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.: TST080HH002-01C

Version: V1.0

☐ 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	2018-7-21	Initial Release	

CONTENTS

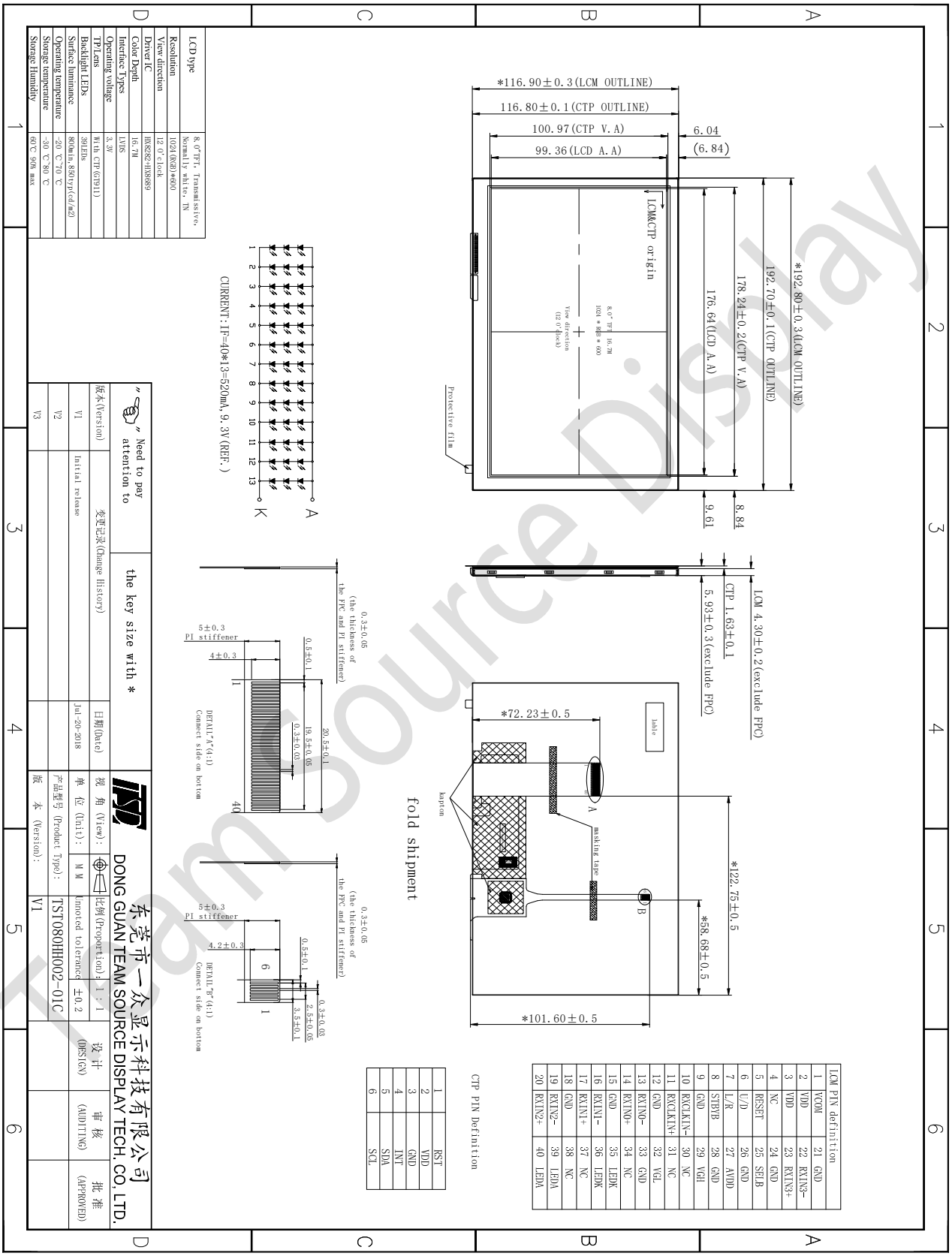
1 General Characteristics

ITEM	Specification	Unit
LCD Type	a-Si TFT,Transmissive,Normally white,TN	-
LCD Size	8.0	inch
Resolution (W x H)	1024(RGB) × 600	pixel
CTP+LCM size	192.80(H) x 116.90(V) x 5.93(T)	mm
LCM size	192.80(H) x 116.90(V) x 4.30(T)	mm
Active Area	176.64 (H) x 99.36(V)	mm
Dot Pitch	0.1725(H)x0.1656(V)	mm
Viewing Direction	12 o'clock	-
Gray Scale Inversion Direction	6 o'clock	-
Color Depth	16.7M	-
Pixel Arrangement	RGB-stripe	-
Backlight Type	39 LED，520mA	-
Surface Luminance	Min 800,Typ 850	cd/m2
Surface Treatment	Hardness: 6H	-
Interface Type	LVDS	-
Input Voltage	3.3	V
With/Without TP	With CTP(GT911)	-
Weight	TBD	g

Note 1: RoHS compliant

Note 2: LCM weight tolerance: ± 5%.

2 Product drawings



LCD type	8.0"TFT, Transmissive, Normally white, TN
Resolution	1024(RGB)*600
View direction	12 O'clock
Driver IC	HX8282+HX8689
Color Depth	16.7M
Interface Types	LVDS
Operating voltage	3.3V
TP/Lens	With CTP(GT911)
Backlight LEDs	30LEDs
Surface luminance	800nits,850typ(cd/m2)
Operating temperature	-20℃~70℃
Storage temperature	-30℃~80℃
Storage Humidity	60℃ 90% max

LCM PIN definition			
1	VCOM	21	GND
2	VDD	22	RX1N3-
3	VDD	23	RX1N3+
4	NC	24	GND
5	RESET	25	SELB
6	U/D	26	GND
7	L/R	27	AVDD
8	STBYB	28	GND
9	GND	29	VGH
10	RXCLK1N-	30	NC
11	RXCLK1N+	31	NC
12	GND	32	VGL
13	RX1N0-	33	GND
14	RX1N0+	34	NC
15	GND	35	LEDK
16	RX1N1-	36	LEDK
17	RX1N1+	37	NC
18	GND	38	NC
19	RX1N2-	39	LEDA
20	RX1N2+	40	LEDA

CTP PIN Definition

1	RST
2	VDD
3	GND
4	INT
5	SDA
6	SCL

" Need to pay attention to the key size with *

版本(Version)	变更记录(Change History)	日期(Date)
V1	Initial release	Jul-20-2018
V2		
V3		

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

视 角 (View):	比例(Proportion):	1 : 1	设 计 (DESIGN)	审 核 (AUDITING)	批 准 (APPROVED)
单 位 (Unit):	M M	Unnoted tolerance	±0.2		
产品型号 (Product Type):	TST080HH002-01C				
版 本 (Version):	V1				

3 Interface description

3.1 LCM interface description

PIN NO.	Symbol	description
1	VCOM	Common voltage
2	VDD	Power voltage for digital circuit
3	VDD	Power voltage for digital circuit
4	NC	No connect
5	RESET	Global reset pin
6	U/D	Up/down scan control
7	L/R	Right/left shift control
8	STBYB	Standby mode control. Normally pull High.
9	GND	Ground
10	RXCLKIN-	Negative LVDS differential clock input
11	RXCLKIN+	Positive LVDS differential clock input
12	GND	Ground
13	RXIN0-	Negative LVDS differential data input
14	RXIN0+	Positive LVDS differential data input
15	GND	Ground
16	RXIN1-	Negative LVDS differential data input
17	RXIN1+	Positive LVDS differential data input
18	GND	Ground
19	RXIN2-	Negative LVDS differential data input
20	RXIN2+	Positive LVDS differential data input
21	GND	Ground
22	RXIN3-	Negative LVDS differential data input
23	RXIN3+	Positive LVDS differential data input
24	GND	Ground

25	SELB	In LVDS mode, used as 6-bit/8-bit input select When SELB=0, 8-bit input; When SELB=1, 6bit input;
26	GND	Ground
27	AVDD	Analog power
28	GND	Ground
29	VGH	Gate ON voltage
30-31	NC	No connect
32	VGL	Gate OFF voltage
33	GND	Ground
34	NC	No connect
35-36	LEDK	LED Cathode
37-38	NC	No connect
39-40	LEDA	LED Anode

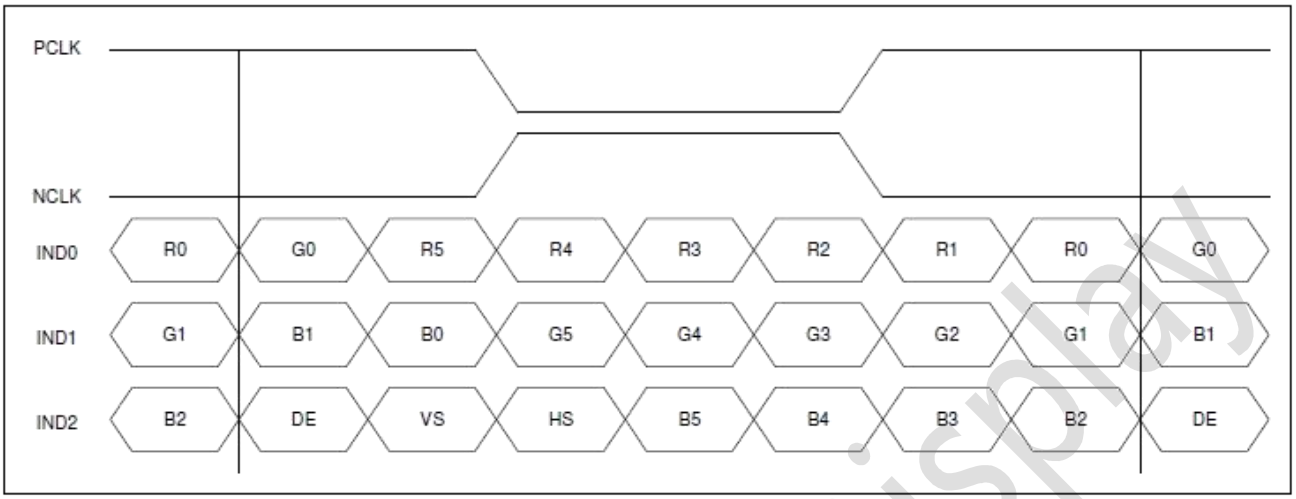
Note:

3.2 CTP interface description

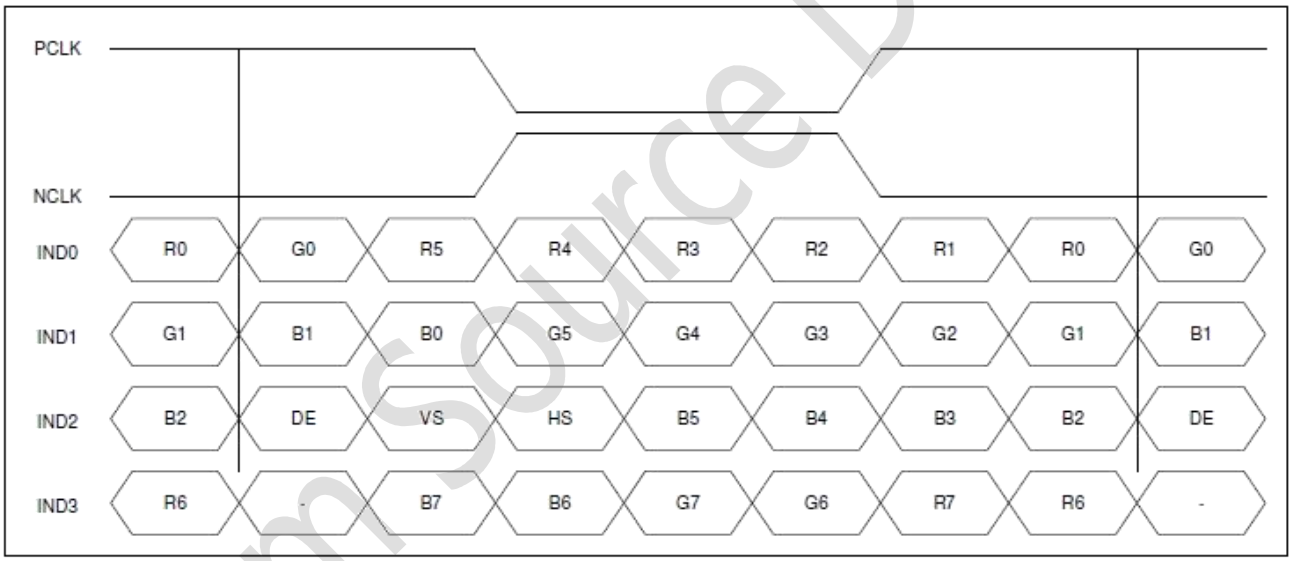
PIN NO.	Symbol	description
1	RST	External Reset, Low is active
2	VDD	Power supply +3.3V
3	GND	Ground. (0V)
4	INT	Interrupt request to the host
5	SDA	I2C data input and output
6	SCL	I2C clock input

4 LVDS Mode Data Input

6-bit LVDS input



8-bit LVDS input



5 Absolute Maximum Ratings

PARAMETER	SYMBOL	MIN	MAX	UNIT
Power supply voltage 1	VDD	-0.5	+5.0	V
Power supply voltage 2	AVDD	-0.5	+15	V
Logic output voltage	Vout	-0.5	+5.0	V
Input voltage	Vin	-0.5	AVDD+0.5	V
Operating Temperature	TOP	-20	70	° C
Storage Temperature	TST	-30	80	° C
Humidity	RH	-	90%(Max 60° C)	RH

Item	Symbol	Unit	Test Condition	Min	Typ.	Max	Note
Gate on power current	IVGH	mA	VGH=18V	-	0.4	1.0	-
Gate off power current	IVGL	mA	VGL=-10V	-	1.6	1.0	-
Analog power current	IVDD	mA	VDD=3.3V	-	15.2	10	-
Analog power current	IAVDD	mA	AVDD=11V	-	19.5		

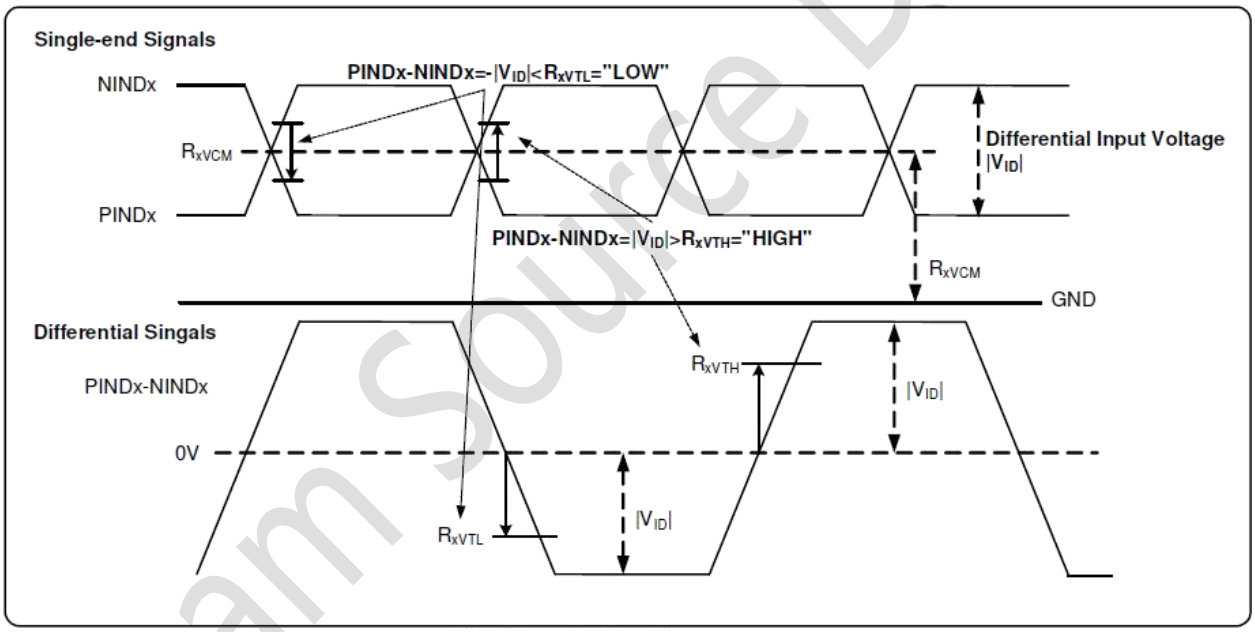
Item	Symbol	Unit	Value			Note
			Min	Typ	Max	
Power voltage	DVDD	V	3.0	3.3	3.6	Note2
	AVDD	V	10.8	11	11.2	
	VGH	V	17.7	18	18.3	-
	VGL	V	-10.3	-10	-9.7	
Input signal voltage	VCOM	V	4.2	4.5	4.8	Note4
Input logic high voltage	VIH	V	0.7DVDD	-	DVDD	Note3
Input logic low voltage	VIL	V	0	-	0.3DVDD	

Note 1: Be sure to apply DVDD and VGL to the LCD first, and then apply VGH.
Note 2: DVDD setting should match the signals output voltage (refer to Note 3) of customer's system board.
Note 3: DCLK,HS,VS,RESET,U/D, L/R,DE,R0~R7,G0~G7,B0~B7,MODE,DITHB.
Note 4: Typical VCOM is only a reference value. It must be optimized according to each LCM. Please use VR and base on below application circuit.

6 LVDS DC Electrical Characteristics

Parameter	Symbol	Spec. Min.	Spec. Typ.	Spec. Max.	Unit	Condition
Differential input high Threshold voltage	R_{XVTH}	-	-	+0.1	V	R_{XVCM} =1.2V
Differential input low threshold voltage	R_{XVTL}	-0.1	-	-	V	
Input voltage range (singled-end)	R_{XVIN}	0	-	VDD-1.2+ $\|V_{ID}\|/2$	V	-
Differential input common Mode voltage	R_{XVCM}	$\|V_{ID}\|/2$	-	VDD-1.2	V	-
Differential input voltage	$\| V_{ID} \|$	0.2	-	0.6	V	-
Differential input leakage Current	RV_{Xliz}	-10	-	+10	μA	-
LVDS Digital Operating Current	Iddlvds	-	15(TBD)	30(TBD)	mA	Fclk=65MHz, VDD=3.3V
LVDS Digital Stand-by Current	Istlvds	-	10(TBD)	50(TBD)	μA	Clock & all Functions are stopped

LVDS Mode DC Electrical Characteristics



Single-end Signals

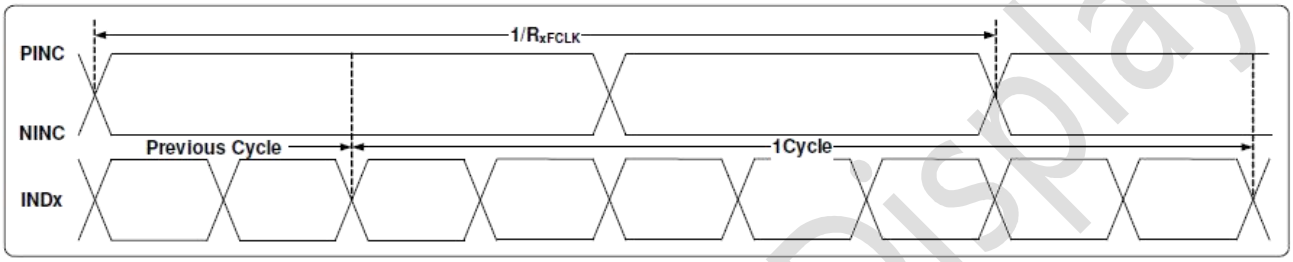
Parameter	Symbol	Spec. Min.	Spec. Typ.	Spec. Max.	Unit	Condition
Base drive current for PWM	IDRV	-	-	60	mA	R_{XVCM} =1.2V
DRV output voltage for PWM	VDRV	0	-	VDD	V	
Feed back voltage for PWM	VFB	0.55	0.6	0.65	V	-
Duty cycle maximum	Dmax	-	-	85	%	-
VCOM buffer input voltage	VCOMI	1	-	AVDD	V	-
VCOM buffer output voltage	VCOMO	VCOMI-0.2	VCOMI	VCOMI+0.2	V	-
VCOM buffer output current	IVCOM	-	-	10	mA	Fclk=65MHz, VDD=3.3V

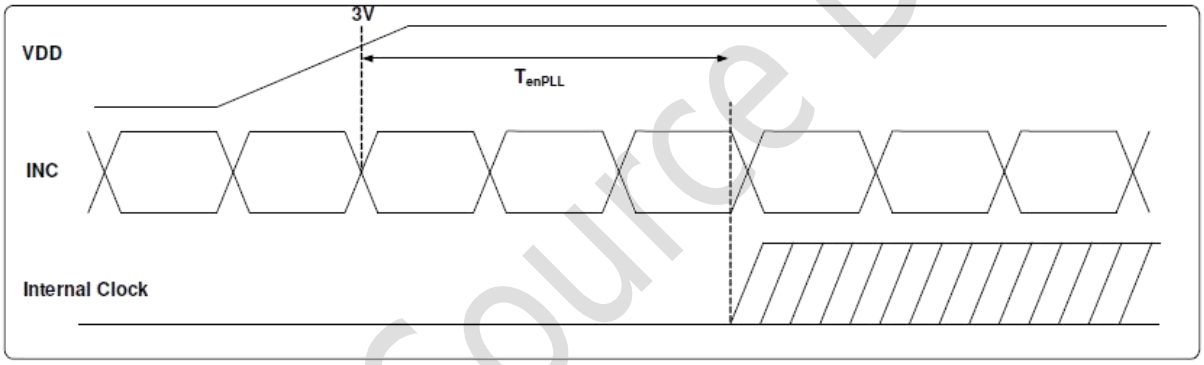
Power table

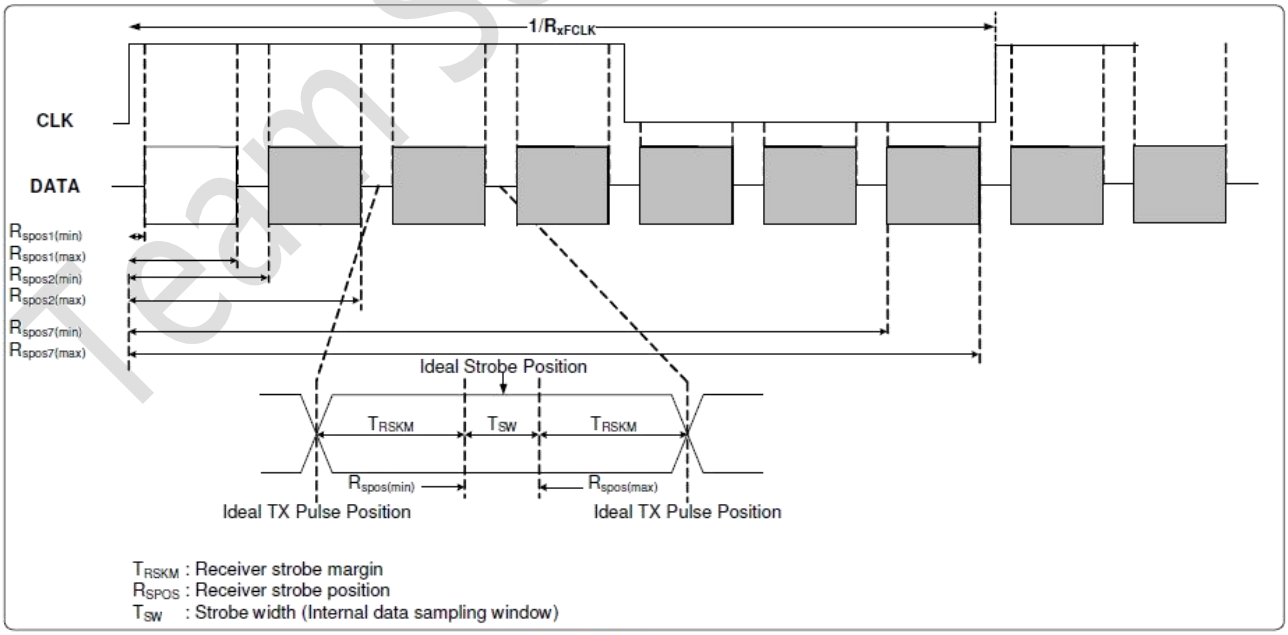
7 LVDS AC Electrical Characteristics

Parameter	Symbol	Spec. Min.	Spec. Typ.	Spec. Max.	Unit	Condition
Clock frequency	R_{XFCLK}	20	-	71	MHz	-
Input data skew margin	T_{RSKM}	500	-	-	pS	$\|V_{ID}\|$=400mV R_{XVCM}=1.2V R_{XFCLK}=71MHz
Clock high time	T_{LVCH}	-	4/(7* R_{XFCLK})	-	ns	-
Clock low time	T_{LVCL}	-	3/(7* R_{XFCLK})	-	ns	-
PLL wake-up time	T_{emPLL}	-	-	150	μs	-

LVDS Mode AC Electrical Characteristics







LVDS Figure

Parameter	Symbol	Spec. Min.	Spec. Typ.	Spec. Max.	Unit	Condition
Modulation Frequency	SSC_{MF}	23	-	93	KHz	-
Modulation Rate	SSC_{MR}	-	-	±3	%	LVDS clock =71MHz center spread

SSC Table

8 Backlight Characteristics

ITEM	SYMBOL	MIN	TYP	MAX	UNIT
Voltage for LED backlight	V_f	-	9.3	-	V
Current for LED backlight	I_f	-	520	-	mA
Power consumption	Wbl	-	4836	-	mW
Uniformity	Avg	75	-	-	%
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.

9 LCD Optical specifications

Item	Symbol	Condition	Specification			Unit	Remark
			Min	Typ	Max		
Response time (By Quick)	Tr+Tf	θ = 0°	-	16	32	ms	Note 5
Contrast ratio	CR	θ = 0°	600	800	-		Note 2,6
Viewing angle	Top	CR≧10	70	80	-	Deg.	Note 2,6,7
	Bottom	CR≧10	60	70	-		
	Left	CR≧10	70	80	-		
	Right	CR≧10	70	80	-		
Color Filter Chromacicity with C light	Wx	θ = 0°	Typ -0.03	0. 310	Typ +0.03		Note 3
	Wy			0. 330			
	Rx			0. 592			
	Ry			0. 352			
	Gx			0. 323			
	Gy			0. 570			
	Bx			0. 157			
	By			0. 099			
NTSC			-	50	-	%	Note 3
Transmittance	Trans		-	-	-	%	Note 4

Note 1: Ambient temperature = 25°C.

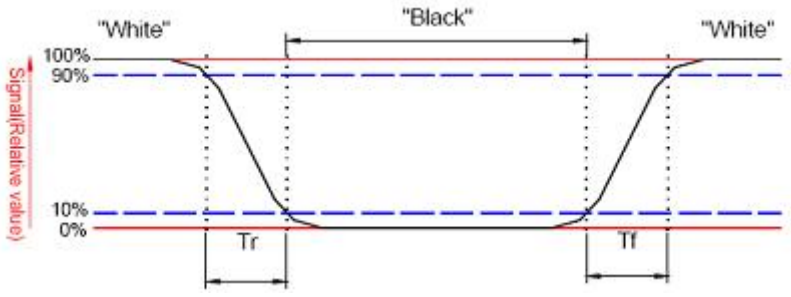
Note 2: To be measured with a viewing cone of 2°by Topcon luminance meter BM-5A.

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.

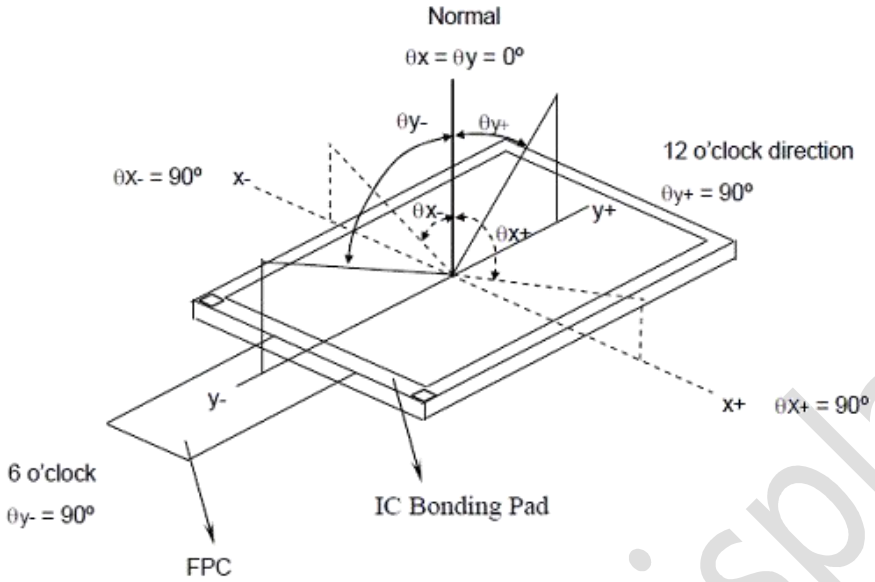


Note 6: Definition of contrast ratio:

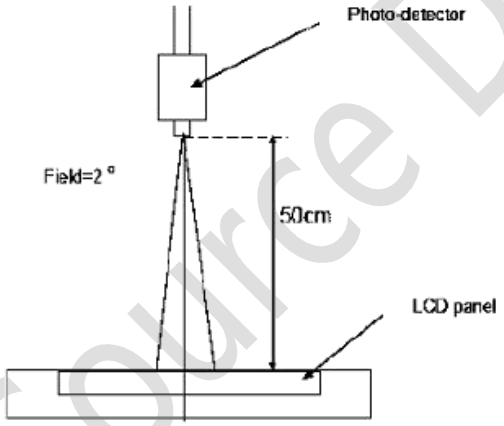
Contrast ratio is calculated by the following formula.

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

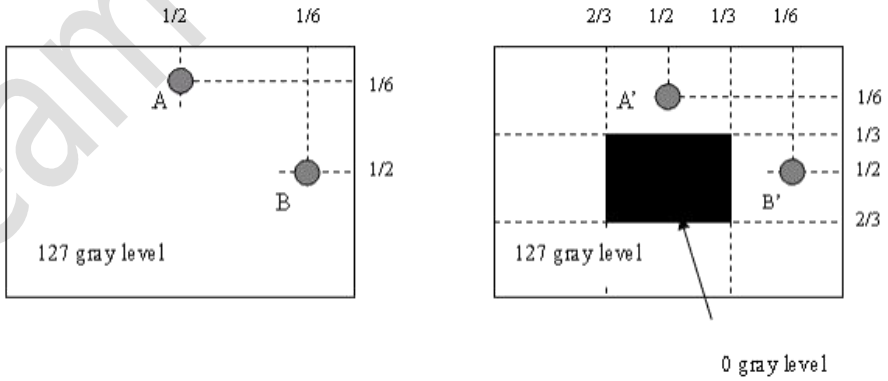
Note 7: Definition of viewing angle



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'.

10 Capacitive Touch Panel specifications

10.1 Mechanical characteristics

DESCRIPTION	INL SPECIFICATION	REMARK
Touch Panel Size	8.0	
Outline Dimension (OD)	192.70(H) x 116.80(V) mm	Cover Lens Outline
Product Thickness	1.63mm	
Glass Thickness	0.7mm	
View Area	178.24(H)x100.97(V)mm	
Input Method	5 Fingers	
Activation Force	Touch	
Surface Hardness	≥6H	

10.2 Electrical characteristics

DESCRIPTION		SPECIFICATION
Operating Voltage		DC 2.8~3.3V
Power Consumption (IDD)	Active Mode	TBD
	Sleep Mode	TBD
Interface		I^2C
Controller IC		GT911
I^2C address		0xBA/0xBB
Resolution		1024*600

10.3 Interface timing characteristics

PARAMETER	MIN	MAX	UNIT
SCL Frequency	-	400K	Hz
Bus Free Time Between a STOP and START Condition	0.9	-	uS
Hold Time (repeated) START Condition	0.3	-	uS
Data Setup Time	0.4	-	uS
Setup Time for Repeated START Condition	0.4	-	uS
Setup Time for STOP Condition	0.4	-	uS

11 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	-30±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	

12 Suggestions for using LCD modules

12.1 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.

12.2 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.