宇华国际科技有限公司

YuHua INT,L Technology Co., LIMITED

SPECIFICATION FOR LCD MODULE

Customer : _____

Product Model: YH070BS3001

Sample code: _____

Designed by	Checked by	Approved by

Final Approval by Customer

☐ **LCM Machinery OK** Checked By _____ ☐ **LCM Display OK** Checked By _____	☐ **LCM OK** ☐ **NG，Problem survey:** Approved By _____

※The specification of "TBD" should refer to the measured value of sample . If there is difference between the design specification and measured value, we naturally shall negotiate and agree to solution with customer.

REVISION RECORD

REV NO	REV DATE	PAGE	CONTENTS	REMARKS

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1.0 GENERAL SPECIFICATIONS

YH070BS3001 **is a color active matrix LCD module incorporating amorphous silicon IPS (Thin Film Transistor). It is composed of a color IPS-LCD panel, driver IC, FPC and a back light unit. The module display area contains 1024*600 pixels. This product accords with RoHS environmental criterion.**

Item	Contents	Unit
Viewing direction	6:00	O' Clock
Number of Dots	1024(RGB) x600	/
Display Mode	Normally BLACK	/
Interface Type	Parallel RGB 24-bit	/
Number of color	16.7M	
LCM Luminance	280(typ)	cd/m2
Response Time (Tr+Tf)	25ms (typ)	
Contrast Ratio	280(typ)	

2.0 ELECTRICAL CHARACTERISTICS OF LCD

The following are maximum values which, if exceeded may cause fauity operation or damage to the unit.

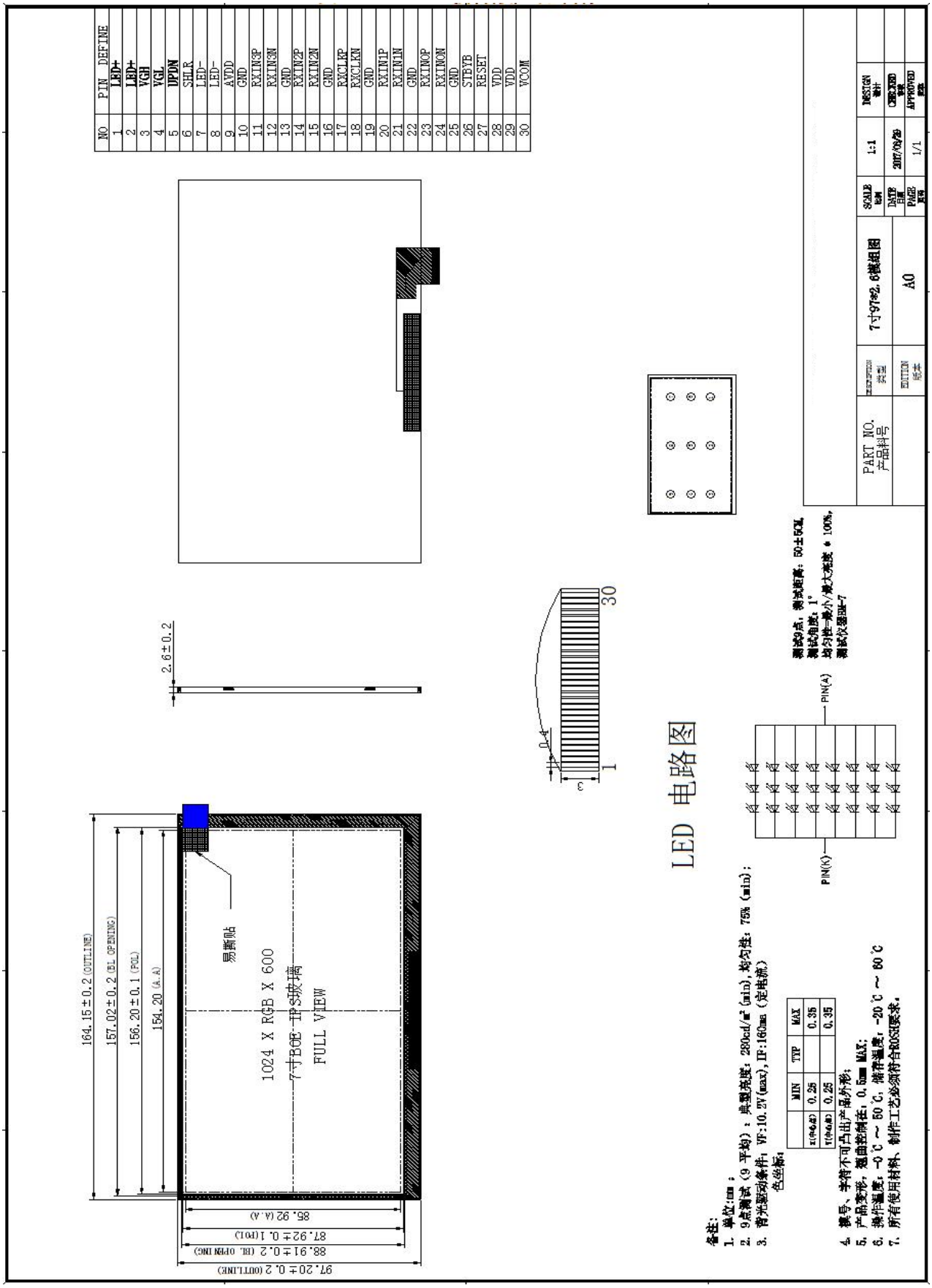
Item	Symbol	Min	TYP	Max	Unit
Supply Voltage	VDDIO	1.7	1.8	1.9	V
Analog Voltage	AVDD	9.4	9.6	9.8	V
VCOM Power Voltage	VCOM	3.2	3.3	--	V
High-level Input Voltage	VIHC	--	--	--	mV
Low-level Input Voltage	VILC	--	--	--	mV
TFT Gate ON Voltage	VGH	17	18	19	V
TFT Gate OFF Voltage	VGL	--	-6	--	V
Consumption Current Of LED	ILED	--	160	--	mA

Note: Thermal Gradient:-0.05%/℃

3.0 LED BACK LIGHT SPECIFICATION

Item	Symbol	Min	Typ	Max	Unit	Condition
Forware voltage	**Vf**	8.7	9.6	10.2	**V**	**If=160mA**
Forward curent	**Lf**	--	160	--	**mA**	**24-chip**
Power Consumption	**PBL**	--	**1536**	--	**mW**	**If=160mA**
Uniformity(with L/G)	**--**	75%	80%	--	--	**If=160mA**
Luminous Color	**White**					
Chip connection	24-chip 3-Serial+8-Parallel					

4.DIMENSIONAL DRAWING



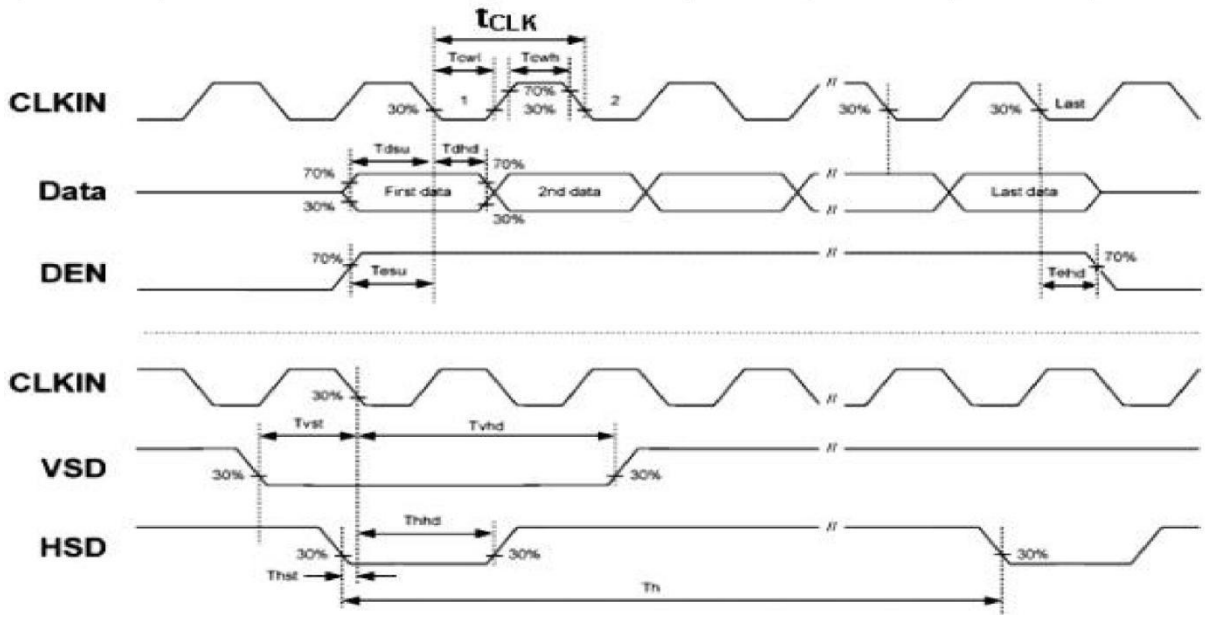
5.0 INTERFACE PIN CONNECTIONS

Pin No.	Symbol	Function	Remark
1-2	LED+	LED Anode	
3	VGH	Gate ON Voltage	
4	VGL	Gate OFF Voltage	
5	UPDN	Gate Up or Down scan control	
6	SHLR	Source Right or Left sequence	
7-8	LED-	LED Cathode	
9	AVDD	Power for Analog Circuit	
10	GND	Ground	
11	RXIN3P	MIPI Data lane3 input	
12	RXIN3N		
13	GND	Ground	
14	RXIN2P	MIPI Data lane2 input	
15	RXIN2N		
16	GND	Ground	
17	RXCLKP	MIPI CLK input	
18	RXCLKN		
19	GND	Ground	
20	RXIN1P	MIPI Data lane1 input	
21	RXIN1N		
22	GND	Ground	
23	RXIN0P	MIPI Data lane0 input	
24	RXIN0N		
25	GND	Ground	
26	STBYB	Standby mode	
27	RESET	Global reset pin	
28	VDD	Power Supply (1.8V)	
29	VDD	Power Supply (1.8V)	
30	VCOM	Common Voltage	

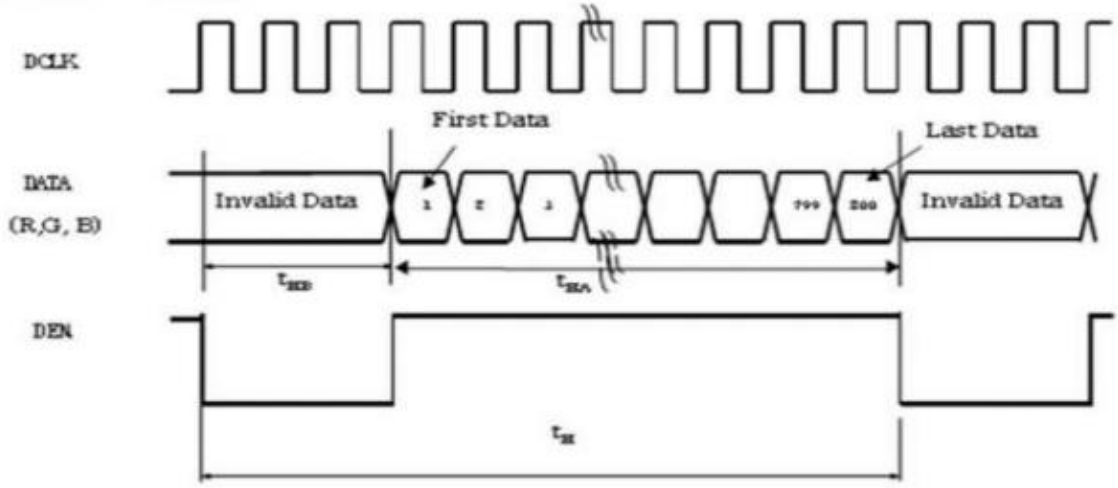
6.0 TIMING CHARACTERISTICS OF INPUT SIGNAL

6.1 Input Timing Table

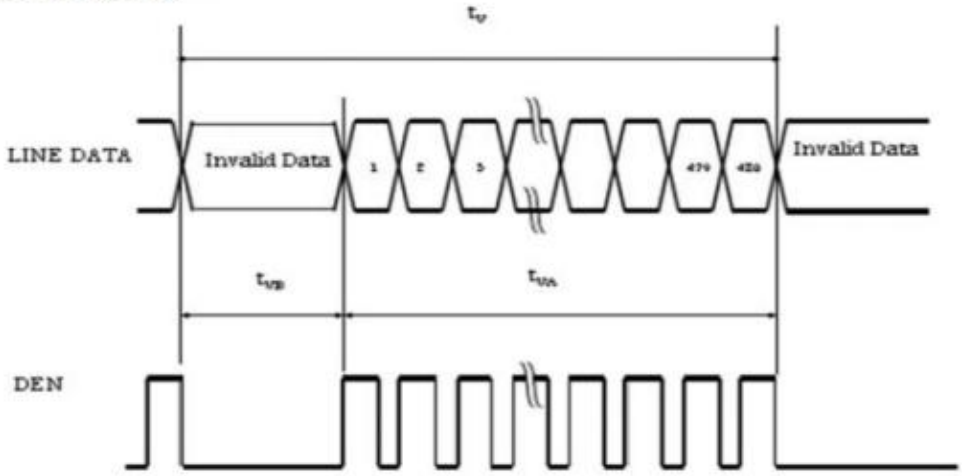
ITEM		SYMBOL	MIN	TYP	MAX	UNIT
	DCLK Frequency	Fclk	40.8	51.2	67.2	MHz
DE mode	Horizontal Display Area	Thd		1024		Dclk
	HSD Period	Th	1114	1344	1400	Dclk
	Horizontal Blank	thb+thfp	90	320	376	Tclk
	Vertical Display Area	tvd		600		TH
	VSD Period	Tv	610	635	800	TH
	vsd Blanking	tvbp+tvfp	10	35	200	TH
HV mode	DCLK Frequency	Fclk	44.9	51.2	63	MHz
	Horizontal Display Area	Thd		1024		Dclk
	HSD Period	Th	1200	1344	1400	Dclk
	HSD Pulse Width	thpw	1	-	140	Dclk
	HSD Back Porch	thpb		160		Dclk
	HSD fornt Porch	thfp	16	160	216	Dclk
	vsd Blanking	tvbp+tvfp	140	160	180	TH
Vertical Timing	Vertical Display Area	Tvd		768		Tclk
	VSD Period	Tv	792	806	840	th
	VSD Pulse Width	Tvpw	1	-	20	th
	Vertical Front Porch	Tvb	-	20	-	th
	VSD Back Porch	Tvbp		23		th
	VSD Fornt Porch	Tvfp	1	15	49	th



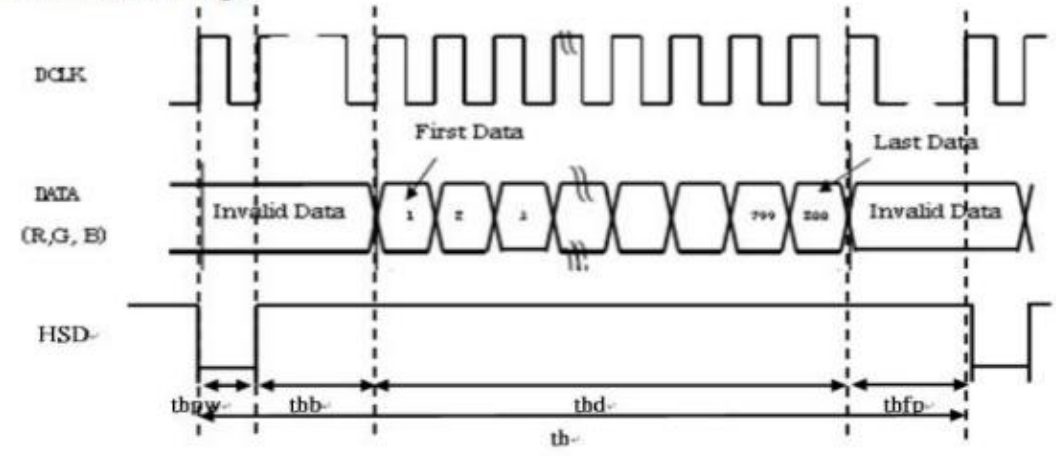
DE Mode
Horizontal timing :



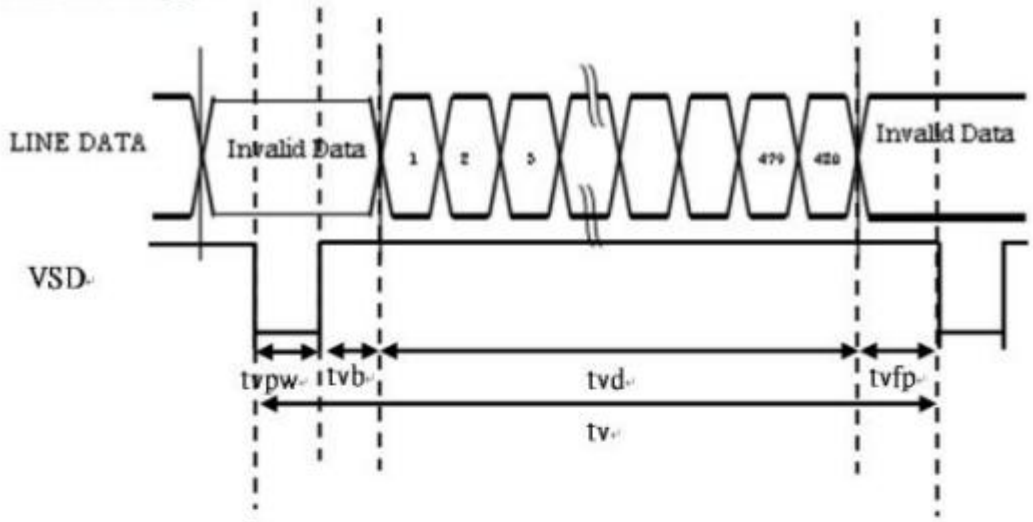
Vertical timing :



SYNC Mode
Horizontal timing :

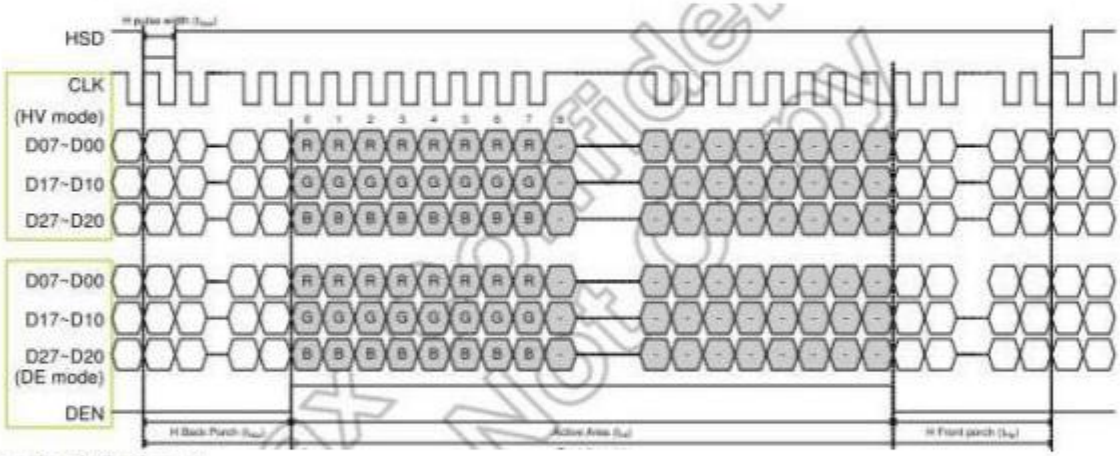


Vertical timing：

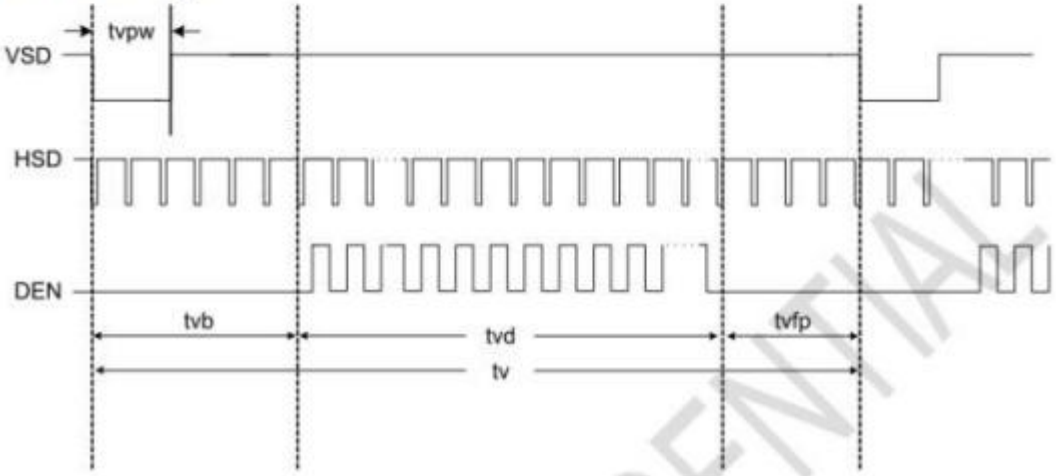


Data Input Format

Horizontal timing：

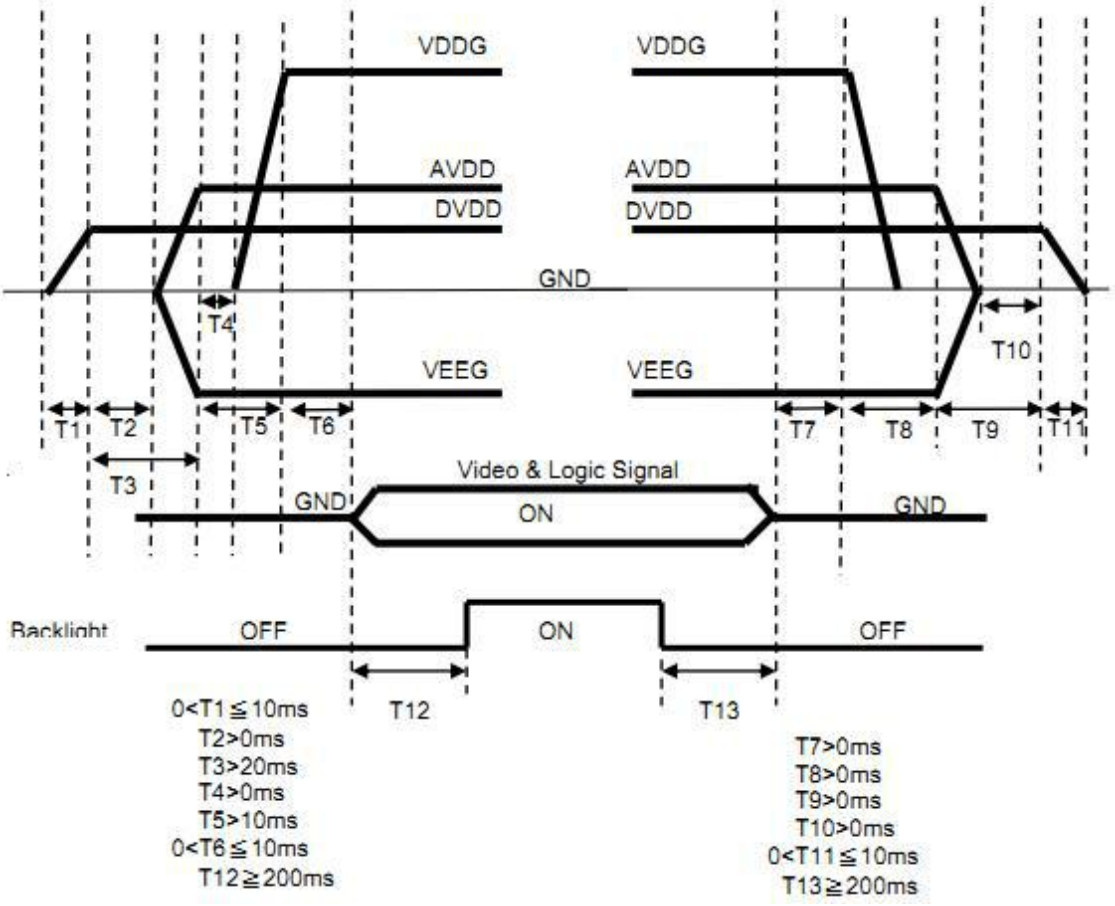


Vertical timing：



6.2 Power、Signal sequence

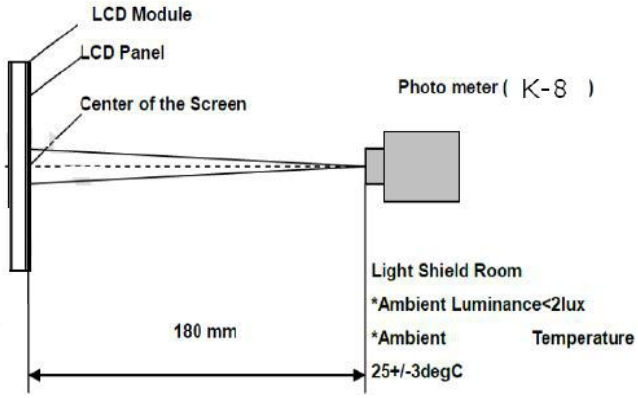
Power On：DVDD→AVDD/VEEG→VDDG→Video & Logic Signal→Backlight
Power Off：Backlight→Video & Logic Signal→VDDG→AVDD/VEEG→DVDD



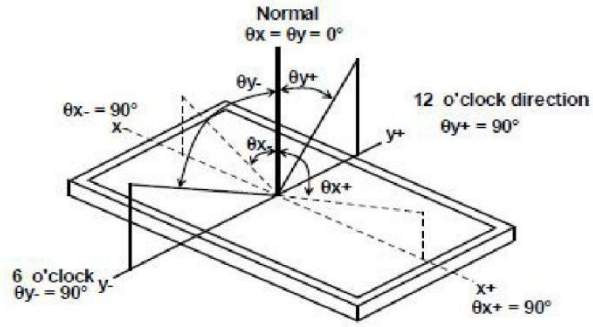
7.0 ELECTRO-OPTICAL CHARACTERISTICS

ITEM		SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT	NOTE
Panel Transmittance		T	θ = ϕ 0°	4.4	4.7	--	%	
Luminance		L	θ = ϕ 0°	250	280	320	cd/m2	Note1
Luminance Uniformity		YU	9points	--	75	--	%	Note5
Contrast Ratio		CR	Point-5	--	280	--	-	Note3
Response Time		Rr+Tf	Point-5	--	25	40	ms	Note4
Viewing Angle K=Contrast Ratio>10	Horizontal	ΘL	CR＞10	--	50	--		Note2
		ΘR		--	50	--		
	Vertical	ΘU		--	40	--		
		ΘD		--	40	--	.	
Color Filter Chromaticity	Wite	X	θ = ϕ 0°	0.260	0.310	0.360		Note1
		Y		0.280	0.330	0.380		
	Red	X	θ = ϕ 0°	TBD	TBD	TBD		
		Y		TBD	TBD	TBD		
	Green	X	θ = ϕ 0°	TBD	TBD	TBD		
		Y		TBD	TBD	TBD		
	Blue	X	θ = ϕ 0°	TBD	TBD	TBD		
		Y		TBD	TBD	TBD		
Color gamut (NTSC ratio)					TBD		%	

Note1: Measure condition :25° c±2° c, 60±100%RH,under 10 Lux in the dark room. K-8,Viewing angle 2° .Measurement after lighting on 10 minus



Note2: Definition of Viewing Angle



Note (3) Definition Of Contrast Ratio (CR)

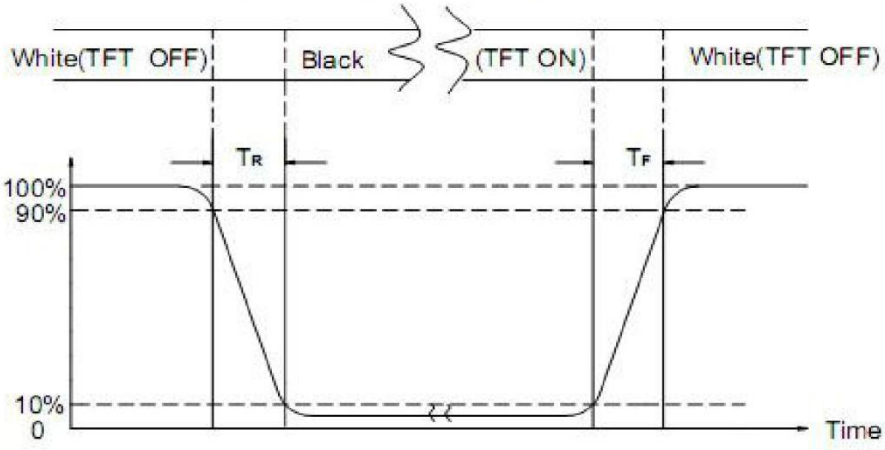
The contrast ratio can be calculated by the following expression

Contrast Ratio (CR) = L63 / L0

L63: Luminance of gray level 63, L0: Luminance of gray level 0

Note (4) Definition Of Response Time (TR, TF)

Figure 4 Definition of Response Time



Note (5) Definition of Transmittance (Module is without signal input)

$$\text{Transmittance} = \frac{\text{Luminance of LCD Module}}{\text{Luminance of Back light}} \times 100\%$$

8.0 RELIABILITY

8.1 MTBF

The LCD module shall be designed to meet a minimum MTBF value of 50000 hours with normal. (25°C in the room without sunlight)

8.2 Tests

NO.	Test Item	Test condition	Criterion
1	High Temperature Storage	60℃±2℃ 96H Restore 2H at 25℃ Power off	
2	Low Temperature Storage	-10℃±2℃ 96H Restore 2H at 25℃ Power off	
3	High Temperature Operation	60℃±2℃ 96H Restore 2H at 25℃ Power on	
4	Low Temperature Operation	0℃±2℃ 96H Restore 2H at 25℃ Power on	
5	High Temperature & Humidity Operation	50℃±2℃ 90%RH 96H Power on	
6	Temperature Cycle	-10℃ ←25℃ 30min 60℃ ←60℃ 5min 25℃ 30min after 10cycle, Restore 2H at 25℃ Power off	Aftertesting,cosmetic and electrical defects should not happen.
7	Vibration Test	10Hz~45Hz, 100m/s2, 120min	
8	Shock Test	Half-sinewave,300m/s2,11ms	
9	Drop Test(package state)	800mm, concrete floor,1corner, 3edges, 6 sides each time	1.After testing, cosmetic and electrical defects should not happen. 2.the product should remain at initial place 3.Product uncovered or package broken is not permitted.
10	Electro Static Discharge Test (non-operation)	150pF，330Ω，Contact:±4KV,Air:±8KV Measure point :LCD glass and metal bezel	IEC61000-4-2：2001 GB/T17626.2-2006
		200pF，0Ω，±200V contact test Measure point :IF connector pins	

9.0 INSPECTION STANDARDS

9.1 Purpose

This incoming inspection standard shall be applied to TFT-LCD supplied by ZHONGSHEN to its customer.

9.2 Scope

This inspection standard contains Cosmetic Specifications and Electrical Specifications.

9.3 Classification of defects

9.3.1 Major defect.

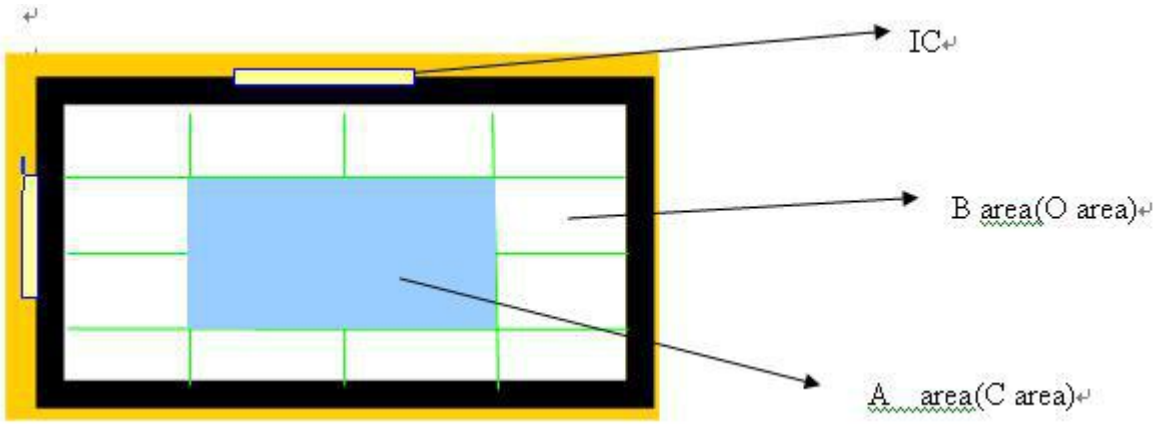
The major defect is a defect that is likely to result in product failure or reduction in Product's intended usage.

9.3.2 Minor defect.

The minor defect is a defect that has little bearing on the effective use or Operation of the product.

9.4 Definition

9.4.1 Display area definition



9.5 Inspection conditions is as follows

9.5.1 Viewing distance is approximately 35-40 cm

9.5.2 Viewing angle is normal to the LCD panel as 45°

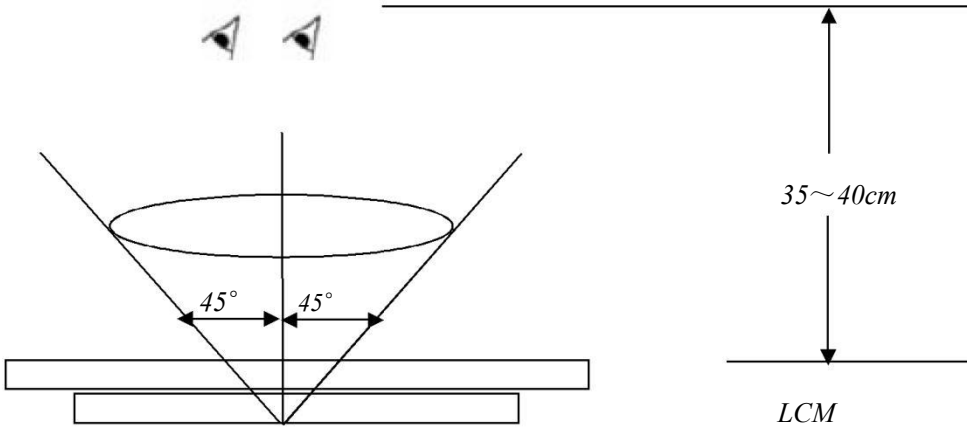
9.5.3 Ambient temperature is approximately 25±5℃

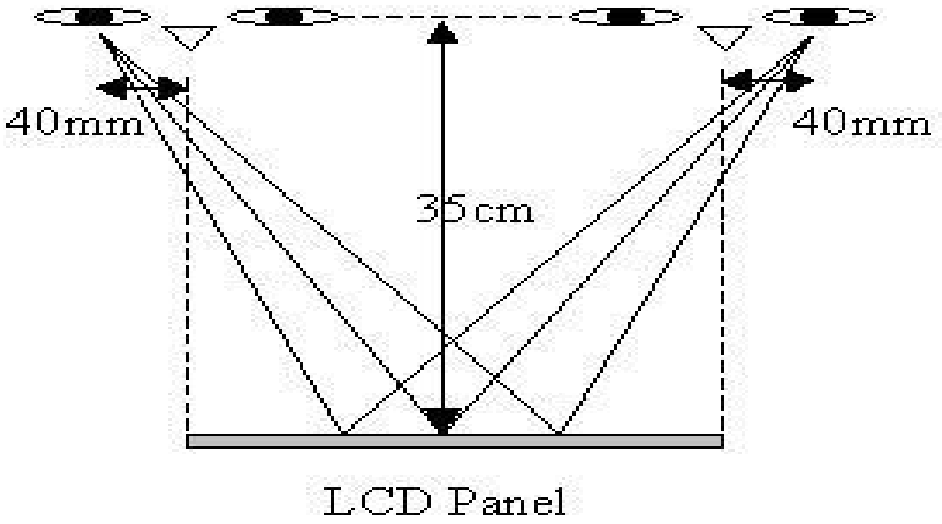
9.5.4 Ambient humidity is 60±5% RH

9.5.5 Ambient luminance is from 300-500 Lux.

9.5.6 Input signal timing should be typical value(3s-5s).

9.5.7 Mura & Light leakage inspection at ND-Filter 6%.





9.6 Sampling method

9.6.1 According to the MIL-STD-105E general inspection level , Ⅱ Sampling plan.

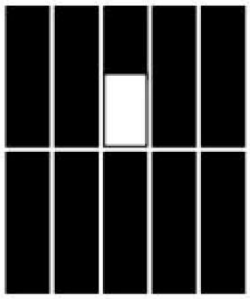
9.6.2 AQL: MA 0.65 MI 1.0

9.7 Inspection Criteria

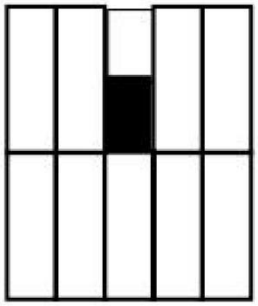
DEFECT TYPE			LIMIT			Defect	Note
VISUAL DEFECT	SCRATCH		W≤0.05mm and L≤5mm		Ignore	Maj	NOTE1
			0.05mm<W≤0.2mm L≤10mm		N≤4		
			10mm<L, 0.1mm<W		N=0		
	INTERNAL	SPOT	Φ≤0.2mm		Ignore		
			0.2mm<Φ≤0.5mm		N≤4		
			Φ>0.5mm		N=0		
		FIBER	0.1mm≤W≤0.2mm L≤2.5mm		N≤4		
			0.2mm<W, 2.5mm<L		N=0		
		POLARIZER BUBBLE	Φ≤0.25mm		Ignore		
			0.25mm<Φ≤0.5mm		N≤4		
			Φ>0.5mm		N=0		
		DENT	Φ<0.25mm		Ignore		
			0.25mm≤Φ≤0.5mm		N≤4		
			Φ>0.5mm		N=0		
ELECTRICAL DEFECT	BRIGHT DOT		C Area	O Area	Total	Maj	NOTE2 NOTE3
			N≤4（contain C area and O area）		N≤4		
	DARK DOT		N≤5（contain C area and O area）		N≤5		
	TWO ADJACENT DOT		N≤1	N≤2	N≤3		
	THREE OR MORE ADJACENT DOT		NOT ALLOWLED				
	LINE DEFECT		NOT ALLOWLED				

Note1: Minimum distance between dot defects and spot is 5mm;

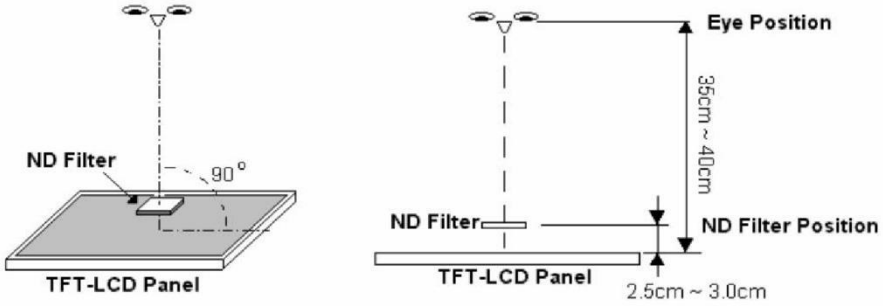
Note2: The definition of Bright dot and Dark dot -bright area is more than 50% of one dot



-dark area is more than 50% of one dot



-The bright dot shall be visible under ND-Filter 5% as following:

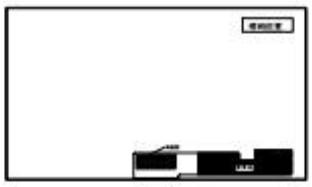


NOTE3:

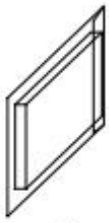
-A bit rate(bright dot model)≤10%;

-Class Chipping but not affect the function of quality OK; -Polarizing film appearance does not affect the function OK;

包装图:



将1PCS模组产品
装在PE袋包裹。

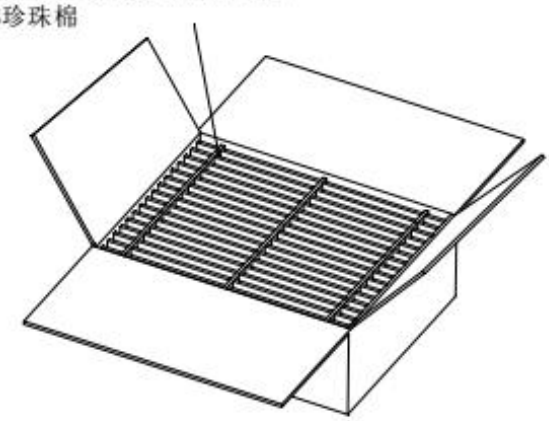


备注：2PCS产品模组的LCD
面对面，中间靠一张泡棉隔开

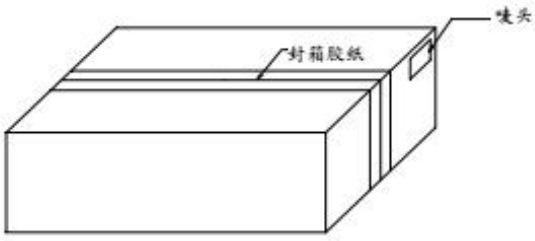
用泡棉隔开

将2PCS产品
放入纸箱里，
60pcs

在纸箱里的卡板上下两面各用
1PCS珍珠棉



使用封口胶封口
并贴附唛头



REVSION 版本	A0	☑ 正式规格 ☐ 临时规格	REVISER 修订人	MODEL NO 产品料号	APPROVED BY 核准	CHECKED BY 审核	DRAWN BY 绘图
DATE 日期	2016.06.18		WG	客户:			
PAGE 页码	5/6						

11.0 HANDLING PRECAUTION

(1) Don't disassemble and reassemble the module by self.
(禁止自行拆解)
(2) Acid, alkali, alcohol or touched directly by hand will damage the display.
(酸性、碱性、酒精或手的直接接触将会损伤显示面)
(3) Static electricity will damage the module. Please configure grounding device.
(静电会损伤模组，请装配接地设备)
(4)The strong vibration, shock, twist or bend will cause material damage, even module broken.
(强烈的撞击、震动、扭转或弯曲将会造成原材损伤，甚至面板破裂)
(5) It is easy to cause image sticking while displaying the same pattern for very long time.
(长期显示同一画面会造成影像残留)
(6) The response time, brightness and performance will vary from different temperature.
(响应时间、亮度与均匀性会因温度而有所改变)
(7) Starting from the date of shipment in the photoelectric products for a period of 12 months.
(从吉兰特出货之日开始产品保质期为 **12** 个月)