



DATA IMAGE CORPORATION

CTP Module Specification Preliminary

ITEM NO.: FG0800E0DSSWNGZ1

Table of Contents

1. COVER & CONTENTS	1
2. RECORD OF REVISION	2
3. GENERAL SPECIFICATIONS	3
4. ABSOLUTE MAXIMUM RATINGS	3
5. ELECTRICAL CHARACTERISTICS	3
6. TIMING CHARACTERISTICS	5
7. PIN CONNECTIONS	10
8. BLOCK DIAGRAM	12
9. OPTICAL CHARACTERISTIC	13
10. QUALITY ASSURANCE	15
11. APPEARANCE SPECIFICATION	16
12. LCM PRODUCT LABEL DEFINE	19
13. PRECAUTIONS IN USE LCM	21
14. OUTLINE DRAWING	22
15. PACKAGE INFORMATION.....	23

Customer Companies	R&D Dept.	Q.C. Dept.	Eng. Dept.	Prod. Dept.
	ALEX	JOE	GARY	KEN
Approved by	Version:	Issued Date:	Sheet Code:	Total Pages:
	1	26/NOV/13'		23

2. RECORD OF REVISION

Rev	Date	Item	Page	Comment
1	26/NOV/13'			Initial preliminary

3. GENERAL SPECIFICATIONS

Parameter	Specifications	Unit
Screen Size	8.0"(Diagonal)	inch
Display Format	1024(W) x RGB x 768(H)	dot
LCD Active Area	162.05(W) x 121.54(H)	mm
Dot Pitch	0.05275 (W) x 0.15825 (H)	mm
Pixel Configuration	R.G.B. Stripe	
Display mode	Normally Black, Transmissive	
Outline Dimension	174(W) x136(H) x 2.45 (D)	mm
Surface treatment	Hard Coating	
Back-light	LED	
Interface	LVDS	
Weight	126	g
View Angle direction	All	
Our components and processes are compliant to RoHS standard		

4. ABSOLUTE MAXIMUM RATINGS

(GND=0V)

Parameter	Symbol	MIN.	MAX.	Unit	Remark
Power voltage	VCC	-0.3	+5.0	V	
	AVDD	6.5	13.5	V	
	VGH	-0.3	40.0	V	
	VGL	-20.0	0.3	V	
	VGH-VGL	-	40	V	
Operating temperature	Top	-10	50	°C	
Storage temperature	Tst	-20	60	°C	-
LED Reverse Voltage	VR	-	5	V	
LED Forward Current	IF	-	35	mA	

5. ELECTRICAL CHARACTERISTICS

(GND=0V,Note 1)

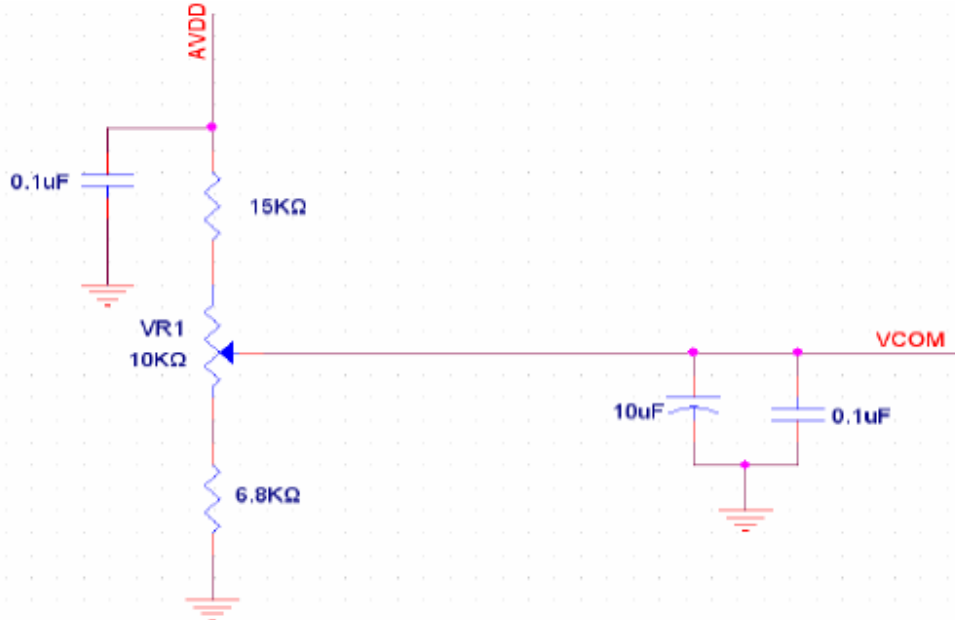
Parameter	Symbol	MIN.	Typ.	MAX.	Unit	Remark
Power for Driver	VCC	3.0	3.3	3.6	V	Note 2
	AVDD	9.8	10	10.2	V	
	VGH	18.6	18.9	19.2	V	
	VGL	-8.1	-7.8	-7.5	V	
Power Current	ICC	--	35	60	mA	
	IAVDD	--	25	40	mA	
	IGH	--	0.65	1	mA	
	IGL	--	0.65	1	mA	
input logical high voltage	VIH	0.7VCC	--	VCC	V	Note 4
input logical Low voltage	VIL	0	--	0.3VCC	V	
Input signal voltage	VCOM	3.0	3.6	3.9	[V]	Note 3

Note 1: Be sure to apply VDD and VGL to the LCD first, and then apply VGH.

Note 2: VDD setting should match the signals output voltage (refer to Note 3) of customer's system board.

Note 3: Typical Vcom is only a reference value, it must be optimized according to each LCM, please use VR and base on below application circuit.

Note 4: RESET, STBYB, SELB, L/R, U/D, CABCE0, CABCE1.



5.1 Backlight Driving Conditions

Parameter	Symbol	MIN.	Typ.	MAX.	Unit	Remark
Voltage for LED backlight	V_L	8.4	9.6	10.5	V	Note 1
Current for LED backlight	I_L	--	220	--	mA	
LED life time	-	15000	--	--	Hr	Note 2

Note 1: The LED Supply Voltage is defined by the number of LED at $T_a=25^\circ\text{C}$ and $I_L=220\text{mA}$.

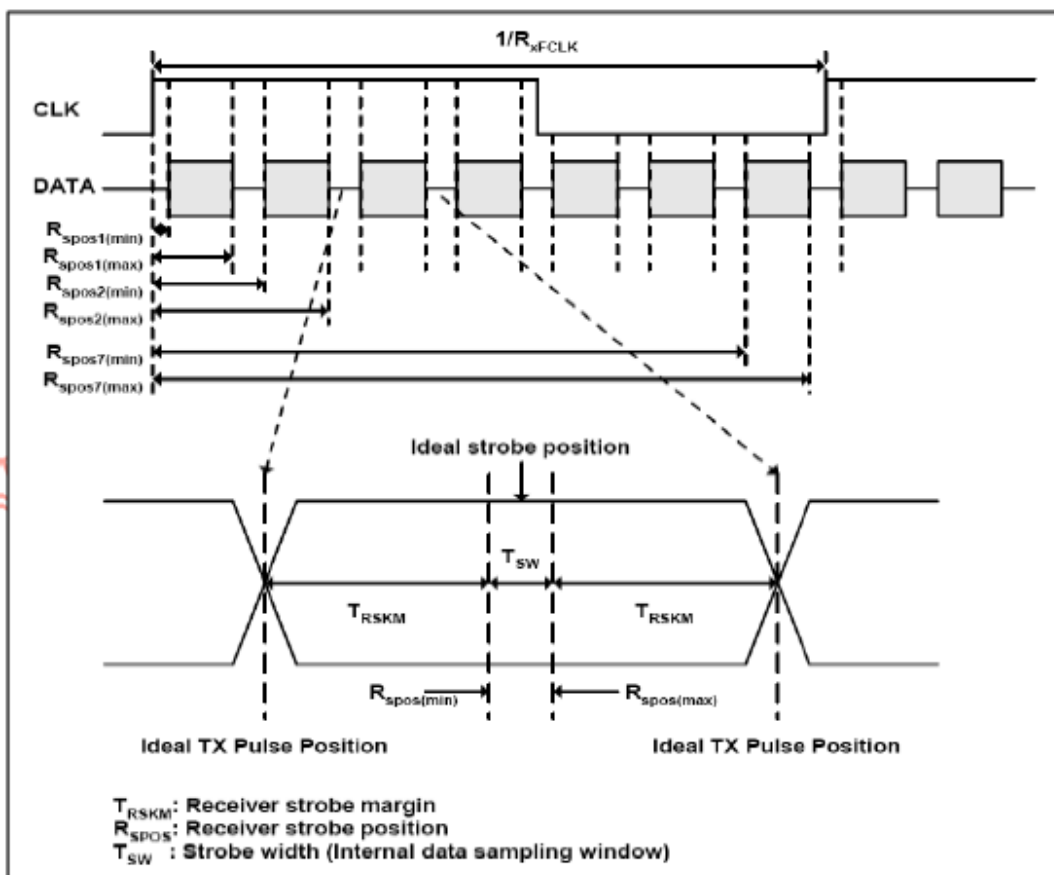
Note 2: The "LED life time" is defined as the module brightness decrease to 50% original brightness at $T_a=25^\circ\text{C}$ and $I_L=220\text{mA}$. The LED lifetime could be decreased if operating I_L is larger than 220mA.

6. TIMING CHARACTERISTICS

6.1 AC Electrical Characteristics

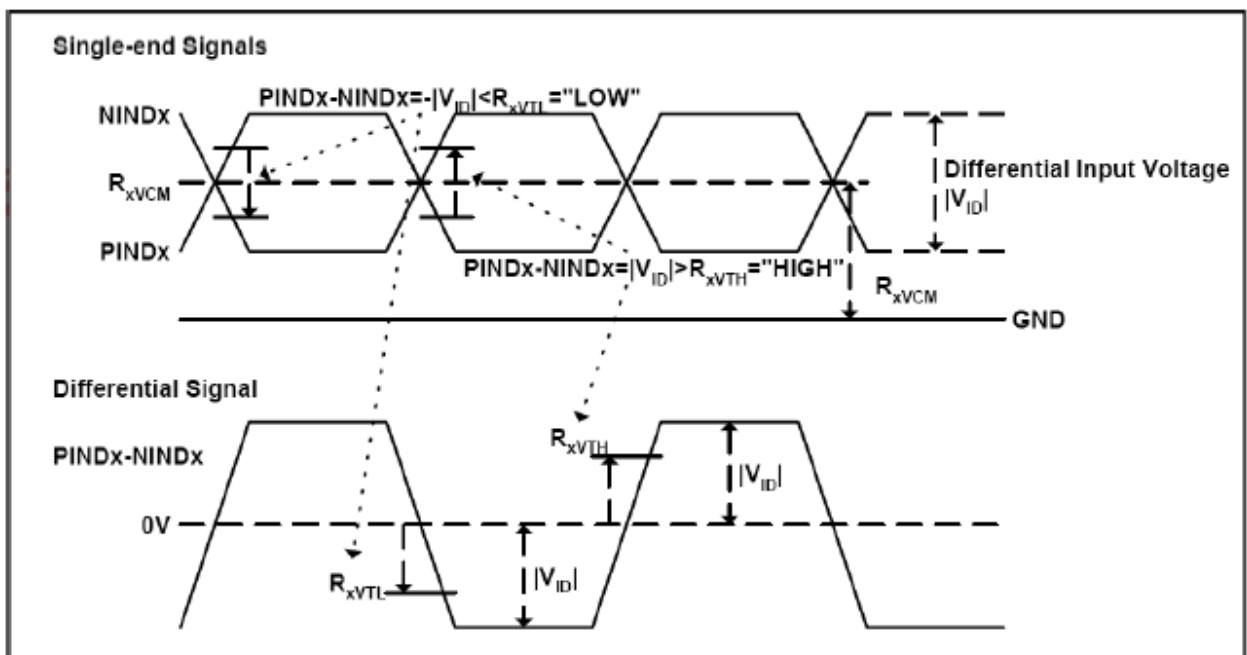
Parameter	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Clock frequency	R_{xFCLK}	20	-	71	MHz	
Input data skew margin	T_{RSKM}	500	-	-	ps	
Clock high time	T_{LVCH}	-	$4/(7 * R_{xFCLK})$	-	ns	
Clock low time	T_{LVCL}	-	$3/(7 * R_{xFCLK})$	-	ns	

6.2 Input Clock and Data Timing Diagram



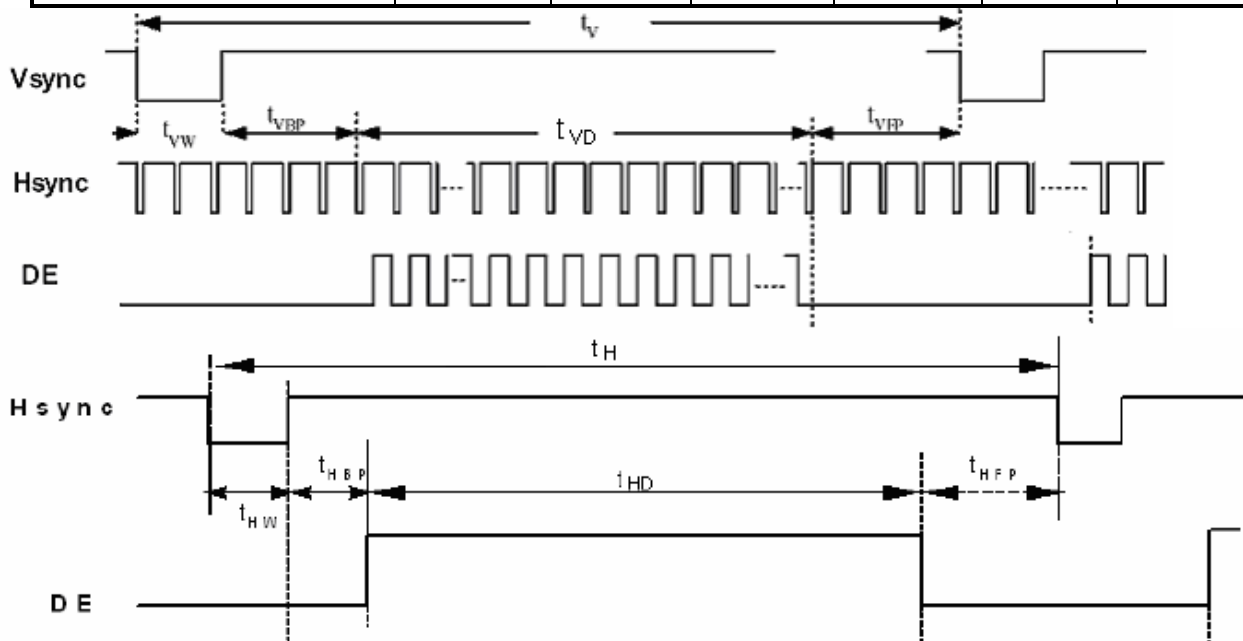
6.3 DC Electrical Characteristics

Parameter	Symbol	Values			Unit	Remark
		Min.	Tvp.	Max.		
Differential input high Threshold voltage	R_{xVTH}	-	-	+0.1	V	
Differential input low Threshold voltage	R_{xVTL}	-0.1	-	-	V	
Input voltage range (singled-end)	R_{xVIN}	0	-	2.4	V	
Differential input common mode voltage	R_{xVCM}	$ V_{ID} /2$		$2.4 - V_{ID} /2$	V	
Differential input common mode voltage	$ V_{ID} $	0.2	-	0.6	V	
Differential input leakage current	$R_{V_{xIIZ}}$	-10	-	+10	μA	



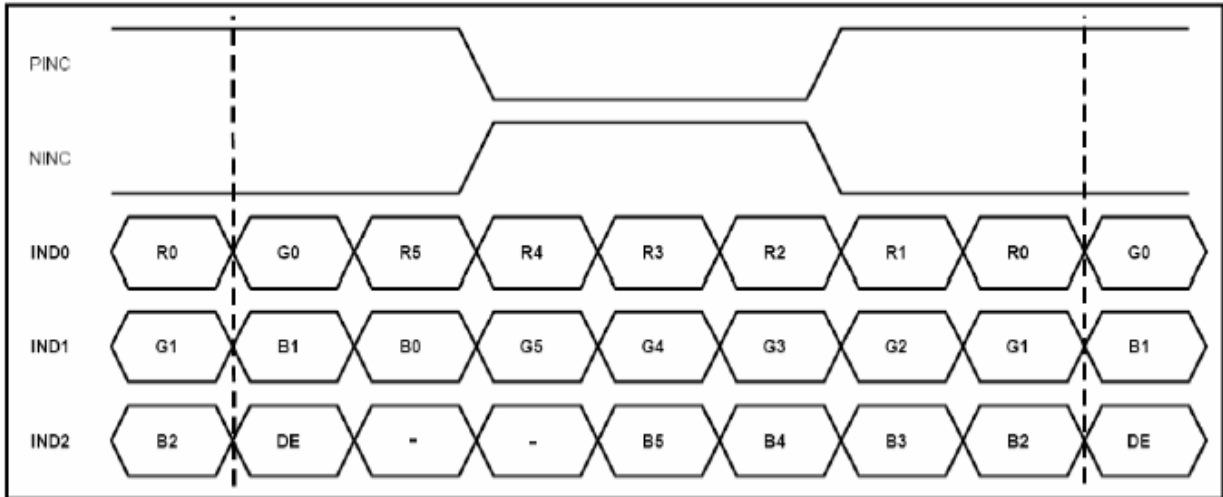
6.4 Timing Table

Item	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Clock Frequency	fclk	52	65	71	MHz	
Horizontal display area	thd	1024				
HS period time	th	1114	1344	1400	DCLK	
HS Blanking	thb+thfp	90	320	376	DCLK	
Vertical display area	tvd	768				
VS period time	tv	778	806	845	H	
VS Blanking	tvb+tvfp	10	38	77	H	

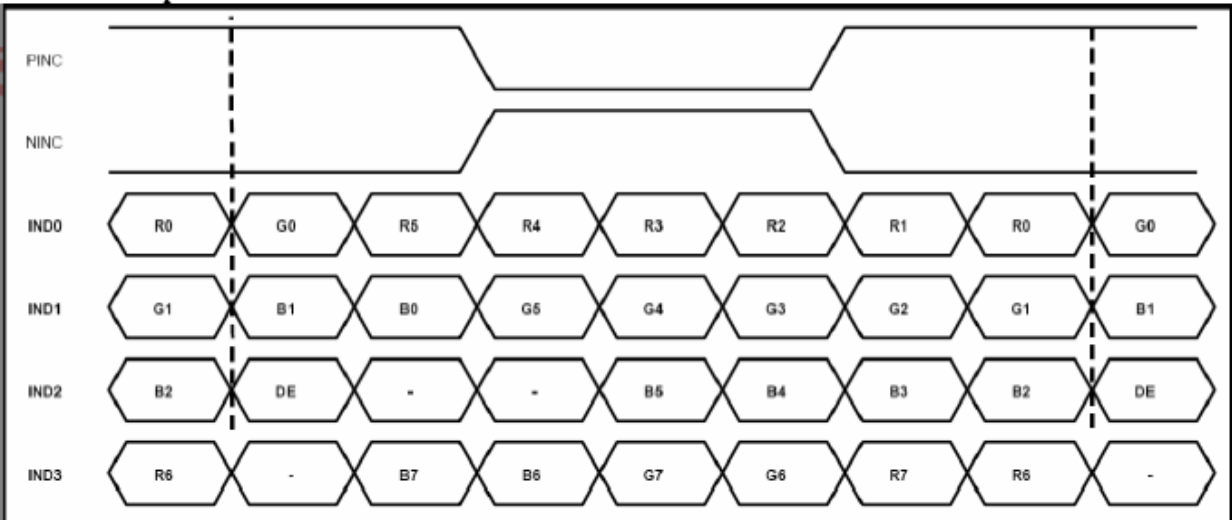


6.5 Data Input Format

6bit LVDS input



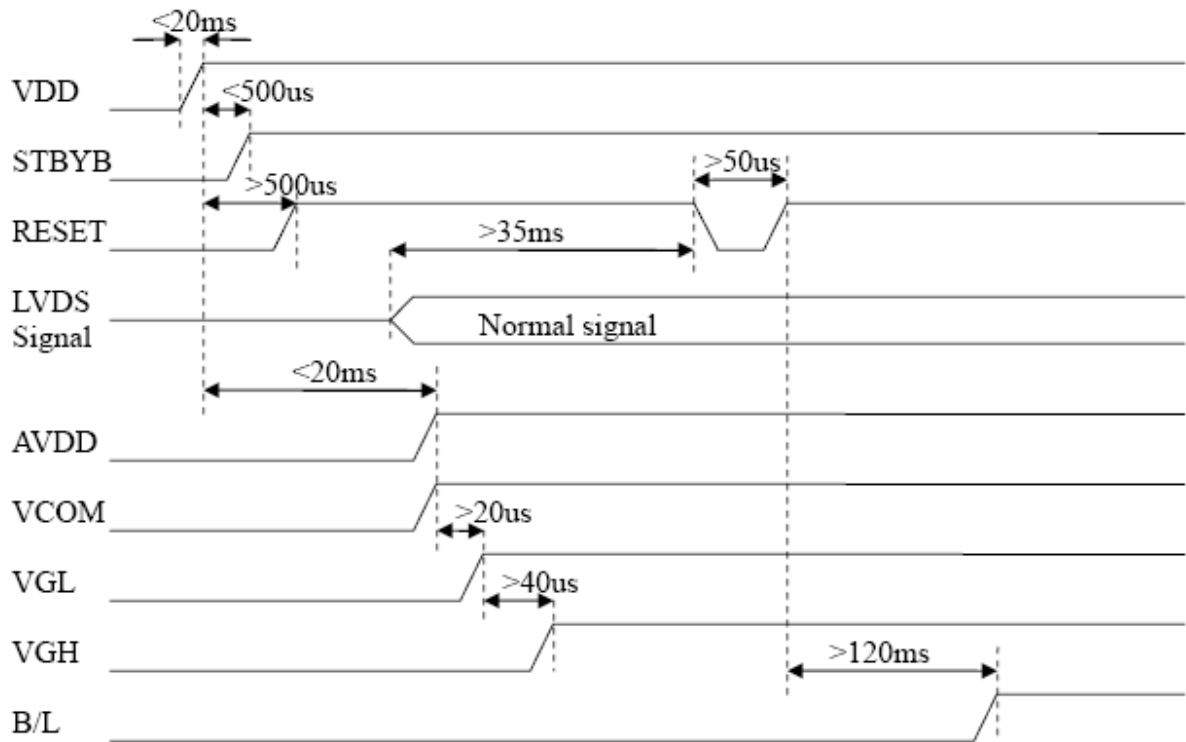
8bit LVDS input



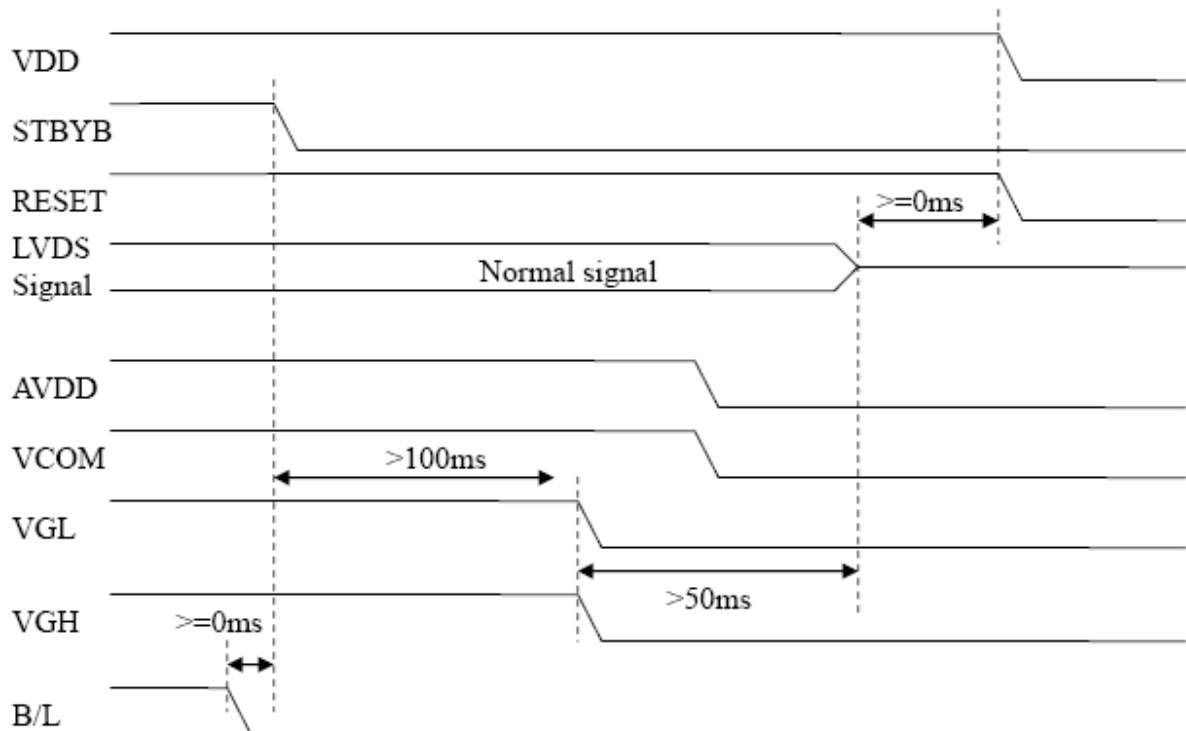
Note: Support DE timing mode only, SYNC mode not supported

6.6 Power Sequence

a. Power on:



b. Power off:



7. PIN CONNECTIONS

Pin No.	Symbol	I/O	Function	Remark
1	VCOM	P	Common Voltage	
2	VDD	P	Power Voltage for digital circuit	
3	VDD	P	Power Voltage for digital circuit	
4	NC	-	No connection	
5	Reset	I	Global reset pin	
6	STBYB	I	Standby mode, Normally pulled high STBYB = "1", normal operation STBYB = "0", timing controller, source driver will turn off, all output are High-Z	
7	GND	P	Ground	
8	RXIN0-	I	- LVDS differential data input	
9	RXIN0+	I	+ LVDS differential data input	
10	GND	P	Ground	
11	RXIN1-	I	- LVDS differential data input	
12	RXIN1+	I	+ LVDS differential data input	
13	GND	P	Ground	
14	RXIN2-	I	- LVDS differential data input	
15	RXIN2+	I	+ LVDS differential data input	
16	GND	P	Ground	
17	RXCLKIN-	I	- LVDS differential clock input	
18	RXCLKIN+	I	+ LVDS differential clock input	
19	GND	P	Ground	
20	RXIN3-	I	- LVDS differential data input	
21	RXIN3+	I	+ LVDS differential data input	
22	GND	P	Ground	
23	NC	-	No connection	
24	NC	-	No connection	
25	GND	P	Ground	
26	NC	-	No connection	
27	DIMO	O	Backlight CABC controller signal output	
28	SELB	I	6bit/8bit mode select	Note1
29	AVDD	P	Power for Analog Circuit	
30	GND	P	Ground	
31	LED-	P	LED Cathode	
32	LED-	P	LED Cathode	
33	L/R	I	Horizontal inversion	Note3
34	U/D	I	Vertical inversion	Note3
35	VGL	P	Gate OFF Voltage	
36	CABCEN1	I	CABC H/W enable	Note2
37	CABCEN0	I	CABC H/W enable	Note2
38	VGH	P	Gate ON Voltage	
39	LED+	P	LED Anode	
40	LED+	P	LED Anode	

I: input, O: output, P: Power

Note1: If LVDS input data is 6 bits , SELB must be set to High;

If LVDS input data is 8 bits , SELB must be set to Low.

Note2: When CABC_EN="00", CABC OFF.

When CABC_EN="01", user interface image.

When CABC_EN="10", still picture.

When CABC_EN="11", moving image.

When CABC off, don't connect DIMO, else connect it to backlight.

Note3: When L/R="0", set right to left scan direction.

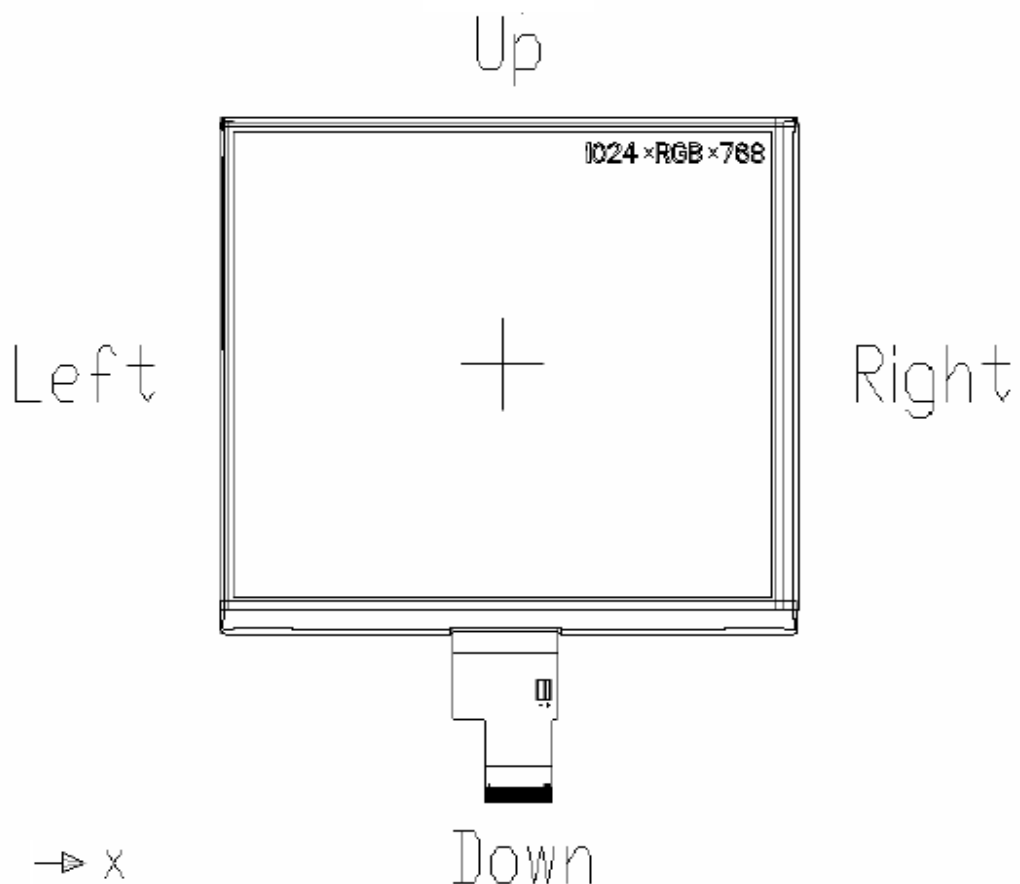
When L/R="1", set left to right scan direction.

When U/D="0", set top to bottom scan direction.

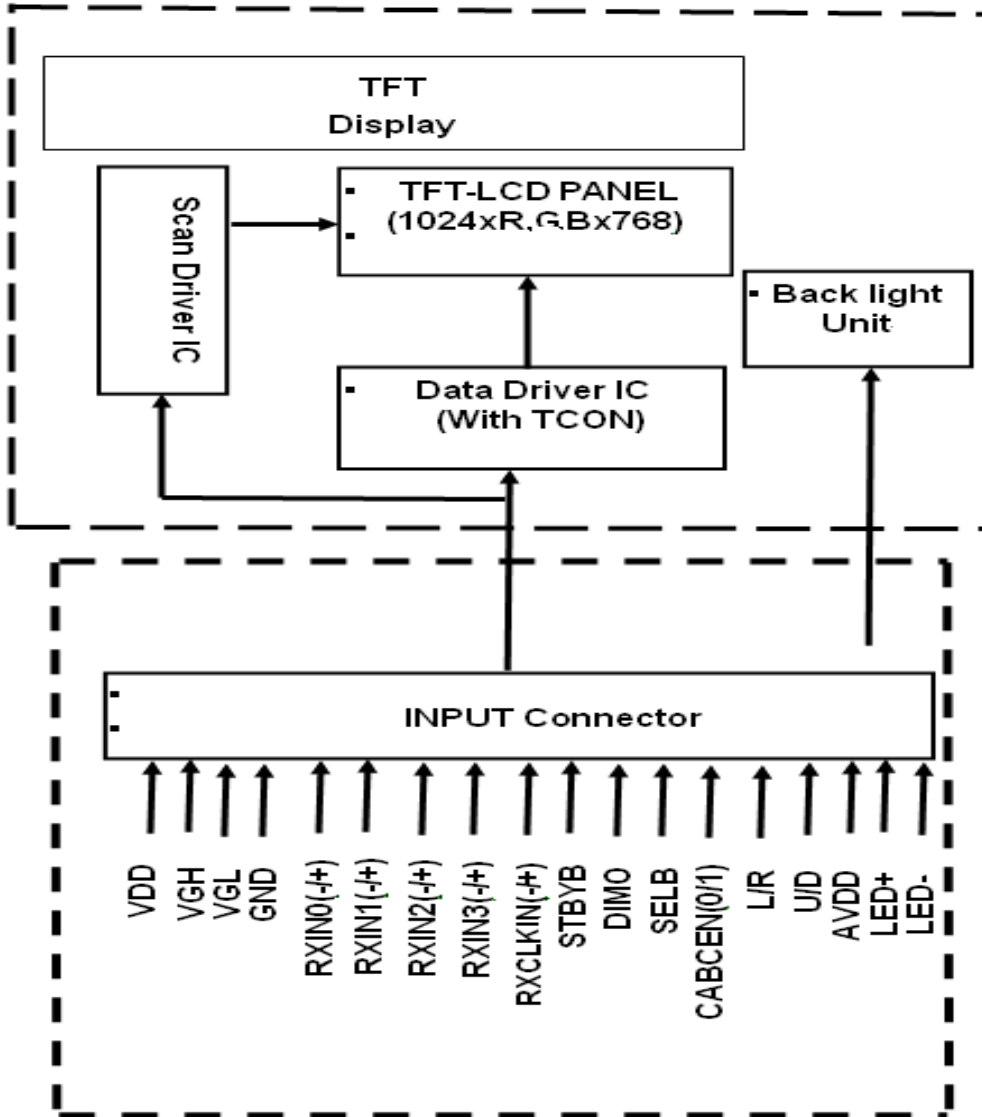
When U/D="1", set bottom to top scan direction.

Note: Definition of scanning direction.

Refer to the figure as below:



8. BLOCK DIAGRAM

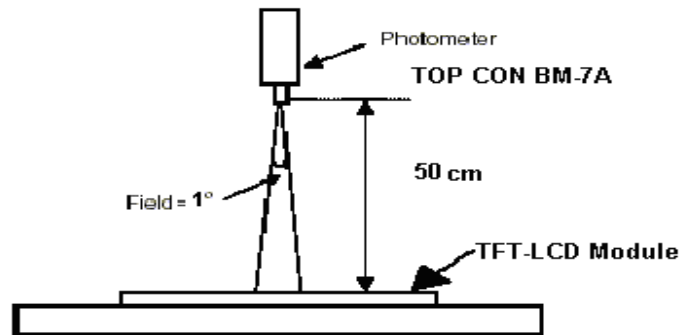


9. OPTICAL CHARACTERISTIC

Parameter		Symbol	Condition	MIN.	TYP.	MAX.	Unit	Remarks
Viewing Angle	Horizontal	θ_{x+}	Center CR \geq 10	75	85	--	deg	Note 1,4
		θ_{x-}		75	85	--		
	Vertical	θ_{y+}		75	85	--		
		θ_{y-}		75	85	--		
Contrast Ratio		CR	Center	600	800	--		Note 1,3
Response time	Rise+ Fall	Tr + Tf	Center $\theta_x=\theta_y=0^\circ$	-	25	50	ms	Note 1,6
Brightness Uniformity		B-uni	$\theta_x=\theta_y=0^\circ$	70	80	--	%	Note1,5
Central Luminance		L	IL=mA	300	350	--	cd/m ²	Note 1,2
White Chromaticity		x_w	Center	0.238	0.288	0.338		Note 1,2
		y_w	$\theta_x=\theta_y=0^\circ$	0.276	0.326	0.376		

The following optical specifications shall be measured in a darkroom or equivalent state (ambient luminance ≤ 1 lux, and at room temperature). The operation temperature is $25^\circ\text{C}\pm 2^\circ\text{C}$, and LED current $I_L=220\text{mA}$. The measurement method is shown in Note1.

Note1: The method of optical measurement:

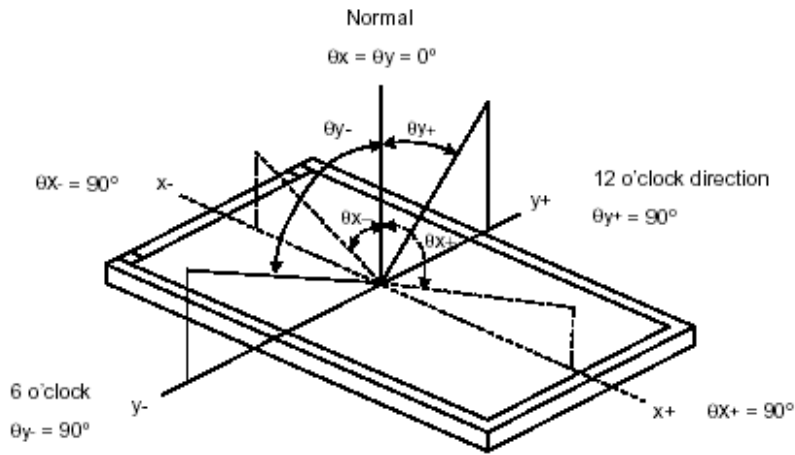


Note2: Measured at the central point of the LCD module and at the viewing angle of the $\theta_x=\theta_y=0^\circ$

Note3: Definition of Contrast Ratio (CR):

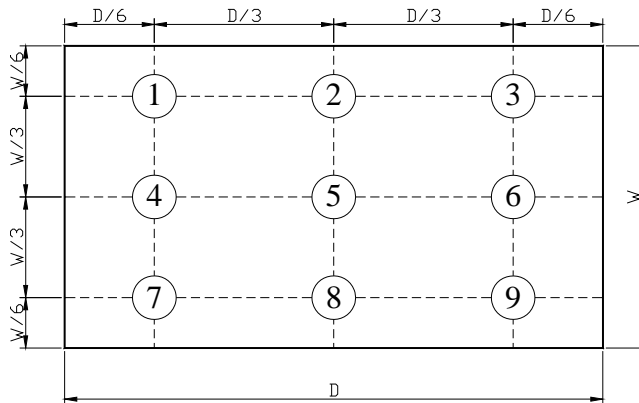
$$CR = \frac{\text{Luminance with all pixels in white state}}{\text{Luminance with all pixels in Black state}}$$

Note 4: Definition of Viewing Angle(CR≥10):



Note 5: Definition of Brightness Uniformity (B-uni):

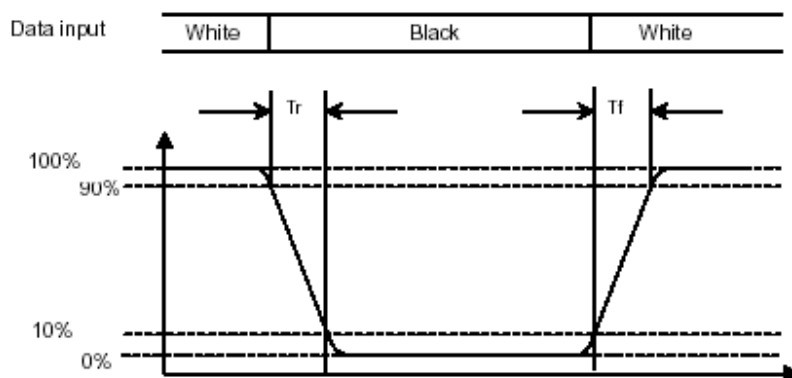
Luminance Measuring Points



$$B\text{-uni} = \frac{\text{Minimum luminance of 9 points}}{\text{Maximum luminance of 9 points}}$$

Note6: Definition of Response Time:

The Response Time is set initially by defining the “Rising Time (Tr)” and the “Falling Time (Tf)” respectively. Tr and Tf are defined as following figure.



10. QUALITY ASSURANCE

10.1 Test Condition

10.1.1 Temperature and Humidity(Ambient Temperature)

Temperature : $25 \pm 5^{\circ}\text{C}$

Humidity : $65 \pm 5\%$

10.1.2 Operation

Unless specified otherwise, test will be conducted under function state.

10.1.3 Container

Unless specified otherwise, vibration test will be conducted to the product itself without putting it in a container.

10.1.4 Test Frequency

In case of related to deterioration such as shock test. It will be conducted only once.

10.1.5 Test Method

Reliability Test Item & Level		Test Level	Remark
No.	Test Item		
1.	Low Temperature Storage Test	Ta=-20°C, 120hrs	IEC68-2-2
2.	High Temperature Storage Test	Ta=60°C, 120hrs	IEC68-2-1
3.	Low Temperature Operation Test	Ta=-10°C, 120hrs	IEC68-2-2
4.	High Temperature Operation Test	Ts=50°C, 120hrs	IEC68-2-1
5.	High Temperature and High Humidity Operation Test	Ta=40°C, 90%RH, 120hrs	IEC68-2-3
6.	Thermal Cycling Test (No operation)	-10°C → +25°C → +50°C, 100 Cycles 30 min 5 min 30 min	IEC68-2-14
7.	Vibration Test (No operation)	Frequency : 10 ~ 55 HZ Amplitude : 1.5 mm Sweep time : 10Hz~55Hz~10Hz Test Period: 2 hours for each direction of X, Y, Z	IEC68-2-6
8.	ESD TEST	±2KV, Human Body Mode, 100pF/1500Ω	IEC-61000-4-2

Note 1: Ta is the ambient temperature of samples.

Note 2: Ts is the temperature of panel's surface.

Note 3: In the standard condition, there shall be no practical problem that may affect the display function. After the reliability test, the product only guarantees operation, but don't guarantee all of the cosmetic specification.

Note 4: Before cosmetic and function test, the product must have enough recovery time, at least 2 hours at room temperature.

11. APPEARANCE SPECIFICATION

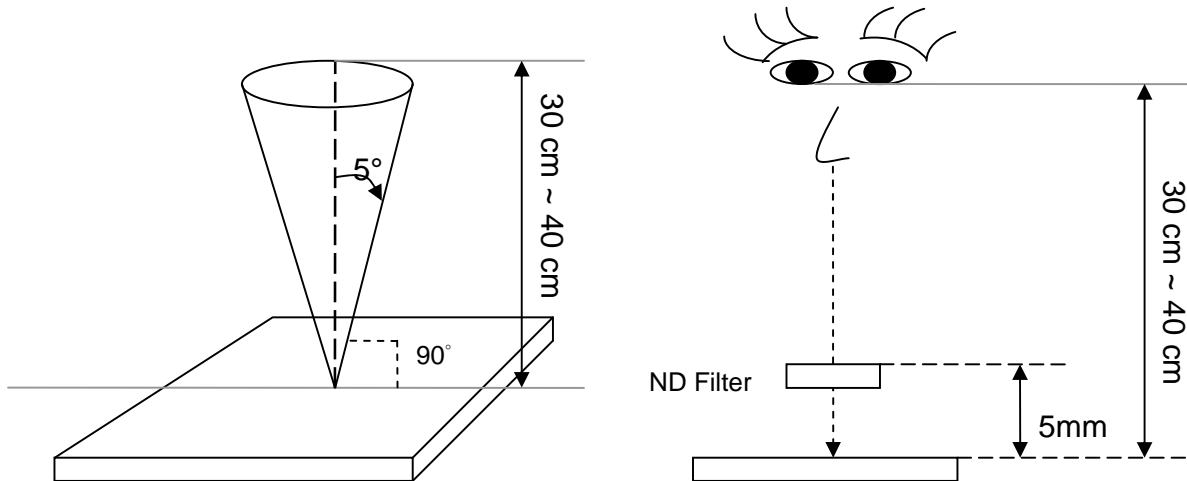
11.1 Inspection condition

11.1.1 Inspection conditions

11.1.1.1 Inspection Distance : 35 ± 5 cm

11.1.1.2 View Angle :

- (1) Inspection that light pervious to the product: $\pm 5^\circ$
- (2) Inspection that light reflects on the product: : $\pm 45^\circ$



11.1.2 Environment conditions :

Ambient Temperature :		$25 \pm 5^\circ\text{C}$
Ambient Humidity :		$65 \pm 5\%$
Ambient Illumination	Cosmetic Inspection	$400 \sim 800\text{ lux}$
	Functional Inspection	$300 \sim 500\text{ lux}$

11.1.3 Definition of applicable Zones



11.2 Inspection Parameters

No.	Parameter	Criteria																		
1	Operating	Display function: No Display malfunction (Major)																		
		Line Defect: No obvious Vertical and Horizontal line defect in bright, dark and colored. (Major) (Note:1)																		
		Point Defect (Red, green, blue, dark): Active area ≤ 8 dots (Minor)(Note:1)																		
		<table border="1"> <thead> <tr> <th>Item</th> <th>Acceptable number</th> <th>Total</th> <th>Class Of Defects</th> <th>AQL Level</th> </tr> </thead> <tbody> <tr> <td>Bright</td> <td>4</td> <td rowspan="2">8</td> <td rowspan="4">Minor</td> <td rowspan="4">1.5</td> </tr> <tr> <td>Dark</td> <td>4</td> </tr> <tr> <td>Adjacent Bright</td> <td>1</td> <td>1</td> </tr> <tr> <td>Adjacent Dark</td> <td>1</td> <td>1</td> </tr> </tbody> </table>	Item	Acceptable number	Total	Class Of Defects	AQL Level	Bright	4	8	Minor	1.5	Dark	4	Adjacent Bright	1	1	Adjacent Dark	1	1
		Item	Acceptable number	Total	Class Of Defects	AQL Level														
		Bright	4	8	Minor	1.5														
		Dark	4																	
		Adjacent Bright	1	1																
		Adjacent Dark	1	1																
		Non-uniformity: Visible through 2%ND filter white, R, G, B and gray 50%pattern. (Minor)																		
Foreign material in Black or White spots shape ($W > 1/4L$) (Note: 5)																				
<table border="1"> <thead> <tr> <th>Dimension</th> <th>Acceptable number</th> <th>Class Of Defects</th> <th>AQL Level</th> </tr> </thead> <tbody> <tr> <td>$D \leq 0.3$</td> <td>*</td> <td rowspan="3">Minor</td> <td rowspan="3">1.5</td> </tr> <tr> <td>$0.3 < D \leq 0.5$</td> <td>4</td> </tr> <tr> <td>$D > 0.5$</td> <td>0</td> </tr> </tbody> </table>	Dimension	Acceptable number	Class Of Defects	AQL Level	$D \leq 0.3$	*	Minor	1.5	$0.3 < D \leq 0.5$	4	$D > 0.5$	0								
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$D = (\text{Long} + \text{Short}) / 2$ * : Disregard																				
Foreign Material in Line or spiral shape ($W \leq 1/4L$) (Note: 4)																				
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$L \leq 5\text{mm}, W < 0.07\text{mm}$	*																			
L : Length W : Width * : Disregard																				
2	External Inspection (non-operating)	Dimension: Outline (Major)																		
		Bezel appearance: uneven (Minor)																		
		Scratch on the Polarize: (Note:2)																		
		<table border="1"> <thead> <tr> <th>Dimension</th> <th>Acceptable number</th> <th>Class Of Defects</th> <th>AQL Level</th> </tr> </thead> <tbody> <tr> <td>$W > 0.1\text{mm}, L > 5\text{mm}$</td> <td>0</td> <td rowspan="3">Minor</td> <td rowspan="3">1.5</td> </tr> <tr> <td>$L \leq 5\text{mm}, 0.07\text{mm} < W \leq 0.1\text{mm}$</td> <td>4</td> </tr> <tr> <td>$L \leq 5\text{mm}, W < 0.07\text{mm}$</td> <td>*</td> </tr> </tbody> </table>	Dimension	Acceptable number	Class Of Defects	AQL Level	$W > 0.1\text{mm}, L > 5\text{mm}$	0	Minor	1.5	$L \leq 5\text{mm}, 0.07\text{mm} < W \leq 0.1\text{mm}$	4	$L \leq 5\text{mm}, W < 0.07\text{mm}$	*						
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		L : Length W : Width * : Disregard																		
		Dent and spots shape on the polarize (Note:2): (Note: 5)																		
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$D > 0.5$	0																			
$D = (\text{Long} + \text{Short}) / 2$ * : Disregard																				
Polarizer flaw or leak out resin : Defect is defined as the active area.																				

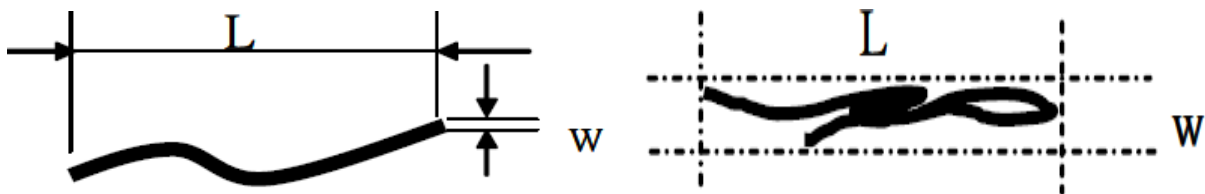
			Definition
Class of defects	Major	AQL 0.65%	It is a defect that is likely to result in failure or to reduce materially the usability of the product for the intended function.
	Minor	AQL 1.5%	It is a defect that will not result in functioning problem with deviation classified.

Note:1.(a)Bright point defect is defined as point defect of R,G,B with area >1/2 pixel respectively
 (b)Dark point defect is defined as visible in full white pattern.
 (c)The point defect must under 2% ND Filter visible .

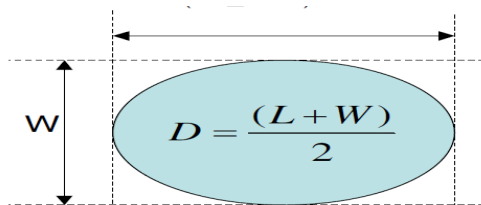
Note:2 The external inspection should be conducted at the distance 30 ± 5 cm between the eyes of inspector and the panel .

Note:3 Luminance measurement for contrast ratio is at the distance 50 ± 5 cm between the detective head and the panel with ambient luminance less than 1 lux. Contrast ratio is obtained at optimum view angle.

Note:4 W-Width in mm , L-length of Max.(L1,L2) in mm.



Note:5 Spot Foreign Material ($W \geq L/4$)



11.3 Sampling Condition

Unless otherwise agree in written, the sampling inspection shall be applied to the incoming inspection of customer.

Lot size: Quantity of shipment lot per model.

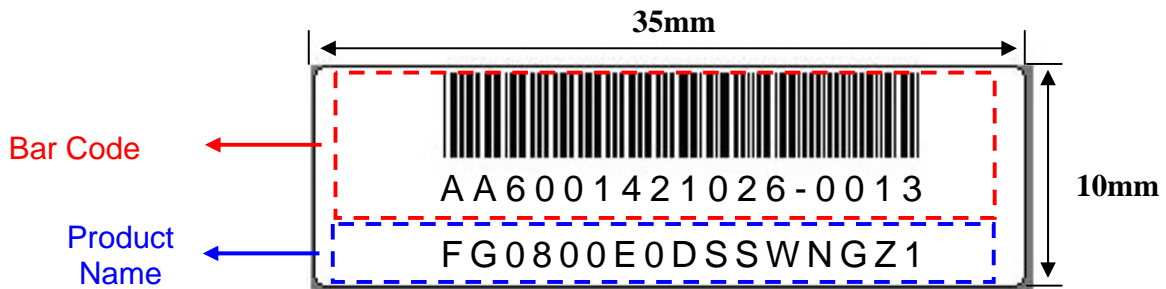
Sampling type: normal inspection, single sampling

Sampling table: MIL-STD-105E

Inspection level: Level II

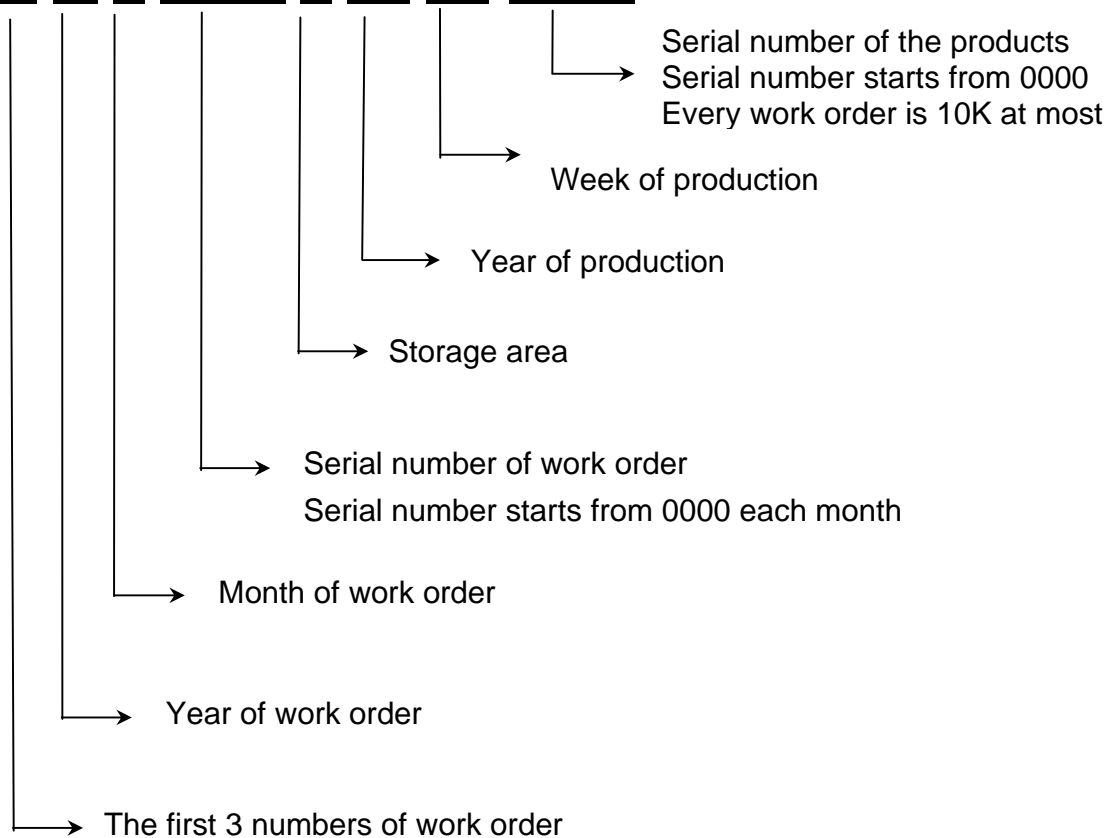
12. LCM PRODUCT LABEL DEFINE

Product Label style:

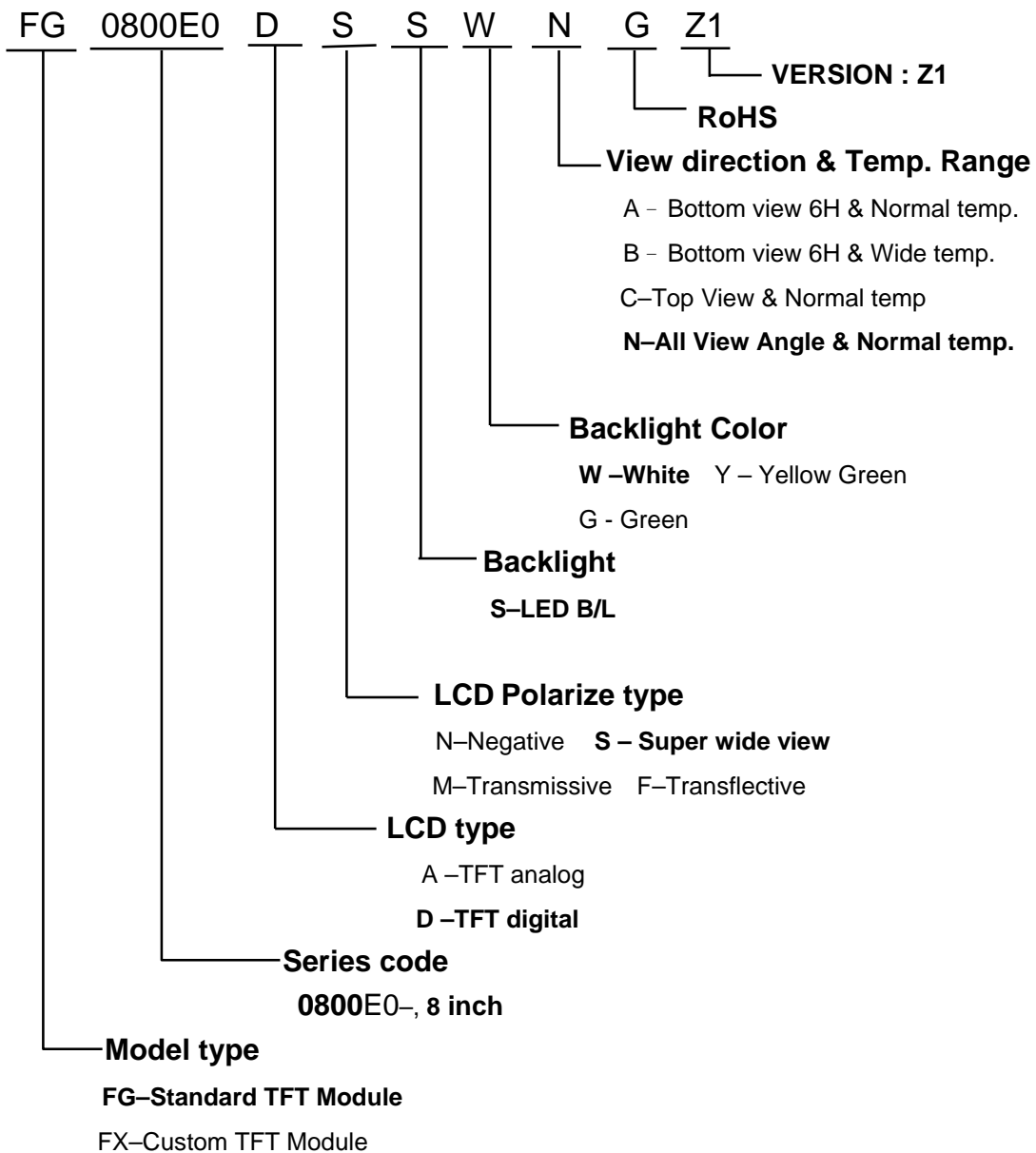


BarCode Define:

A A 6 0014 2 10 26-0013



Product Name Define:



13. PRECAUTIONS IN USE LCM

1. ASSEMBLY PRECAUTIONS

- (1) Since Touch Panel is consist of glass, please be careful your hands to be injured during handing. You must wear gloves during handing.
- (2) Do not touch, push or rub the exposed touch panel, tweezers or anything harder than HB pencil lead. And please do not rub with dust clothes with chemical treatment.
- (3) Do not stack the touch panels together. Do not put heavy objects on touch panel.
- (4) Please do not take a CTP to pieces and reconstruct it. Resolving and reconstructing modules may cause them not to work well.
- (5) Please excessive force or strain to the panel or tail is prohibited, Do not lift touch panel by cable (FPC).
- (6) Use clean sacks or glove to prevent fingerprints and/or stains left on the panel. Extra attention and carefulness should be taken while handling the glass edge.
- (7) Please pay attention for the matters stated below at mounting design of touch panel enclosure. Enclosure support to fix touch panel must be out of active area.(do not design enclosure presses the active area to protect from miss put)

2. OPERATING PRECAUTIONS

- (1) Please be sure to turn off the power supply before connecting and disconnecting signal input cable.
- (2) Please do not change variable resistance settings in CTP. They are adjusted to the most suitable value. If they are changed, it might happen CTP does not satisfy the characteristics specification
- (3) Be careful for condensation at sudden temperature change. Condensation makes damage to sensor or electrical contacted parts.
- (4) CTP has high frequency circuits. Sufficient suppression to the electromagnetic interference shall be done by system manufacturers. Grounding and shielding methods may be important to minimize the interference.
- (5) Touch the panel with your finger or stylus only to assure normal operation. Any sharp edged or hard objects are prohibited.
- (6) Operate the panel in a steady environment. Abrupt variation on temperature and humidity may cause malfunction of the panel.

3. ELECTROSTATIC DISCHARGE CONTROL

- (1) The operator should be grounded whenever he/she comes into contact with the CTP. Never touch any of the conductive parts such the copper leads on the FPC and the interface terminals with any parts of the human body.

- (2) The CTP should be kept in antistatic bags or other containers resistant to static for storage.
- (3) Only properly grounded soldering irons should be used.
- (4) If an electric screwdriver is used, it should be well grounded and shielded from commentator sparks.
- (5) The normal static prevention measures should be observed for work clothes and working benches; for the latter conductive (rubber) mat is recommended
- (6) Since dry air is inductive to statics, a relative humidity of 50-60% is recommended.

4. STORAGE PRECAUTIONS

- (1) When you store touch panel for a long time, it is recommended to keep the temperature between 0°C-40°C without the exposure of sunlight and to keep the humidity less than 90%RH.
- (2) Please do not leave touch panel in the environment of high humidity and high temperature such as 60°C 90%RH
- (3) Please do not leave touch panel in the environment of low temperature; below -20°C.

5. OTHERS

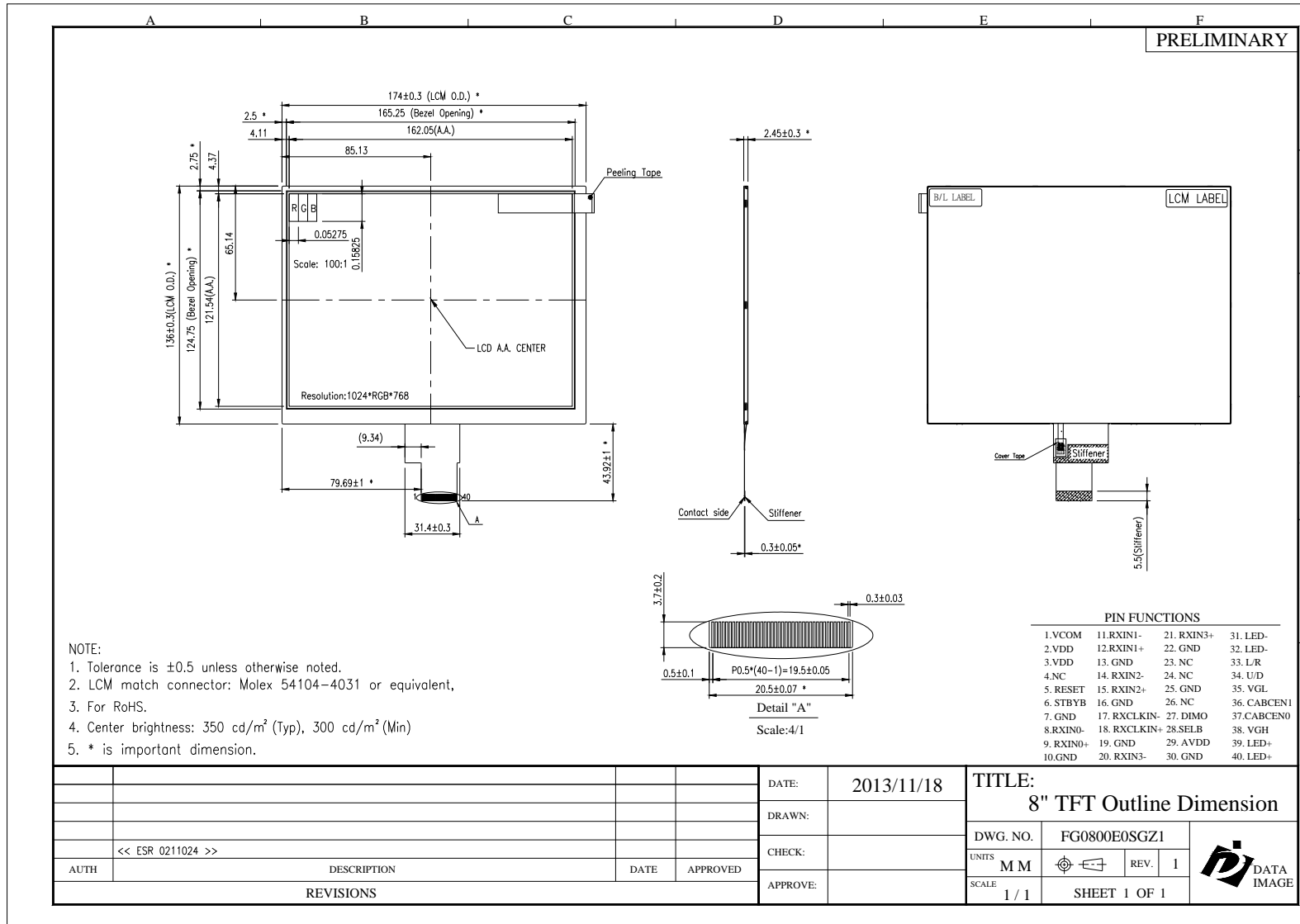
For the packaging box, please pay attention to the followings:

- (1) Please do not pile them up more than 5 boxes. (They are not designed so.) And please do not turn over.
- (2) Please handle packaging box with care not to give them sudden shock and vibrations. And also please do not throw them up.
- (3) Packing box and inner case for CTP are made of cardboard. So please pay attention not to get them wet. (Such like keeping them in high humidity or wet place can occur getting them wet.)

6. LIMITED WARRANTY

Unless otherwise agreed between DATA IMAGE and customer, DATA IMAGE will replace or repair any of its CTP which is found to be defective electrically and visually when inspected in accordance with DATA IMAGE acceptance standards, for a period on one year from date of shipment. Confirmation of such date shall be based on freight documents. The warranty liability of DATA IMAGE is limited to repair and/or replacement on the terms set forth above. DATA IMAGE will not responsible for any subsequent or consequential events.

14. OUTLINE DRAWING





15. PACKAGE INFORMATION

T.B.D.