深圳市一众显示科技有限公司

SHEN ZHEN TEAM SOURCE DISPLAY TECH. CO, TD.

TFT-LCD Module Specification

Module NO.：TST101WXBN-17C

Version：V1.1

☐ **APPROVAL FOR SPECIFICATION**   ☐ **APPROVAL FOR SAMPLE**

For Customer's Acceptance：	
Approved by	**Comment**

Team Source Display：		
Presented by	**Reviewed by**	**Organized by**

Version No.	Date	Content	Remark
V1.0	2018-8-4	Initial Release	
V1.1	2018-8-31	Change the LCM drawing	Page4,10

CONTENTS

1 General Characteristics

ITEM	Specification	Unit
LCD Type	a-Si TFT,Transmissive,Normally black,TN	-
LCD Size	10.1	inch
Resolution (W x H)	1280(RGB) ×800	pixel
CTP+LCM size	255.0(H) x 178.0(V) x 9.1(T)	mm
LCM size	229.7(H) x149.15(V) x 5.0(T)	mm
Active Area	216.96 (H) x 135.6(V)	mm
Dot Pitch	0.198(H)x0.198(V)	mm
Viewing Direction	ALL o'clock	-
Color Depth	16.7M	-
Pixel Arrangement	RGB-stripe	-
Backlight Type	36 LED，360mA	-
Surface Luminance	Min 700,Typ 800	cd/m2
Surface Treatment	Hardness: 6H	-
Interface Type	LVDS	-
Input Voltage	3.3	V
With/Without TP	With CTP(GT9271)	-
Weight	TBD	g

Note 1: RoHS compliant

Note 2: LCM weight tolerance: ± 5%.

2 Product drawings
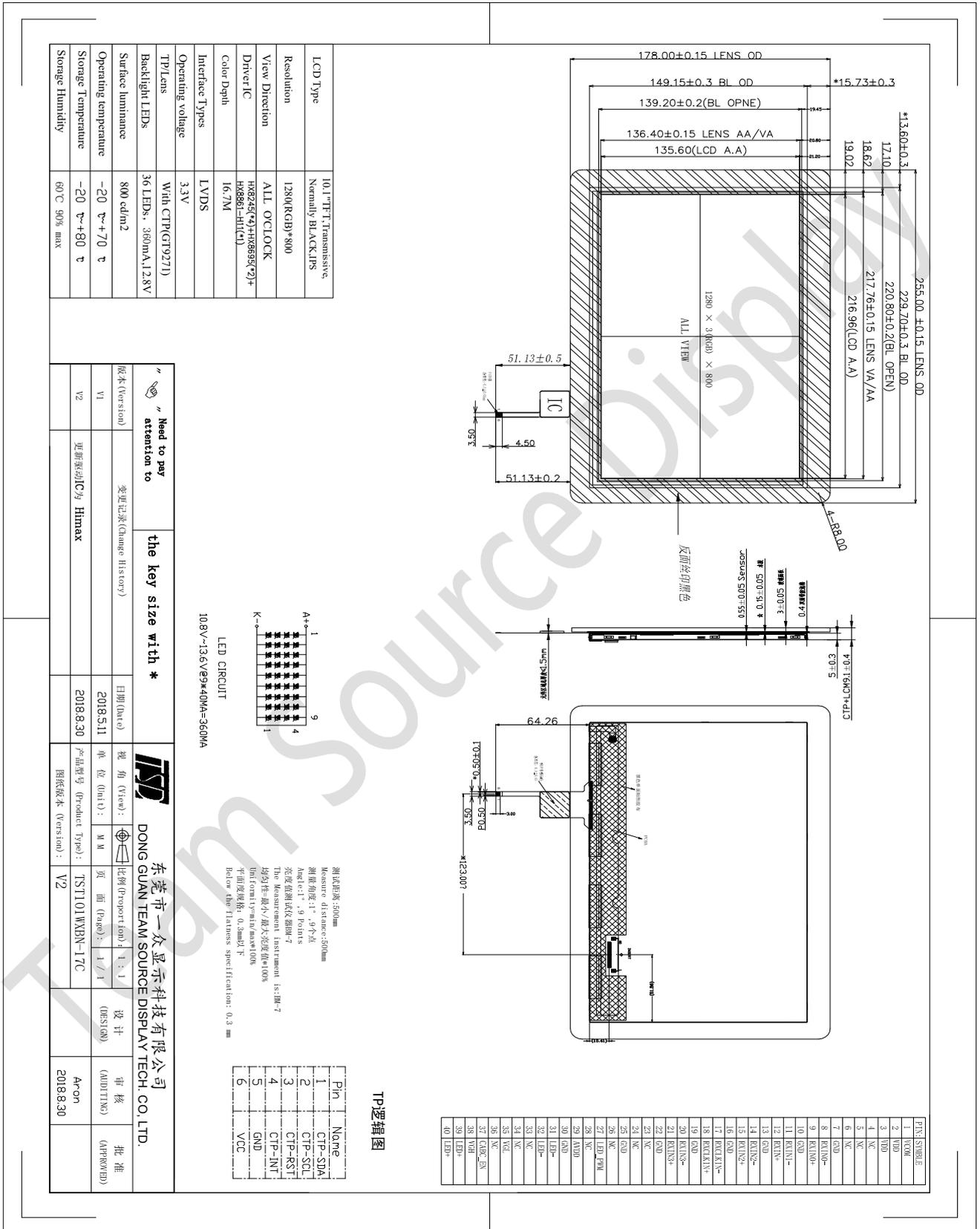
LCD Type	10.1"TFT,Transmissive, Normally BLACK,IPS
Resolution	1280(RGB)*800
View Direction	ALL O'CLOCK
Driver IC	HX8245(*4)+HX8695(*2)+ HX8861-H1(1)
Color Depth	16.7M
Interface Types	LVDS
Operating voltage	3.3V
TP/Lens	With CTP(GT9271)
Backlight LEDs	36 LEDs, 360mA,12.8V
Surface luminance	800 cd/m2
Operating temperature	−20 ℃~+70 ℃
Storage Temperature	−20 ℃~+80 ℃
Storage Humidity	60℃ 90% max

"📝" **Need to pay attention to the key size with ***

变更记录(Change History)

版本 (Version)		日期(Date)
	V1	2018.5.11
	V2	更新驱动IC为 Himax	2018.8.30

LED CIRCUIT
10.8V~13.6V@9*40MA=360MA

测试距离:500mm
Measure distance:500mm
测量角度:1°,9个点
Angle:1°,9 Points
亮度值测试仪器IM-7
The Measurement instrument is:IM-7
均匀性=最小/最大亮度值*100%
Uniformity=min/max*100%
Unit:cd/m²
平面度规格: 0.3mm以下
Below the flatness specification: 0.3 mm

DONG GUAN TEAM SOURCE DISPLAY TECH. CO., LTD.
东莞市一众显示科技有限公司

视 角 (View) :		单 位 (Unit) :	比例(Proportion) :		
		M M	1 : 1		

产品型号 (Product Type) :		页 面 (Page) :	设 计 (DESIGN)	审 核 (AUDITING)	批 准 (APPROVED)
TST101WXBN-17C	V2	1 / 1			
				Aron	2018.8.30

TP逻辑图

Pin	Name
1	CTP-SDA
2	CTP-SCL
3	CTP-RST
4	CTP-INT
5	GND
6	VCC

PIN	SYMBLE
1	VCOM
2	VDD
3	VDD
4	NC
5	NC
6	GND
7	GND
8	RXIN0-
9	RXIN0+
10	GND
11	RXIN1-
12	RXIN1+
13	GND
14	RXIN2-
15	RXIN2+
16	GND
17	RXCLKIN-
18	RXCLKIN+
19	GND
20	RXIN3-
21	RXIN3+
22	GND
23	NC
24	NC
25	GND
26	NC
27	LED_PWM
28	NC
29	AVDD
30	GND
31	LED-
32	NC
33	NC
34	NC
35	VGL
36	NC
37	VGH
38	CABC_EN
39	LED+
40	LED+

3   Interface description

3.1   LCM interface description

PIN NO.	Symbol	description
1	VCOM	Common voltage
2-3	VDD	Power voltage for digital circuit
4-6	NC	No connect
7	GND	Power ground
8	RXIN0-	Negative LVDS differential data input
9	RXIN0+	Positive LVDS differential data input
10	GND	Power ground
11	RXIN1-	Negative LVDS differential data input
12	RXIN1+	Positive LVDS differential data input
13	GND	Power ground
14	RXIN2-	Negative LVDS differential data input
15	RXIN2+	Positive LVDS differential data input
16	GND	Power ground
17	RXCLKIN-	Negative LVDS differential clock input
18	RXCLKIN+	Positive LVDS differential clock input
19	GND	Power ground
20	RXIN3-	Negative LVDS differential data input
21	RXIN3+	Positive LVDS differential data input
22	GND	Power ground

23-24	NC	No connect
25	GND	Power ground
26	NC	No connect
27	LED_PWM	No connect
28	NC	No connect
29	AVDD	Power for Analog Circuit
30	GND	Power ground
31-32	LED-	LED Cathode
33-34	NC	No connect
35	VGL	Gate OFF Voltage
36	NC	No connect
37	CABC_EN	No connect
38	VGH	Gate ON Voltage
39-40	LED+	LED Anode

3.2 CTP interface description

PIN NO.	Symbol	description
1	CTP-SDA	I2C data input and output
2	CTP-SCL	I2C clock input
3	CTP-RST	External Reset, Low is active
4	CTP-INT	Interrupt request to the host
5	GND	Ground. (0V)
6	VDD	Power supply +3.3V

4   Timing Characteristics

4.1   DATA input format

Display Position of Input Data (V-H)
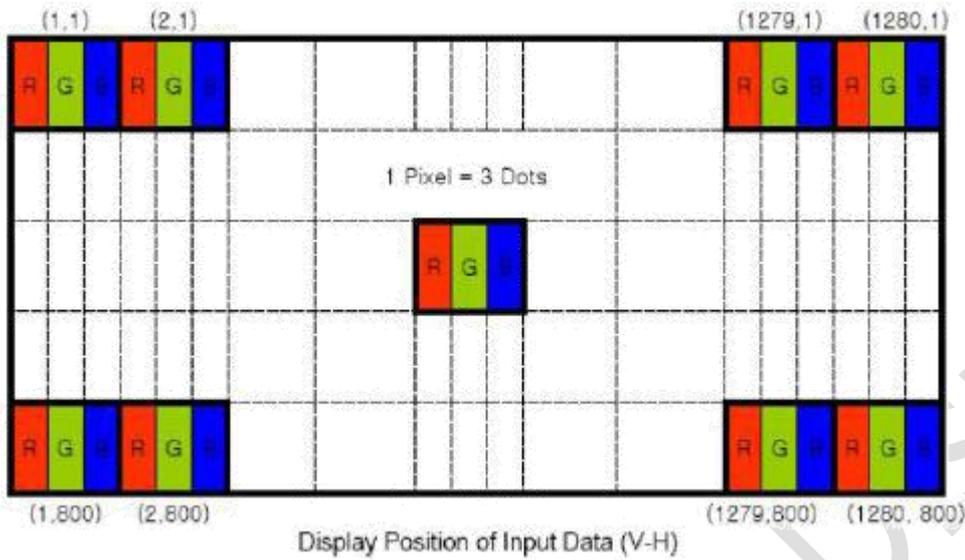
4.2   LVDS interface
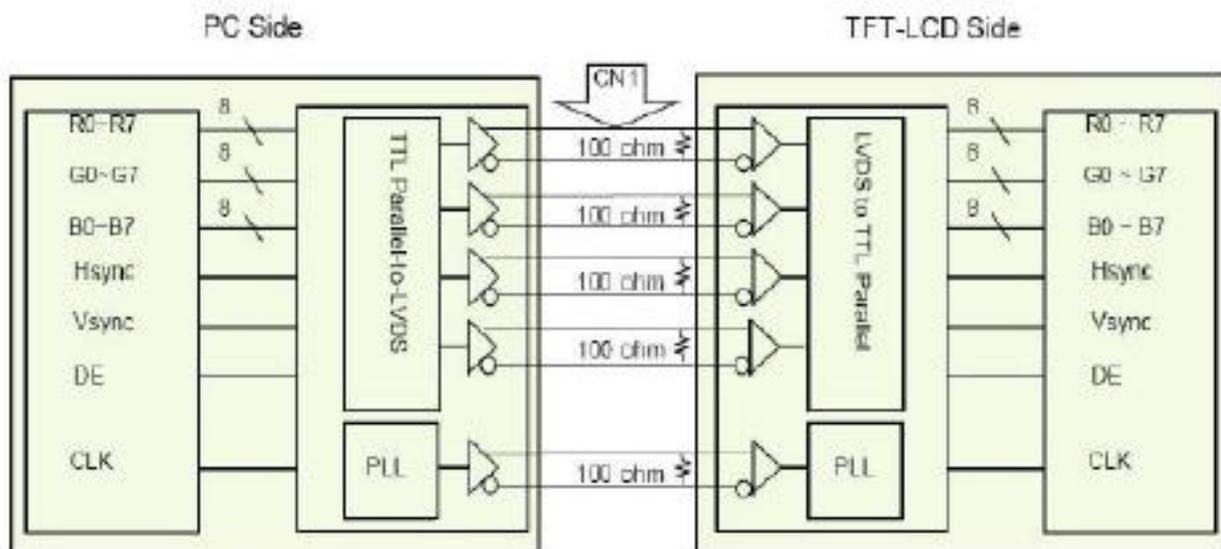
4.3 LVDS input signal
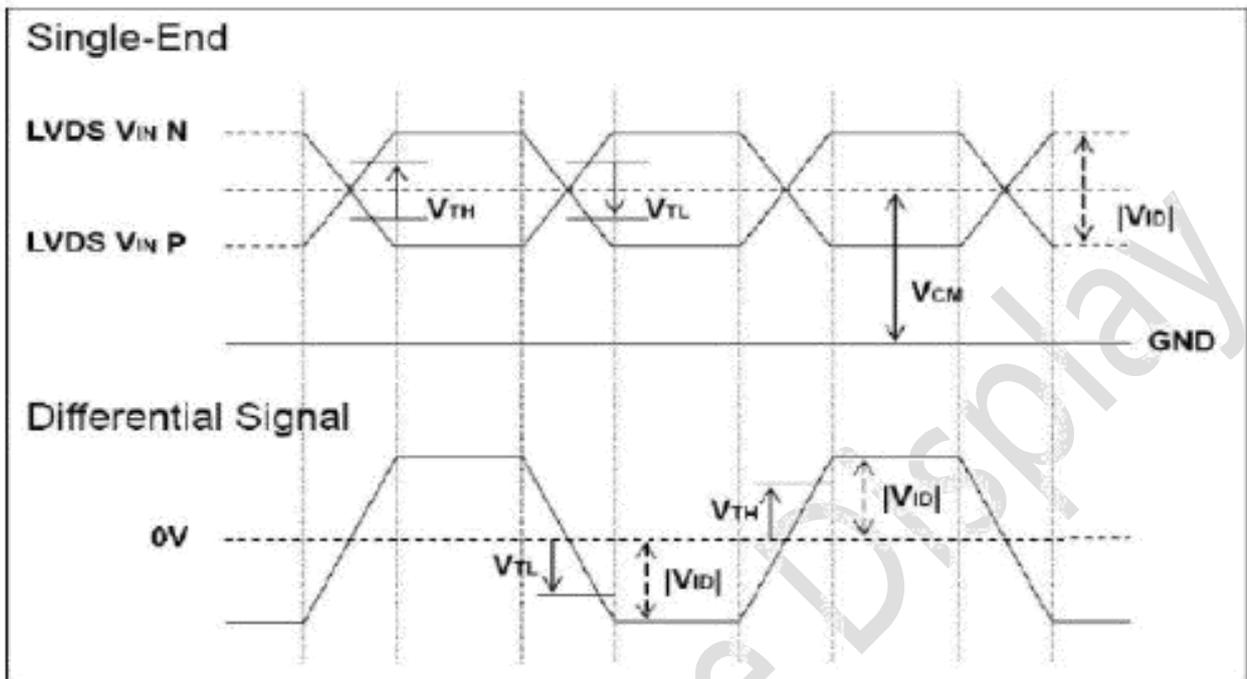
4.4 LVDS timing specification

Signal	Item	Symbol	Min	Type	Max	Unit
DCLK	Frequency	1/TC	60	65	70	MHz
	Cycle	Tc	16.66	15.38	14.3	ns
DE	Horizontal Period	THd	1280	1280	1280	Tc
	Horizontal Cycle	TH	1310	1330	1560	Tc
		TH_time	19.5	20.46	21.83	ns
	Vertical Period	TVd	800	800	800	Tc
	Vertical Cycle	TV	-	812	-	Tc

Interface Timing
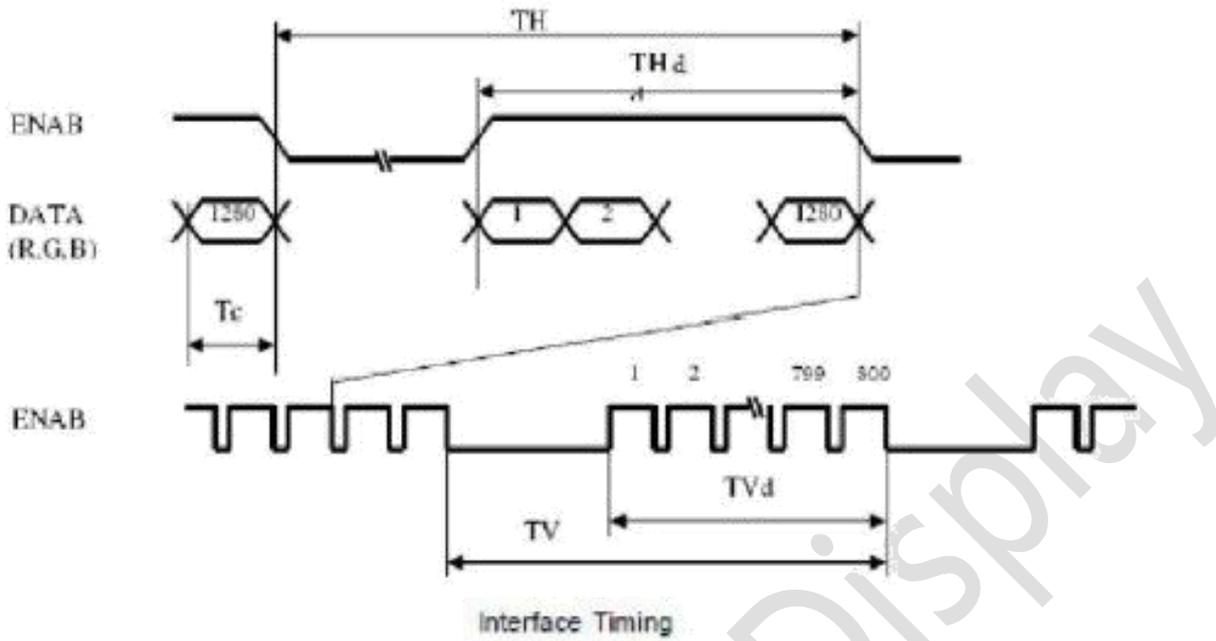
4.5 Input clock and timing diagram
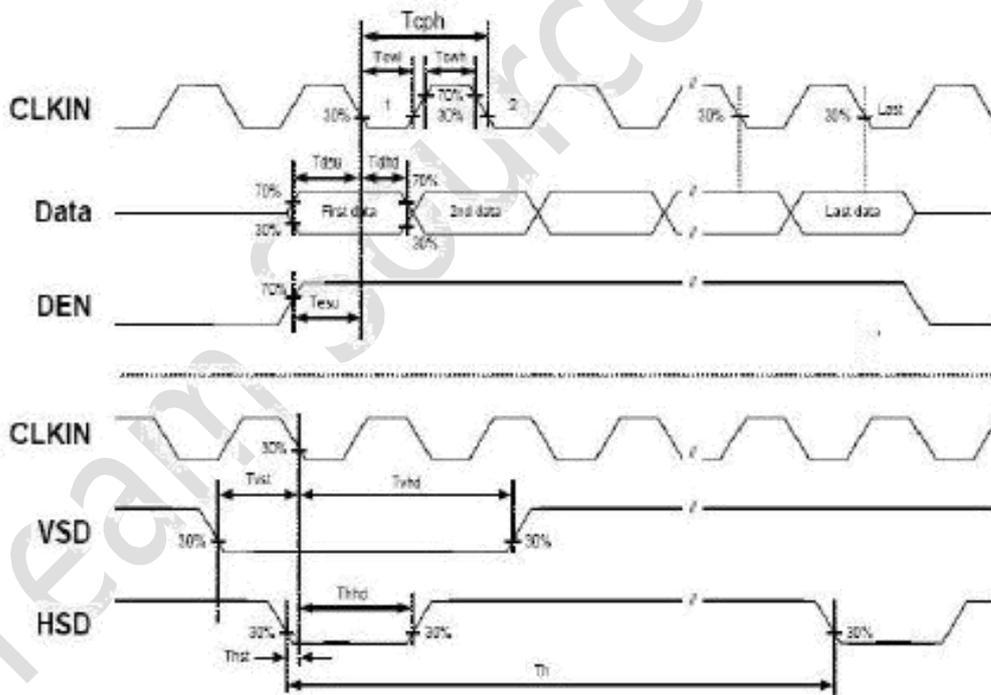
5　Absolute Maximum Ratings

PARAMETER	SYMBOL	MIN	MAX	UNIT
Supply voltage for analog	VDD	-0.3	5	V
Supply voltage for logic	VDD	-0.5	5	V
Operating Temperature	TOP	-20	70	°C
Storage Temperature	TST	-20	80	°C
Humidity	RH	-	90%(Max 60°C)	RH

6　Electrical　Characteristics

Item	Symbol	Min	Typ.	Max	Unit	Applicable terminal
Supply Voltage for Logic	VDD	3.0	3.3	3.6	V	
Supply Voltage for Analog	AVDD	8.3	8.5	8.7	V	
Power supply	VGH	21.5	22	22.5	V	
Power supply	VGL	7.7	8.2	8.7	V	
Power supply	VCOM	3.2	3.4	3.6	V	
Input Voltage	V_{IL}	GND	-	0.3VDD	V	
	V_{IH}	0.7VDD	-	VDD		
Input leakage Current	I_{LKG}	-	-	-	μA	

7　Backlight　Characteristics

ITEM	SYMBOL	MIN	TYP	MAX	UNIT
Voltage for LED backlight	V_f	-	12.8	-	V
Current for LED backlight	I_f	-	360	-	mA
Power consumption	Wbl	-	4608	-	mW
Uniformity	Avg	75	80	-	%
LED Life Time	-	30000	40000	-	Hrs

Note:

1.The LED life time is defined as the module brightness decrease to 50% original brightness at Ta=25°C, 60%RH ±5 %.

2. The life time of LED will be reduced if LED is driven by high current, high ambient temperature and humidity conditions.

3. Typical operating life time is an estimated data.

4. Permanent damage to the device may occur if maximum values are exceeded or reverse voltage is loaded .Functional operation should be restricted to the conditions described under normal operating conditions.

8　LCD　Optical　specifications

| Item	Symbol	Condition	Specification			Unit	Remark
			Min	Typ	Max		
Response time (By Quick)	Tr+Tf	θ = 0°	-	30	-	ms	Note 5
Contrast ratio	CR	θ = 0°	700	900	-		Note 2,6
Viewing angle	Top	CR≧10	70	80	-	Deg.	Note 2,6,7
	Bottom	CR≧10	70	80	-		
	Left	CR≧10	70	80	-		
	Right	CR≧10	70	80	-		
Color　Filter Chromacicity with C light	Wx	θ = 0°	Typ -0.02	0.303	Typ +0.02		Note 3
	Wy			0.339			
	Rx			TBD			
	Ry			TBD			
	Gx			TBD			
	Gy			TBD			
	Bx			TBD			
	By			TBD			
NTSC			-	65	%		Note 3
Transmittance	Trans		-	TBD	%		Note 4

Note 1: Ambient temperature = 25°C.

Note 2: To be measured with a viewing cone of 2°by Topcon luminance meter BM-5A.

Note 3: To be measured with Otsuta chromaticity meter LCF-2100M, CF only measure under C light simulation.

Note 4: BOE shipping status is cell without polarizer. Transmittance of Specification is cell with polarizer. The tolerance of Transmittance is ±10%.

Note 5: Definition of response time:

The output signals of TRD-100 are measured when the input signals are changed to "White" (falling time) and from "White" to "Black" (rising time), respectively. The interval is between the 10% and 90% of amplitudes. Refer to figure as below.
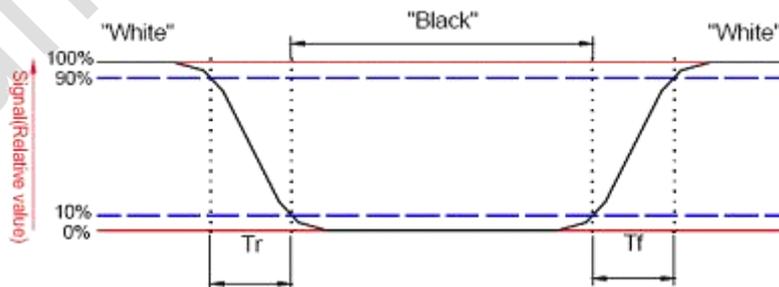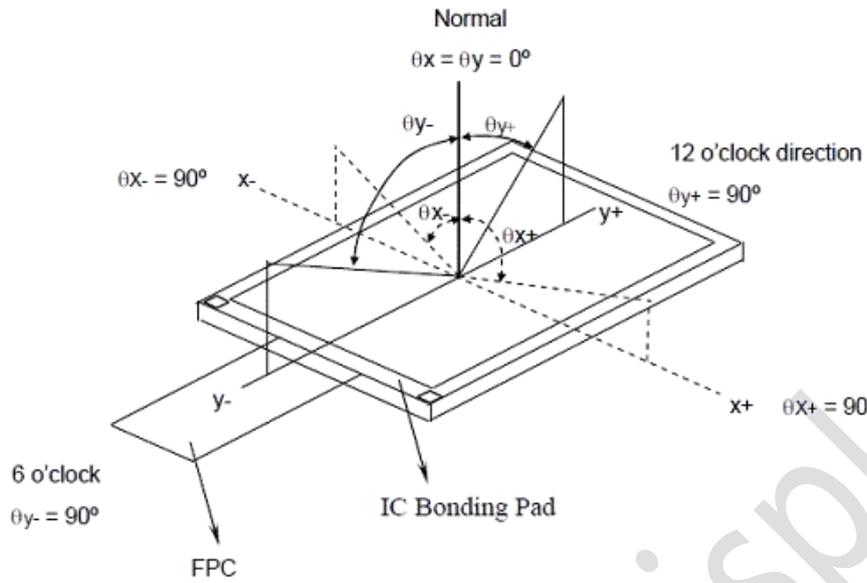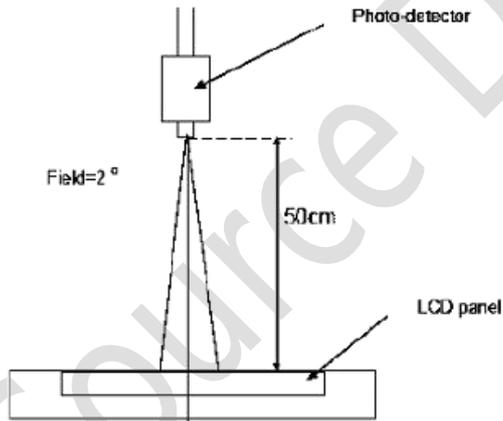

Note 6: Definition of contrast ratio:

Contrast ratio is calculated by the following formula.

$$\text{Contrast ratio (CR)} = \frac{\text{Brightness on the "white" state}}{\text{Brightness on the "black" state}}$$
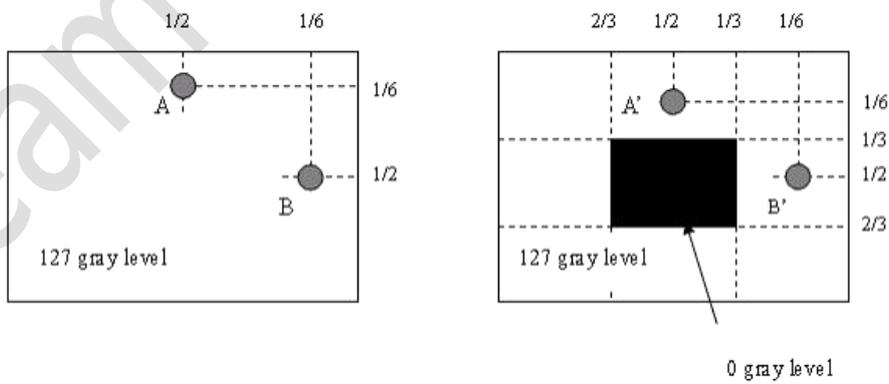
Note 7: Definition of viewing angle

Note 8: Optical characteristic measurement setup.

Note 9:

l LA-LA' l / LA x 100%= 2% max., LA and LA' are brightness at location A and A'.
l LB-LB' l / LB x 100%= 2% max., LB and LB' are brightness at location B and B'.

9 Capacitive Touch Panel specifications

9.1 Mechanical characteristics

DESCRIPTION	INL SPECIFICATION	REMARK
Touch Panel Size	10.1	
Outline Dimension (OD)	255(H) x 178(V) mm	Cover Lens Outline
Product Thickness	4.1mm	With FPC and frame D.S.T
Glass Thickness	3.0mm	
View Area	217.76x136.4mm	
Input Method	5 Fingers	
Activation Force	Touch	
Surface Hardness	≥6H	

9.2 Electrical characteristics

DESCRIPTION		SPECIFICATION
Operating Voltage		DC 2.8~3.3V
Power Consumption (IDD)	Active Mode	TBD
	Sleep Mode	TBD
Interface		I^{2}C
Controller IC		GT9271
I^{2}C address		0xBA/0XBB
Resolution		1280*800

9.3 Interface timing characteristics
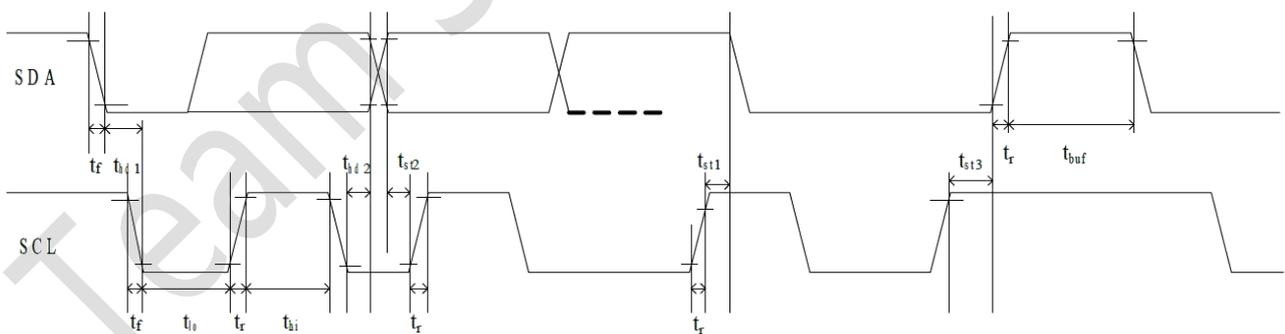
PARAMETER	Symbol	MIN	MAX	UNIT
SCL Frequency		-	400K	Hz
SCL low period	tlo	4.7	-	us
SCL high period	thi	0.6	-	uS
SCL setup time for START condition	tst1	0.6	-	uS
SCL setup time for STOP condition	tst3	0.6	-	uS

SCL hold time for START condition	thd1	0.6	-	uS
SDA setup time	tst2	0.1	-	us
SDA hold time	thd2	0	-	us

10 RELIABILITY TEST

NO.	TEST ITEM	TEST CONDITION	INSPECTION AFTER TEST
1	High Temperature Storage	80±2°C/96 hours	Inspection after 2~4 hours storage at room temperature and humidity. The condensation is not accepted. The sample shall be free from defects: 1. Air bubble in the LCD 2. Seal leak 3. Non-display 4. Missing segments 5. Glass crack
2	Low Temperature Storage	-20±2°C/96 hours	
3	High Temperature Operating	70±2°C/96 hours	
4	Low Temperature Operating	-20±2°C/96 hours	
5	Temperature Cycle	-30±2°C ~ 25~ 80± 2°C × 10 cycles (30 min.)　　(5min.)　　　　(30min.)	
6	Damp Proof Test	60°C ±5°C × 90%RH/96 hours	
7	Vibration Test	Frequency 10Hz~55Hz Stroke: 1.5mm Sweep: 10Hz~150 Hz~10Hz 2 hours For each direction of X, Y, Z	
8	Shock Test	Half-sine, wave, 300m/s	
9	Packing Drop Test	Height: 80 cm 1 corner, concrete floor	
10	Electrostatic Discharge Test	C=150pF, R=330 Ω Air: ±8KV 150pF/330Ω 30 times Contact: ±4KV,20 times	

11 Suggestions for using LCD modules

11.1 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.

11.2 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.