SPECIFICATION
FOR
LCD MODULE
MODULE NO: YB-TG240320C277A-N-A

Doc.Version:01

Customer Approval:

□ Accept	□ Reject

YEEBO	NAME	SIGNATURE	DATE
Prepare	Electronic Engineer	阮景龙	2021-03-22
Check	Mechanical Engineer		
Verify			
Approval			

■APPROVAL FOR SPECIFICATIONS ONLY

□APPROVAL FOR SPECIFICATIONS AND SAMPLE

WIMRD005-02-D

1. Revision History

Sample Version	DOC. Version	DATE	DESCRIPTION		CHANGED BY
A0	00	2021-01-20	SPEC ONLY	First issue	R.J.L/Z.J.W
A0	01	2021-03-22	SPEC ONLY	Modify 6. Electrical Characteristics ……p6	R.J.L/Z.J.W

2. Table of Contents:

3. Module Numbering System:

(Example)

YB- T G 240320 S 01 D -T – A0

Sample Version: A0~Z0

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

Version: A~Z

Serial No: 01~99

S: STD Product
C: Customer Made

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

LCM Display Type
C: Character Type；
G: Graphic Type；
GB: Graphic Black/White Type；(For E-paper)
GC: Graphic Color Type；(For E-paper)
S: Segment Type

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

YEEBO

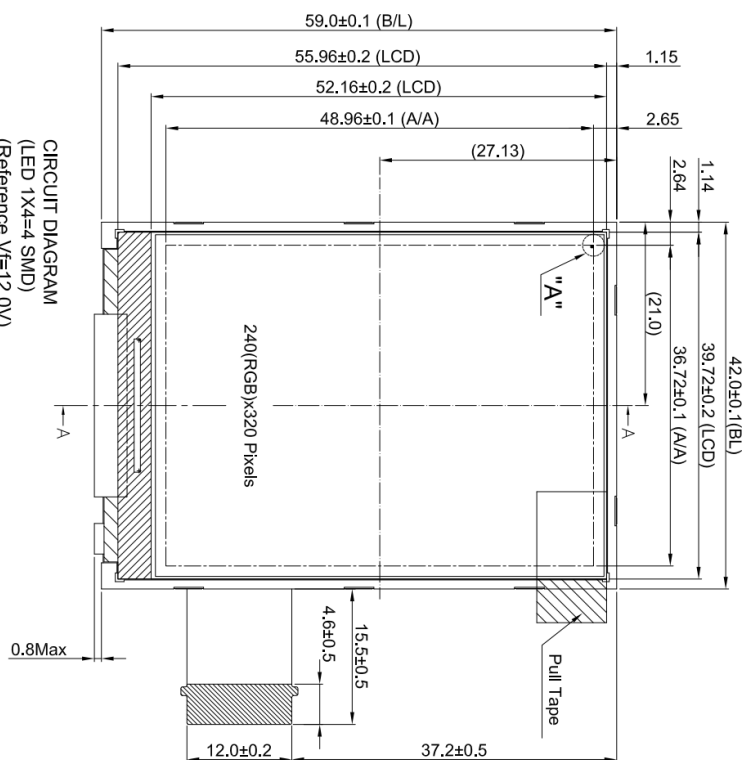# 4. General Specification:

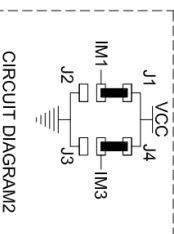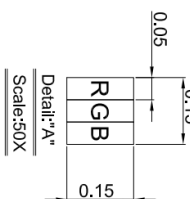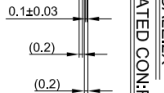| ITEM	CONTENTS
Module Size	42.0 (W) *59.0(H) *2.1 (T) mm
Module Size(With FPC)	57.5 (W) *59.0(H) * 2.1 (T) mm
Display Size(Diagonal)	2.4 inch
Display Format	240(RGB)*320 Pixels
Active Area	36.72(W) * 48.96 (H) mm
Pixel Pitch	0.153 * 0.153 mm
LCD Type	TFT (262K) / Transmissive / Normally Black
View Angle	Free
Controller IC	ILI9341V
Weight	TBD

5. LCM drawing:

Specification:
1. Display mode: 2.4" IPS TFT (262K)
   Normal Black / Transmissive
2. Viewing direction: FULL VIEW
3. Operating temperature: -20°C to +70°C
   Storage temperature: -30°C to +80°C
4. Drive IC: ILI9341V
5. Backlight: 4 Chip White LED
   (LED MUST HAVE JAPAN PATENT RIGHT)
6. Unspecified tolerance: ±0.30mm.
7. ROHS compliant

CIRCUIT DIAGRAM
(LED 1X4=4 SMD)
(Reference Vf=12.0V)
If=20mA

Count drawing & Spec.revision record during discussion with customer

Rec.	Revision content description	Date
#1	FIRST ISSUE	2021-01-20

CODE NOTES:
CTL240320N25A
XXXX/XXXXXXXXXX —— customer P/N.
XXXX —— customer P/N.
LOT NO.
Production Year and week

Iron Frame
CTL240320N25A
XXXX/XXXXXXXXXX
XXXX
CODE

Insulation Tape

Pull Tape

240(RGB)x320 Pixels

Section"A-A"

DETAIL:"B"
SCALE:2X
MATED CON:FH26-39S-0.3SHW

Detail:"A"
Scale:50X
R G B

SECTION"B-B"
Conductive Side
(Au Plating)
Stiffener
(PI)

CIRCUIT DIAGRAM2
J1 VCC
IM1 J2 J4
J3 IM3
IM0

MOD. Name	YB-TG240320C277A-N-A			
	DESIGNED	CHECKED	VERIFIED	APPROVED
	周健文			
	2021-01-20			

YEEBO
UNIT mm
SIZE A4
SCALE N-T-S
FILE NAME
Count Dwg.
Sheet 1 Of 1

PIN ASSIGNMENT	
No.	Symbol
1	LED-A
2	LED-K
3	IOVCC
4	SDO
5	TE
6	DB17
7	DB16
8	DB15
9	DB14
10	DB13
11	DB12
12	DB11
13	DB10
14	DB9
15	DB8
16	DB7
17	DB6
18	DB5
19	DB4
20	DB3
21	DB2
22	DB1
23	DB0
24	SDA
25	GND
26	DOTCLK
27	GND
28	ENABLE
29	HSYNC
30	VSYNC
31	RDB
32	WRB(D/CX)
33	RS(SCL)
34	CSB
35	RESET
36	IM0
37	IM2
38	VCI
39	GND

Module P/N:YB-TG240320C277A-N-A
Doc.Version:01

6. Electrical Characteristics

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

Item	Symbol	Min.	Type	Max.	Unit	Remark
Supply Voltage	V_{CI}	-0.3	-	+4.6	Volt	Note1
Supply Voltage(Logic)	VDDI	-0.3	-	+4.6	Volt	Note1
Operating Temperature	Topr	-20	-	+70	℃	-
Storage Temperature	Tstg	-30	-	+80	℃	-

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

6-2 Operating Conditions   (Ta=25℃)

| Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Power Supply voltage	V_{CI}	-	2.5	2.8	3.3	Volt
Supply voltage for I/O	VDDI	-	1.65	2.8	3.3	Volt
Input Voltage	V_{IH}	-	0.7 * VDDI	-	VDDI	V
	V_{IL}	-	Vss	-	0.3* VDDI	V
Power Supply Current for LCM	Icc	VCI=2.8V	-	TBD		mA

6-3 Timing Characteristics

6-3.1 Display Serial Interface Timing Characteristics (4-line SPI system)
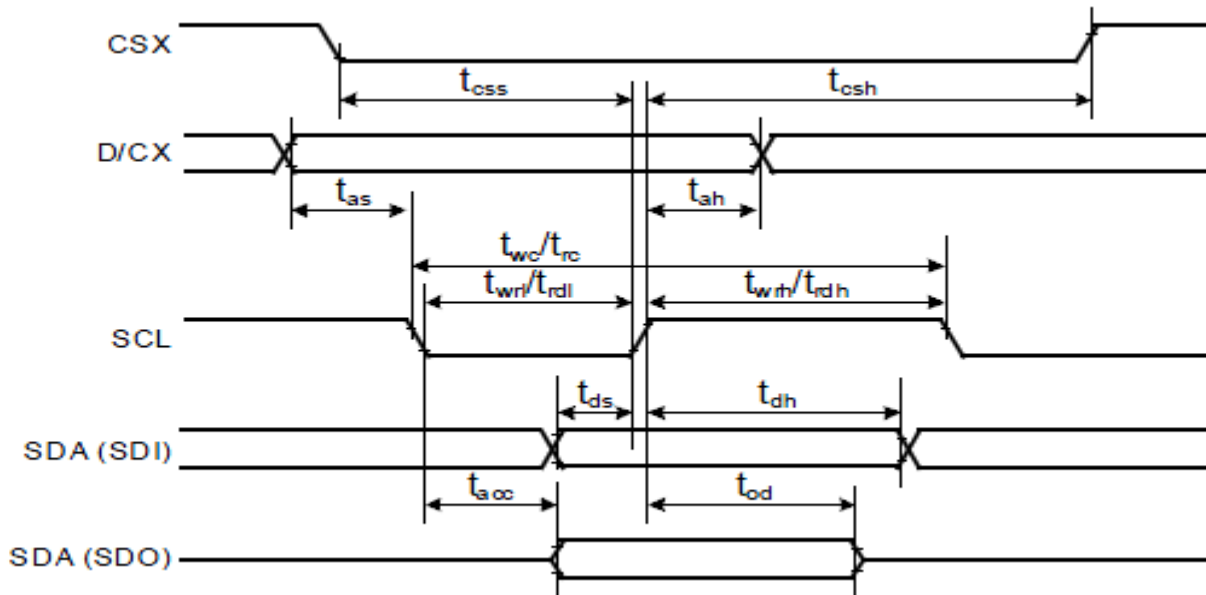
Signal	Symbol	Parameter	min	max	Unit	Description
CSX	tcss	Chip select time (Write)	40	-	ns	
	tcsh	Chip select hold time (Read)	40	-	ns	
SCL	twc	Serial clock cycle (Write)	100	-	ns	
	twrh	SCL "H" pulse width (Write)	40	-	ns	
	twrl	SCL "L" pulse width (Write)	40	-	ns	
	trc	Serial clock cycle (Read)	150	-	ns	
	trdh	SCL "H" pulse width (Read)	60	-	ns	
	trdl	SCL "L" pulse width (Read)	60	-	ns	
D/CX	tas	D/CX setup time	10	-		
	tah	D/CX hold time (Write / Read)	10	-		
SDA / SDI (Input)	tds	Data setup time (Write)	30	-	ns	
	tdh	Data hold time (Write)	30	-	ns	
SDA / SDO (Output)	tacc	Access time (Read)	10	-	ns	For maximum CL=30pF
	tod	Output disable time (Read)	10	50	ns	For minimum CL=8pF

Note: Ta = 25 °C, VDDI=1.65V to 3.3V, VCI=2.5V to 3.3V, AGND=VSS=0V
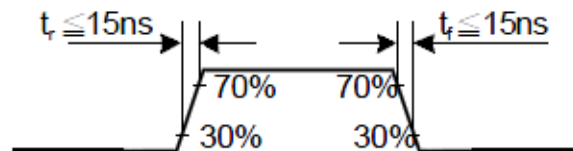
6-3.2 Display Parallel 18/16/9/8-bit Interface Timing Characteristics (8080-II system)
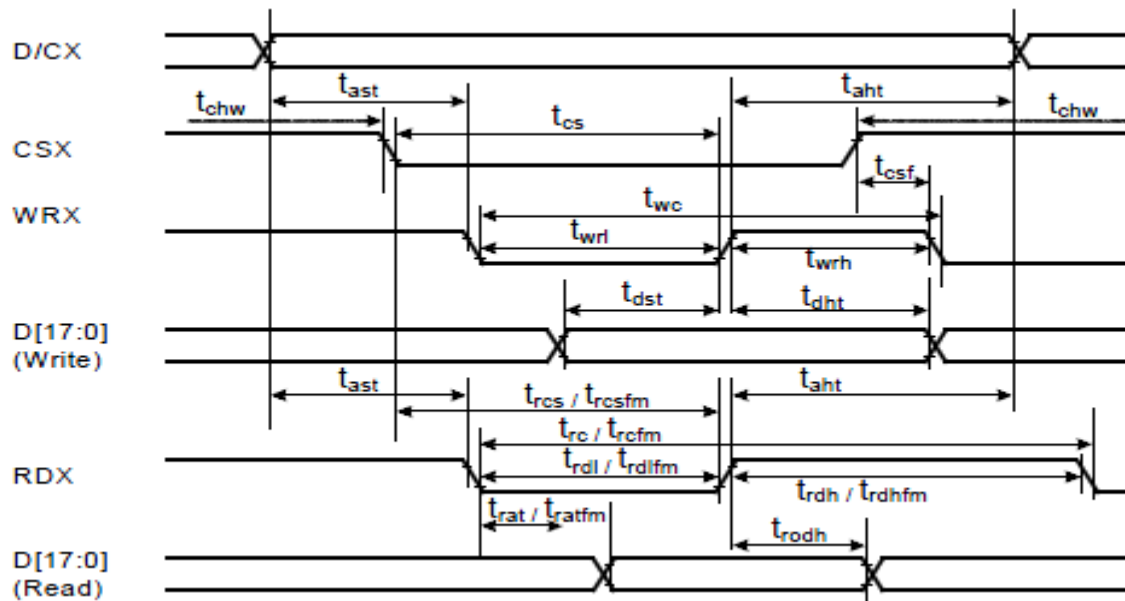
Signal	Symbol	Parameter	min	max	Unit	Description
DCX	tast	Address setup time	0	-	ns	
	taht	Address hold time (Write/Read)	0	-	ns	
CSX	tchw	CSX "H" pulse width	0	-	ns	
	tcs	Chip Select setup time (Write)	15	-	ns	
	trcs	Chip Select setup time (Read ID)	45	-	ns	
	trcsfm	Chip Select setup time (Read FM)	355	-	ns	
	tcsf	Chip Select Wait time (Write/Read)	10	-	ns	
WRX	twc	Write cycle	66	-	ns	
	twrh	Write Control pulse H duration	15	-	ns	
	twrl	Write Control pulse L duration	15	-	ns	
RDX (FM)	trcfm	Read Cycle (FM)	450	-	ns	
	trdhfm	Read Control H duration (FM)	90	-	ns	
	trdlfm	Read Control L duration (FM)	355	-	ns	
RDX (ID)	trc	Read cycle (ID)	160	-	ns	
	trdh	Read Control pulse H duration	90	-	ns	
	trdl	Read Control pulse L duration	45	-	ns	
D[17:0], D[17:10]&D[8:1], D[17:10], D[17:9]	tdst	Write data setup time	10	-	ns	For maximum CL=30pF For minimum CL=8pF
	tdht	Write data hold time	10	-	ns	
	trat	Read access time	-	40	ns	
	tratfm	Read access time	-	340	ns	
	trod	Read output disable time	20	80	ns	

Note: Ta = -30 to 70 °C, VDDI=1.65V to 3.3V, VCI=2.5V to 3.3V, VSS=0V.
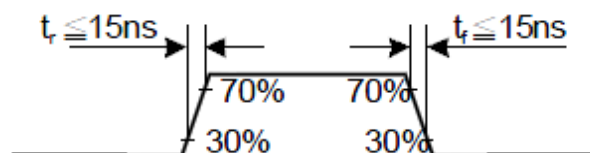
6-3.3 Parallel 18/16/6-bit RGB Interface Timing Characteristics
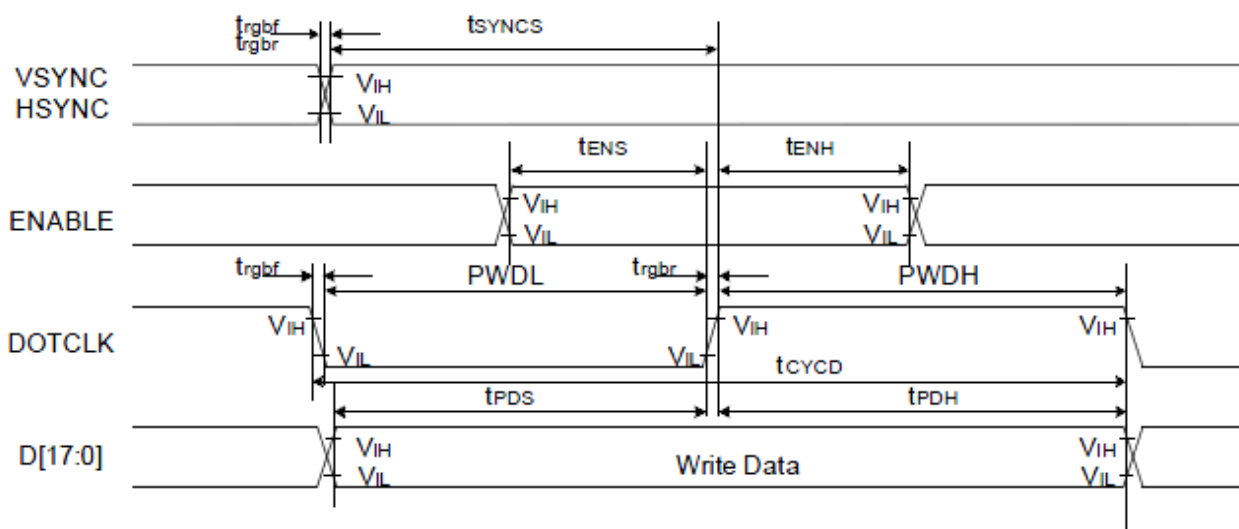
Signal	Symbol	Parameter	min	max	Unit	Description
VSYNC / HSYNC	t_{SYNCS}	VSYNC/HSYNC setup time	15	-	ns	18/16-bit bus RGB interface mode
	t_{SYNCH}	VSYNC/HSYNC hold time	15	-	ns	
DE	t_{ENS}	DE setup time	15	-	ns	
	t_{ENH}	DE hold time	15	-	ns	
D[17:0]	t_{PDS}	Data setup time	15	-	ns	
	t_{PDH}	Data hold time	15	-	ns	
DOTCLK	PWDH	DOTCLK high-level period	15	-	ns	
	PWDL	DOTCLK low-level period	15	-	ns	
	t_{CYCD}	DOTCLK cycle time	100	-	ns	
	t_{rgbr}, t_{rgbf}	DOTCLK,HSYNC,VSYNC rise/fall time	-	15	ns	
VSYNC / HSYNC	t_{SYNCS}	VSYNC/HSYNC setup time	15	-	ns	6-bit bus RGB interface mode
	t_{SYNCH}	VSYNC/HSYNC hold time	15	-	ns	
DE	t_{ENS}	DE setup time	15	-	ns	
	t_{ENH}	DE hold time	15	-	ns	
D[17:0]	t_{PDS}	Data setup time	15	-	ns	
	t_{PDH}	Data hold time	15	-	ns	
DOTCLK	PWDH	DOTCLK high-level pulse period	15	-	ns	
	PWDL	DOTCLK low-level pulse period	15	-	ns	
	t_{CYCD}	DOTCLK cycle time	50	-	ns	
	t_{rgbr}, t_{rgbf}	DOTCLK,HSYNC,VSYNC rise/fall time	-	15	ns	

Note: Ta = -30 to 70 °C, VDDI=1.65V to 3.3V, VCI=2.5V to 3.3V, AGND=VSS=0V
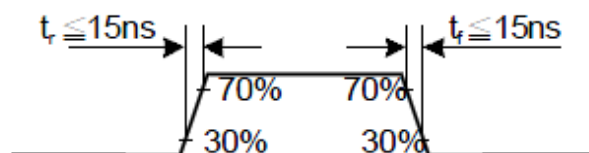
7. Optical Characteristics:

Item		Symbol	Conditions	Specifications			Unit	Note
				Min	Typ	Max		
Transmittance (With PL)		T(%)	-	-	4.65	-	-	-
Contrast Ratio		CR	Θ=0 Normal Viewing angle	640	800	-		(1) (2)
Response time		TR+TF	-	-	35	45	ms	(1) (3)
Viewing angle	Hor	Θx+	CR≧10	-	80	-	deg.	-
		Θx-		-	80	-		
	Ver	Θy+		-	80	-		
		Θy-		-	80	-		

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.	Brightness
Chromaticity Coordinates (Transmissive)	Red	x	$\theta = \phi = 0°$ LED Backlight Color Degree x=0.3 y=0.3 Brightness =7000 cd/m^2	0.627	0.647	0.667	100 cd/m^2
		y		0.297	0.317	0.337	
	Green	x		0.255	0.275	0.295	450 cd/m^2
		y		0.562	0.582	0.602	
	Blue	x		0.120	0.140	0.160	35 cd/m^2
		y		0.068	0.088	0.108	
	White	x		0.269	0.310	0.330	550 cd/m^2
		y		0.316	0.336	0.356	

Note (1) Definition of Viewing Angle :
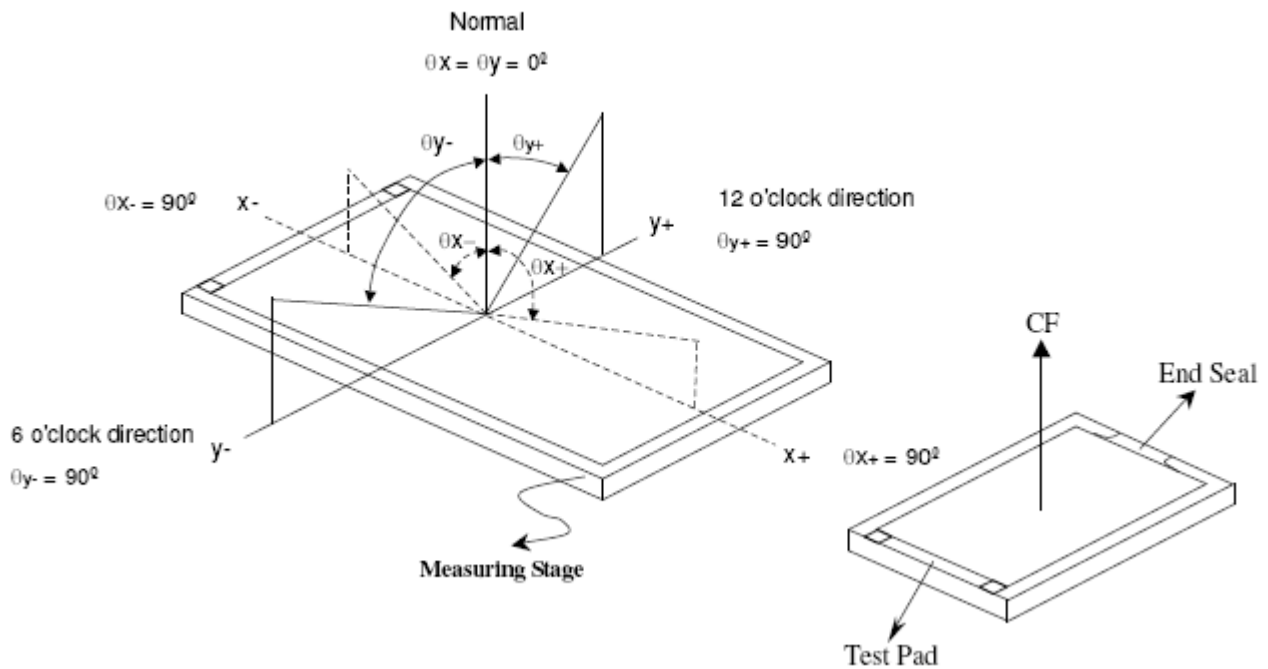
Note (2) Definition of Contrast Ratio(CR) :
measured at the center point of panel

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

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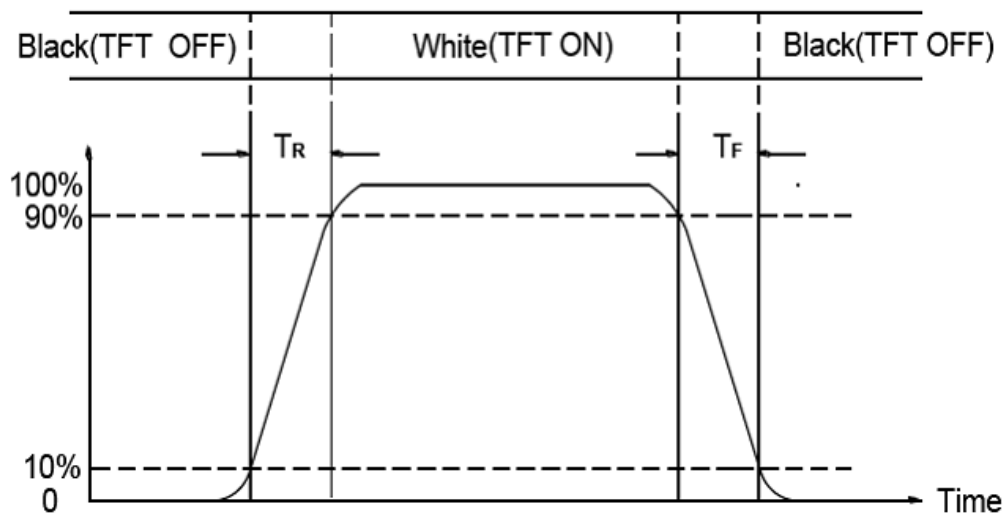
8. Interface Pin Assignment:

No.	Symbol	Function
1	LED_A	LED power anode
2	LED_K	LED power cathode
3	IOVCC	Digital power supply
4	SDO	Serial data output signal
5	TE	Tearing effect output pin (No connection)
6	DB17	Data bus
7	DB16	Data bus
8	DB15	Data bus
9	DB14	Data bus
10	DB13	Data bus
11	DB12	Data bus
12	DB11	Data bus
13	DB10	Data bus
14	DB9	Data bus
15	DB8	Data bus
16	DB7	Data bus
17	DB6	Data bus
18	DB5	Data bus
19	DB4	Data bus
20	DB3	Data bus
21	DB2	Data bus
22	DB1	Data bus
23	DB0	Data bus
24	SDA	Serial data input signal
25	GND	Ground
26	DOTCLK	Pixel clock signal in RGB I/F mode
27	GND	Ground

28	ENABLE	Data enable signal in RGB I/F mode
29	HSYNC	Horizontal sync. Signal in RGB I/F mode
30	VSYNC	Vertical sync. Signal in RGB I/F mode
31	RDB	Read signal in 80-series parallel interface
32	WRB	Write signal in 80-series parallel interface
33	RS	Data/Command select signal
34	CSB	Chip select signal
35	RESET	Reset signal

36 / 37	IM0 IM2	Select MCU Interface mode

Select MCU Interface mode

IM3	IM2	IM1	IM0	MCU-Interface Mode	DB Pin in use	
					Register/content	GRAM
1	0	1	0	80 MCU 18-bit bus Interface II	D[8:1]	D[17:0]
1	0	1	1	80 MCU 9-bit bus Interface II	D[17:10]	D[17:9]
1	1	1	0	4-wire 8-bit data serial Interface II	SDI: in SOO: out	

38	VCI	Analog power supply
39	GND	Ground

9. Block Diagram:
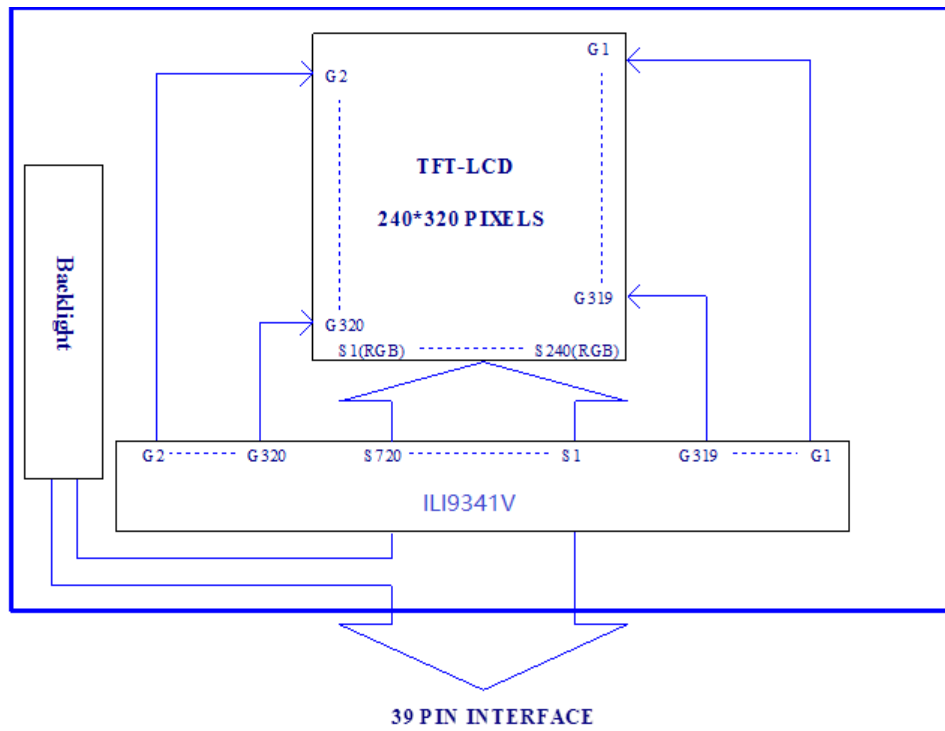
10. Backlight:

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℃)

PARAMETER	Sym.	Min.	Typ.	Max.	Unit	Test Condition	Note
Supply Current	I	-	20	-	mA	V=12.0V	
Supply Voltage	V	11.0	12.0	13.2	V	If=20mA	
Reverse Voltage	VR	-	-	5	V	-	
Luminous Intensity for LCM	IV	450	550	-	Cd/m2	If=20mA	2
Uniformity for LCM	-	70	-	-	%	If=20mA	3
Life Time	-	-	50000	-	Hr.	If=20mA	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**
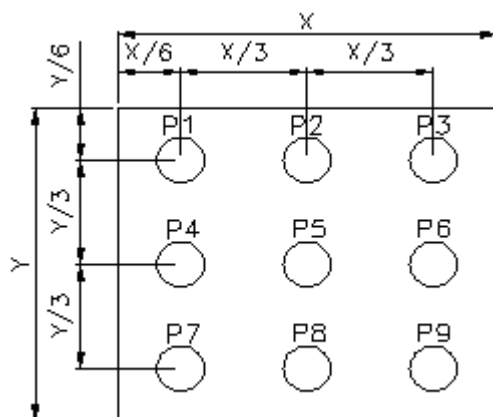
(Effective spatial Distribution)
Hole Diameter ø8 mm; 1 to 9 per Position Measured Luminous

11. <u>Standard Specification for Reliability :</u>

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

*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 12.1, 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 = 0.65

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℃   Humidity: 60±10%RH
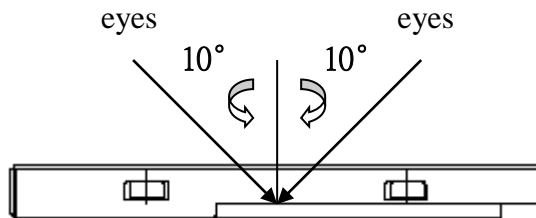
     (iv) Definition of area:
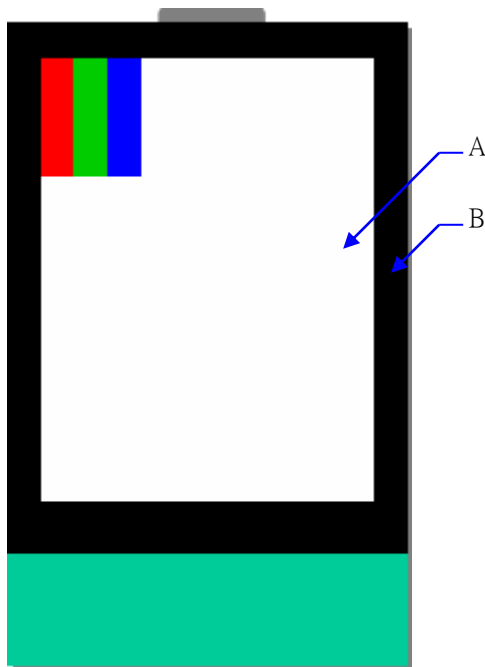
A. Area: Viewing area.

B. Area: Out of viewing area.

      (Outside viewing area)
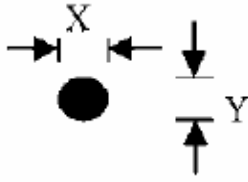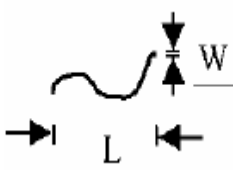
b. Basic principle:
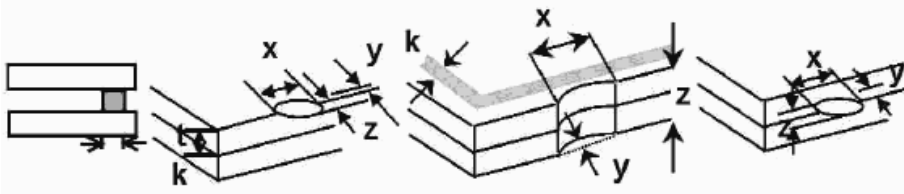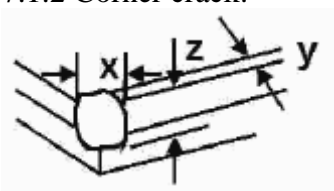
 (i) It will accord to the AQL when the standard can not be described.

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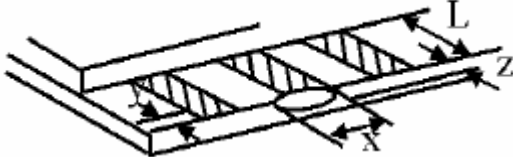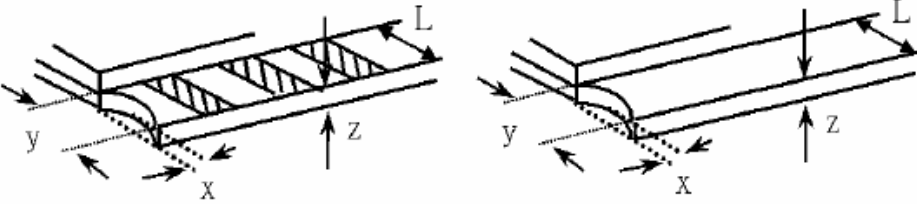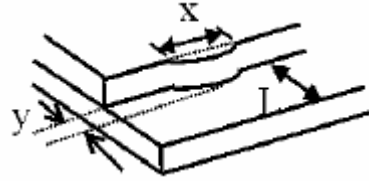
c. Standard of inspection: (Unit: mm)

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 White and black or color spots on display $\leqq$ 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	**2.5**
03	LCD and Touch Panel black spots, white spots, contamination (non – display)	3.1 Round type: As following drawing $\Phi = (X+Y) / 2$ (drawing of round spot with X and Y dimensions) * Densely spaced: No more than two spots within 3mm.	**2.5**

Round type table:

Size(mm)	Acceptable Q'ty
$\Phi \leqq 0.10$	Accept no dense
$0.10 < \Phi \leqq 0.20$	2
$0.20 < \Phi \leqq 0.25$	2
$0.25 < \Phi \leqq 0.30$	1
$0.30 < \Phi$	0

3.2 Line type: (As following drawing)

(drawing of line with W width and L length)

Length(mm)	Width(mm)	Acceptable Q'ty
---	$W \leqq 0.02$	Accept no dense
$L \leqq 3.0$	$0.02 < W \leqq 0.05$	2
$L \leqq 2.5$	$0.03 < W \leqq 0.08$	2
---	$0.08 < W$	Rejection

* Densely spaced: No more than two lines within 3mm.

AQL: **2.5**

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 	Size Φ(mm)	Acceptable Q'ty		2.5
05	Scratches	Follow NO.3 -2 Line Type.	
06	Mura	Not visible through 5% ND filter in 50% gray.	**2.5**
07	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 7.1 General glass chip: 7.1.1 Chip on panel surface and crack between panels:	2.5

The AQL=04 row contains an inner table:

Size Φ(mm)	Acceptable Q'ty
Φ≦0.20	Accept no dense
0.20< Φ≦0.50	3
0.50< Φ≦1.00	2
1.00< Φ	0
Total Q'ty	3

z: Chip thickness	y: Chip width	x: Chip length
Z≦1/2t	Not over viewing area	x≦1/8a
1/2t< z≦2t	Not exceed 1/3k	x≦1/8a

⊙ Unit: mm

⊙ If there are 2 or more chips, x is the total length of each chip

7.1.2 Corner crack:

z: Chip thickness	y: Chip width	x: Chip length
Z≦1/2t	Not over viewing area	x≦1/8a
1/2t< z≦2t	Not exceed 1/3k	x≦1/8a

⊙ Unit: mm

⊙ If there are 2 or more chips, x is the total length of each chip

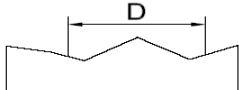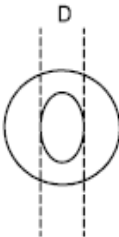| NO	Item	Criterion	AQL
08	Glass crack	Symbols: x: Chip length y: Chip width z: Chip thickness k: Seal width t: Glass thickness a: LCD side length L: Electrode pad length 8.1 Protrusion over terminal: 8.1.1 Chip on electrode pad: 8.1.2 Non-conductive portion: ⊙ If there chipped area touches the ITO terminal, 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. 8.1.3 Substrate protuberance and internal crack 	2.5

Table under 8.1.1:

y: Chip width	x: Chip length	z: Chip thickness
y≦0.5mm	x≦1/8a	0< z≦t

Table under 8.1.2:

y: Chip width	x: Chip length	z: Chip thickness
y≦L	x≦1/8a	0< z≦t

Table under 8.1.3:

y: width	x: length
y≦1/3L	X≦a

NO	Item	Criterion	AQL
09	Cracked glass	The LCD with extensive crack is not acceptable.	2.5
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.	2.5 2.5 0.65
11	Bezel	Bezel must comply with product specifications.	2.5
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.	2.5 2.5 2.5 2.5 0.65 0.65
13	FPC	13.1 FPC terminal damage $\leqq$ 1/2 FPC terminal width and can not affect the function , we judge accept. 13.2 FPC alignment hole damage $\leqq$ 1/2 alignment area and can not affect the function , we judge accept.	2.5 2.5
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.	2.5 0.65

NO	Item	Criterion	AQL
15	Touch Panel Chipped glass	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	2.5

NO	Item	Criterion	AQL
16	Touch		2.5

	Panel(Fish eye、dent and bubble on film)	SIZE(mm)	Acceptable Q'ty		
		Φ≦0.2	Accept no dense		
		0.2< D ≦0.4	5		
		0.4< D ≦0.5	2		
		0.5< D	0		
17	Touch Panel Newton ring	Newton ring dimension ≦ 1/2 touch panel area and not affect font and line distortion(≦2.5%) , it is acceptable.			2.5
18	Touch Panel Linearity	Less than 2.5% is acceptable.			2.5
19	LCD Ripple	Touch the touch panel , can not see the LCD ripple. Pen: R 1.0mm silicon rubber. Operation Force: 80g			2.5
20	General appearance	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.			0.65 0.65 0.65 0.65

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.