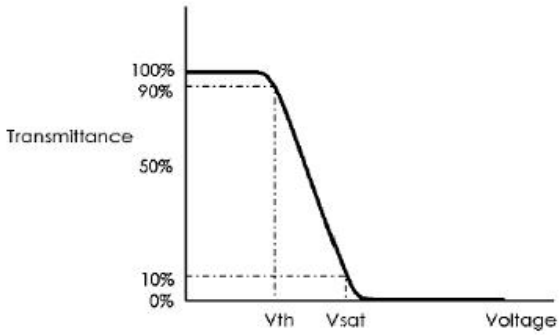
3.2 Measuring Condition

- Measuring surrounding : dark room
- Ambient temperature : 25±2℃
- 30min. warm-up time.

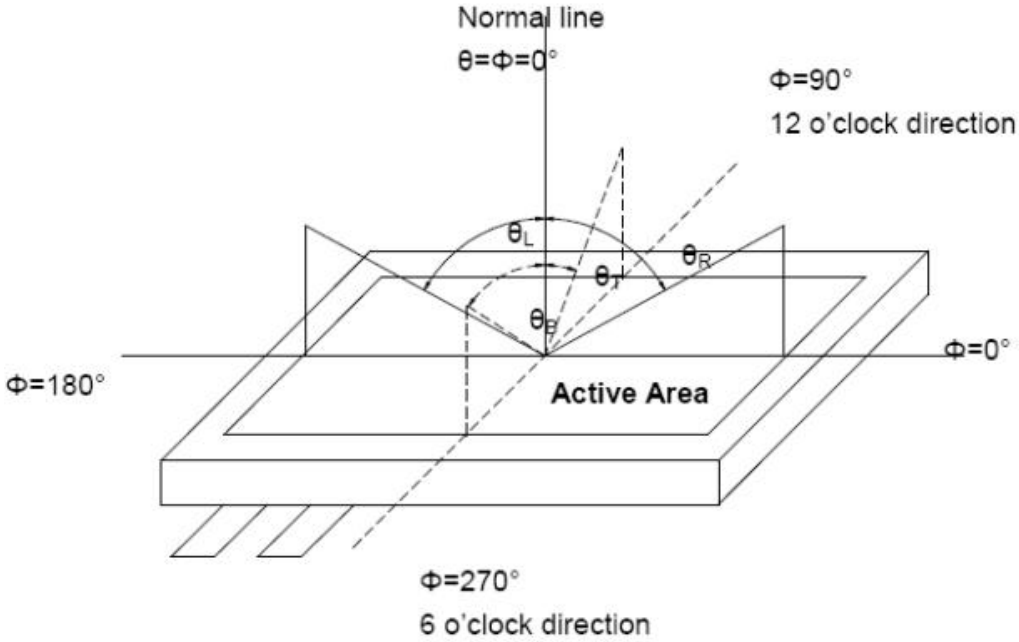
3.3 Measuring Equipment

- TOPCON BM-7
- Measuring spot size : field 2°

Note (1) Definition of Vsat and Vth (at 20℃)

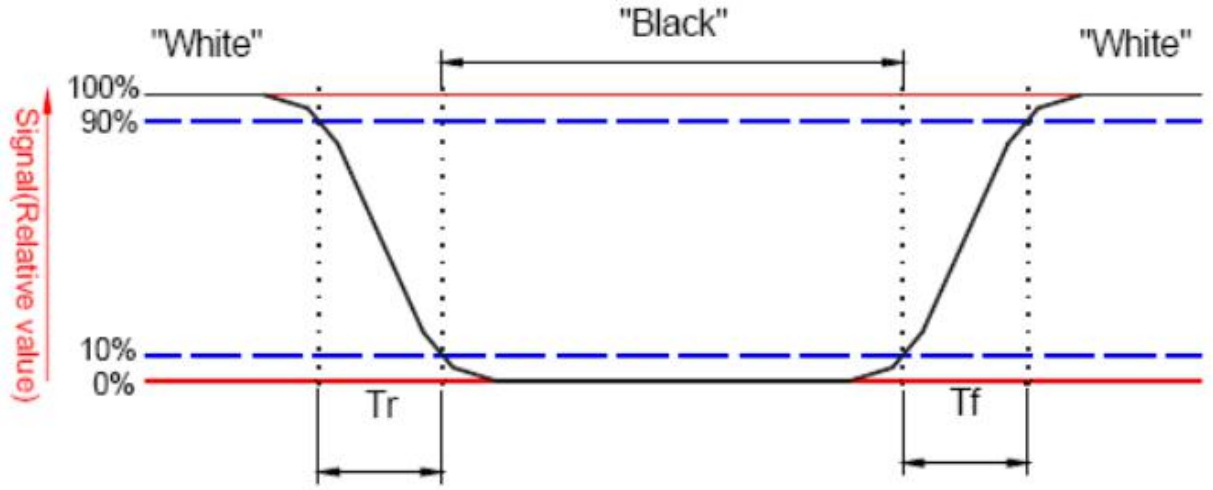


Note (2) Definition of Viewing Angle :



Note 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 (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 4: Definition of contrast ratio:

Contrast ratio is calculated by the following formula.

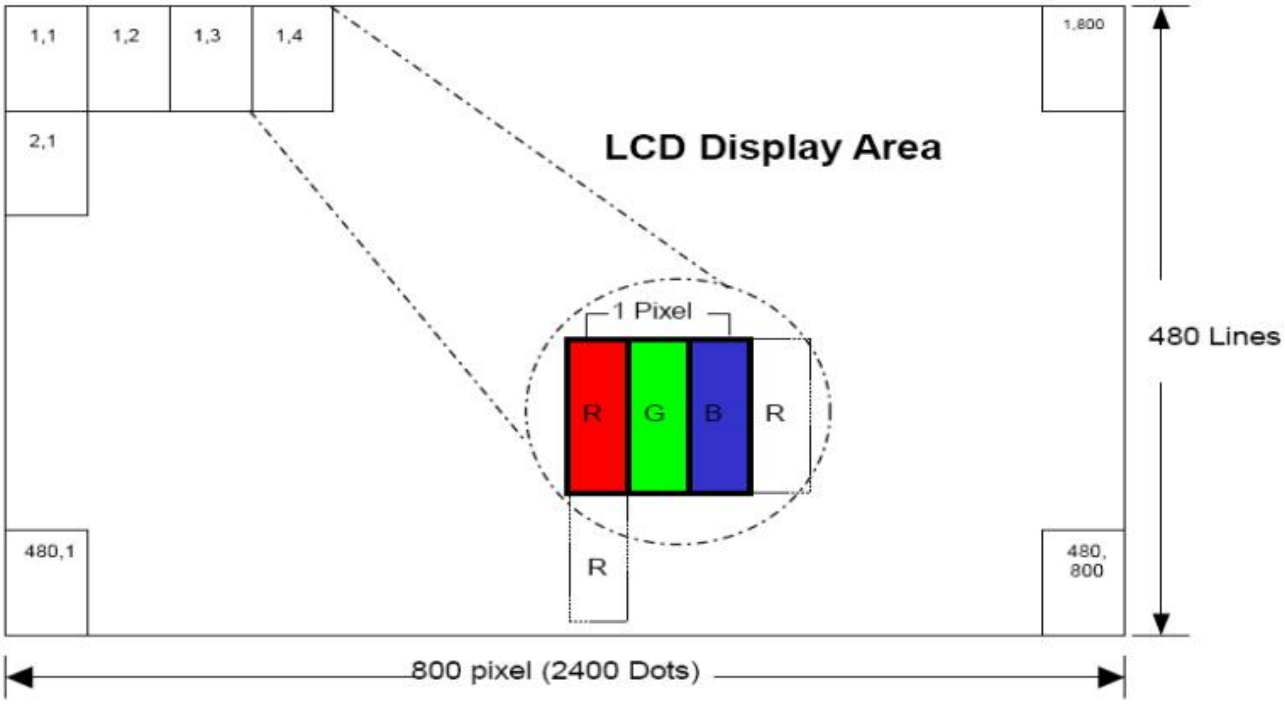
$$\text{Contrast ratio (CR)} = \frac{\text{Brightness on the "white" state}}{\text{Brightness on the "black" state}}$$

Note 5: Definition of color chromaticity (CIE 1931)

Note 6: All input terminals LCD panel must be ground while measuring the center area of the panel

4.0 Block Diagram

4.1 TFT-LCD Module



5.0 Interface Pin Connection

5.1 TFT LCD Module

Pin NO.	SYMBOL	DESCRIPTION
1	LED+	LED Anode
2	LED+	LED Anode
3	LED-	LED Cathode
4	LED-	LED Cathode
5	GND	Ground
6	VCOM	Common Voltage
7	DVDD	Digital Power
8	MODE	DE/SYNC mode select. Normally pull high H: DE mode. L: HSD/VSD mode
9	DEN	Data Enable signal
10	VSD	Vertical sync input. Negative polarity
11	HSD	Horizontal sync input. Negative polarity
12	B7	Blue Data Input(MSB)
13	B6	Blue Data Input
14	B5	Blue Data Input
15	B4	Blue Data Input
16	B3	Blue Data Input
17	B2	Blue Data Input
18	B1	Blue Data Input
19	B0	Blue Data Input(LSB)
20	G7	Green Data Input(MSB)
21	G6	Green Data Input
22	G5	Green Data Input
23	G4	Green Data Input
24	G3	Green Data Input
25	G2	Green Data Input
26	G1	Green Data Input
27	G0	Green Data Input(LSB)
28	R7	Red Data Input(MSB)
29	R6	Red Data Input
30	R5	Red Data Input
31	R4	Red Data Input
32	R3	Red Data Input
33	R2	Red Data Input
34	R1	Red Data Input
35	R0	Red Data Input(LSB)
36	GND	Power ground
37	DCLK	Clock input
38	GND	Power ground
39	SHLR	Left or Right Display Control
40	UPDN	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. Active low to enter reset state. Suggest to connecting with an RC reset circuit for stability. Normally pull high. (R=10KΩ，C=1μF)
45	NC	Not connect
46	VCOM	Common Voltage
47	DITH	Dithering setting DITH="H" 6bit resolution(last 2 bit of input data truncated) DITH="L" 8bit resolution(default setting)
48	GND	Power ground
49	NC	Not connect
50	NC	Not connect

6. Electrical Characteristics

6.1 TFT LCD Module

Item	Symbol	Min.	Typ.	Max.	Unit	Note
Supply Voltage	DV_{DD}	3.0	3.3	3.6	V	
	V_{GH}	16	17	18	V	
	V_{GL}	-7.7	-7	-6.3	V	
	AV_{DD}	10.2	10.4	10.6	V	
	Vcom	3.3	3.55	3.8	V	

Note (1): The brightness of LCD panel could be changed by adjusting the AC component of VCOM.
VCOM按实际效果确认

Note (2): STHL, STHR, OEH, L/R, CPH1~CPH3, STVD, STVU, OEV, CKV, U/D

6.2 TFT-LCD Current Consum

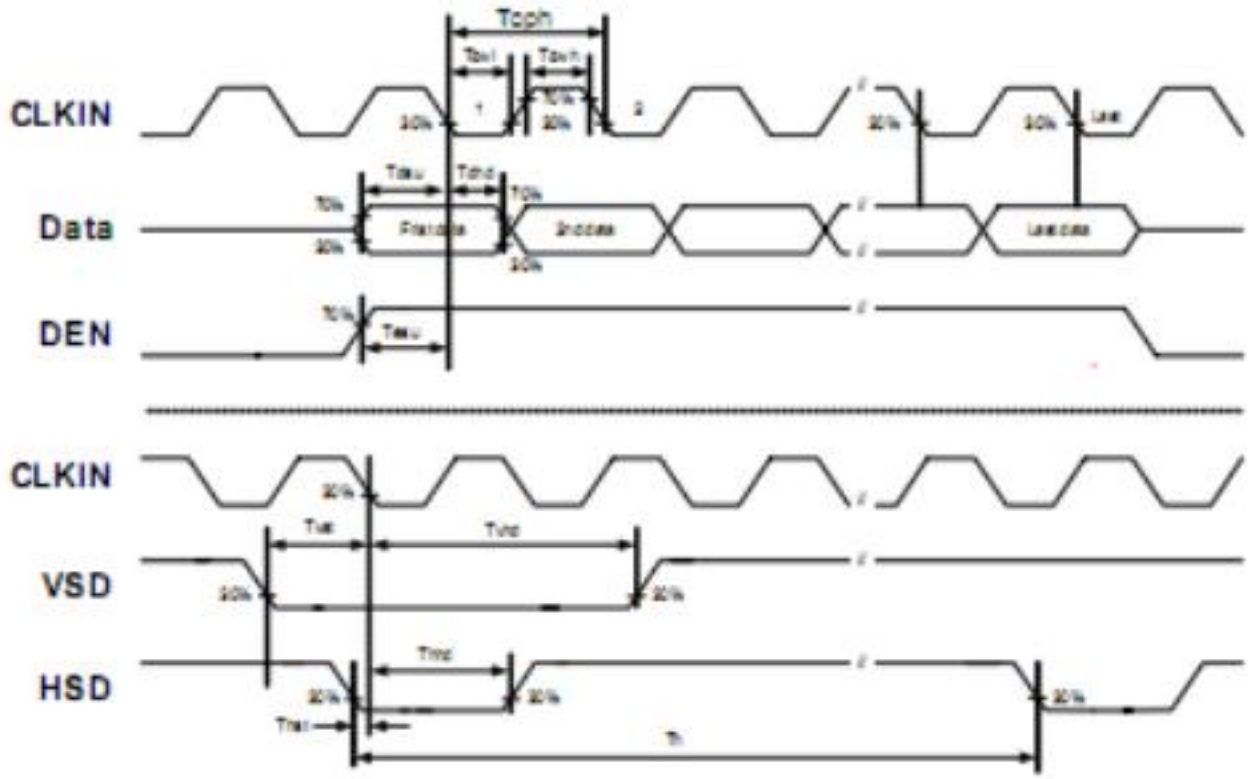
ITEM	SYMBOL	CONDITION	MIN	TYPE	MAX	UNIT	NOTE
Gate on power current	IVGH	VGH =18V	- -	0.5	1	mA	Note1
Gate off power current	IVGL	VGL= -6V	- -	0.5	1	mA	Note1
Digital power current	IDVDD	DVDD = 3.3V	- -	30	45	mA	Note1
Analog power current	IAVDD	AVDD = 9.6V	- -	35	45	mA	Note1
Total Power Consumption	PC		- -	447	604	mW	Note1

Note1: Typ. specification : Gray-level test Pattern
Max. specification : Black test Pattern

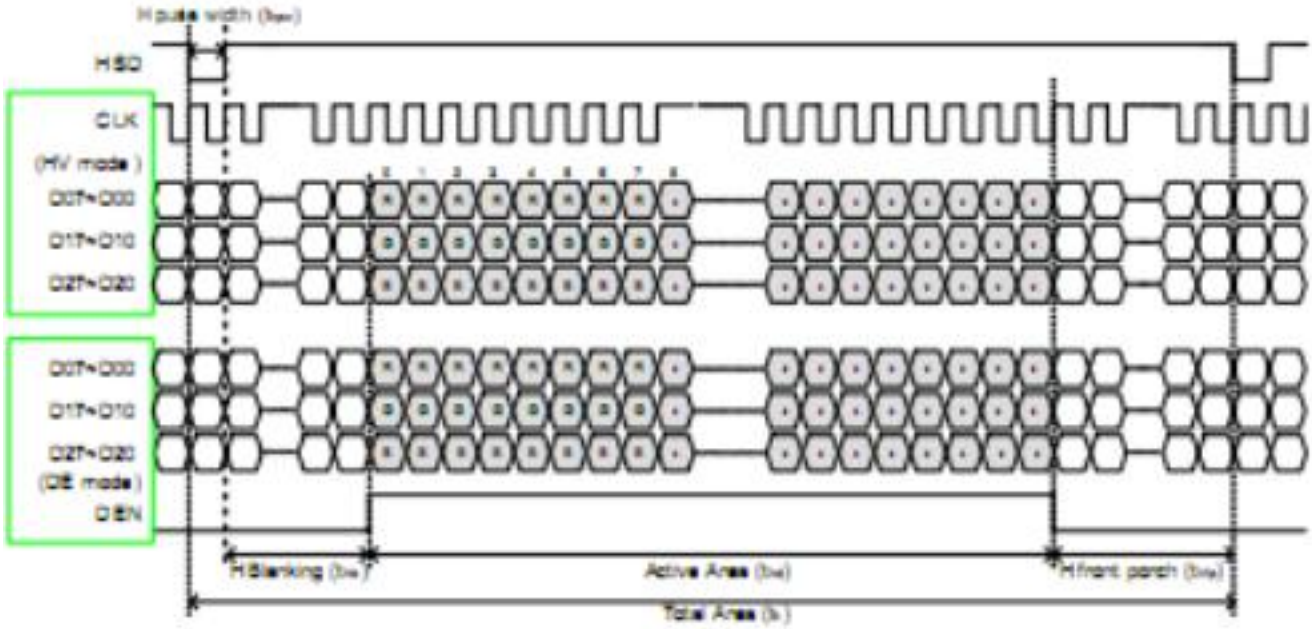
256 gray pattern

Black Pattern

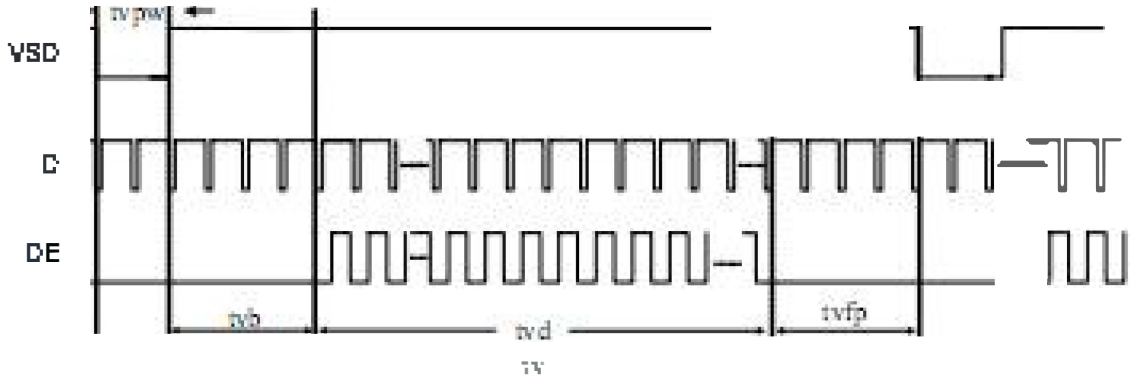
6.3 Timing Diagram of Interface Signal



Sampling clock timing



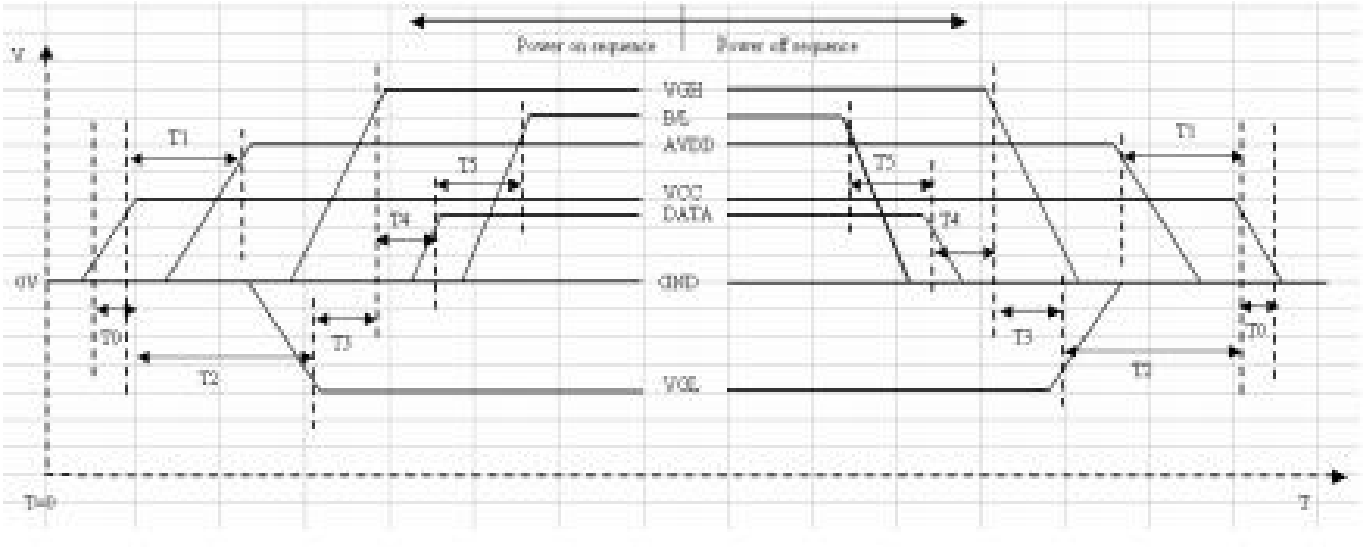
Horizontal display timing range



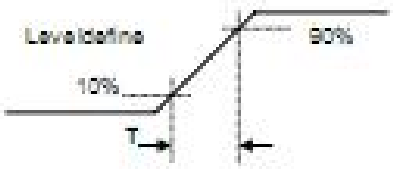
ertical timing

Item	Symbol	Min.	Typ.	Max.	Unit	Note
DCLK cycle time	Tcph	25			ns	
DCLK frequency	fclk		30	40	MHz	
DCLK 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 setup time	Tdsu	8			ns	
Data hold time	Tdhd	8			ns	
DE setup time	Tesu	8			ns	
DE hold time	Tehd	8			ns	
Horizontal display area	thd		800		Tcph	
HSD period time	th		928		Tcph	
HSD pulse width	thpw		48		Tcph	
HSD back porch	thb		40		Tcph	
HSD front porch	thfp		40		Tcph	
Vertical display area	tvd		480		th	
VSD period time	tv		525		th	
VSD pulse width	tvpw		3		th	
VSD back porch	tvb		29		th	
VSD front porch	tvfp		13		th	

6.4 Power Sequence



Item	Min.	Typ.	Max.	Unit
T0	0.5	--	20	msec
T1	16			msec
T2	20			msec
T3	10			msec
T4	10		50	msec
T5	50			msec



Power On Sequence: VCC-> AVDD -> VGL -> VGH -> Data -> B/L

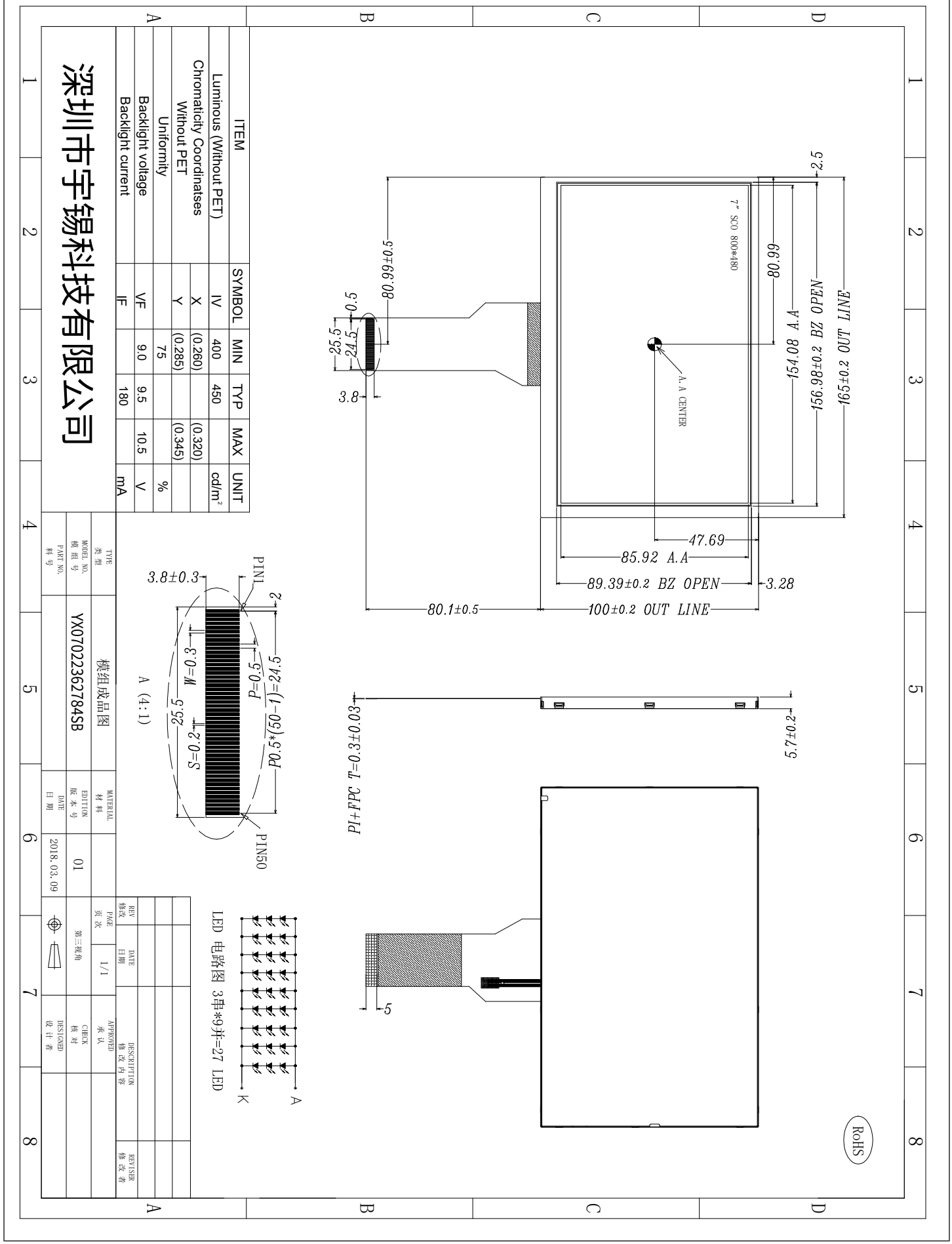
Power Off Sequence: B/L-> Data -> VGH -> VGL -> AVDD -> VCC

Notes: Data include R0~R7, G0~G7, B0~B7, HSD, VSD, DCLK, SHLR, UPDN, DE MODE, RSTB, STBYB, SHLR, UPDN, DITH

7.0 Reliability test items

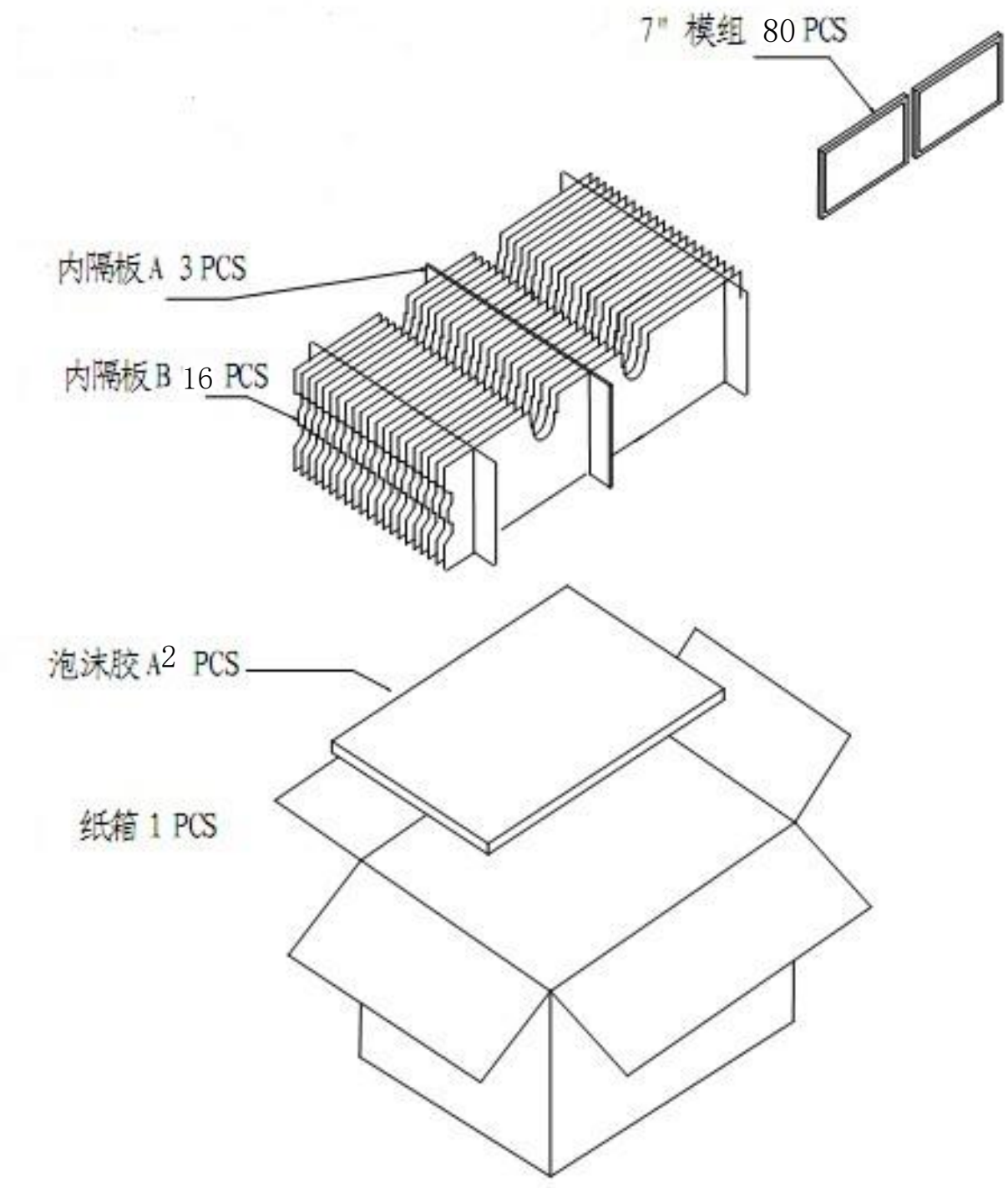
NO	Item	Conditions	Remark
1	High Temperature Storage	Ta=+80℃,48hrs	
2	Low Temperature Storage	Ta=-30℃,48hrs	
3	High Temperature Operation	Ta=+70℃,48hrs	
4	Low Temperature Operation	Ta=-20℃,48hrs	
5	High Temperature and High Humidity (operation)	Ta=+60℃,90%RH,48hrs	
6	Thermal Cycling Test (non operation)	-30℃(0.5hr)→+80℃(0.5hr),100cycles	
7	Vibration	1.Random:1.04G,10-500HZ,X,Y,Zdirection 30min/each direction 2.Sweep sine:1.5G, 5~500Hz, X/Y/Z,30min/each direction	
8	Shock	100G,6ms, ±X, ±Y, ±Z 3 time for each direction	JIS C7021, A-10 (Condition A)
9	Vibration (with carton)	Random:1.04Grms, 10~500Hz, X/Y/Z 45min/each direction Fixed:5Hz, 1.5Grms, X/Y/Z 45min/each direction	
10	Drop (with carton)	Height: 60cm 1 corner, 3 edges, 6 surfaces	JIS Z0202
11	Electrostatic Discharge	±200V,200PF,0Ω1 time/each terminal	

8.0 Outline dimension



9.0 Packing form

9.1 Packing form 1



10.0 General Precaution

10.1 Use Restriction

This product is not authorized for use in life supporting systems, aircraft navigation control systems, military systems and any other application where performance failure could be life-threatening or otherwise catastrophic.

10.2 Asembly Precaytton

10.2.1 Please use the mounting hole on the module side in installing and do not bending or wrenching LCD in assembling. And please do not drop, bend or twist LCD module in handling.
10.2.2 Please design display housing in accordance with the following guide lines.
10.2.2.1 Housing case must be destined carefully so as not to put stresses on LCD all sides and not to wrench module. The stresses may cause non-uniformity even if there is no non-uniformity statically.
10.2.2.2 Keep sufficient clearance between LCD module back surface and housing when the LCD module is mounted. The clearance in the design is recommended taking into account the tolerance of LCD module thickness and mounting structure height on the housing.
10.2.3 Please do not push or scratch LCD panel surface with any-thing hard. And do not soil LCD panel surface by touching with bare hands. (Polarizer film, surface of LCD panel is easy to be flawed.)
10.2.4 Please do not press any parts on the rear side such as source IC, gate IC, and FPC during handling LCD module. If pressing rear part is unavoidable, handle the LCD module with care not to damage them.
10.2.5 Please wipe out LCD panel surface with absorbent cotton or soft cloth in case of it being soiled.
10.2.6 Please wipe out drops of adhesives like saliva and water on LCD panel surface immediately. They might damage to cause panel surface variation and color change.
10.2.7 Please do not take a LCD module to pieces and reconstruct it. Resolving and reconstructing modules may cause them not to work well.

10.3 Disassembling or Modification

Do not disassemble or modify the module. It may damage sensitive parts inside LCD module, and may cause scratches or dust on the display. HannStar does not warrant the module, if customers disassemble or modify the module.

10.4 Breakage of LCD Panel

10.4.1 If LCD panel is broken and liquid crystal spills out, do not ingest or inhale liquid crystal, and do not contact liquid crystal with skin.
10.4.2 If liquid crystal contacts mouth or eyes, rinse out with water immediately.
10.4.3 If liquid crystal contacts skin or cloths, wash it off immediately with alcohol and rinse thoroughly with water.
10.4.4 Handle carefully with chips of glass that may cause injury, when the glass is broken.

10.5 Absolute Maximum Ratings and Power Protection Circuit

10.5.1 Do not exceed the absolute maximum rating values, such as the supply voltage variation, input voltage variation, variation in parts' parameters, environmental temperature, etc., otherwise LCD module may be damaged.
10.5.2 Please do not leave LCD module in the environment of high humidity and high temperature for a long time.
10.5.3 It's recommended employing protection circuit for power supply.
10.6 Operation
10.6.1 Do not touch, push or rub the polarizer with anything harder than HB pencil lead.Use fingerstalls of soft gloves in order to keep clean display quality, when persons handle the LCD module for incoming inspection or assembly.
10.6.2 When the surface is dusty, please wipe gently with absorbent cotton or other soft material.
10.6.3 Wipe off saliva or water drops as soon as possible. If saliva or water drops contact with polarizer for a long time, they may causes deformation or color fading.
10.6.4 When cleaning the adhesives, please use absorbent cotton wetted with a little petroleum benzine or other adequate solvent.

10.7 Static Electricity

10.7.1 Protection film must remove very slowly from the surface of LCD module to prevent from electrostatic occurrence.
10.7.2 Because LCD module uses CMOS-IC on TFT-LCD panel, it is very weak to electrostatic discharge. Please be careful with electrostatic discharge.
10.7.3 Persons who handle the module should be grounded through adequate methods.

10.8 Disposal

When disposing LCD module, obey the local environmental regulations.

10.9 OTHERS

10.9.1 A strong incident light into LCD panel might cause display characteristics' changing inferior because of polarizer film, color filter, and other materials becoming inferior. Please do not expose LCD module direct sunlight land strong UV rays.
10.9.2 Please pay attention to a panel side of LCD module not to contact with other materials in preserving it alone.
10.9.3 For the packaging box, please pay attention to the followings:
10.9.3.1 Packaging box and inner case for LCD are designed to protect the LCDs from the damage or scratching during transportation. Please do not open except picking LCDs up from the box.
10.9.3.2 Please do not pile them up more than 6 boxes. (They are not designed so.) And please do not turn over.
10.9.3.3 Please handle packaging box with care not to give them sudden shock and vibrations. And also please do not throw them up.
10.9.3.4 Packing box and inner case for LCDs are made of cardboard. So please pay attention not to get them wet. (Such like keeping them in high humidity or wet place can occur getting them wet.)