

# SPECIFICATION FOR CTP MODULE

MODULE NO: YB-TG240320C266A-C-A

Doc.Version:01

Customer Approval:

Accept  Reject

YEEBO	NAME	SIGNATURE	DATE
Prepare	Mechanical Engineer	李毅斌	2020-12-29
Check	Electronic Engineer	許展宏	2020-12-29
Verify		孫五南	2020-12-29
Approval		孫五南	2020-12-30

APPROVAL FOR SPECIFICATIONS ONLY

APPROVAL FOR SPECIFICATIONS AND SAMPLE

WIMRD005-02-D





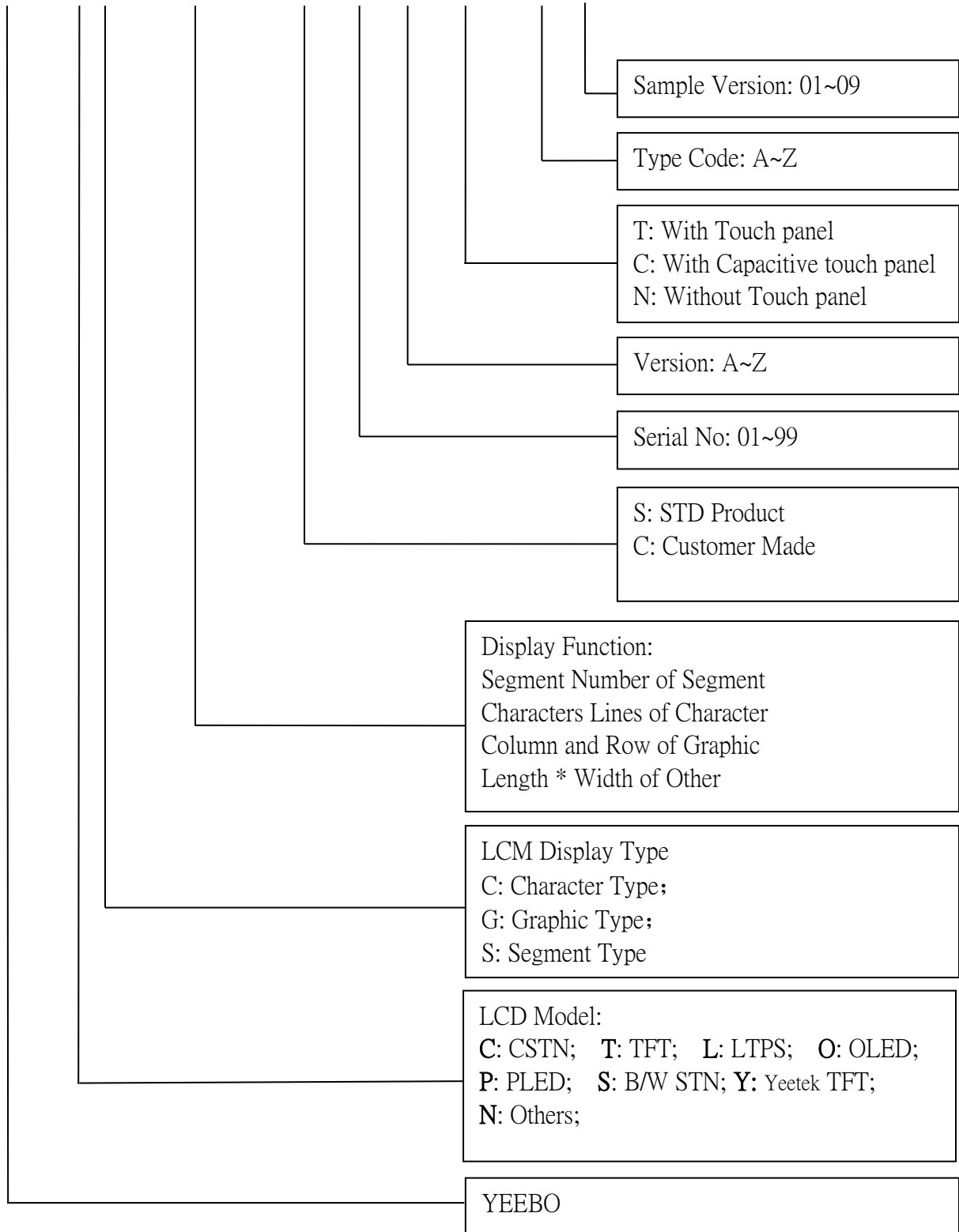
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### 3. Module Numbering System:

(example)

**YB- TG 240320 C 266 A -C – A 01**



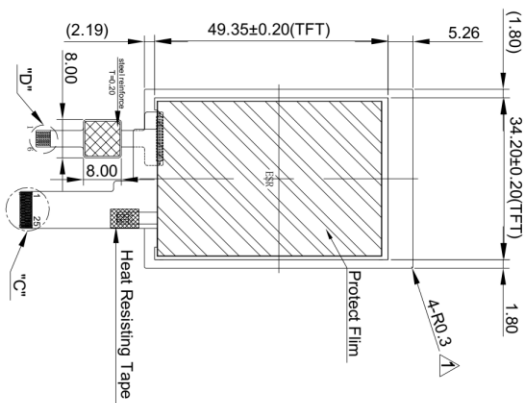
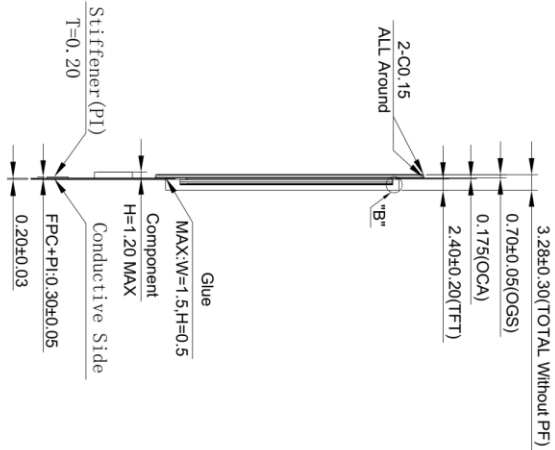
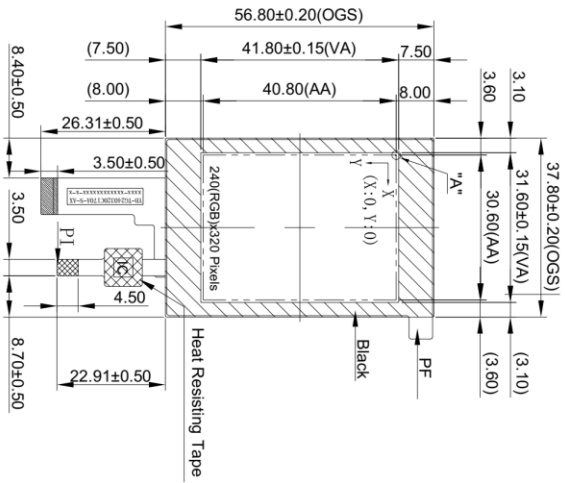
#### **4. General Specification:**

ITEM	CONTENTS
Module Size(mm)	37.80(W) * 56.80(H) * 3.28(T) mm
Display Size(Diagonal)	2 inch
Display Format	240(RGB)* 320 Pixels
Pixel Pitch(mm)	0.1275 (H)*0.1275(V)
LCD Type	TFT(262k)/Normally Black/Transmissiv
Active Area(mm)	30.60(W)*40.80(H)
View Angle	Full View
Controller IC	ST7789V
CTP IC	ST1624
CTP Interface	I2C
Weight(g)	10.23
Fireware	9444_20201225_V1.dump
Test Configuration	9444_20201225_134312.prj

## 5. LCM drawing:

Count drawing & Spec: revision record during discussion with customer		
Rec.	Revision content description	Date
01	FIRST ISSUE	2020-11-20
02	Modify R Angle	2020-11-20

Customer NO.



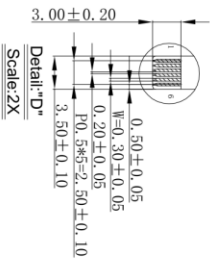
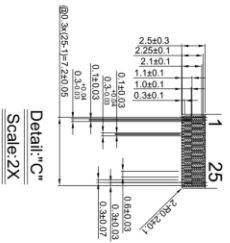
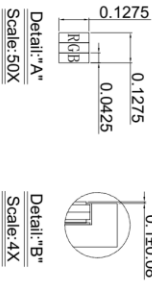
CTP	
PIN ASSIGNMEN	NO. SYMBOL
1	RESET
2	INT
3	SDA
4	SCL
5	VDD
6	GND

TFT	
PIN ASSIGNMEN	NO. SYMBOL
1	GND
2	GND
3	NC
4	VCC
5	TE
6	NC
7	DB7
8	DB6
9	DB5
10	DB4
11	DB3
12	DB2
13	DB1
14	DB0
15	RD
16	WR
17	RS
18	GND
19	CS
20	GND
21	RESET
22	NC
23	LED A
24	NC
25	LED K

Customer Approve

- Specification:**
- Glass Type: CTP+TFT
  - CTP Drive IC: ST1624
  - Channel NO: 6x8
  - Display mode: 2.0" TFT(262k)/Normally Black/Ttransmissiv
  - Viewing direction: FULL VIEW
  - Drive IC is: ST7789V
  - Backlight color: White(LED X3) ;
  - Transmittance : ≥85%
  - surface Hardness: ≥6H
  - Operating temperature: -20°C to +70°C
  - Storage temperature: -30°C to +80°C
  - Unspecified tolerance: ±0.30mm.
  - ROHS compliant

CIRCUIT DIAGRAM  
B/L Electrical Circuit



YEEBO			UNIT	SIZE	SCALE	DESIGNED	CHECKED	VERIFIED	APPROVED	FILE NAME
YEEBO			mm	A4	N-T-S					Count Dwg.
MOD. Name	YB-TG240320C266A-C-A	Sheet	1	Of	1					

## 6. Electrical Characteristics

### 6-1 Absolute Maximum Ratings

#### 6-1-1 Absolute Maximum Ratings (TFT)

(Ta=25°C)

Item	Symbol	Min.	Type	Max.	Unit	Remark
Supply Voltage	V <sub>CI</sub>	-0.3	-	+4.6	V	Note1
Logic Input Voltage Range	V <sub>IN</sub>	0.5		IOV <sub>CC</sub> +0.5	V	Note1
Operating Temperature	T <sub>opr</sub>	-20	-	+70	°C	-
Storage Temperature	T <sub>stg</sub>	-30	-	+80	°C	-

Note1: Absolute maximum rating is the limit value beyond which the IC maybe broken. They do not assure operations.

#### 6-1-2 Absolute Maximum Ratings (TP)

(Ta=25°C)

Parameter	Symbol	Min.	Max.	Unit
VDD	V <sub>VDD</sub>	-0.3	+6	V
IOVDD	V <sub>IOVDD</sub>	-0.3	+6	V
Operating Ambient Temperature	T <sub>A</sub>	-20	+80	°C
Storage Temperature	T <sub>S</sub>	-40	+125	°C

\*Note: Stresses above those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. All the ranges are stress ratings only. Functional operation of this device at these or any other conditions above those indicated in the operational sections of this specification is not implied or intended. Exposed to the absolute maximum rating conditions for extended periods may affect device reliability.

### 6-2 Operating Conditions

#### 6-2-1 Operating Conditions (TFT)

(Ta=25°C)

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Power Supply voltage	V <sub>CI</sub>	-	2.6	2.8	3.3	Volt
Input Voltage	V <sub>IH</sub>	-	0.7 IOV <sub>CC</sub>	-	IOV <sub>CC</sub>	V
	V <sub>IL</sub>	-	GND	-	0.3 IOV <sub>CC</sub>	V
Power Supply Current for LCM	I <sub>CC</sub>	VCC=2.8V	-	8	12	mA

## 6-2-2 Operating Conditions (TP)

(Ta=25°C)

Condition: VDD = IOVDD = 3.3V, T<sub>A</sub> = 25°C, unless be specified individually.

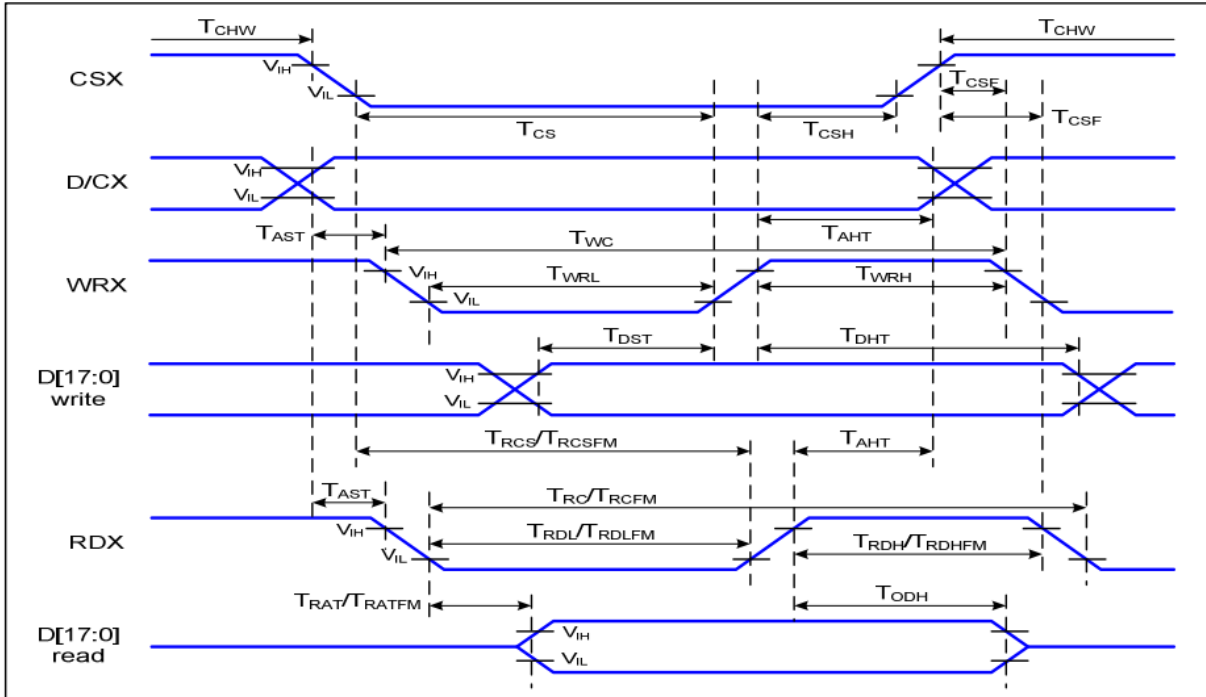
Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
VDD	V <sub>VDD</sub>	2.7	-	3.6	V	
IOVDD	V <sub>IOVDD</sub>	1.6	-	3.6	V	
Operating Current	I <sub>NML</sub>	-	16	24	mA	15TX, 9RX
Idle Current	I <sub>IDLE</sub>	-	5.9	8.9	mA	15TX, 9RX, scan rate=20Hz
Power Down Current	I <sub>PD</sub>	-	-	20	uA	
Input High Voltage	V <sub>IH</sub>	0.85* IOVDD	-	-	V	
Input Low Voltage	V <sub>IL</sub>	-	-	0.15* IOVDD	V	
Input Pull Up Resistor	R <sub>PU</sub>	50	-	60	KOhm	
Output Driving Current	I <sub>DRV</sub>	6	-	-	mA	V <sub>OH</sub> = IOVDD x 0.8
Output Sinking Current	I <sub>SINK</sub>	10	-	-	mA	V <sub>OL</sub> = IOVDD x 0.2
Low Voltage Reset	V <sub>LVR</sub>	-	-	2.3	V	



## 6-3 Timing Characteristics

### 6-3-1 Timing Characteristics (TFT)

#### 8080 Series MCU Parallel Interface Characteristics: 18/16/9/8-bit Bus



$V_{DD1}=1.65$  to  $3.3V$ ,  $V_{DD}=2.4$  to  $3.3V$ ,  $AGND=DGND=0V$ ,  $T_a=25^\circ C$

Signal	Symbol	Parameter	Min	Max	Unit	Description
D/CX	$T_{AST}$	Address setup time	0		ns	-
	$T_{AHT}$	Address hold time (Write/Read)	10		ns	
CSX	$T_{CHW}$	Chip select "H" pulse width	0		ns	-
	$T_{CS}$	Chip select setup time (Write)	15		ns	
	$T_{RCS}$	Chip select setup time (Read ID)	45		ns	
	$T_{RCSFM}$	Chip select setup time (Read FM)	355		ns	
	$T_{CSF}$	Chip select wait time (Write/Read)	10		ns	
	$T_{CSH}$	Chip select hold time	10		ns	
WRX	$T_{WC}$	Write cycle	66		ns	-
	$T_{WRH}$	Control pulse "H" duration	15		ns	
	$T_{WRL}$	Control pulse "L" duration	15		ns	
RDX (ID)	$T_{RC}$	Read cycle (ID)	160		ns	When read ID data
	$T_{RDH}$	Control pulse "H" duration (ID)	90		ns	
	$T_{RDL}$	Control pulse "L" duration (ID)	45		ns	
RDX (FM)	$T_{RCFM}$	Read cycle (FM)	450		ns	When read from frame memory
	$T_{RDHFM}$	Control pulse "H" duration (FM)	90		ns	
	$T_{RDLFM}$	Control pulse "L" duration (FM)	355		ns	
D[17:0]	$T_{DST}$	Data setup time	10		ns	For $CL=30pF$

$T_{DHT}$	Data hold time	10		ns
$T_{RAT}$	Read access time (ID)		40	ns
$T_{RATFM}$	Read access time (FM)		340	ns
$T_{ODH}$	Output disable time	20	80	ns

Table 4 8080 Parallel Interface Characteristics

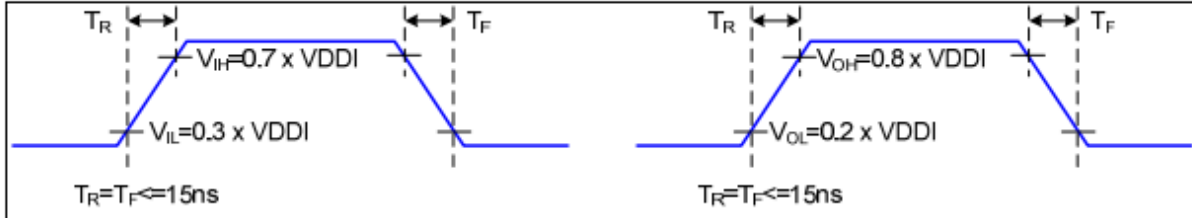


Figure 2 Rising and Falling Timing for I/O Signal

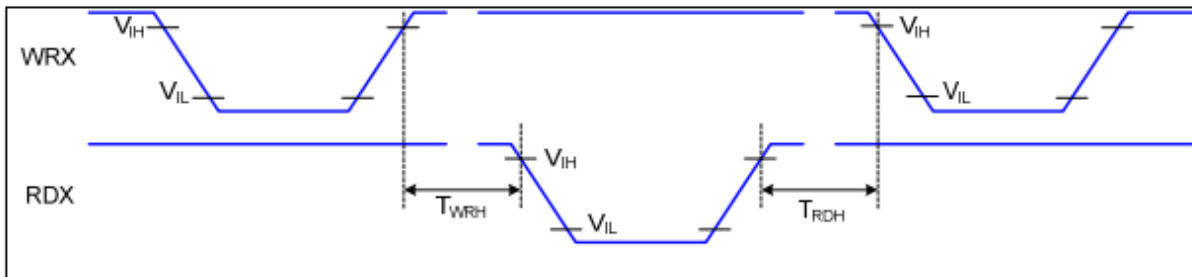


Figure 3 Write-to-Read and Read-to-Write Timing

Note: The rising time and falling time ( $T_r$ ,  $T_f$ ) of input signal and fall time are specified at 15 ns or less. Logic high and low levels are specified as 30% and 70% of VDDI for Input signals.

### 6-3-2 Timing Characteristics (TP)

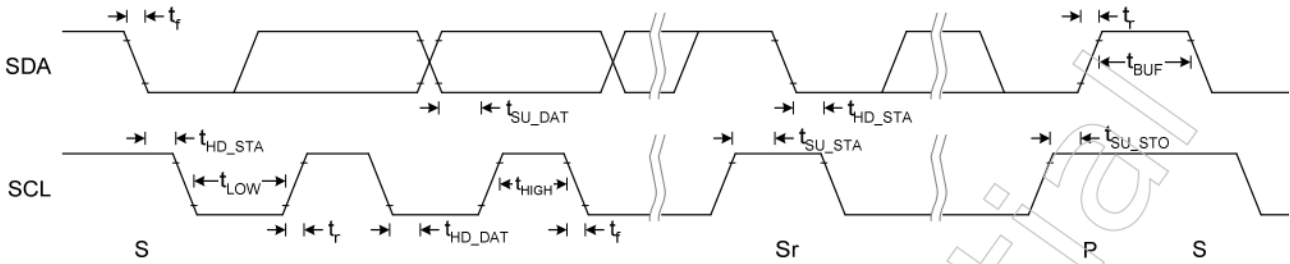


Figure 5-1 I2C Fast Mode Timing

Table 5-3 I2C Fast Mode Timing Characteristic

Conditions: VDD = 3.3V, GND = 0V, T<sub>A</sub> = 25°C

Symbol	Parameter	Rating			Unit
		Min.	Typ.	Max.	
f <sub>SCL</sub>	SCL clock frequency	0	-	400	kHz
t <sub>LOW</sub>	Low period of the SCL clock	1.3	-	-	us
t <sub>HIGH</sub>	High period of the SCL clock	0.6	-	-	us
t <sub>f</sub>	Signal falling time	-	-	300	ns
t <sub>r</sub>	Signal rising time	-	-	300	ns
t <sub>SU_STA</sub>	Set up time for a repeated START condition	0.6	-	-	us
t <sub>HD_STA</sub>	Hold time (repeated) START condition. After this period, the first clock pulse is generated	0.6	-	-	us
t <sub>SU_DAT</sub>	Data set up time	100	-	-	ns
t <sub>HD_DAT</sub>	Data hold time	0	-	0.9	us
t <sub>SU_STO</sub>	Set up time for STOP condition	0.6	-	-	us
t <sub>BUF</sub>	Bus free time between a STOP and START condition	1.3	-	-	us
C <sub>b</sub>	Capacitive load for each bus line	-	-	400	pF

## 7. Optical Characteristics:

Item	Symbol	Conditions	Specifications			Unit	Note	
			Min	Typ	Max			
Transmittance (With PL)	T (%)	-	-	4.5	-	-	-	
Contrast Ratio	CR	$\Theta=0$ Normal Viewing angle	-	800	-		(1) (2)	
Response time	TR+TF	-	-	30	40	ms	(1) (3)	
Viewing angle	Hor	$\Theta_{x+}$	CR $\geq$ 10	-	80	-	deg.	-
		$\Theta_{x-}$		-	80	-		
	Ver	$\Theta_{y+}$		-	80	-		
		$\Theta_{y-}$		-	80	-		

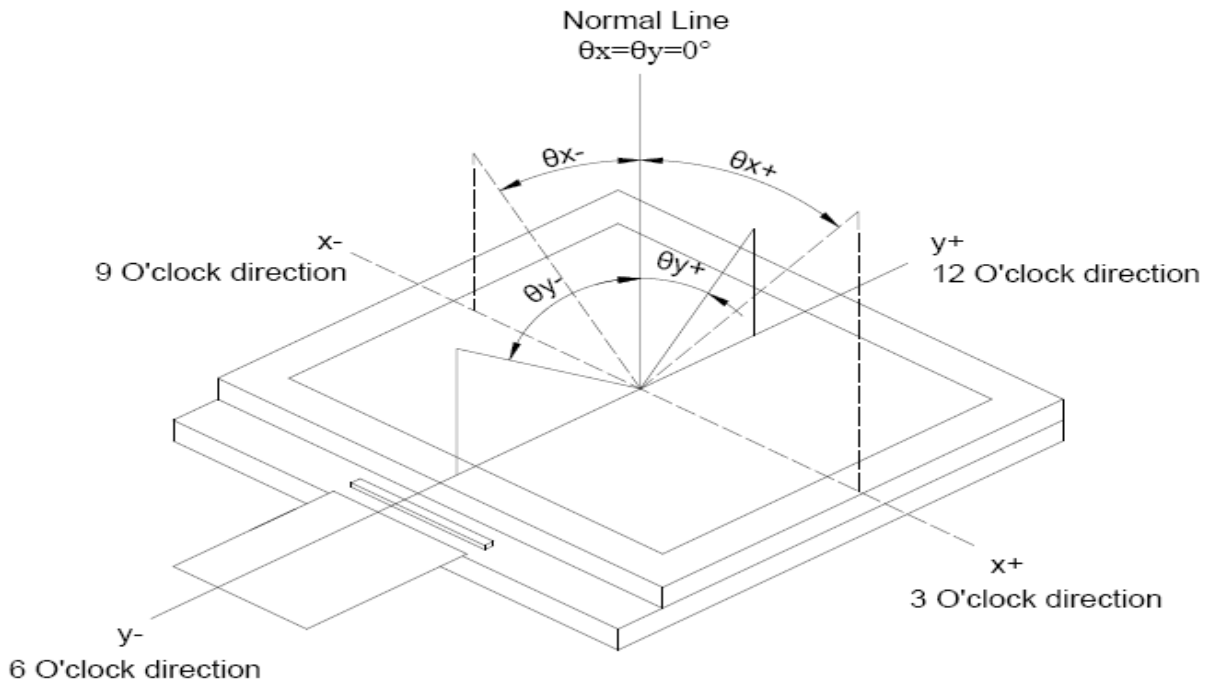
### Measuring Condition

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	Condition	Min.	Typ.	Max.
Chromaticity Coordinates (Transmissive)	Red	x	$\theta = \phi = 0^\circ$ LED Backlight Color Degree	0.5800	0.6200	0.6600
		y		0.3229	0.3629	0.4029
	Green	x		0.2835	0.3235	0.3635
		y		0.5483	0.5883	0.6283
	Blue	x		0.1010	0.1410	0.1810
		y		0.0584	0.0984	0.1384
	White	x		0.2629	0.3029	0.3429
		y		0.3051	0.3451	0.3851

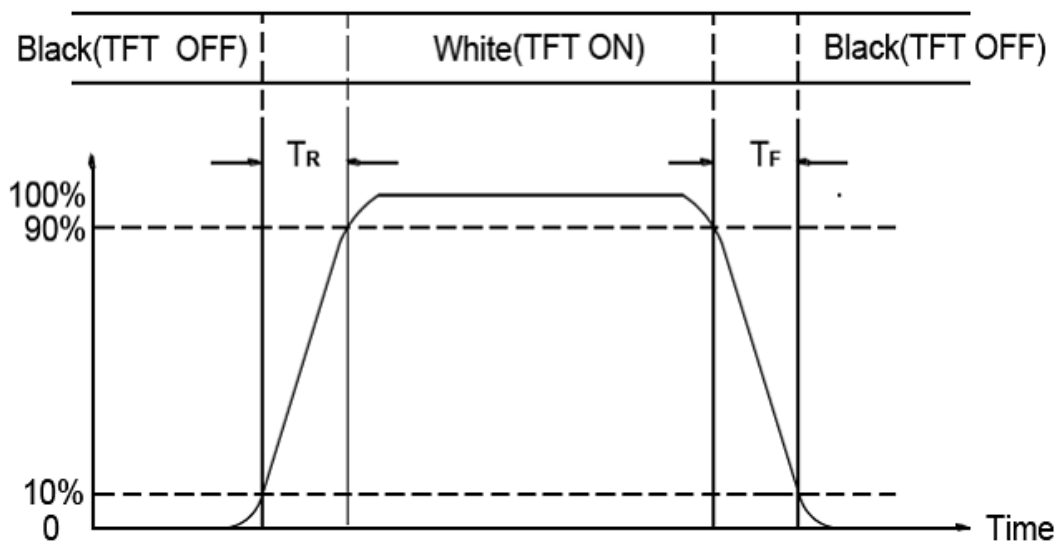
Note (1) Definition of Viewing Angle:



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

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

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



## 8. Interface Pin Assignment

### 8-1 Interface Pin Assignment (TFT)

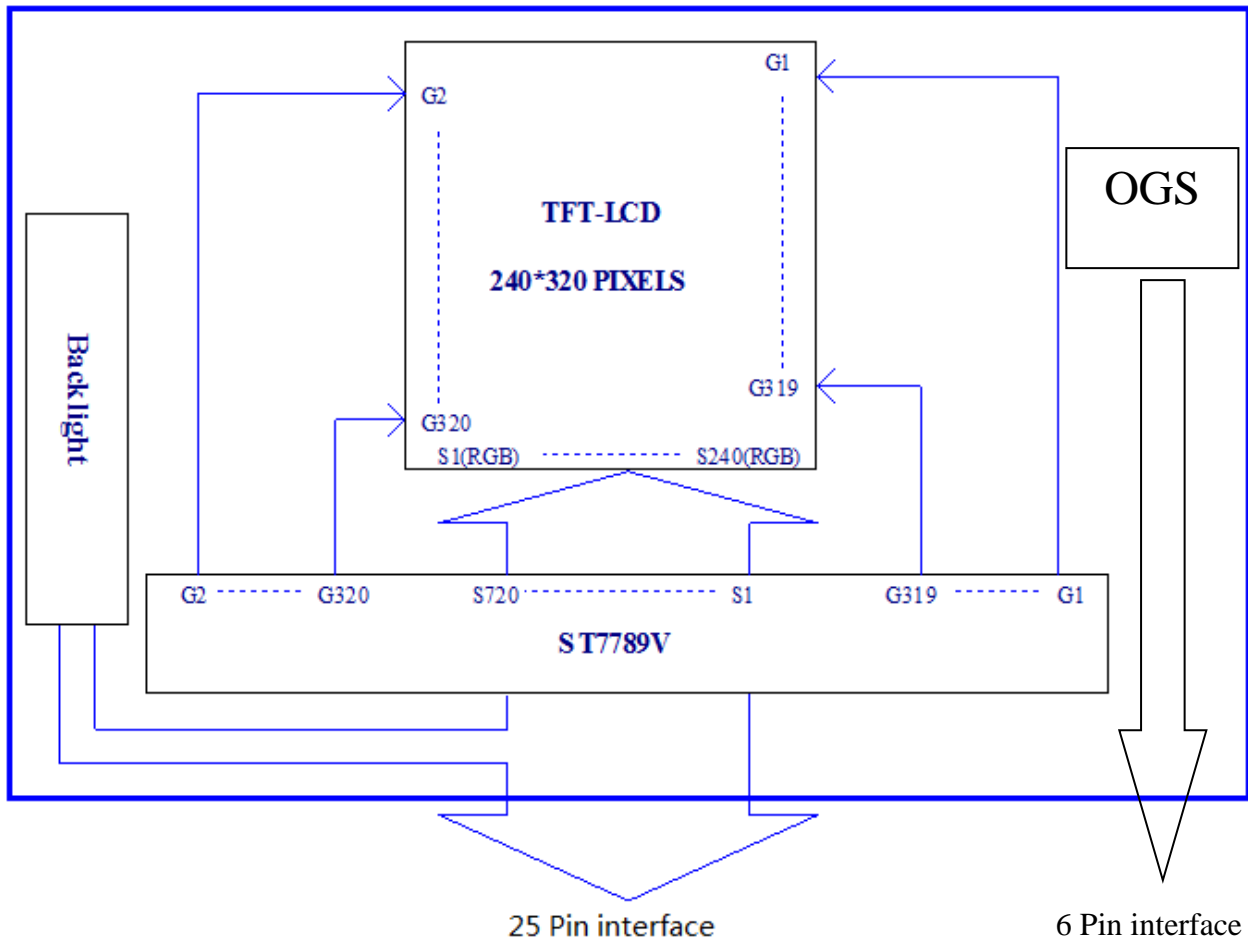
No.	Symbol	Function
1	GND	Power ground
2	GND	
3	NC	NC
4	VCC	Power supply
5	TE	Tearing effect output
6	NC	NC
7	DB7	Data Bus
8	DB6	
9	DB5	
10	DB4	
11	DB3	
12	DB2	
13	DB1	
14	DB0	
15	RD	Read enable in 8080 MCU parallel interface
16	WR	Write enable in MCU parallel interface
17	RS	Display data/command selection pin in parallel interface
18	GND	Power ground
19	CS	Chip selection pin
20	GND	Power ground
21	RESET	This signal will reset the device and it must be applied to properly
22	NC	NC
23	LED_A	LED anode
24	NC	NC
25	LED_K	LED cathode



## 8-2 Interface Pin Assignment (TP)

No.	Symbol	Function
1	RESET	System reset signal input, active low
2	INT	Indicate coordinate data ready
3	SDA	I <sup>2</sup> C Serial Data
4	SCL	I <sup>2</sup> C Serial Clock
5	VDD	Power
6	GND	Power ground

**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:

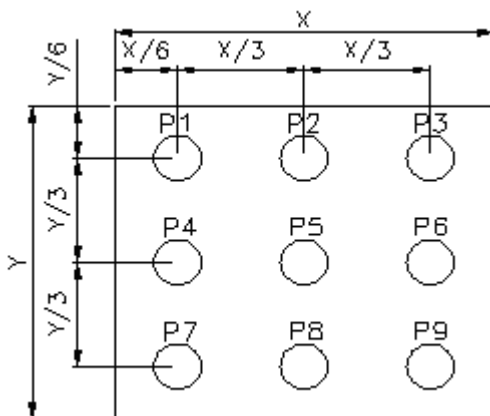
(Ta=25°C)

PARAMETER	Sym.	Min.	Typ.	Max.	Unit	Test Condition	Note
Supply Current	I	-	20	-	mA	V=9.6V	
Supply Voltage	V	8.1	9.6	10.2	V	If=20mA	
Luminous Intensity for CTP+LCM	IV	340	425	-	cd/m <sup>2</sup>		2
Uniformity for CTP+LCM	-	70	-	-	%		3
Life Time	-	20000	-	-	Hr.		4
Color	White						

NOTE:

1. Backlight Only
2. Average Luminous Intensity of P1-P9
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 (LCM+CTP) Module

No	Item	Description
01	High temperature operation	The sample should be allowed to stand at 70°C 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°C 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°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.
09	Electrical Static Discharge	Air: ±4KV 150pF/330Ω 5 times
		Contact: ±2KV 150pF/330Ω 5 time

\*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 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

### 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

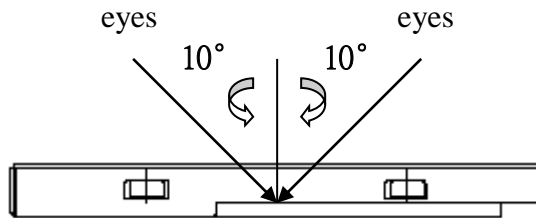
#### a. Manner of appearance test:

(i) The test must be under  $20W \times 2$  or  $40W$  fluorescent light, and the distance of view must be at  $30 \pm 5\text{cm}$ .

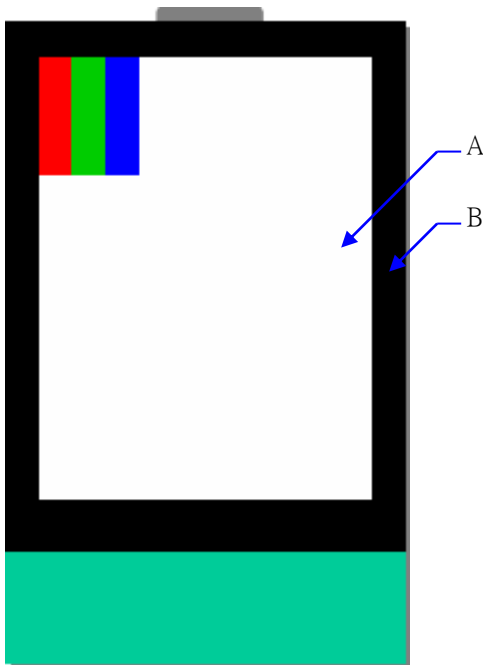
(ii) When test the model of transmissive product must add the reflective plate.

(iii) The test direction is base on around  $10^\circ$  of vertical line.

(iii) Temperature:  $25 \pm 5^\circ\text{C}$  Humidity:  $60 \pm 10\% \text{RH}$



#### (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.

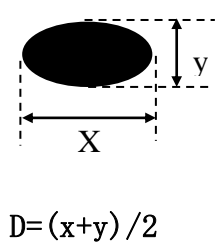
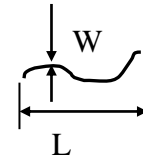
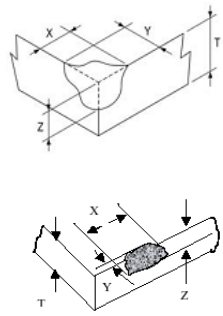
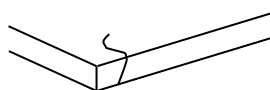
(ii) The sample of the lowest acceptable quality level must be discussed by both supplier and customer when any dispute happened.

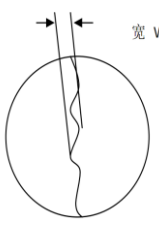

(iii) Must add new item on time when it is necessary.

#### c. Standard of inspection: (Unit: mm)

12-6. Inspection specification

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	<table border="1" data-bbox="355 734 887 1008"> <thead> <tr> <th>D</th> <th>Acceptable numbers</th> </tr> </thead> <tbody> <tr> <td><math>\leq 0.2</math></td> <td>ignored (No more than five spots within 5mm)</td> </tr> <tr> <td><math>0.2 &lt; D \leq 0.5</math></td> <td>3</td> </tr> <tr> <td><math>0.5 &lt; D \leq 1.0</math></td> <td>2</td> </tr> <tr> <td><math>D &gt; 1.0</math></td> <td>NG</td> </tr> </tbody> </table> <p data-bbox="1029 757 1225 896"> </p> <p data-bbox="1029 952 1177 985"><math>D = (x+y) / 2</math></p> <p data-bbox="355 1064 1370 1377">                     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                 </p>	D	Acceptable numbers	$\leq 0.2$	ignored (No more than five spots within 5mm)	$0.2 < D \leq 0.5$	3	$0.5 < D \leq 1.0$	2	$D > 1.0$	NG		2.5
D	Acceptable numbers												
$\leq 0.2$	ignored (No more than five spots within 5mm)												
$0.2 < D \leq 0.5$	3												
$0.5 < D \leq 1.0$	2												
$D > 1.0$	NG												

Black spots / White spots /Bright spots/ Color spots /polluted inside/ punctured	D		Acceptable numbers	 <p><math>D = (x+y) / 2</math></p>	2.5	
	$\leq 0.15$		ignored (No more than five spots within 5mm)			
	$0.15 < D \leq 0.25$		3			
	$0.25 < D \leq 0.35$		2			
	$D > 0.35$		NG			
<p>1、Product's front side checked according to this specification, back side ignored, but light leakage is not allowed.</p> <p>2、Printing ink peel off is not allowed.</p> <p>3、The particle will be ignored when it is removable by cleaning</p> <p>* Densely spaced: No more than two spots within 10mm</p>						
Linear Object: Fiber, scurf, scratches and other linear defects (not affecting function)	W		L	Acceptable numbers		2.5
	$\leq 0.05$		$\leq 5$	ignored (No more than five lines within 5mm)		
	$0.05 < W \leq 0.15$		$\leq 5$	2		
	$W > 0.15$			NG		
<p>The reverse side scratches, not affect to the electronic circuit, cannot find the scratches from the front side is acceptable</p> <p>* Densely spaced: No more than two lines within 10mm</p>						
Glass edge chipping、edge breakage	<p>Edge breakage can't affect visual effect (edge breakage can't cause damage to circuit); over lens have no visual damage</p>				2.5	
	conditions		Acceptable numbers			
	$X \leq 1.0mm, Y \leq 1.0mm, Z \leq T$		2			
Glass broken	<p>Visual broken is NG, and there is no potential fault.</p>				0.65	
						

1. V/A printed edges sawtooth inspected according to this standard 2. LOGO's sawtooth	Some contentious defect judged according to samples			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	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 $\leq 0.3\text{mm}$ Surface broken below 5mm can be modified by print ink, after modified, the result shall be achieved to EMI		2.5



## **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  $25\pm 10^{\circ}\text{C}$ , 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.

## 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.