MATLOG

PRODUCT SPECIFICATION

6.8" TFT LCD MODULE
MODEL: T068480128-A1WMN-001   Ver:1.4

RoHS

< ◇ >   Preliminary Specification

< ◆ >   Finally Specification

CUSTOMER'S APPROVAL	
CUSTOMER :	
SIGNATURE:	DATE:

APPROVED BY	PM REVIEWED	PD REVIEWED	PREPARED BY

Revision History

Revision	Date	Originator	Detail	Remarks
1.0	2017.09.07	ZFY	Initial Release	
1.1	2018.03.22	ZFY	Modify Module Parameter	P4
			Add LED working life	P5
			Modify many details	P24/P25
			Modify outline drawing (C)	P27
1.2	2019.02.26	ZDT	Modify LED working life	P5
1.3	2019.03.05	ZDT	Modify Temperature	P4/P23
			Modify outline drawing (D)	P27
1.4	2019.03.14	ZDT	Modify Interface Pins Definition	P9/P10
			Modify outline drawing (E)	P27

Table of Contents

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)	6.8"	
LCD type	IPS TFT	
Display Mode	Transmissive /Normally black	
Resolution	480 RGB x 1280	Pixels
View Direction	FULL VIEW	Best Image
Module Outline	66.12(H) x 171.79 (V) x 2.62 (T)　(Note1)	mm
Active Area	60.22 (H) x 160.59 (V)	mm
Pixel Size	125.46 (H) x 125.46 (V)	um
Pixel Arrangement	Stripe	
Display Colors	16.7M	
Interface	MIPI	
With or without touch panel	Without	
Driver IC	ICNL9706	-
Operating Temperature	**-20～75**	℃
Storage Temperature	**-30～85**	℃
Weight	68	g

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

3. Absolute Maximum Ratings

V_{SS}=0V, Ta=25ºC

Item	Symbol	Min.	Max.	Unit
Supply Voltage	VCI	-0.3	6.6	V
	IOVCC	-0.3	3.6	V
Storage temperature	T_{STG}	**-30**	**+75**	℃
Operating temperature	T_{OP}	**-20**	**+85**	℃

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

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

4. DC Characteristics

Item		Symbol	Min.	Typ.	Max.	Unit
Supply Voltage		VCI	2.6	3.0	3.6	V
		IOVCC	1.6	1.8	3.6	V
VDDIO Input low level voltage		V_{IL}	VSS	-	0.2*IOVCC	mV
VDDIO Input high level voltage		V_{IH}	0.8*IOVCC	-	IOVCC	mV
Current Consumption All white	Logic	$I_{CC+}\ I_{IN}$	-	(60)	-	mA
	Analog					

5. Backlight Characteristic

5.1. Backlight Characteristic

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Forward Voltage	V_F	Ta=25 ºC, I_F=20mA/LED	11	**12**	13	V
Forward Current	I_F	Ta=25 ºC, V_F=6V/LED	-	**120**	-	mA
Power dissipation	P_D		-	**1440**	-	mW
Uniformity	Avg		70	80	-	%
LED working life(25℃)	-		-	15,000	-	Hrs
Drive method		Constant current				
LED Configuration		12 White LEDs (2 LEDs in one string and 6 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 ºC,60%RH±5%, I_F=20mA/LED.

5.2. Backlight Characteristic

A

K

Circuit Diagram:
Double Core Lamp
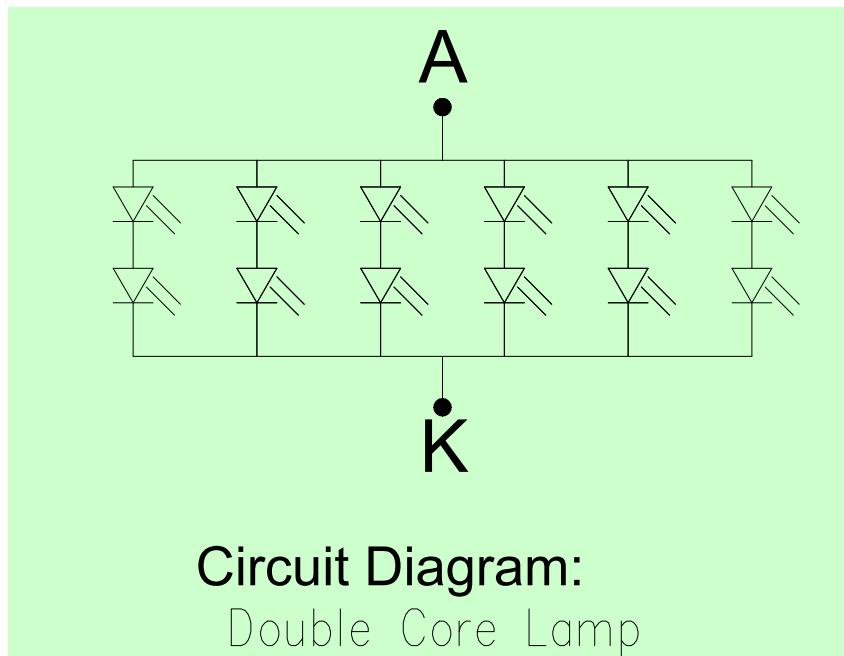
6. Optical Characteristics

6.1. Optical Characteristics

Ta=25ºC, VCI=3.0V

	Item		Symbol	Condition	Specification			Unit
					Min.	Typ.	Max.	
Backlight On (Transmissive Mode)	Luminance on TFT(I_f=20mA/LED)		Lv	Normally viewing angle $\theta_X = \varphi_Y = 0º$	560	700	-	cd/m²
	Contrast ratio(See 6.3)		CR		1000	(1500)	-	
	Response time (See 6.2)		T_R+T_F		-	25	35	ms
	Chromaticity Transmissive (See 6.5)	Red	X_R		0.591	0.641	0.691	
			Y_R		0.293	0.343	0.393	
		Green	X_G		0.232	0.282	0.332	
			Y_G		0.588	0.638	0.688	
		Blue	X_B		0.090	0.140	0.190	
			Y_B		0.046	0.096	0.146	
		White	X_W		0.235	0.285	0.335	
			Y_W		0.306	0.356	0.406	
	Viewing Angle (See 6.4)	Horizontal	θ_{X+}	Center CR≥10	70	80	-	Deg.
			θ_{X-}		70	80	-	
		Vertical	φ_{Y+}		70	80	-	
			φ_{Y-}		70	80	-	
	NTSC Ratio(Gamut)				65	70	-	%

6.2. Definition of Response Time

6.2.1. Normally Black Type (Negative)
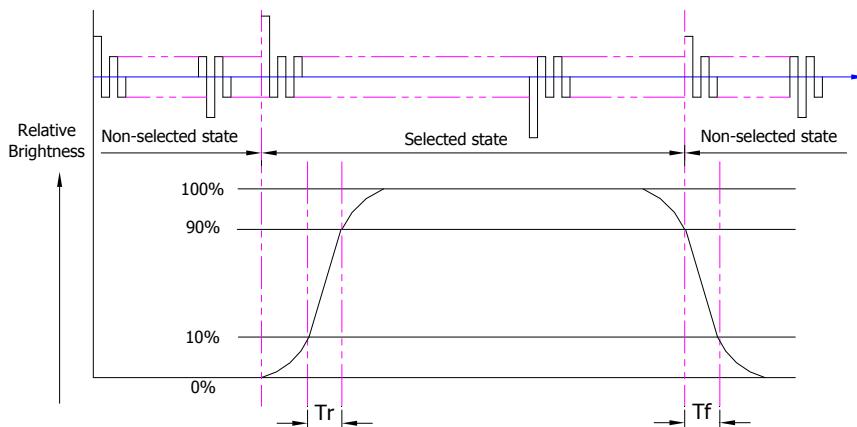
Tr is the time it takes to change form non-selected stage with relative luminance 10% to selected state with relative luminance 90%;

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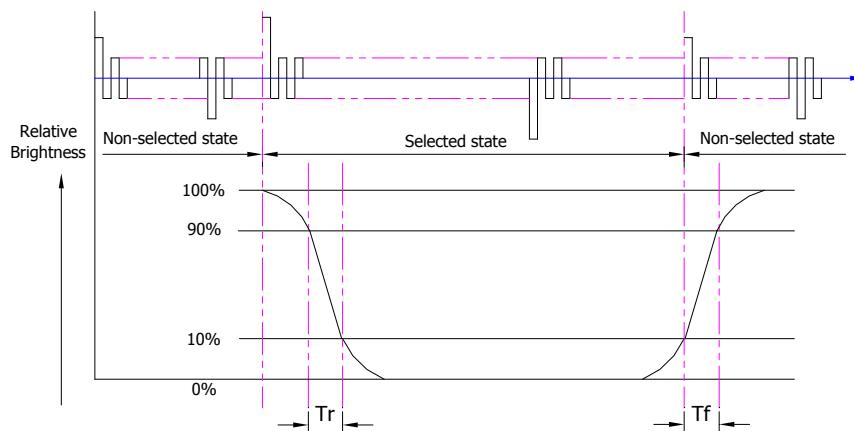
Tr is the time it takes to change form non-selected stage with relative luminance 90% to selected state with relative luminance 10%;

Tf 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
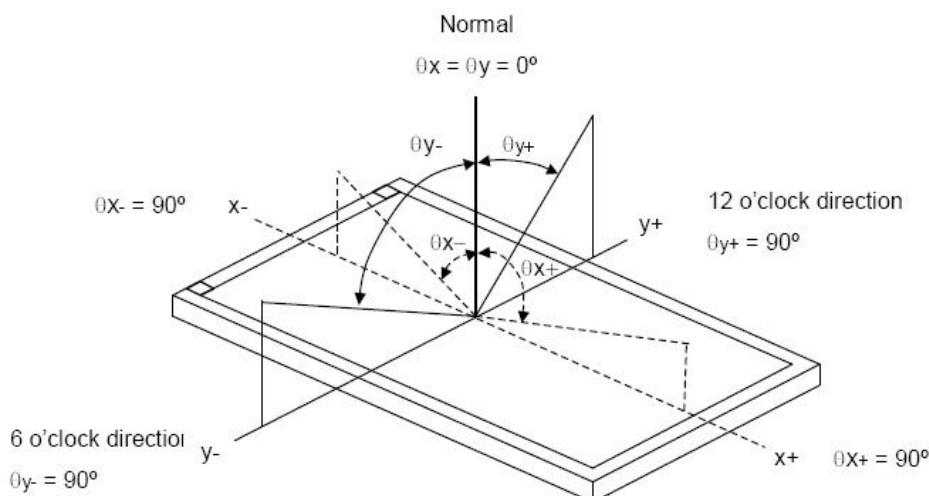
Measuring machine: LCD-5100 or EQUI

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)
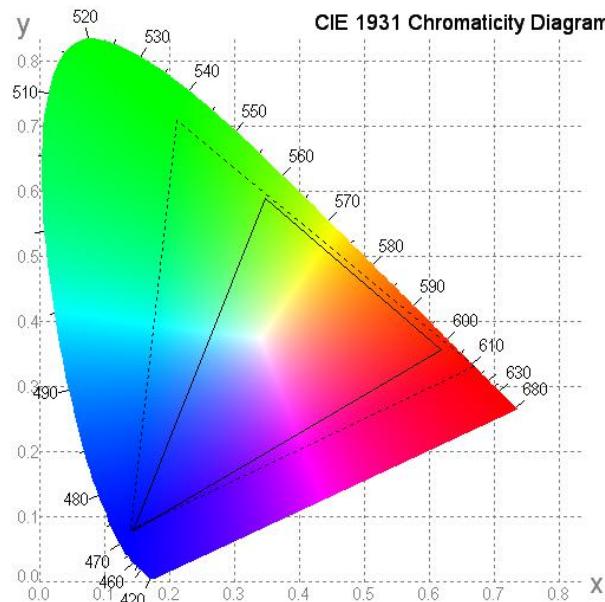
### 6.6. Definition of Surface Luminance, Uniformity and Transmittance

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

6.6.1.　Surface Luminance: L_V = 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
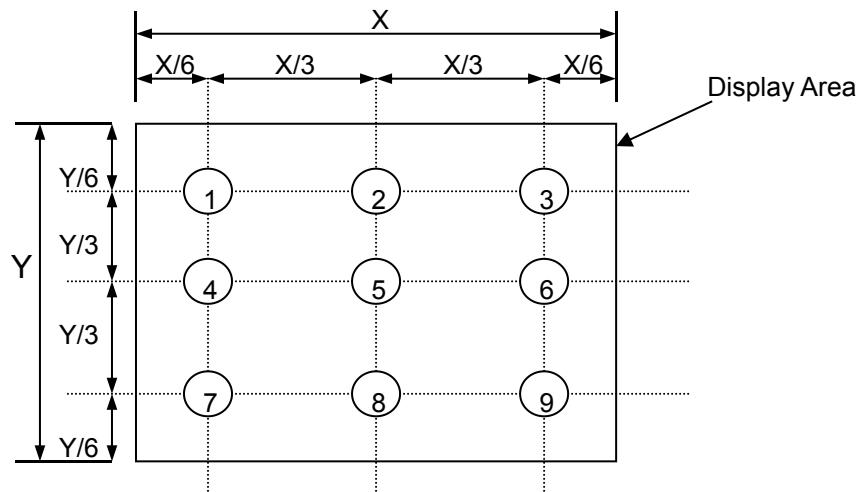
7. Block Diagram and Power Supply
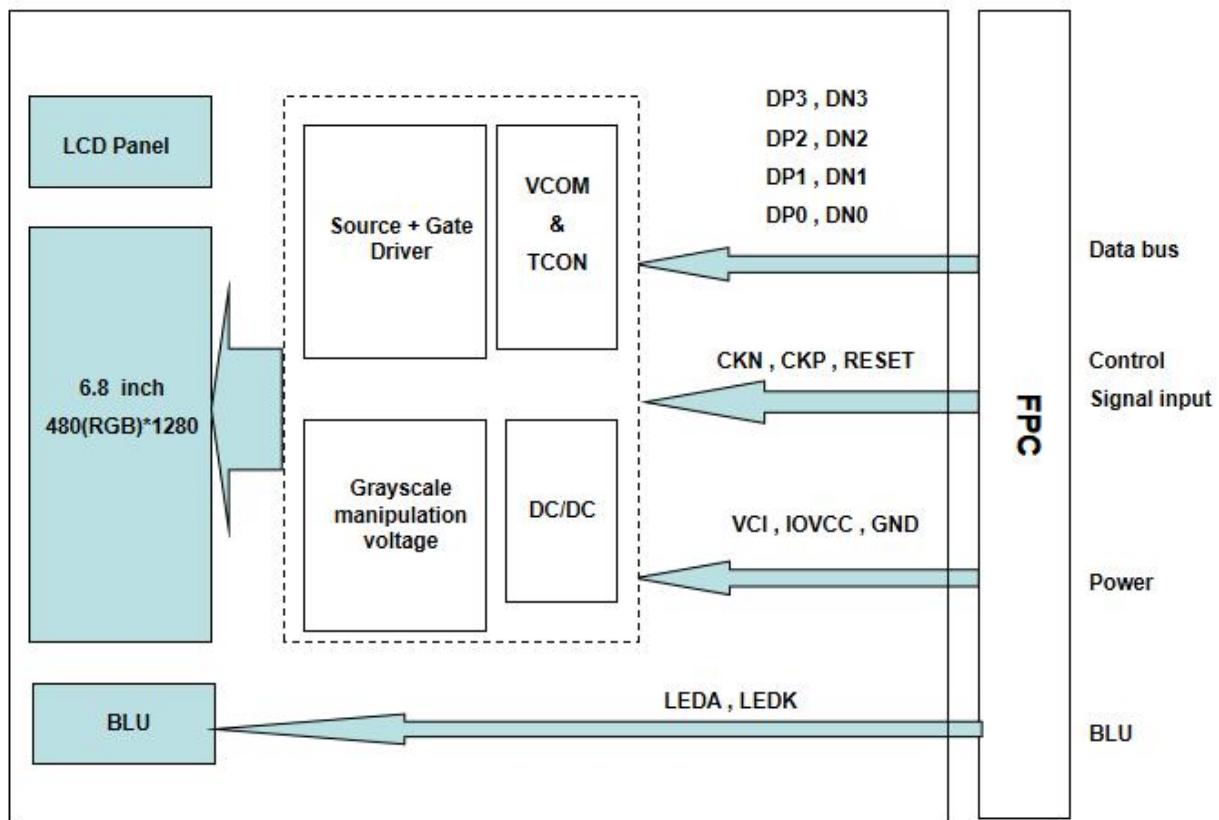
8. Interface Pins Definition

No.	Symbol	Function	Remark
1	GND	Ground	
2	VCI	A power supply for analog circuit	
3	VCI	A power supply for analog circuit	
4	IOVCC	A power supply for the logic power and I/O circuit	
5	GND	Ground	
6	RESET	Reset pin	
7	TE	No connection	
8	GND	Ground	
9	GND	Ground	
10	DN3	MIPI data Input	
11	DP3	MIPI data Input	
12	GND	Ground	
13	DN2	MIPI data Input	
14	DP2	MIPI data Input	
15	GND	Ground	
16	CKN	MIPI clock Input	
17	CKP	MIPI clock Input	
18	GND	Ground	
19	DN1	MIPI data Input	
20	DP1	MIPI data Input	
21	GND	Ground	
22	DN0	MIPI data Input	
23	DP0	MIPI data Input	
24	GND	Ground	
25	VSP	No connection	
26	VSN	No connection	
27	LEDK	Led cathode	
28	LEDK	Led cathode	
29	LEDA	Led anode	
30	LEDA	Led anode	

9. AC Characteristics

1）high speed mode – clock timing
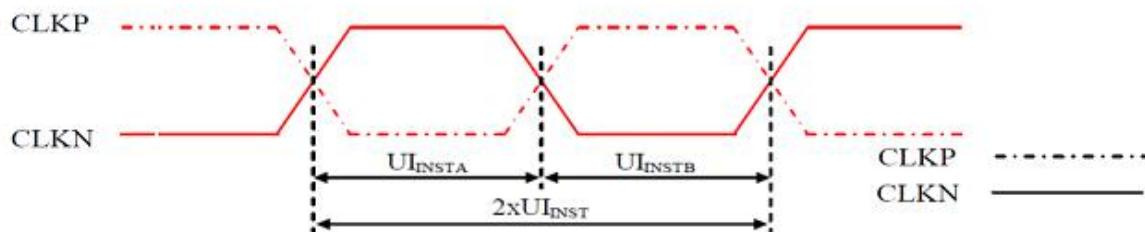
Signal	Symbol	Parameter	Specification			Unit	Notes
			MIN	TYP	MAX		
CLK P/N	$2xUI_{INST}$	Double UI instantaneous	4		25	nS	
CLK P/N	UI_{INSTA}, UI_{INSTB}	UI instantaneous Half	2		12.5	nS	1

2）high speed mode – clock/data timing
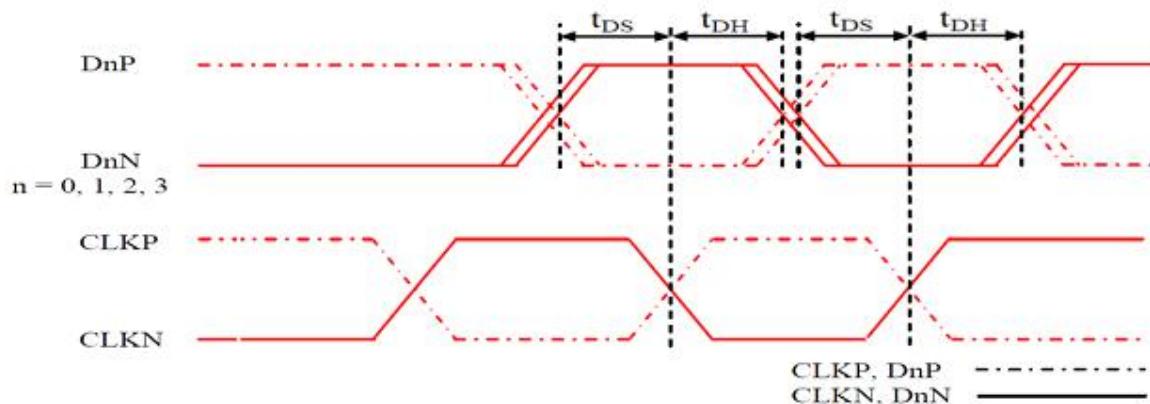
Signal	Symbol	Parameter	Specification			Unit	Notes
			MIN	TYP	MAX		
Dn P/N	tDS	Data to Clock Setup time	0.15*UI			UI	
(n=0,1,2 and 3)	tDH	Clock to Data Hold time	0.15*UI			UI	

3）high speed mode – rising and falling timing
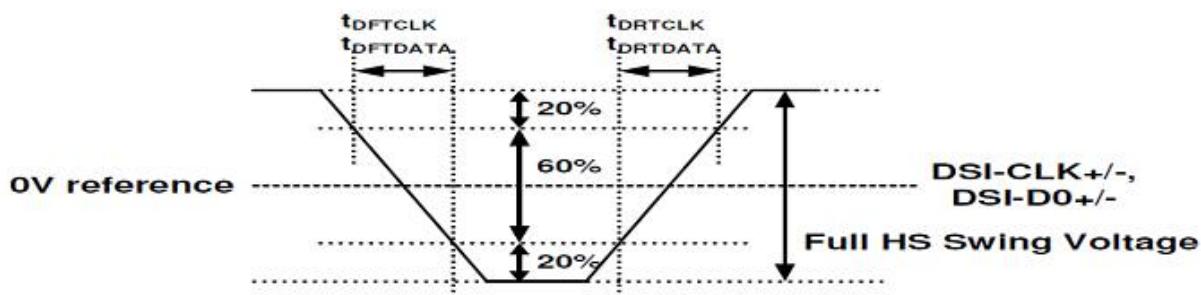
Parameter	Symbol	Conditions	Specification			Unit	Notes
			MIN	TYP	MAX		
Differential Rise Time for Clock	t_DRTCLK	CLKP/N	150pS		0.3*UI		2,3
Differential Rise Time for Data	t_DRTDATA	DnP/N	150pS		0.3*UI		1,2,3
Differential Fall Time for Clock	t_DFTCLK	CLKP/N	150pS		0.3*UI		2,3
Differential Fall Time for Data	t_DFTDATA	DnP/N	150pS		0.3*UI		1,23

Note 1: Dn =0,1,2 and 3

Note2: The display module has to meet timing requriements,which are defined for the transmitter (MCU) on MIPI D-PHY standard.

Note3: DSI-CLK+ = CLKP
    DSI-CLK- =CLKN
  DSI-D0+ =D0P
  DSI-D0- =D0N

4）Low Speed Mode - Bus Turn Around
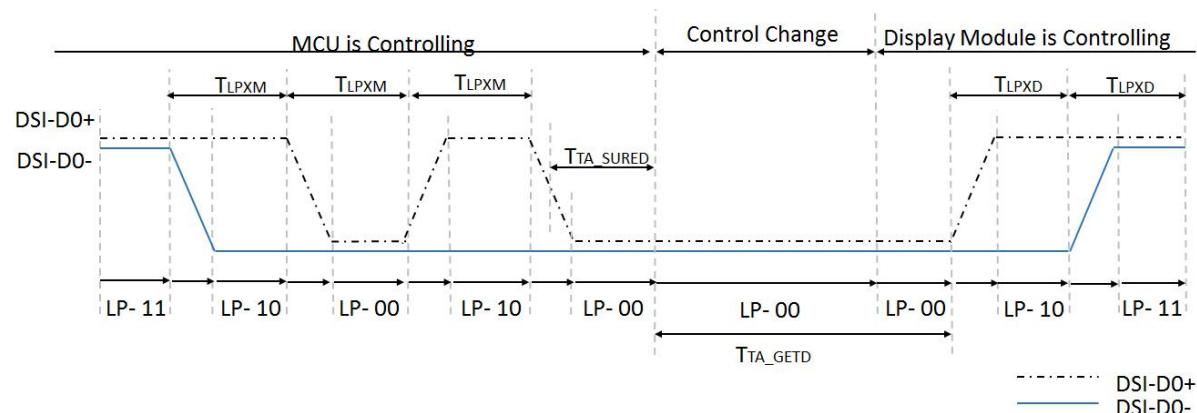

Bus Turnaround (BTA) from MCU to display module Timing
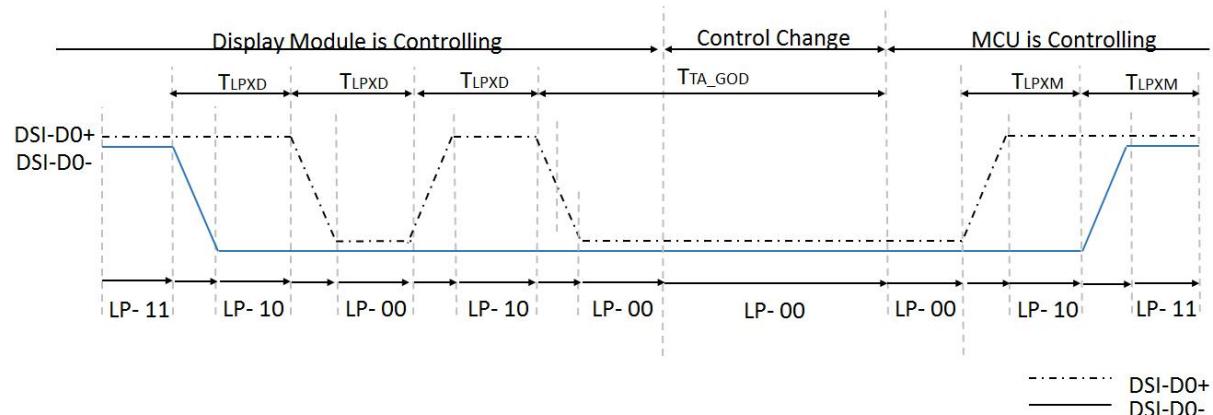
Bus Turnaround (BTA) from Display module to MCU Timing

Signal	Symbol	Parameter	Specification			Unit	Notes
			MIN	TYP	MAX		
D0P/N	T_{LPXM}	Length of LP-00,LP-01,LP-10 or LP11 periods MCU to Display Module	50		75	nS	1
D0P/N	T_{LPXD}	Length of LP-00,LP-01,LP-10 or LP11 periods Display Module to MCU	50		75	nS	1
D0P/N	T_{TA_SURED}	Time-out before the Display Module starts driving	T_{LPXD}		$2* T_{LPXD}$	nS	1
D0P/N	T_{TA_GETD}	Time to drive LP-00 by Display Module	$5* T_{LPXD}$			nS	1
D0P/N	T_{TA_GOD}	Time to drive LP-00 after turnaround request -MCU	$4 * T_{LPXD}$			nS	1

Note 1: D0P = DSI-D0+, D0N = DSI-D0-

5）Data Lanes from Low Power Mode to High Speed Mode
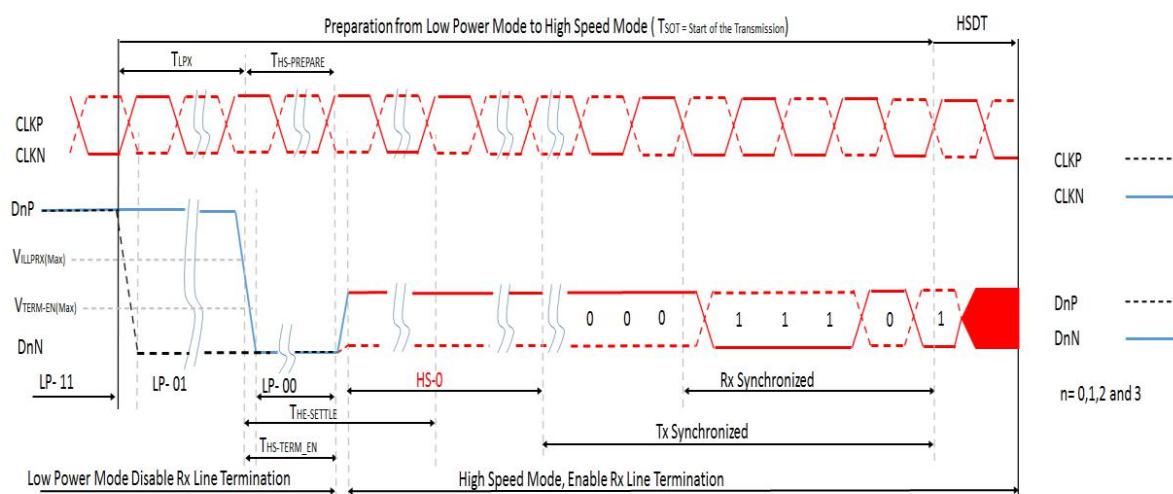
Data Lanes from Low Power Mode to High Speed Mode Timing

Signal	Symbol	Parameter	Specification			Unit	Notes
			MIN	TYP	MAX		
D0P/N	T_{LPX}	Length of any Low Power State Period	50			nS	1
D0P/N	$T_{HS-PREPARE}$	Time to drive LP-00 to prepare for HS Transmission	40+4*UI		85+6*UI	nS	1
D0P/N	$T_{HS-TREM-EN}$	Time to enable Data lane Receiver line termination measured from when Dn crosses VILMAX			35+4*UI	nS	1

Note 1: Dn =0,1,2 and 3

6）Data Lanes from High Speed Mode to Low Power Mode

Note:
If the last load bit is HS-1, the transmitter changes from HS-1 to HS-0.
If the last load bit is HS-0, the transmitter changes from HS-0 to HS-1.
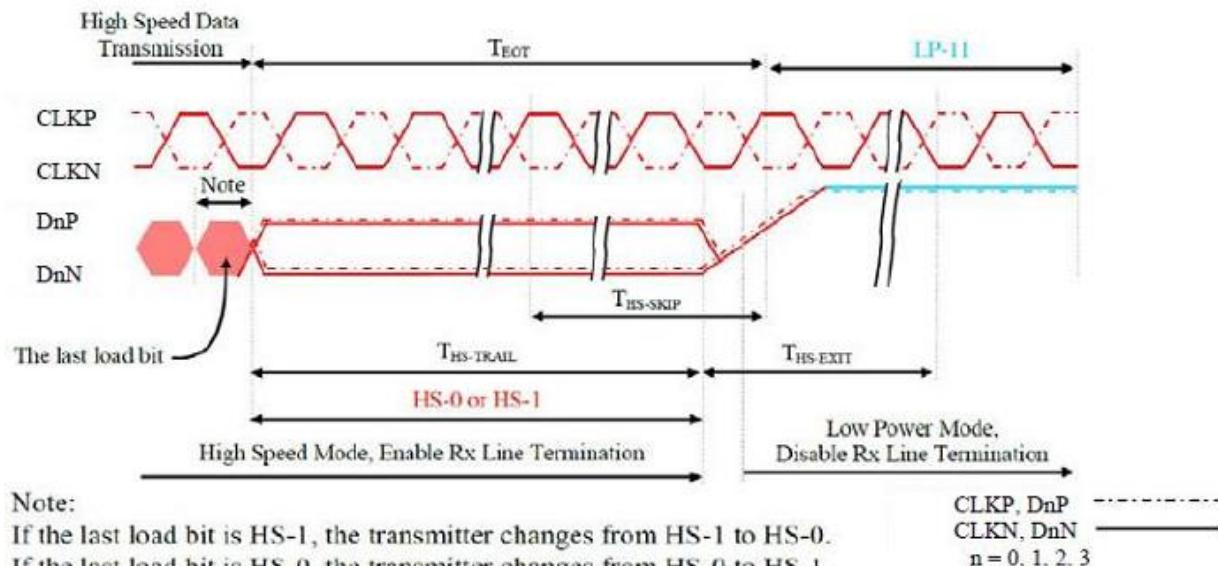
Data Lanes from High Speed Mode to Low Power Mode Timing

Signal	Symbol	Parameter	Specification			Unit	Notes
			MIN	TYP	MAX		
D0P/N	$T_{HS-SKIP}$	Time-Out at Display Module to ignore transition period of EoT	40		55+4*UI	nS	1
D0P/N	$T_{HS-EXIT}$	Time to drive LP-11 after HS burst	100			nS	1

Note 1: Dn =0,1,2 and 3

7）DSI Clock Burst – High speed mode to /from Low Power Mode
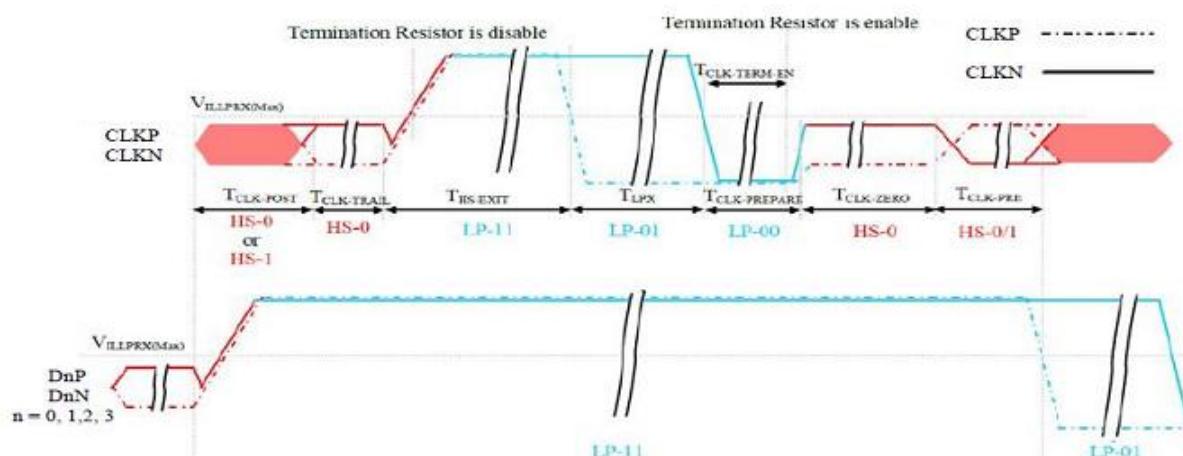
Clock Lane –High speed mode to / from Low Power Mode Timing

Signal	Symbol	Parameter	Specification			Unit	Notes
			MIN	TYP	MAX		
CKP/N	T$_{CK-POST}$	Time that the MCU shall continue sending HS clock after the last associated Data Lanes has transitioned to LP mode	60+52*UI			nS	
CKP/N	T$_{CLK-TRAIL}$	Time to drive HS differential state after last payload clock bit of a HS transmission burst	60			nS	
CKP/N	T$_{HS-EXIT}$	Time to drive LP-11 after HS burst	100			nS	
CKP/N	T$_{CLK-PREPARE}$	Time to drive LP-00 to prepare for HS transmission	38		95	nS	
CKP/N	T$_{CLK-TERM-EN}$	Time-out at Clock Lane to enable HS termination			38	nS	
CKP/N	T$_{CLK-PREPARE}$+T$_{CLK-ZERO}$	Minimum lead HS-0 drive period before starting Clock	300			nS	
CKP/N	T$_{CLK-PRE}$	Time that the HS clock shall be driven prior to any associated Data Lane beginning the transition from LP to HS mode	8*UI			nS	

10. Reset timing
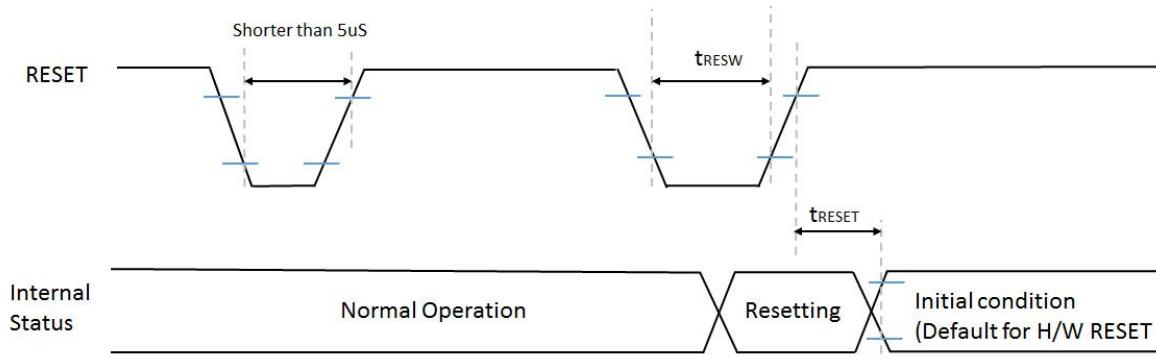
Condition : Ta =25℃

Signal	Symbol	Parameter	Description	Specification			Unit	Notes
				MIN	TYP	MAX		
RESET	t_{RESW}	Reset "L" pulse width		10			uS	1
	t_{RESET}	Reset complete time	When reset applied during Sleep in mode			5	mS	2
			When reset applied during Sleep Out mode			120	mS	5

Note 1: Spike due to an electrostatic discharge on RESET line does not cause irregular system reset according to the table below.

RESET Pulse	Action
Short than 5us	Reset Rejected
Long than 10uS	Reset
Between 5us and 10uS	Reset Start

Note 2: During the resetting period, the display will be blanked (The display is entering blanking sequence, which maximum time is 120ms, when Reset Starts in sleep out mode. The display remains the blank state in sleep in mode) and then return to Default condition for H/W RESET.

Note3: During Reset Complete Time, values in OTP memory will be latched to internal register during this period. This loading is done every time when there is H/W RESET complete time(tRESET) within 5ms after a rising edge of RESET.

Note4: Spike Rejection also applies during a valid reset pulse as shown below:
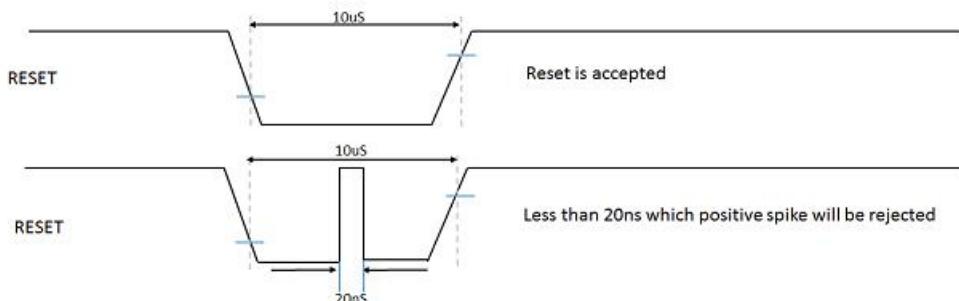
Note5: It is necessary to wait 5msec after releasing RESET before sending commands. Also Sleep Out command can not be sent for 120msec.

11. Quality Assurance

11.1. Purpose

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

11.2. Standard for Quality Test

11.2.1. Sampling Plan:

GB2828.1-2012

Single sampling, general inspection level II

11.2.2. Sampling Criteria:

Visual inspection: AQL 1.5%

Electrical functional: AQL 0.65%.

11.2.3. Reliability Test:

Detailed requirement refer to Reliability Test Specification.

11.3. Nonconforming Analysis & Disposition

11.3.1. Nonconforming analysis:

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

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

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

11.3.2. Disposition of nonconforming:

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

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

11.4. Agreement Items

Shall negotiate with customer if the following situation occurs:

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

11.4.2. Additional requirement to be added in product specification.

11.4.3. Any other special problem.

11.5. Standard of the Product Visual Inspection

11.5.1. Appearance inspection:

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

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

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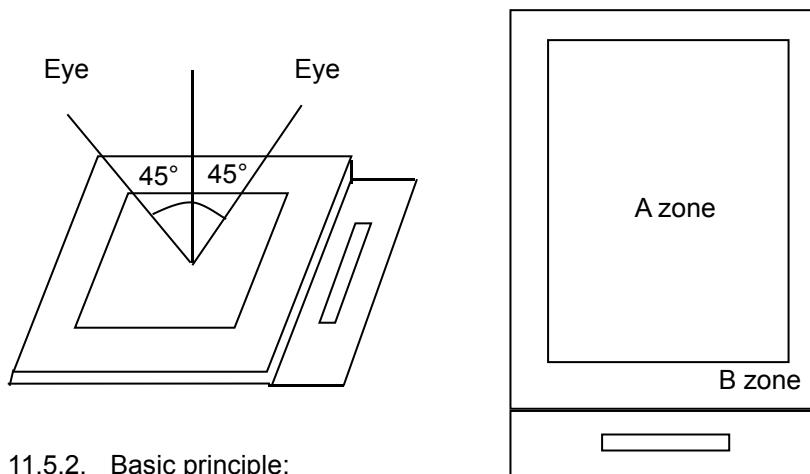

11.5.2. Basic principle:

11.5.2.1. 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.

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

## 11.6. Inspection Specification

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 3mm apart.		
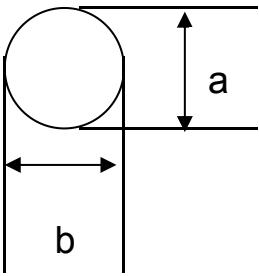
Size \ Area	Acc. Qty
φ≤0.20	Ignore
0.20<φ≤0.50	N≤3
0.50<φ	0

No.	Item		Display Area	Total	
02	Electrical Defect (Minor defect)	Bright dot	N≤2	N≤2	Note1
		Dark dot	N≤4	N≤4	
		Total dot	N≤4	N≤4	
		Mura	Not visible through 5% ND filters.		Note 2

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)	
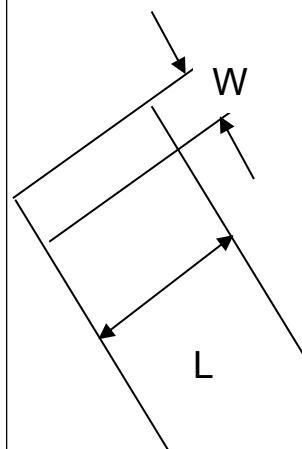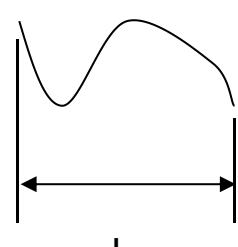
Length	Width	Acc. Qty
/	W $\leqq$ 0.03	Ignore
L $\leqq$ 2.5	0.03 $<$ W $\leqq$ 0.05	3
L $\leqq$ 2.5	0.05 $<$ W $\leqq$ 0.10	2
/	0.1 $<$ W	0
Total		3

Distance between 2 defects should more than 3mm apart. Scratches not viewable through the back of the display are acceptable.

04	Glass Crack (Minor defect)	
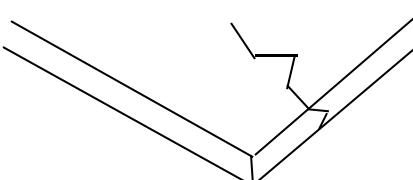
Crack is potential to enlarge, any type is not allowed.

05	Glass Chipping Pad Area: (Minor defect)	
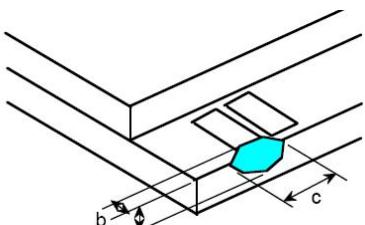
Length and Width	Acc. Qty
c > 3.0, b< 1.0	1
c< 3.0, b< 1.0	3
a<Glass Thickness	

06	Glass Chipping Rear of Pad Area: (Minor defect) 		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<Glass Thickness	

07	Glass Chipping Except Pad Area: (Minor defect) 		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<Glass Thickness	

08	Glass Corner Chipping: (Minor defect) 		Length and Width	Acc. Qty
			c < 3.0, b< 3.0	Ignore
			a<Glass Thickness	
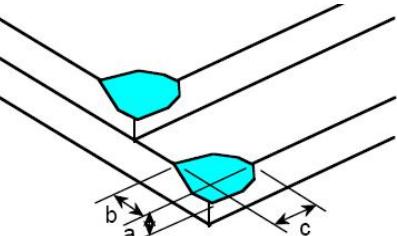
09	Glass Burr: (Minor defect) 		Length	Acc. Qty
			F < 1.0	Ignore
		Glass burr don't affect assemble and module dimension.		
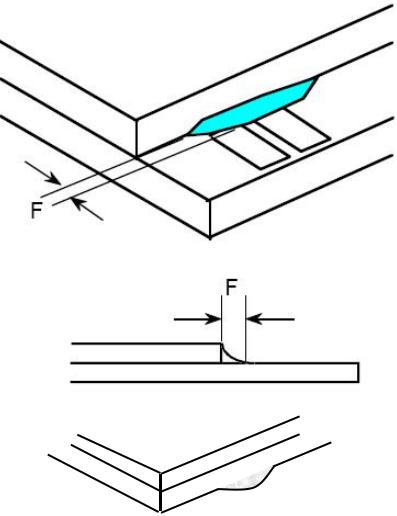
10	FPC Defect: (Minor defect) a → w → a	10.1 Dent, pinhole width a<w/3. (w: circuitry width.) 10.2 Open circuit is unacceptable. 10.3 No oxidation, contamination and distortion.
11	Bubble on Polarizer (Minor defect)	Diameter / Acc. Qty table below
12	Dent on Polarizer (Minor defect)	Diameter / Acc. Qty table below

Item 11 - Bubble on Polarizer

Diameter	Acc. Qty
φ≤0.20	Ignore
0.20 <φ≤0.30	4
0.30 <φ≤0.50	1
0.50 < φ	None

Item 12 - Dent on Polarizer

Diameter	Acc. Qty
φ≤0.20	Ignore
0.20 <φ≤0.30	4
0.30 <φ≤0.50	1
0.50 < φ	None

13	Bezel	13.1 No rust, distortion on the Bezel. 13.2 No visible fingerprints, stains or other contamination.
14	Touch Panel	D: Diameter W: width L: length 14.1 Spot: D<0.25 is acceptable 　　　0.25≤D≤0.4 2dots are acceptable and the distance between defects should more than 10 mm. 　　　D>0.4 is unacceptable 14.2 Dent: D>0.40 is unacceptable 14.3 Scratch: W≤0.03, L≤10 is acceptable, 　　　0.03<W≤0.10, L≤10 is acceptable Distance between 2 defects should more than 10 mm. 　　　W>0.10 is unacceptable.
15	PCB	15.1 No distortion or contamination on PCB terminals. 15.2 All components on PCB must same as documented on the BOM/component layout. 15.3 Follow IPC-A-600F.
16	Soldering	Follow IPC-A-610C standard

		The below defects must be rejected.
17	Electrical Defect (Major defect)	17.1 Missing vertical / horizontal segment,
		17.2 Abnormal Display.
		17.3 No function or no display.
		17.4 Current exceeds product specifications.
		17.5 LCD viewing angle defect.
		17.6 No Backlight.
		17.7 Dark Backlight.
		17.8 Touch Panel no function.

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

11.7. Classification of Defects

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

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

11.8. Identification/marking criteria

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

11.9. Packing

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

11.9.2.   Modules inside package box should have compliant mark.

11.9.3.   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.
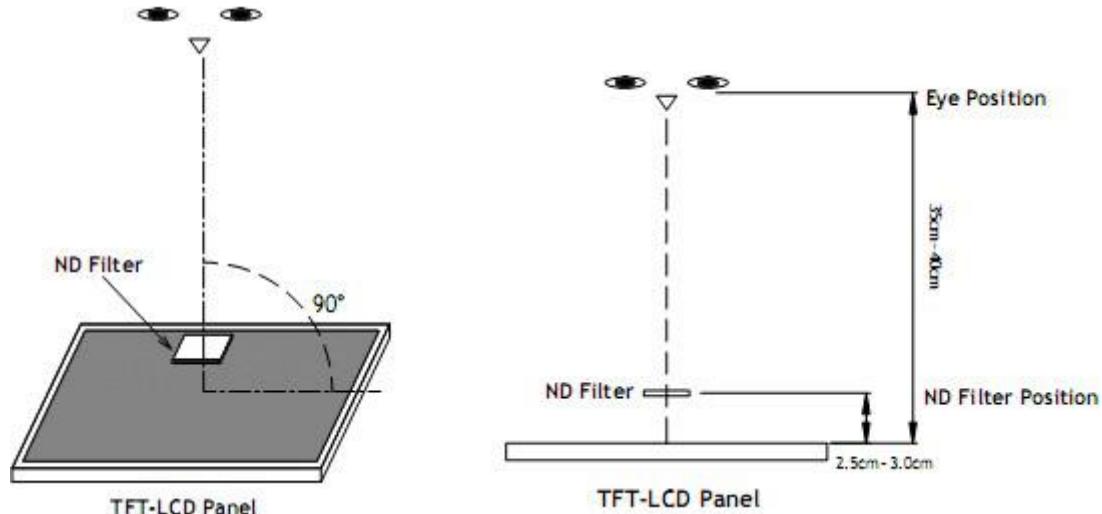
Bright dot: The bright dot size defect at black display pattern. It can be recognized by 2% transparency of filter when the distance between eyes and panel is 350mm±50mm.

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 350mm±50mm.

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

12. Reliability Specification

No	Item	Condition	Quantity	Criteria
1	High Temperature Operating	**75℃, 96Hrs**	2	GB/T2423.2 -2008
2	Low Temperature Operating	**-20℃, 96Hrs**	2	GB/T2423.1 -2008
3	High Humidity	**50℃, 90%RH, 96Hrs**	2	GB/T2423.3 -2006
4	High Temperature Storage	**85℃, 96Hrs**	2	GB/T2423.2 -2008
5	Low Temperature Storage	**-30℃, 96Hrs**	2	GB/T2423.1 -2008
6	Thermal Cycling Test	**-20℃, 60min ~ 75℃, 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.	2	GB/T5170.14 -2009
8	Electrical Static Discharge	Air:±4KV 150pF/330Ω 5 times Contact:±2KV 150pF/330Ω 5 times	2	GB/T17626.2 -2006
9	Drop Test (Packaged)	Height:80 cm,1 corner, 3 edges, 6 surfaces.	2	GB/T2423.8 -1995

Note1.　No defection cosmetic and operational function allowable.

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

13. Precautions and Warranty

13.1. Safety

13.1.1. 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.

13.1.2. Since the liquid crystal cells are made of glass, do not apply strong impact on them. Handle with care.

13.2. Handling

13.2.1. Reverse and use within ratings in order to keep performance and prevent damage.

13.2.2. 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.

13.3. Storage

13.3.1. Do not store the LCD module beyond the specified temperature ranges.

13.3.2. Strong light exposure causes degradation of polarizer and color filter.

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

13.4.1. Pins of LCD and Backlight

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

13.4.1.2. Recommended Soldering Conditions

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

Maximum Solder Temperature: 370℃

Maximum Solder Time: 3s at the maximum temperature

Recommended Soldering Temp: 350±20℃

Typical Soldering Time: ≤3s

13.4.1.3. Solder Wetting

Solder   Pin Lead   Solder   Pin Lead

Recommended   Not Recommended

13.4.2. Pins of EL

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

13.4.2.2. No Solder Paste on the soldering pad on the motherboard is recommended.

13.4.2.3. Recommended Soldering Conditions

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

Recommended Solder Temperature: 270~290℃

Typical Soldering Time: ≤2s

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

13.4.2.4. No horizontal press on the EL leads during soldering.

13.4.2.5. 180° bend EL leads three times is not allowed.

13.4.2.6. Solder Wetting

Recommended　　　　　　　Not Recommended

13.4.2.7. The type of the solder iron:
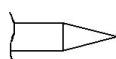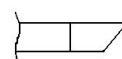
Recommended　　　　　　　Not Recommended

13.4.2.8. Solder Pad
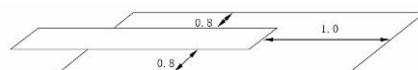
13.5. Operation

13.5.1. Do not drive LCD with DC voltage

13.5.2. Response time will increase below lower temperature

13.5.3. Display may change color with different temperature

13.5.4. Mechanical disturbance during operation, such as pressing on the display area, may cause the segments to appear "fractured".

13.5.5. Do not connect or disconnect the LCM to or from the system when power is on.

13.5.6. Never use the LCM under abnormal condition of high temperature and high humidity.

13.5.7. 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.

13.5.8. Do not display the fixed pattern for long time（we suggest the time not longer than one hour）because it may develop image sticking due to the TFT structure.

13.6. Static Electricity

13.6.1. CMOS LSIs are equipped in this unit, so care must be taken to avoid the electro-static charge, by ground human body, etc.

13.6.2. The normal static prevention measures should be observed for work clothes and benches.

13.6.3. The module should be kept into anti-static bags or other containers resistant to static for storage.

13.7. Limited Warranty

13.7.1. Our warranty liability is limited to repair and/or replacement. We will not be responsible for any consequential loss.

13.7.2. 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.

13.7.3. 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.

14. Packaging

TBD

15. Outline Drawing

PIN FUNCTION

PIN	SYMBOL
1	GND
2	VCI
3	VCI
4	IOVCC
5	GND
6	RESET
7	TE
8	GND
9	GND
10	DP3
11	GND
12	DN2
13	DP2
14	GND
15	CKN
16	CKP
17	GND
18	DN1
19	DP1
20	GND
21	DN0
22	DP0
23	GND
24	NC
25	NC
26	LEDK
27	LEDK
28	LEDA
29	LEDA
30	

REVISION RECORD

REV		
	First Issue	
	Modify Driver IC	
	Add black tape	
	Modify Operation temperature	

Viewing after FPC bending shipment with FPC Bending

Circuit Diagram:
Double Core Lamp

NOTES:
1. Display size:6.8"TFT
2. Viewing direction:FULL VIEW/IPS
3. Display mode:Transmissive/Normal Black
4. Operation temperature:-20°C~+75°C
5. Storage temperature:-30°C~+85°C
6. Driver IC:ICNL9706
7. Power supply voltage:3.3V
8. Backlight :White(12 LED)/12V(TYP)/120mA
   Brighness:700(TYP)cd/m2
9. ROHS must be complied
* Unspecification tolerance are ±0.2mm
* The dimension with mark brackets "()" just for reference

VERSION	DATE	MODEL NAME:	T068480128-A1WMN-001
E	2019.03.13		
NO.	UNIT	TITLE:	Outline
	mm		
SCALE	DRAWN	FILE NAME:	T068480128-A1WMN-001_E
1/1			
APPROVED	CHECKED		