

PRODUCT SPECIFICATION

10.1” TFT LCD MODULE
MODEL: YDP LCD I 1010 MI



- < ◇ > Preliminary Specification
- < ◆ > Finally Specification

CUSTOMER’S APPROVAL	
CUSTOMER :	
SIGNATURE:	DATE:

APPROVED BY	PM REVIEWED	PD REVIEWED	PREPARED BY
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Revision History

Revision	Date	Originator	Detail	Remarks
1.0	2019.07.15	ZDT	Initial Release	
1.1	2019.07.26	ZDT	Modify Backlight Characteristic Modify Outline Drawing	P5 P23
1.2	2024.07.10	DFG	Modify Module Parameter Modify DC Characteristics Modify Backlight Characteristic Modify Luminance on TFT Modify AC Characteristics Modify Quality Assurance Modify Reliability Specification Modify Precautions and Warranty Modify Outline Drawing(C)	P4 P5 P5 P6 P11 P17 P19 P20-21 P24

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1. General Description

The specification is a transmissive type color active matrix liquid crystal display (LCD) which uses amorphous thin film transistor (TFT) as switching devices. This product is composed of a TFT-LCD panel, driver ICs, and a backlight unit.

2. Module Parameter

Features	Details	Unit
Display Size(Diagonal)	10.1"	
LCD type	IPS TFT	
Display Mode	Transmissive /normally black	
Resolution	800 RGB x 1280	Pixels
View Direction	FULL VIEW	Best Image
Module Outline	142.9(H) x228.5 (V) x 2.62(T) (Note1)	mm
Active Area	135.36(H) x216.58(V)	mm
Pixel Size	169.2(H)x169.2(V)	um
Pixel Arrangement	RGB stripe	
Display Colors	16.7M	
Driver IC	JD9365DA	-
Interface	MIPI	
With or Without TP	Without	
Operating Temperature	-20~70	°C
Storage Temperature	-30~80	°C
Weight	TBD	g

Note 1: Exclusive hooks, posts , FFC/FPC tail etc.

3. Absolute Maximum Ratings

GND=0V, Ta=25°C

Item	Symbol	Min.	Max.	Unit
Power voltage	VDD	-0.3	3.6	V
	AVDD	-0.3	6.6	V
	AVEE	0	-6.6	V
Storage temperature	T _{stg}	-30	+80	°C
Operating temperature	T _{op}	-20	+70	°C

Note 1: If Ta below 50°C, the maximal humidity is 90%RH, if Ta over 50°C, absolute humidity should be less than 60%RH.

Note 2: The response time will be extremely slow when the operating temperature is around -10°C , and the back ground will become darker at high temperature operating.

4. DC Characteristics

Item	Symbol	Min.	Typ.	Max.	Unit
Power voltage	VDD	2.5	3.0	3.3	V
	AVDD	4.5	-	6.3	V
	AVEE	-4.5	-	-6.3	V
Input logic high voltage	V _{IH}	0.7*VDD	-	VDD	V
Input logic low voltage	V _{IL}	0	-	0.3*VDD	V
Output logic high voltage	V _{OH}	0.8*VDD	-	VDD	V
Output logic low voltage	V _{OL}	0	-	0.2*VDD	V
Current Consumption All white	I _{dd}	-	TBD	-	mA

5. Backlight Characteristic

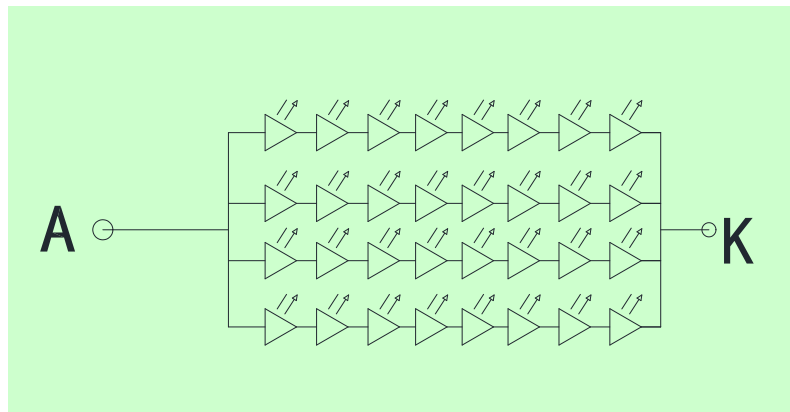
5.1. Backlight Characteristic

Item	Symbol	Condition	Min	Typ	Max	Unit
Forward Voltage	V _F	Ta=25 °C, I _F =22.5mA/LED	22.4	24	27.2	V
Forward Current	I _F	Ta=25 °C, V _F =3.0V/LED	-	90	-	mA
Power dissipation	P _d		-	2160	-	W
Uniformity	Avg		-	80	-	%
LED working life(25°C)	-		-	30000	-	hours
Drive method	Constant current					
LED Configuration	32 White LEDs(8 LEDs in one string and 4 groups in parallel)					

Note1: LED life time defined as follows: The final brightness is at 50% of original brightness.

The environmental conducted under ambient air flow, at Ta=25±2 °C, 60%RH±5%, I_F=22.5mA/LED.

5.2. Backlighting circuit



6. Optical Characteristics

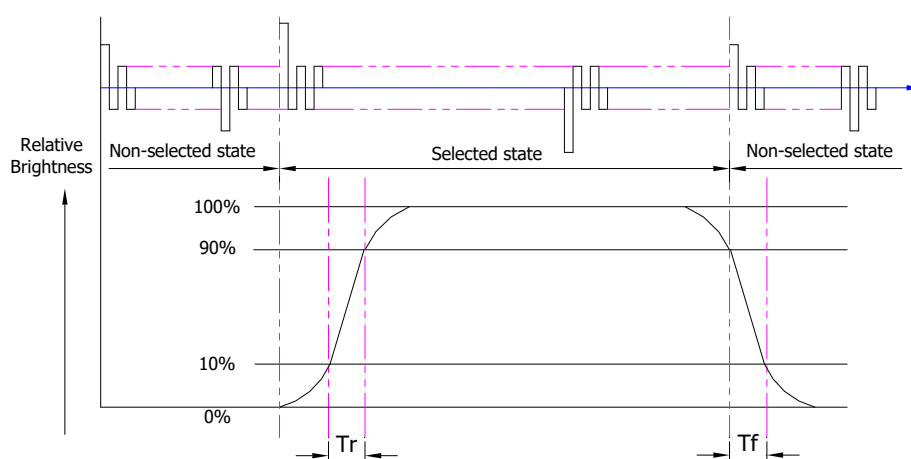
6.1. Optical Characteristics

Ta=25°C, VDD=3.0V

Backlight On (Transmissive Mode)	Item		Symbol	Condition	Specification			Unit
					Min.	Typ.	Max.	
	Luminance on TFT(I_f =22.5mA/LED)		Lv	Normally viewing angle $\theta_x = \varphi_y = 0^\circ$	240	300	-	cd/m²
	Contrast ratio(See 6.3)		CR		800	1000	-	
	Response time (See 6.2)		TR		-	25	35	ms
			TF					
	Chromaticity Transmissive (See 6.5)	Red	XR		-	TBD	-	
			YR		-	TBD	-	
		Green	XG		-	TBD	-	
			YG		-	TBD	-	
		Blue	XB		-	TBD	-	
			YB		-	TBD	-	
		White	XW		-	TBD	-	
			YW		-	TBD	-	
	Viewing Angle (See 6.4)	Horizontal	θ_{x+}	Center CR≥10	-	80	-	Deg.
			θ_{x-}		-	80	-	
		Vertical	φ_{y+}		-	80	-	
			φ_{y-}		-	80	-	
	NTSC				-	60		%

6.2. Definition of Response Time

6.2.1. Normally Black Type (Negative)

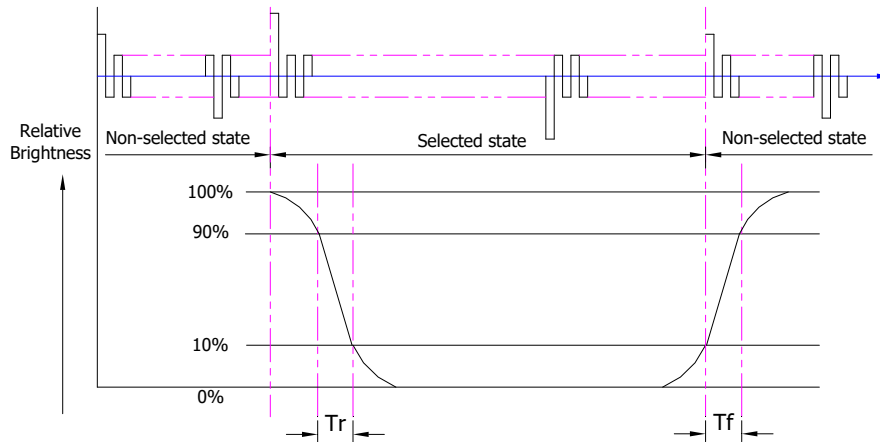


Tr is the time it takes to change from non-selected stage with relative luminance 10% to selected state with relative luminance 90%;

Tf is the time it takes to change from selected state with relative luminance 90% to non-selected state with relative luminance 10%.

Note : Measuring machine: LCD-5100

6.2.2. Normally White Type (Positive)



T_r is the time it takes to change from non-selected state with relative luminance 90% to selected state with relative luminance 10%;

T_f is the time it takes to change from selected state with relative luminance 10% to non-selected state with relative luminance 90%;

Note : Measuring machine: LCD-5100 or EQUI

6.3. Definition of Contrast Ratio

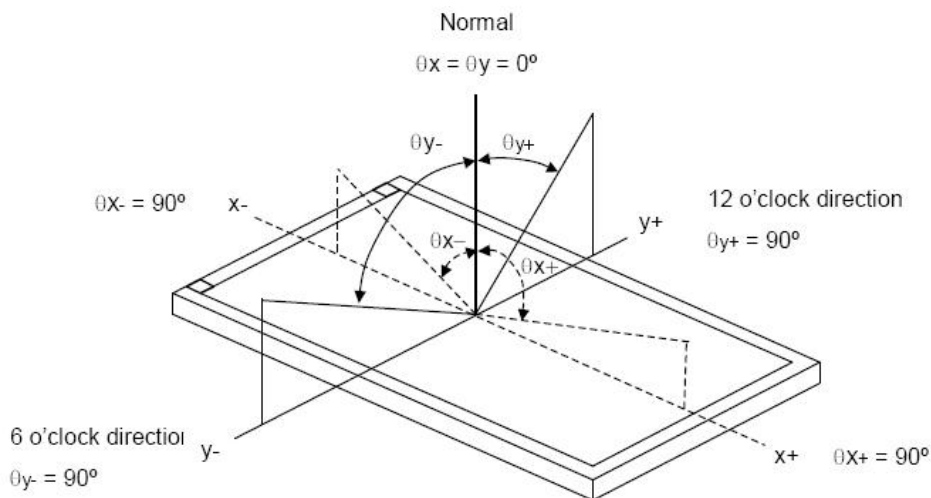
Contrast is measured perpendicular to display surface in reflective and transmissive mode.

The measurement condition is:

Measuring Equipment	Eldim or Equivalent
Measuring Point Diameter	3mm//1mm
Measuring Point Location	Active Area centre point
Test pattern	A: All Pixels white
	B: All Pixel black
Contrast setting	Maximum

Definitions: CR (Contrast) = Luminance of White Pixel / Luminance of Black Pixel

6.4. Definition of Viewing Angles



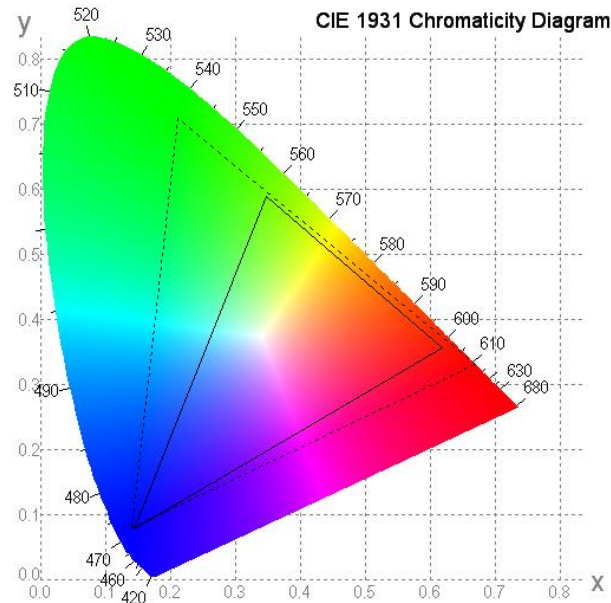
Measuring machine: LCD-5100 or EQUI

6.5. Definition of Color Appearance

R,G,B and W are defined by (x, y) on the IE chromaticity diagram

NTSC=area of RGB triangle/area of NTSC triangleX100%

Measuring picture: Red, Green, Blue and White (Measuring machine: BM-7)



6.6. Definition of Surface Luminance, Uniformity and Transmittance

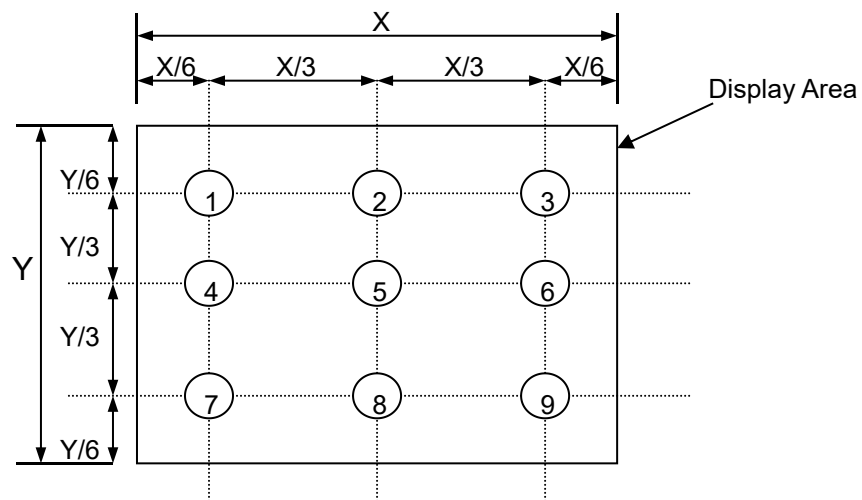
Using the transmissive mode measurement approach, measure the white screen luminance of the display panel and backlight.

6.6.1. Surface Luminance: $L_V = \text{average } (L_{P1}:L_{P9})$

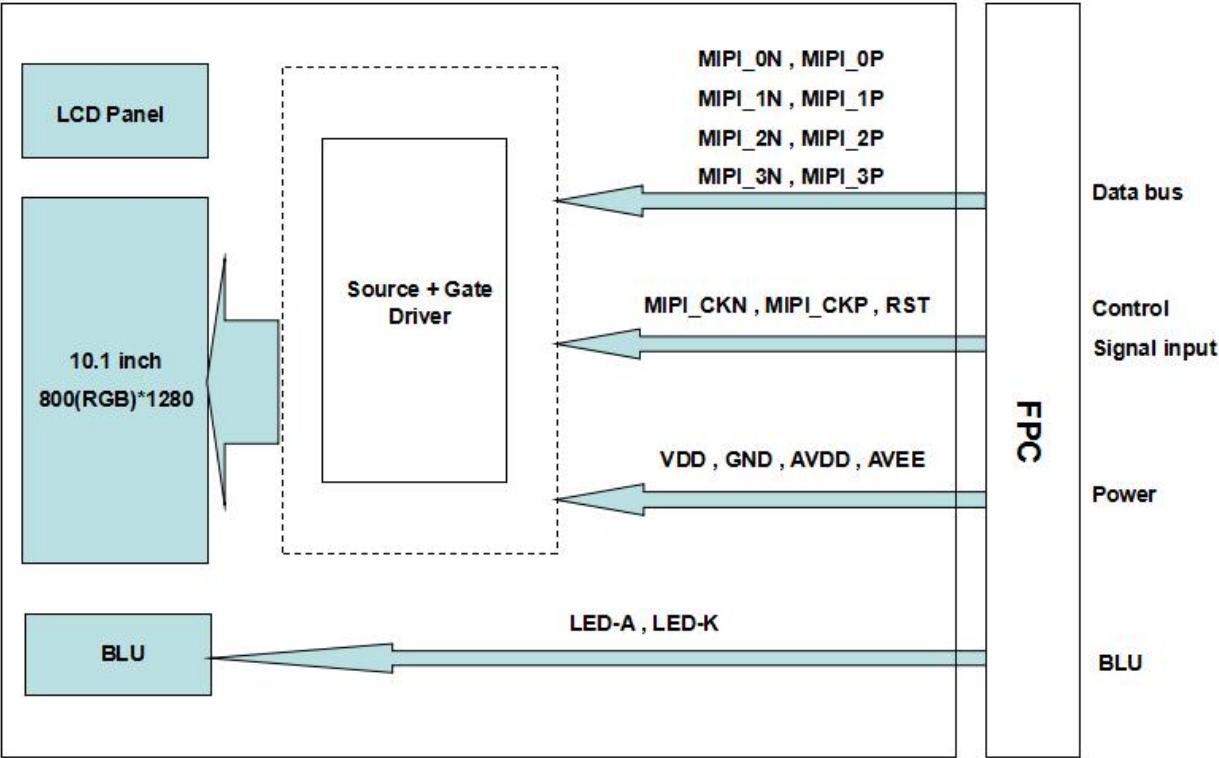
6.6.2. Uniformity = Minimal ($L_{P1}:L_{P9}$) / Maximal ($L_{P1}:L_{P9}$) * 100%

6.6.3. Transmittance = L_V on LCD / L_V on Backlight * 100%

Note : Measuring machine: BM-7



7. Block Diagram and Power Supply



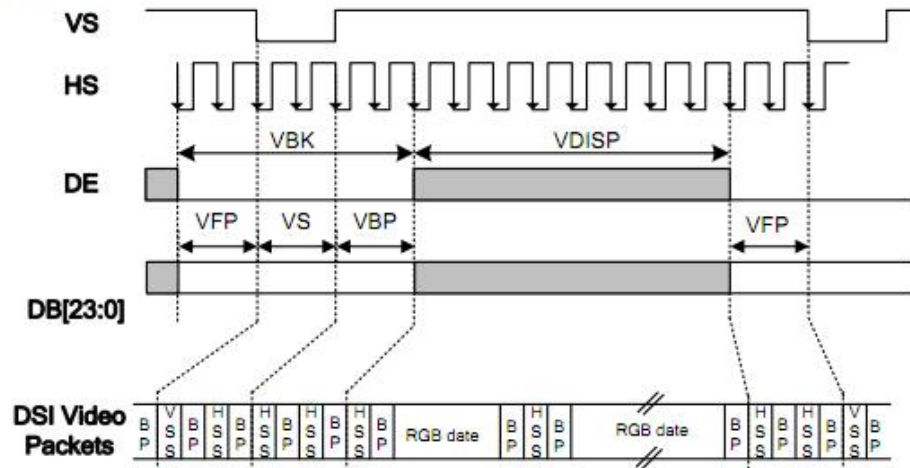
8. Interface Pins Definition

No.	Symbol	Function	Remark
1	LED-A	LED Anode	
2	LED-K	LED cathode	
3	GND	Ground	
4	VDD	Power supply	
5	VDD	Power supply	
6	GND	Ground	
7	RST	Global reset pin	
8	NC	No connection	
9	NC	No connection	
10	AVEE	Analog supply negative voltage	
11	AVDD	Analog supply positive voltage	
12	GND	Ground	
13	MIPI_0N	MIPI Negative data signal (-)	
14	MIPI_0P	MIPI Positive data signal (+)	
15	GND	Ground	
16	MIPI_1N	MIPI Negative data signal (-)	
17	MIPI_1P	MIPI Positive data signal (+)	
18	GND	Ground	
19	MIPI_CKN	MIPI Negative clock signal (-)	
20	MIPI_CKP	MIPI Positive clock signal (+)	
21	GND	Ground	
22	MIPI_2N	MIPI Negative data signal (-)	
23	MIPI_2P	MIPI Positive data signal (+)	
24	GND	Ground	
25	MIPI_3N	MIPI Negative data signal (-)	
26	MIPI_3P	MIPI Positive data signal (+)	
27	GND	Ground	
28	NC	No connection	
29	NC	No connection	
30	NC	No connection	

9. AC characteristics

1) Timings for DSI video mode

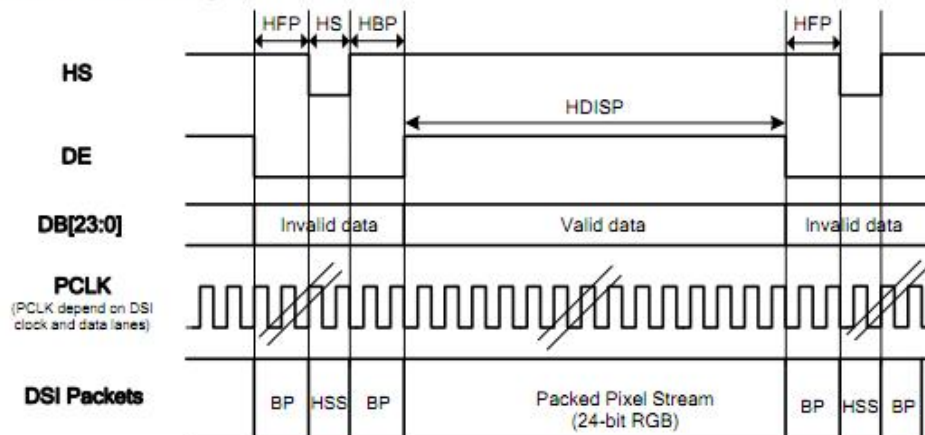
Vertical Timings



Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Vertical low pulse width	VS	-	2	4	200 Note(1)	Line
Vertical front porch	VFP	-	4	20	200	Line
Vertical back porch	VBP	-	2	10	200 Note(1)	Line
Vertical blanking period	VBK	VS+VBP+VFP	8	34	250	Line
Vertical active area	-	VDISP	-	1280	-	Line
Vertical Refresh rate	VRR	-	-	60	-	Hz

Note: (1) The VS and VBP pulse width are related to GIP start pulse and GIP clock pulse timing. The GIP start pulse and GIP clock pulse must be set at corresponding position for LCD normal display.

Horizontal Timings



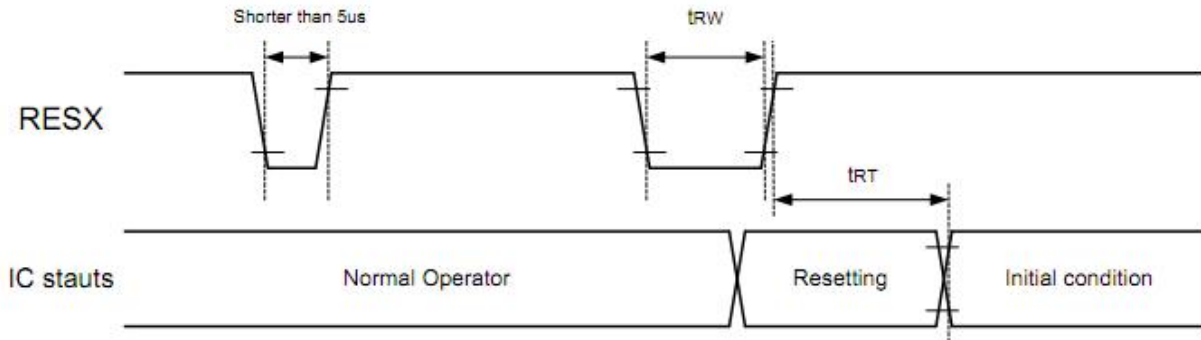
Resolution=800x1280 ($T_A=25^{\circ}\text{C}$, $\text{IOVCC}=1.8\text{V}$, $\text{VCIP}=\text{VCI}=\text{VCCH}=2.8\text{V}$)

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
HS low pulse width	HS	-	6	18	-	DCK
Horizontal back porch	HBP	-	5	18	-	DCK
Horizontal front porch	HFP	-	5	18	-	DCK
Horizontal blanking period	HBLK	HS+HBP+HFP	16	54 (Note1)	-	DCK
Horizontal active area	HDISP	-	-	800	-	DCK
Pixel Clock	PCLK	-	63.06 (Note2)	67.33 (Note2)	-	MHz

Note 1: $\text{HS}+\text{HBP} > 0.5\mu\text{s}$.

Note 2: Pixel Clock = $(\text{HBLK}+\text{HDISP}) * (\text{VBK}+\text{VDISP}) * \text{Frame rate}$, Frame rate=60Hz.

2) Reset input timings



Symbol	Parameter	Related pins	Min.	Max.	Unit
t_{RW}	Reset pulse width ⁽²⁾	RESX	10	-	μs
t_{RT}	Reset complete time ⁽³⁾	-	-	5 (Note 5)	ms
		-	-	120 (Note 6, 7)	ms

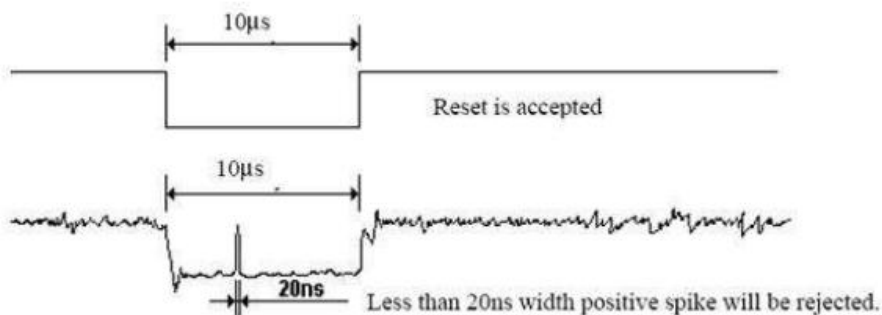
Note: (1) The reset complete time also required time for loading ID bytes from OTP to registers. This loading is done every time when there is HW reset cancel time (t_{RT}) within 5 ms after a rising edge of RESX.

(2) Spike due to an electrostatic discharge on RESX line does not cause irregular system reset according to the table below.

RESX Pulse	Action
Shorter than 5 μs	Reset Rejected
Longer than 10 μs	Reset
Between 5 μs and 10 μs	Reset Start

(3) During the resetting period, the display will be blanked (The display is entering blanking sequence, which maximum time is 120 ms, when Reset Starts in Sleep Out –mode. The display remains the blank state in Sleep In –mode) and then returns to Default condition for H/W reset.

(4) Spike Rejection also applies during a valid reset pulse as shown below:



(5) When Reset is applied during Sleep In Mode.

(6) When Reset is applied during Sleep Out Mode.

(7) It is necessary to wait 5msec after releasing RESX before sending commands. Also Sleep Out command cannot be sent for 120msec.

(8) After Sleep Out Command, it is necessary to wait 120msec then send RESX.

10. Quality Assurance

10.1. Purpose

This standard for Quality Assurance assures the quality of LCD module products supplied to customer.

10.2. Standard for Quality Test

10.2.1. Sampling Plan:

GB2828.1-2012

Single sampling, general inspection level II

10.2.2. Sampling Criteria:

Visual inspection: AQL 1.5

Electrical functional: AQL 0.65.

10.2.3. Reliability Test:

Detailed requirement refer to Reliability Test Specification.

10.3. Nonconforming Analysis & Disposition

10.3.1. Nonconforming analysis:

10.3.1.1. Customer should provide overall information of non-conforming sample for their complaints.

10.3.1.2. After receipt of detailed information from customer, the analysis of nonconforming parts usually should be finished in one week.

10.3.1.3. If cannot finish the analysis on time, customer will be notified with the progress status.

10.3.2. Disposition of nonconforming:

10.3.2.1. Non-conforming product over PPM level will be replaced.

10.3.2.2. The cause of non-conformance will be analyzed. Corrective action will be discussed and implemented.

10.4. Agreement Items

Shall negotiate with customer if the following situation occurs:

10.4.1. There is any discrepancy in standard of quality assurance.

10.4.2. Additional requirement to be added in product specification.

10.4.3. Any other special problem.

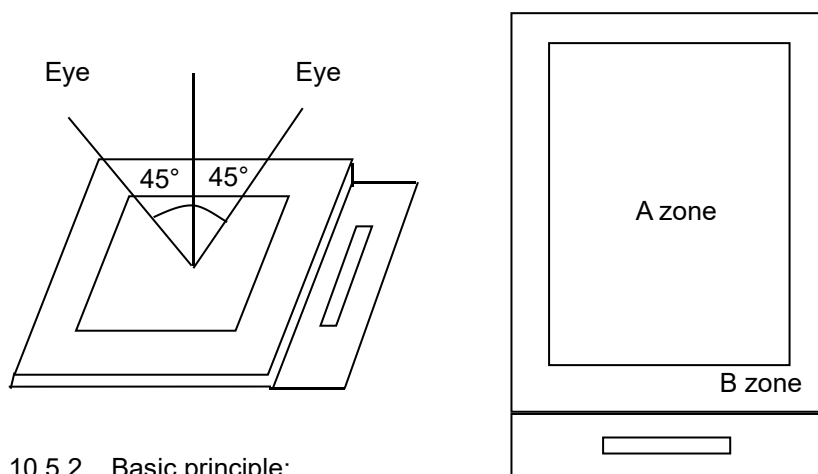
10.5. Standard of the Product Visual Inspection

10.5.1. Appearance inspection:

10.5.1.1. The inspection must be under illumination about 1000 – 1500 lx, and the distance of view must be at 30cm ± 2cm.

10.5.1.2. The viewing angle should be 45° from the vertical line without reflection light or follows customer's viewing angle specifications.

10.5.1.3. Definition of area: A Zone: Active Area, B Zone: Viewing Area,

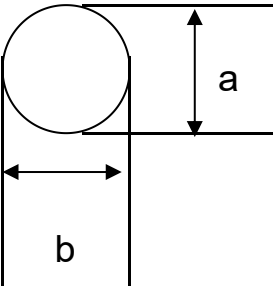


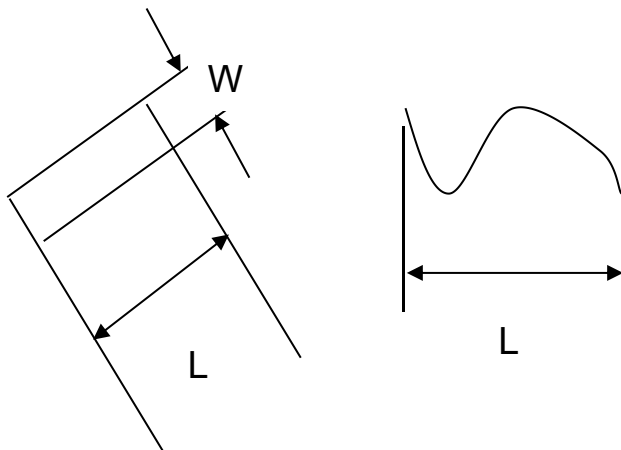
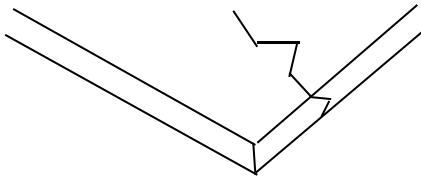
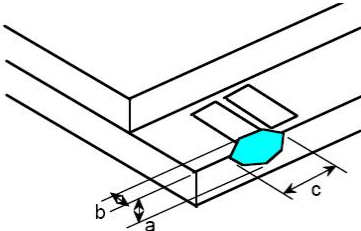
10.5.2. Basic principle:

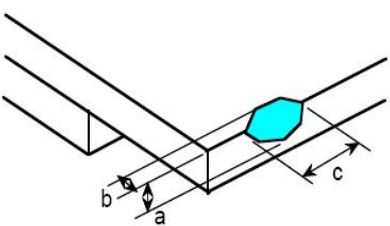
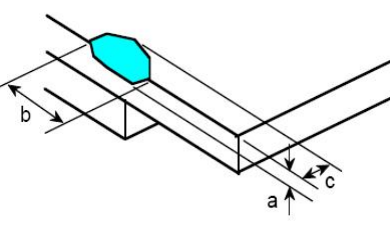
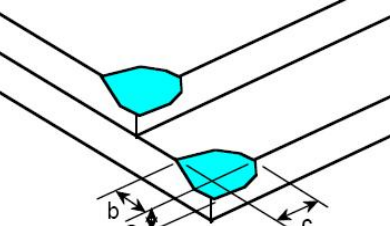
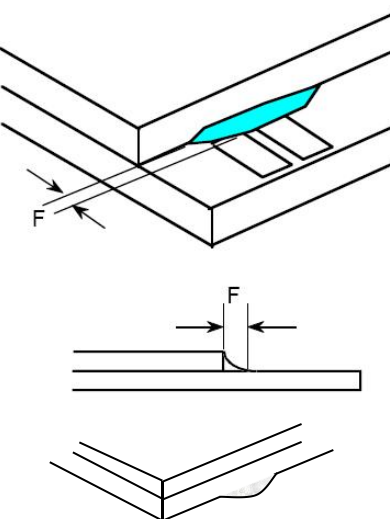
10.5.2.1. A set of sample to indicate the limit of acceptable quality level must be discussed by both us and customer when there is any dispute happened.

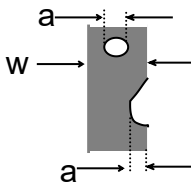
10.5.2.2. New item must be added on time when it is necessary.

10.6. Inspection Specification for the TFT module

No.	Item	Criteria (Unit: mm)																		
01	Black / White spot Foreign material (Round type) Pinholes Stain Particles inside cell. (Minor defect)	 $\varphi = (a + b) / 2$ Distance between 2 defects should more than 5mm apart.	<table><tr><th>Size \ Area</th><th>Acc. Qty</th></tr><tr><td>$\varphi \leq 0.20$</td><td>Ignore</td></tr><tr><td>$0.20 < \varphi \leq 0.50$</td><td>N≤3</td></tr><tr><td>$0.50 < \varphi$</td><td>0</td></tr></table>		Size \ Area	Acc. Qty	$\varphi \leq 0.20$	Ignore	$0.20 < \varphi \leq 0.50$	N≤3	$0.50 < \varphi$	0								
			Size \ Area	Acc. Qty																
$\varphi \leq 0.20$	Ignore																			
$0.20 < \varphi \leq 0.50$	N≤3																			
$0.50 < \varphi$	0																			
02	Electrical Defect (Minor defect)	<table><tr><th rowspan="2">Bright dot</th><th>Display Area</th><th>Total</th><th rowspan="4">Note1</th></tr><tr><th>N≤2</th><th>N≤2</th></tr><tr><th>Dark dot</th><th>N≤4</th><th>N≤4</th></tr><tr><th>Total dot</th><th>N≤4</th><th>N≤4</th></tr><tr><th>Mura</th><th colspan="2">Not visible through 5% ND filters.</th><th>Note2</th></tr></table>			Bright dot	Display Area	Total	Note1	N≤2	N≤2	Dark dot	N≤4	N≤4	Total dot	N≤4	N≤4	Mura	Not visible through 5% ND filters.		Note2
		Bright dot	Display Area	Total		Note1														
N≤2	N≤2																			
Dark dot	N≤4	N≤4																		
Total dot	N≤4	N≤4																		
Mura	Not visible through 5% ND filters.		Note2																	
		Remark:																		
		1. Bright dot caused by scratch and foreign object accords to item 1.																		

03	Black and White line Scratch Foreign material (Line type) (Minor defect)	 <table><thead><tr><th>Length</th><th>Width</th><th>Acc. Qty</th></tr></thead><tbody><tr><td>/</td><td>$W \leq 0.1$</td><td>Ignore</td></tr><tr><td>$L \leq 2.5$</td><td>$0.1 < W \leq 0.2$</td><td>3</td></tr><tr><td>$L > 2.5$</td><td>$0.2 < W$</td><td>0</td></tr><tr><td colspan="2">Total</td><td>3</td></tr></tbody></table> Distance between 2 defects should more than 3mm apart. Scratches not viewable through the back of the display are acceptable.	Length	Width	Acc. Qty	/	$W \leq 0.1$	Ignore	$L \leq 2.5$	$0.1 < W \leq 0.2$	3	$L > 2.5$	$0.2 < W$	0	Total		3
Length	Width	Acc. Qty															
/	$W \leq 0.1$	Ignore															
$L \leq 2.5$	$0.1 < W \leq 0.2$	3															
$L > 2.5$	$0.2 < W$	0															
Total		3															
04	Glass Crack (Minor defect)	 Crack is potential to enlarge, any type is not allowed.															
05	Glass Chipping Pad Area: (Minor defect)	 <table><thead><tr><th>Length and Width</th><th>Acc. Qty</th></tr></thead><tbody><tr><td>$c > 3.0, b < 1.0$</td><td>1</td></tr><tr><td>$c < 3.0, b < 1.0$</td><td>3</td></tr><tr><td colspan="2">$a < \text{Glass Thickness}$</td></tr></tbody></table>	Length and Width	Acc. Qty	$c > 3.0, b < 1.0$	1	$c < 3.0, b < 1.0$	3	$a < \text{Glass Thickness}$								
Length and Width	Acc. Qty																
$c > 3.0, b < 1.0$	1																
$c < 3.0, b < 1.0$	3																
$a < \text{Glass Thickness}$																	

06	Glass Chipping Rear of Pad Area: (Minor defect) 	<table><tr><th>Length and Width</th><th>Acc. Qty</th></tr><tr><td>$c > 3.0, b < 1.0$</td><td>1</td></tr><tr><td>$c < 3.0, b < 1.0$</td><td>2</td></tr><tr><td>$c < 3.0, b < 0.5$</td><td>4</td></tr><tr><td colspan="2">$a < \text{Glass Thickness}$</td></tr></table>	Length and Width	Acc. Qty	$c > 3.0, b < 1.0$	1	$c < 3.0, b < 1.0$	2	$c < 3.0, b < 0.5$	4	$a < \text{Glass Thickness}$	
Length and Width	Acc. Qty											
$c > 3.0, b < 1.0$	1											
$c < 3.0, b < 1.0$	2											
$c < 3.0, b < 0.5$	4											
$a < \text{Glass Thickness}$												
07	Glass Chipping Except Pad Area: (Minor defect) 	<table><tr><th>Length and Width</th><th>Acc. Qty</th></tr><tr><td>$c > 3.0, b < 1.0$</td><td>1</td></tr><tr><td>$c < 3.0, b < 1.0$</td><td>2</td></tr><tr><td>$c < 3.0, b < 0.5$</td><td>4</td></tr><tr><td colspan="2">$a < \text{Glass Thickness}$</td></tr></table>	Length and Width	Acc. Qty	$c > 3.0, b < 1.0$	1	$c < 3.0, b < 1.0$	2	$c < 3.0, b < 0.5$	4	$a < \text{Glass Thickness}$	
Length and Width	Acc. Qty											
$c > 3.0, b < 1.0$	1											
$c < 3.0, b < 1.0$	2											
$c < 3.0, b < 0.5$	4											
$a < \text{Glass Thickness}$												
08	Glass Corner Chipping: (Minor defect) 	<table><tr><th>Length and Width</th><th>Acc. Qty</th></tr><tr><td>$c < 3.0, b < 3.0$</td><td>Ignore</td></tr><tr><td colspan="2">$a < \text{Glass Thickness}$</td></tr></table>	Length and Width	Acc. Qty	$c < 3.0, b < 3.0$	Ignore	$a < \text{Glass Thickness}$					
Length and Width	Acc. Qty											
$c < 3.0, b < 3.0$	Ignore											
$a < \text{Glass Thickness}$												
09	Glass Burr: (Minor defect) 	<table><tr><th>Length</th><th>Acc. Qty</th></tr><tr><td>$F < 1.0$</td><td>Ignore</td></tr></table> Glass burr don't affect assemble and module dimension.	Length	Acc. Qty	$F < 1.0$	Ignore						
Length	Acc. Qty											
$F < 1.0$	Ignore											

10	FPC Defect: (Minor defect) 	10.1 Dent, pinhole width $a < w/3$. (w: circuitry width.) 10.2 Open circuit is unacceptable. 10.3 No oxidation, contamination and distortion.								
11	Bubble on Polarizer (Minor defect)	<table><tr><th>Diameter</th><th>Acc. Qty</th></tr><tr><td>$\varphi \leq 0.30$</td><td>Ignore</td></tr><tr><td>$0.30 < \varphi \leq 0.50$</td><td>$N \leq 2$</td></tr><tr><td>$0.50 < \varphi$</td><td>$N = 0$</td></tr></table>	Diameter	Acc. Qty	$\varphi \leq 0.30$	Ignore	$0.30 < \varphi \leq 0.50$	$N \leq 2$	$0.50 < \varphi$	$N = 0$
Diameter	Acc. Qty									
$\varphi \leq 0.30$	Ignore									
$0.30 < \varphi \leq 0.50$	$N \leq 2$									
$0.50 < \varphi$	$N = 0$									
12	Dent on Polarizer (Minor defect)	<table><tr><th>Diameter</th><th>Acc. Qty</th></tr><tr><td>$\varphi \leq 0.25$</td><td>Ignore</td></tr><tr><td>$0.25 < \varphi \leq 0.50$</td><td>$N \leq 4$</td></tr><tr><td>$0.50 < \varphi$</td><td>None</td></tr></table>	Diameter	Acc. Qty	$\varphi \leq 0.25$	Ignore	$0.25 < \varphi \leq 0.50$	$N \leq 4$	$0.50 < \varphi$	None
Diameter	Acc. Qty									
$\varphi \leq 0.25$	Ignore									
$0.25 < \varphi \leq 0.50$	$N \leq 4$									
$0.50 < \varphi$	None									
13	Bezel	13.1 No rust, distortion on the Bezel. 13.2 No visible fingerprints, stains or other contamination.								
14	PCB	14.1 No distortion or contamination on PCB terminals. 14.2 All components on PCB must same as documented on the BOM/component layout. 14.3 Follow IPC-A-600F.								
15	Soldering	Follow IPC-A-610C standard								
16	Electrical Defect (Major defect)	The below defects must be rejected. 16.1 Missing vertical / horizontal segment, 16.2 Abnormal Display. 16.3 No function or no display. 16.4 Current exceeds product specifications. 16.5 LCD viewing angle defect. 16.6 No Backlight. 16.7 Dark Backlight. 16.8 Touch Panel no function.								

Remark: LCD Panel Broken shall be rejected. Defect out of LCD viewing area is acceptable.

10.7. Classification of Defects

10.7.1. Visual defects (Except no / wrong label) are treated as minor defect and electrical defect is major.

10.7.2. Two minor defects are equal to one major in lot sampling inspection.

10.8. Identification/marketing criteria

Any unit with illegible / wrong /double or no marking/ label shall be rejected.

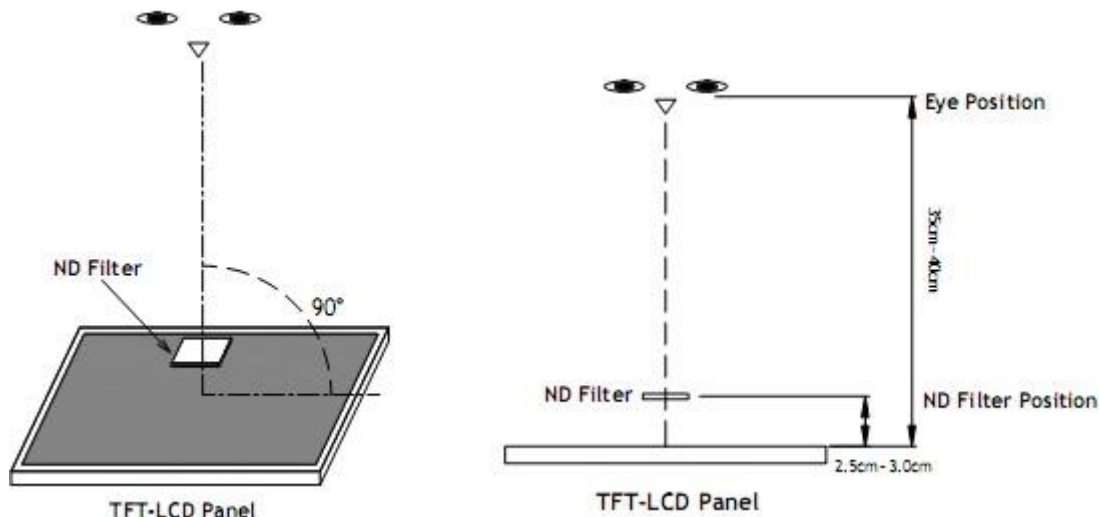
10.9. Packaging

10.9.1. There should be no damage of the outside carton box, each packaging box should have one identical label.

10.9.2. Modules inside package box should have compliant mark.

10.9.3. All direct package materials shall offer ESD protection

Note1: Bright dot is defined as the defective area of the dot is larger than 50% of one sub-pixel area.



Bright dot: The bright dot size defect at black display pattern. It can be recognized by 2% transparency of filter when the distance between eyes and panel is $350\text{mm} \pm 50\text{mm}$.

Dark dot: Cyan, Magenta or Yellow dot size defect at white display pattern. It can be recognized by 5% transparency of filter when the distance between eyes and panel is $350\text{mm} \pm 50\text{mm}$.

Note2: Mura on display which appears darker / brighter against background brightness on parts of display area.

11. Reliability Specification

No	Item	Condition	Quantity	Criteria
1	High Temperature Operating	70℃, 96Hrs	2	GB/T2423.2-2008
2	Low Temperature Operating	-20℃, 96Hrs	2	GB/T2423.1-2008
3	High Humidity Storage	50℃, 90%RH, 96Hrs	2	GB/T2423.3-2016
4	High Temperature Storage	80℃, 96Hrs	2	GB/T2423.2-2008
5	Low Temperature Storage	-30℃, 96Hrs	2	GB/T2423.1-2008
6	Thermal Cycling Test	-20℃, 60min~70℃, 60min, 20 cycles.	2	GB/T2423.22-2012
7	Packing vibration	Frequency range:10Hz~50Hz Acceleration of gravity:5G X, Y, Z 30 min for each direction.	-	GB/T5170.14-2009
8	Electrical Static Discharge	Air: $\pm 4\text{KV}$ 150pF/330 Ω 5 times Contact: $\pm 2\text{KV}$ 150pF/330 Ω 5 times	2	GB/T17626.2-2018
9	Drop Test (Packaged)	Height:80 cm,1 corner, 3 edges, 6 surfaces.	-	GB/T2423.7-2018

Note1. No defection cosmetic and operational function allowable.

Note2. Total current Consumption should be below double of initial value

12. Precautions and Warranty

12.1. Safety

- 12.1.1. The liquid crystal in the LCD is poisonous. Do not put it in your mouth. If the liquid crystal touches your skin or clothes, wash it off immediately using soap and water.
- 12.1.2. Since the liquid crystal cells are made of glass, do not apply strong impact on them. Handle with care.

12.2. Handling

- 12.2.1. Reverse and use within ratings in order to keep performance and prevent damage.
- 12.2.2. Do not wipe the polarizer with dry cloth, as it might cause scratch. If the surface of the LCD needs to be cleaned, wipe it swiftly with cotton or other soft cloth soaked with petroleum IPA, do not use other chemicals.

12.3. Storage

- 12.3.1. Do not store the LCD module beyond the specified temperature ranges.
- 12.3.2. Strong light exposure causes degradation of polarizer and color filter.

12.4. Metal Pin (Apply to Products with Metal Pins)

12.4.1. Pins of LCD and Backlight

- 12.4.1.1. Solder tip can touch and press on the tip of Pin LEAD during the soldering

12.4.1.2. Recommended Soldering Conditions

Solder Type: Sn96.3~94-Ag3.3~4.3-Cu0.4~1.1

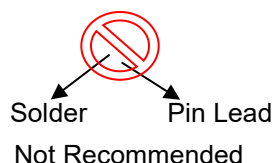
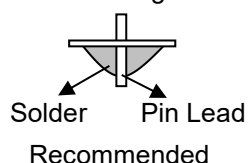
Maximum Solder Temperature: 370°C

Maximum Solder Time: 3s at the maximum temperature

Recommended Soldering Temp: 350±20°C

Typical Soldering Time: ≤3s

12.4.1.3. Solder Wetting



12.4.2. Pins of EL

- 12.4.2.1. Solder tip can touch and press on the tip of EL leads during soldering.

- 12.4.2.2. No Solder Paste on the soldering pad on the motherboard is recommended.

12.4.2.3. Recommended Soldering Conditions

Solder type: Nippon Alimit Leadfree SR-34, size 0.5mm

Recommended Solder Temperature: 270~290°C

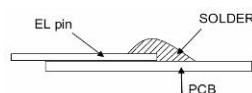
Typical Soldering Time: ≤2s

Minimum solder distance from EL lamp (body): 2.0mm

- 12.4.2.4. No horizontal press on the EL leads during soldering.

- 12.4.2.5. 180° bend EL leads three times is not allowed.
-

12.4.2.6. Solder Wetting

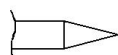


Recommended

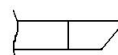


Not Recommended

12.4.2.7. The type of the solder iron:

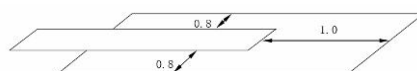


Recommended



Not Recommended

12.4.2.8. Solder Pad



12.5. Operation

- 12.5.1. Do not drive LCD with DC voltage
- 12.5.2. Response time will increase below lower temperature
- 12.5.3. Display may change color with different temperature
- 12.5.4. Mechanical disturbance during operation, such as pressing on the display area, may cause the segments to appear “fractured”.
- 12.5.5. Do not connect or disconnect the LCM to or from the system when power is on.
- 12.5.6. Never use the LCM under abnormal condition of high temperature and high humidity.
- 12.5.7. Module has high frequency circuits. Sufficient suppression to the electromagnetic interface shall be done by system manufacturers. Grounding and shielding methods may be important to minimize the interference.
- 12.5.8. *Do not display the fixed pattern for long time (we suggest the time not longer than one hour) because it will develop image sticking due to the TFT structure.*

12.6. Static Electricity

- 12.6.1. CMOS LSIs are equipped in this unit, so care must be taken to avoid the electro-static charge, by ground human body, etc.
- 12.6.2. The normal static prevention measures should be observed for work clothes and benches.
- 12.6.3. The module should be kept into anti-static bags or other containers resistant to static for storage.

12.7. Limited Warranty

- 12.7.1. Our warranty liability is limited to repair and/or replacement. We will not be responsible for any consequential loss.
- 12.7.2. If possible, we suggest customer to use up all modules in six months. If the module storage time over twelve months, we suggest that recheck it before the module be used
- 12.7.3. After the product shipped, any product quality issues must be feedback within three months, otherwise, we will not be responsible for the subsequent or consequential events.

13. Packaging

TBD

14. Outline Drawing

REV. DESCRIPTION

REV.	DESCRIPTION	DATE	NAME
A	First Issue	19.07.12	CDD
B	Modify BLU circuit	19/07/25	CDD
C	Change backlight	24.07.04	PQQ

General Tolerances:

DIM	Level	1	2	3	4
0-5	0.05	0.1	0.1	0.2	
5-10	0.05	0.1	0.1	0.2	
10-50	0.05	0.1	0.2	0.3	
50-100	0.1	0.2	0.3	0.5	
100-150	0.1	0.2	0.5	0.8	

Backlight Circuit

Backlight Circuit Diagram: A circuit diagram showing a backlight LED array connected to a power source (A) and a control signal (K). The array is represented by a series of diodes.

Pin Assignment

PIN	ASSIGNMENT
1	LED-A
2	LED-K
3	GND
4	VDD
5	VDD
6	GND
7	RST
8	NC
9	NC
10	AVEE
11	AVDD
12	GND
13	MIPI 0N
14	MIPI 0P
15	GND
16	MIPI 1N
17	MIPI 1P
18	GND
19	MIPI CKN
20	MIPI CKP
21	GND
22	MIPI 2N
23	MIPI 2P
24	GND
25	MIPI 3N
26	MIPI 3P
27	GND
28	NC
29	NC
30	NC

Notes:

- Display size: 10.1" TFT IPS
- Viewing direction: full view
- Display mode: Transmissive/Normal Black
- Operation temperature: -20° C ~ +70° C
- Storage temperature: -30° C ~ +80° C
- Driver IC: JD9365DA
- Power supply voltage: 3.0 V
- Backlight : White (32LED) / 24 (TYP) V / 90mA
- LCM Luminance: 300 (TYP) cd/m²
- Interface type: MIPI 4L
- RoHS must be complied
- The dimension with mark brackets "()" just for reference