Project No. 项目编号	TXW397017S4-AS
Customer 客户名称	
Module No. 客户型号	
Product type 产品内容	LCD+Touch Module TFT：480 *3RGB*800Dots 3.97”TFT LCD

客户确认Customer Approval	
项目负责人Project Manager	
品质主管Director of Quality	
采购工程师Purchasing Engineer	

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1. Document revision history :

DOCUMENT REVISION	DATE	DESCRIPTION	PREPARED BY	APPROVED BY
A	2018.06.27	First Release.	liugao	

2. General Description

- 3.97”(diagonal), 480x3 RGB x800dots, 16.7M colors, Transmissive, TFT LCD+Touch module.
- Viewing Direction: IPS
- **Driving IC: ILI9806E**
- **Touch IC: GT911**
- RGB Interface
- Logic voltage: 2.8V (typ.).
- With touch panel .

3. Mechanical Specifications

The mechanical detail is shown in Fig. 1 and summarized in Table 1 below.

Table 1

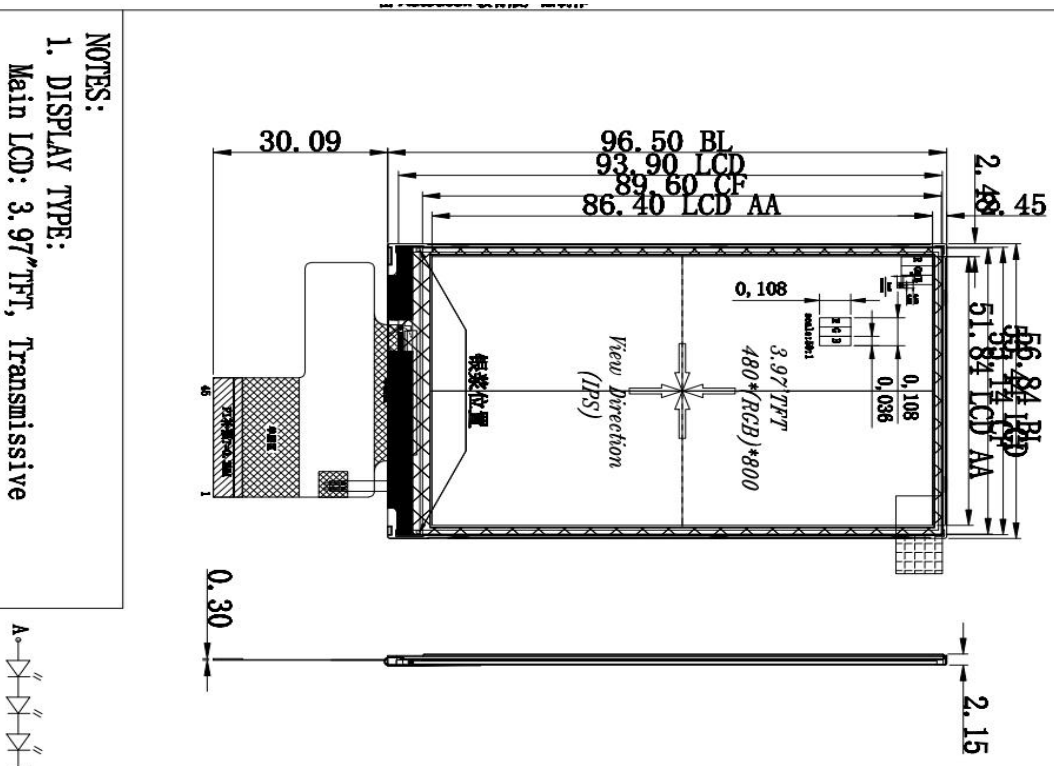
Parameter		Specifications	Unit
主屏 Color TFT 480 x3 RGB x800	LCM Outline dimensions	56.84(W) x96.85(H) x 2.15(D)	mm
	TP Outline dimensions	58.44(W) x96.85(H) x1.45(D)	mm
	TP view area	52.44(W) x87(H)	mm
	LCD active area	51.84(W) x86.4(H)	mm
	Display format	480 x3 RGB x800	dots
	Color configuration	RGB stripes	-
	Dot pitch	115.5(RGB)(W) x 115.5(H)	um
Weight		TBD	grams

4. Interface signals

Figure 1: Outline Drawing

NOTES:

1. DISPLAY TYPE:
   Main LCD: 3.97"TFT, Transmissive
2. OPERATING TEMP: -20° C~70° C
3. STORAGE TEMP : -30° C~80° C
4. MAIN LCD DRIVER:ILI9806E-2
5. BACKLIGHT: 8CHIP-WHITE LED
6. UNSPECIFIED TOLERANCES:±0.2MM



LED CIRCUIT DIAGRAM:

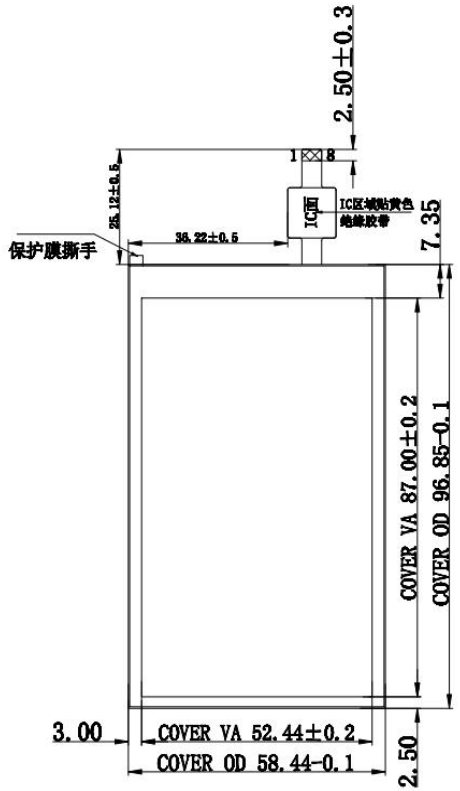
TXW	型号:	TXW397017S1-CD	成品-图
	FILE NAME	设 计	电子审核
	UNIT	SIZE	LIU	结构审核
	mm	A4	2018.09.30	批 准

Shenzhen Tianxianwei Technology Co., Ltd.
Product Specification

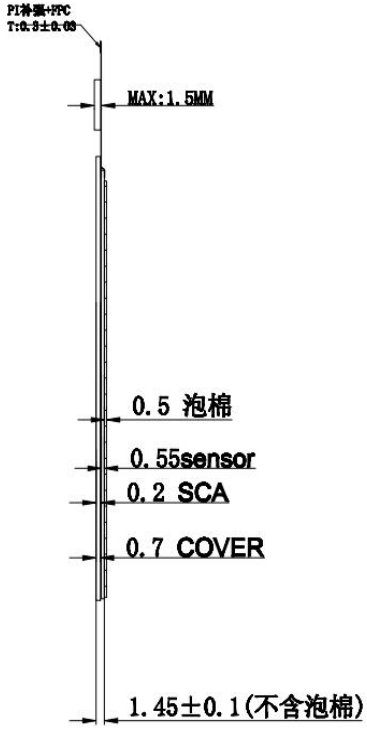
版本	标识	修改内容	修改日期	签名
	⚠			

PI定义	
1	GND
2	NC
3	INT
4	SDA
5	SCL
6	RST
7	VDD
8	GND

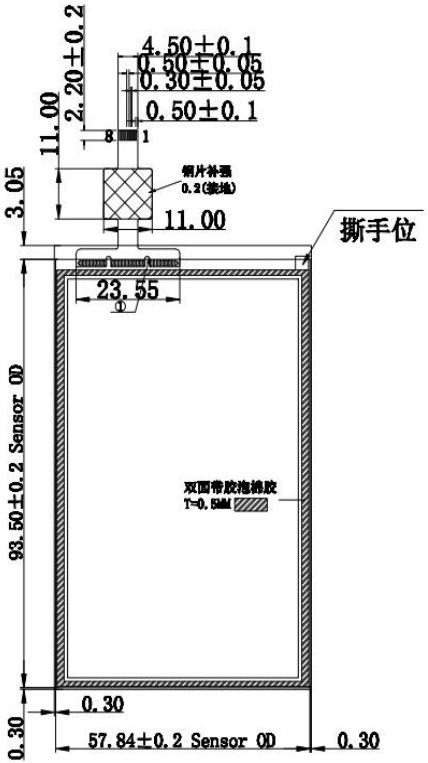
正面图



侧面图



反面图



技术参数：

技术参数:

1.Cover +SCA+GLASS+FPC(COF)
IC: GT911 5点触控
2.工作电压:2.8V
3.透光率:≥87%
4.表面硬度:≥6H
5.工作环境:-20℃~+70℃, ≤90%RH
6.储存环境:-30℃~+80℃, ≤90%RH
7.未注尺寸公差按±0.2mm
8.产品环保符合ROHS标准
9.The GAP between LCD and CTP should be over 0.3mm

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制 图	SHAO	2018.05.03	结 构	G+G	TXW397017S4-AS
审 核			比 例	1:1	
批 准			单 位	mm	
		第 1 页 共 1 页		图纸名称	工程图

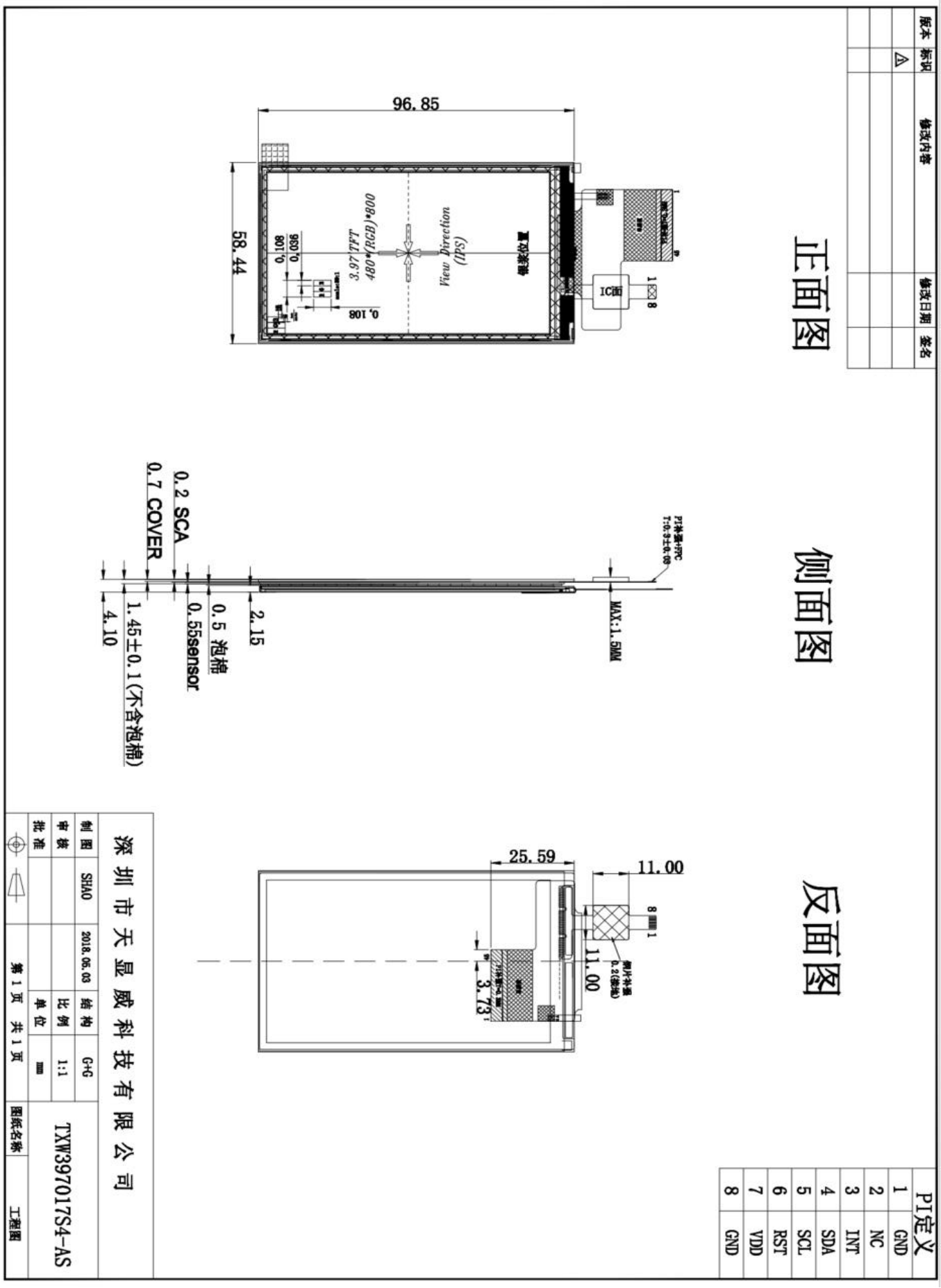

正面图
侧面图
反面图
96.85
58.44
0.2 SCA
0.7 COVER
0.5 泡棉
0.55sensor
2.15
1.45±0.1 (不含泡棉)
4.10
MAX:1.5MM
25.59
11.00
11.00
3.73
PI定义
1 GND
2 NC
3 INT
4 SDA
5 SCL
6 RST
7 VDD
8 GND
深圳市天显威科技有限公司
TXW397017S4-AS
工程图
第 1 页 共 1 页
mm
1:1
G+G
SHAO
2018.06.03

Table 2: LCM Pin assignment

Pin No.	Symbol	Description
1	LEDK	POWER SUPPLY- FOR BACKLIGHT CATHODE.
2	LEDA	POWER SUPPLY+ FOR BACKLIGHT ANODE.
3-6	NC	NC
7-8	VCC(2.8V)	POWER SUPPLY（2.8V）.
9	IOVCC(1.8V)	POWER SUPPLY（1.8V/2.8V）.
10	RESET	Reset signal.
11-18	R7-R0	RED DATA.
19	GND	Ground.
20-27	G7-G0	GREEN DATA.
28	GND	Ground.
29-36	B7-B0	BULE DATA.
37	GND	Ground.
38	SCL	SCL pin as serial clock when operates in the serial interface.
39	CS	select signal.
40	SDI	SDI pin as serial data input/output bidirection when operates in the serial interface.
41	NC	NC
42	VSYNC	Frame synchronizing signal
43	HSYNC	Line synchronizing signal
44	DE	Data enable signal
45	PCLK	Dot clock signal

Table 3:Touch Pin assignment。

NO:	SYMBOL	I/O	FUNCTION
1	GND	P	Ground
2	NC		NC
3	INT	O	Touch panel interrupt output
4	SDA	I/O	Touch panel I2C data
5	SCL	I/O	Touch panel I2C clock
6	RST	O	Touch panel reset
7	VDD	P	Touch panel I/O PWR supply
8	GND	P	Ground

5. Absolute Maximum Ratings

5.1 LCM Electrical Maximum Ratings – for IC Only

Table 3: Electrical Maximum Ratings – for IC

Parameter	Symbol	Min.	Max.	Unit	Note
Power supply voltage (VDD)	VDD	-0.3	+4.0	V	1
Power supply voltage (IOVCC)	IOVCC	-0.3	+3.6	V	1

Note:

1.IOVCC,VCI, GND must be maintained.

2.The modules may be destroyed if they are used beyond the absolute maximum ratings.

5.2 Touch Maximum Ratings – for IC Only

Ltem 项目		Symdol	min	Typ.	Max	Unit	Remarks 备注
Lnput PowerVoltage 输入电源电压		VDD	2.8	3.3	3.3	V	
lnputSignalVoltage 输入信号电压	H Level	VlH	2.8	3.3	3.3	V	
	L Level	VlL		0			
Supply Current 电源电流		*lDD				MA	

5.3 LCM Environmental Condition

Table 4

Item	Operating temperature (Topr)		Storage temperature (Tstg) (Note 1)		Remark
	Min.	Max.	Min.	Max.	
Ambient temperature	-20°C	+70°C	-30°C	+80°C	Dry

Humidity (Note 1)	80% max. RH for Ta 40C < 50% RH for 40C < Ta Maximum operating temperature	No condensation

Note 1: Product cannot sustain at extreme storage conditions for long time.

5.4 Touch **Environmental Condition**

项目 Item	规格 Specification	备注 Unit
工作温湿度范围 Operating temperature&Humidity	-20℃~+70℃, <90%RH	无结露 Non condensing
储存温度湿度范围 Storage temperature&Humidity	-30℃~+80℃, <90%RH	无结露 Non condensing

6. Electrical Specifications

6.1 LCM Typical Electrical Characteristics

At Ta = 25 °C, VCI = 2.6V to 3.3V, IOVCC= 1.65V to 3.3V GND=0V.

Table 5

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Supply voltage (analog)	VCI-GND		2.6	2.8	3.3	V
Supply voltage (logic)	IOVDD-GND		1.65	1.8	3.3	V
Supply current (Logic & LCD)	ICC	VCI=2.8V	15	20	25	mA
Supply voltage of white LED backlight	VLED =V(BL+)-V(BL-)	Forward current =15 mA Number of LED dies = 8	22.4	24	25.6	V
Luminance (on the module surface)			320	350	380	cd/m^2

6.2 Touch **Electrical Characteristics**

项目 Item	规格 Specification				备注 Remark
触控点 Touch point	5-Points				触控点同步侦测数量 The numder of touch points simultaneouslydetect
电压范围 Voltage range	Min	TYP	Max	Unit	
	2.5	3.0	3.6	V	
电流 Current range				mA	

绝缘阻抗 Lnsulation resistance	≥20M@25V(直流) ≥20M@25V(DC)	使用高压测试机进行测试或使用绝缘(25V)测试头按压于引线未端进行测试. Usehigh-pressuretesting machingor useinsulationmeter(25V)to test the endofFPC
线性 Linearity	≤3.0%	用线性测试机进行测试. Use linear Tester.
触电抖动时间 Chatteering Time	≤25ms	/
抗干扰能力	电源、LCD、温度	IC 贴上高温胶，距离电源、LCD 2-3cm

6.3 Touch **Mechanical characteristics**

项目 ltem	规格 Specification		备注 Remark
输入方式 Lnput method	手指 Finger or exclusive pen		
操作寿命 Operation life	敲击寿命 Tapping duradility	≥1 百万次 ≥ 1milliontimes	试验可能造成产品表面轻微的划伤,但功能保持不变. Test may cause suse surface slightscratch yet the function staysintact.
	笔画寿命 Pensliding duradilty	≥2 亿次 ≥ 100.000times	
表面硬度 Hardness	6H		500g 压力测试 Pressure 500gf test
玻璃硬度	强化玻璃 0.7mm，可耐 50g 钢球最少 30mm 的冲击。		

7. Optical Characteristics

7.1 LCM Optical Characteristics

Table 7: Optical specifications

Items		Symbol	Condition	Specifications			Unit	Note
				Min.	Typ.	Max.		
Contrast Ratio		CR		-	800	-	-	
Response Time		T_R		-	10	20	ms	
		T_F		-	15	20	ms	
Chromaticity	Red	X_R		0.604	0.634	0.664	-	
		Y_R		0.298	0.328	0.358	-	
	Green	X_G		0.264	0.294	0.324	-	
		Y_G		0.547	0.577	0.607	-	
	Blue	X_B		0.107	0.137	0.167	-	
		Y_B		0.104	0.134	0.164	-	
	White	X_W		0.272	0.302	0.332	-	
		Y_W		0.305	0.335	0.365	-	
Viewing angle	Hor.	ϕ1(3 o'clock)	Center CR≥10	-	80	-	deg.	
		ϕ2(9 o'clock)		-	80	-		
	Ver.	θ2(12 o'clock)		-	80	-		
		θ1(6 o'clock)		-	80	-		
NTSC ratio					70		%	

Note 1: 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

CR = CR (10)

CR (X) is corresponding to the Contrast Ratio of the point X at Figure in Note 5.

Note 2: Definition of Response Time (TR, TF):

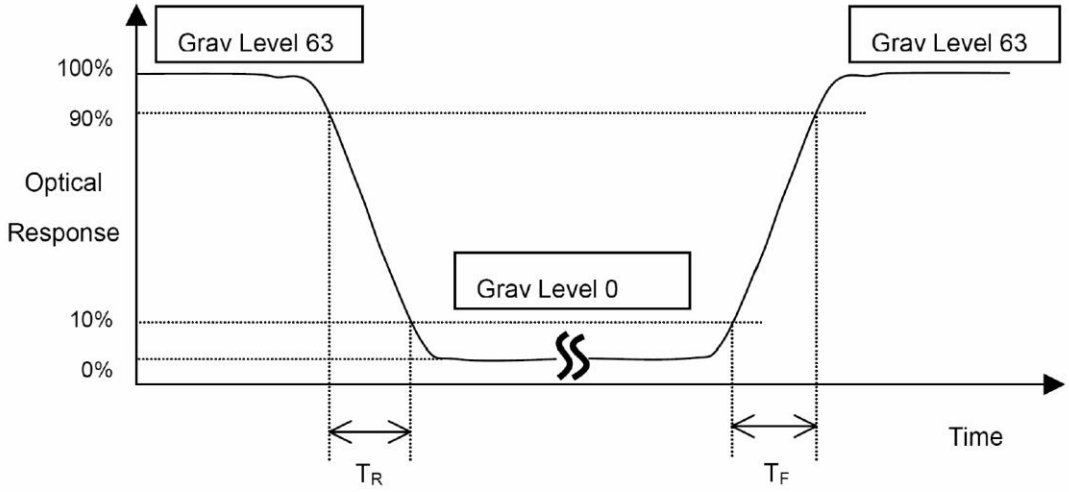


Figure 3

Note 3: Viewing Angle

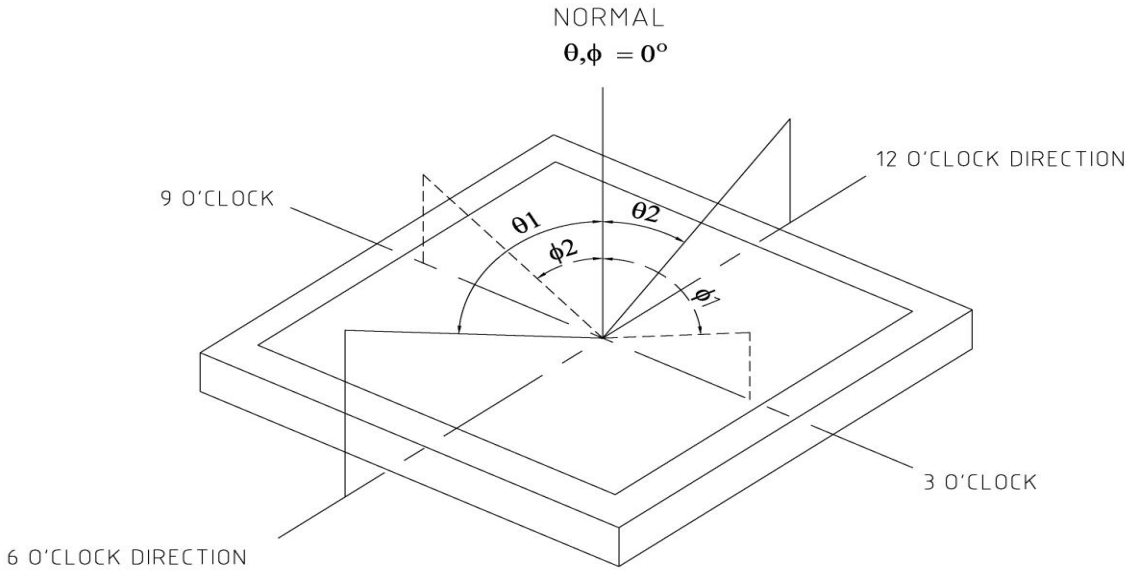


Figure 4

The above "Viewing Angle" is the measuring position with Largest Contrast Ratio; not for good image quality. View Direction for good image quality is 6 O'clock. Module maker can increase the "Viewing Angle" by applying Wide View Film.

Note 4: Measurement Set-Up:

The LCD module should be stabilized at a given temperature for 20 minutes to avoid abrupt temperature change during measuring. In order to stabilize the luminance, the measurement should be executed after lighting Backlight for 20 minutes in a windless room.

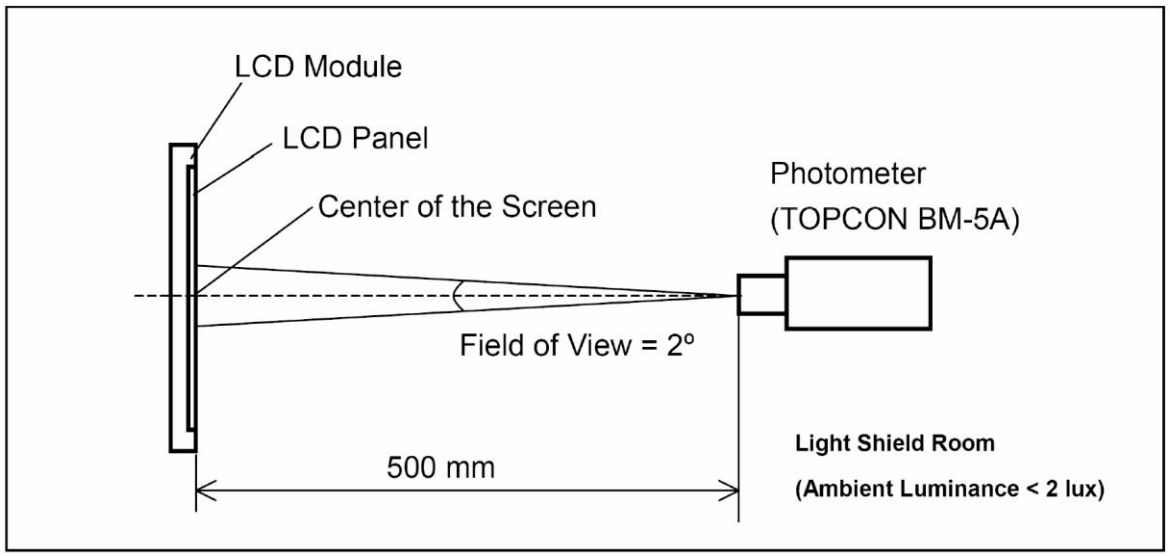


Figure 5

7.2 Touch Optical Characteristics

8. Timing Characteristics

项目 Item	规格 Specification	备注 Remark
透明度 Transparency	≥80%	白光测试

8.1 RGB Interface Timing Characteristics of IC

Table 8: Normal Write Mode (VCC = IOVCC=2.4~3.3V)

Symbol	Parameter	Min	Typ	Max	Unit
t_{cycle}	Clock Cycle Time (write cycle)	100	-	-	ns
t_{cycle}	Clock Cycle Time (read cycle)	1000	-	-	ns
t_{AS}	Address Setup Time	0	-	-	ns
t_{AH}	Address Hold Time	0	-	-	ns
t_{DSW}	Data Setup Time	5	-	-	ns
t_{DHW}	Data Hold Time	5	-	-	ns
t_{ACC}	Data Access Time	250	-	-	ns
t_{OH}	Output Hold time	100	-	-	ns
$PWCS_L$	Pulse Width /CS low (write cycle)	50	-	-	ns
$PWCS_H$	Pulse Width /CS high (write cycle)	50	-	-	ns
$PWCS_L$	Pulse Width /CS low (read cycle)	500	-	-	ns
$PWCS_H$	Pulse Width /CS high (read cycle)	500	-	-	ns
t_R	Rise time	-	-	4	ns
t_F	Fall time	-	-	4	ns

The timing chart of RGB interface DE mode is shown as follows.

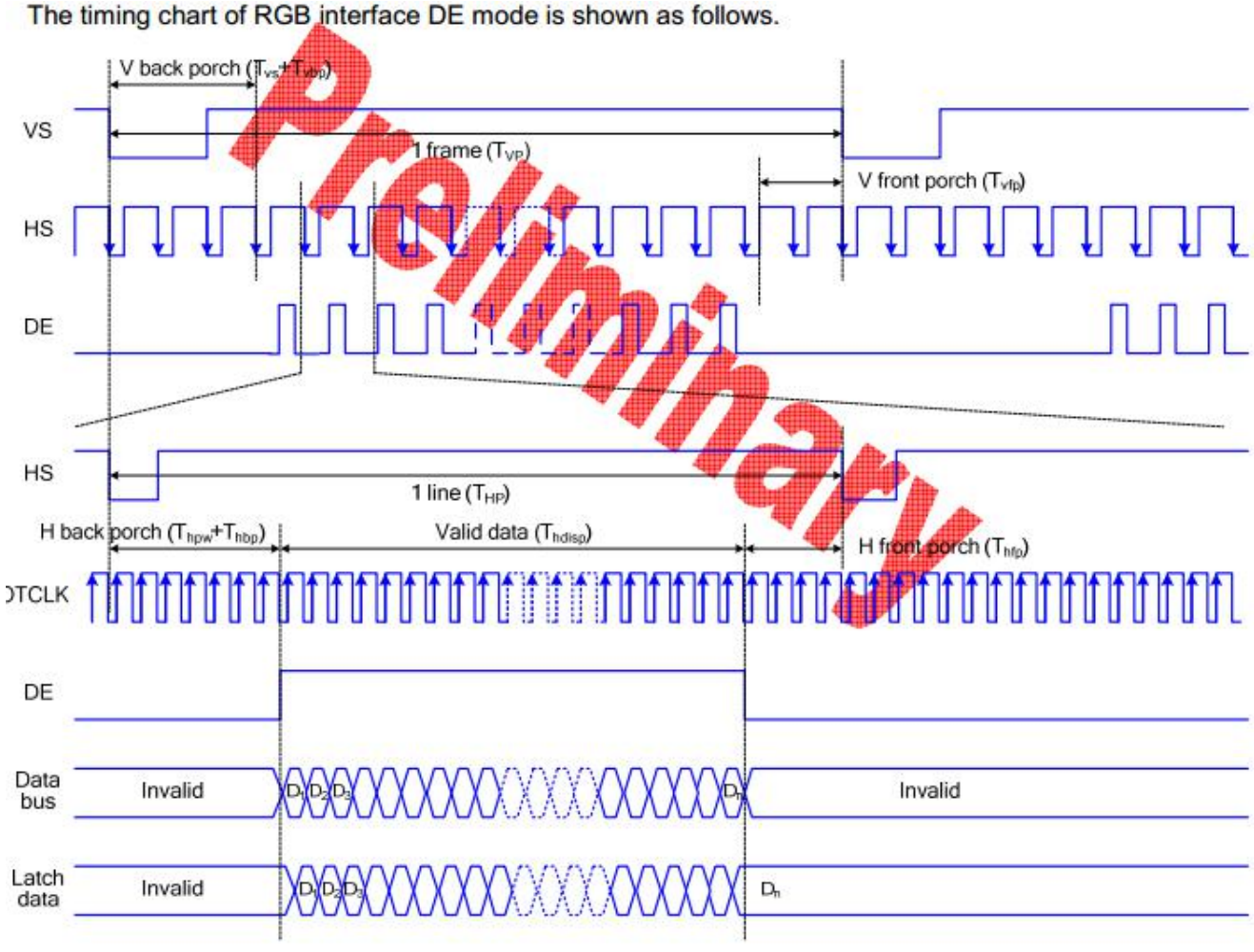


Figure 7. RGB Timing

8.2 Reset Operation of IC

Table 9: Reset Timing Characteristics (VCC = IOVCC=2.4~3.3V)

Item	Symbol	Unit	Min.	Typ.	Max.
Reset low-level width	tRES	ms	1	-	-
Reset rise time	trRES	μs	-	-	10

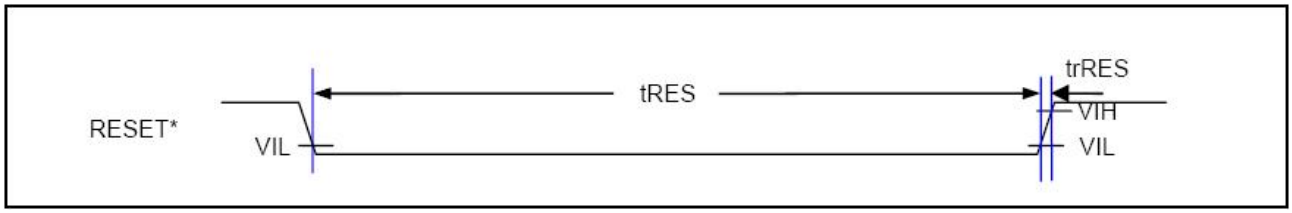


Figure 8: Reset Timing

9. Reliability Test Item

Test Item	Sample Type	Test Condition	Test result determinant gist
High temperature storage	Normal temperature	70±3°C;96H	the inspection of appearance and function character.
	Wide temperature	80±3°C;96H	
Low temperature storage	Normal temperature	-20±3°C;120H	
	Wide temperature	-30±3°C;120H	
High temperature /humidity storage	Normal temperature	50°C±3°C,90%±3%RH;96H	
	Wide temperature	60°C±3°C,90%±3%RH;96H	
High temperature operation	Normal temperature	60±3°C;96H	no objection of the function character; no fatal objection of the appearance.
	Wide temperature	70±3°C;96H	
Low temperature operation	Normal temperature	0±3°C;96H	
	Wide temperature	-20±3°C;96H	
High temperature /humidity operation	Normal temperature	40°C±3°C,90%±3%RH;96H	
	Wide temperature	50°C±3°C,90%±3%RH;96H	
Temperature Shock	Normal temperature	-20±3°C,30min→70±3°C,30 min;10cycle	inspect the objections appearance、function & the whole structure
	Wide temperature	-30±3°C,30min 80±3,30min;10cycle	The inspection of appearance、function & the whole structure

10. Suggestions for using LCD modules

10.1 Handling of LCM

1. The LCD screen is made of glass. Don't give excessive external shock, or drop from a high place.
2. If the LCD screen is damaged and the liquid crystal leaks out, do not lick and swallow. When the liquid is attach to your hand, skin, cloth etc, wash it off by using soap and water thoroughly and immediately.
3. Don't apply excessive force on the surface of the LCM.
4. If the surface is contaminated ,clean it with soft cloth. If the LCM is severely contaminated , use Isopropyl alcohol/Ethyl alcohol to clean. Other solvents may damage the polarizer . The following solvents is especially prohibited: water , ketone Aromatic solvents etc.
5. Exercise care to minimize corrosion of the electrode. Corrosion of the electrodes is accelerated by water droplets, moisture condensation or a current flow in a high-humidity environment.
6. Install the LCD Module by using the mounting holes. When mounting the LCD module make sure it is free of twisting, warping and distortion. In particular, do not forcibly pull or bend the I/O cable or the backlight cable.
7. Don’t disassemble the LCM.
8. To prevent destruction of the elements by static electricity, be careful to maintain an optimum work environment.
   - Be sure to ground the body when handling the LCD modules.
   - Tools required for assembling, such as soldering irons, must be properly grounded.
   - To reduce the amount of static electricity generated, do not conduct assembling and other work under dry conditions.
   - The LCD module is coated with a film to protect the display surface. Exercise care when peeling off this protective film since static electricity may be generated.
9. Do not alter, modify or change the the shape of the tab on the metal frame.
10. Do not make extra holes on the printed circuit board, modify its shape or change the positions of components to be attached.
11. Do not damage or modify the pattern writing on the printed circuit board.
12. Absolutely do not modify the zebra rubber strip (conductive rubber) or heat seal connector
13. Except for soldering the interface, do not make any alterations or modifications with a soldering iron.
14. Do not drop, bend or twist LCM.

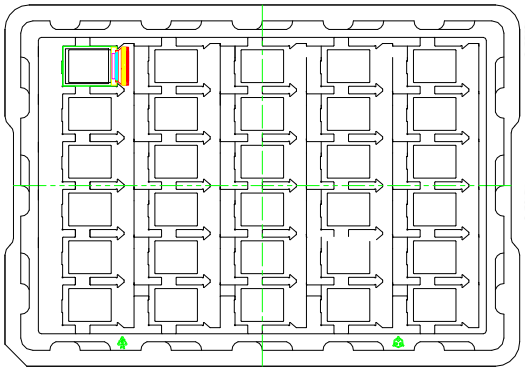
10.2 Storage

1. Store in an ambient temperature of 5 to 45°C, and in a relative humidity of 40% to 60%. Don't expose to sunlight or fluorescent light.
2. Storage in a clean environment, free from dust, active gas, and solvent.
3. Store in antistatic container.

11. Packing (Reference only)

Packing Method

(1)



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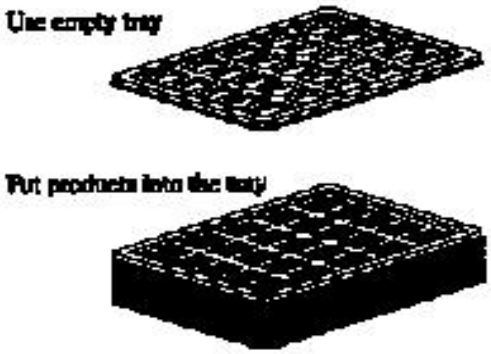

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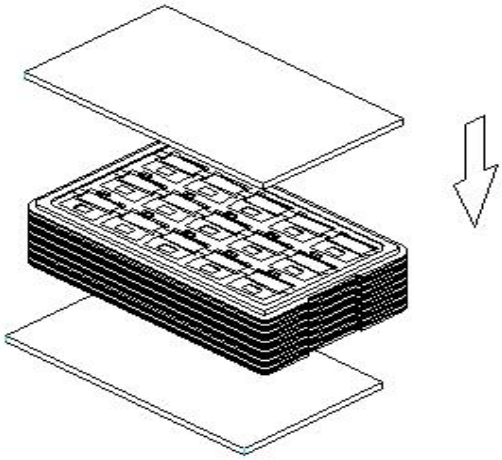

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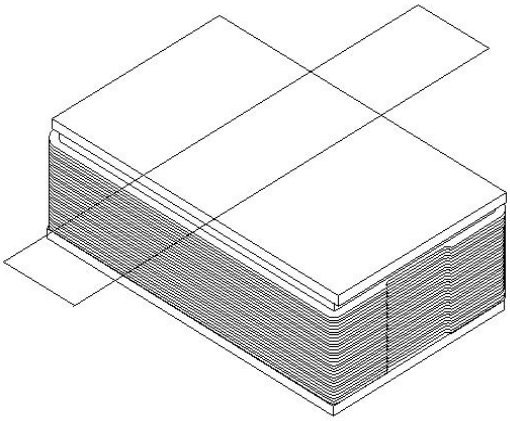

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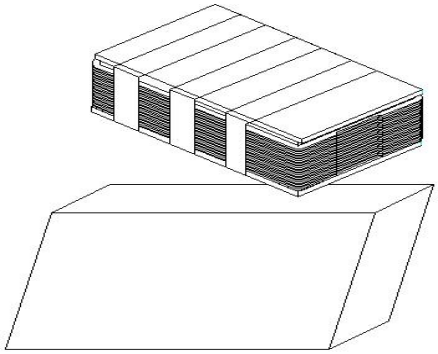

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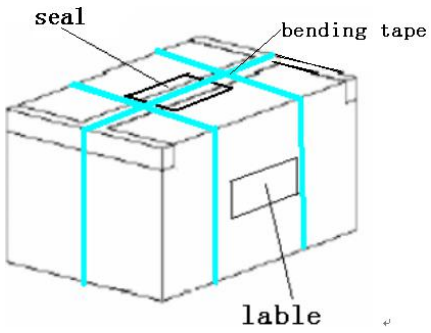

1. Put module into tray cavity :
2. Tray stacking
3. Put 1 cardboard under the tray stack and 1 cardboard above:
4. Fix the cardboard to the tray stack with adhesive tape:
5. Put the tray stack into carton.
6. Carton sealing with adhesive tape.

- END -