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SPECIFICATION

VXT500BKI-01F

☐ Preliminary Specification

☐ Final Specification

CUSTOMER:

Made By: ymf	**Approved By:**
Checked By:	
Approved By:	**Date:**
Quality:	
Date:	**Note:**
Note:	

Records of Revision

DATE	REF.PAGE PARAGRAPH DRAWING No.	REVISED No.	SUMMARY	REMARK
2024-03-05		V01	First Issue	
2024-05-07		V02	Update Interface pin function and add VCI current	

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Contents

1. General Specification 4
2. Mechanical Drawing 5
3. Block Diagram 7
4. Interface Pin Function 8
5. Absolute Maximum Ratings 9
6. Electrical Characteristics 10
7. Optical Characteristics 12
8. Timing Characteristics 15
9. Standard Specification for Reliability 18
10. Specification of Quality Assurance 20
11. Handling Precaution 29
12. Packing Method 30

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1. General Specification

Item	Contents	Unit
LCD TYPE	TFT/TRANSMISSIVE	
MODULE SIZE (W*H*T)	68.7*121.12*5.9	MM
ACTIVE SIZE (W*H)	62.1*110.4	MM
PIXEL PITCH (W*H)	0.08625*0.08625	MM
NUMBER OF DOTS	720*1280	
LCD DRIVER IC	ILI881C	
INTERFACE TYPE	MIPI	
TOP POLARIZER TYPE	ANTI-GLARE	
RECOMMEND VIEWING DIRECTION	ALL	O’CLOCK
GRAY SCALE INVERSION DIRECTION	-	O’CLOCK
BACKLIGHT TYPE	14-DIES WHITE LED	
TOUCH PANEL TYPE	CAPACTIVE	

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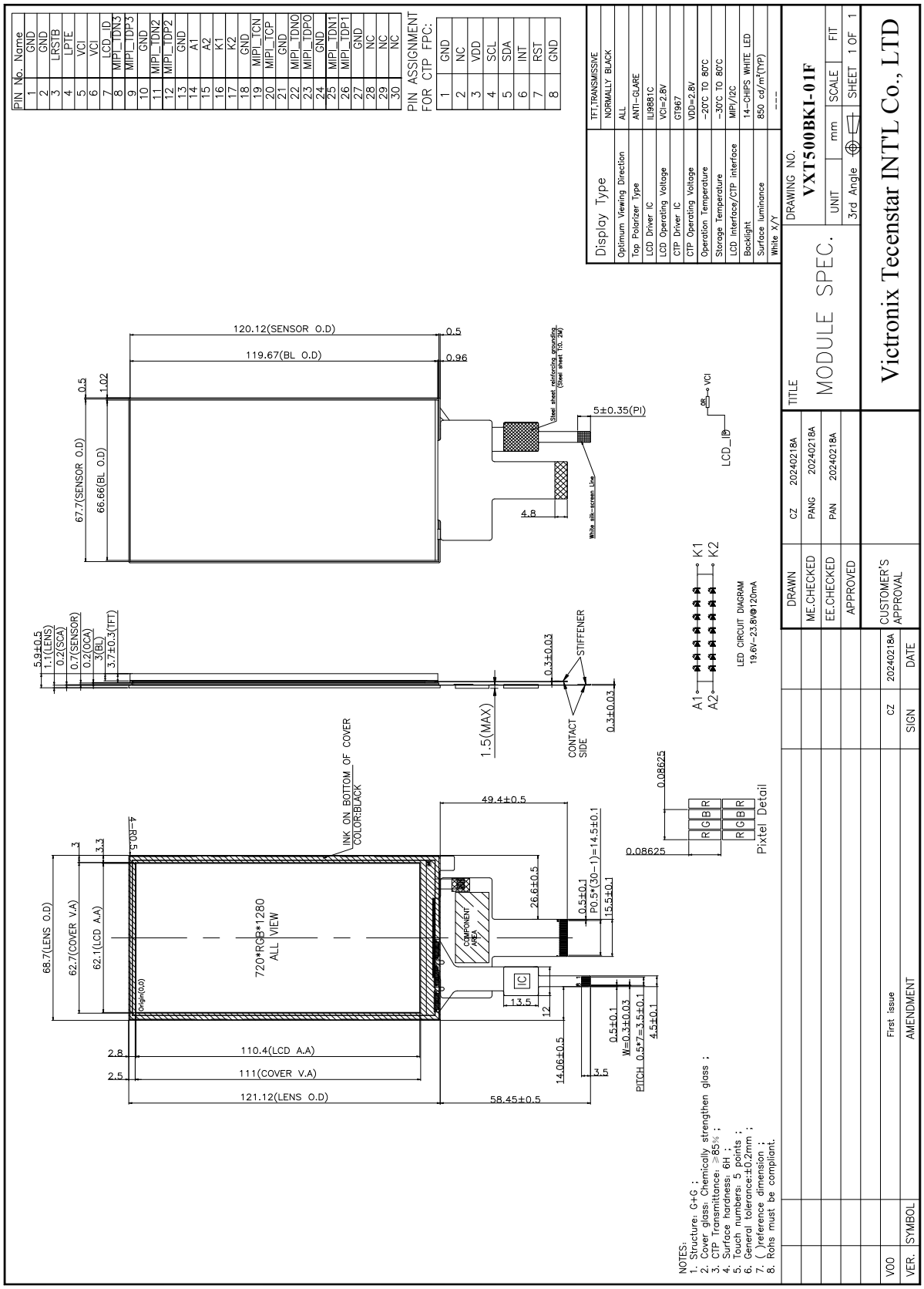
2. Mechanical Drawing



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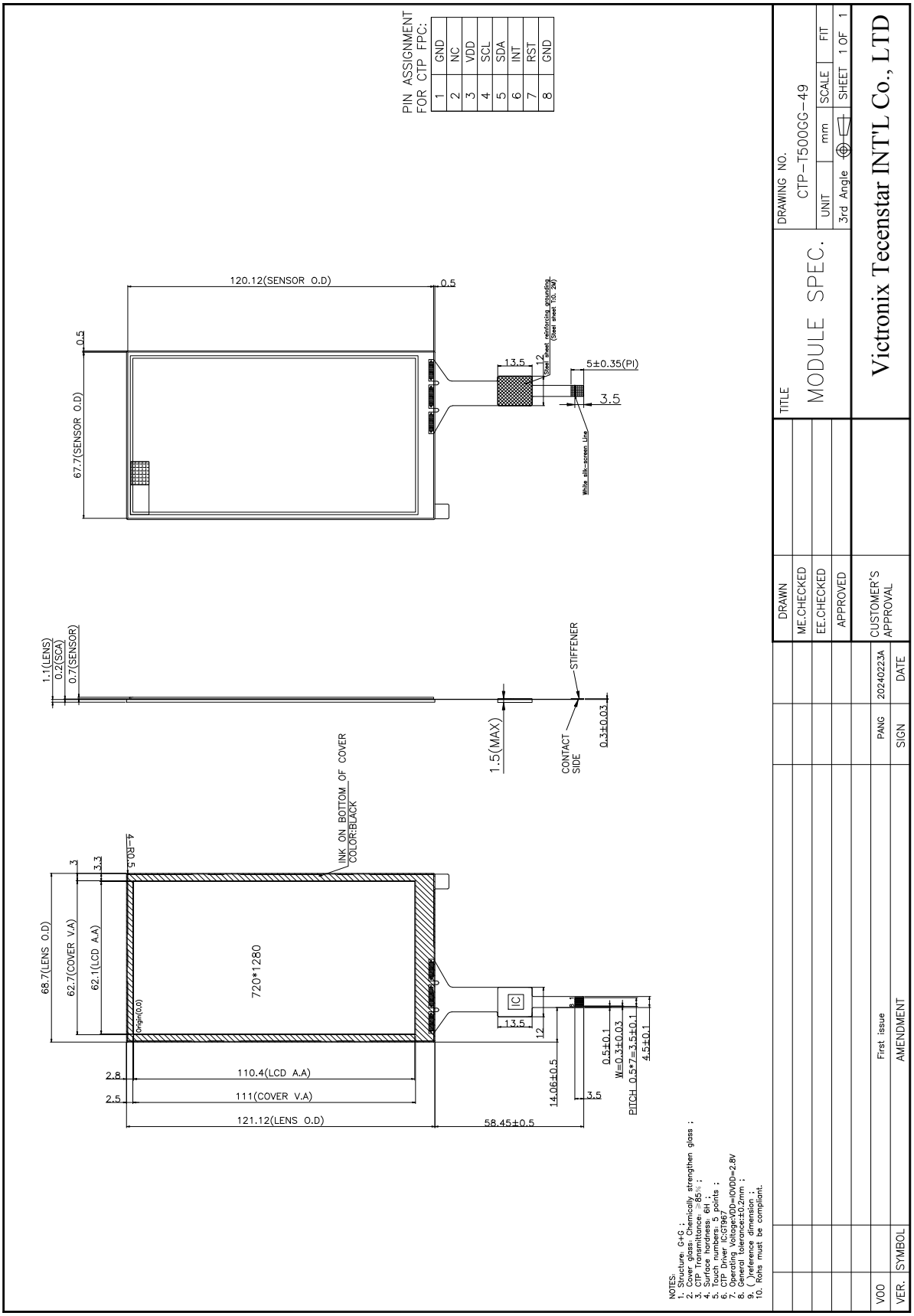

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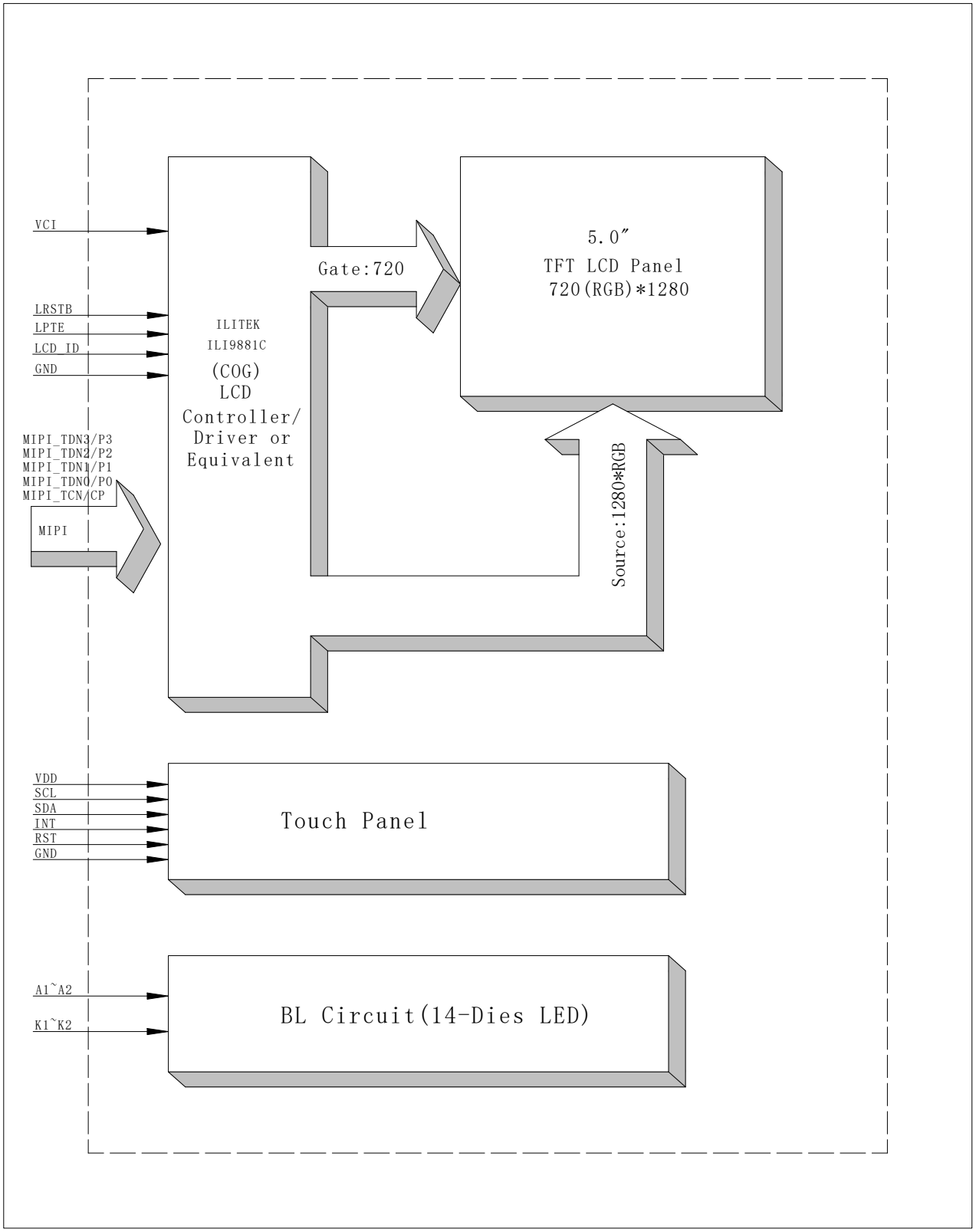
3. Block Diagram



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4. Interface Pin Function

Pin No.	Symbol	Description
1	GND	Power ground.
2	GND	Power ground.
3	LRSTB	The external reset input.
4	LPTE	Tearing effect output pin.Leave the pin open when not in use.
5	VCI	Power supply 2.8V.
6	VCI	Power supply 2.8V.
7	LCD_ID	Product id signal output.
8	MIPI_TDN3	MIPI DSI differential data pair. (Data lane 3)
9	MIPI_TDP3	MIPI DSI differential data pair. (Data lane 3)
10	GND	Power ground.
11	MIPI_TDN2	MIPI DSI differential data pair. (Data lane 2)
12	MIPI_TDP2	MIPI DSI differential data pair. (Data lane 2)
13	GND	Power ground.
14	A1	Anode of LED backlight.
15	A2	Anode of LED backlight.
16	K1	Cathode of LED backlight.
17	K2	Cathode of LED backlight.
18	GND	Power ground.
19	MIPI_TCN	MIPI DSI differential clock pair
20	MIPI_TCP	MIPI DSI differential clock pair
21	GND	Power ground.
22	MIPI_TDN0	MIPI DSI differential data pair. (Data lane 0)
23	MIPI_TDP0	MIPI DSI differential data pair. (Data lane 0)
24	GND	Power ground.
25	MIPI_TDN1	MIPI DSI differential data pair. (Data lane 1)
26	MIPI_TDP1	MIPI DSI differential data pair. (Data lane 1)
27	GND	Power ground.
28	NC	No connection.
29	NC	No connection.
30	NC	No connection.

Pin No.	Symbol	Description
1	GND	Power ground.
2	VDD	Power supply
3	SCL	I2C clock signal
4	SDA	I2C data signal
5	INT	Interrupt request to the host, or Wake up request from the host.
6	RST	Reset pin,active low.
7	GND	Power ground.

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5. Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit
Supply voltage for analog	VCI	-0.3	3.6	V
Supply voltage for logic	VCI	-0.3	3.6	V
Supply current (One LED)	I_{LED}		30	mA
Operating temperature	T_{OP}	-20	+80	°C
Storage temperature	T_{ST}	-30	+80	°C

Note: 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.

Current value of each pattern

Display	I_{VCI} (TYP)	I_{VCI} (MAX)	Unit
Red/Green/Blue	32	40	mA
White	30	40	
Black	29	40	

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6. Electrical Characteristics

6.1 Input Power

Item	Symbol	Min	Typ.	Max	Unit	Applicable terminal
Supply Voltage for Analog	VCI	2.5	2.8	3.3	V	
Supply Voltage for Logic	VCI	2.5	2.8	3.3	V	
Input Voltage	V_{IL}	GND	-	0.3VDD	V	
	V_{IH}	0.7VDD	-	VDD		
Input leakage Current	I_{LKG}	-1		1	μA	
Supply Current	IDD		TBD		mA	

6.2 Backlight Driving Conditions

Item	Symbol	Value			Unit	Remark
		Min.	Typ.	Max.		
Voltage for LED Backlight	V_F	19.6	21	23.8	V	I_L =40mA
Current for LED Backlight	I_L		40		mA	
Power Consumption	P		0.84		W	
LED Life Time		30,000	50,000		Hr	Note

Note: Brightness to be decreased to 50% of the initial value at ambient temperature TA=25℃

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6.3 CTP Electrical characteristics

Item	Contents	Unit
Structure	G+G	
Outline dimension	68.7±0.2*121.12±0.2	mm
Outline dimension of sensor	67.7±0.5*120.12±0.5	mm
View area	62.1±0.2*110.4±0.2	mm
Drive IC	GT967	
Interface type	IIC	
IIC Address	0xBA(8Bit)/0x5D(7Bit)	
Supply voltage	2.8	V
I/O voltage	2.8	V
Number of touch point	5	point
Connector type	ZIF	
Transmittance of view area	≧85%	
Hardness	≧6H	

Item	Symbol	Value	Unit
Power supply voltage	VDD	2.7~3.6	V
I/O digital voltage	IOVCC	1.71~3.6	V
Operating temperature	Topr	-20 ~ +80	℃
Storage temperature	Tstg	-30 ~ +80	℃

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7. Optical Characteristics

ITEM		SYMBOL	CONDITIONS	SPECIFICATIONS			UNIT	NOTE
				MIN	TYP.	MAX		
Luminance		L	I_L =40mA	680	850	1200	Cd/m^2	
Contrast Ratio		CR	θ=0°	1000	1200			
Response Time		T_{ON}	25℃		30	40	ms	
		T_{OFF}						
CIE Color Coordinate	Red	X_R	Viewing normal angle	0.6285	0.6685	0.7085		
		Y_R		0.2854	0.3254	0.3654		
	Green	X_G		0.2845	0.3245	0.3645		
		Y_G		0.5899	0.6299	0.6699		
	Blue	X_B		0.0849	0.1249	0.1649		
		Y_B		0.958	0.9980	1.038		
	White	X_W		0.2837	0.3237	0.3637		
		Y_W		0.3139	0.3539	0.3939		
Viewing Angle	Hor.	θ_{X+}	CR≥10	70	80	-	Degree	
		θ_{X-}		70	80	-		
	Ver.	θ_{Y+}		70	80	-		
		θ_{Y-}		70	80	-		
Uniformity	Un			75	80		%	

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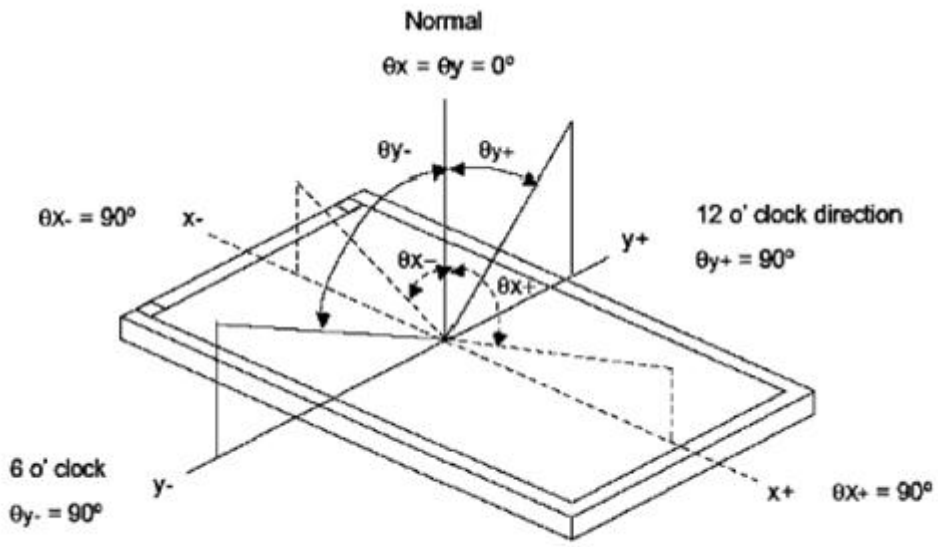
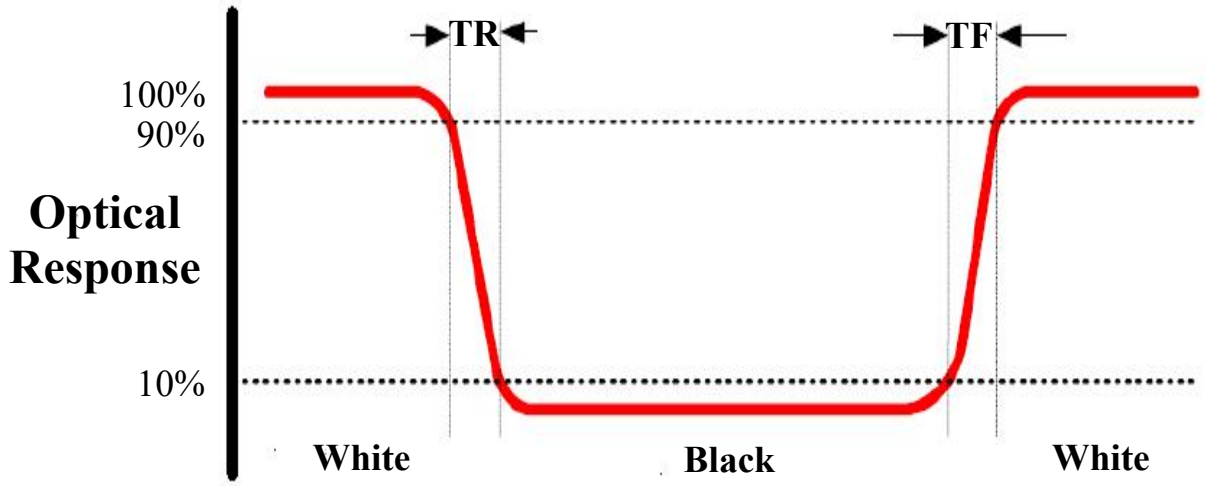
Note 1: Definition of Viewing Angle θx and θy:



Note 2: Definition of contrast ratio CR:

$$CR = \frac{\text{Luminance of white state}}{\text{Luminance of black state}}$$

Note 3: Definition of Response Time(Tr,Tf)



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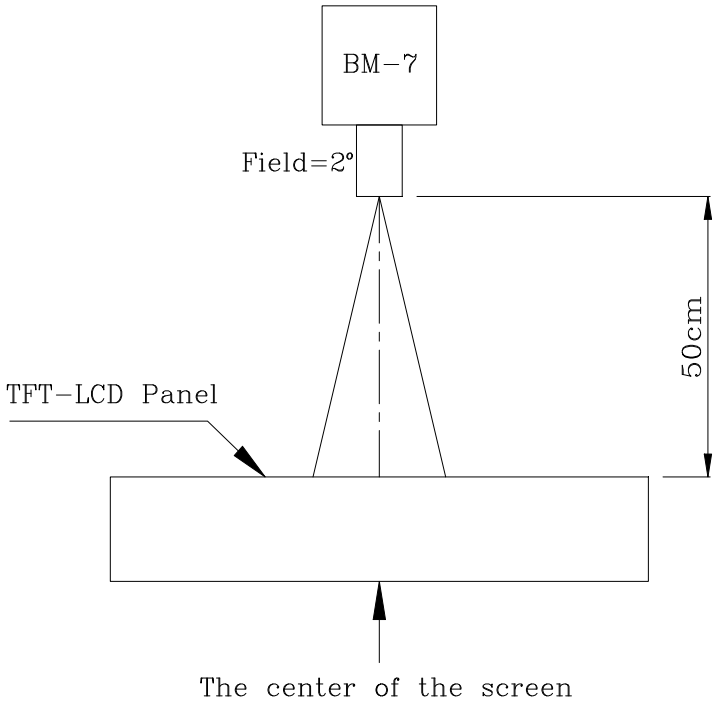
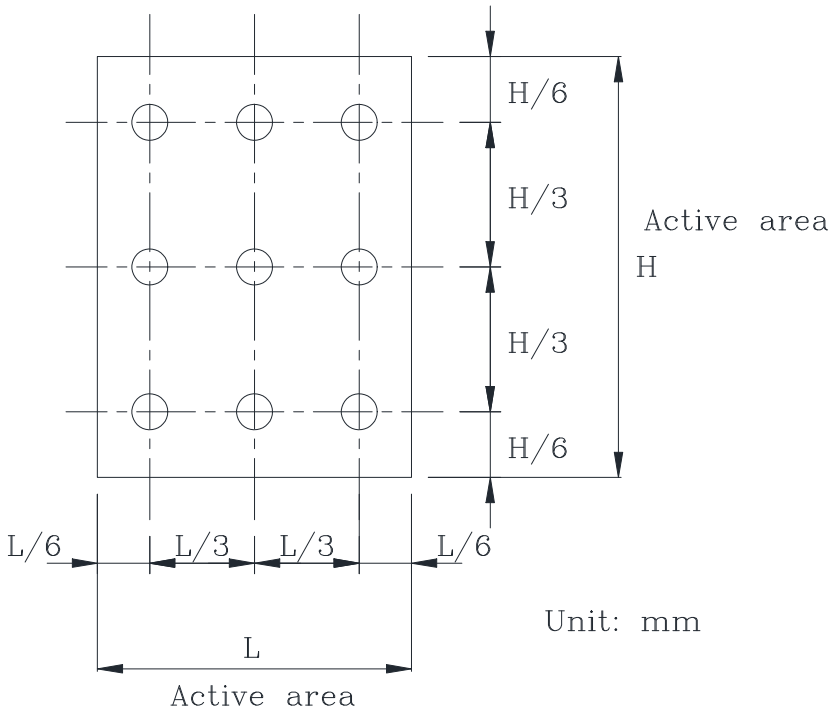
Note 4: Definition of Luminance

①The Brightness Test Equipment Setup

Field=2° (As measuring "black" image, field=2° is the best testing condition)



②The Brightness Test Point Setup



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8. Timing Characteristics

8.1 High Speed Mode – Clock Channel Timing

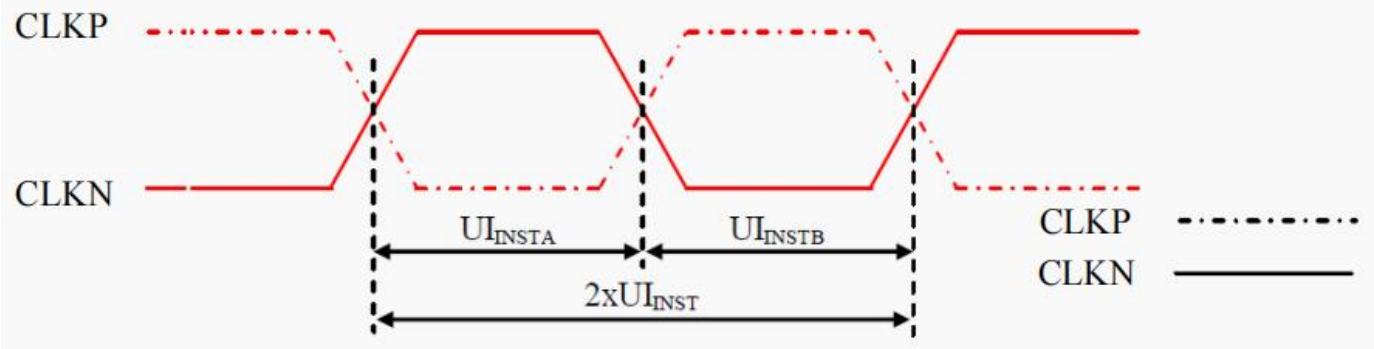

Figure 1 DSI Clock Channel Timing

Signal	Symbol	Parameter	Min	Max	Unit
CLKP/N	$2xUI_{INST}$	Double UI instantaneous	4	25	ns
CLKP/N	UI_{INSTA},UI_{INSTB} (Note 1)	UI instantaneous Half	2 (Note 2)	12.5	ns

Table 1 DSI Clock Channel Timing

Data type	Two Lanes speed	Three Lanes speed	Four Lanes speed
Data Type = 00 1110 (0Eh), RGB 565, 16 UI per Pixel	566 Mbps	433 Mbps	366 Mbps
Data Type = 01 1110 (1Eh), RGB 666, 18 UI per Pixel	637 Mbps	487 Mbps	412 Mbps
Data Type = 10 1110 (2Eh), RGB 666 Loosely, 24 UI per Pixel	850 Mbps	650 Mbps	550 Mbps
Data Type = 11 1110 (3Eh), RGB 888, 24 UI per Pixel	850 Mbps	650 Mbps	550 Mbps

Table 2 Limited Clock Channel Speed

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8.2 High Speed Mode – Data Clock Channel Timing

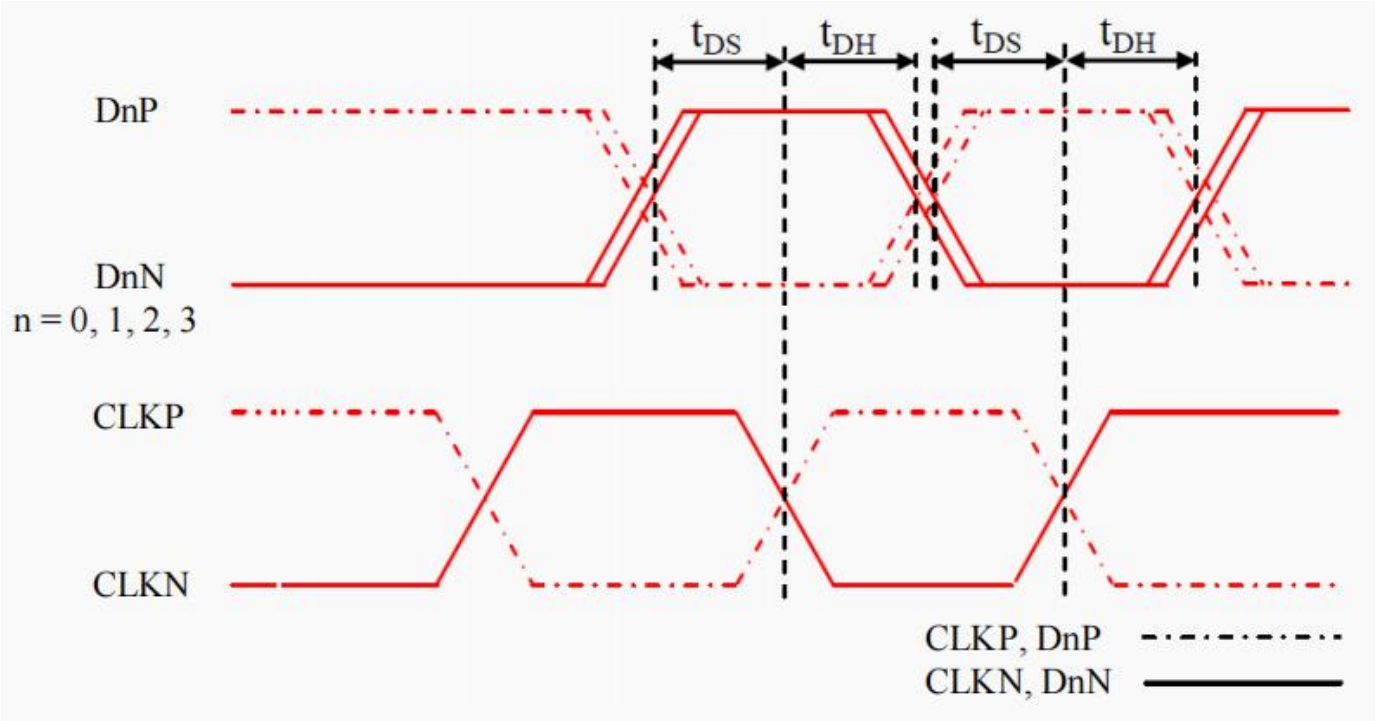

Figure 2 DSI Data to Clock Channel Timings

Signal	Symbol	Parameter	Min	Max
DnP/N , n=0 and 1	t_{DS}	Data to Clock Setup time	0.15xUI	-
	t_{DH}	Clock to Data Hold Time	0.15xUI	-

Table 3 DSI Data to Clock Channel Timings

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8.3 High Speed Mode – Rising and Falling Timings

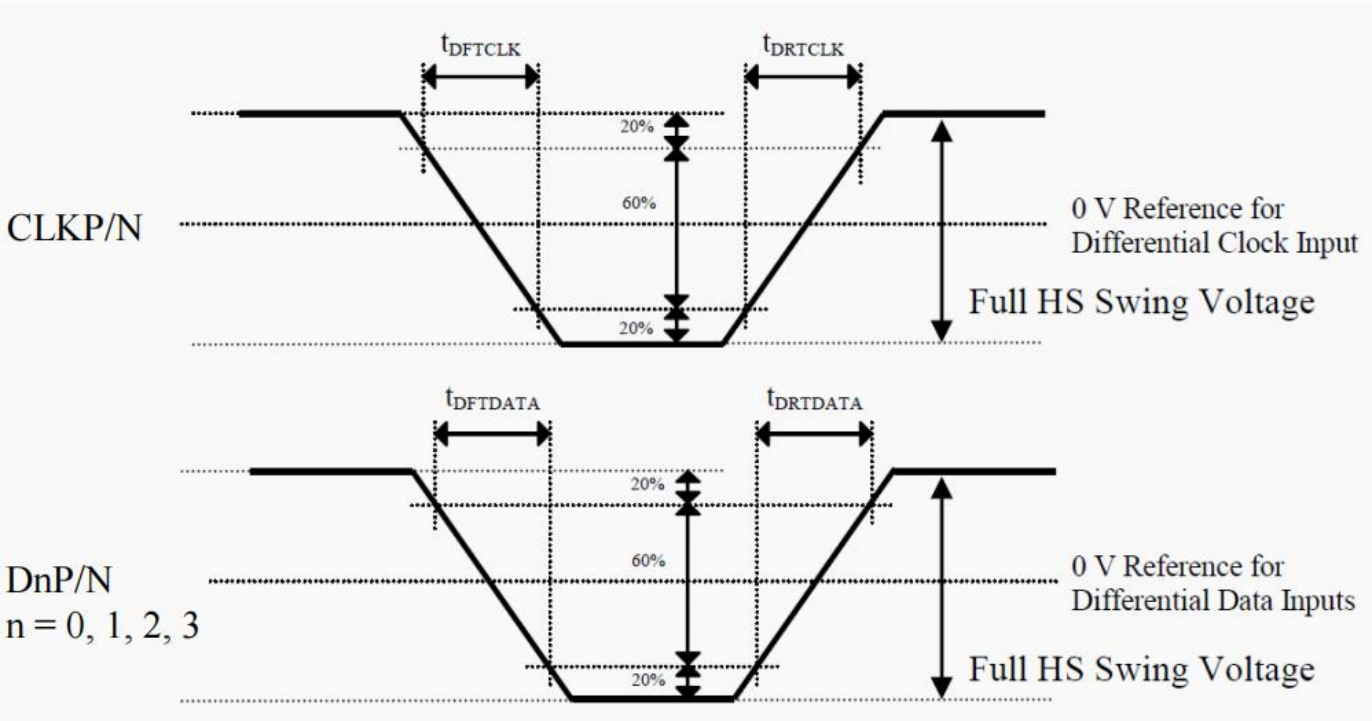

Figure 3 Rising and Falling Timings on Clock and Data Channels

Parameter	Symbol	Condition	Specification		
			Min	Typ	Max
Differential Rise Time for Clock	t_{DRTCLK}	CLKP/N	150 ps	-	0.3UI (Note)
Differential Rise Time for Data	$t_{DRTDATA}$	DnP/N n=0 and 1	150 ps	-	0.3UI (Note)
Differential Fall Time for Clock	t_{DFTCLK}	CLKP/N	150 ps	-	0.3UI (Note)
Differential Fall Time for Data	$t_{DFTDATA}$	DnP/N n=0 and 1	150 ps	-	0.3UI (Note)

Table 4 Rise and Fall Timings on Clock and Data Channels

Note: The display module has to meet timing requirements, which are defined for the transmitter (MCU) on MIPI D-Phy standard.

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9. Standard Specification for Reliability

9.1 Standard Specification for Reliability of LCD Module

No.	Item	Description	Remarks
01	High temperature operation	The sample should be allowed to stand at 80℃ for 240 hours under driving condition and then returning it to normal temperature condition, and allowing it stand for 2 hours.	Note 1 IEC60068-2-2, GB2423.2-89
02	Low temperature operation	The sample should be allowed to stand at -30℃ for 240 hours under driving condition and then returning it to normal temperature condition, and allowing it stand for 2 hours.	Note2 IEC60068-2-1 GB2423.1-89
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.	IEC60068-2-2 GB2423.2-89
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.	IEC60068-2-1 GB/T2423.1-89
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.	IEC60068-2-1 GB/T2423.3-2006
06	Thermal shock storage	The sample should be allowed to stand the following 10 cycles : -20℃ for 30 minutes → normal temperature for 5 minutes → +60℃ for 30 minutes → normal temperature for 5 minutes, as one cycle.	Start with cold temperature,end with high temperature IEC60068-2-14, GB2423.22-87
07	Packing drop test	According to ASTM-D-5327.	IEC60068-2-32 GB/T2423.8-1995
08	Electrical Static Discharge	Air: ±8KV 150pF/330Ω 5 times	IEC61000-4-2 GB/T17626.2-1998
		Contact: ±4KV 150pF/330Ω 5 time	

Note:1.Ts is the temperature of panel's surface.
2.Ta is the ambient temperature of sample.
3.Sample size for each test item is 3~5pcs.

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9.2 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 9.2, standard specifications for reliability will be 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.

9.3 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.

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10. Specification of Quality Assurance

This standard of Quality Assurance confirms to the quality of LCD module products supplied by Victronix.

10.1 Quality Test

Before delivering, the supplier should conduct the following tests to confirm the quality of products.

- Electrical-Optical Characteristics: According to the individual specification to test the product.
- Appearance Characteristics: According to the individual specification to test the product.
- Reliability Characteristics: According to the definition of reliability on the specification for testing products.

10.2 Delivery Test

Before delivering, the supplier should conduct the delivery test.

- Test method: According to MIL-STD105E.General Inspection Level II take a single Time.
- The defects classify of AQL as following:
  Major defect: AQL = 0.65
  Minor defect: AQL = 1.5
  Total defects: AQL = 1.5

10.3 Non-conforming Analysis & Deal With Manners

10.3.1 Non-conforming Analysis

- Purchaser should provide the data detail of non-conforming sample and the non-conforming.
- After receiving the data detail from purchaser, the analysis of non-conforming should be finished within two weeks.
- If the analysis can't be finished on time, supplier must notice purchaser 3 days in advance.

10.3.2 Disposition of non-conforming

- If any product defect be found during assembling, supplier must change the good for every defect after confirmation.
- Both supplier and customer should analyze the reason and discuss the disposition of non-conforming when the reason of nonconforming is not sure.

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10.4 Agreement items

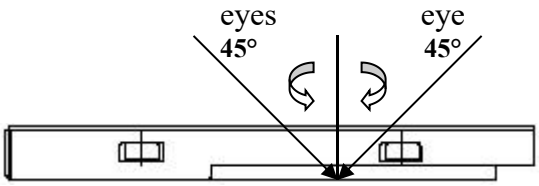
Both parties should negotiate together when the following problems happen.

- There is any problem of standard of quality assurance, and both sides should agree that it must be modified.
- There is any argument item which does not record in the standard of quality assurance.
- Any other special problem.

10.5 Standard of The Product Appearance Test

10.5.1 Manner of appearance test

- The test must be under 20W × 2 or 40W fluorescent light, and the distance of view must be at 30±5cm.
- When test the model of transmissive product must add the reflective plate.
- The test direction is base on around 45° of vertical line.
- Temperature: 25±5°C Humidity: 60±10%RH



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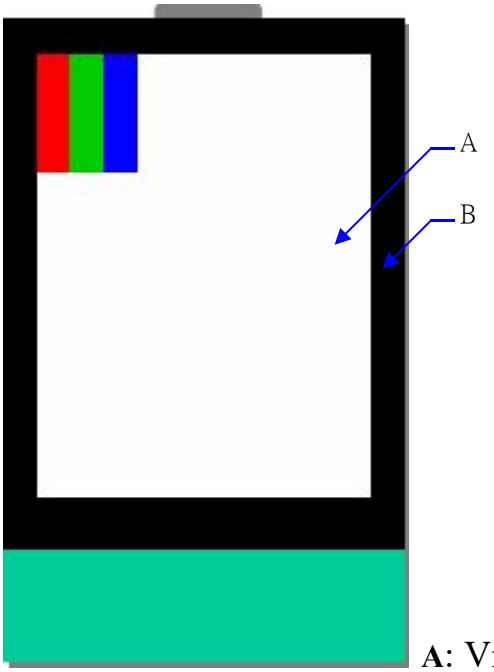
- Definition of area:



A: Viewing area B: Outside viewing area

10.5.2 Basic principle

- When the standard can not be described, AQL will be applied.
- The sample of the lowest acceptable quality level must be negotiated by both supplier and customer when any dispute happened.
- New item must be added on time when it is necessary.

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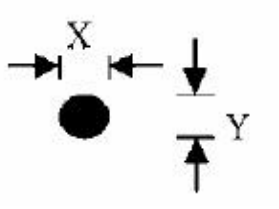
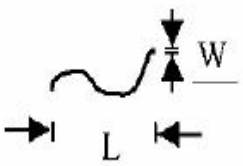
10.6 Inspection Specification

<table>
<tr><th>NO.</th><th>Item</th><th>Criterion</th><th>AQL</th></tr>
<tr><td>01</td><td>Electrical Testing</td><td>1.1 Missing vertical, horizontal segment, segment contrast defect.
1.2 Missing character, dot or icon.
1.3 Display malfunction.
1.4 No function or no display.
1.5 Current consumption exceeds product specifications.
1.6 LCD viewing angle defect.
1.7 Mixed product types.
1.8 Flicker</td><td>0.65</td></tr>
<tr><td>02</td><td>Black or White spots or Bright spots or Color spots on LCD (Display only)</td><td>2.1 White and black or color spots on display < 0.25mm, no more than one spots.
2.2 Densely spaced: No more than three spots within 3mm.</td><td>2.5</td></tr>
<tr><td rowspan="2">03</td><td rowspan="2">LCD and Touch Panel black spots, white spots, contamination (non – display)</td><td>3.1 Round type: As following drawing
Φ = (X+Y) / 2
 

<table><tr><th>Size(mm)</th><th>Acceptable Q'ty</th></tr><tr><td>Φ≦0.10</td><td>Accept no dense</td></tr><tr><td>0.10< Φ≦0.20</td><td>2</td></tr><tr><td>0.20< Φ≦0.25</td><td>2</td></tr><tr><td>0.25< Φ≦0.30</td><td>1</td></tr><tr><td>0.30< Φ</td><td>0</td></tr></table>* Densely spaced: No more than two spots within 3mm.</td><td>2.5</td></tr>
<tr><td>3.2 Line type: (As following drawing)
 

<table><tr><th>Length(mm)</th><th>Width(mm)</th><th>Acceptable Q'ty</th></tr><tr><td>---</td><td>W≦0.02</td><td>Accept no dense</td></tr><tr><td>L<2.5</td><td>W<0.08</td><td>1</td></tr><tr><td>---</td><td>0.08≦W</td><td>Rejection</td></tr></table>* Densely spaced: No more than two lines within 3mm.</td><td>2.5</td></tr>
</table>

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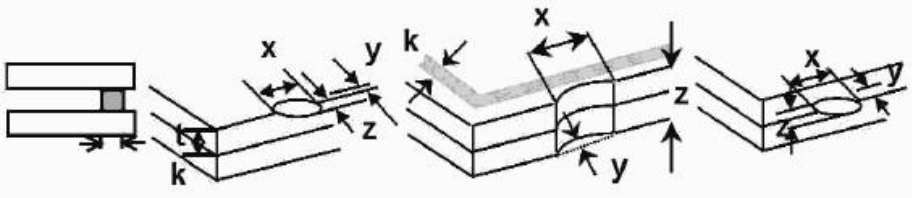
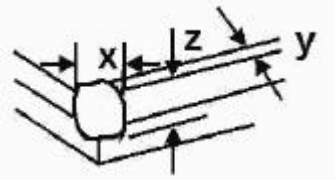
<table>
<tr><th>NO.</th><th>Item</th><th colspan="2">Criterion</th><th>AQL</th></tr>
<tr><td rowspan="6">04</td><td rowspan="6">Polarizer bubbles</td><td rowspan="6">If bubbles are visible, judge using black spot specifications, not easy to find, must check in specify direction</td><td>Size Φ(mm)</td><td>Acceptable Q'ty</td><td rowspan="6">2.5</td></tr>
<tr><td>Φ≦0.30</td><td>Accept no dense</td></tr>
<tr><td>0.30< Φ≦0.50</td><td>3</td></tr>
<tr><td>0.50< Φ≦1.00</td><td>2</td></tr>
<tr><td>1.00< Φ</td><td>0</td></tr>
<tr><td>Total Q’ty</td><td>3</td></tr>
<tr><td>05</td><td>Scratches</td><td colspan="3">Follow NO.3 -2 Line Type.</td><td></td></tr>
<tr><td>06</td><td>Chipped glass</td><td colspan="3">Symbols:
x: Chip length y: Chip width z: Chip thickness
k: Seal width t: Glass thickness a: LCD side length
L: Electrode pad length
6.1 General glass chip:
6.1.1 Chip on panel surface and crack between panels:
 

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

<table>
<tr><th>z: Chip thickness</th><th>y: Chip width</th><th>x: Chip length</th></tr>
<tr><td>Z≦1/2t</td><td>Not over viewing area</td><td>x≦1/8a</td></tr>
<tr><td>1/2t< z≦2t</td><td>Not exceed 1/3k</td><td>x≦1/8a</td></tr>
</table>
⊙ Unit: mm
⊙ If there are 2 or more chips, x is the total length of each chip</td><td>2.5</td></tr>
</table>

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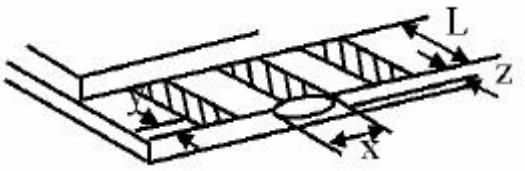
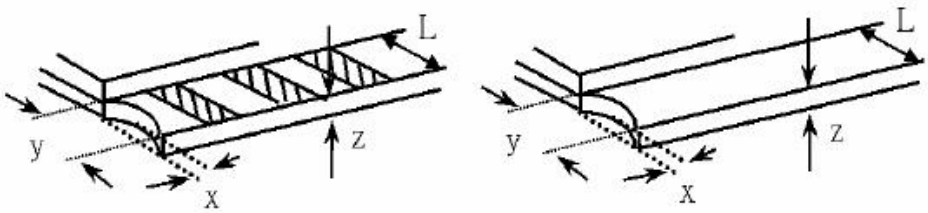
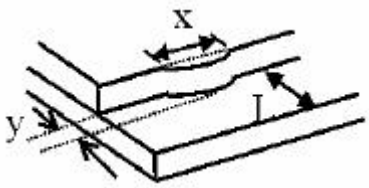
<table>
<tr><th>NO.</th><th>Item</th><th>Criterion</th><th>AQL</th></tr>
<tr><td>07</td><td>Glass crack</td><td>
Symbols:
x: Chip length y: Chip width z: Chip thickness
k: Seal width t: Glass thickness a: LCD side length
L: Electrode pad length
7.2 Protrusion over terminal:
7.2.1 Chip on electrode pad:


<table>
<tr><td>y: Chip width</td><td>x: Chip length</td><td>z: Chip thickness</td></tr>
<tr><td>y≦0.5mm</td><td>x≦1/8a</td><td>0< z≦t</td></tr>
</table>
7.2.2
Non-conductive portion:


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


<table>
<tr><td>y: width</td><td>x: length</td></tr>
<tr><td>y≦1/3L</td><td>X≦a</td></tr>
</table>
</td><td>2.5</td></tr>
</table>

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NO.	Item	Criterion	AQL
08	Cracked glass	No crack is allowed.	2.5
09	Backlight elements	9.1 Illumination source flickers when lit. 9.2 Spots or scratches that appear when lit must be judged. Using LCD spot, lines and contamination standards. 9.3 Backlight doesn't light or color is wrong.	2.5 2.5 0.65
10	Bezel	No scratches with W>0.1 and Length>2.5mm.	2.5
11	PCB、COB	11.1 COB seal may not have pinholes larger than 0.2mm or contamination. 11.2 COB seal surface may not have pinholes through to the IC. 11.3 The height of the COB should not exceed the height indicated in the assembly diagram. 11.4 There may not be more than 2mm of sealant outside the seal area on PCB. And there should be no more than three places. 11.5 Parts on PCB must be the same as on the production characteristic chart, There should be no wrong parts, missing parts or excess parts. 11.6 The jumper on the PCB should conform to the product characteristic chart.	2.5 2.5 2.5 2.5 0.65 0.65
12	FPC	FPC damage per IPC guidelines.(IPC-A-610) Nicks or damage along the edges of the flexible printed cir-cuitry and cutouts,providing the penetration does not exceed 50% of the distance from the edge to the nearest conductor to 2.5mm[0.1in], Whichever is less.	2.5
13	Soldering	13.1 No cold solder joints, missing solder connections, oxidation or icicle. 13.2 No short circuits in components on PCB or FPC. 13.3 Soldering per IPC guidelines.(IPC-A-610)	2.5 0.65

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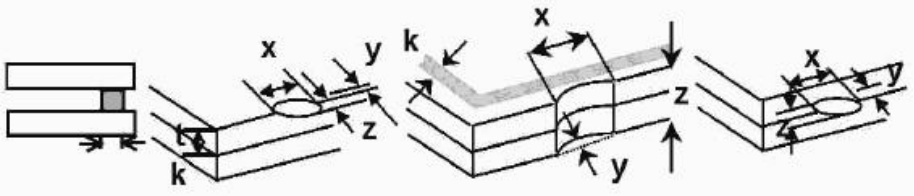
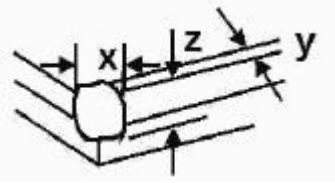
<table>
<tr><th>NO.</th><th>Item</th><th>Criterion</th><th>AQL</th></tr>
<tr><td>14</td><td>Touch Panel Chipped glass</td><td>
Symbols:
x: Chip length y: Chip width z: Chip thickness
k: Seal width t: Touch Panel Total thickness a: LCD side length
L: Electrode pad length
14.1 General glass chip:
14.1.1 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
14.1.2 Corner crack:


<table>
<tr><td>z: Chip thickness</td><td>y: Chip width</td><td>x: Chip length</td></tr>
<tr><td>z≦t</td><td>≦1/2 k and not over viewing area</td><td>x≦1/8a</td></tr>
</table>
⊙ Unit: mm
⊙ If there are 2 or more chips, x is the total length of each chip
</td><td>2.5</td></tr>
</table>

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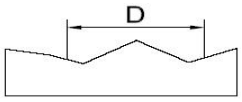
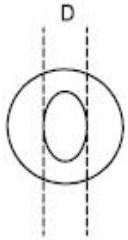
<table>
<tr><th>NO.</th><th>Item</th><th>Criterion</th><th>AQL</th></tr>
<tr><td>15</td><td>Touch Panel(Fish eye、dent and bubble on film)</td><td>
<table>
<tr><td>SIZE(mm)</td><td>Acceptable Q’ty</td></tr>
<tr><td>Φ≦0.2</td><td>Accept no dense</td></tr>
<tr><td>0.2< D ≦0.4</td><td>5</td></tr>
<tr><td>0.4< D ≦0.5</td><td>2</td></tr>
<tr><td>0.5< D</td><td>0</td></tr>
</table>




</td><td>2.5</td></tr>
<tr><td>16</td><td>Touch Panel Newton ring</td><td>Newton ring dimension ≦ 1/2 touch panel area and not affect font and line distortion(≦2.5%) , it is acceptable.</td><td>2.5</td></tr>
<tr><td>17</td><td>Touch Panel Linearity</td><td>Less than 2.5% is acceptable.</td><td>2.5</td></tr>
<tr><td>18</td><td>LCD Ripple</td><td>Touch the touch panel , can not see the LCD ripple.
Pen: R 1.0mm silicon rubber.
Operation Force: 80g</td><td>2.5</td></tr>
<tr><td>19</td><td>General appearance</td><td>19.1 Pin type must match type in specification sheet.
19.2 LCD pin loose or missing pins.
19.3 Product packaging must the same as specified on packaging specification sheet.
19.4 Product dimension and structure must conform to product specification sheet.</td><td>0.65
0.65
0.65
0.65</td></tr>
</table>

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11. Handling Precaution

11.1 Handling of LCM

- Avoid external shock.
- Don't apply excessive force on the surface.
- Liquid in LCD is hazardous substance, do not lick or swallow. When the liquid is attaching to your hand, skin, cloth, etc., wash it thoroughly and immediately.
- Don't operate it above the absolute maximum rating.
- Don't disassemble the LCM.
- The operators should wear protections 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 careful when peeling off this protective film since static electricity may be generated.

11.2 Storage

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

11.3 Soldering

- Use only soldering irons with proper grounding and no leakage.
- Iron: no higher than 280±10°C and less than 3 sec during hand soldering.
- Rewiring: no more than 2 times.

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12. Packing Method

-TBD

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