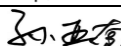# SPECIFICATION
FOR
CTP MODULE

MODULE NO: YB-TG1024600C80A-C-A0

Doc.Version:00

Customer Approval:

□ Accept	□ Reject

YEEBO	NAME	SIGNATURE	DATE
Prepare	Mechanical Engineer	黄启荣	2022-06-02
Check	Electronic Engineer		2022-06-07
Verify			2022-06-07
Approval			2022-06-07

■ APPROVAL FOR SPECIFICATIONS ONLY

□ APPROVAL FOR SPECIFICATIONS AND SAMPLE

WIMRD005-02-D

1. Revision History

Sample Version	DOC. Version	DATE	DESCRIPTION		CHANGED BY
A0	00	2022-06-02	SPEC ONLY	First issue	H.Q.R

2. Table of Contents:

3. Module Numbering System:

YB- TG 1024600 C 80 A -C – A A0

Sample Version: A0~Z0

Type Code: A~Z

T: With Touch panel
C: With Capacitive touch panel
N: Without Touch panel

Version: A~Z

Serial No: 01~99

S: STD Product
C: Customer Made

Display Function:
Segment Number of Segment
Characters Lines of Character
Column and Row of Graphic
Length * Width of Other

LCM Display Type
C: Character Type；
G: Graphic Type；
S: Segment Type

LCD Model:
C: CSTN； T: TFT； L: LTPS； O: OLED；
P: PLED； S: B/W STN；Y: Yeetek TFT；
N: Others；

YEEBO

4. General Specification:

ITEM	CONTENTS
Module Size	190(W) * 112.5(H) * 3.985(T) mm
Display Size(Diagonal)	7.0inch
Display Format	1024(RGB)* 600 Pixels
Pixel Pitch	0.1506 (H)mm*0.1432(V) mm
LCD Type	TFT (16.7M) / Transmissive / Normally Black
Active Area	154.21(W)*85.92(H)mm
View Angle	Free
Controller IC	EK79001HN & EK73215BCGA
Weight(g)	TBD

5. LCM drawing:
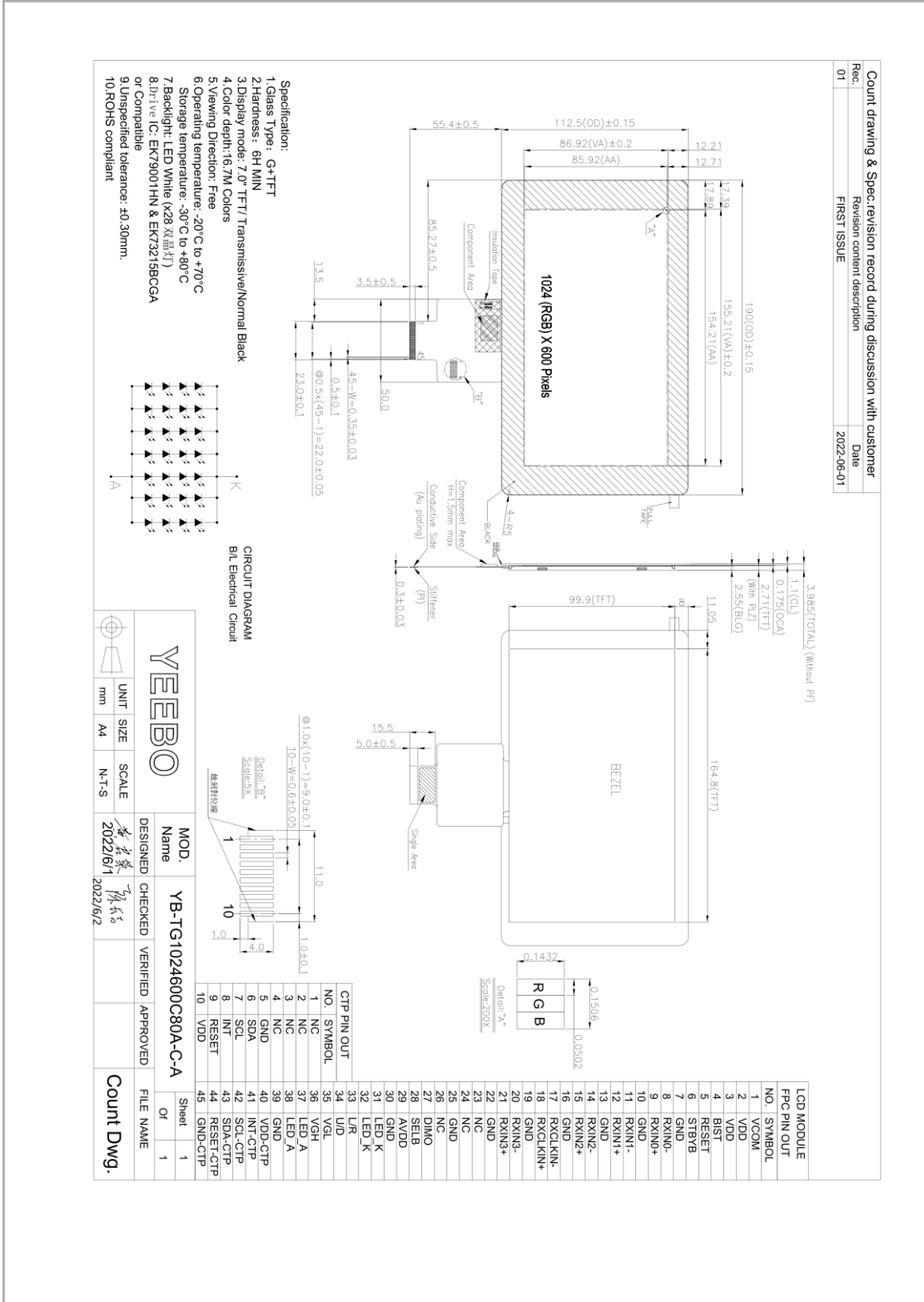
6. Electrical Characteristics

6-1 Absolute Maximum Ratings　　　　　　(Ta=25℃ VSS=0V)

Item	Symbol	Min.	Type	Max.	Unit	Remark
Power Supply voltage	VDD	-0.5	-	5.0	Volt	
	AVDD	-0.5	-	15.0	Volt	
Operating Temperature	Topr	-20	-	+70	℃	
Storage Temperature	Tstg	-30	-	+80	℃	

Note1: Absolute maximum rating is the limit value beyond which the IC maybe broken.

6-2 Operating Conditions

(Ta=25℃)

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Power Supply voltage	VDD	-	2.3	3.3	3.6	Volt
	AVDD	-	9.4	9.6	9.8	Volt
	VGH	-	16	18	20	Volt
	VGL	-	-7	-6	-5	Volt
Input Voltage	VCOM		-	3.2	4	Volt
Power Supply Current for Driver	IVDD	DVDD=3.3V	-	TBD	-	mA
	IAVDD	AVDD=9.6V	-	TBD	-	mA

6-3 Timing Characteristics

6-3-1 LVDS DC characteristic

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Differential input high threshold voltage	RxVTH			+0.1V	V	RxVCM=1.2V
Differential input low threshold voltage	RxVTL	-0.1			V	
Input voltage range(single-end)	RxVIN	0		2.4	V	
Differential input common mode voltage	RxVCM	$\lvert V_{ID}\rvert/2$		$2.4 - \lvert V_{ID}\rvert/2$	V	
Differential input voltage	$\lvert V_{ID}\rvert$	0.2		0.6	V	
Differential input leakage current	RxVTH	-10		+10	V	
LVDS Digital Operating Current	Iddlvsd	-	40(TBD)	50	mA	Fclk=65Mhz, VDD=3.3V
LVDS Digital Standby Current	Istlvds	-	10(TBD)	50	uA	Clock & all functions are stop

Module P/N: YB-TG1024600C80A-C-A

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Doc.Version:00
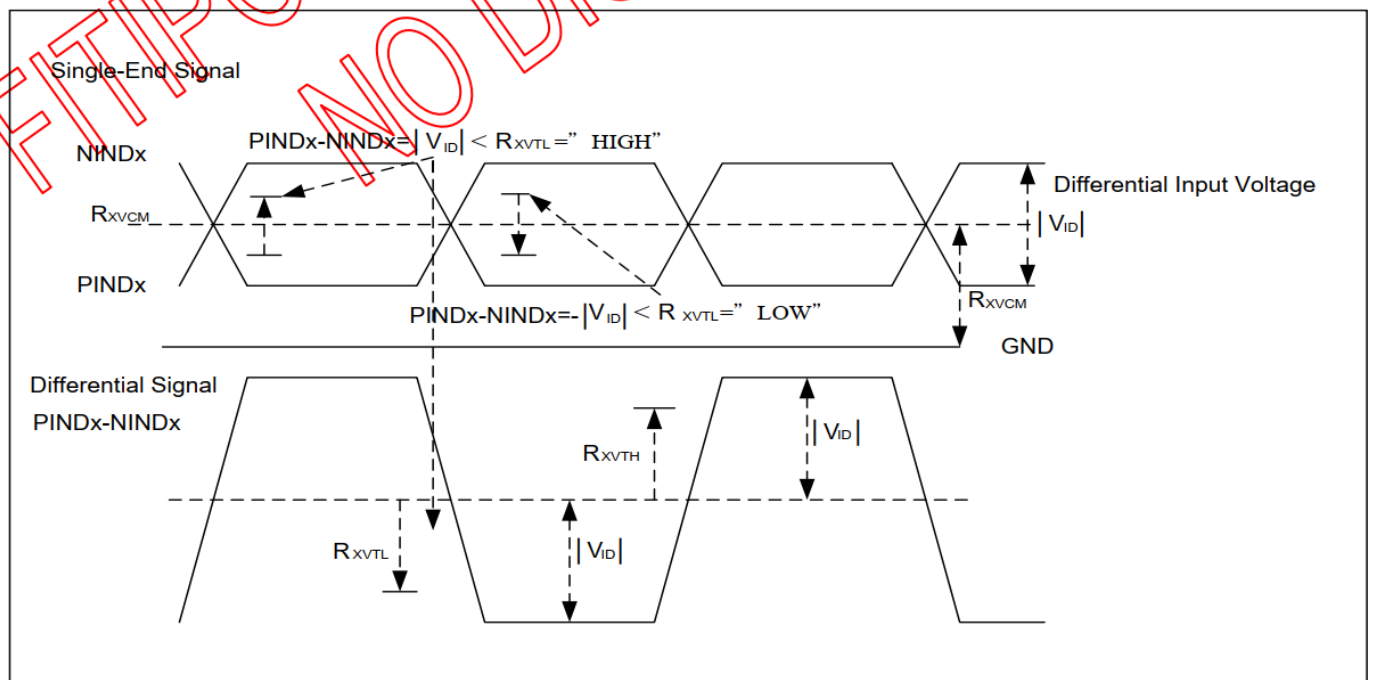
6-3-2 AC Electrical Characteristics

LVDS mode

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Clock Frequency	R_{xFCLK}		20	-	71	MHz
Input data skew margin	T_{RSKM}	$\|V_{ID}\|$=400mV R_{xVCM}=1.2V R_{xFCLK}=71MHz	500			ps
Clock High Time	T_{LVCH}			$4/(7* R_{xFCLK})$		ns
						ns
Clock Low Time	T_{LVCL}			$3/(7* R_{xFCLK})$		ns
PLL wake-up-time	T_{enPLL}				150	us
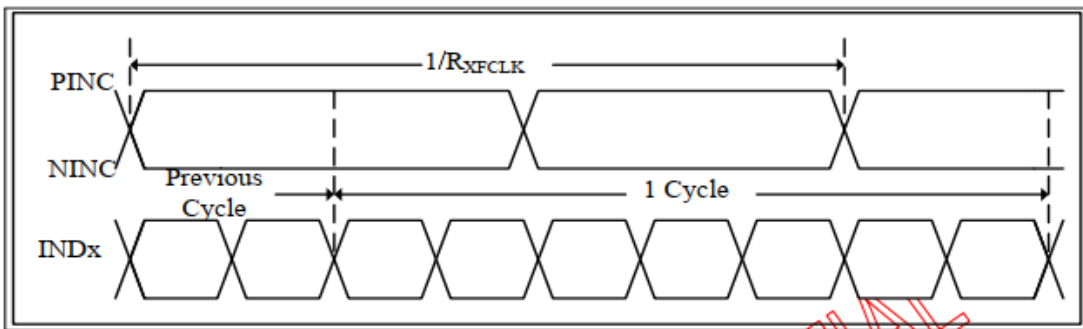
LVDS timing(1)

LVDS timing(2)

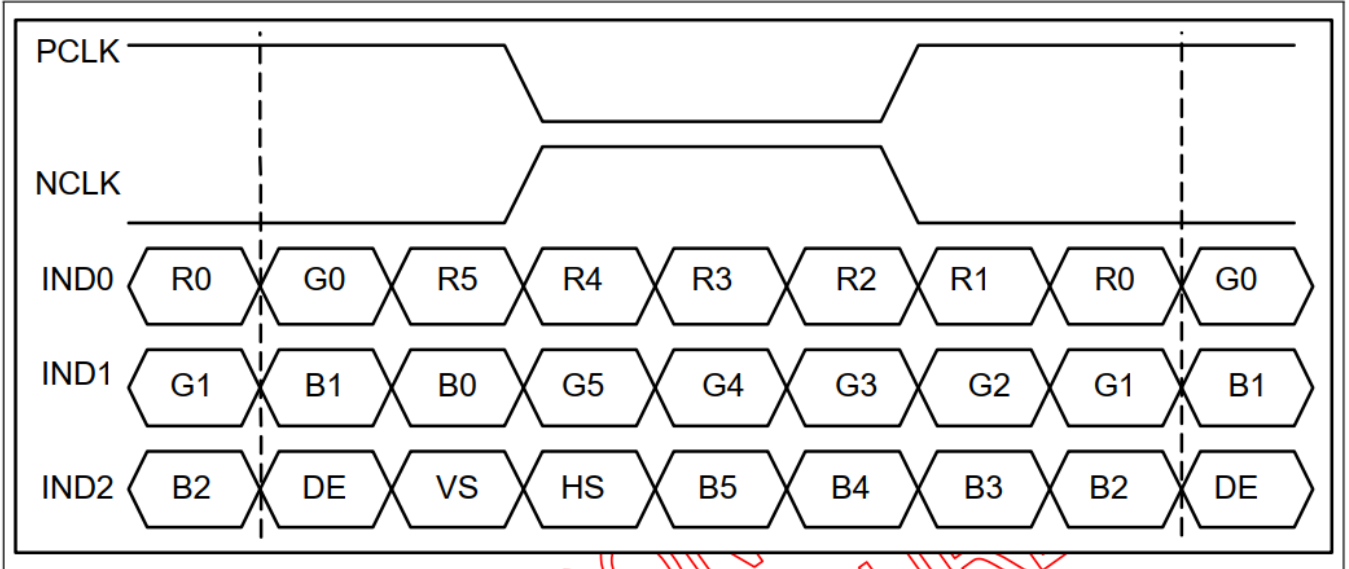T_{SW} :Receiver strobe position
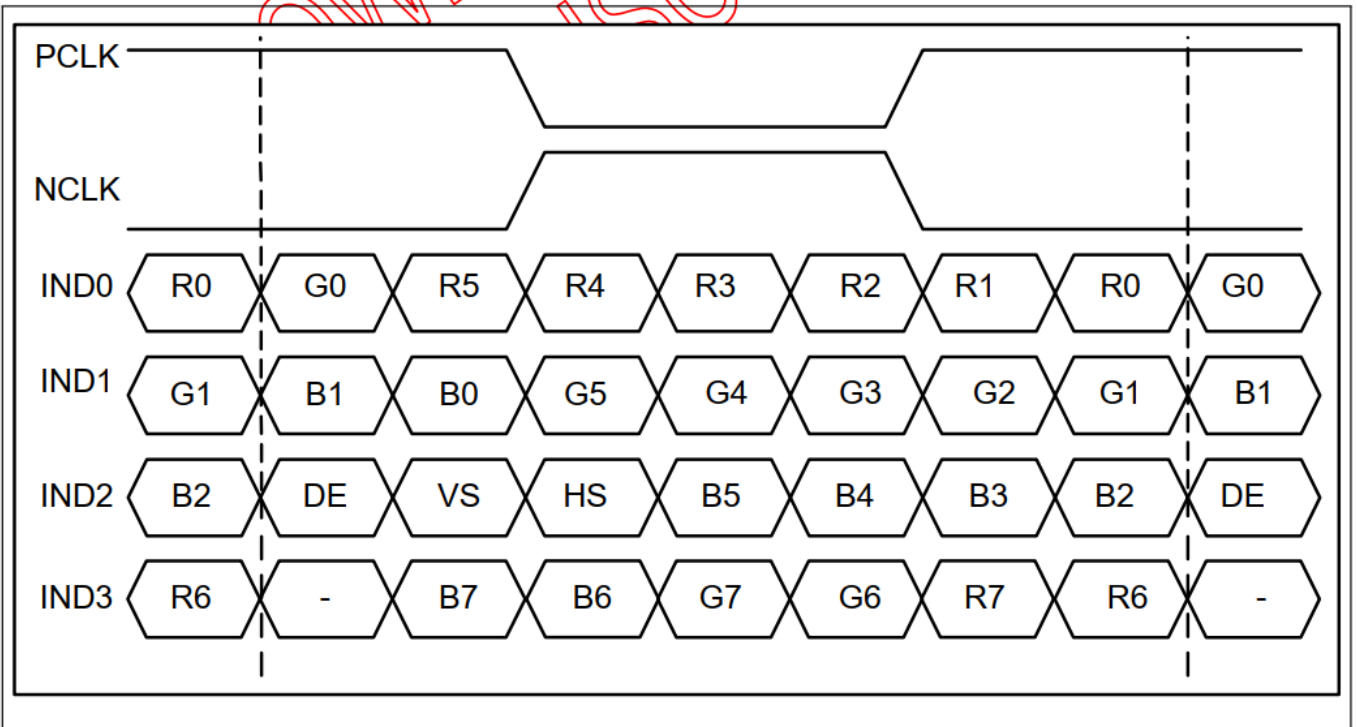T_{RSKM} :Receiver strobe margin
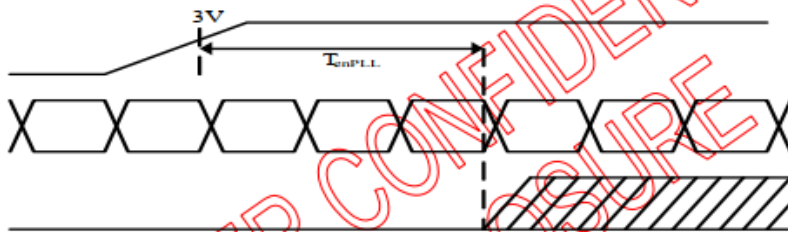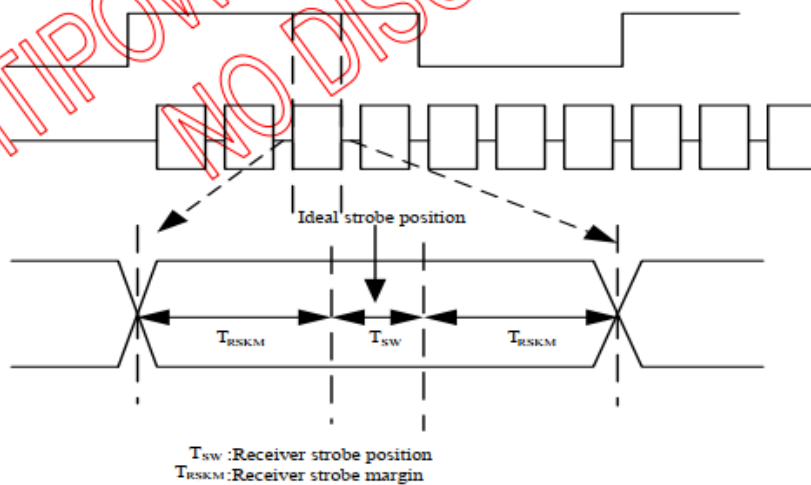
6-3-3 Data Input Format for LVDS

6-bit LVDS input(HSD="H")

6-bit LVDS Input Timing chart
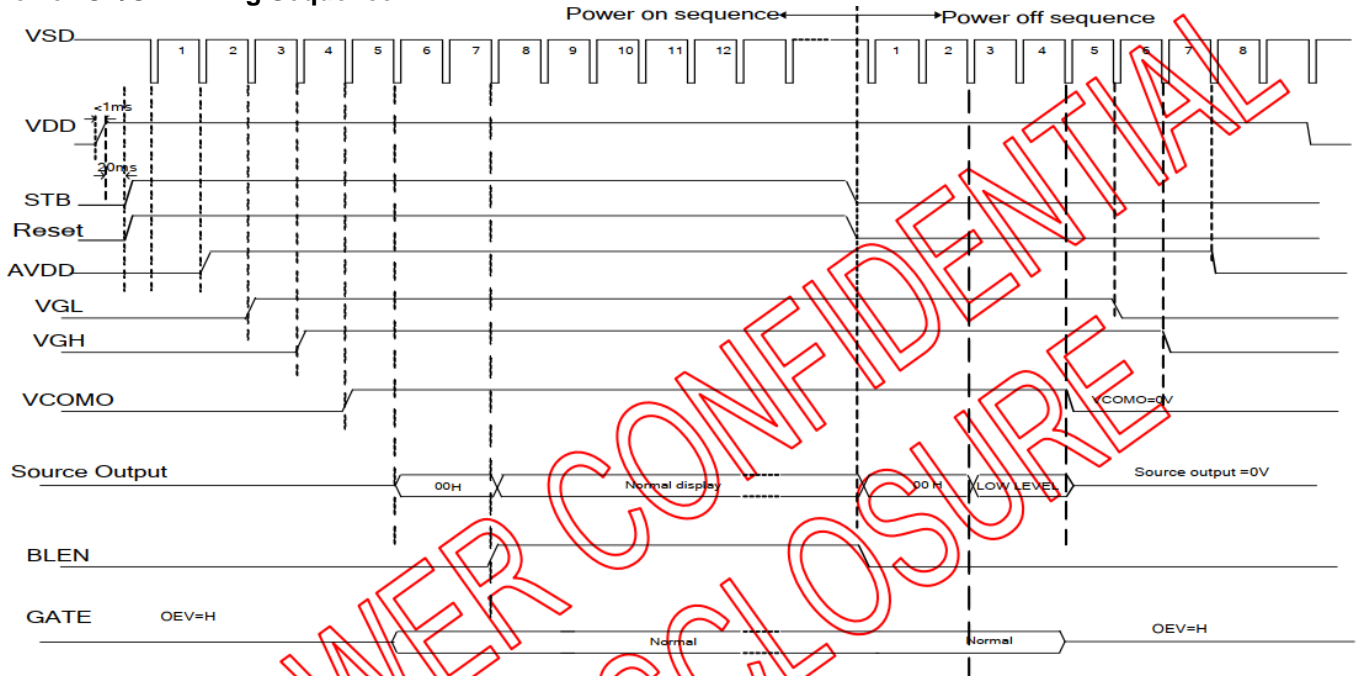
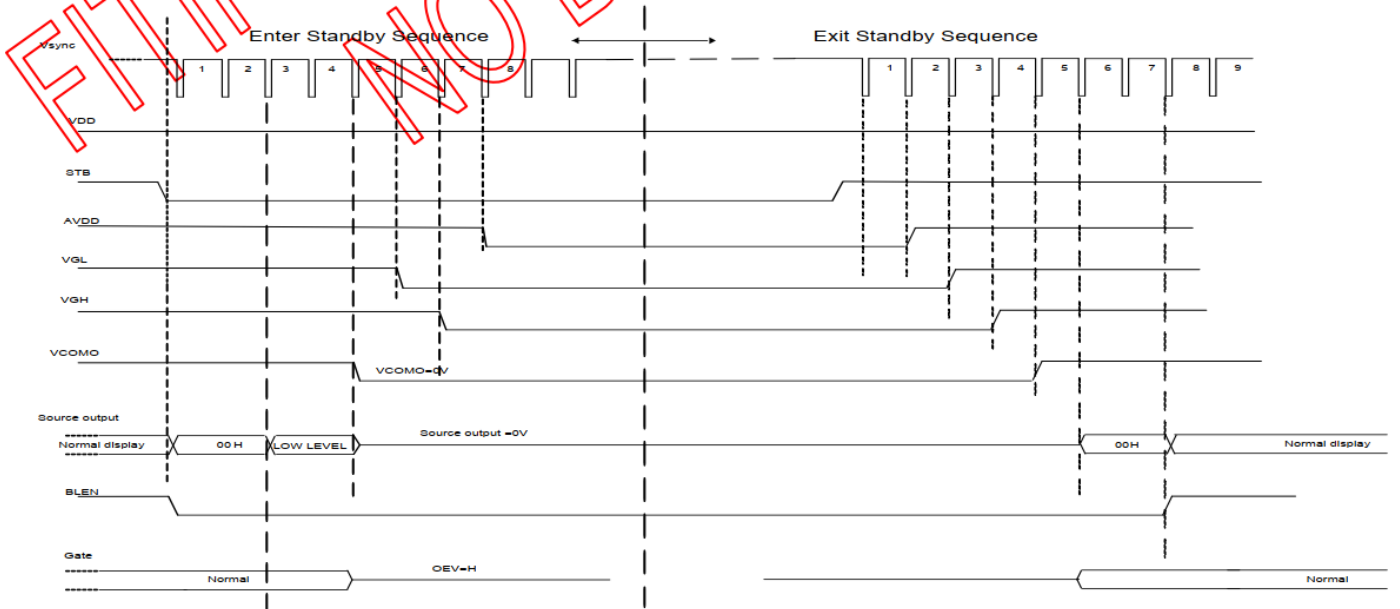**8-bit LVDS input(HSD="L")**

8-bit LVDS Input Timing chart

6-3-4 Power On/Off Sequence

In order to prevent IC from power on reset fail, the rising time (TPOR) of the digital power supply VDD should be maintained within the given specifications. Refer to "AC Characteristics" for more detail on timing

**Power-On/Off Timing Sequence**

Power On/Off timing chart

Enter and Exit Standby Mode timing chart

6-3-5 Output Timing Table

Output Timing Table

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
DCLK frequency	Fclk	-	65	71	MHz	VDD =2.3~3.6V
DCLK cycle time	Tclk	14.1	15.4		ns	
DCLK pulse duty	Tcwh	40	50	60	%	Tclk
Time from HSD to Source Output	Thso	-	64	-	DCLK	
Time from HSD to LD	Thld	-	64	-	DCLK	
Time from HSD to STV	Thstv	-	2	-	DCLK	
Time from HSD to CKV	Thckv	-	20	-	DCLK	
Time from HSD to OEV	Thoev	-	4	-	DCLK	
LD pulse width	Twld	-	10	-	DCLK	
CKV pulse width	Twckv	-	66	-	DCLK	
OEV pulse width	Twoev	-	74	-	DCLK	
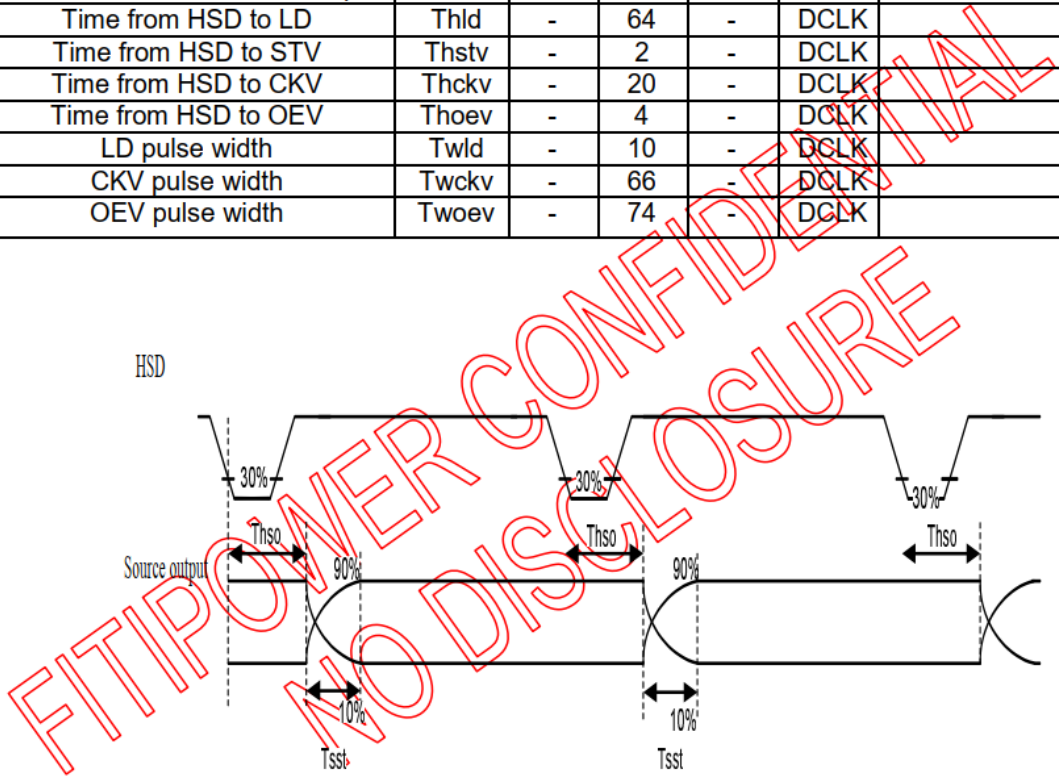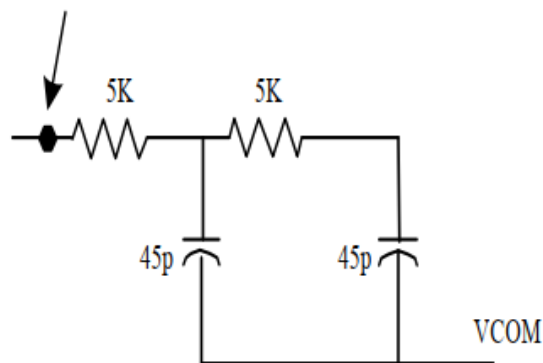
Source Output Timing

7. Optical Characteristics:

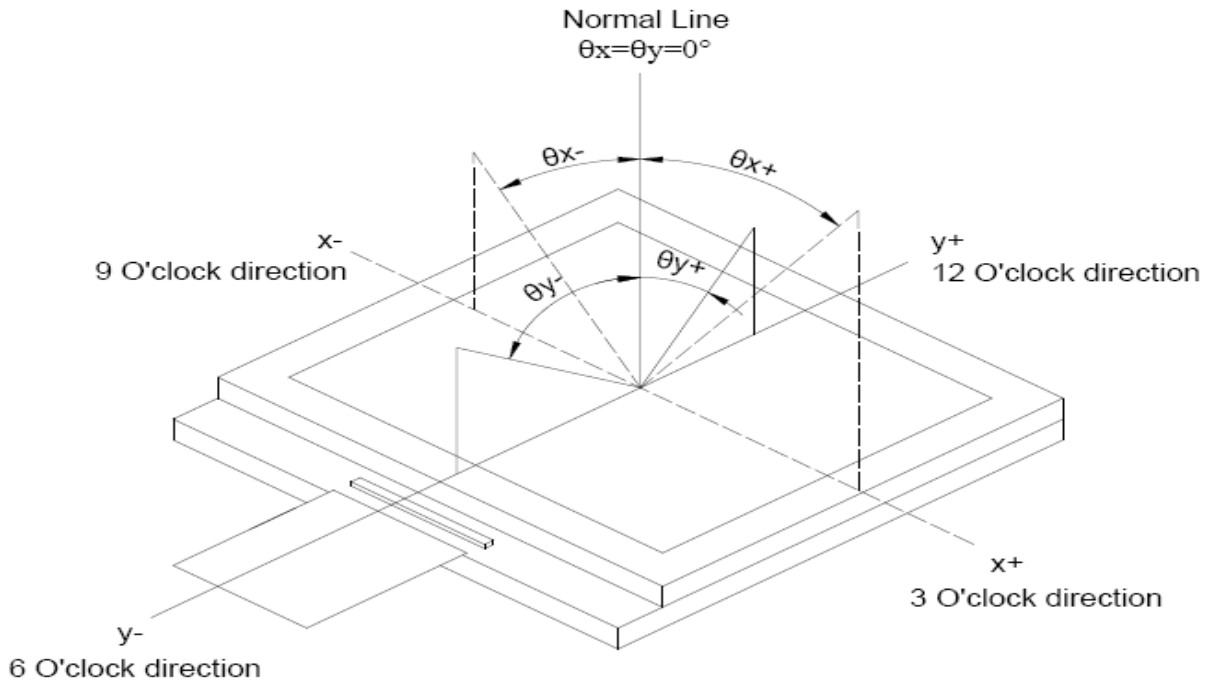| Item		Symbol	Conditions	Specifications			Unit	Note
				Min	Typ	Max		
Transmittance (With PL)		T(%)	−	4.8	5.0	-	-	-
Contrast Ratio		CR	Θ=0 Normal Viewing Angle	500	800	-	-	(1) (2)
Response Time		TR+TF	−	-	25	40	ms	(1) (3)
Viewing angle	Hor	Θx+	CR≧ 10	-	85	-	deg.	-
		Θx-		-	85	-		
	Ver	Θy+		-	85	-		
		Θy-		-	85	-		

Measuring Condition
 1. Measuring surrounding: dark room
 2. Ambient temperature: 25±2℃
 3. 30 min. Warm-up time.

Color of CIE Coordinate:

Item		Symbol	Condition	Min.	Typ.	Max.
Chromaticity Coordinates (Transmissive)	Red	x	θ = φ = 0 ° LED Backlight	-	0.599	-
		y		-	0.338	-
	Green	x		-	0.299	-
		y		-	0.550	-
	Blue	x		-	0.139	-
		y		-	0.131	-
	White	x		-	0.308	-
		y		-	0.336	-

Note (1) Definition of Viewing Angle :

Normal Line
θx=θy=0°

x-
9 O'clock direction

y+
12 O'clock direction

x+
3 O'clock direction

y-
6 O'clock direction

Note (2) Definition of Contrast Ratio(CR) :
measured at the center point of panel

$$Contrast\ ratio\ (CR) = \frac{Photo\ detector\ output\ when\ LCD\ is\ at\ "White"\ state}{Photo\ detector\ output\ when\ LCD\ is\ at\ "Black}$$

Note (3) Definition of Response Time : Sum of TR and TF
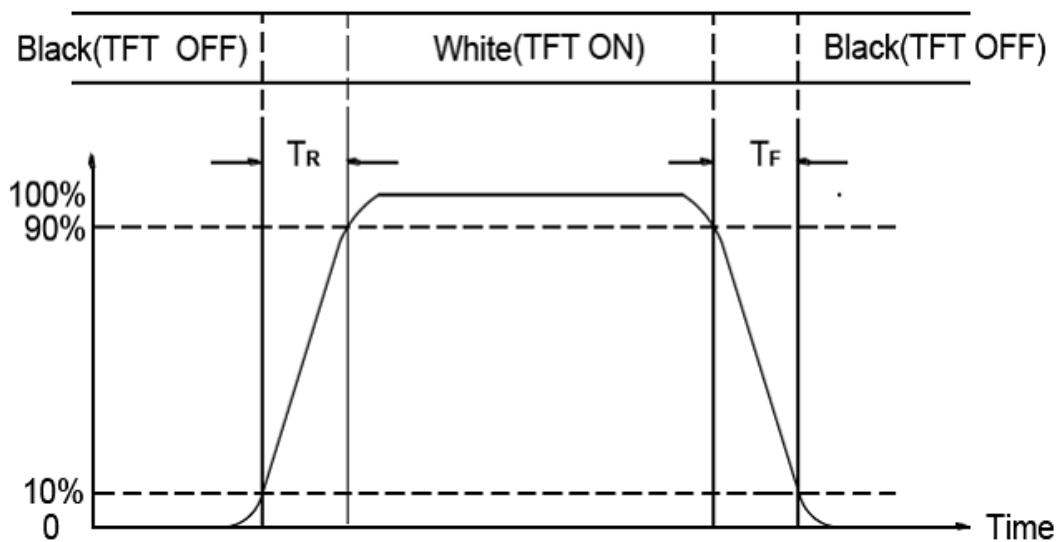
8. Interface Pin Assignment:

8.1 TFT INTERFACE

No.	Symbol	Function
1	VCOM	Common Voltage
2	VDD	Power Voltage
3	VDD	Power Voltage
4	BIST	Normal Operation/BIST pattern select. Normally pull low BIST = H : BIST(DCLK input is not needed) BIST = L : Normal Operation
5	RESET	Global reset pin. Active Low to enter Reset State. Normally pull high.
6	STBYB	Standby mode & Normally pulled high. STBYB = "1", normal operation STBYB = "0", timing controller, source driver will turn off, all output are High-Z
7	GND	Power Ground
8	RXIN0-	-LVDS differential data input
9	RXIN0+	+LVDS differential data input
10	GND	Power Ground
11	RXIN1-	-LVDS differential data input
12	RXIN1+	+LVDS differential data input
13	GND	Power Ground
14	RXIN2-	-LVDS differential data input
15	RXIN2+	+LVDS differential data input
16	GND	Power Ground
17	RXCLKIN-	-LVDS differential clock input
18	RXCLKIN+	+LVDS differential clock input
19	GND	Power Ground
20	RXIN3-	-LVDS differential data input
21	RXIN3+	+LVDS differential data input
22	GND	Power Ground
23	NC	No Connect
24	NC	No Connect
25	GND	Power Ground
26	NC	No Connect
27	DIMO	Backlight dimmer signal for external controller. DIMO = "0", Turn off external backlight controller DIMO = "1", Logical control signal to turn on external backlight controller
28	SELB	6 bit/8 bit mode select Note1

29	AVDD	Power for Analog Circuit	
30	GND	Power Ground	
31	LED_K	LED Cathode	
32	LED_K	LED Cathode	
33	L/R	Horizontal inversion	Note2
34	U/D	Vertical inversion	Note2
35	VGL	Gate OFF Voltage	
36	VGH	Gate on Voltage	
37	LED_A	LED Anode	
38	LED_A	LED Anode	
39	GND	Power Ground	
40	VDD-CTP	CTP_VDD	
41	INT-CTP	CTP_INT	
42	SCL-CTP	CTP_SCL	
43	SDA-CTP	CTP_SDA	
44	RESET-CTP	CTP_RESET	
45	GND-CTP	Power Ground	

Note1: If LVDS input data is 6 bits ,SELB must be set to High;
If LVDS input data is 8 bits ,SELB must be set to Low.

Note2: When L/R="0", set right to left scan direction.
When L/R="1", set left to right scan direction.
When U/D="0", set top to bottom scan direction.
When U/D="1", set bottom to top scan direction.

9. Backlight:

9-1. Standard Lamp Styles (Edge Lighting Type):
    The LED chips are distributed over the edge light area of the
    illumination unit, which gives the less power consumption:

9-2. The Main Advantages of the LED Backlight are as following:
    9-2-1 The brightness of the backlight can simply be adjusted.
      By a resistor or a potentiometer.
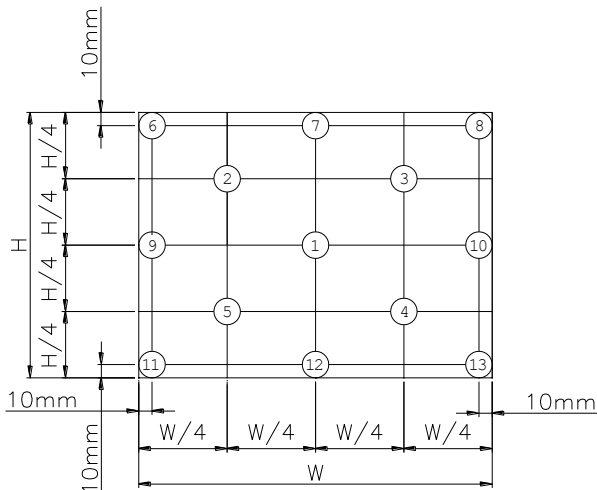
9-3. Data About LED Backlight: (Ta=25℃)

PARAMETER	Sym.	Min.	Typ.	Max.	Unit	Test Condition	Note
Supply Current	I	-	140	-	mA	--	--
Voltage of the Backlight	V_{BL}	22.4	24.8	27.2	V		--
Luminous Intensity for LCM	IV	450	500	-	cd/m^2	If=140mA	2
Uniformity for LCM	-	70	-	-	%		3
LED Life Time	-	20000	-	-	Hr		4
Color	White						

NOTE:
1. Backlight Only
2. Average Luminous Intensity of P1-P13
3. Uniformity = Min/Max * 100%
4. LED life time defined as follows: The final brightness is at 50% of original brightness
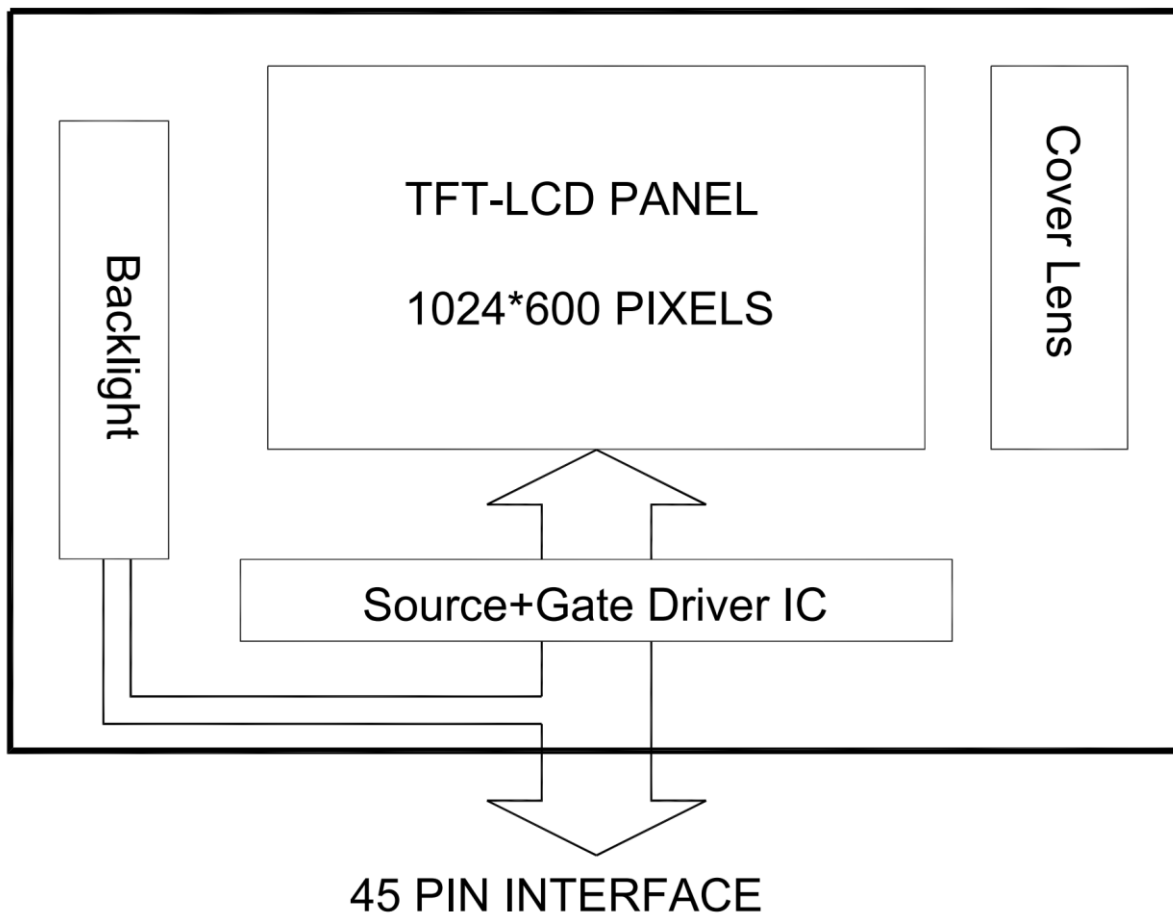
Measured Method: (X*Y: Light Area)   **Internal Circuit Diagram**
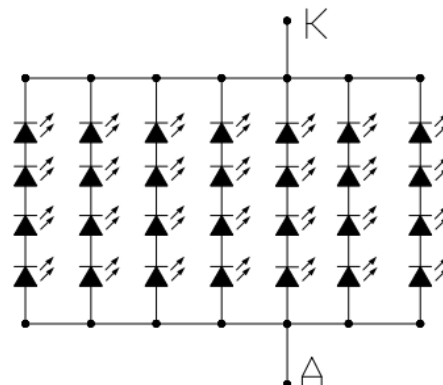
(Effective spatial Distribution)
    Using aperture of 1°,distance 50cm.

10. Block diagram

11.**Packing**

TBD

12. Standard Specification for Reliability:

12–1. Standard Specifications for Reliability of (LCD+CTP) Module

No	Item	Description
01	High temperature operation	The sample should be allowed to stand at 70℃ for 120 hours under driving condition and then returning it to normal temperature condition, and allowing it stand for 2 hours.
02	Low temperature operation	The sample should be allowed to stand at -20℃ for 120 hours under driving condition and then returning it to normal temperature condition, and allowing it stand for 2 hours.
03	High temperature storage	The sample should be allowed to stand at 80℃ for 240 hours under no-load condition, and then returning it to normal temperature condition, and allowing it stand for 2 hours.
04	Low temperature storage	The sample should be allowed to stand at -30℃ for 240 hours under no-load condition, then returning it to normal temperature condition, and allowing it stand for 2 hours.
05	Moisture storage	The sample should be allowed to stand at 60℃,90%RH MAX for 240 hours under no-load condition, then taking it out and drying it at normal temperature for 2 hours.
06	Thermal shock storage	The sample should be allowed to stand the following 10 cycles : -20℃ for 30 minutes → normal temperature for 5 minutes → +60℃ for 30 minutes → normal temperature for 5 minutes, as one cycle.
07	Packing vibration	Frequency range : 10Hz ~ 55Hz Amplitude of vibration : 1.5mm Sweep time: 12 min X,Y,Z 2 hours for each direction.
08	Packing drop test	According to ISTA 1A 2001.
09	Electrical Static Discharge	Air: ±6KV 150pF/330Ω 5 times
		Contact: ±4KV 150pF/330Ω 5 time

*Sample size for each test item is 3~5pcs

12 - 2. Testing Conditions and Inspection Criteria

For the final test the testing sample must be stored at room temperature for 24 hours, after the tests listed in Table 11.2, Standard specifications for Reliability have been executed in order to ensure stability.

No	Item	Test Model	In section Criteria
01	Current Consumption	Refer To Specification	The current consumption should conform to the product specification.
02	Contrast	Refer To Specification	After the tests have been executed, the contrast must be larger than half of its initial value prior to the tests.
03	Appearance	Visual inspection	Defect free.

12-3. MTBF

MTBF	Functions, performance, appearance, etc. shall be free from remarkable deterioration within 50,000 hours under ordinary operating and storage conditions room temperature (25±5℃), normal humidity (50±10% RH), and in area not exposed to direct sun light.

13. Specification of Quality Assurance:

13-1. Pupose

This standard for Quality Assurance should affirm the quality of LCD module products to supply to purchaser by YEEBO CORPORATION (Supplier).

13-2. Standard for Quality Test

a. Inspection:

Before delivering, the supplier should take the following tests, and affirm the quality of product.

b. Electro-Optical Characteristics:

According to the individual specification to test the product.

c. Test of Appearance Characteristics:

According to the individual specification to test the product.

d. Test of Reliability Characteristics:

According to the definition of reliability on the specification for testing products.

e. Delivery Test:

Before delivering, the supplier should take the delivery test.

(i) Test method: According to **ISO2859-1.**General Inspection Level Ⅱ take a single time.

(ii) The defects classify of AQL as following:

Major defect: AQL = 0.65%

Minor defect: AQL = 2.5%

Total defects: AQL = 2.5%

13-3. Non- conforming Analysis & Deal With Manners

a. Non- conforming Analysis:

(i) Purchaser should supply the detail data of non- conforming sample and the non-conforming.

(ii) After accepting the detail data from purchaser, the analysis of non- conforming should be finished in two weeks.

(iii) If supplier can not finish analysis on time, must announce purchaser before 3 days.

b. Disposition of non- conforming:

(i) If find any product defect of supplier during assembly time, supplier must change the good product for every defect after recognition.

(ii) Both supplier and customer should analyze the reason and discuss the disposition of non- conforming when the reason of nonconforming is not sure.

13-4. Agreement items

Both sides should discuss together when the following problems happen.

a. There is any problem of standard of quality assurance, and both sides should think that must be modified.

b. There is any argument item which does not record in the standard of quality assurance.

c. Any other special problem.

13-5. Standard of The Product Appearance Test

a. Manner of appearance test:

(i) The test must be under 20W $\times$2 or 40W fluorescent light, and the distance of view must be at 30$\pm$5cm.
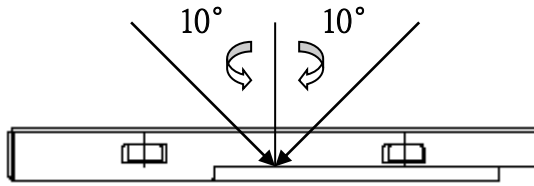
(ii) When test the model of transmissive product must add the reflective plate.

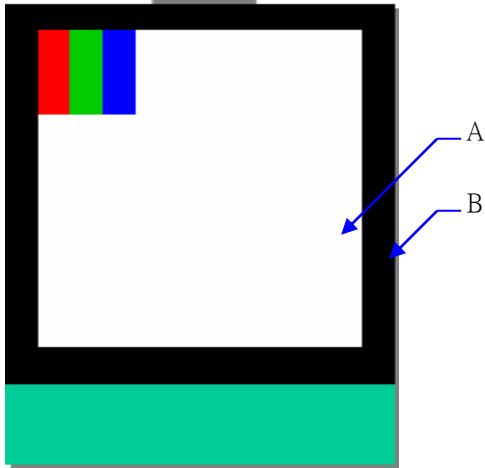(iii)The test direction is base on around 10°of vertical line.

(iiii)Temperature: 25$\pm$5℃   Humidity: 60$\pm$10%RH

eyes   eyes

10°   10°

(iv) Definition of area:

A. Area: Viewing area.
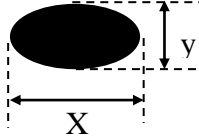B. Area: Out of viewing area.
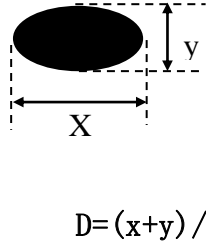   (Outside viewing area)

b. Basic principle:
 (i) It will accord to the AQL when the standard can not be described.
 (ii) The sample of the lowest acceptable quality level must be discussed by both supplier and customer when any dispute happened.
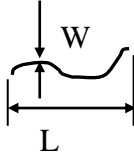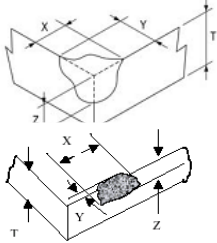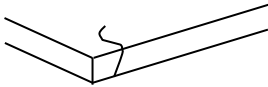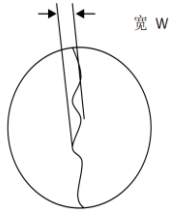 (iii) Must add new item on time when it is necessary.
 c. Standard of inspection: (Unit: mm)
 13-6. Inspection specification

Item	Specification	Unit : mm	AQL
Electrical Testing	1.1 Open 1.2 Short 1.3 T/P failure 1.4 Missing vertical, horizontal segment, segment contrast defect. 1.5 Missing character, dot or icon. 1.6 Display malfunction. 1.7 No function or no display. 1.8 Current consumption exceeds product specifications. 1.9 LCD viewing angle defect. 1.10 Mixed product types. 1.11 Flicker		0.65

explosion-proof film bubble/Concave and convex point/indentation / Contamination	D	Acceptable numbers		2.5
	≤0.25	ignored (No more than five spots within 5mm)		
	0.25＜D≤0.5	3		
	0.5＜D≤0.8	2		
	0.8＜D≤1.5	1		
	D＞1.5	NG		

$$D=(x+y)/2$$

1、 Product's front side checked according to this specification, back side ignored, but light leakage is not allowed.

2、 Printing ink peel off is not allowed.

3、 The particle will be ignored when it is removable by cleaning

* Densely spaced: No more than two spots within 10mm

D	Acceptable numbers
≤0.15	ignored（No more than five spots within 5mm）
0.15＜D≤0.3	3
0.3＜D≤0.5	2
D＞0.5	NG

$$D=(x+y)/2$$

1.Product's front side checked according to this specification, back side ignored, but light leakage is not allowed.

2.Printing ink peel off is not allowed.

3、The particle will be ignored when it is removable by cleaning

* Densely spaced: No more than two spots within 10mm

Black spots / White spots /Bright spots/ Color spots /polluted inside/ punctured

2.5

Linear Object: Fiber, scurf, scratches and other linear defects (not affecting function)	W	L	Acceptable numbers	The reverse side scratches, not affect to the electronic circuit, cannot find the scratches from the front side is acceptable * Densely spaced: No more than two lines within 10mm	2.5
	≤0.05	≤6	ignored（No more than five lines within 5mm）		
	0.05＜W≤0.25	≤6	2		
	W〉0.25		NG		

Glass edge chipping、edge breakage	Edge breakage can't affect visual effection (edge breakage can't cause damage to circuit); over lens have no visual damage			2.5
	conditions	Acceptable numbers		
	X≤1.5mm,Y≤2mm,Z≤T	4		

Glass broken	Visual broken is NG, and there is no potential fault. 	0.65

1. V/A printed edges sawtooth inspected according to this standard 2. LOGO's sawtooth	Some contentious defect judged according to samples		宽 W	2.5
	Product type	Conditions		
	Same size	1、width below 0.2 inch（included）ignored，above 0.2 NG 2、Length not accounted		

Specific dimension	In accordance with product outline drawing or specification (key dimension) or engineering sample.	2.5

Glue overflow/Frame		1. Glue overflow exceed 0.2mm to the black frame is not allowed.	2.5
FPC	Bonding bubble/ Misalignment	FPC golden finger hot pressure's bubble or impurity diameter shall be below 1/2 of the pressed area, pressed deviation shall not exceed 1/2 of the silver line width, and 40X microscope cannot have obvious cracks.	0.65
	Folded mark （minor fault）	Linearity irreversibility folded mark and acute angle folded mark is NG.	2.5
	EMI FILM （minor fault）	Surface broken, scratched ≦0.3mm Surface broken below 5mm can be modified by print ink, after modified, the result shall be achieved to EMI	2.5

YB 億都集團
YEEBO GROUP

14. Handling Precaution:

14.1 Warranty

This product has been manufactured to specifications as a part for use in your company's general electronic products. It is guaranteed to perform according to delivery specifications. For any other use apart from general electronic equipment, we will not take responsibility if the product is used in medical devices, nuclear power control equipment, aerospace equipment, fire and security systems, or any other applications in which there is a direct risk to human life and where extremely high levels of reliability are required. If the product is to be used in any of the above applications, we will need to enter into a separate product liability agreement.

1. We cannot accept responsibility for any defect arise after additional process of the product (including disassembly and reassembly), after product delivery.
2. We cannot accept responsibility for any defect, which may arise after the application of strong external force to the product.
3. We cannot accept responsibility for any defect, which may arise due to the application of static electricity after the product has passed your company's acceptance inspection procedures.
4. We cannot accept responsibility for industrial property, which may arise through the use of your product, with exception to those issues relating directly to the structure or method of manufacturing of our product 3months from YEEBO production.
5. The liability of YB is limited to repair or replacement on the terms set forth below. YB will not be responsible for any subsequent or consequential events or injury or damage to any personnel or user including third party personnel and/or user. Unless otherwise agreed in writing between YB and the customer, YB will only replace or repair any of its CTP which is found defective electrically or visually when inspected in accordance with YB GENERAL CTP INSPECTION STANDARD.

14.2. Precautions in Use of CTP Module

14.2-1. Handling of CTP Module

14.2-1-1 Please operate the capacitive touch panel by touch the panel surface with finger or electric pen

14.2-1-2 Store the products at the temperature and humidity mentioned in the specification in a good package do not expose the products under direct sunlight.

14.2-1-3 Do not hit the capacitive touch panel in strong force , or drop it down, it is made of glass and friable.

14.2-1-4 Put on finger coats，glovers or mask to protect the products from fingerprint of stain. Do not upload/unload the touch panel by holding the FPC cable. Do not bend the FPC cableoften or pull it hard when installing, as FPC cable is soft and connected to touch panel body.

14.2-1-5 Pay attention to the prevention from high voltage and static electricity.

14.2-2 Storage

14.2-2-1 Store in ambient temperature of $25\pm5℃$, and relative humidity of $50\pm10\%RH$. Do not expose to sunlight or fluorescent light.

14.2-2-2 Storage in a clean environment, free from dust, active gas, and solvent.

14.2-2-3 Store in anti-static electricity container.

14.2-2-4 Store without any physical load.

14.2-2-5 Appearance,3months;Function,1year;within the validity, failed CTP can be replaced 1 to 1

14.3 Guarantee

Our products meet requirements of the environment.YEEBO ROHS requirement is based on European Union Directive 2011/65/EU (ROHS) Requirements and Update.