

MDT070007	800 x 1280	MIPI Interface	TFT Module
Specification			
Version: 1		Date: 05/08/2023	
Revision			
1	03/08/2023	First issue	

Display Features			
Display Size	7"		
Resolution	800 x 1280		
Orientation	Portrait		
Appearance	RGB		
Logic Voltage	1.8V		
Interface	MIPI		
Brightness	1000 cd/m ²		
Touchscreen	---		
Module Size	103.60 x 162.27 x 4.70 mm		
Operating Temperature	-20°C ~ +70°C	Created By	Checked By
Pinout	26 way FFC	CL	TSB
Pitch	1.0 mm	Box Quantity	Weight / Display
		---	---

* - For full design functionality, please use this specification in conjunction with the ILI9881 display driver specification.(Provided Separately)

Display Accessories	
Part Number	Description
MDIB-CC1	Interconnect board for standard pitch pinouts to fine pitch wires. Providing pinouts for 2.54 pinout. 1.27, 1, 0.845, 0.8, 0.7, 0.65, 0.62, 0.6, 0.5 & 0.3 pads.

Optional Variants	
Appearances	Voltage



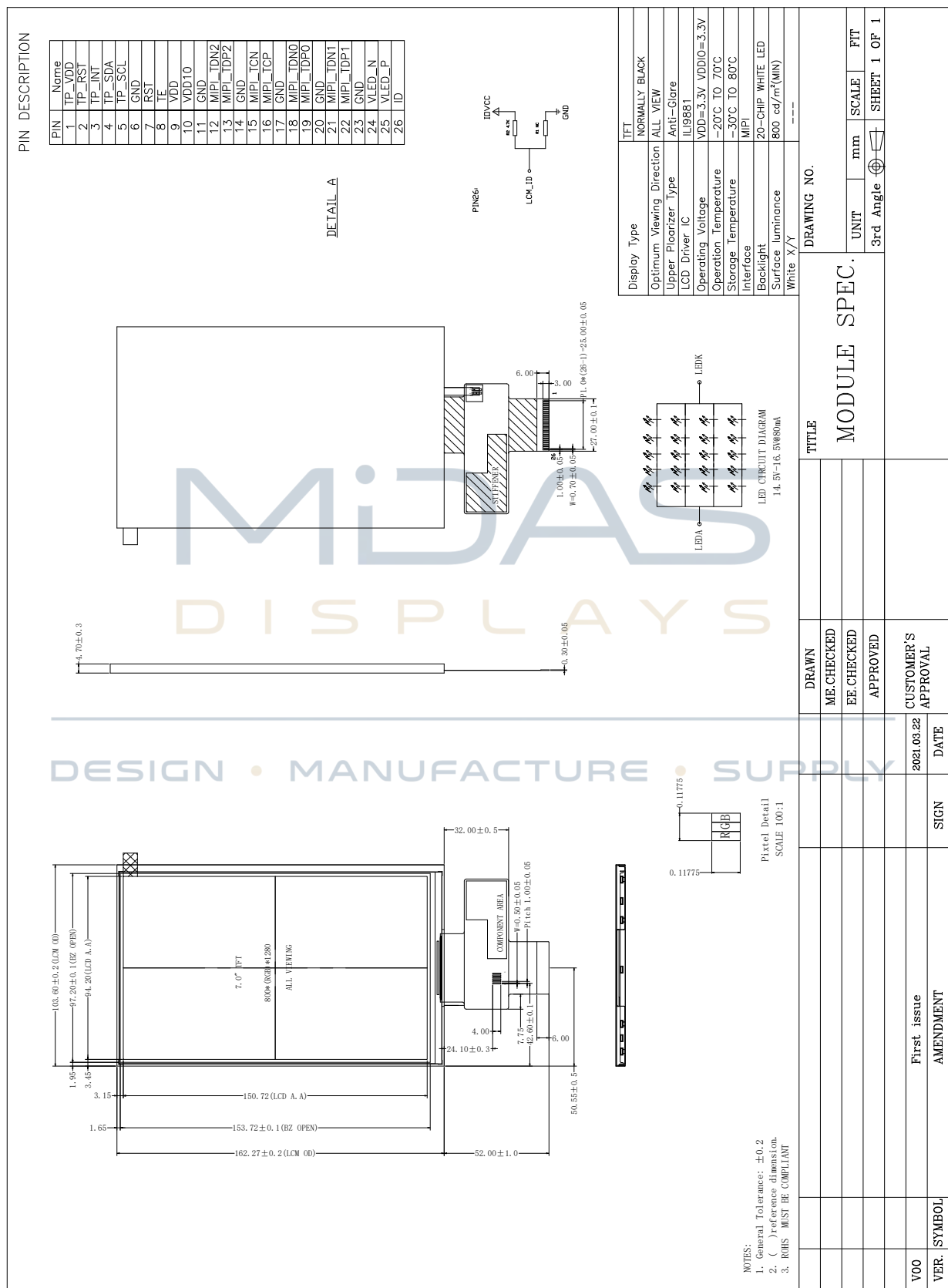
1. General Specification

Item	Contents	Unit
LCD TYPE	TFT/TRANSMISSIVE	
MODULE SIZE (W*H*T)	103.60*162.27*4.70	MM
ACTIVE SIZE (W*H)	94.2*150.72	MM
PIXEL PITCH (W*H)	0.11775*0.11775	MM
NUMBER OF DOTS	800*1280	
LCM DRIVER IC	ILI9881	
INTERFACE TYPE	MIPI	
TOP POLARIZER TYPE	ANTI-GLARE	
RECOMMEND VIEWING DIRECTION	ALL	O'CLOCK
GRAY SCALE INVERSION DIRECTION	--	O'CLOCK
BACKLIGHT TYPE	20-CHIP WHITE LED	
TOUCH PANEL TYPE	WITHOUT	

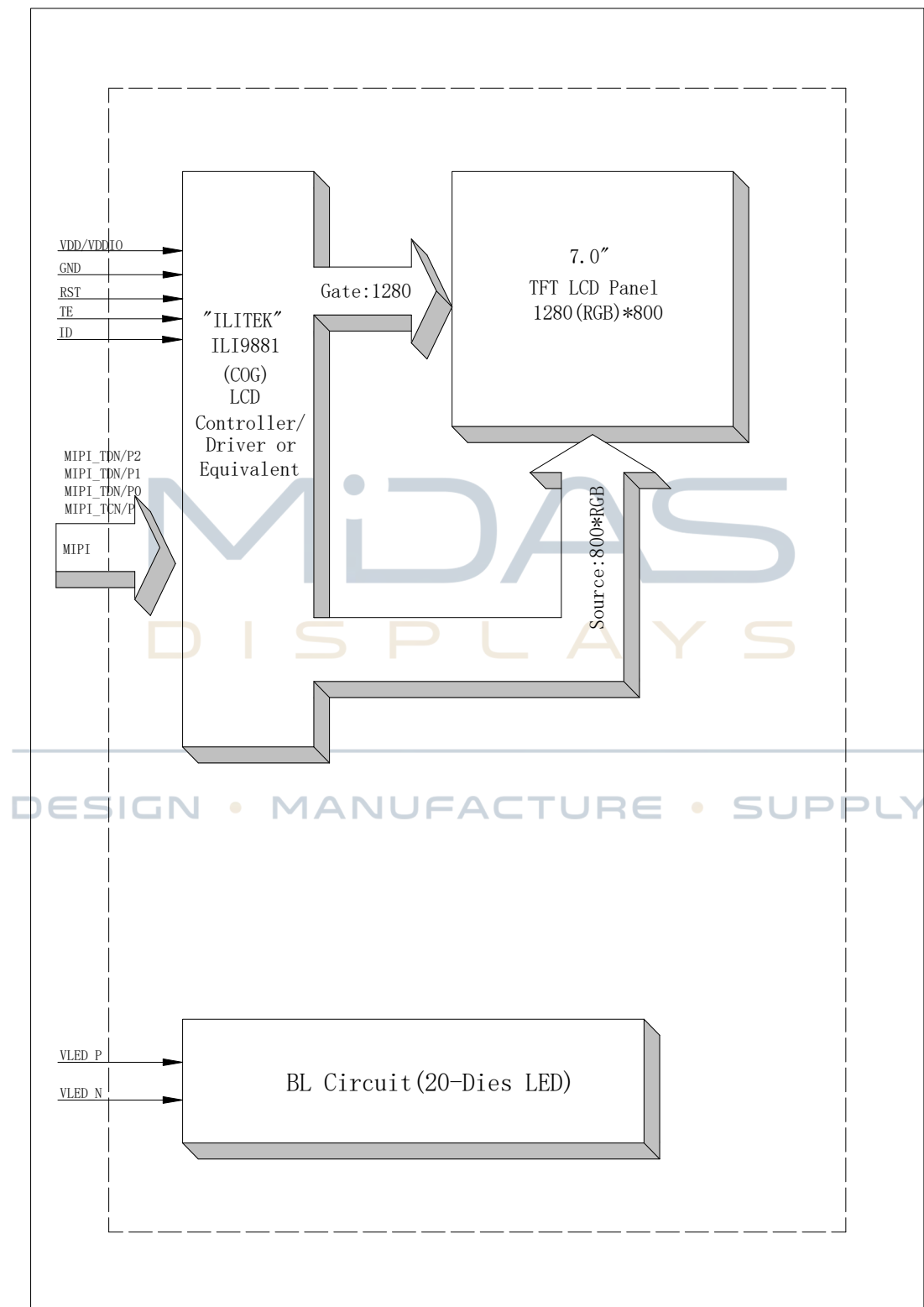
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2. Mechanical Drawing



3. Block Diagram



4. Interface Pin Function

Pin No.	Symbol	Description
1	TP_VDD	NO connection
2	TP_RST	NO connection
3	TP_INT	NO connection
4	TP_SDA	NO connection
5	TP_SCL	NO connection
6	GND	Ground
7	RST	Reset pin.
8	TE	Tearing effect
9	VDD	Power supply for analog
10	VDDIO	Power supply for logic
11	GND	Ground
12	MIPI_TDN2	MIPI data negative signal
13	MIPI_TDP2	MIPI data negative signal
14	GND	Ground
15	MIPI_TCN	MIPI clock negative signal
16	MIPI_TCP	MIPI clock negative signal
17	GND	Ground
18	MIPI_TDN0	MIPI data negative signal
19	MIPI_TDP0	MIPI data negative signal
20	GND	Ground
21	MIPI_TDN1	MIPI data negative signal
22	MIPI_TDP1	MIPI data negative signal
23	GND	Ground
24	VLED_N	Cathode for backlight
25	VLED_P	Anode for backlight
26	ID	Product ID signal output (1.8V)



5. Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit
Supply voltage for analog	VDD	-0.3	6.3	V
Supply voltage for logic	VDDIO	-0.3	1.95	V
Supply current (One LED)	I _{LED}		80	mA
Operating temperature	T _{OP}	-20	+70	°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.

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6. Electrical Characteristics

6.1 Input Power

Item	Symbol	Min	Typ.	Max	Unit	Applicable terminal
Supply Voltage for Analog	VDD	2.5	2.8	3.3	V	
Supply Voltage for Logic	VDDIO	1.65	1.8	1.95	V	
Input Voltage	V _{IL}	0	-	0.3VDDIO	V	
	V _{IH}	0.7VDDIO	-	VDDIO		
Input leakage Current	I _{LKG}	-		-	μA	

6.2 Backlight Driving Conditions

Item	Symbol	Value			Unit	Remark
		Min.	Typ.	Max.		
Voltage for LED Backlight	V _F	14.5	16	16.5	V	I _L =240mA
Current for LED Backlight	I _L		240		mA	
Power Consumption	P		3.84		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°C

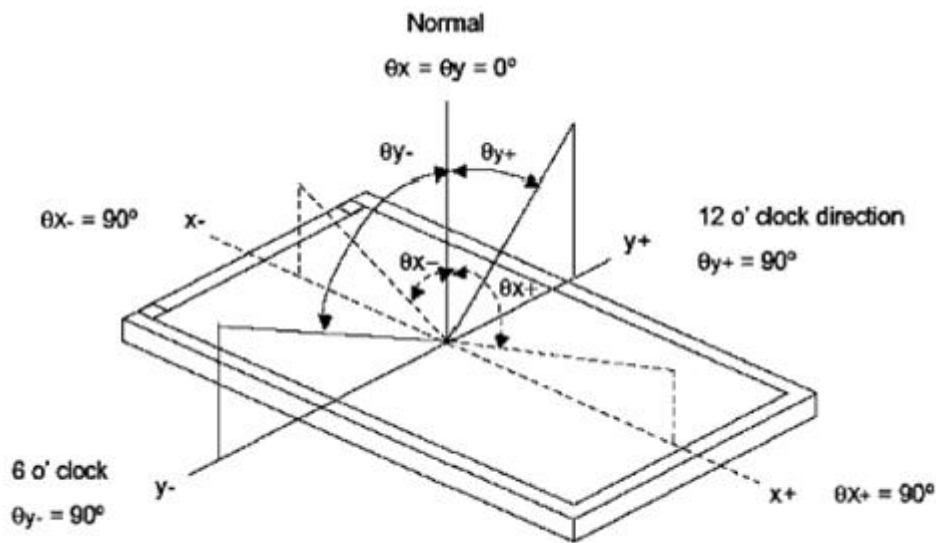


7. Optical Characteristics

ITEM		SYMBOL	CONDITIONS	SPECIFICATIONS			UNIT	NOTE
				MIN	TYP.	MAX		
Luminance		L	$I_L = 80\text{mA}$	800	1000	1400	Cd/m^2	
Contrast Ratio		CR	$\theta = 0^\circ$	800	1000			
Response Time		T_{ON}	25°C	-	25	35	ms	
		T_{OFF}						
CIE Color Coordinate	Red	X_R	Viewing normal angle	0.6003	0.6403	0.6803		
		Y_R		0.2959	0.3359	0.3759		
	Green	X_G		0.2783	0.3183	0.3583		
		Y_G		0.5504	0.5904	0.6304		
	Blue	X_B		0.0908	0.1308	0.1708		
		Y_B		0.1244	0.1644	0.2044		
	White	X_W		0.2872	0.3272	0.3672		
		Y_W		0.3196	0.3596	0.3996		
Viewing Angle	Hor.	θ_{x+}	$\text{CR} \geq 10$	75	85		Degree	
		θ_{x-}		75	85			
	Ver.	θ_{y+}		75	85			
		θ_{y-}		75	85			
Uniformity	Un			70	75		%	



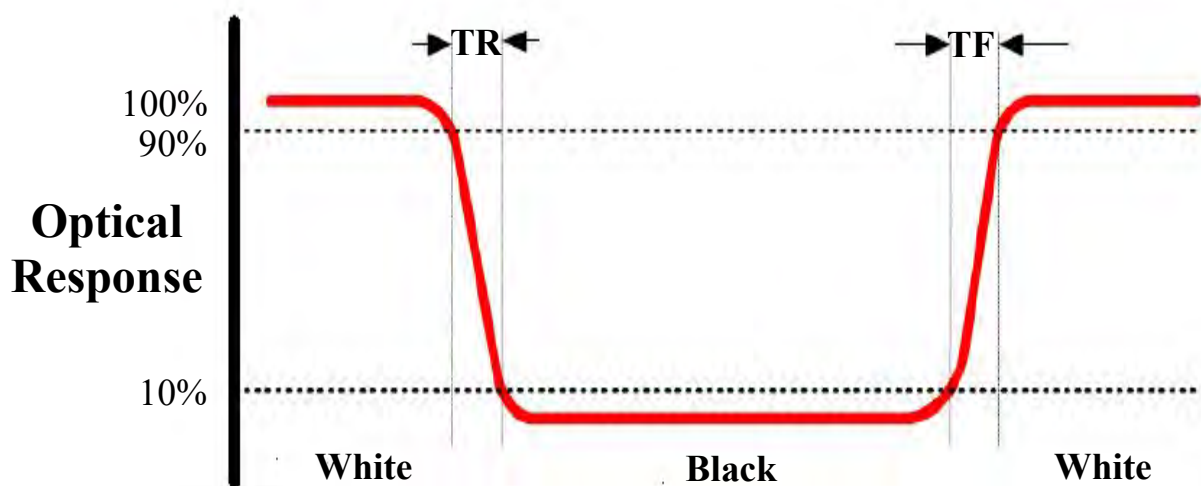
Note 1: Definition of Viewing Angle θ_x and θ_y :



Note 2: Definition of contrast ratio CR:

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

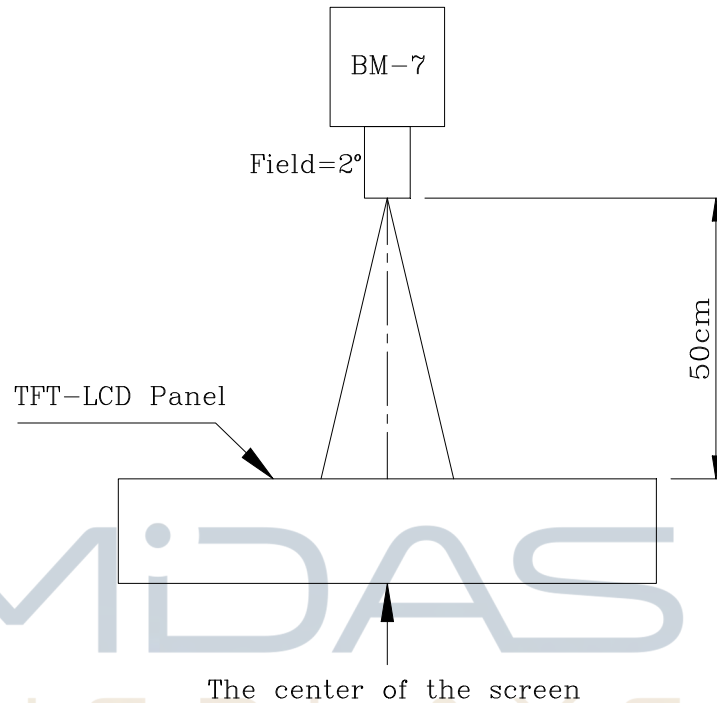
Note 3: Definition of Response Time(T_r , T_f)



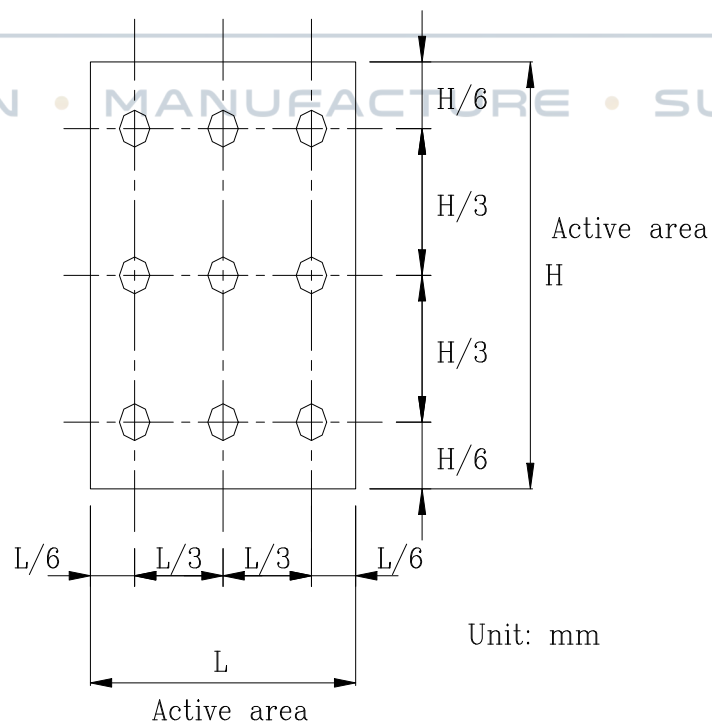
Note 4: Definition of Luminance

①The Brightness Test Equipment Setup

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

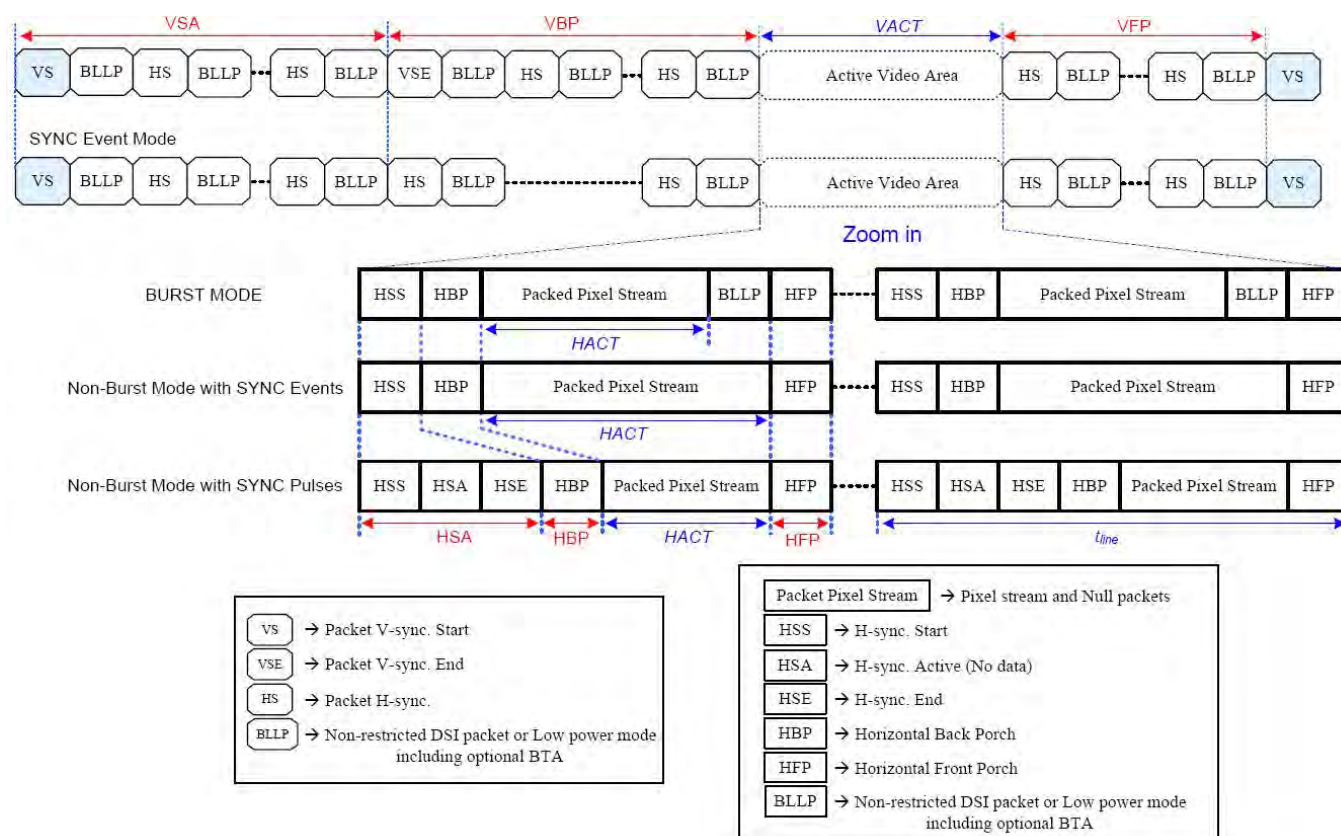


②The Brightness Test Point Setup



8. Timing Characteristics

8.1 Signal timing



Parameters	Symbols	Min.	Typ.	Max.	Units
Vertical sync. active	VSA	2 (Note5)	-	-	Line
Vertical Back Porch	VBP	14 (Note5)	-	-	Line
Vertical Front Porch	VFP	8 (Note5)	-	-	Line
Active lines per frame	VACT	-	1280	-	Line
Horizontal sync. active	HSA	2	-	-	Pixel
Horizontal Porch period	HSA + HBP + HFP	1.6	-	-	us
Active pixels per line	HACT	-	720	-	Pixel
Bit rate	BR _{bps}	385		Note4	Mbps/lane

1UI=1/Bit rate

HAS(pixel)=(tHSA*lane number)/(UI*pixel format)

HBP(pixel)=(tHBP*lane number)/(UI*pixel format)

HFP(pixel)=(tHFP*lane number)/(UI*pixel format)

$$Frame\ Rate = \frac{BR_{bps} \times Lane_{num}}{(VACT + VSA + VBP + VFP) \times (HACT + HSA + HBP + HFP) \times Pixel\ Format}$$

Example: $BR_{bps} = 457\text{Mbps/lane}$, $1UI = 2.1883\text{ns}$, $\text{Frame rate} = 60\text{Hz}$, $VACT = 1280$, $VSA = 2$, $VBP = 30$, $VFP = 20$, $HACT = 720$, $HAS = 33$, $HBP = 100$, $HFP = 100$, $Lane_{num} = 4(\text{lane})$, $\text{Pixel Format} = 24(\text{bit})$.

Note:

1. $Lane_{num}$: Data lane of MIPI-DSI.
2. The formula exists slightly error because of the host-transmission way.
3. The best frame rate setting: 2data lanes :50~60Hz/ 3data lanes :50~70Hz/ 4data lanes: 50~70Hz.
4. Limited Clock Channel Speed

Data type	Two Lanes speed	Three Lanes speed	Four Lanes speed
Data Type = 00 1110 (0Eh), RGB 565, 16 UI per Pixel	566 Mbps	466 Mbps	366 Mbps
Data Type = 01 1110 (1Eh), RGB 666, 18 UI per Pixel	637 Mbps	525 Mbps	412 Mbps
Data Type = 10 1110 (2Eh), RGB 666 Loosely, 24 UI per Pixel	850 Mbps	700 Mbps	550 Mbps
Data Type = 11 1110 (3Eh), RGB 888, 24 UI per Pixel	850 Mbps	700 Mbps	550 Mbps

5. The minimum values of this table mean the limitation of IC without considering the panel GIP. The actual values of VSA, VBP and VFP will be changed by different panel GIP setting.

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9. Standard Specification for Reliability

9.1 Standard Specification for Reliability of LCD Module

No	Test Item	Condition	Remarks
1	High Temperature Operation	T _s = +70°C, 240 hours	IEC60068-21:2007 GB2423.2-2008
2	Low Temperature Operation	T _a = -20°C, 240 hours	IEC60068-2-1:2007 GB/2423.1-2008
3	High Temperature Storage	T _a = +80°C, 240 hours	IEC60068-21:2007 GB/2423.2-2008
4	Low Temperature Storage	T _a = -30°C, 240 hours	IEC60068-21:2007 GB/2423.1-2008
5	Storage at High Temperature and Humidity	T _a = +60°C, 90% RH max, 240 hours	IEC60068-2-78 :2001 GB/T2423.3—2006
6	Thermal Shock (non-operation)	-20°C 30 min~+60°C 30 min, Change time: 5min, 20 Cycle	Start with cold temperature, End with high temperature, IEC60068-214:1984, GB/2423.22-2002
7	ESD	C=150pF, R=330Ω, 5 point/panel Air: ±8Kv, 5 times; Contact: ±4Kv, 5 times (Environment: 15°C~35°C, 30%~60% RH, 86Kpa~106Kpa)	IEC61000-42:2001 GB/T17626.2-2006
8	Package Drop Test	Height: 80cm, 1 corner, 3 edges, 6 surfaces	IEC60068-2-32:1990 GB/T2423.8—1995

Note1: T_s is the temperature of panel's surface.

Note2: T_a is the ambient temperature of sample.

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 ($25\pm 5^{\circ}\text{C}$), normal humidity ($50\pm 10\%$ 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 Midas Displays.

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 & Feedback

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.

10.4 Agreement items

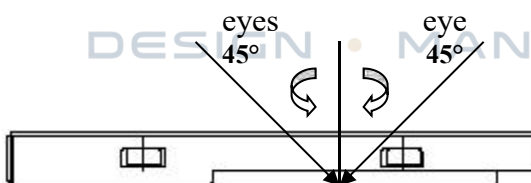
Both parties should negotiate together when the following problems happen.

- 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.

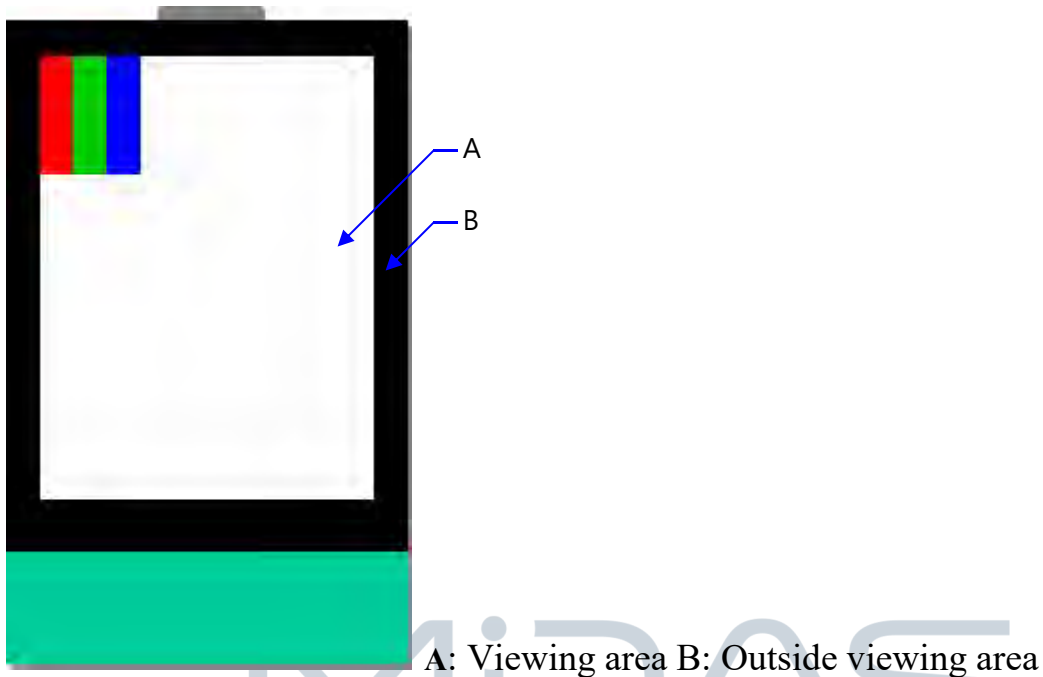
10.5 Standard of The Product Appearance Test

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



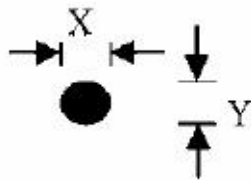
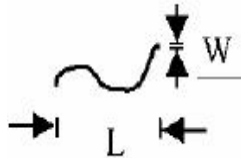
- Definition of area:

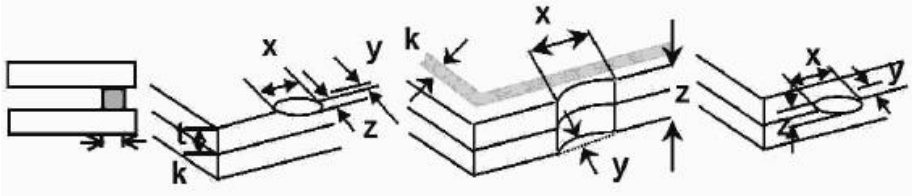
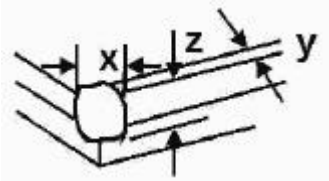


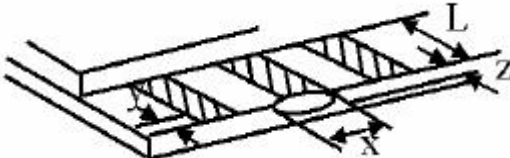
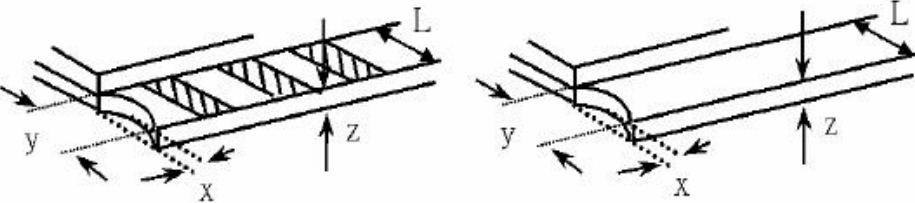
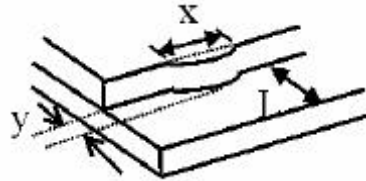
10.5.2 Basic principle

- 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.

10.6 Inspection Specification

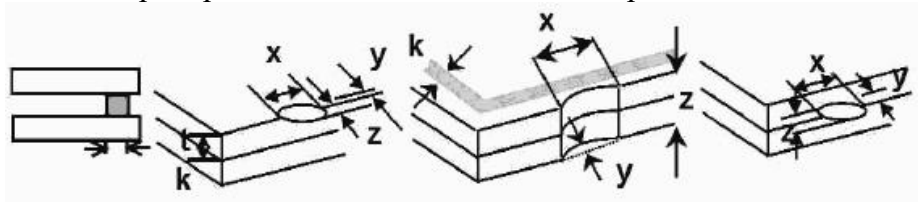
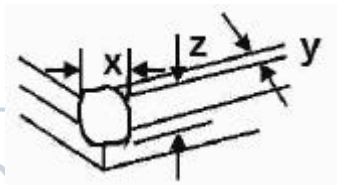
NO.	Item	Criterion	AQL														
01	Electrical Testing	1.1 Missing vertical, horizontal segment, segment contrast defect. 1.2 Missing character, dot or icon. 1.3 Display malfunction. 1.4 No function or no display. 1.5 Current consumption exceeds product specifications. 1.6 LCD viewing angle defect. 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 $\leq 0.25\text{mm}$, no more than Five spots. 2.2 Densely spaced: No more than three spots within 3mm.	1.5														
03	LCD and Touch Panel black spots, white spots, contamination (non – display)	3.1 Round type: As following drawing $\Phi = (X+Y) / 2$  <table><tr><th>Size(mm)</th><th>Acceptable Q'ty</th></tr><tr><td>$\Phi \leq 0.10$</td><td>Accept no dense</td></tr><tr><td>$0.10 < \Phi \leq 0.20$</td><td>2</td></tr><tr><td>$0.20 < \Phi \leq 0.25$</td><td>2</td></tr><tr><td>$0.25 < \Phi \leq 0.30$</td><td>1</td></tr><tr><td>$0.30 < \Phi$</td><td>0</td></tr></table> * Densely spaced: No more than two spots within 3mm.	Size(mm)	Acceptable Q'ty	$\Phi \leq 0.10$	Accept no dense	$0.10 < \Phi \leq 0.20$	2	$0.20 < \Phi \leq 0.25$	2	$0.25 < \Phi \leq 0.30$	1	$0.30 < \Phi$	0	1.5		
		Size(mm)	Acceptable Q'ty														
$\Phi \leq 0.10$	Accept no dense																
$0.10 < \Phi \leq 0.20$	2																
$0.20 < \Phi \leq 0.25$	2																
$0.25 < \Phi \leq 0.30$	1																
$0.30 < \Phi$	0																
		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>$W \leq 0.02$</td><td>Accept no dense</td></tr><tr><td>$L \leq 3.0$</td><td>$0.02 < W \leq 0.05$</td><td rowspan="2">2</td></tr><tr><td>$L \leq 2.5$</td><td>$0.03 < W \leq 0.08$</td></tr><tr><td>---</td><td>$0.08 < W$</td><td>Rejection</td></tr></table> * Densely spaced: No more than two lines within 3mm.	Length(mm)	Width(mm)	Acceptable Q'ty	---	$W \leq 0.02$	Accept no dense	$L \leq 3.0$	$0.02 < W \leq 0.05$	2	$L \leq 2.5$	$0.03 < W \leq 0.08$	---	$0.08 < W$	Rejection	1.5
Length(mm)	Width(mm)	Acceptable Q'ty															
---	$W \leq 0.02$	Accept no dense															
$L \leq 3.0$	$0.02 < W \leq 0.05$	2															
$L \leq 2.5$	$0.03 < W \leq 0.08$																
---	$0.08 < W$	Rejection															

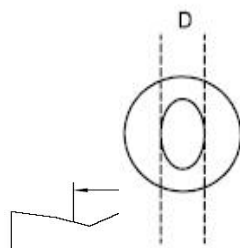
NO.	Item	Criterion			AQL
04	Polarizer bubbles	If bubbles are visible, judge using black spot specifications, not easy to find, must check in specify direction	Size Φ (mm)	Acceptable Q'ty	1.5
			$\Phi \leq 0.30$	Accept no dense	
			$0.30 < \Phi \leq 0.50$	3	
			$0.50 < \Phi \leq 1.00$	2	
			$1.00 < \Phi$	0	
			Total Q'ty	3	
05	Scratches	Follow NO.3 -2 Line Type.			
06	Chipped glass	Symbols: x: Chip length y: Chip width z: Chip thickness k: Seal width t: Glass thickness a: LCD side length L: Electrode pad length 6.1 General glass chip: 6.1.1 Chip on panel surface and crack between panels:			1.5
					
		z: Chip thickness	y: Chip width	x: Chip length	
		$Z \leq 1/2t$	Not over viewing area	$x \leq 2MM$	
		$1/2t < z \leq 2t$	Not exceed 1/3k	$x \leq 2MM$	
		☉ Unit: mm ☉ If there are 2 or more chips, x is the total length of each chip			
		6.1.2 Corner crack:			
					
		z: Chip thickness	y: Chip width	x: Chip length	
		$Z \leq 1/2t$	Not over viewing area	$x \leq 2MM$	
		$1/2t < z \leq 2t$	Not exceed 1/3k	$x \leq 2MM$	
☉ Unit: mm ☉ If there are 2 or more chips, x is the total length of each chip					

NO.	Item	Criterion	AQL																
07	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 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>$y \leq 0.5\text{mm}$</td><td>$x \leq 2\text{MM}$</td><td>$0 < z \leq t$</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>$y \leq L$</td><td>$x \leq 2\text{MM}$</td><td>$0 < z \leq t$</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 not be damaged. 7.2.3 Substrate protuberance and internal crack  <table><tr><td>y: width</td><td>x: length</td></tr><tr><td>$y \leq 1/3L$</td><td>$X \leq 2\text{MM}$</td></tr></table>	y: Chip width	x: Chip length	z: Chip thickness	$y \leq 0.5\text{mm}$	$x \leq 2\text{MM}$	$0 < z \leq t$	y: Chip width	x: Chip length	z: Chip thickness	$y \leq L$	$x \leq 2\text{MM}$	$0 < z \leq t$	y: width	x: length	$y \leq 1/3L$	$X \leq 2\text{MM}$	1.5
y: Chip width	x: Chip length	z: Chip thickness																	
$y \leq 0.5\text{mm}$	$x \leq 2\text{MM}$	$0 < z \leq t$																	
y: Chip width	x: Chip length	z: Chip thickness																	
$y \leq L$	$x \leq 2\text{MM}$	$0 < z \leq t$																	
y: width	x: length																		
$y \leq 1/3L$	$X \leq 2\text{MM}$																		

NO.	Item	Criterion	AQL
08	Cracked glass	No crack is allowed.	1.5
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.	1.5 1.5 0.65
10	Bezel	No scratches with W>0.1 and Length>2.5mm.	1.5
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.	1.5 1.5 1.5 1.5 0.65 0.65
12	FPC	FPC damage per IPC guidelines.(IPC-A-610) Nicks or damage along the edges of the flexible printed circuitry 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.	1.5
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)	1.5 0.65



NO.	Item	Criterion	AQL												
14	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 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>$Z \leq t$</td><td>$\cong 1/2\ k$ and not over viewing area</td><td>$x \leq 2\text{MM}$</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>$z \leq t$</td><td>$\cong 1/2\ k$ and not over viewing area</td><td>$x \leq 2\text{MM}$</td></tr></table> ⊙ Unit: mm ⊙ If there are 2 or more chips, x is the total length of each chip	z: Chip thickness	y: Chip width	x: Chip length	$Z \leq t$	$\cong 1/2\ k$ and not over viewing area	$x \leq 2\text{MM}$	z: Chip thickness	y: Chip width	x: Chip length	$z \leq t$	$\cong 1/2\ k$ and not over viewing area	$x \leq 2\text{MM}$	1.5
z: Chip thickness	y: Chip width	x: Chip length													
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z: Chip thickness	y: Chip width	x: Chip length													
$z \leq t$	$\cong 1/2\ k$ and not over viewing area	$x \leq 2\text{MM}$													

NO.	Item	Criterion	AQL											
15	Touch Panel(Fish eye、dent and bubble on film)	<table><tr><th>SIZE(mm)</th><th>Acceptable Q'ty</th></tr><tr><td>$\Phi \leq 0.2$</td><td>Accept no dense</td></tr><tr><td>$0.2 < D \leq 0.4$</td><td>5</td></tr><tr><td>$0.4 < D \leq 0.5$</td><td>2</td></tr><tr><td>$0.5 < D$</td><td>0</td></tr></table>	SIZE(mm)	Acceptable Q'ty	$\Phi \leq 0.2$	Accept no dense	$0.2 < D \leq 0.4$	5	$0.4 < D \leq 0.5$	2	$0.5 < D$	0		1.5
		SIZE(mm)	Acceptable Q'ty											
		$\Phi \leq 0.2$	Accept no dense											
		$0.2 < D \leq 0.4$	5											
		$0.4 < D \leq 0.5$	2											
$0.5 < D$	0													
16	Touch Panel Newton ring	Newton ring dimension $\leq 1/2$ touch panel area and not affect font and line distortion($\leq 2.5\%$) , it is acceptable.	1.5											
17	Touch Panel Linearity	Less than 1.5% is acceptable.	1.5											
18	LCD Ripple	Touch the touch panel , can not see the LCD ripple. Pen: R 1.0mm silicon rubber. Operation Force: 80g	1.5											
19	General appearance	19.1 Pin type must match type in specification sheet.	0.65											
		19.2 LCD pin loose or missing pins.	0.65											
		19.3 Product packaging must the same as specified on packaging specification sheet.	0.65											
		19.4 Product dimension and structure must conform to product specification sheet.	0.65											

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 makes contact with 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 $25\pm 10^{\circ}\text{C}$, and in a relative humidity of $50\pm 10\%\text{RH}$. 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 $280\pm 10^{\circ}\text{C}$ and less than 3 sec during hand soldering.
Rewiring: no more than 2 times.

