

EXAMINED BY :	EMERGING DISPLAY TECHNOLOGIES CORPORATION	FILE NO . CAS-0009431
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APPROVED BY:		TOTAL PAGE : 24
<i>Chris Wu</i>		VERSION : 1

CUSTOMER                      ACCEPTANCE                      SPECIFICATIONS

MODEL NO. :

ETML101013MDHA

(RoHS)

FOR MESSRS : \_\_\_\_\_

CUSTOMER'S APPROVAL

DATE : \_\_\_\_\_

BY : \_\_\_\_\_

EMERGING DISPLAY  
TECHNOLOGIES CORPORATION

MODEL NO.	VERSION	PAGE
ETML101013MDHA	1	0-1

RECORDS OF REVISION

DOC . FIRST ISSUE

JUL.12, 2022

DATE

REVISED  
PAGE  
NO.

SUMMARY

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1. GENERAL SPECIFICATIONS

1.1 DATA SHEETS FOR LCD PANEL CONTROLLER/DRIVER  
PLEASE REFER TO :

EK79202B

1.2 DATA SHEETS FOR CAPACITIVE TOUCH PANEL  
CONTROLLER/DRIVER PLEASE REFER TO :

MICROCHIP MXT1664T3

1.3 MATERIAL SAFETY DESCRIPTION

ASSEMBLIES SHALL COMPLY WITH EUROPEAN ROHS REQUIREMENTS, INCLUDING PROHIBITED MATERIALS/COMPONENTS CONTAINING LEAD, MERCURY, CADMIUM, HEXAVALENT CHROMIUM, POLYBROMINATED BIPHENYLS (PBB) AND POLYBROMINATED DIPHENYL ETHERS (PBDE), BIS(2-ETHYLHEXYL) PHTHALATE (DEHP), BUTYL BENZYL PHTHALATE (BBP), DIBUTYL PHTHALATE (DBP), DIISOBUTYL PHTHALATE (DIBP).

2. MECHANICAL SPECIFICATIONS

2.1 TFT LCD MODULE MECHANICAL SPECIFICATIONS

( 1 ) DISPLAY SIZE	-----	10.1 inch
( 2 ) NUMBER OF DOTS	-----	1280(RGB)W * 800H DOTS
( 3 ) MODULE SIZE	-----	229.46W * 149.1H *8.6D (MAX.) mm
( 4 ) VIEWING AREA	-----	219.46W * 138.1H mm
( 5 ) ACTIVE AREA	-----	216.96W * 135.6H mm
( 6 ) DOT SIZE	-----	0.0565W * 0.1695H mm
( 7 ) PIXEL SIZE	-----	0.1695W * 0.1695H mm
( 8 ) LCD TYPE	-----	TFT , IPS , TRANSMISSIVE , NORMALLY BLACK
( 9 ) COLOR	-----	16.7M
( 10 ) VIEWING DIRECTION	-----	SUPER WIDE VIEW
( 11 ) BACK LIGHT	-----	LED , COLOR : WHITE
( 12 ) INTERFACE MODE	-----	LVDS (8 BIT)
( 13 ) WEIGHT	-----	301g

## 2.2 CAPACITIVE TOUCH PANEL MECHANICAL SPECIFICATIONS

- (1) TOUCH PANEL SIZE ----- 10.1 inch
- (2) OUTER DIMENSION ----- 227.2W \* 148.0H \* 1.75D mm  
(NOT INCLUDED FPC)
- (3) ACTIVE AREA ----- 218.96W \* 137.6H mm
- (4) INPUT TYPE ----- MULTI TOUCH
- (5) NUMBER OF TOUCH SENSOR ----- 41\*26 SENSORS
- (6) RESOLUTION ----- 1280\*800
- (7) INTERFACE MODE ----- USB

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### 3. ABSOLUTE MAXIMUM RATINGS

#### 3.1 TFT MODULE ELECTRICAL ABSOLUTE MAXIMUM RATINGS

ITEM	SYMBOL	MIN.	MAX.	UNIT	REMARK
POWER SUPPLY VOLTAGE	VDD-VSS	-0.5	4	V	
	AVDD-VSS	-0.3	18	V	
	VGH-VSS	-0.5	VGL+32	V	
	VGL-VSS	-17	-0.3	V	
	VGH-VGL	12	32	V	
STATIC ELECTRICITY	—	—	—	V	NOTE (1)
POWER DISSIPATION FOR LED BACKLIGHT	PD	—	4.095	W	
FORWARD CURRENT FOR LED BACKLIGHT	ILED	—	390	mA	

NOTE (1) : LCM SHOULD BE GROUND DURING LCM HANDLING.

NOTE (2) : THE ABSOLUTE MAXIMUM RATING VALUES OF THIS PRODUCT ARE NOT ALLOWED TO BE EXCEEDED AT ANY TIMES. SHOULD A MODULE BE USED WITH ANY OF THE ABSOLUTE MAXIMUM RATINGS EXCEEDED, THE CHARACTERISTICS OF THE MODULE MAY NOT BE RECOVERED, OR IN AN EXTREME CASE, THE MODULE MAY BE PERMANENTLY DESTROYED.

#### 3.2 CAPACITIVE TOUCH PANEL ELECTRICAL ABSOLUTE MAXIMUM RATINGS

ITEM	SYMBOL	MIN.	MAX.	UNIT	REMARK
POWER SUPPLY VOLTAGE	VDD1-VSS1	-0.3	5.5	V	

#### 3.3 ENVIRONMENTAL ABSOLUTE MAXIMUM RATINGS

ITEM	OPERATING		STORAGE		REMARK
	MIN.	MAX.	MIN.	MAX.	
AMBIENT TEMPERATURE	-20°C	70°C	-30°C	80°C	NOTE (1), (2), (3)
HUMIDITY	NOTE (3)		NOTE (3)		WITHOUT CONDENSATION
VIBRATION	—	2.45 m/s <sup>2</sup> (0.25 G)	—	11.76m/s <sup>2</sup> (1.2 G)	10~100Hz XYZ DIRECTIONS 1HR EACH
SHOCK	—	29.4 m/s <sup>2</sup> (3 G)	—	490.0 m/s <sup>2</sup> (50 G)	10 ms XYZ DIRECTIONS 1 TIME EACH
CORROSIVE GAS	NOT ACCEPTABLE		NOT ACCEPTABLE		

NOTE (1) : THE ABSOLUTE MAXIMUM RATINGS OF THIS PRODUCT SHOULD NOT BE EXCEEDED AT ANY TIME. IF THESE RATINGS ARE EXCEEDED, THE PRODUCT'S PERFORMANCE IS NOT GUARANTEED AND THE PRODUCT MAY EXPERIENCE PERMANENT DAMAGE.

NOTE (2) : BACKGROUND COLOR CHANGES SLIGHTLY DEPENDING ON AMBIENT TEMPERATURE THIS PHENOMENON IS REVERSIBLE.

NOTE (3) : Ta ≤ 60°C : 90%RH MAX. (96HRS MAX.)

Ta > 60°C : ABSOLUTE HUMIDITY MUST BE LOWER THAN THE HUMIDITY OF 90%RH AT 60°C. (96HRS MAX.)

4. ELECTRICAL CHARACTERISTICS

4.1 LCD MODULE ELECTRICAL CHARACTERISTICS

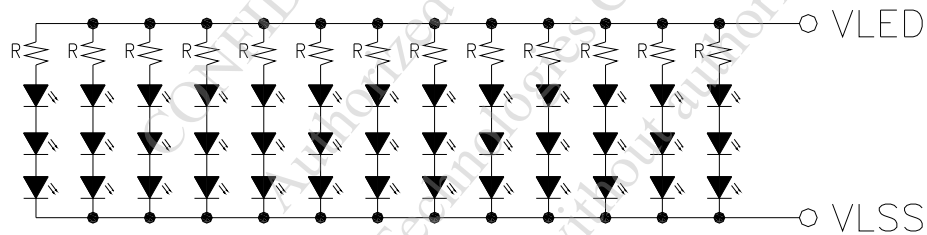
Ta=25°C

ITEM	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT	REMARK
POWER SUPPLY VOLTAGE	VDD-VSS	—	2.3	2.5	3.6	V	
	AVDD-VSS	—	8.0	8.2	8.4	V	
	VGH-VSS	—	14.5	15	15.5	V	
	VGL-VSS	—	-13.5	-13	-12.5	V	
LOGIC HIGH INPUT VOLTAGE	VIH	—	0.8VDD	—	VDD	V	
LOGIC LOW INPUT VOLTAGE	VIL	—	VSS	—	0.2VDD	V	
POWER SUPPLY CURRENT	IVDD	VDD-VSS=2.5V	—	31	40	mA	NOTE (1)
	IAVDD	AVDD-VSS=8.2V	—	22	30	mA	
	IGH	VGH-VSS=15V	—	1.8	2.4	mA	
	IGL	VGL-VSS=-13V	—	1.7	2.2	mA	
POWER SUPPLY VOLTAGE FOR LED BACKLIGHT	VLED -VLSS	ILED=260mA	7.95	9.5	10.5	V	NOTE (2) NOTE (3)
LED LIFE TIME (MTBF)	—	IF=20 mA (PER LED)	30000	—	—	HRS	NOTE (5) NOTE (6)

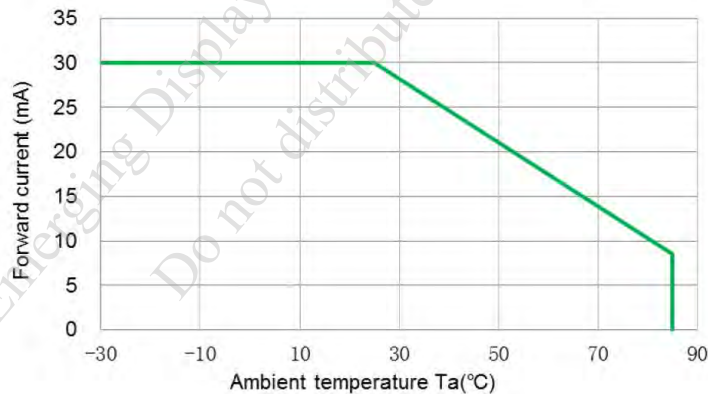
NOTE (1) : THE DISPLAY PATTERN IS ALL “WHITE”.

NOTE (2) : THE LED SUPPLY VOLTAGE IS DEFINED BY THE NUMBER OF LED AT Ta=25°C AND ILED=260mA.

NOTE (3) : INTERNAL CIRCUIT DIAGRAM OF BACKLIGHT.



NOTE (4) : AMBIENT TEMP. VS. ALLOWABLE FORWARD CURRENT.(PER LED)



NOTE (5) : CONDITIONS; Ta=25 °C, CONTINUOUS LIGHTING

NOTE (6) : DEFINITIONS OF LIFE TIME :

LCM LUMINANCE BECOMES HALF OF THE INITIAL VALUE.

4.2 CTP MODULE ELECTRICAL CHARACTERISTICS

Ta=25°C

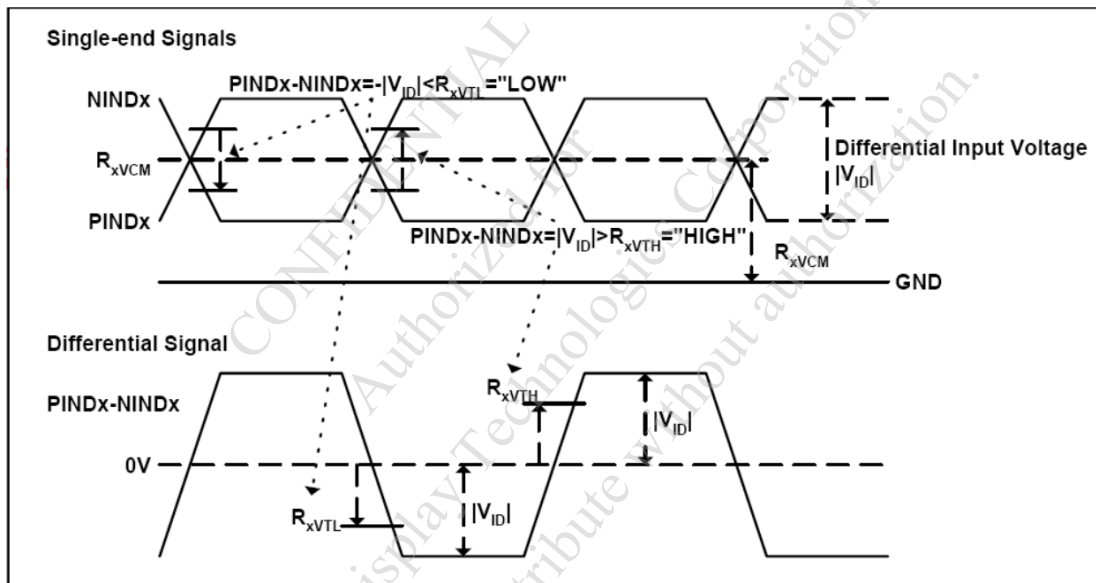
ITEM	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT
POWER SUPPLY VOLTAGE	VDD1-VSS1	—	4.75	5.0	5.25	V
POWER SUPPLY CURRENT	IDD1	VDD1-VSS1=5.0V	—	40	55	mA

5. TIMING CHARACTERISTICS

5.1 AC CHARACTERISTICS

5.1.1 LVDS MODE AC ELECTRICAL CHARACTERISTICS

ITEM	SYMBOL	VALUES			UNIT	REMARK
		MIN.	TYP.	MAX.		
LVDS DIFFERENTIAL INPUT HIGH THRESHOLD VOLTAGE	$R_{xVTH}$	—	—	+100	mV	$R_{xVCM}=1.2V$
LVDS DIFFERENTIAL INPUT LOW THRESHOLD VOLTAGE	$R_{xVTL}$	-100	—	—	mV	
LVDS DIFFERENTIAL INPUT COMMON MODE VOLTAGE	$R_{xVCM}$	0.7	—	1.6	V	
LVDS DIFFERENTIAL VOLTAGE	$ V_{ID} $	200	—	600	mV	

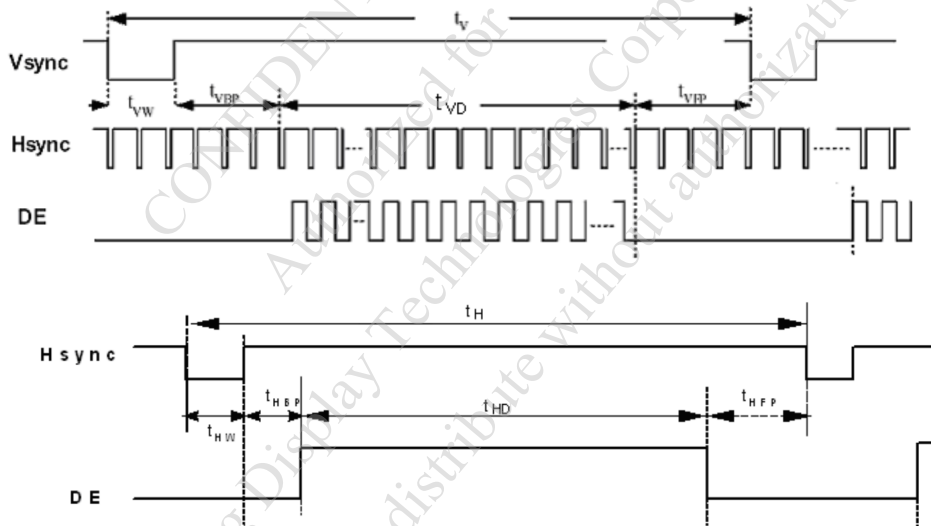




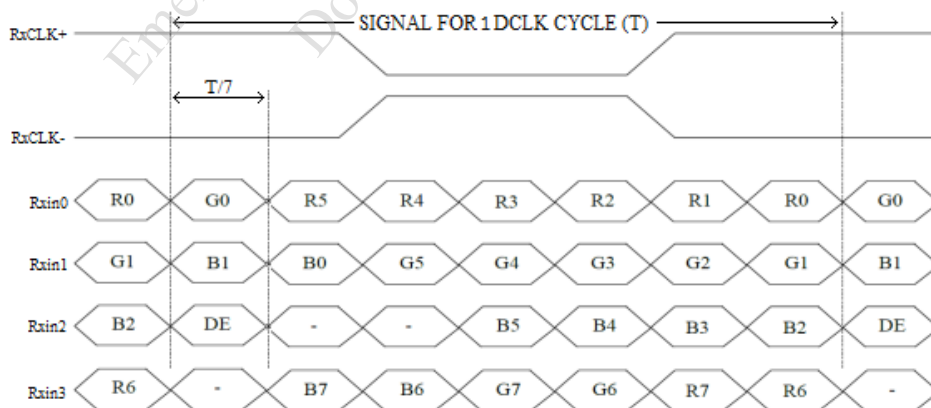
5.2 LVDS INTERFACE

5.2.1 LVDS INPUT TIMING TABLE (DE MODE)

ITEM	SYMBOL	VALUES			UNIT	REMARK
		MIN.	TYP.	MAX.		
CLOCK FREQUENCY	1/Tc	66.3	72.4	78.9	MHz	FRAME RATE =60Hz
HORIZONTAL DISPLAY AREA	t <sub>HD</sub>	1280			Tc	
HSYNC PULSE WIDTH	t <sub>HPW</sub>	2	—	40	Tc	
HSYNC BACK PORCH (WITH PULSE WIDTH)	t <sub>HBP</sub>	88	88	88	Tc	
HSYNC FRONT PORCH	t <sub>HFP</sub>	12	72	132	Tc	
VERTICAL DISPLAY AREA	t <sub>VD</sub>	800			tH	
VSYNC PULSE WIDTH	t <sub>VPW</sub>	2	—	20	tH	
VSYNC BACK PORCH (WITH PULSE WIDTH)	t <sub>VBP</sub>	23	23	23	tH	
VSYNC FRONT PORCH	t <sub>VFP</sub>	1	15	49	tH	



5.2.2 DATA INPUT FORMAT FOR LVDS

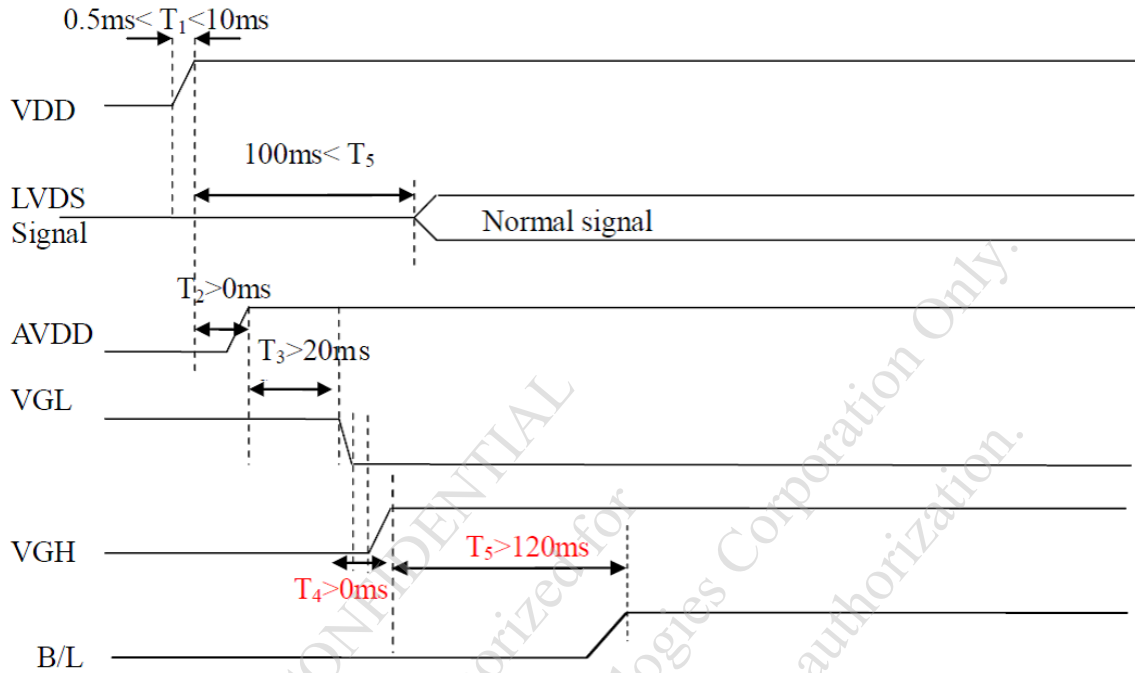


8BIT LVDS INPUT(VESA FORMAT)

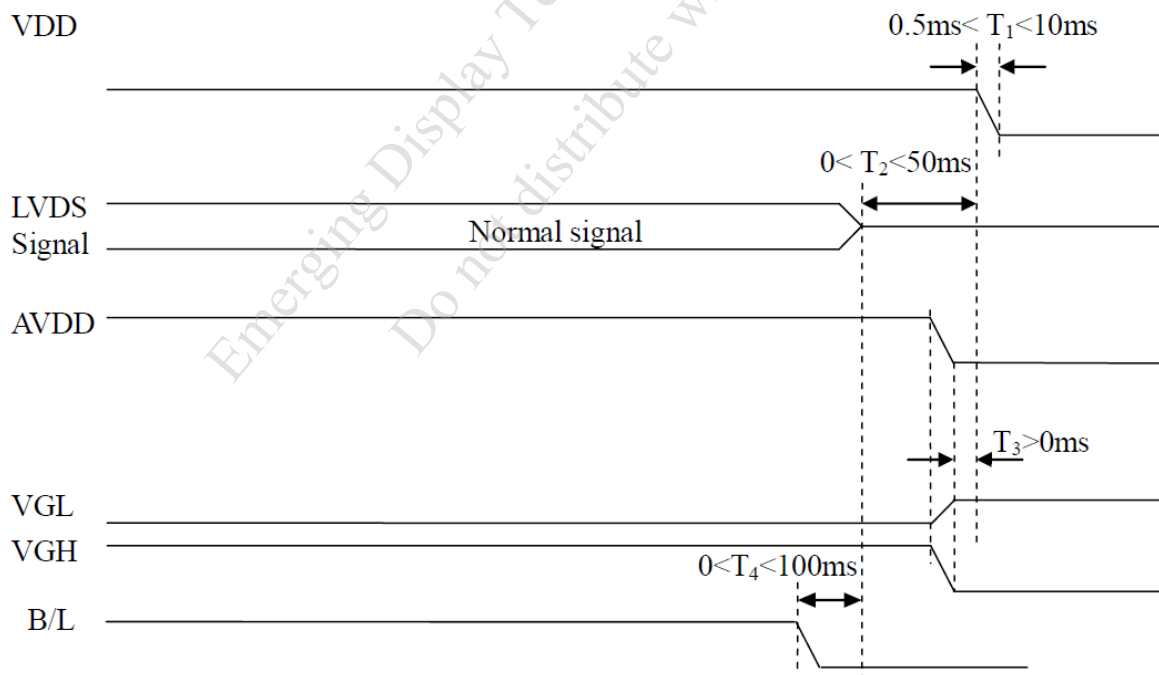
5.3 POWER ON/OFF SEQUENCE

5.3.1 POWER ON SEQUENCE

A. Power on:



5.3.2 POWER OFF SEQUENCE



NOTE : VGH VOLTAGE SHOULD BE POWERED OFF EARLIER THAN VGL OR POWERED OFF AT THE SAME TIME.

6. OPTICAL CHARACTERISTICS

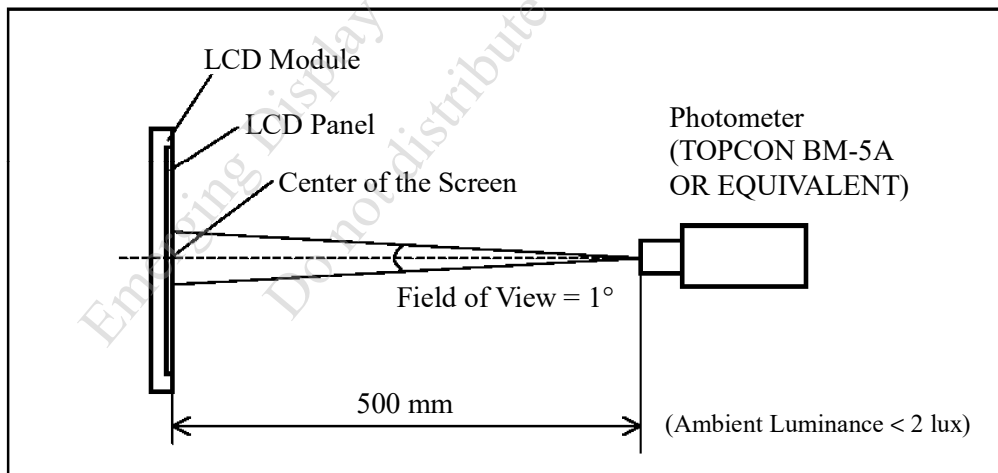
6.1 OPTICAL CHARACTERISTICS

Ta=25±2°C

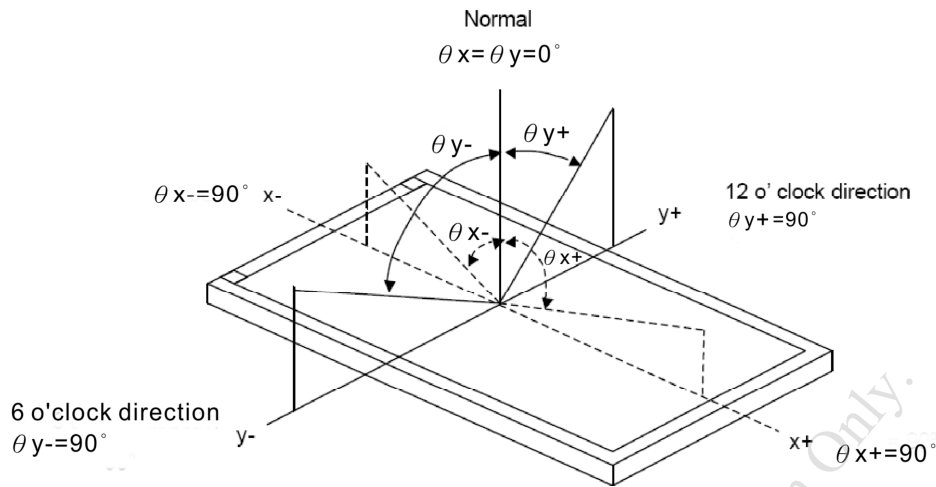
ITEM	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT	REMARK	
VIEWING ANGLE	$\theta_{y+}$	CR≥10	$\theta_x=0^\circ$	75	85	—	deg	NOTE (2) NOTE (3)
	$\theta_{y-}$			75	85	—	deg	
	$\theta_{x+}$		$\theta_y=0^\circ$	75	85	—	deg	
	$\theta_{x-}$			75	85	—	deg	
CONTRAST RATIO (CENTER)	CR	$\theta_x=0^\circ, \theta_y=0^\circ$	600	800	—	—	NOTE (3)	
RESPONSE TIME	T <sub>R</sub> (rise)		—	10	20	msec	NOTE (4)	
	T <sub>F</sub> (fall)		—	15	30	msec	NOTE (4)	
COLOR CHROMATICITY (CENTER)	WHITE	W <sub>x</sub>	$\theta_x=0^\circ, \theta_y=0^\circ$ VDD-VSS=2.5V AVDD-VSS=8.2V ILED=260mA	0.26	0.31	0.36	—	NOTE (5)
		W <sub>y</sub>		0.26	0.31	0.36	—	
	RED	R <sub>x</sub>		0.56	0.61	0.66	—	
		R <sub>y</sub>		0.30	0.35	0.40	—	
	GREEN	G <sub>x</sub>		0.31	0.36	0.41	—	
		G <sub>y</sub>		0.52	0.57	0.62	—	
	BLUE	B <sub>x</sub>		0.09	0.14	0.19	—	
		B <sub>y</sub>		0.05	0.10	0.15	—	
THE BRIGHTNESS OF MODULE(CENTER)	B		340	380	—	cd/m <sup>2</sup>	NOTE (6)	
THE UNIFORMITY OF MODULE	—		70	—	—	%	NOTE (7)	

NOTE (1) : TEST CONDITION :

AFTER STABILIZING AND LEAVING THE PANEL ALONE AT A GIVEN TEMPERATURE FOR 30 MINUTES. MEASUREMENT SHOULD BE EXECUTED IN A STABLE, WINDLESS, AND DARK ROOM.



NOTE ( 2 ) : DEFINITION OF VIEWING ANGLE :



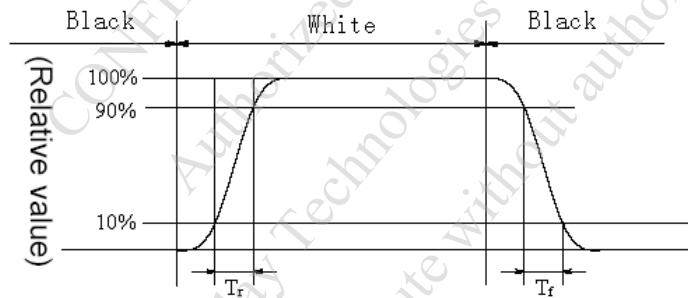
NOTE ( 3 ) : DEFINITION OF CONTRAST RATIO (CR) :

MEASURED AT THE CENTER POINT OF MODULE

$$\text{CONTRAST RATIO(CR)} = \frac{\text{BRIGHTNESS MEASURED WHEN LCD IS AT "WHITE STATE"}}{\text{BRIGHTNESS MEASURED WHEN LCD IS AT "BLACK STATE"}}$$

NOTE ( 4 ) : DEFINITION OF RESPONSE TIME :  $T_R$  AND  $T_F$

THE FIGURE BELOW IS THE OUTPUT SIGNAL OF THE PHOTO DETECTOR.



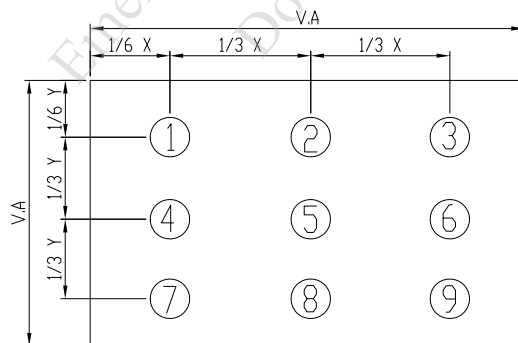
NOTE ( 5 ) : DEFINITION OF COLOR CHROMATICITY

(a) 100% RGB PIXEL DATA TRANSMISSION WHEN ALL THE INPUT TERMINALS OF MODULE ARE ELECTRICALLY POWERED ON.

(b) MEASURED AT THE CENTER POINT OF MODULE

NOTE ( 6 ) : MEASURED THE BRIGHTNESS OF WHITE STATE AT CENTER POINT.

NOTE ( 7 ) : (a) DEFINITION OF BRIGHTNESS UNIFORMITY

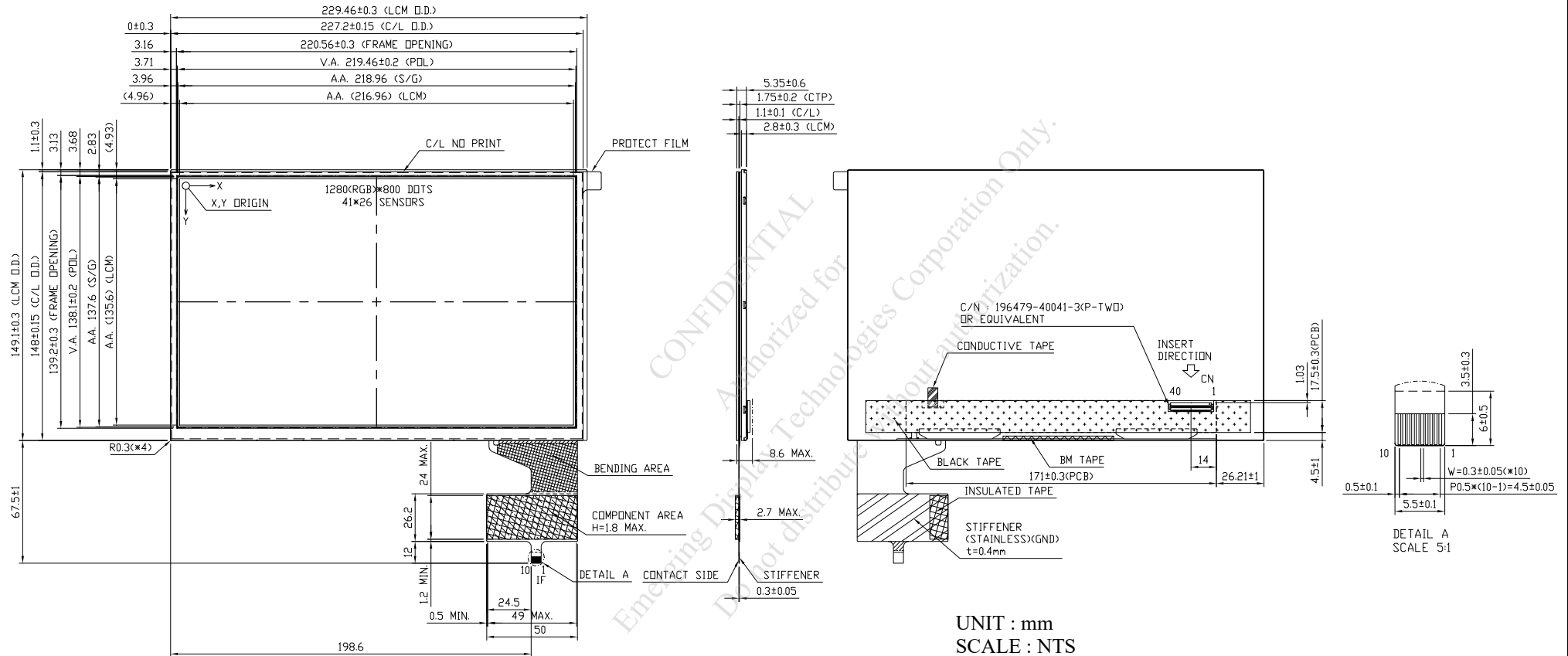


UNIT : mm

(b) THE BRIGHTNESS UNIFORMITY CALCULATING METHOD

$$\text{UNIFORMITY} : \frac{\text{MINIMUM BRIGHTNESS}}{\text{MAXIMUM BRIGHTNESS}} * 100\%$$

7. OUTLINE DIMENSIONS



UNIT : mm  
SCALE : NTS

THIRD ANGLE PROJECTION

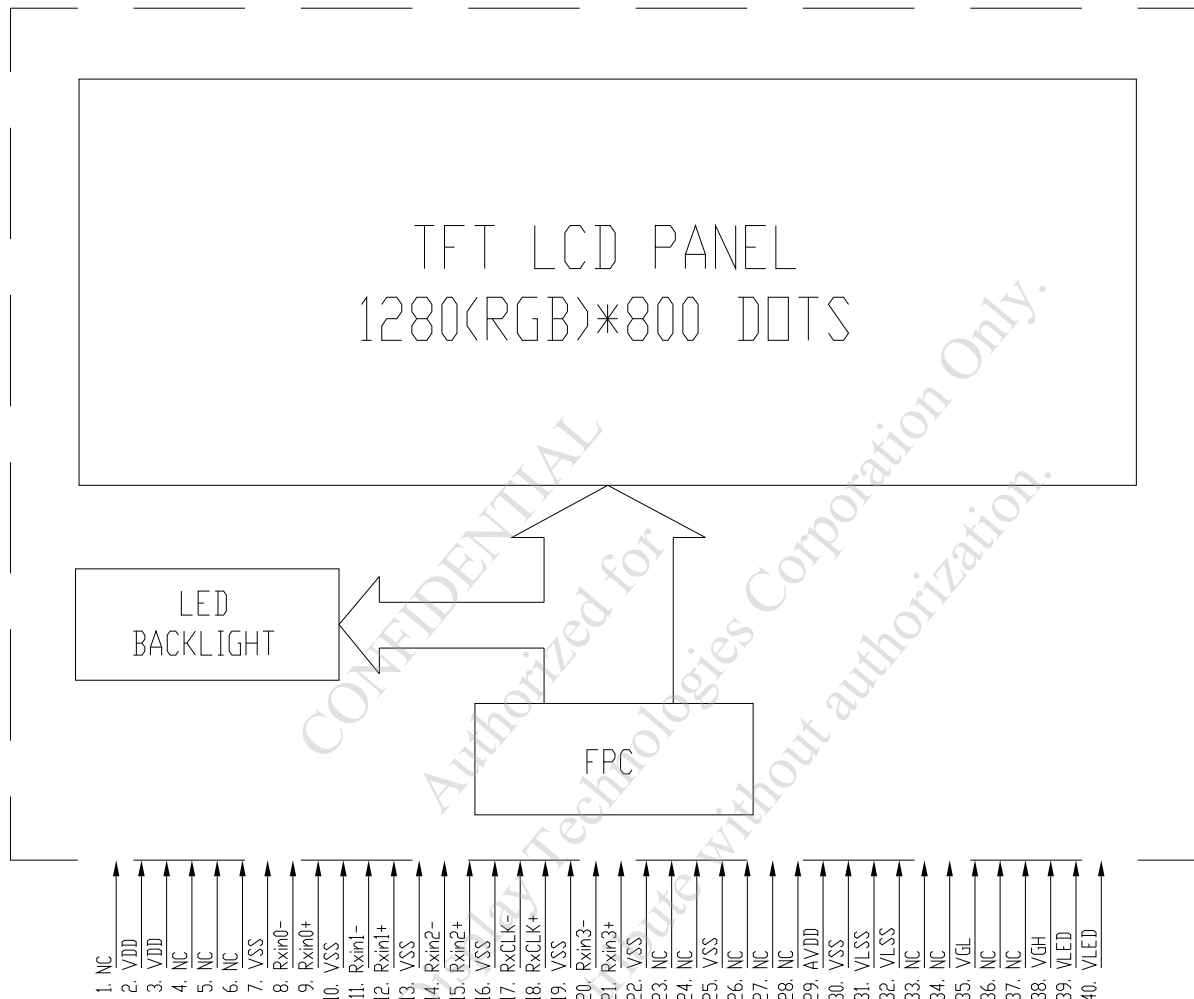
NOT SPECIFIED TOLERANCE IS ± 0.5

NOTE :

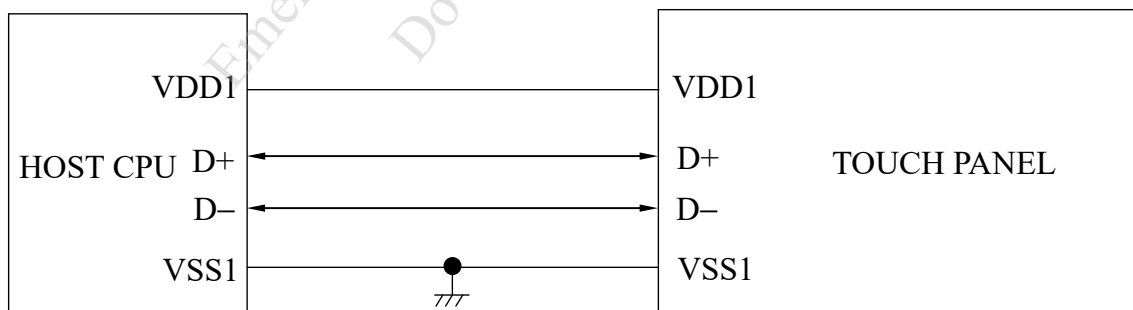
- 1.C/L GLASS : SODA LIME,CHAMFERED EDGES
- 2.FPC BENDING RADIUS SHOULD BE MORE THAN 1.0 mm.
- 3.RECOMMEND MATCH CONNECTOR: KYOCERA 04 6240 010

8. BLOCK DIAGRAM

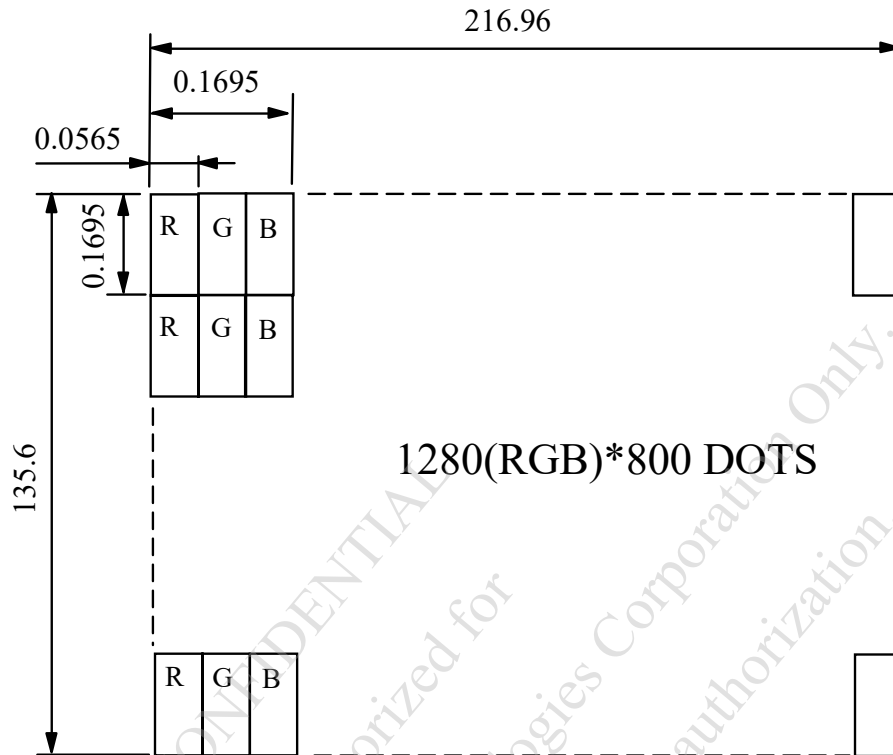
8.1 TFT



8.2 CTP



9. DETAIL DRAWING OF DOT MATRIX



UNIT : mm  
SCALE : NTS  
NOT SPECIFIED TOLERANCE IS  $\pm 0.1$   
DOTS MATRIX TOLERANCE IS  $\pm 0.01$

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## 10. INTERFACE SIGNALS

### 10.1 TFT MODULE INTERFACE

PIN NO.	SYMBOL	I/O/P	FUNCTION
1	NC	—	NON CONNECTION
2	VDD	P	POWER SUPPLY VOLTAGE
3	VDD	P	POWER SUPPLY VOLTAGE
4	NC	—	NON CONNECTION
5	NC	—	NON CONNECTION
6	NC	—	NON CONNECTION
7	VSS	P	GROUND
8	Rxin0-	I	-LVDS DIFFERENTIAL DATA INPUT(R0-R5, G0)
9	Rxin0+	I	+LVDS DIFFERENTIAL DATA INPUT(R0-R5, G0)
10	VSS	P	GROUND
11	Rxin1-	I	-LVDS DIFFERENTIAL DATA INPUT(G1~G5, B0,B1)
12	Rxin1+	I	+LVDS DIFFERENTIAL DATA INPUT(G1~G5, B0,B1)
13	VSS	P	GROUND
14	Rxin2-	I	-LVDS DIFFERENTIAL DATA INPUT (B2-B5, HSYNC, VSYNC, DE)
15	Rxin2+	I	+LVDS DIFFERENTIAL DATA INPUT (B2-B5, HSYNC, VSYNC, DE)
16	VSS	P	GROUND
17	RxCLK-	I	-LVDS DIFFERENTIAL CLOCK INPUT(LVDS CLK)
18	RxCLK+	I	+LVDS DIFFERENTIAL CLOCK INPUT(LVDS CLK)
19	VSS	P	GROUND
20	Rxin3-	I	-LVDS DIFFERENTIAL DATA INPUT (R6, R7, G6, G7, B6, B7)
21	Rxin3+	I	+LVDS DIFFERENTIAL DATA INPUT (R6, R7, G6, G7, B6, B7)
22	VSS	P	GROUND
23	NC	—	NON CONNECTION. RESERVED FOR LVDS FORMAT SELECTION
24	NC	—	NON CONNECTION. RESERVED FOR LVDS BIT MODE SELECTION
25	VSS	P	GROUND
26	NC	—	NON CONNECTION. RESERVED FOR OTP_SDA
27	NC	—	NON CONNECTION. RESERVED FOR OTP_SCL
28	NC	—	NON CONNECTION. RESERVED FOR OTP_CSB
29	AVDD	—	POWER SUPPLY VOLTAGE FOR ANALOG CIRCUIT
30	VSS	P	GROUND
31	VLSS	P	POWER SUPPLY FOR LED BACKLIGHT (CATHODE)
32	VLSS	P	POWER SUPPLY FOR LED BACKLIGHT (CATHODE)
33	NC	—	NON CONNECTION
34	NC	—	NON CONNECTION
35	VGL	—	GATE OFF VOLTAGE
36	NC	—	NON CONNECTION
37	NC	—	NON CONNECTION
38	VGH	—	GATE ON VOLTAGE
39	VLED	P	POWER SUPPLY FOR LED BACKLIGHT (ANODE)
40	VLED	P	POWER SUPPLY FOR LED BACKLIGHT (ANODE)

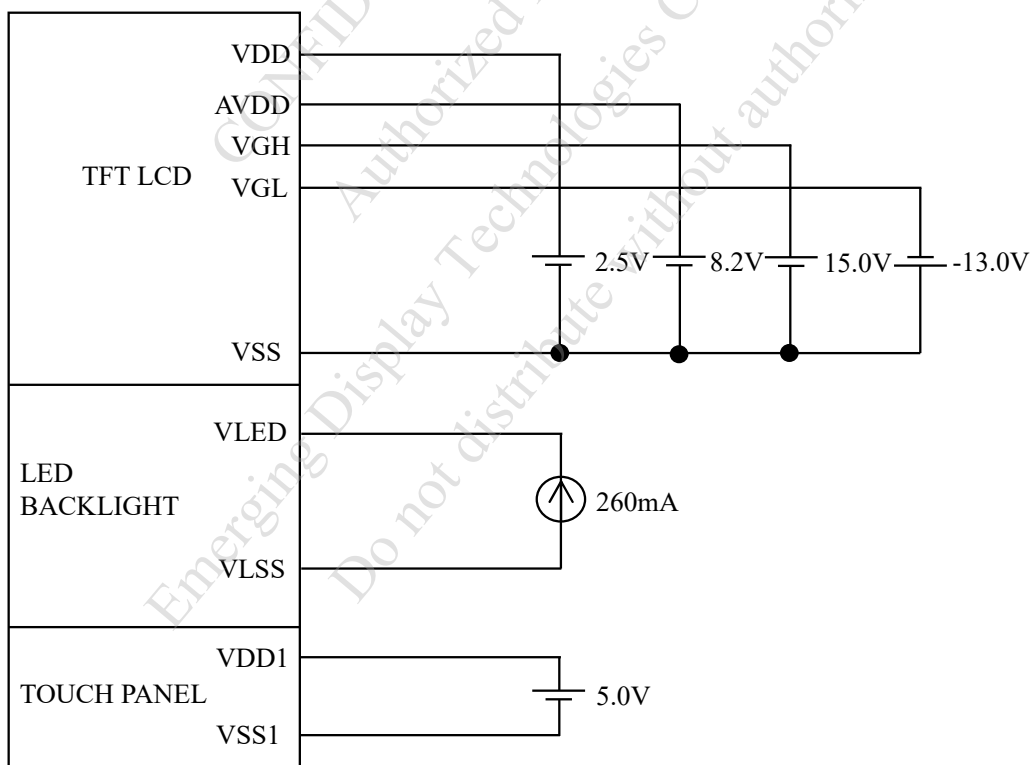


## 10.2 CTP INTERFACE

PIN NO.	SYMBOL	FUNCTION
1	NC	THE PIN WAS RESERVED FOR I2C VSS1
2	NC	THE PIN WAS RESERVED FOR I2C /RST
3	NC	THE PIN WAS RESERVED FOR I2C /INT
4	NC	THE PIN WAS RESERVED FOR I2C SCL
5	NC	THE PIN WAS RESERVED FOR I2C SDA
6	NC	THE PIN WAS RESERVED FOR I2C VDD1(+3.3V)
7	VDD1	POWER SUPPLY VOLTAGE(+5.0V)
8	D-	USB D-
9	D+	USB D+
10	VSS1	GROUND

## 11. POWER SUPPLY

### 11.1 POWER SUPPLY FOR LCM



12. CAPACITIVE TOUCH PANEL SPECIFICATION

12.1 OPTICAL CHARACTERISTICS

ITEM	CONDITION	MIN.	TYP.	MAX.	UNIT
TRANSPARENCY NOTE (1)	Ta = 25°C λ = 550nm	85	—	—	%

NOTE (1) : OPTICAL MEASUREMENT SHOULD BE EXECUTED AFTER PANEL IS SECURED. MEASUREMENT PROCESS SHOULD BE EXECUTED IN A STABLE, WINDLESS, AND DARK ROOM. OPTICAL SPECIFICATIONS SHOULD BE MEASURED BY SPECTROPHOTOMETER.

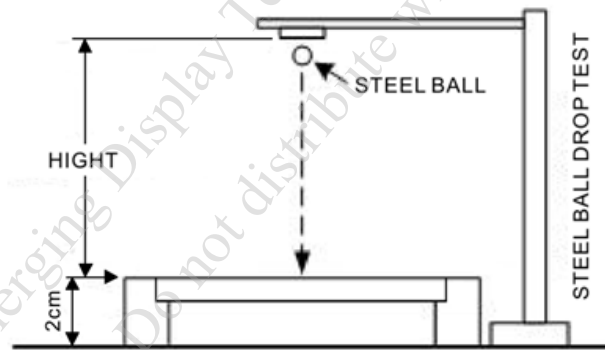
12.2 HARDNESS

ITEM	DESCRIPTION
SURFACE HARDNESS	7H(min)

12.3 DURABILITY

USING STEEL BALL AND FALLING ON TOUCH PANEL SURFACE, FROM THE HEIGHT MUST PASS BELOW CONDITIONS :

ITEM	CONDITION	INSPECTION METHOD	DESCRIPTION
STEEL BALL DROP TEST	WEIGHT : 67g HEIGHT OF FALL : 30 cm	VISUAL INSPECTION	SIGN OF FRACTURE OR DAMAGE IS NOT ACCEPTABLE 3 TIMES/ 1 POINTS, 25°C



13. INSPECTION CRITERIA

13.1 APPLICATION

THIS INSPECTION STANDARD IS TO BE APPLIED TO THE LCD MODULE DELIVERED FROM EMERGING DISPLAY TECHNOLOGIES CORP.( E.D.T ) TO CUSTOMERS

13.2 INSPECTION CONDITIONS

13.2.1 (1)OBSERVATION DISTANCE : 45±5cm

(2)VIEWING ANGLE : ±45°

±45° (FOR SECTION WITHIN VIEWING AREA), REFER TO FIG.A

90° (FOR SECTION OUTSIDE OF VIEWING AREA), REF TO FIG.B

PERPENDICULAR TO MODULE SURFACE

VIEWING ANGLE SHOULD BE SMALLER THAN 45°



THE INSPECTION CRITERIA IS ACCORDING TO LINE OF SIGHT. INSPECTION SHALL BE MADE WITHIN THE HALF SECTION OF THE VIEWING CONE GENERATED BY LINE SEGMENT OF 45° WITH RESPECT TO THE VERTICAL AXIS FROM CENTER VERTEX OF LCD, THE FLUORESCENT LAMP AND THE CONE AXIS MUST BE PERPENDICULAR TO THE LCD SURFACE.

IF THE DEFECTS ARE OUTSIDE OF VIEWING AREA, IT SHALL BE INSPECTED BY 90° WITH RESPECT TO THE VERTICAL AXIS FROM EDGE OF VIEWING AREA.

13.2.2 ENVIRONMENT CONDITIONS :

AMBIENT TEMPERATURE		25±5°C
AMBIENT HUMIDITY		65 ± 20%RH
AMBIENT ILLUMINATION	COSMETIC INSPECTION	600~800 lux
	FUNCTIONAL INSPECTION	300~500 lux
INSPECTION TIME		15 secs

13.2.3 INSPECTION LOT

QUANTITY PER DELIVERY LOT FOR EACH MODEL

13.2.4 INSPECTION METHOD

A SAMPLING INSPECTION SHALL BE MADE ACCORDING TO THE FOLLOWING PROVISIONS TO JUDGE THE ACCEPTABILITY

(a)APPLICABLE STANDARD :

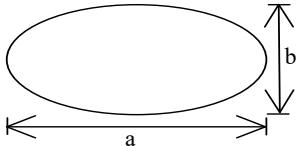
ANSI/ ASQ Z1.4 NORMAL INSPECTION LEVEL II

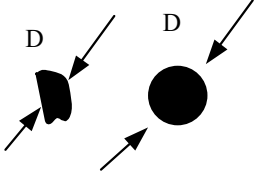
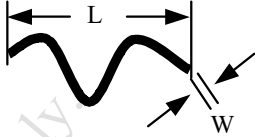
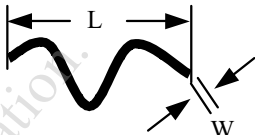
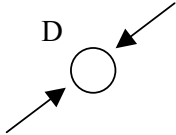
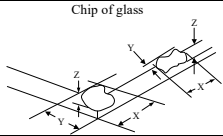
(b)AQL : MAJOR DEFECT : AQL 0.65

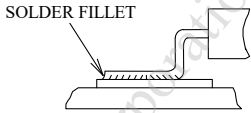
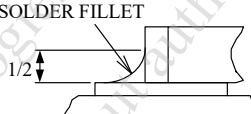
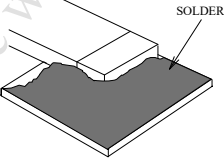
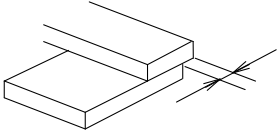
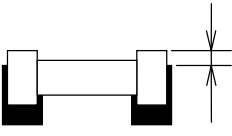
MINOR DEFECT : AQL 1.0

13.3 DEFECTS CLASSIFICATION

TYPE OF DEFECT	INSPECTION ITEM	DEFECT FEATURE	AQL
MAJOR DEFECT	1.DISPLAY ON	<ul style="list-style-type: none"> <li>• DEFECT TO MISS SPECIFIED DISPLAY FUNCTION, FOR ALL AND SPECIFIED DOTS</li> <li>EX: DISCONNECTION, SHORT CIRCUIT ETC</li> </ul>	0.65
	2.CTP FUNCTION	<ul style="list-style-type: none"> <li>• NO FUNCTION</li> <li>• BROKEN LINE</li> <li>• FALSE TOUCH</li> </ul>	
	3.BACKLIGHT	<ul style="list-style-type: none"> <li>• NO LIGHT</li> <li>• FLICKERING AND OTHER ABNORMAL ILLUMINATION</li> </ul>	
	4.DIMENSIONS	<ul style="list-style-type: none"> <li>• SUBJECT TO INDIVIDUAL ACCEPTANCE SPECIFICATIONS</li> </ul>	
MINOR DEFECT	1.DISPLAY ZONE (VIEWING AREA)	<ul style="list-style-type: none"> <li>• BLACK/WHITE SPOT / CIRCULAR TYPE</li> <li>• BUBBLES ON POLARIZER</li> <li>• NEWTON RING</li> <li>• BLACK/WHITE LINE / LINEAR TYPE</li> <li>• SCRATCH</li> <li>• CONTAMINATION</li> <li>• UNEVEN COLOR SPREAD</li> </ul>	1.0
	2.BEZEL ZONE	<ul style="list-style-type: none"> <li>• STAINS</li> <li>• SCRATCHES</li> <li>• FOREIGN MATTER</li> </ul>	
	3.SOLDERING	<ul style="list-style-type: none"> <li>• INSUFFICIENT SOLDER</li> <li>• SOLDERED IN INCORRECT POSITION</li> <li>• CONVEX SOLDERING SPOT</li> <li>• SOLDER BALLS</li> <li>• SOLDER SCRAPS</li> </ul>	
	4.DISPLAY ON (ALL ON)	<ul style="list-style-type: none"> <li>• LIGHT LINE</li> </ul>	

NO.	ITEM	CRITERIA																						
1	DISPLAY ON INSPECTION	(1) INCORRECT PATTERN (2) MISSING SEGMENT (3) DIM SEGMENT (4) OPERATING VOLTAGE BEYOND SPEC																						
2	OVERALL DIMENSIONS	OVERALL DIMENSION BEYOND SPEC																						
3	DOT DEFECT	<p>(1)INSPECTION PATTERN: FULL WHITE, FULL BLACK, RED, GREEN AND BLUE SCREENS.</p> <p>(2)</p> <table border="1"> <thead> <tr> <th>ITEMS</th> <th>ACCEPTABLE COUNT</th> </tr> </thead> <tbody> <tr> <td>BRIGHT DOT</td> <td><math>N \leq 3</math></td> </tr> <tr> <td>DARK DOT</td> <td><math>N \leq 4</math></td> </tr> <tr> <td>TOTAL BRIGHT AND DARK DOTS</td> <td><math>N \leq 6</math></td> </tr> </tbody> </table> <p>NOTE :</p> <p>1. THE DEFINITION OF DOT : THE SIZE OF A DEFECTIVE DOT OVER 1/2 OF WHOLE DOT IS REGARDED AS ONE DEFECTIVE DOT. THE BRIGHT DOT DEFECT MOST BE VISIBLE THROUGH A 2% ND FILTER</p> <p>2. BRIGHT DOT : DOTS APPEAR BRIGHT AND UNCHANGED IN SIZE IN WHICH LCD PANEL IS DISPLAYING UNDER BLACK PATTERN.</p> <p>3. DARK DOT : DOTS APPEAR DARK AND UNCHANGED IN SIZE IN WHICH LCD PANEL IS DISPLAYING UNDER PURE RED, GREEN, BLUE PICTURE.</p>	ITEMS	ACCEPTABLE COUNT	BRIGHT DOT	$N \leq 3$	DARK DOT	$N \leq 4$	TOTAL BRIGHT AND DARK DOTS	$N \leq 6$														
ITEMS	ACCEPTABLE COUNT																							
BRIGHT DOT	$N \leq 3$																							
DARK DOT	$N \leq 4$																							
TOTAL BRIGHT AND DARK DOTS	$N \leq 6$																							
4	BUBBLES ON POLARIZER /SURFACE STAINS /DIRT/CF FAIL/SPOT	<table border="1"> <thead> <tr> <th></th> <th>AVERAGE DIAMETER (mm) : D</th> <th>NUMBER OF PIECES PERMITTED</th> </tr> </thead> <tbody> <tr> <td rowspan="3">BUBBLE ON THE POLARIZER</td> <td><math>D \leq 0.3</math></td> <td>IGNORE</td> </tr> <tr> <td><math>0.3 &lt; D \leq 0.5</math></td> <td><math>N \leq 5</math></td> </tr> <tr> <td><math>0.5 &lt; D</math></td> <td>NONE</td> </tr> <tr> <td rowspan="2">SURFACE STAINS</td> <td><math>D \leq 0.1</math></td> <td>IGNORE</td> </tr> <tr> <td><math>0.1 &lt; D \leq 0.5</math></td> <td><math>N \leq 6</math></td> </tr> <tr> <td rowspan="3">CF FAIL / SPOT</td> <td><math>D \leq 0.1</math></td> <td>IGNORE</td> </tr> <tr> <td><math>0.1 &lt; D \leq 0.5</math></td> <td><math>N \leq 4</math></td> </tr> <tr> <td><math>0.5 &lt; D</math></td> <td>NONE</td> </tr> </tbody> </table> <p>NOTE : (1)POLARIZER BUBBLE IS DEFINED AS THE BUBBLE APPEARS ON ACTIVE DISPLAY AREA. THE DEFECT OF POLARIZER BUBBLE SHALL BE IGNORED IF THE POLARIZER BUBBLE APPEARS ON THE OUTSIDE OF ACTIVE DISPLAY AREA.</p> <p>(2)THE EXTRANEOUS SUBSTANCE IS DEFINED AS IT CAN BE OBSERVED WHEN THE MODULE IS POWER ON.</p> <p>(3)THE DEFINITION OF AVERAGE DIAMETER, D IS DEFINED AS FOLLOWING. AVERAGE DIAMETER (D)=(a+b)/2</p> 		AVERAGE DIAMETER (mm) : D	NUMBER OF PIECES PERMITTED	BUBBLE ON THE POLARIZER	$D \leq 0.3$	IGNORE	$0.3 < D \leq 0.5$	$N \leq 5$	$0.5 < D$	NONE	SURFACE STAINS	$D \leq 0.1$	IGNORE	$0.1 < D \leq 0.5$	$N \leq 6$	CF FAIL / SPOT	$D \leq 0.1$	IGNORE	$0.1 < D \leq 0.5$	$N \leq 4$	$0.5 < D$	NONE
	AVERAGE DIAMETER (mm) : D	NUMBER OF PIECES PERMITTED																						
BUBBLE ON THE POLARIZER	$D \leq 0.3$	IGNORE																						
	$0.3 < D \leq 0.5$	$N \leq 5$																						
	$0.5 < D$	NONE																						
SURFACE STAINS	$D \leq 0.1$	IGNORE																						
	$0.1 < D \leq 0.5$	$N \leq 6$																						
CF FAIL / SPOT	$D \leq 0.1$	IGNORE																						
	$0.1 < D \leq 0.5$	$N \leq 4$																						
	$0.5 < D$	NONE																						

NO.	ITEM	CRITERIA										
5	BLACK/WHITE SPOT CIRCULAR TYPE	THE FOLLOWING BLACK/WHITE SPOT ARE WITHIN THE VIEWING AREA. AVERAGE DIAMETER : D (mm) <table border="1"> <thead> <tr> <th>SIZE D</th> <th>PERMISSIBLE NO.</th> </tr> </thead> <tbody> <tr> <td><math>D \leq 0.3</math></td> <td>IGNORE</td> </tr> <tr> <td><math>0.3 &lt; D \leq 0.5</math></td> <td>6</td> </tr> <tr> <td><math>0.5 &lt; D</math></td> <td>0</td> </tr> </tbody> </table> NOTE ( 1 ) : THE DISTANCE BETWEEN DEFECTS SHOULD BE MORE THAN 10mm APART.		SIZE D	PERMISSIBLE NO.	$D \leq 0.3$	IGNORE	$0.3 < D \leq 0.5$	6	$0.5 < D$	0	
SIZE D	PERMISSIBLE NO.											
$D \leq 0.3$	IGNORE											
$0.3 < D \leq 0.5$	6											
$0.5 < D$	0											
6	SCRATCH	THE FOLLOWING SCRATCH IS WITHIN THE VIEWING AREA. WIDTH : W (mm) , LENGTH : L (mm) <table border="1"> <thead> <tr> <th>SIZE W &amp; L</th> <th>PERMISSIBLE NO.</th> </tr> </thead> <tbody> <tr> <td><math>W \leq 0.07</math></td> <td>IGNORE</td> </tr> <tr> <td><math>0.07 &lt; W \leq 0.1, L \leq 10</math></td> <td>6</td> </tr> <tr> <td><math>0.1 &lt; W</math></td> <td>0</td> </tr> </tbody> </table> NOTE ( 1 ) : THE DISTANCE BETWEEN DEFECTS SHOULD BE MORE THAN 10mm APART.		SIZE W & L	PERMISSIBLE NO.	$W \leq 0.07$	IGNORE	$0.07 < W \leq 0.1, L \leq 10$	6	$0.1 < W$	0	
SIZE W & L	PERMISSIBLE NO.											
$W \leq 0.07$	IGNORE											
$0.07 < W \leq 0.1, L \leq 10$	6											
$0.1 < W$	0											
7	BLACK / WHITE LINE LINEAR TYPE / FOREIGN FIBER	THE FOLLOWING BLACK LINE, WHITE LINE IS WITHIN THE VIEWING AREA. WIDTH : W (mm) , LENGTH : L (mm) <table border="1"> <thead> <tr> <th>SIZE W &amp; L</th> <th>PERMISSIBLE NO.</th> </tr> </thead> <tbody> <tr> <td><math>W \leq 0.07</math></td> <td>IGNORE</td> </tr> <tr> <td><math>0.07 &lt; W \leq 0.1, L \leq 10</math></td> <td>6</td> </tr> <tr> <td><math>0.1 &lt; W</math></td> <td>0</td> </tr> </tbody> </table> NOTE ( 1 ) : THE DISTANCE BETWEEN DEFECTS SHOULD BE MORE THAN 10mm APART.		SIZE W & L	PERMISSIBLE NO.	$W \leq 0.07$	IGNORE	$0.07 < W \leq 0.1, L \leq 10$	6	$0.1 < W$	0	
SIZE W & L	PERMISSIBLE NO.											
$W \leq 0.07$	IGNORE											
$0.07 < W \leq 0.1, L \leq 10$	6											
$0.1 < W$	0											
8	BUBBLE / DENT FOR OPTICAL BONDING	BUBBLES WITHIN VIEWING AREA. AVERAGE DIAMETER : D (mm) <table border="1"> <thead> <tr> <th>SIZE D</th> <th>PERMISSIBLE NO.</th> </tr> </thead> <tbody> <tr> <td><math>D \leq 0.3</math></td> <td>IGNORE</td> </tr> <tr> <td><math>0.3 &lt; D \leq 0.5</math></td> <td>6</td> </tr> <tr> <td><math>0.5 &lt; D</math></td> <td>0</td> </tr> </tbody> </table> NOTE ( 1 ) : THE DISTANCE BETWEEN DEFECTS SHOULD BE MORE THAN 10mm APART.		SIZE D	PERMISSIBLE NO.	$D \leq 0.3$	IGNORE	$0.3 < D \leq 0.5$	6	$0.5 < D$	0	
SIZE D	PERMISSIBLE NO.											
$D \leq 0.3$	IGNORE											
$0.3 < D \leq 0.5$	6											
$0.5 < D$	0											
12	CHIPPING	<table border="1"> <tr> <td>CORNER</td> <td><math>X \leq 3 \text{ mm} , Y \leq 3 \text{ mm} \cdot Z \leq t</math> (t : THICKNESS)</td> </tr> <tr> <td>EDGE</td> <td><math>X \leq 6 \text{ mm} , Y \leq 1 \text{ mm} , Z &lt; t</math> (t : THICKNESS)</td> </tr> </table>	CORNER	$X \leq 3 \text{ mm} , Y \leq 3 \text{ mm} \cdot Z \leq t$ (t : THICKNESS)	EDGE	$X \leq 6 \text{ mm} , Y \leq 1 \text{ mm} , Z < t$ (t : THICKNESS)						
CORNER	$X \leq 3 \text{ mm} , Y \leq 3 \text{ mm} \cdot Z \leq t$ (t : THICKNESS)											
EDGE	$X \leq 6 \text{ mm} , Y \leq 1 \text{ mm} , Z < t$ (t : THICKNESS)											
13	CRACKED GLASS	NOT ACCEPTABLE										
14	LINE DEFECT ON DISPLAY	OBVIOUS VERTICAL OR HORIZONTAL LINE DEFECT IS NOT ALLOWED										
15	MURA ON DISPLAY	IT'S OK IF MURA IS SLIGHT VISIBLE THROUGH 2% ND FILTER										
16	UNEVEN COLOR SPREAD, COLORATION	TO BE DETERMINED BASED UPON THE LIMITED SAMPLE.										
17	BEZEL APPEARANCE	1. BEZEL MAY NOT HAVE RUST, BE DEFORMED OR HAVE FINGER PRINTS STAINS OF OTHER CONTAMINATION. 2. BEZEL MUST COMPLY WITH JOB SPECIFICATIONS.										

NO.	ITEM	CRITERIA
18	PCB	<ol style="list-style-type: none"> <li>1. THERE MAY NOT BE MORE THAN 2mm OF SEALANT OUTSIDE THE SEAL AREA ON THE PCB, AND THERE SHOULD BE NO MORE THAN THREE PLACES.</li> <li>2. NO OXIDATION OR CONTAMINATION PCB TERMINALS.</li> <li>3. PARTS ON PCB MUST BE THE SAME AS ON THE PRODUCTION CHARACTERISTIC CHART. THERE SHOULD BE NO WRONG PARTS, MISSING PARTS OR EXCESS PARTS.</li> <li>4. THE JUMPER ON THE PCB SHOULD CONFORM TO THE PRODUCT CHARACTERISTIC CHART.</li> <li>5. IF SOLDER GETS ON BEZEL TAB PADS, LED PAD, ZEBRA PAD OR SCREW HOLD PAD; MAKE SURE IT IS SMOOTHED DOWN.</li> </ol>
19	SOLDERING	<ol style="list-style-type: none"> <li>1. NO SOLDERING FOUND ON THE SPECIFIED PLACE</li> <li>2. INSUFFICIENT SOLDER               <ol style="list-style-type: none"> <li>(a)LSI, IC A POOR WETTING OF SOLDER IS BETWEEN LOWER BEND OR "HEEL" OF LEAD AND PAD   </li> <li>(b)CHIP COMPONENT  <ul style="list-style-type: none"> <li>· SOLDER IS LESS THAN 50% OF SIDES AND FRONT FACE WETTING   </li> <li>· SOLDER WETS 3 SIDES OF TERMINAL, BUT LESS THAN 25% OF SIDES AND FRONT SURFACE AREA ARE COVERED   </li> </ul> </li> </ol> </li> <li>3. PARTS ALIGNMENT               <ol style="list-style-type: none"> <li>(a)LSI, IC LEAD WIDTH IS MORE THAN 50% BEYOND PAD OUTLINE   </li> <li>(b)CHIP COMPONENT COMPONENT IS OFF CENTER, AND MORE THAN 50% OF THE LEADS IS OFF THE PAD OUTLINE   </li> </ol> </li> <li>4. NO UNMELTED SOLDER PASTE MAY BE PRESENT ON THE PCB.</li> <li>5. NO COLD SOLDER JOINTS, MISSING SOLDER CONNECTIONS, OXIDATION OR ICICLE.</li> <li>6. NO RESIDUE OR SOLDER BALLS ON PCB.</li> <li>7. NO SHORT CIRCUITS IN COMPONENTS ON PCB.</li> </ol>

NO.	ITEM	CRITERIA
20	BACKLIGHT	<ol style="list-style-type: none"> <li>1. NO LIGHT</li> <li>2. FLICKERING AND OTHER ABNORMAL ILLUMINATION</li> <li>3. SPOTS OR SCRATCHES THAT APPEAR WHEN LIT MUST BE JUDGED USING LCD SPOT, LINES AND CONTAMINATION STANDARDS.</li> <li>4. BACKLIGHT DOESN'T LIGHT OR COLOR IS WRONG.</li> </ol>
21	GENERAL APPEARANCE	<ol style="list-style-type: none"> <li>1. NO OXIDATION, CONTAMINATION, CURVES OR, BENDS ON INTERFACE PIN (OLB) OF TCP.</li> <li>2. NO CRACKS ON INTERFACE PIN (OLB) OF TCP.</li> <li>3. NO CONTAMINATION, SOLDER RESIDUE OR SOLDER BALLS ON PRODUCT.</li> <li>4. THE IC ON THE TCP MAY NOT BE DAMAGED, CIRCUITS.</li> <li>5. THE UPPERMOST EDGE OF THE PROTECTIVE STRIP ON THE INTERFACE PIN MUST BE PRESENT OR LOOK AS IF IT CAUSE THE INTERFACE PIN TO SEVER.</li> <li>6. THE RESIDUAL ROSIN OR TIN OIL OF SOLDERING (COMPONENT OR CHIP COMPONENT) IS NOT BURNED INTO BROWN OR BLACK COLOR.</li> <li>7. SEALANT ON TOP OF THE ITO CIRCUIT HAS NOT HARDENED.</li> <li>8. PIN TYPE MUST MATCH TYPE IN SPECIFICATION SHEET.</li> <li>9. LCD PIN LOOSE OR MISSING PINS.</li> <li>10. PRODUCT PACKAGING MUST BE THE SAME AS SPECIFIED ON PACKAGING SPECIFICATION SHEET.</li> <li>11. PRODUCT DIMENSION AND STRUCTURE MUST CONFORM TO PRODUCT SPECIFICATION SHEET.</li> <li>12. THE APPEARANCE OF HEAT SEAL SHOULD NOT ADMIT ANY DIRT AND BREAK.</li> </ol>

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14. RELIABILITY TEST

14.1 STANDARD SPECIFICATIONS FOR RELIABILITY OF LCD MODULE

NO.	ITEM	DESCRIPTION
1	HIGH TEMPERATURE OPERATION	THE SAMPLE SHOULD BE ALLOWED TO STAND AT +70°C FOR 240 HRS
2	LOW TEMPERATURE OPERATION	THE SAMPLE SHOULD BE ALLOWED TO STAND AT -20°C FOR 240 HRS
3	HIGH TEMPERATURE STORAGE	THE SAMPLE SHOULD BE ALLOWED TO STAND AT +80°C FOR 240 HRS
4	LOW TEMPERATURE STORAGE	THE SAMPLE SHOULD BE ALLOWED TO STAND AT -30°C FOR 240 HRS
5	HIGH TEMPERATURE / HUMIDITY TEST STORAGE	THE SAMPLE SHOULD BE ALLOWED TO STAND AT 60°C, 90% RH 240 HRS
6	THERMAL SHOCK (NOT OPERATED)	<p>THE SAMPLE SHOULD BE ALLOWED TO STAND THE FOLLOWING 10 CYCLES OF OPERATION:</p> <p>The diagram illustrates one cycle of thermal shock testing. It starts with a 30-minute dwell at -20°C. This is followed by a 3-minute ramp-up to +70°C. There is a 30-minute dwell at +70°C. Then, there is a 3-minute ramp-down to -20°C, followed by a 30-minute dwell at -20°C. The total duration of one cycle is 100 minutes.</p>
7	ESD (ELECTROSTATIC DISCHARGE) (NOT OPERATED)	AIR DISCHARGE ± 12KV CONTACT DISCHARGE ± 8KV ACCORDING TO IEC-61000-4-2

NOTE ( 1 ) : THE TEST SAMPLES HAVE RECOVERY TIME FOR 2 HOURS AT ROOM TEMPERATURE BEFORE THE FUNCTION CHECK. IN THE STANDARD CONDITIONS, THERE IS NO DISPLAY FUNCTION NG ISSUE OCCURRED.

NOTE ( 2 ) : THERE IS NO DISPLAY FUNCTION NG ISSUE OCCURRED, ALL THE COSMETIC SPECIFICATION IS JUDGED BEFORE THE RELIABILITY STRESS.

NOTE ( 3 ) : THE MODULE SHOULDN'T BE TESTED MORE THAN ONE CONDITION, AND ALL THE TEST CONDITIONS ARE INDEPENDENT.

14.2 TESTING CONDITIONS AND INSPECTION CRITERIA

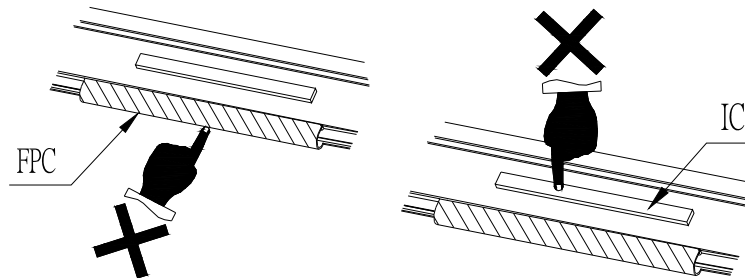
FOR THE FINAL TEST THE TESTING SAMPLE MUST BE STORED AT ROOM TEMPERATURE FOR 24 HOURS, AFTER THE TESTS LISTED IN TABLE 14.1, STANDARD SPECIFICATIONS FOR RELIABILITY HAVE BEEN EXECUTED IN ORDER TO ENSURE STABILITY.

NO.	ITEM	TEST MODEL	INSPECTION CRITERIA
1	CURRENT CONSUMPTION	REFER TO SPECIFICATION	THE CURRENT CONSUMPTION SHOULD CONFORM TO THE PRODUCT SPECIFICATION.
2	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.
3	APPEARANCE	VISUAL INSPECTION	DEFECT FREE

15. CAUTION

15.1 OPERATION

- 15.1.1 DO NOT CONNECT OR DISCONNECT MODULES TO OR FROM THE MAIN SYSTEM WHILE POWER IS BEING SUPPLIED .
- 15.1.2 USE THE MODULE WITHIN SPECIFIED TEMPERATURE ; LOWER TEMPERATURE CAUSES THE RETARDATION OF BLINKING SPEED OF THE DISPLAY ; HIGHER TEMPERATURE MAKES OVERALL DISPLAY DISCOLOR . WHEN THE TEMPERATURE RETURNS TO NORMALITY, THE DISPLAY WILL OPERATE NORMALLY.
- 15.1.3 ADJUST THE LC DRIVING VOLTAGE TO OBTAIN THE OPTIMUM CONTRAST .
- 15.1.4 POWER ON SEQUENCE INPUT SIGNALS SHOULD NOT BE SUPPLIED TO LCD MODULE BEFORE POWER SUPPLY VOLTAGE IS APPLIED AND REACHES THE SPECIFIED VALUE.  
IF ABOVE SEQUENCE IS NOT FOLLOWED , CMOS LSIS OF LCD MODULES MAY BE DAMAGED DUE TO LATCH - UP PROBLEM.
- 15.1.5 NOT ALLOWED TO INFLICT ANY EXTERNAL STRESS AND TO CAUSE ANY MECHANICAL INTERFERENCE ON THE BENDING AREA OF FPC DURING THE TAIL BENDING BACKWARDS!  
DO NOT STRESS FPC AND IC ON THE MODULE!



## 15.2 NOTICE

- 15.2.1 USE A GROUNDED SOLDERING IRON WHEN SOLDERING CONNECTOR I/O TERMINALS . FOR SOLDERING OR REPAIRING, TAKE PRECAUTION AGAINST THE TEMPERATURE OF THE SOLDERING IRON AND THE SOLDERING TIME TO PREVENT PEELING OFF THE THROUGH-HOLE-PAD .
- 15.2.2 DO NOT DISASSEMBLE . EDT SHALL NOT BE HELD RESPONSIBLE IF THE MODULE IS DISASSEMBLED AND UPON THE REASSEMBLY THE MODULE FAILED.
- 15.2.3 DO NOT CHARGE STATIC ELECTRICITY, AS THE CIRCUIT OF THIS MODULE CONTAINS CMOS LSIS. A WORKMAN'S BODY SHOULD ALWAYS BE STATIC-PROTECTED BY USE OF AN ESD STRAP. WORKING CLOTHES FOR SUCH PERSONNEL SHOULD BE OF STATIC-PROTECTED MATERIAL.
- 15.2.4 ALWAYS GROUND THE ELECTRICALLY-POWERED DRIVER BEFORE USING IT TO INSTALL THE LCD MODULE. WHILE CLEANING THE WORK STATION BY VACUUM CLEANER, DO NOT BRING THE SUCKING MOUTH NEAR THE MODULE ; STATIC ELECTRICITY OF THE ELECTRICALLY-POWERED DRIVER OR THE VACUUM CLEANER MAY DESTROY THE MODULE.
- 15.2.5 DON'T GIVE EXTERNAL SHOCK.
- 15.2.6 DON'T APPLY EXCESSIVE FORCE ON THE SURFACE.
- 15.2.7 LIQUID IN LCD IS HAZARDOUS SUBSTANCE. MUST NOT LICK AND SWALLOW.  
WHEN THE LIQUID IS ATTACH TO YOUR, SKIN, CLOTH ETC. WASH IT OUT THOROUGHLY AND IMMEDIATELY.
- 15.2.8 DON'T OPERATE IT ABOVE THE ABSOLUTE MAXIMUM RATING.
- 15.2.9 STORAGE IN A CLEAN ENVIRONMENT, FREE FROM DUST, ACTIVE GAS, AND SOLVENT.
- 15.2.10 STORE WITHOUT ANY PHYSICAL LOAD.
- 15.2.11 REWIRING: NO MORE THAN 3 TIMES.