YB 億都集團
YEEBO GROUP

SPECIFICATION
FOR
TFT MODULE

MODULE NO: YB-TG1024600S13A-N-A0

Doc.Version:00

Customer Approval:

□ Accept	□ Reject

YEEBO	NAME	SIGNATURE	DATE
Prepare	Electronic Engineer	李明志	2023-01-04
Check	Mechanical Engineer	林栩杰	2023-01-12
Verify		伍琛琛	2023-01-13
Approval			2023-01-13

■ APPROVAL FOR SPECIFICATIONS ONLY

□APPROVAL FOR SPECIFICATIONS AND SAMPLE

WIMRD005-02-D

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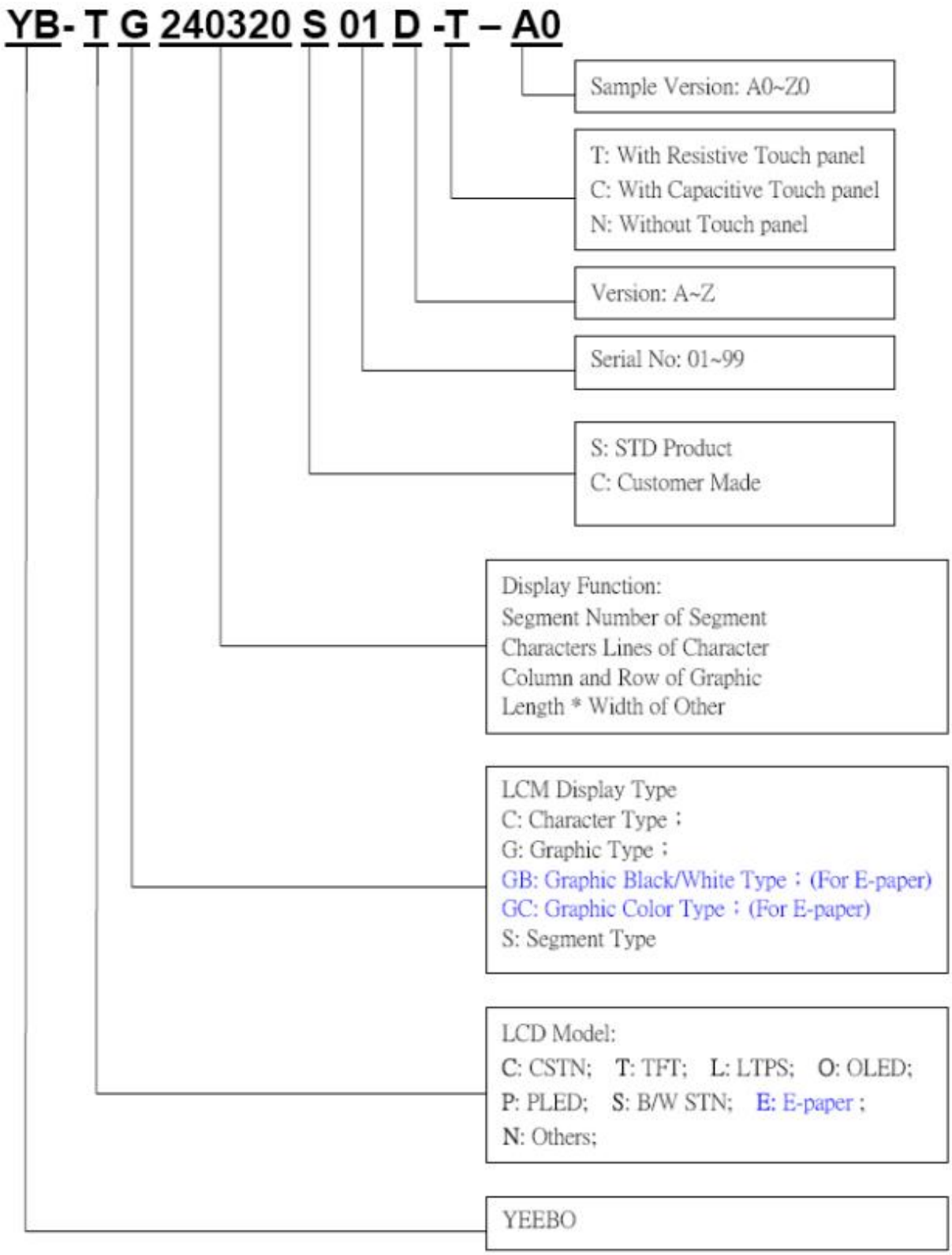
1. Revision History

Sample Version	DOC. Version	DATE	DESCRIPTION		CHANGED BY
A0	00	2023-01-04	SPEC ONLY	First issue	L.M.Z/L.X.J

2. Table of Contents:

3. Module Numbering System:

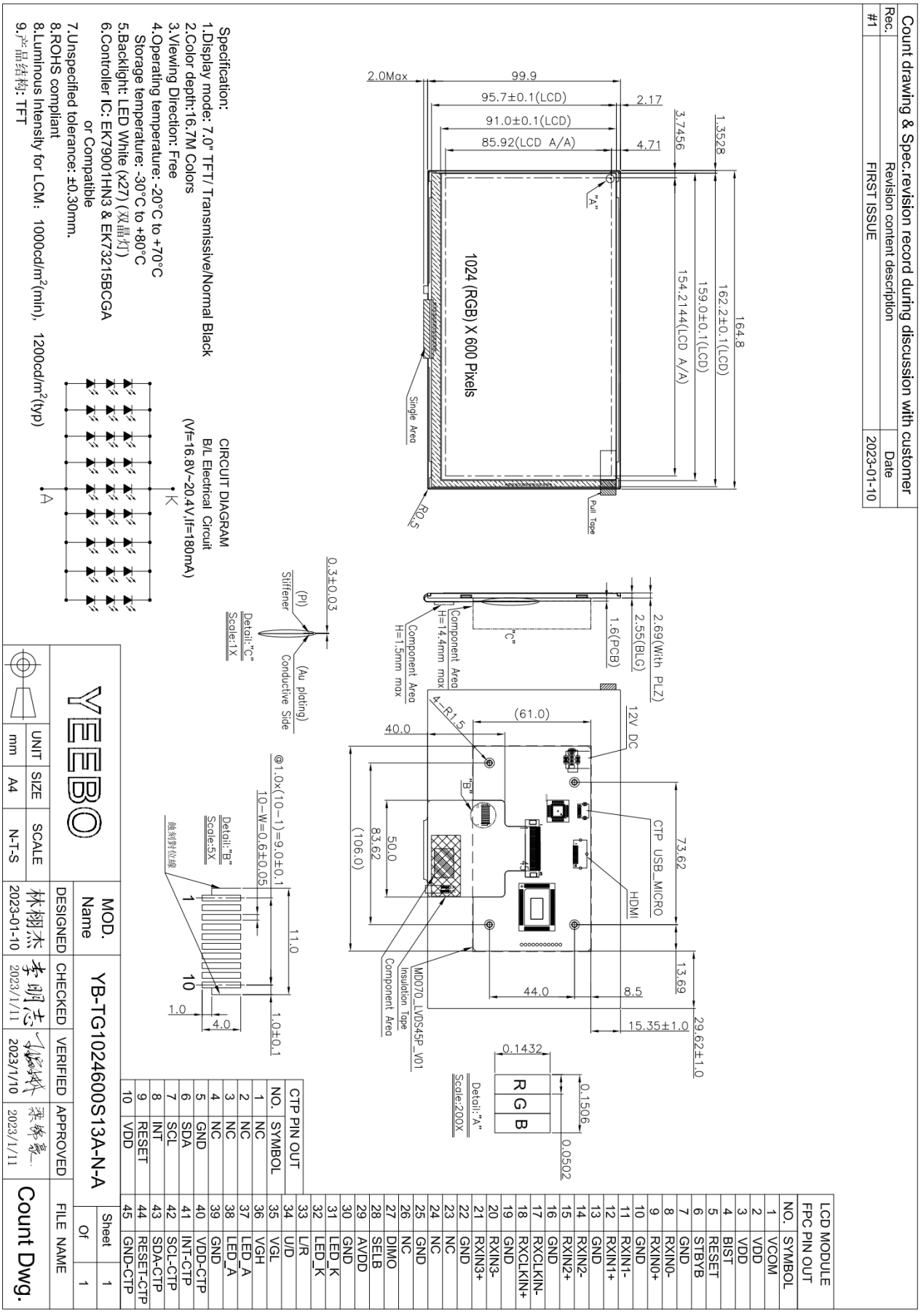
(Example)



4. General Specification:

ITEM	CONTENTS
Module Size	164.8(W) * 99.9(H) * 2.69(T) mm
Module Size(With FPC)	164.8(W) * 101.9(H) * 18.69 (T) mm
Display Size(Diagonal)	7.0 inch
Display Format	1024(RGB)*600 Pixels
Active Area	154.2144 (W) * 85.92 (H) mm
Pixel Pitch	0.1506 * 0.1432 mm
LCD Type	TFT (16.7M) / Transmissive / Normally Black
View Angle	Free
Controller IC	EK79001HN3 & EK73215BCGA
Weight	TBD

5. LCM drawing:



CTP PIN OUT	
NO.	SYMBOL
1	NC
2	NC
3	NC
4	NC
5	GND
6	SDA
7	SCL
8	INT
9	RESET
10	VDD

LCD MODULE FPC PIN OUT	
NO.	SYMBOL
1	VCOM
2	VDD
3	VDD
4	BIST
5	RESET
6	STBYB
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	DIMO
28	SELB
29	AVDD
30	GND
31	LED_K
32	LED_K
33	L/R
34	U/D
35	VGL
36	VGH
37	LED_A
38	LED_A
39	GND
40	VDD-CTP
41	INT-CTP
42	SCL-CTP
43	SDA-CTP
44	RESET-CTP
45	GND-CTP

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

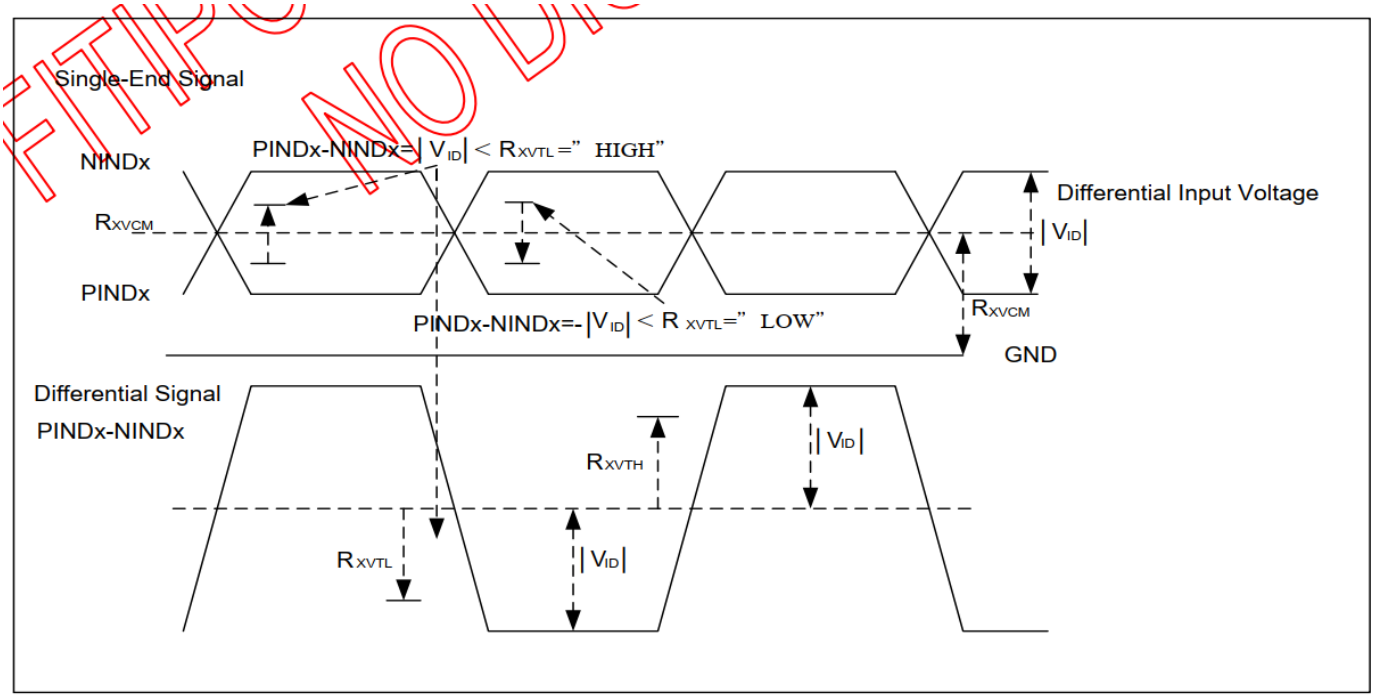
(Ta=25℃)

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

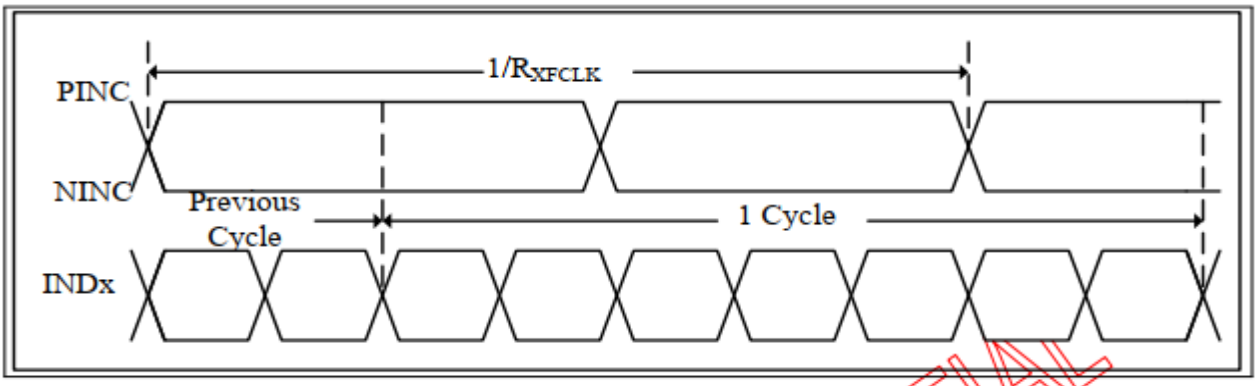
Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Differential input high threshold voltage	RxVTH			+0.1V	V	RxVCM=1.2V
Differential input low threshold voltage	RxVTL	-0.1			V	
Input voltage range(single-end)	RxVIN	0		2.4	V	
Differential input common mode voltage	RxVCM	$\|V_{ID}\|/2$		2.4 -$\|V_{ID}\|/2$	V	
Differential input voltage	$\|V_{ID}\|$	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



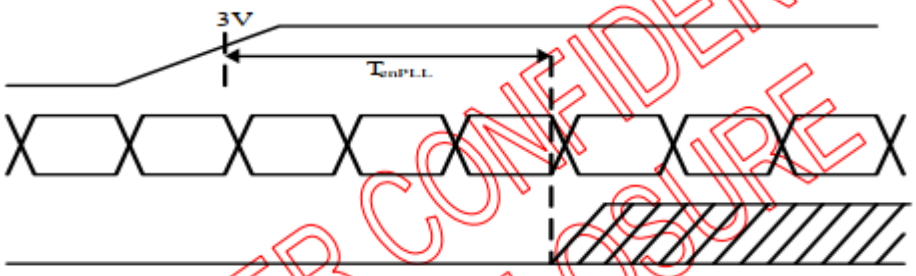
6-3-2 AC Electrical Characteristics

LVDS mode

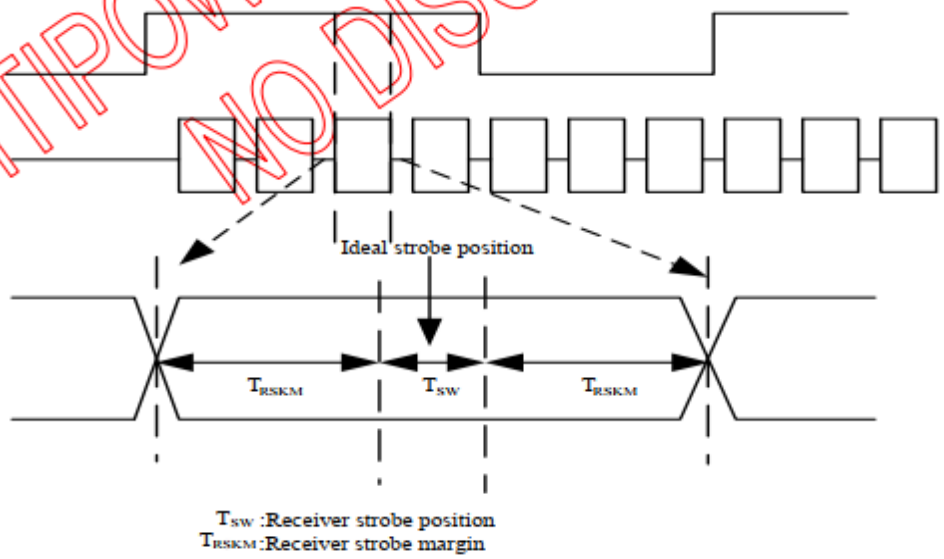
Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Clock Frequency	R_{xFCLK}		20	-	71	MHz
Input data skew margin	T_{RSKM}	|V_{ID}|=400mV R_{xVCM}=1.2V R_{xFCLK}=71MHz	500			ps
Clock High Time	T_{LVCH}			4/(7* R_{xFCLK})		ns ns
Clock Low Time	T_{LVCL}			3/(7* R_{xFCLK})		ns
PLL wake-up-time	T_{enPLL}				150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



LVDS timing(1)



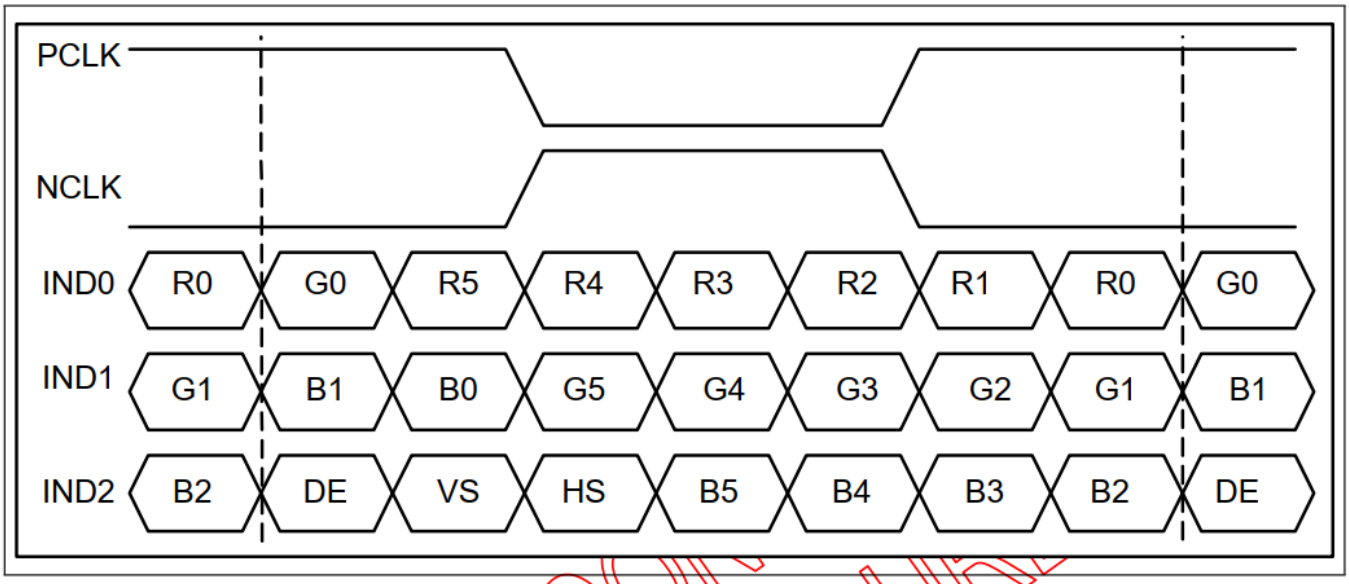
LVDS timing(2)



T_{SW} :Receiver strobe position
T_{RSKM}:Receiver strobe margin

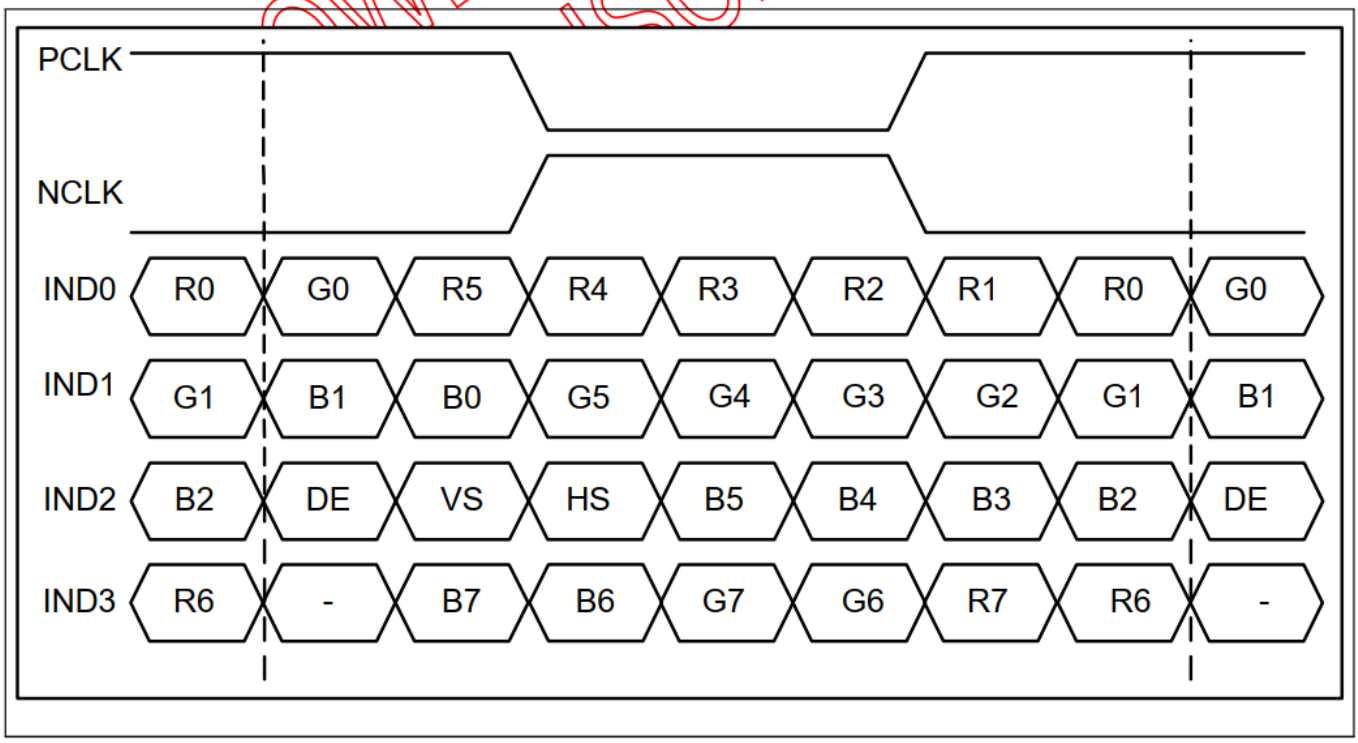
6-3-3 Data Input Format for LVDS

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



6-bit LVDS Input Timing chart

8-bit LVDS input(HSD="L")

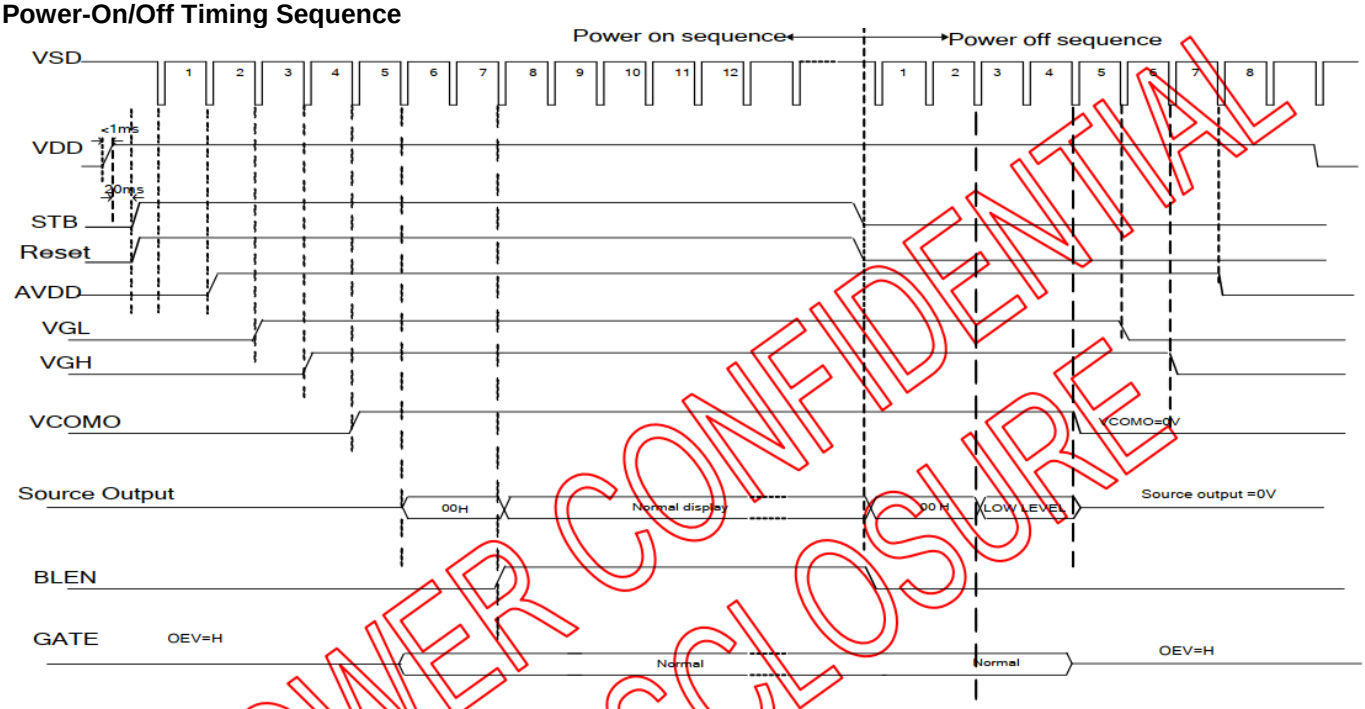


8-bit LVDS Input Timing chart

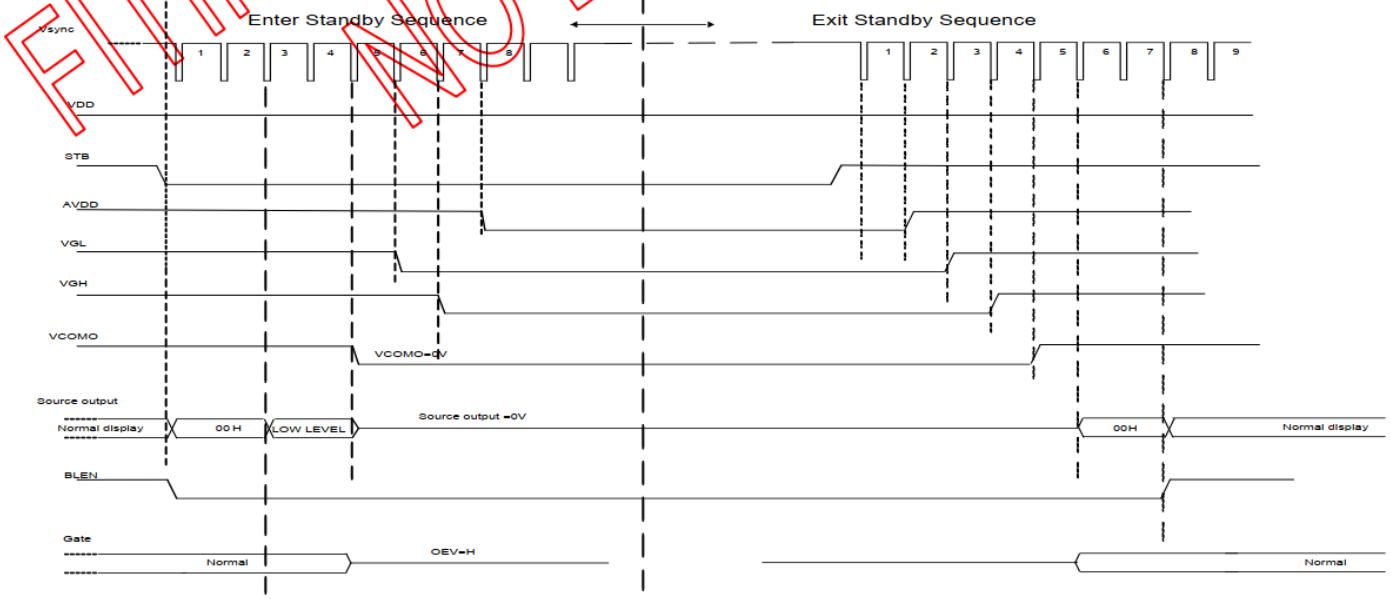
6-3-4 Power On/Off Sequence

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

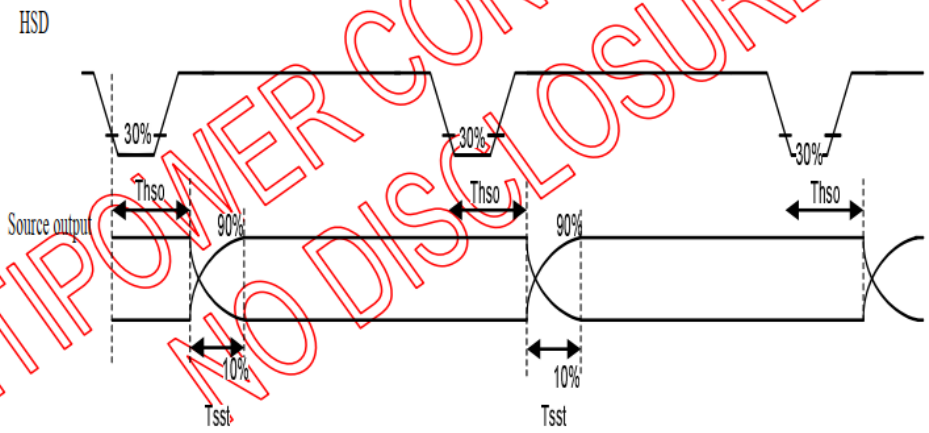


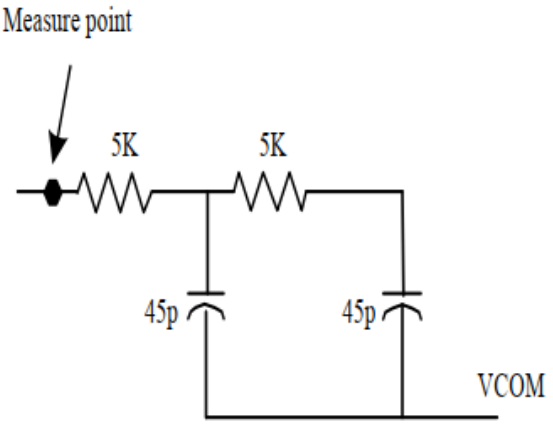
Enter and Exit Standby Mode timing chart

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:

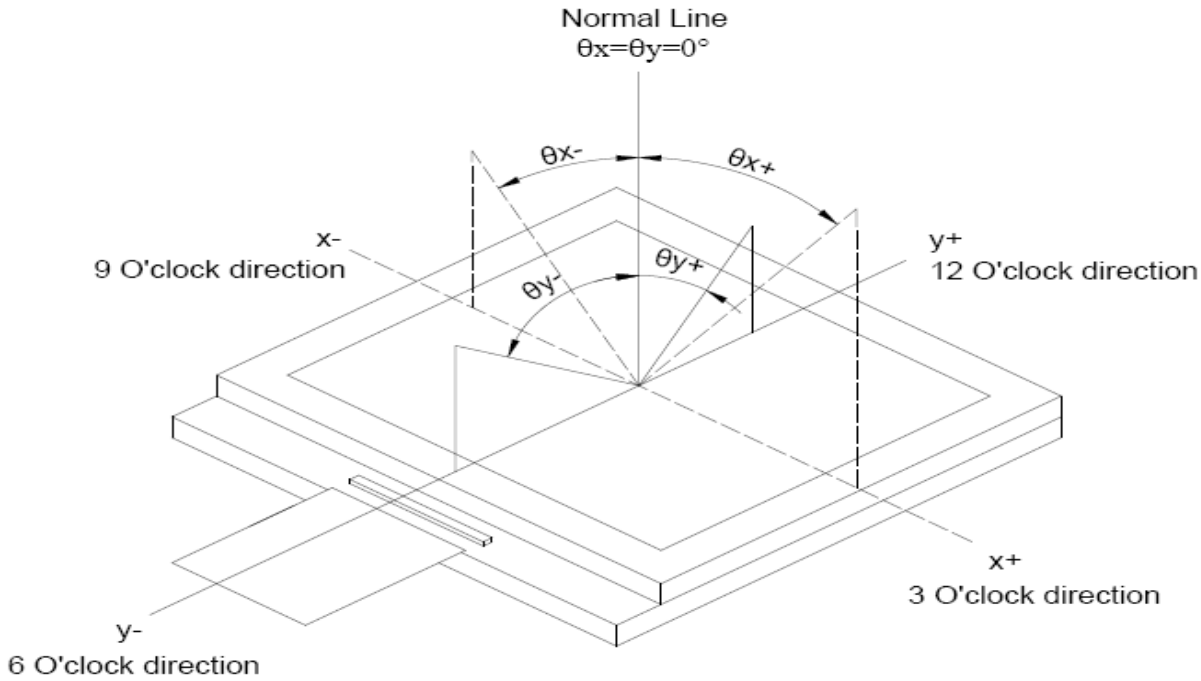
Item		Symbol	Conditions	Specifications			Unit	Note
				Min	Typ	Max		
Transmittance (With PL)		T(%)	–	4.8	5.0	-	-	-
Contrast Ratio		CR	Θ=0 Normal Viewing Angle	500	800	-	-	(1) (2)
Response Time		TR+TF	–	-	25	40	ms	(1) (3)
Viewing angle	Hor	Θx+	CR≧ 10	-	85	-	deg.	-
		Θx-		-	85	-		
	Ver	Θy+		-	85	-		
	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

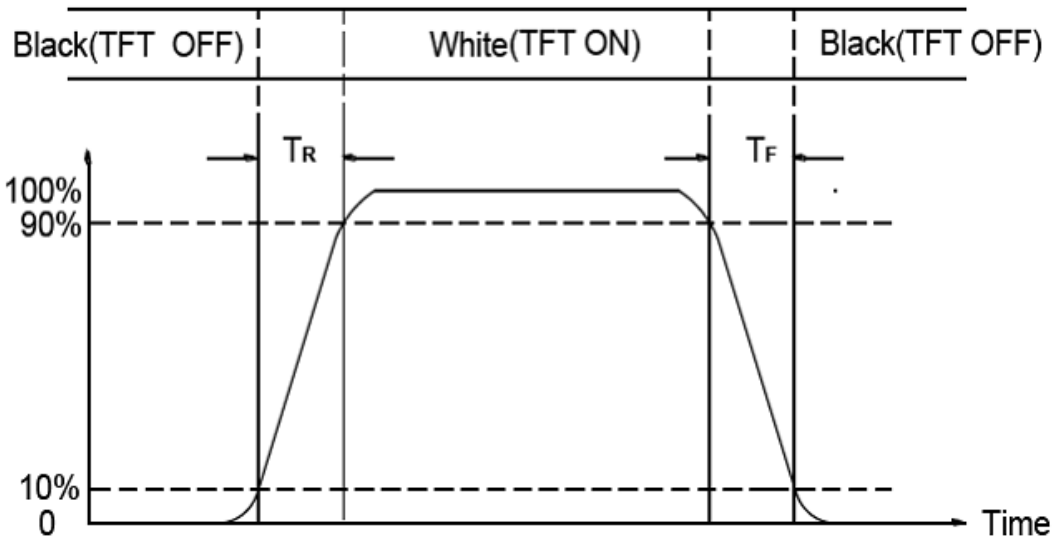
Note (1) Definition of Viewing Angle :



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

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

Note (3) Definition of Response Time : Sum of TR and TF



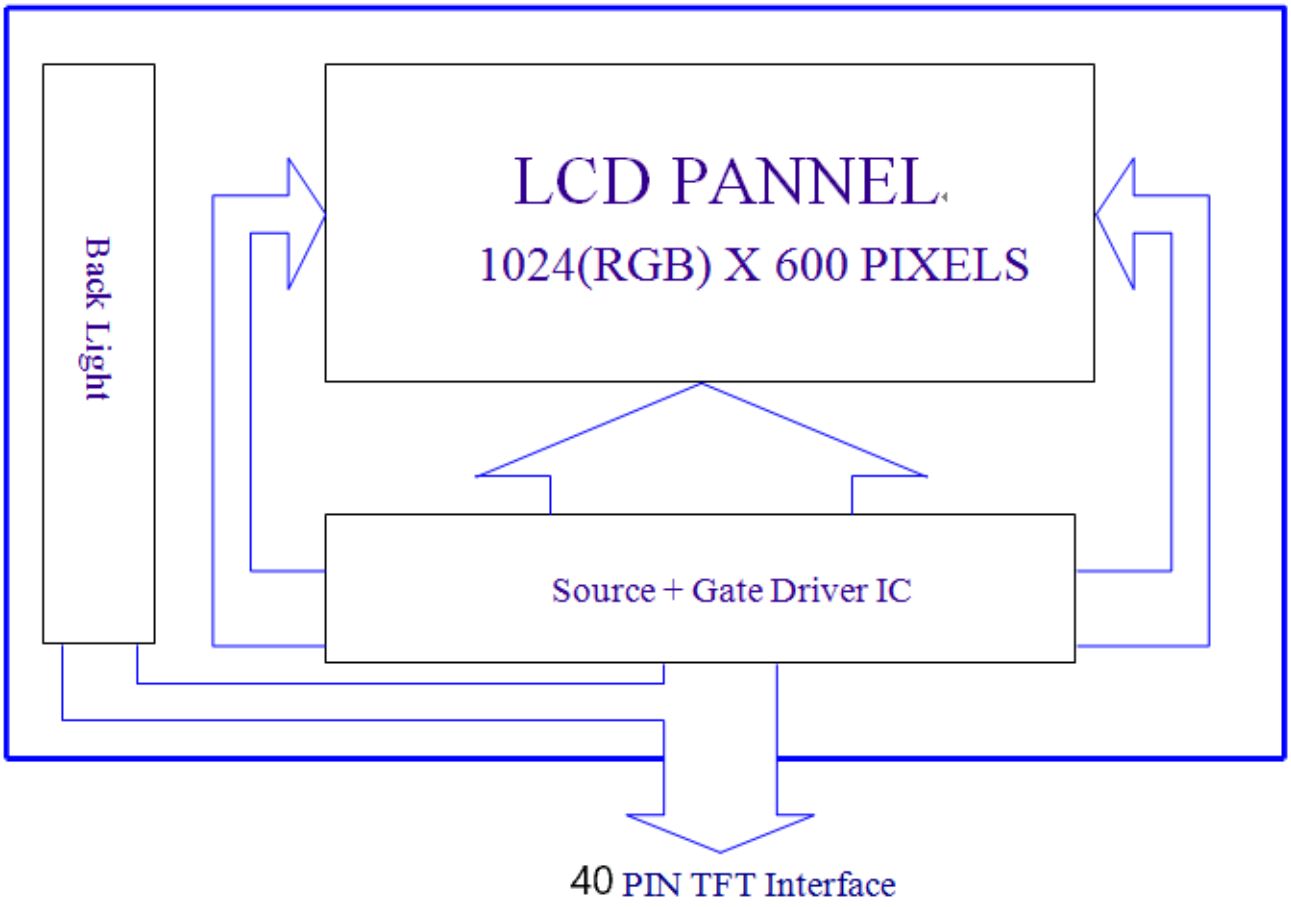
8. Interface Pin Assignment:

8.1 TFT INTERFACE

No.	Symbol	Function
1	VCOM	Common Voltage
2	VDD	Power Voltage
3	VDD	Power Voltage
4	NC	No Connect
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	SELB	6 bit/8 bit mode select
24	AVDD	Power for Analog Circuit
25	GND	Power Ground
26	LED-	LED Cathode
27	LED-	LED Cathode
28	SHLR	Horizontal inversion
29	UPDN	Vertical inversion
30	VGL	Gate OFF Voltage
31	VGH	Gate on Voltage

32	LED+	LED Anode
33	LED+	LED Anode
34	GND	Power Ground
35	GND	Power Ground
36	CTP-SDA	CTP_SDA
37	CTP-SCL	CTP_SCL
38	CTP-INT	CTP_INT
39	CTP-RST	CTP_RESET
40	CTP-VCC	CTP_VCC

9. Block Diagram:



10. Backlight:

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:

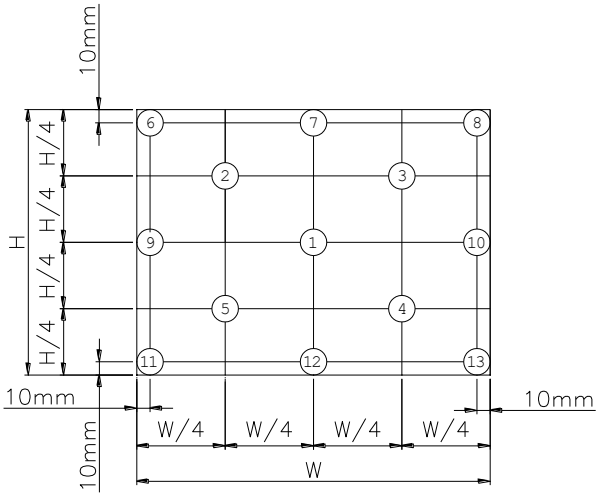
2. The Main Advantages of the LED Backlight are as following:
   2.1 The brightness of the backlight can simply be adjusted.
   By a resistor or a potentiometer.

3. Data About LED Backlight: (Ta=25℃)

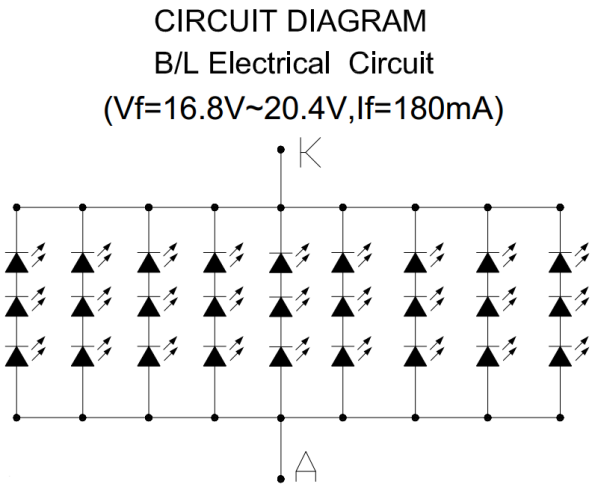
PARAMETER	Sym.	Min.	Typ.	Max.	Unit	Test Condition	Note
Supply Current	I	-	180	-	mA	--	--
Voltage of the Backlight	V_{BL}	16.8	18.0	20.4	V	If=180mA	--
Luminous Intensity for LCM	IV	1000	1200	-	cd/m^2		2
Uniformity for LCM	-	70	-	-	%		3
LED Life Time	-	20000	-	-	Hr		4
Color	White						

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)



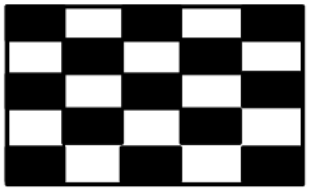
Internal Circuit Diagram



(Effective spatial Distribution)
Using aperture of 1 °,distance 50cm.

11. Standard Specification for Reliability :

11–1. Standard Specifications for Reliability of LCD 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 : -30℃ for 30 minutes → normal temperature for 5 minutes → +80℃ 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: ±4KV 150pF/330Ω 5 times
		Contact: ±2KV 150pF/330Ω 5 time
10	Imaging sticking	Burn in:5*5 Chess,1h@25C. Inspection Pattern:50% grey, Perpendicular view, after 5 Min,the mura must disappear 

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

11 - 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 11-1, 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.

11- 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.

12. Specification of Quality Assurance:

12-1. Purpose

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

12-2. 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 = 0.40

Minor defect: AQL = 1.0

Total defects: AQL = 1.0

12-3. 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.

12-4. 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.

12-5. Standard of The Product Appearance Test

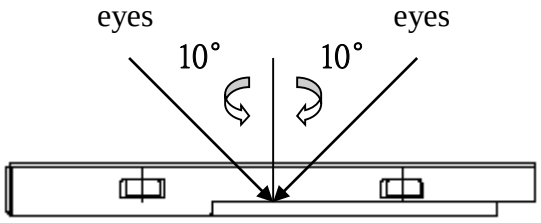
a. Manner of appearance test:

(i) The test must be under 20W ×2 or 40W fluorescent light, and the distance of view must be at 30±5cm.

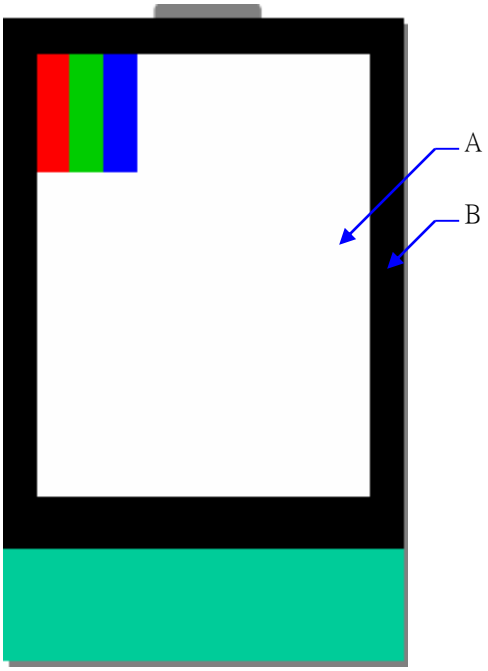
(ii) When test the model of transmissive product must add the reflective plate.

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

(iiii)Temperature: 25±5℃ Humidity: 60±10%RH



(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.

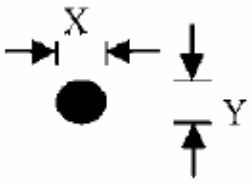
(ii) The sample of the lowest acceptable quality level must be discussed by both supplier and customer when any dispute happened.

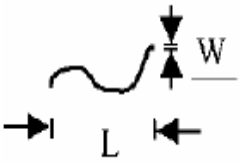
(iii) Must add new item on time when it is necessary.

c. Standard of inspection: (Unit: mm)

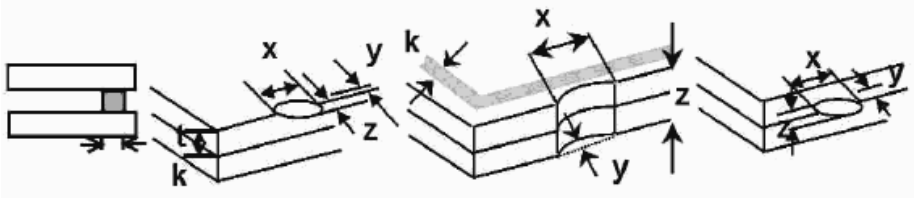
12-6. Inspection specification

Defect out of viewing area can be neglected.

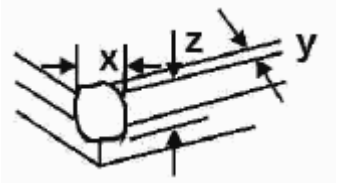
<table>
<tr><th>NO</th><th>Item</th><th>Criterion</th><th>AQL</th></tr>
<tr><td>01</td><td>Electrical Testing</td><td>1.1 Missing vertical, horizontal segment, segment contrast defect.
1.2 Missing character, dot or icon.
1.3 Display malfunction.
1.4 No function or no display.
1.5 Current consumption exceeds product specifications.
1.6 LCD viewing angle defect.
1.7 Mixed product types.
1.8 Flicker</td><td>0.4</td></tr>
<tr><td>02</td><td>Black or White spots or Bright spots or Color spots on LCD (Display only)</td><td>2.1 White and black or color spots on display ≦ 0.25mm, no more than Five spots.
2.2 Densely spaced: No more than three spots within 3mm.
2.3 Not visible through 5% ND filter</td><td>1.0</td></tr>
<tr><td rowspan="2">03</td><td rowspan="2">LCD and Touch Panel black spots, white spots, contamination</td><td>3.1 Round type: As following drawing
Φ = (X+Y) / 2
 

<table>
<tr><th>Size(mm)</th><th>Acceptable Q'ty</th></tr>
<tr><td>Φ≦0.15</td><td>Accept no dense</td></tr>
<tr><td>0.15< Φ≦0.25</td><td>3</td></tr>
<tr><td>0.25< Φ≦0.30</td><td>2</td></tr>
<tr><td>0.30< Φ≦0.35</td><td>1</td></tr>
<tr><td>0.35< Φ</td><td>0</td></tr>
</table>
* Densely spaced: No more than two spots within 3mm.</td><td>1.0</td></tr>
<tr><td>3.2 Line type: (As following drawing)
 

<table>
<tr><th>Length(mm)</th><th>Width(mm)</th><th>Acceptable Q'ty</th></tr>
<tr><td>---</td><td>W≦0.03</td><td>Accept no dense</td></tr>
<tr><td>L≦3.0</td><td>0.03<W≦0.05</td><td>4</td></tr>
<tr><td>L≦2.0</td><td>0.05<W≦0.1</td><td>3</td></tr>
<tr><td>---</td><td>0.1<W</td><td>Rejection</td></tr>
</table>
* Densely spaced: No more than two lines within 3mm.</td><td>1.0</td></tr>
</table>

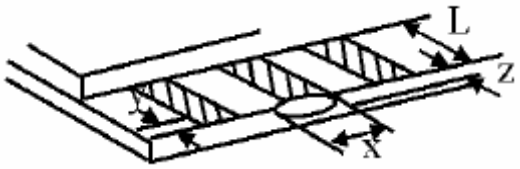
<table>
<tr><th>NO</th><th>Item</th><th>Criterion</th><th>AQL</th></tr>
<tr><td>04</td><td>Polarizer bubbles</td><td>If bubbles are visible, judge using black spot specifications, not easy to find, must check in specify direction
<table>
<tr><th>Size Φ(mm)</th><th>Acceptable Q'ty</th><th>Area</th></tr>
<tr><td>Φ≦0.15</td><td>Accept no dense</td><td>V.A</td></tr>
<tr><td>0.15< Φ≦0.3</td><td>3</td><td>V.A</td></tr>
<tr><td>0.30< Φ≦0.5</td><td>1</td><td>V.A</td></tr>
<tr><td>0.50< Φ≦1</td><td>2</td><td>Out of V.A</td></tr>
<tr><td>1< Φ</td><td>0</td><td>-</td></tr>
</table></td><td>1.0</td></tr>
<tr><td>05</td><td>Scratches</td><td>Follow NO.3 -2 Line Type.</td><td></td></tr>
<tr><td>06</td><td>Mura</td><td>Not visible through 5% ND filter in 50% gray.</td><td>1.0</td></tr>
<tr><td>07</td><td>Chipped glass</td><td>Symbols:
x: Chip length y: Chip width z: Chip thickness
k: Seal width t: Glass thickness a: LCD side length
L: Electrode pad length
7.1 General glass chip:
7.1.1 Chip on panel surface and crack between panels:
 

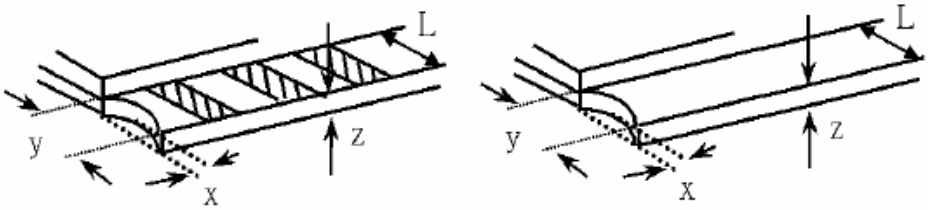
<table>
<tr><th>z: Chip thickness</th><th>y: Chip width</th><th>x: Chip length</th></tr>
<tr><td>Z≦1/2t</td><td>Not over viewing area</td><td>x≦1/8a</td></tr>
<tr><td>1/2t< z≦2t</td><td>Not exceed 1/3k</td><td>x≦1/8a</td></tr>
</table>
⊙ Unit: mm
⊙ If there are 2 or more chips, x is the total length of each chip

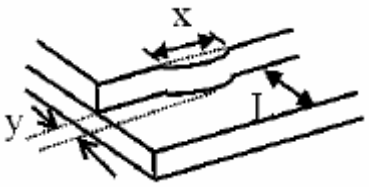
7.1.2 Corner crack:
 

<table>
<tr><th>z: Chip thickness</th><th>y: Chip width</th><th>x: Chip length</th></tr>
<tr><td>Z≦1/2t</td><td>Not over viewing area</td><td>x≦1/8a</td></tr>
<tr><td>1/2t< z≦2t</td><td>Not exceed 1/3k</td><td>x≦1/8a</td></tr>
</table>
⊙ Unit: mm
⊙ If there are 2 or more chips, x is the total length of each chip</td><td>1.0</td></tr>
</table>

NO	Item	Criterion	AQL

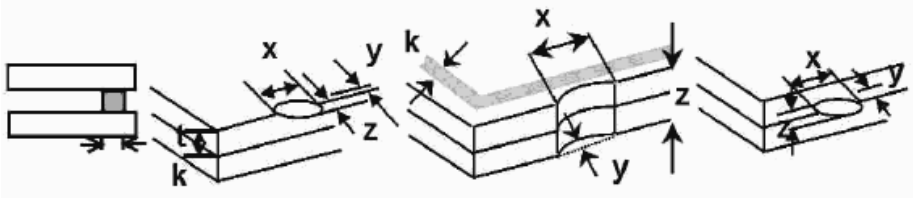
<table>
<tr>
<td>08</td>
<td>Glass crack</td>
<td>
Symbols:
x: Chip length y: Chip width z: Chip thickness
k: Seal width t: Glass thickness a: LCD side length
L: Electrode pad length
8.2 Protrusion over terminal:
8.2.1 Chip on electrode pad:


<table>
<tr><td>y: Chip width</td><td>x: Chip length</td><td>z: Chip thickness</td></tr>
<tr><td>y≦0.5mm</td><td>x≦1/8a</td><td>0< z≦t</td></tr>
</table>
8.2.2 Non-conductive portion:


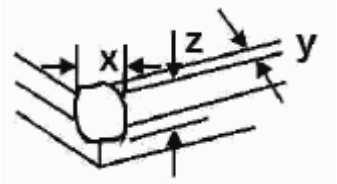
<table>
<tr><td>y: Chip width</td><td>x: Chip length</td><td>z: Chip thickness</td></tr>
<tr><td>y≦L</td><td>x≦1/8a</td><td>0< z≦t</td></tr>
</table>
⊙ If there chipped area touches the ITO terminal, over 2/3 of the ITO must remain and be inspected according to electrode terminal specifications.
⊙ If the product will be heat sealed by the customer, the alignment mark must mot be damaged.
8.2.3 Substrate protuberance and internal crack


<table>
<tr><td>y: width</td><td>x: length</td></tr>
<tr><td>y≦1/3L</td><td>X≦a</td></tr>
</table>
</td>
<td>1.0</td>
</tr>
</table>

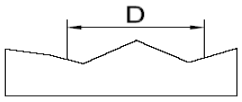
09	Cracked glass	The LCD with extensive crack is not acceptable.	1.0
10	Backlight elements	10.1 Illumination source flickers when lit. 10.2 Spots or scratches that appear when lit must be judged. Using LCD spot, lines and contamination standards. 10.3 Backlight doesn't light or color is wrong.	1.0 1.0 0.4
11	Bezel	Bezel must comply with product specifications.	1.0
12	PCB、COB	12.1 COB seal may not have pinholes larger than 0.2mm or contamination. 12.2 COB seal surface may not have pinholes through to the IC. 12.3 The height of the COB should not exceed the height indicated in the assembly diagram. 12.4 There may not be more than 2mm of sealant outside the seal area on PCB. And there should be no more than three places. 12.5 Parts on PCB must be the same as on the production characteristic chart, There should be no wrong parts, missing parts or excess parts. 12.6 The jumper on the PCB should conform to the product characteristic chart. 12.7 PCBA cosmetic control base on latest IPC standard,IPC-A-610,acceptalbe limit of grade 2.	1.0 1.0 1.0 1.0 0.4 0.4 1.0
13	FPC	13.1 FPC terminal damage ≦ 1/2 FPC terminal width and can not affect the function , we judge accept. 13.2 FPC alignment hole damage ≦ 1/2 alignment area and can not affect the function , we judge accept.	1.0 1.0
14	Soldering	14.1 No cold solder joints, missing solder connections, oxidation or icicle. 14.2 No short circuits in components on PCB or FPC.	1.0 0.4

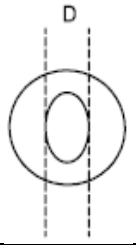
<table>
<tr><th>NO</th><th>Item</th><th>Criterion</th><th>AQL</th></tr>
<tr><td>15</td><td>Touch Panel Chipped glass</td><td>
Symbols:
x: Chip length y: Chip width z: Chip thickness
k: Seal width t: Touch Panel Total thickness a: LCD side length
L: Electrode pad length
15.1 General glass chip:
15.1.1 Chip on panel surface and crack between panels:


<table>
<tr><td>z: Chip thickness</td><td>y: Chip width</td><td>x: Chip length</td></tr>
<tr><td>Z≦t</td><td>≦1/2 k and not over viewing area</td><td>x≦1/8a</td></tr>
</table>
⊙ Unit: mm
⊙ If there are 2 or more chips, x is the total length of each chip

15.1.2 Corner crack:


<table>
<tr><td>z: Chip thickness</td><td>y: Chip width</td><td>x: Chip length</td></tr>
<tr><td>z≦t</td><td>≦1/2 k and not over viewing area</td><td>x≦1/8a</td></tr>
</table>
⊙ Unit: mm
⊙ If there are 2 or more chips, x is the total length of each chip
</td><td>1.0</td></tr>
</table>

<table>
<tr><th>NO</th><th>Item</th><th>Criterion</th><th>AQL</th></tr>
<tr><td>16</td><td>Touch Panel(Fish eye、dent and bubble on film)</td><td>
<table>
<tr><th>SIZE(mm)</th><th>Acceptable Q’ty</th></tr>
<tr><td>Φ≦0.2</td><td>Accept no dense</td></tr>
<tr><td>0.2< D ≦0.4</td><td>5</td></tr>
<tr><td>0.4< D ≦0.5</td><td>2</td></tr>
<tr><td>0.5< D</td><td>0</td></tr>
</table>




</td><td>1.0</td></tr>
<tr><td>17</td><td>Touch Panel Newton ring</td><td>Newton ring dimension ≦ 1/2 touch panel area and not affect font and line distortion(≦2.5%) , it is acceptable.</td><td>1.0</td></tr>
<tr><td>18</td><td>Touch Panel Linearity</td><td>Less than 2.5% is acceptable.</td><td>1.0</td></tr>
<tr><td>19</td><td>LCD Ripple</td><td>Touch the touch panel , can not see the LCD ripple.
Pen: R 1.0mm silicon rubber.
Operation Force: 80g</td><td>1.0</td></tr>
<tr><td>20</td><td>General appearance</td><td>20.1 Pin type must match type in specification sheet.
20.2 LCD pin loose or missing pins.
20.3 Product packaging must the same as specified on packaging specification sheet.
20.4 Product dimension and structure must conform to product specification sheet.</td><td>0.4
0.4
0.4
0.4</td></tr>
</table>

13. Handling Precaution:

13-1 Handling of LCM

- Don't give external shock.
- Don't apply excessive force on the surface.
- Liquid in LCD is hazardous substance. Must not lick and swallow. when the liquid is attach to your hand, skin, cloth etc. Wash it out thoroughly and immediately.
- Don't operate it above the absolute maximum rating.
- Don't disassemble the LCM.
- The operators should be grounded whenever he/she comes into contact with the module. Never touch any of the conductive parts such as the LSI pads,the copper leads on the PCB and the interface terminals with any parts of the human body.
- The modules should be kept in antistatic bags or other containers resistant to static for storage.
- The module is coated with a film to protect the display surface. Be care when peeling off this protective film since static electricity may be generated.

13-2 Storage

- Store in an ambient temperature of 25±10℃, and in a relative humidity of 50±10%RH. Don't expose to sunlight or fluorescent light.
- Storage in a clean environment, free from dust, active gas, and solvent.
- Store in anti-static electricity container.
- Store without any physical load.

13-3 Soldering

- Use only soldering irons with proper grounding and no leakage.
- Iron: No higher than 310±10℃ and less than 3 sec during Hand soldering.
- Rewiring: no more than 2 times.

14. 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 can not 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 within one year from YEEBO shipment.
5. For Heatseal Product which required to heatseal by customer side, parts must be used within three months after delivery from factory.
6. For TAB Product which required to solder by customer side, parts must be used within three months after delivery from factory.
7. 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 LCD which is found defective electrically or visually when inspected in accordance with YB GENERAL LCD INSPECTION STANDARD.

15. Guarantee:

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