



SPECIFICATION FOR CTP MODULE

MODULE NO: YB-TG1024768S03A-C-B

Doc.Version:00

Customer Approval:

<input type="checkbox"/> Accept	<input type="checkbox"/> Reject
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YEEBO	NAME	SIGNATURE	DATE
Prepare	Electronic Engineer	陈坤星	2018-02-26
Check	Mechanical Engineer	林利华	2018-02-26
Verify		陈长吉	2018-2-26
Approval		李 伟	2018-02-26

APPROVAL FOR SPECIFICATIONS ONLY

APPROVAL FOR SPECIFICATIONS AND SAMPLE



2. Table of Contents:

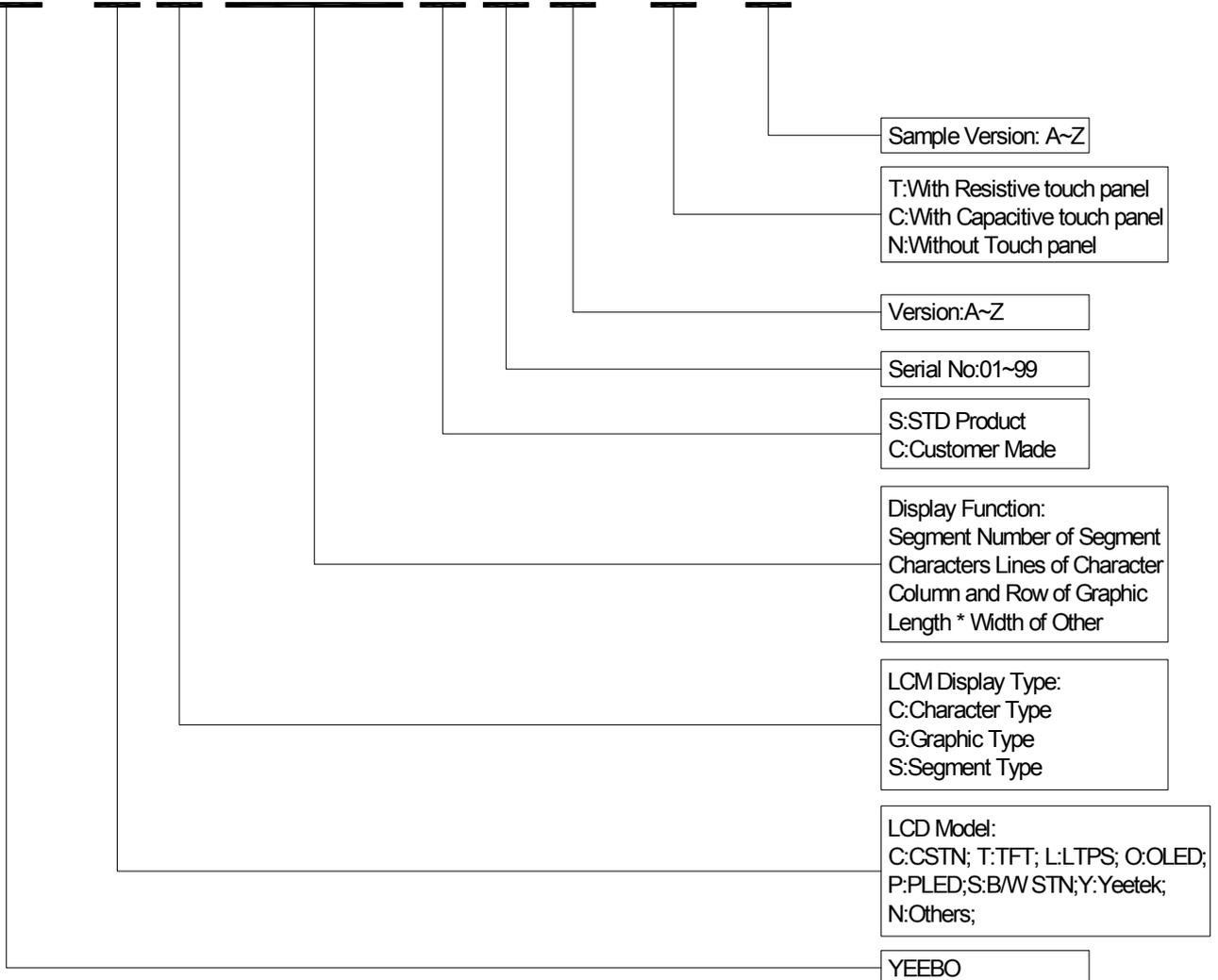
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3. Module Numbering System:

(Example)

YB - T G 1024768 S 03 A - C - A





4. General Specification:

ITEM	CONTENTS
Module Size	346.00(W) * 260.50(H) * 14.10(T) mm
Display Size (Diagonal)	15.0 inch
Display Format	1024(RGB)* 768 Pixels
Active Area	304.13(W) * 228.10(H) mm
Dots Pitch	0.297 * 0.297 mm
LCD Type	TFT (16.2M)/ Normal White/Anti-Glare
TFT Interface	LVDS
View Direction (Gray Inversion)	6 O'clock
The Best Viewing Direction:	12 O'clock
LCD Module Interface	LVDS
CTP IC	ILI2510
CTP Interface	USB
Weight	TBD
FW version	TBD
Config test	TBD

6. Electrical Characteristics (Ta=25°C)

6-1 CTP Operating Conditions

Item	Specification					Remarks
	Symbol	Min	Typ	Max	Unit	
6-1 Supply voltage	V _{BUS}	4.5	5.0	5.5	V	-
6-2 Normal mode Current consumption	Symbol	Min	Typ	Max	Unit	-
	I _{OPR}	--	78.5	130	mA	
	I _{SLP}	--	15	22.5	uA	
6-3 Insulation resistance	≥ 20M Ω(DC 25V)					-

6-2 TFT Absolute Maximum Ratings

(Ta=25°C

VSS=0V)

Item	Symbol	Min.	Type	Max.	Unit	Remark
Power Supply voltage	VDD	-0.5	-	5.0	Volt	(1)
Operating Temperature	Top	-20	-	+70	°C	(1),(2),(3),(4)
Operating Humidity	Hop	10		+85	%RH	
Storage Temperature	Tstg	-30	-	+80	°C	
Storage Humidity	Hstg	10		+95	%RH	

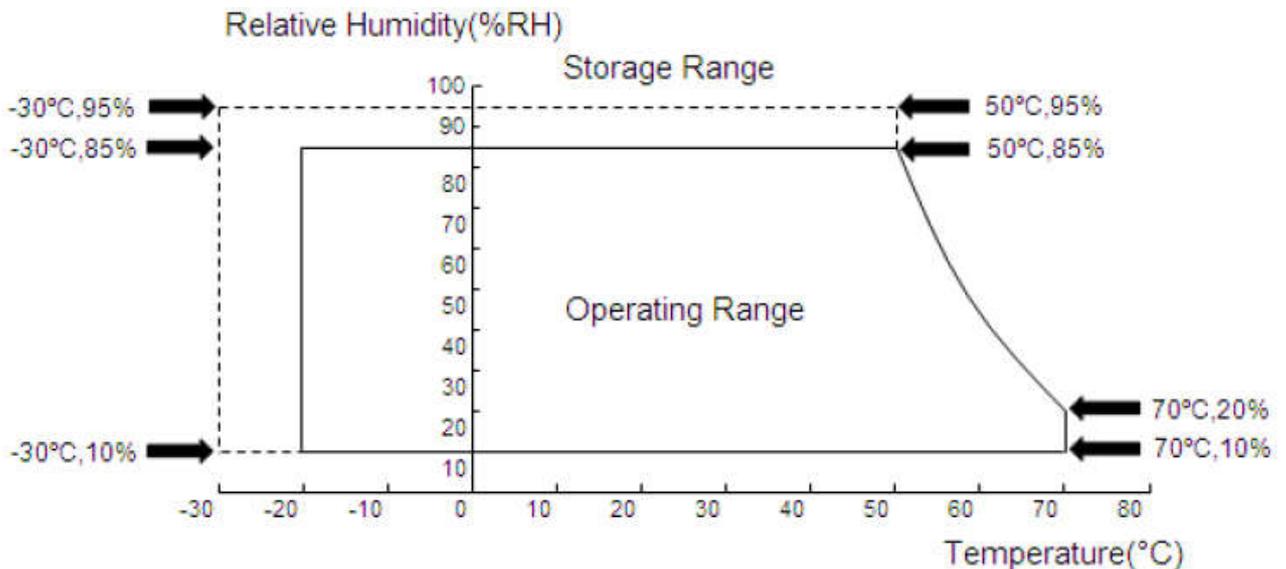
Note (1): Humidity: 85%RH Max. (T≤40°C) Note static electricity.

Maximum wet bulb temperature at 39°C or less. (T>40°C) No condensation.

Note (2): There is a possibility of causing deterioration in the irregularity and others of the screen and the display fineness though the liquid crystal module doesn't arrive at destruction when using it at 60~70 °C or -20~0 °C

Note (3): There is a possibility of causing the fineness deterioration by the prolonged use in the (high temperature) humidity environment (60% or more).

Note (4): In the operating temperature item, the low temperature side is the ambient temperature regulations. The high temperature side is the panel surface temperature regulations.

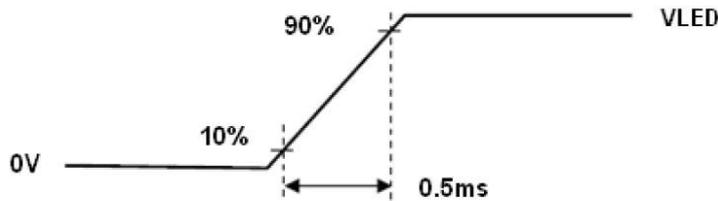


6-3 TFT Operating Conditions

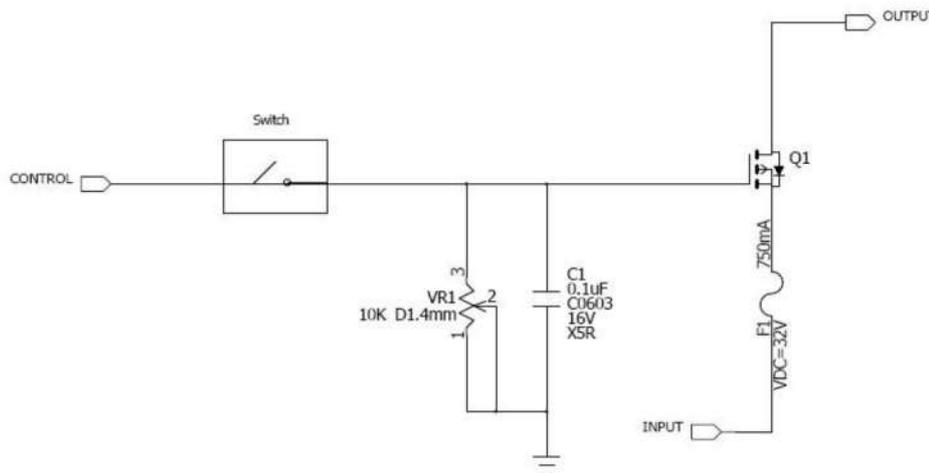
(Ta=25°C)

Item	Symbol	Min.	Typ.	Max.	Unit	Condition
Logic/LCD Drive Voltage	VDD	3.0	3.3	3.6	V	-
VDD Current	IDD	-	0.25	-	A	3.3V /Black pattern
VDD Power Consumption	PDD	-	-	1.3	W	-
Rush Current	Irush	-	-	3	A	Note1
Allowable Logic/LCD Drive Ripple Voltage	VDDrp	-	-	200	[mV]p-p	Note2

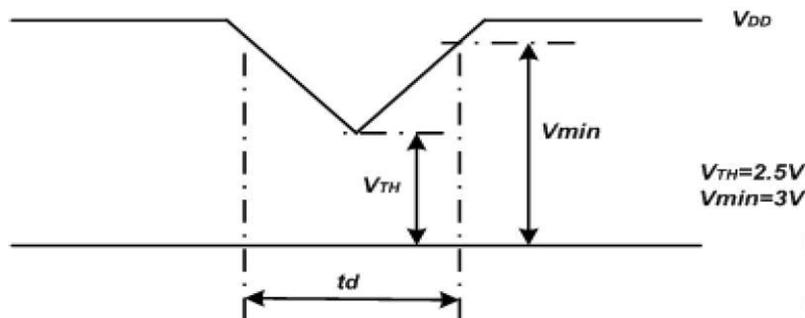
Note 1. Measure Condition



VDD rising time



Note 2. VDD Power Dip Condition



If $V_{TH} < V_{DD} \leq V_{min}$, then $t_d \leq 10ms$; When the voltage return to normal our panel must revive automatically.

VDD Power Dip

6-4 Display Data Input Timing

6-4-1 Timing Characteristics

Interface Timing

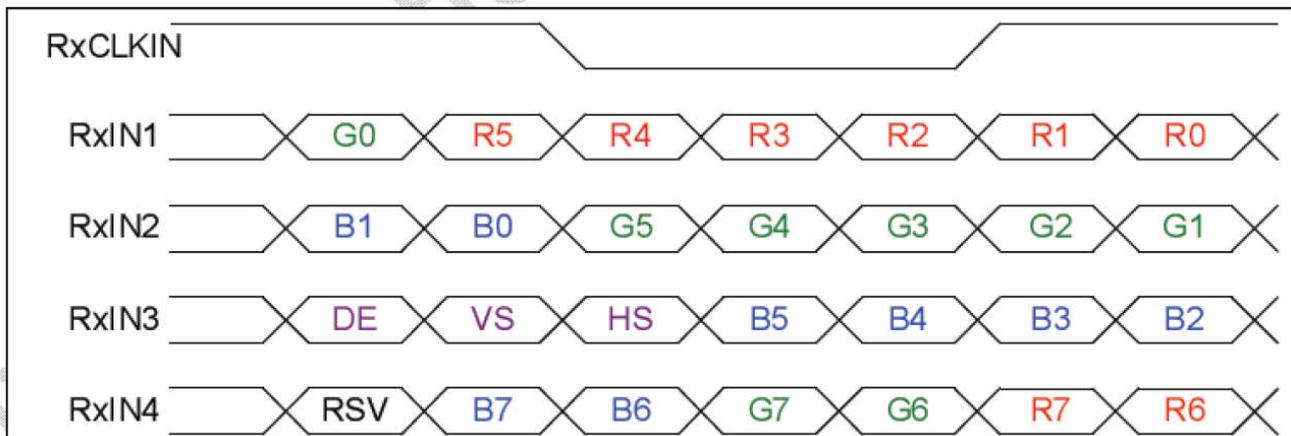
Synchronization Method : DE only

Parameter	Symbol	Unit	Min.	Typ.	Max.
LVDS Clock Frequency <single >	fdck	MHz	50	65	80
H Total Time	Thp	clocks	1056	1344	1720
H Active Time	HA	clocks	1024	1024	1024
H Front Porch	Thfp	clocks	-	48	-
H Sync Pulse Width	HSPW	clocks	-	32	-
H Back Porch	Thbp	clocks	-	240	-
H Frequency	fh	kHz	46.32	48.36	59.40
V Total Time	Tvp	lines	772	806	990
V Active Time	VA	lines	768	768	768
V Front Porch	Tvfp	lines	-	3	-
V Sync Pulse Width	VSPW	lines	-	12	-
V Back Porch	Tvbp	lines	-	23	-
V Frequency	fv	Hz		60	

Note: H Blank area and V Blank area can not be changed at every frame

6-4-2 Timing Diagram of Interface Signal

Timing Characteristics



Note1 : Follow SPWG

Note2 : R/G/B data7: MSB, R/G/B data0: LSB

6-5 Power ON/OFF Sequence

VDD power on/off sequence is as follows. Interface signals are also shown in the chart. Signals from any system shall be Hi-Z state or low level when VDD is off.

Power Sequence

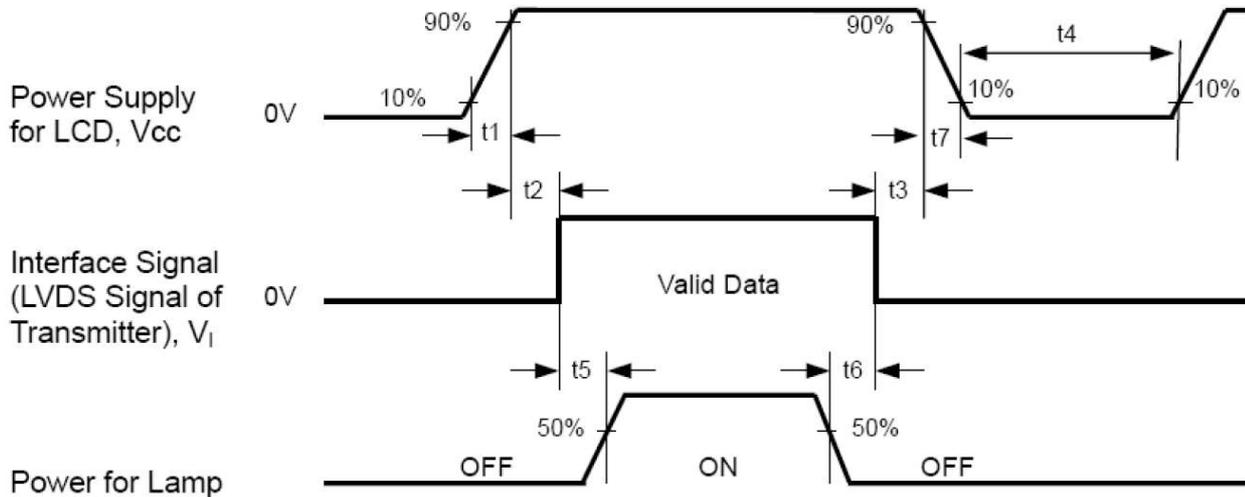


Table 10 Power Sequencing Requirements

Parameter	Symbol	Unit	min	Typ.	max
VDD Rise Time	T1	ms	0.5	-	10
VDD Good to Signal Valid	T2	ms	0	-	20
Signal Disable to Power Down	T3	ms	0	-	1000
Power Off	T4	ms	1000	-	
Signal Valid to Backlight On	T5	ms	300	-	
Backlight Off to Signal Disable	T6	ms	200	-	
VDD Fall Time	T7	ms	0	-	100

7. Optical Characteristics:

Item	Symbol	Conditions	Specifications			Unit	Note	
			Min	Typ	Max			
Contrast Ratio	CR	$\theta=0$ Normal Viewing angle	450	800	-		(2)	
Response time	TR+TF	-	-	16	-	ms	(3)	
NTSC				70		%		
Viewing angle	Hor.	Θ_{x+}	CR \geq 10	70	80	-	deg.	(1)
		Θ_{x-}		70	80	-		
	Ver.	Θ_{y+}		70	80	-		
		Θ_{y-}		70	80	-		

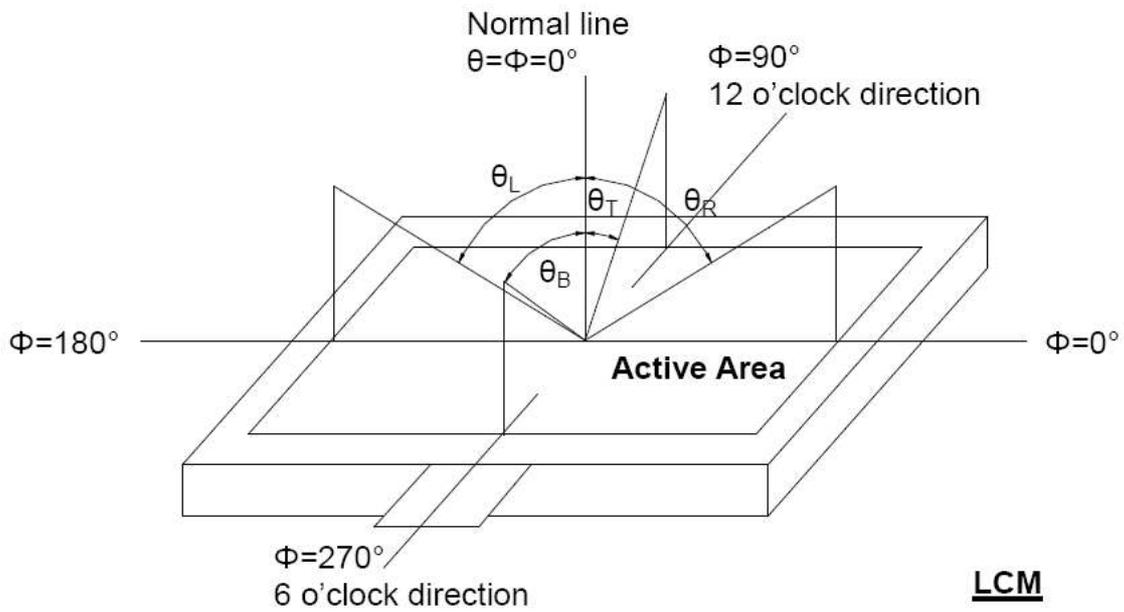
Measuring Condition

1. Measuring surrounding: dark room
2. Ambient temperature: $25 \pm 2^{\circ}\text{C}$
3. 30 min. Warm-up time.

Color of CIE Coordinate:

Item		Symbol	Min.	Typ.	Max.
Chromaticity Coordinates	Red	x	(0.575)	(0.625)	(0.675)
		y	(0.302)	(0.352)	(0.402)
	Green	x	(0.265)	(0.315)	(0.365)
		y	(0.580)	(0.630)	(0.680)
	Blue	x	(0.099)	(0.149)	(0.199)
		y	(0.017)	(0.067)	(0.117)
	White	x	0.255	0.305	0.355
		y	0.275	0.325	0.375

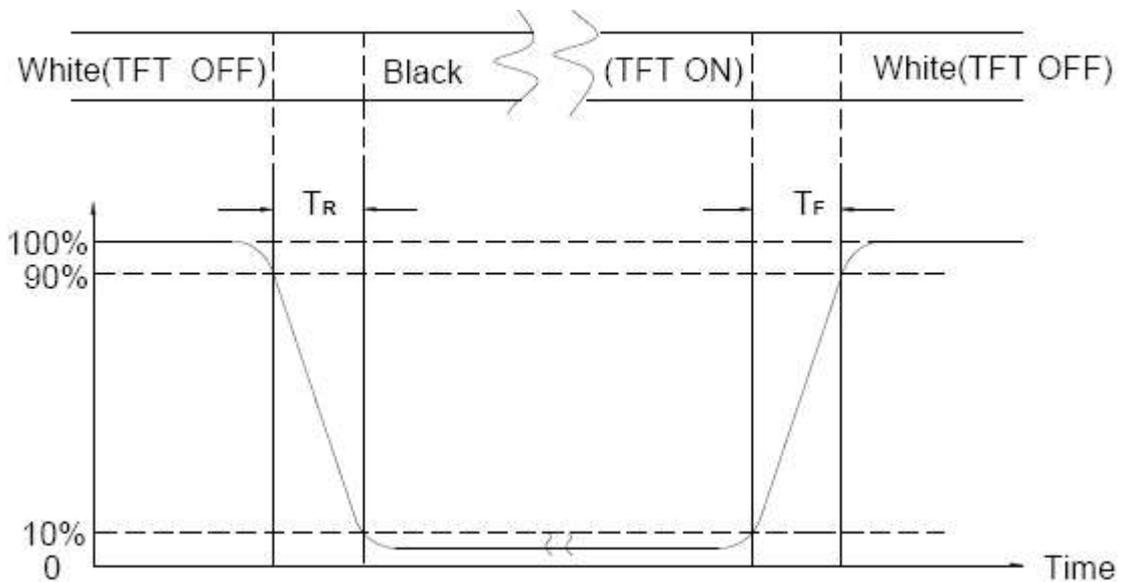
Note (1) Definition of Viewing Angle :



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	VDD	Power Voltage for digital circuit
2	VDD	Power Voltage for digital circuit
3	VSS	Power Ground
4	REV	Reverse Scan selection, "H":3.3V , or "L": 0V
5	Rin1-	-LVDS differential data input (R0-R5,G0)
6	Rin1+	+LVDS differential data input (R0-R5,G0)
7	VSS	Power Ground
8	Rin2-	-LVDS differential data input(G1-G5,B0-B1)
9	Rin2+	+LVDS differential data input(G1-G5,B0-B1)
10	VSS	Power Ground
11	Rin3-	-LVDS differential data input (B2-B5,HS,VS,DE)
12	Rin3+	+LVDS differential data input (B2-B5,HS,VS,DE)
13	VSS	Power Ground
14	CLKIN-	-LVDS differential clock input
15	CLKIN+	+LVDS differential clock input
16	VSS	Power Ground
17	Rin4-	-LVDS differential data input (R6,R7,G6,G7,B6,B7)
18	Rin4+	+LVDS differential data input (R6,R7,G6,G7,B6,B7)
19	VSS	Power Ground
20	NC	Not connect

8-1-1 Connector Name / Designation

Item	Description
Type / Part Number	MSB240420HD
Mating Model Number	P240420 or Compatible

8-2 Black Light Interface

No.	Symbol	Function
1	VCC	Power Supply For LED Circuit , 12V (Typ.)
2	GND	Ground
3	EN	On/Off(5V-ON,0V-OFF)
4	Dimming	PWM Dimming or Analog Dimming
5	NC	Not Connection

8-2-1 Connector Name / Designation

Connector Name / Designation	LED Driver Connector
Manufacturer	SMT or Compatible
Connector Model Number	MSB24038P5A or Compatible
Mating Model Number	P24038P5A or Compatible



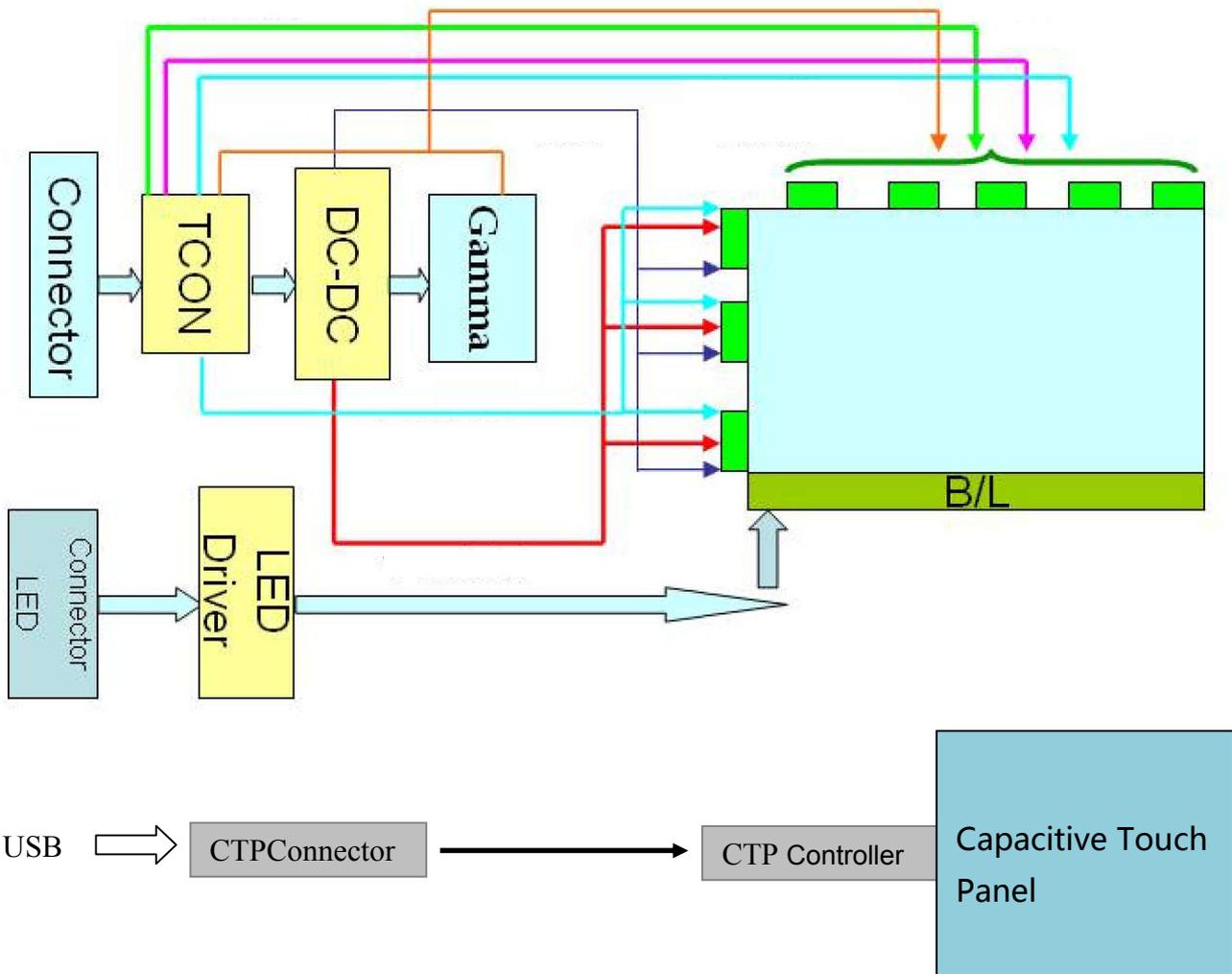
8-3-1 CTP Interface

No.	Symbol	Function
1	VBUS	USB Supply Power
2	D-	USB Data Negative
3	D+	USB Data Positive
4	GND	Ground
5	GND	Ground

8-3-2 Connector Name / Designation

Connector Name / Designation	Connector
USB	2417RJ-05-SM2 or equivalent

9. Block Diagram:



10. Backlight:

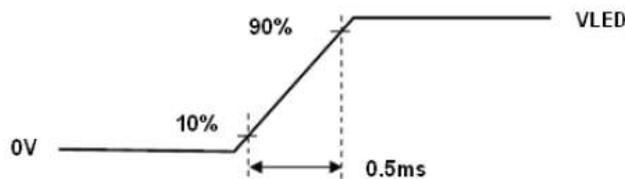
Data About LED Backlight:

Item	Symbol	Min.	Typ.	Max.	Unit	Condition	
LED Input Voltage	VLED	10.8	12	12.6	V	Ta=25°C Note 2.	
LED Power Consumption	PLED	-	-	7.5	W	Ta=25°C Note 2.	
PWM Signal Voltage	High	VLED_PWM	4.5	5	5.5	V	Ta=25°C
	Low		-	-	0.8	V	
PWM dimming Frequency	FPWM	200	-	20K	Hz	Ddim ≥ 5%	
LED Enable Voltage	High	VLED_EN	2.0	5	5.5	V	-
	Low		-	-	0.8	V	
LED Life Time	LT	30,000	-	-	H	Ta=25°C Note 1.	
CTP+TFT Module Luminance (White)	Lv	280	336	-	cd/m ²	Ta=25°C	
Luminance Uniformity	9 Points	75	80	-	%	Ta=25°C	

Note 1: The LED life time define as the estimated time to 50% degradation of initial luminous.

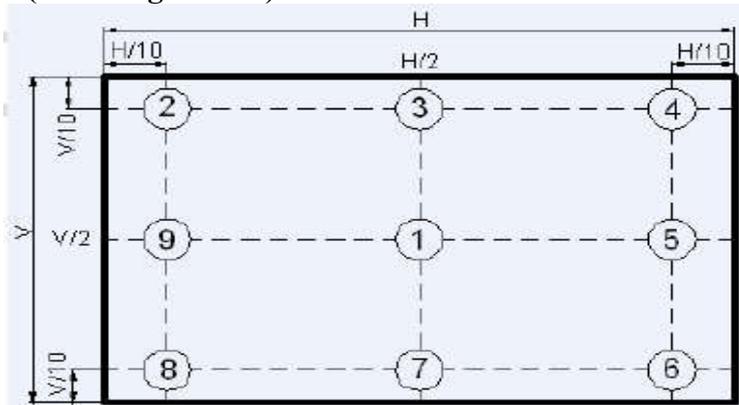
Note 2: A higher LED power supply voltage will result in better power efficiency. Keep the VLED between 12V and 12.6V is strongly recommended.

LED Rush Current Measure Condition



VLED rising time

Measured Method: (H*V: Light Area)



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°C for 240 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°C for 240 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°C 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°C 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°C,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°C for 30 minutes → normal temperature for 5 minutes → +80°C 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.

*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 ($25\pm 5^{\circ}\text{C}$), normal humidity ($50\pm 10\%$ RH), and in area not exposed to direct sun light.
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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 MIL-STD105E.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%

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.

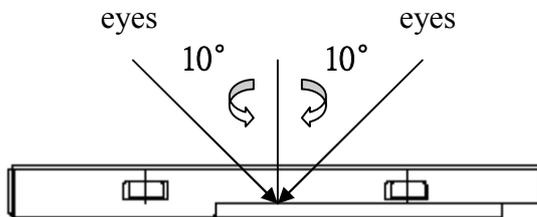
b. There is any argument item which does not record in the standard of quality assurance.

c. Any other special problem.

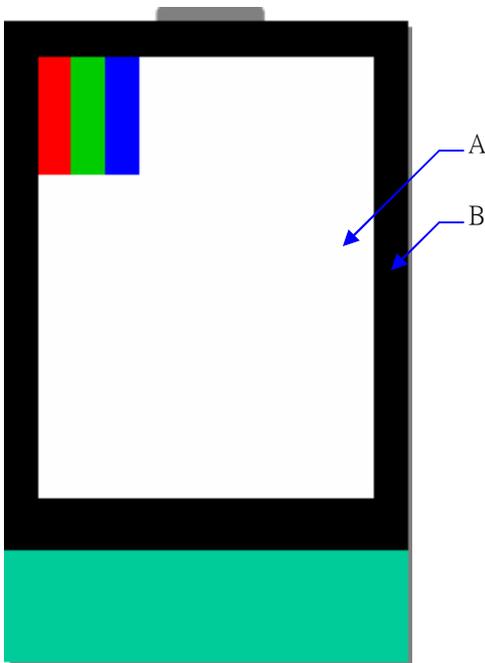
12-5. Standard of The Product Appearance Test

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°C Humidity: 60±10%RH



(iv) Definition of area:



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

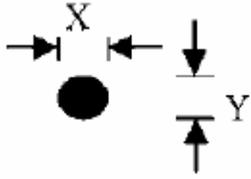
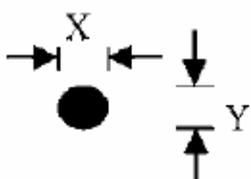
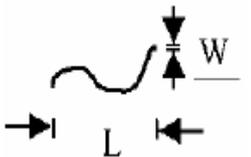
b. Basic principle:

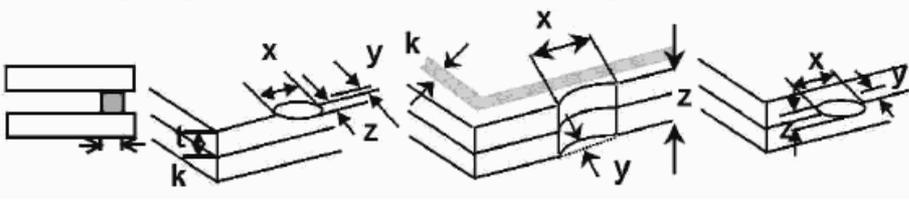
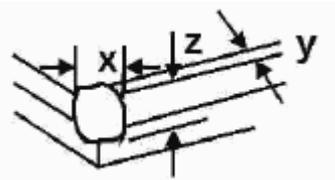
- (i) It will accord to the AQL when the standard can not be described.
- (ii) The sample of the lowest acceptable quality level must be discussed by both supplier and customer when any dispute happened.
- (iii) Must add new item on time when it is necessary.

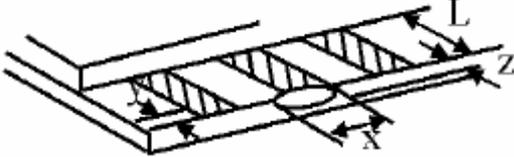
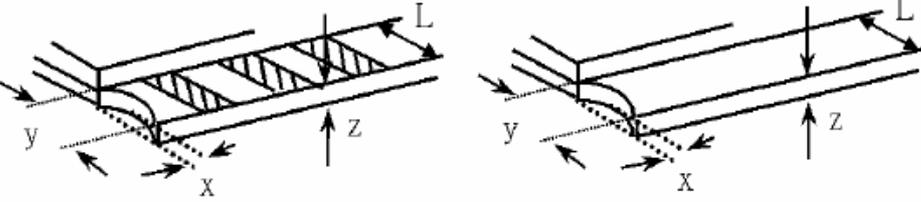
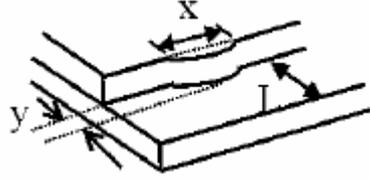
c. Standard of inspection: (Unit: mm)

12-6. Inspection specification

Defect out of viewing area can be neglected.

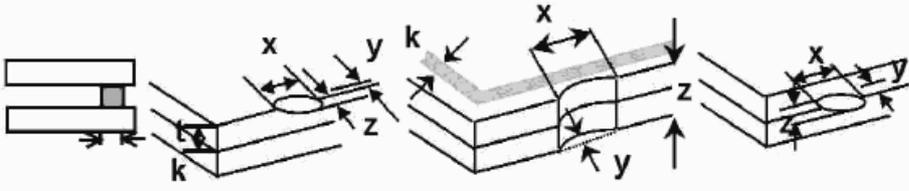
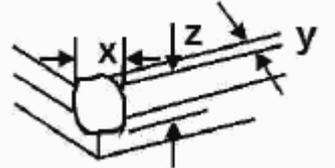
NO	Item	Criterion	AQL													
01	Electrical Testing	1.1 Missing vertical, horizontal segment, segment contrast defect. 1.2 Missing character, dot or icon. 1.3 Display malfunction. 1.4 No function or no display. 1.5 Current consumption exceeds product specifications. 1.6 LCD viewing angle defect. 1.7 Mixed product types. 1.8 Flicker	0.65													
02	Black or White spots or Bright spots or Color spots on LCD (Display only)	2.1 Dot dimension as below drawing: $\Phi = (X+Y) / 2$  <table border="1" data-bbox="805 772 1340 936"> <thead> <tr> <th>Size(mm)</th> <th>Acceptable Q'ty</th> </tr> </thead> <tbody> <tr> <td>$\Phi \leq 0.20$</td> <td>Accept no dense</td> </tr> <tr> <td>$0.20 < \Phi \leq 0.80$</td> <td>7</td> </tr> <tr> <td>$0.80 < \Phi$</td> <td>0</td> </tr> </tbody> </table> <p>* Densely spaced: No more than two spots within 3mm.</p>	Size(mm)	Acceptable Q'ty	$\Phi \leq 0.20$	Accept no dense	$0.20 < \Phi \leq 0.80$	7	$0.80 < \Phi$	0	2.5					
Size(mm)	Acceptable Q'ty															
$\Phi \leq 0.20$	Accept no dense															
$0.20 < \Phi \leq 0.80$	7															
$0.80 < \Phi$	0															
03	LCD and Touch Panel black spots, white spots, contamination (non – display)	3.1 Round type: As following drawing $\Phi = (X+Y) / 2$  <table border="1" data-bbox="805 1160 1340 1323"> <thead> <tr> <th>Size(mm)</th> <th>Acceptable Q'ty</th> </tr> </thead> <tbody> <tr> <td>$\Phi \leq 0.20$</td> <td>Accept no dense</td> </tr> <tr> <td>$0.20 < \Phi \leq 0.80$</td> <td>7</td> </tr> <tr> <td>$0.80 < \Phi$</td> <td>0</td> </tr> </tbody> </table> <p>* Densely spaced: No more than two spots within 3mm.</p>	Size(mm)	Acceptable Q'ty	$\Phi \leq 0.20$	Accept no dense	$0.20 < \Phi \leq 0.80$	7	$0.80 < \Phi$	0	2.5					
		Size(mm)	Acceptable Q'ty													
$\Phi \leq 0.20$	Accept no dense															
$0.20 < \Phi \leq 0.80$	7															
$0.80 < \Phi$	0															
3.2 Line type: (As following drawing)  <table border="1" data-bbox="710 1525 1340 1856"> <thead> <tr> <th>Length(mm)</th> <th>Width(mm)</th> <th>Acceptable Q'ty</th> </tr> </thead> <tbody> <tr> <td>$L \leq 10$</td> <td>$W \leq 0.1$</td> <td>Accept no dense</td> </tr> <tr> <td>$L \leq 10.0$</td> <td>$0.1 < W \leq 0.3$</td> <td>4</td> </tr> <tr> <td>$L > 10$</td> <td>----</td> <td>Rejection</td> </tr> <tr> <td>----</td> <td>$0.3 < W$</td> <td>Rejection</td> </tr> </tbody> </table> <p>* Densely spaced: No more than two lines within 3mm.</p>	Length(mm)	Width(mm)	Acceptable Q'ty	$L \leq 10$	$W \leq 0.1$	Accept no dense	$L \leq 10.0$	$0.1 < W \leq 0.3$	4	$L > 10$	----	Rejection	----	$0.3 < W$	Rejection	2.5
Length(mm)	Width(mm)	Acceptable Q'ty														
$L \leq 10$	$W \leq 0.1$	Accept no dense														
$L \leq 10.0$	$0.1 < W \leq 0.3$	4														
$L > 10$	----	Rejection														
----	$0.3 < W$	Rejection														

NO	Item	Criterion	AQL																		
04	Polarizer bubbles	If bubbles are visible, judge using black spot specifications, not easy to find, must check in specify direction <table border="1" data-bbox="842 293 1342 533"> <thead> <tr> <th>Size Φ(mm)</th> <th>Acceptable Q'ty</th> </tr> </thead> <tbody> <tr> <td>$\Phi \leq 0.20$</td> <td>Accept no dense</td> </tr> <tr> <td>$0.20 < \Phi \leq 0.50$</td> <td>4</td> </tr> <tr> <td>$0.50 < \Phi \leq 1.00$</td> <td>3</td> </tr> <tr> <td>$1.00 < \Phi$</td> <td>0</td> </tr> <tr> <td>Total Q'ty</td> <td>4</td> </tr> </tbody> </table>	Size Φ (mm)	Acceptable Q'ty	$\Phi \leq 0.20$	Accept no dense	$0.20 < \Phi \leq 0.50$	4	$0.50 < \Phi \leq 1.00$	3	$1.00 < \Phi$	0	Total Q'ty	4	2.5						
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05	Scratches	Follow NO.3 -2 Line Type.																			
06	Chipped glass	Symbols: x: Chip length y: Chip width z: Chip thickness k: Seal width t: Glass thickness a: LCD side length L: Electrode pad length 6.1 General glass chip: 6.1.1 Chip on panel surface and crack between panels:  <table border="1" data-bbox="391 1019 1209 1176"> <thead> <tr> <th>z: Chip thickness</th> <th>y: Chip width</th> <th>x: Chip length</th> </tr> </thead> <tbody> <tr> <td>$Z \leq 1/2t$</td> <td>Not over viewing area</td> <td>$x \leq 1/8a$</td> </tr> <tr> <td>$1/2t < z \leq 2t$</td> <td>Not exceed 1/3k</td> <td>$x \leq 1/8a$</td> </tr> </tbody> </table> <ul style="list-style-type: none"> ⊙ Unit: mm ⊙ If there are 2 or more chips, x is the total length of each chip 6.1.2 Corner crack:  <table border="1" data-bbox="391 1534 1209 1691"> <thead> <tr> <th>z: Chip thickness</th> <th>y: Chip width</th> <th>x: Chip length</th> </tr> </thead> <tbody> <tr> <td>$Z \leq 1/2t$</td> <td>Not over viewing area</td> <td>$x \leq 1/8a$</td> </tr> <tr> <td>$1/2t < z \leq 2t$</td> <td>Not exceed 1/3k</td> <td>$x \leq 1/8a$</td> </tr> </tbody> </table> <ul style="list-style-type: none"> ⊙ Unit: mm ⊙ If there are 2 or more chips, x is the total length of each chip 	z: Chip thickness	y: Chip width	x: Chip length	$Z \leq 1/2t$	Not over viewing area	$x \leq 1/8a$	$1/2t < z \leq 2t$	Not exceed 1/3k	$x \leq 1/8a$	z: Chip thickness	y: Chip width	x: Chip length	$Z \leq 1/2t$	Not over viewing area	$x \leq 1/8a$	$1/2t < z \leq 2t$	Not exceed 1/3k	$x \leq 1/8a$	2.5
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07	Glass crack	<p>Symbols: x: Chip length y: Chip width z: Chip thickness k: Seal width t: Glass thickness a: LCD side length L: Electrode pad length</p> <p>7.2 Protrusion over terminal: 7.2.1 Chip on electrode pad:</p>  <table border="1" data-bbox="533 687 1220 842"> <tr> <td>y: Chip width</td> <td>x: Chip length</td> <td>z: Chip thickness</td> </tr> <tr> <td>$y \leq 0.5\text{mm}$</td> <td>$x \leq 1/8a$</td> <td>$0 < z \leq t$</td> </tr> </table> <p>7.2.2 Non-conductive portion:</p>  <table border="1" data-bbox="533 1202 1220 1357"> <tr> <td>y: Chip width</td> <td>x: Chip length</td> <td>z: Chip thickness</td> </tr> <tr> <td>$y \leq L$</td> <td>$x \leq 1/8a$</td> <td>$0 < z \leq t$</td> </tr> </table> <p>⊙ 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 not be damaged.</p> <p>7.2.3 Substrate protuberance and internal crack</p>  <table border="1" data-bbox="852 1675 1294 1830"> <tr> <td>y: width</td> <td>x: length</td> </tr> <tr> <td>$y \leq 1/3L$</td> <td>$X \leq a$</td> </tr> </table>	y: Chip width	x: Chip length	z: Chip thickness	$y \leq 0.5\text{mm}$	$x \leq 1/8a$	$0 < z \leq t$	y: Chip width	x: Chip length	z: Chip thickness	$y \leq L$	$x \leq 1/8a$	$0 < z \leq t$	y: width	x: length	$y \leq 1/3L$	$X \leq a$	2.5
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NO	Item	Criterion	AQL
08	Cracked glass	The LCD with extensive crack is not acceptable.	2.5
09	Backlight elements	9.1 Illumination source flickers when lit. 9.2 Spots or scratches that appear when lit must be judged. Using LCD spot, lines and contamination standards. 9.3 Backlight doesn't light or color is wrong.	2.5 2.5 0.65
10	Bezel	Bezel must comply with product specifications.	2.5
11	PCB、COB	11.1 COB seal may not have pinholes larger than 0.2mm or contamination. 11.2 COB seal surface may not have pinholes through to the IC. 11.3 The height of the COB should not exceed the height indicated in the assembly diagram. 11.4 There may not be more than 2mm of sealant outside the seal area on PCB. And there should be no more than three places. 11.5 Parts on PCB must be the same as on the production characteristic chart, There should be no wrong parts, missing parts or excess parts. 11.6 The jumper on the PCB should conform to the product characteristic chart.	2.5 2.5 2.5 2.5 0.65 0.65
12	FPC	12.1 FPC terminal damage \leq 1/2 FPC terminal width and can not affect the function , we judge accept. 12.2 FPC alignment hole damage \leq 1/2 alignment area and can not affect the function , we judge accept.	2.5 2.5
13	Soldering	13.1 No cold solder joints, missing solder connections, oxidation or icicle. 13.2 No short circuits in components on PCB or FPC.	2.5 0.65

NO	Item	Criterion	AQL												
14	Touch Panel Chipped glass	<p>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</p> <p>14.1 General glass chip: 14.1.1 Chip on panel surface and crack between panels:</p>  <table border="1" data-bbox="391 801 1209 1019"> <tr> <td style="text-align: center;">z: Chip thickness</td> <td style="text-align: center;">y: Chip width</td> <td style="text-align: center;">x: Chip length</td> </tr> <tr> <td style="text-align: center;">$Z \leq t$</td> <td style="text-align: center;">$\leq 1/2 k$ and not over viewing area</td> <td style="text-align: center;">$x \leq 1/8a$</td> </tr> </table> <p>⊙ Unit: mm ⊙ If there are 2 or more chips, x is the total length of each chip</p> <p>14.1.2 Corner crack:</p>  <table border="1" data-bbox="391 1400 1209 1617"> <tr> <td style="text-align: center;">z: Chip thickness</td> <td style="text-align: center;">y: Chip width</td> <td style="text-align: center;">x: Chip length</td> </tr> <tr> <td style="text-align: center;">$z \leq t$</td> <td style="text-align: center;">$\leq 1/2 k$ and not over viewing area</td> <td style="text-align: center;">$x \leq 1/8a$</td> </tr> </table> <p>⊙ Unit: mm ⊙ If there are 2 or more chips, x is the total length of each chip</p>	z: Chip thickness	y: Chip width	x: Chip length	$Z \leq t$	$\leq 1/2 k$ and not over viewing area	$x \leq 1/8a$	z: Chip thickness	y: Chip width	x: Chip length	$z \leq t$	$\leq 1/2 k$ and not over viewing area	$x \leq 1/8a$	2.5
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NO	Item	Criterion	AQL							
15	Touch Panel(Fish eye)	<table border="1"> <tr> <th>SIZE(mm)</th> <th>Acceptable Q'ty</th> </tr> <tr> <td>$L \leq 1.0$</td> <td>Accept no dense</td> </tr> <tr> <td>$L > 1.0\text{mm}$</td> <td>0</td> </tr> </table>	SIZE(mm)	Acceptable Q'ty	$L \leq 1.0$	Accept no dense	$L > 1.0\text{mm}$	0		2.5
		SIZE(mm)	Acceptable Q'ty							
		$L \leq 1.0$	Accept no dense							
$L > 1.0\text{mm}$	0									
16	Touch Panel Newton ring	Newton ring dimension $\leq 1/2$ touch panel area and not affect font and line distortion($\leq 2.5\%$) , it is acceptable.	2.5							
17	Touch Panel Linearity	Less than 2.5% is acceptable.	2.5							
18	LCD Ripple	Touch the touch panel , can not see the LCD ripple. Pen: R 1.0mm silicon rubber. Operation Force: 10~100g	2.5							
19	General appearance	19.1 Pin type must match type in specification sheet.	0.65							
		19.2 LCD pin loose or missing pins.	0.65							
		19.3 Product packaging must the same as specified on packaging specification sheet.	0.65							
		19.4 Product dimension and structure must conform to product specification sheet.	0.65							
20	Definition of Pixel	<p>Pixel : Group of Three Sub-pixels (Red, Green ,Blue):</p> <p>Dot : Red or Green or Blue</p> <p>Dot : Any sub-pixel</p> <p>Bright Dot Defects Dots (sub-pixels) on display which is bright in the picture and visible at Black Pattern.</p> <p>Dark Dot Defects Dots(sub-pixels) on display which is dark in the picture and visible at Red/Green/Black/White Pattern.</p> <p>Neighbour Dot Defects Two or three neighbour dots (dot: sub-pixel) cluster(R&G,G&B,B&R,or</p>								



	R&G&B).Dot Defects Inspection Criteria NOTE : Dot out of VA can be ignored.															
	<table border="1"><thead><tr><th rowspan="2">Items</th><th colspan="2">Inspection Criteria</th></tr><tr><th>Details</th><th>Allowed quantity</th></tr></thead><tbody><tr><td>Bright Dot</td><td>Not Neighbour Dot</td><td>2</td></tr><tr><td>Dark Dot</td><td>Not Neighbour Dot</td><td>3</td></tr><tr><td colspan="2">Total acceptable Qty</td><td>5</td></tr></tbody></table>		Items	Inspection Criteria		Details	Allowed quantity	Bright Dot	Not Neighbour Dot	2	Dark Dot	Not Neighbour Dot	3	Total acceptable Qty		5
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	<ul style="list-style-type: none">● Size of dot defect is larger than half of one sub-pixel.															



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 FPC 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 $25\pm 10^{\circ}\text{C}$, and in a relative humidity of $50\pm 10\%\text{RH}$. 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 $280\pm 10^{\circ}\text{C}$ and less than 3 sec during Hand soldering.
- Rewiring: no more than 2 times.
- Heat-seal must be stored at 25°C or less and 50% R.H. or less in a sealed condition, and must be used within six months after delivery from our factory.

14. Guarantee:

Our products meet requirements of the environment.

YEEBO ROHS requirement is based on European Union Directive 2011/65/EU (ROHS) Requirements and Update.