

TFT-DISPLAY DATASHEET

DATA IMAGE

Model: FG1201F1DSSWPG01

BRIEF SPEC.:

Main Feature

Landscape

High Brightness

Active Screen Area	261.12 x 163.20 (mm)
Diagonal Format	12,1" 16:10
Resolution	1280 X 800
Colors	262K/16.7M (6Bit)
Backlight	LED
Brightness	1000 cd/m ²
LED Life Time	70K(h)
Interface	LVDS
Viewing Angle	89/89 L/R 89/89
Touchscreen	No
Power Supply	3.3 V
Module Outline	278 x 184 x 9.59 (mm)
Operation Temperature	-30 ... +85 °C
Storage Temperature	-30... +85 °C
Surface Treatment	Anti-Glare

DATA IMAGE CORPORATION






TFT Module Specification

Preliminary

ITEM NO.: FG1201F1DSSWPG01

Table of Contents

1. COVER & CONTENTS	1
2. RECORD OF REVISION	2
3. GENERAL DESCRIPTION	3
4. ABSOLUTE MAXIMUM RATINGS	3
5. ELECTRICAL CHARACTERISTICS	4
6. TIMING CHARACTERISTICS	6
7. PIN CONNECTIONS	8
8. OPTICAL CHARACTERISTICS	11
9. QUALITY ASSURANCE	13
10. LCM PRODUCT LABEL DEFINE.....	17
11. PRECAUTIONS IN USE LCM	19
12. OUTLINE DRAWING	20
13. PACKAGE INFORMATION	21

Customer Companies	QA Approved	DQA Check	R&D Approved	R&D Check
				
Customer Approved by	Version:	Issued Date:	Total Pages:	Prepared
	1	01/NOV/17'	21	

2. RECORD OF REVISION

Rev	Date	Item	Page	Comment	Source
1	01/NOV/17'			Initial Preliminary	

3. GENERAL SPECIFICATIONS

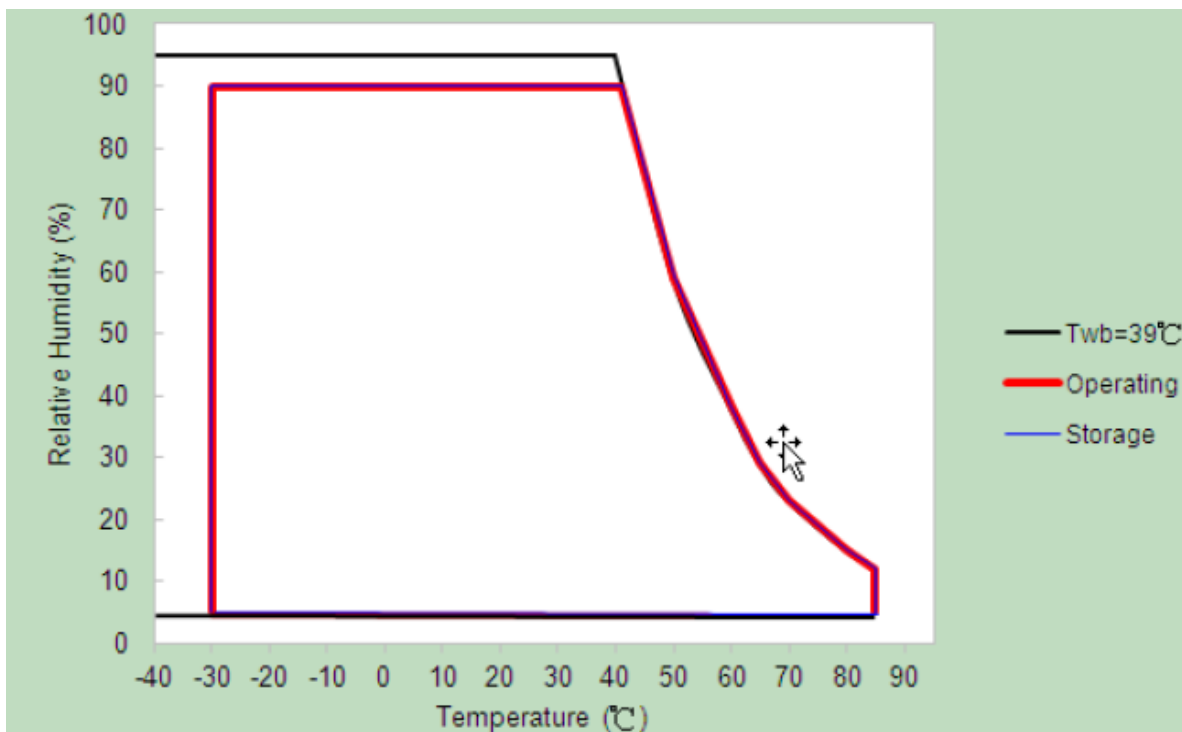
Parameter	Specifications	Unit
Screen size	12.1 (diagonal)	inch
Display resolution	1280 (H) x (RGB) x 800 (V)	dot
Outline dimension	278.00(W) x 184.00(H) x 9.59 _{Max.} (D)	mm
Display active area	261.120(H) x 163.20(V)	mm
Pixel pitch	0.2040(H) x 0.2040(V)	mm
Color configuration	RGB Vertical stripe	
LCD type	Normally black	
Backlight Unit	LED	
Surface treatment	Anti-glare	
View angle direction	All	
Weight	TBD	g
Our components and processes are compliant to RoHS standard		

4. ABSOLUTE MAXIMUM RATINGS

GND=0V

Parameter	Symbol	Min.	Max.	Unit	Remark
Power supply voltage	VDD	-0.3	3.8	V	
Control Signals	SEL68, REVERSE	-0.3	VDD	V	
LVDS Signals	CLKIN -/+ , RIN0 ~ 3-/+	0.3	0.6	V	
Operating Temperature	Top	-30	85	°C	
Storage Temperature	Tst	-30	85	°C	

Note: Maximum Wet-Bulb should be 39°C and no condensation.



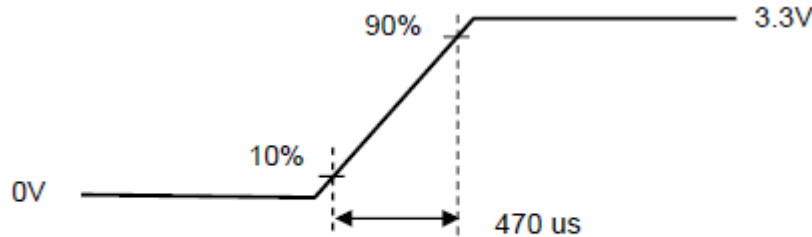
5. ELECTRICAL CHARACTERISTICS

5.1 Operating Conditions

 $T_a=25^{\circ}\text{C}$

Parameter	Symbol	Min.	Typ.	Max.	Unit	Remark
LCD Supply Voltage	VDD	3.0	3.3	3.6	V	
LCD Input Current	I _{VDD}	-	-	458	mA	VDD=3.3V at 60 HZ, all Black Pattern
LCD Power consumption	P _{VDD}	-	-	1.65	W	
LCD Inrush Current	I _{rush LCD}	-	-	1.5	A	VDD=3.3V at 60 HZ, all Black Pattern
Allowable Logic/LCD Drive Ripple Voltage	VDD _{rp}	-	-	100	[mV] P-P	VDD=3.3V at 60 HZ, all Black Pattern Note 1 VDD rising time $\geq 470\mu\text{s}$
Control Signals Voltage	High Level	V _{IH}	0.7VDD	-	VDD	SEL68
	Low Level	V _{IL}	0	-	0.3VDD	

Note 1: Measurement condition

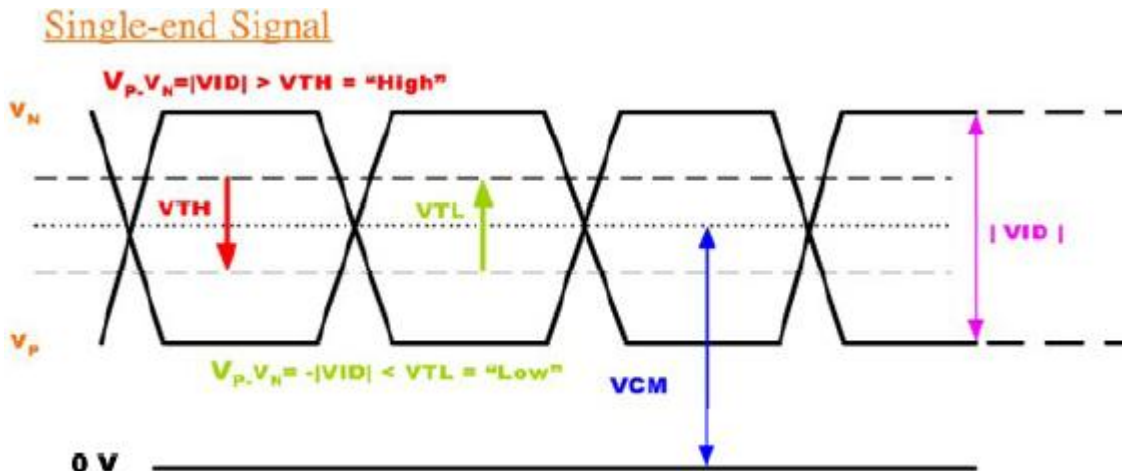

VDD rising time

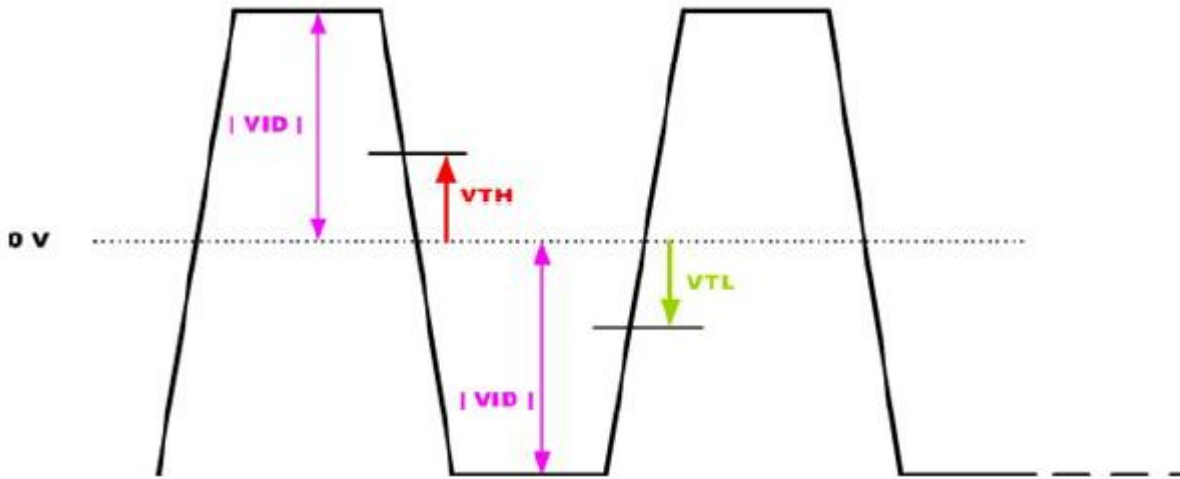
5.2 LVDS Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Remark
Differential Input High Threshold	V _{IH}	-	-	100	mV	V _{CM} =1.2V
Differential Input Low Threshold	V _{TL}	-100	-	-	mV	
Input Differential Voltage	VID	100	400	600	mV	
Differential Input Common Mode Voltage	V _{ICM}	1.1	-	1.45	V	V _{TH} /V _{TL} = $\pm 100\text{mV}$

Input signals shall be low or Hi-Z state when VDD is off.

Note: LVDS Signal Waveform.





5.2 Backlight Characteristics

$T_a=25^\circ\text{C}$

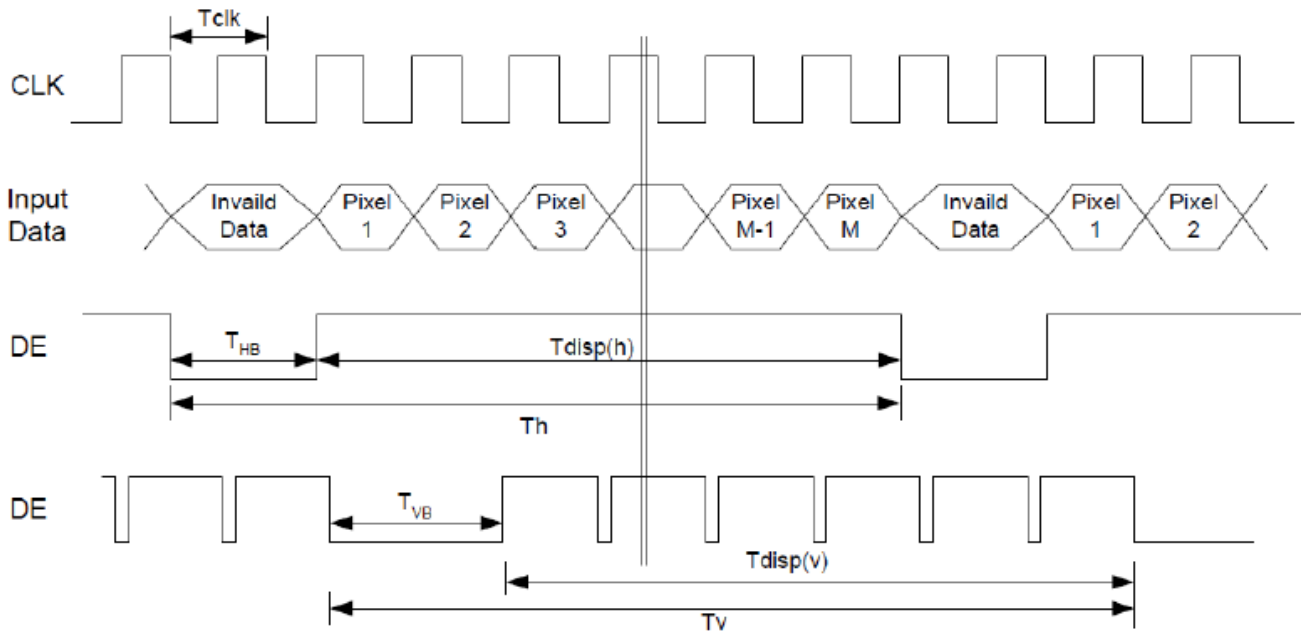
Parameter	Symbol	Min.	Typ.	Max.	Unit	Remark
Input Voltage	VLED	10	12	15	V	
Input Current	I_{VCC}	-	-	-	A	VCC=12V & 100% PWM Duty
Power Consumption	P_{VCC}	-	-	-	W	
EN Control Level	BL On	2.5	-	4	V	
	BL Off	0	-	0.5		
Dimming Frequency	F_{PWM}	200	-	20K	Hz	
Dimming Duty Cycle	D_{PWM}	1	-	100	%	1~5% with non-linear
Dimming Control Level	High Level	3	-	5.5	V	
	Low Level	0	-	0.5		
LED Forward Current	I_F	-	50	-	mA	
LED Forward Voltage	V_F	-	24.4	31.24	V	$I_F = 50 \text{ mA}$
LED Power Consumption	P_{LED}	-	4.88	6.25	W	
LED life time	-	50,000	70,000	-	Hrs	$I_F = 50 \text{ mA}$

6. TIMING CHARACTERISTICS

6.1 Interface Timing

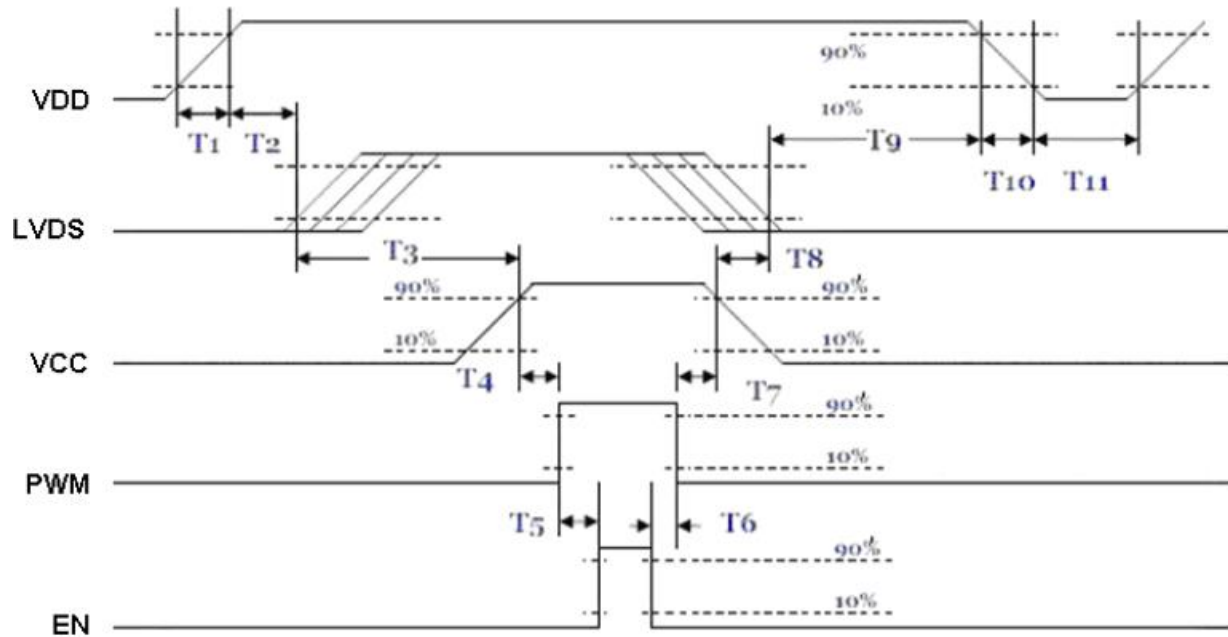
Signal	Parameter	Symbol	Min.	Typ.	Max.	Unit	
Clock Timing	Clock frequency	$1/T_{Clock}$	60	74.4	90	MHz	
Vsync Timing	Vertical Section	Period	T_V	808	838	900	Vsync Timing
		Active	T_{VD}	-	800	-	
		Blanking	T_{VB}	8	38	100	
Hsync Timing	Horizontal Section	Period	T_H	1350	1480	1680	Hsync Timing
		Active	T_{HD}	-	1280	-	
		Blanking	T_{HB}	70	200	400	
Frame Rate		F	50	60	75	Hz	

6.2 Input Timing Diagram



6.3 Power ON/OFF Sequence

VDD power and lamp on/off sequence is as below. Interface signals are also shown in the chart. Signals from any system shall be Hi-Z state or low level when VDD is off.



Power ON/OFF sequence timing

Parameter	Value			Units
	Min.	Typ.	Max.	
T1	0.5	-	10	[ms]
T2	30	40	50	[ms]
T3	175	-	-	[ms]
T4	10	-	-	[ms]
T5	10	-	-	[ms]
T6	0	-	-	[ms]
T7	10	-	-	[ms]
T8	100	-	-	[ms]
T9	0	16	50	[ms]
T10	-	-	10	[ms]
T11	1000	-	-	[ms]

The above on/off sequence should be applied to avoid abnormal function in the display. Please make sure to turn off the power when you plug the cable into the input connector or pull the cable out of the connector.

7. PIN CONNECTIONS

7.1 CN1 LCM

Pin No.	Symbol	Function
1	VCC	3.3 power supply
2	VCC	
3	GND	Ground
4	GND	
5	Link0-	R0,R1,R2,R3,R4,R5,G0
6	Link+	
7	GND	Ground
8	Link1-	G1,G2,G3,G4,G5,B0,B1
9	Link1+	
10	GND	Ground
11	Link2-	B2,B3,B4,B5,NA/DE
12	Link2+	
13	GND	Ground
14	CLK1N-	CLK1N-
15	CLK1N+	CLK1N+
16	GND	Ground
17	Link3-	R6,R7,G6,G7,B6,B7
18	Link3+	
19	Mode	6 bit
20	NC	No Connection

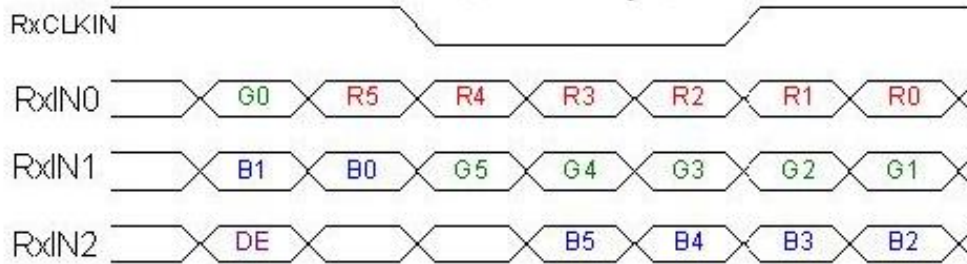
7.2 CN2 Backlight

Pin No.	Symbol	Function
1	NC	NC
2	NC	NC
3	LED C1	Cathode 1
4	LED A1	Anode 1
5	LED A2	Anode 2
6	LED C2	Cathode 2
7	LED C3	Cathode 3
8	LED A3	Anode 3
9	LED A4	Anode 4
10	LED C4	Cathode 4

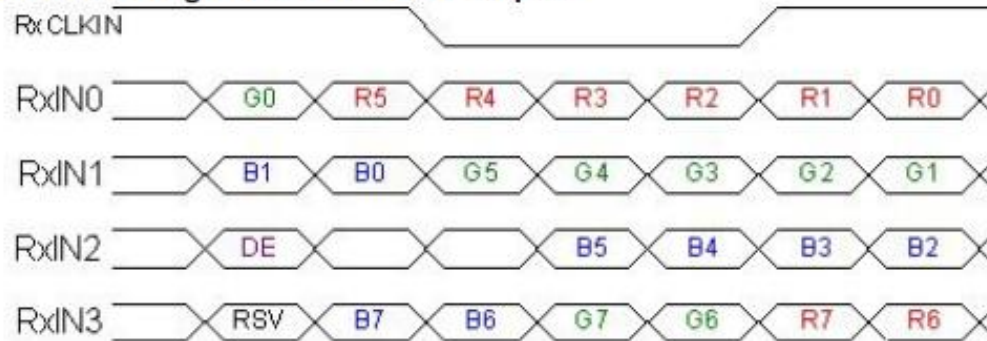
7.3 The Input Data Format

7.3.1 SEL68

SEL68 = “Low” or “NC” for 6 bits LVDS Input



SEL68 = “High” for 8 bits LVDS Input



Note 1: Please follow PSWG.

Note 2: R/G/B data 7:MSB, R/G/B data 0:LSB

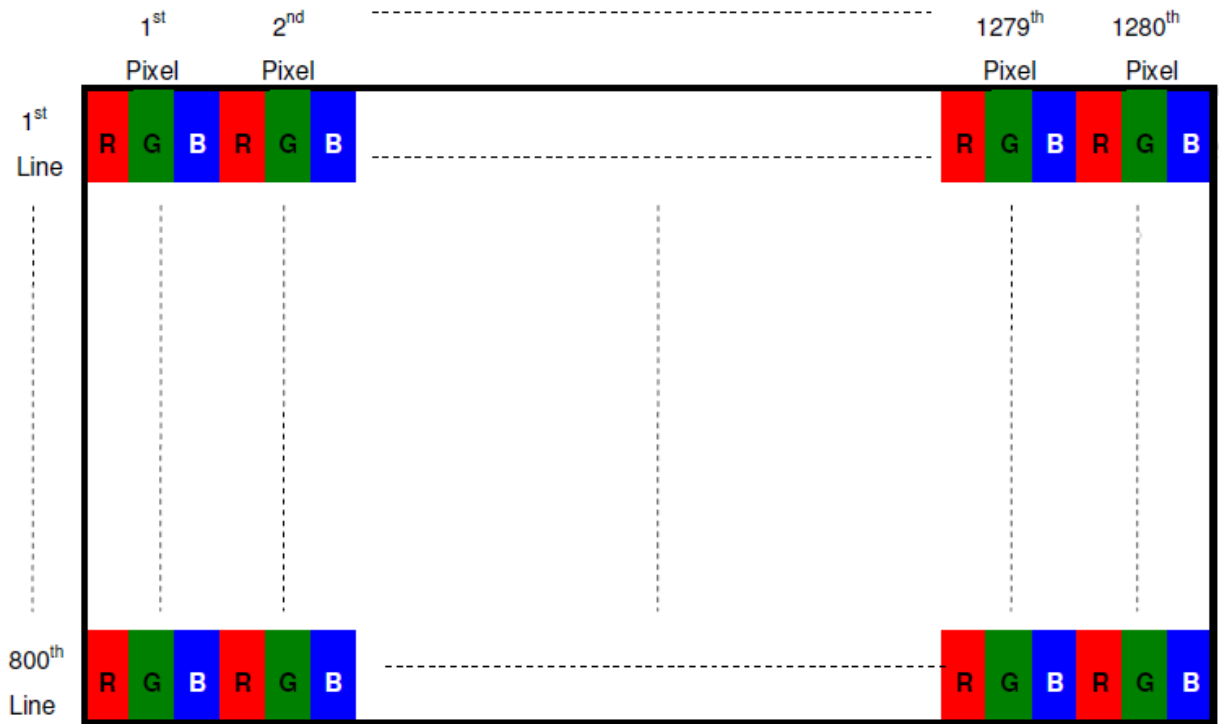
Note 3: RSV stands for “Reserved”.

Signal Name	Description	Remark
R7	Red Data 7	Red-pixel Data
R6	Red Data 6	
R5	Red Data 5	For 8Bits LVDS input
R4	Red Data 4	MSB: R7 ; LSB: R0
R3	Red Data 3	
R2	Red Data 2	For 6Bits LVDS input
R1	Red Data 1	MSB: R5 ; LSB: R0
R0	Red Data 0	
G7	Green Data 7	Green-pixel Data
G6	Green Data 6	
G5	Green Data 5	For 8Bits LVDS input
G4	Green Data 4	MSB: G7 ; LSB: G0
G3	Green Data 3	
G2	Green Data 2	For 6Bits LVDS input
G1	Green Data 1	MSB: G5 ; LSB: G0
G0	Green Data 0	
B7	Blue Data 7	Blue-pixel Data
B6	Blue Data 6	
B5	Blue Data 5	For 8Bits LVDS input
B4	Blue Data 4	MSB: B7 ; LSB: B0
B3	Blue Data 3	
B2	Blue Data 2	For 6Bits LVDS input
B1	Blue Data 1	MSB: B5 ; LSB: B0
B0	Blue Data 0	
RxCLKIN	LVDS Data Clock	The typical frequency is 40MHz.
DE	Data Enable Signal	When the signal is high, the pixel data shall be valid to be displayed.
RSV	Reserved Signal	“High” or “Low” is acceptable

Note: Output signals from any system shall be low or Hi-Z state when VDD is off.

7.4 Pixel Format Image.

Following figure shows the relationship between input signal and LCD pixel format.

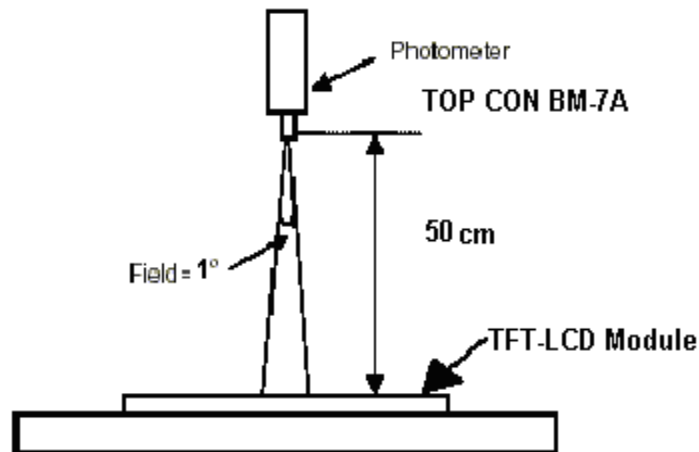


8. OPTICAL CHARACTERISTIC

 $T_a=25^{\circ}\text{C}$, $V_{CC}=3.3\text{V}$

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit	Remarks	
Brightness	L	$\theta_x=\theta_y=0^{\circ}$ ILED= 320 mA	850	1000	--	cd/m^2	Note 1,2	
Uniformity	B-uni		75	--	--	%	Note 1,5	
Contrast Ratio	CR		800	1000	--	--	Note 1,3	
Response Time (Rising + Falling)	Tr + Tf	$\theta_x=\theta_y=0^{\circ}$	--	25	--	ms	Note 1,6	
Viewing Angle	Horizontal	θ_{x+}	Center CR \geq 10	80	89	--	deg	Note 1,4
		θ_{x-}		80	89	--		
	Vertical	θ_{y+}		80	89	--		
		θ_{y-}		80	89	--		
Chromaticity	Red	Rx	Center $\theta_x=\theta_y=0^{\circ}$	-0.05	+0.05	--	Note 1,2	
		Ry						
	Green	Gx						
		Gy						
	Blue	Bx						
		By						
	White	Wx						
		Wy						

Note1: Measure condition : $25^{\circ}\text{C}\pm 2^{\circ}\text{C}$, $60\pm 10\%\text{RH}$, under 10 Lux in the dark room. BM-7A (TOPCON) , measurement after lighting on 10 mins.

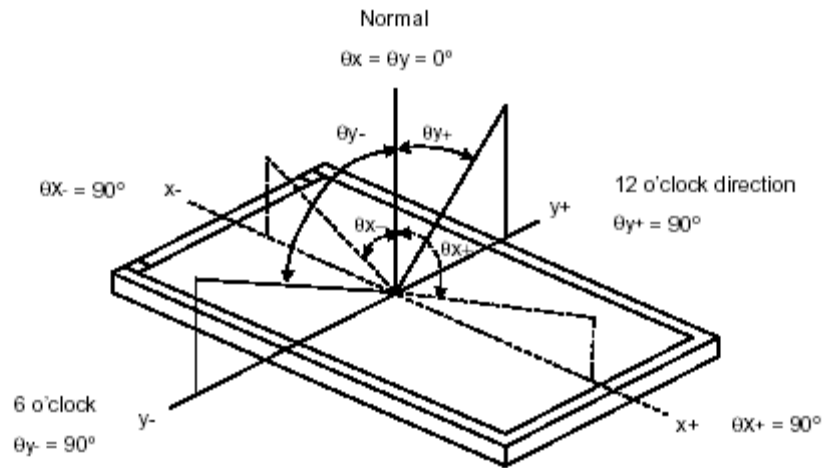


Note2: Measured at the central point of the LCD module and at the viewing angle of the $\theta_x=\theta_y=0^{\circ}$

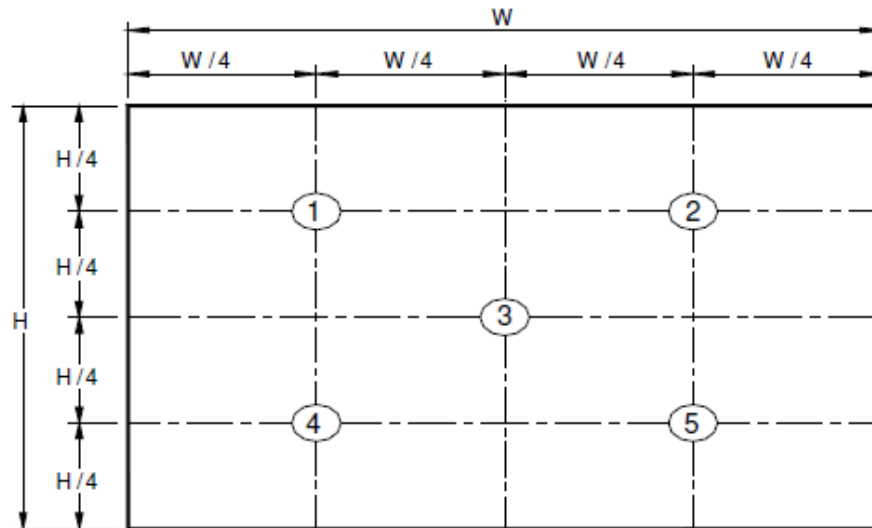
Note3: Definition of Contrast Ratio (CR):

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

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



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

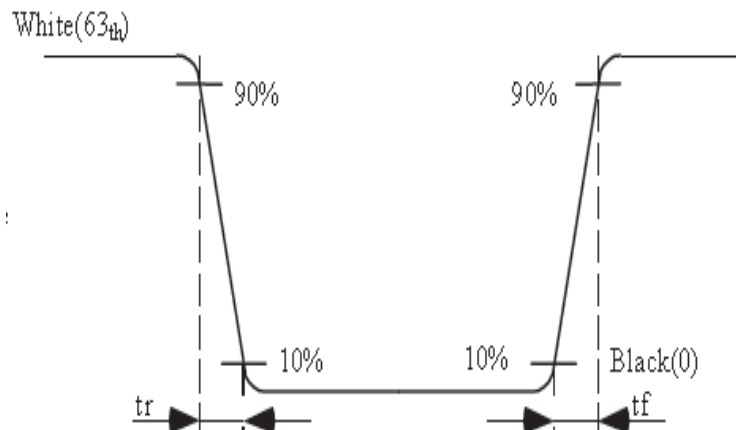


Luminance Measuring Points

$$B\text{-uni} = \frac{\text{Minimum luminance of 5 points}}{\text{Maximum luminance of 5 points}}$$

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.



9. QUALITY ASSURANCE

9. Test Condition

9.1.1 Temperature and Humidity(Ambient Temperature)

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

Humidity : $65 \pm 5\%$

9.1.2 Operation

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

9.1.3 Container

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

9.1.4 Test Frequency

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

9.1.5 Test Method

Reliability Test Item & Level			Remark
No.	Test Item	Test Level	
1	High Temperature Storage Test	Ta=85°C,300hrs	IEC68-2-2
2	Low Temperature Storage Test	Ta=-30°C,300hrs	IEC68-2-1
3	High Temperature Operation Test	Ta=85°C,300hrs	IEC68-2-2
4	Low Temperature Operation Test	Ta=-30°C,300hrs	IEC68-2-1
5	High Temperature and High Humidity (No operation)	T=60°C,90%RH,300hrs	IEC68-2-2
6	Thermal Cycling Test (No operation)	-20°C → +25°C → +60°C ,100 Cycles 30 min 5 min 30 min	IEC68-2-14
7	Vibration test (Package)	Frequency:10~55HZ Amplitude:1.5mm Sweep time:11min Test period:6Cycles for each direction of X,Y,Z	IEC68-2-6
8	Drop test (Package)	Height :60cm 1 conner,3edges,6surfaces	IEC68-2-32
9	Electrostatic Discharge Test	Location: LCM/TP surface Condition:150pf 330Ω Contact +/- 8kV Air +/-15kV Criteria: Class C	IEC61000-4-2

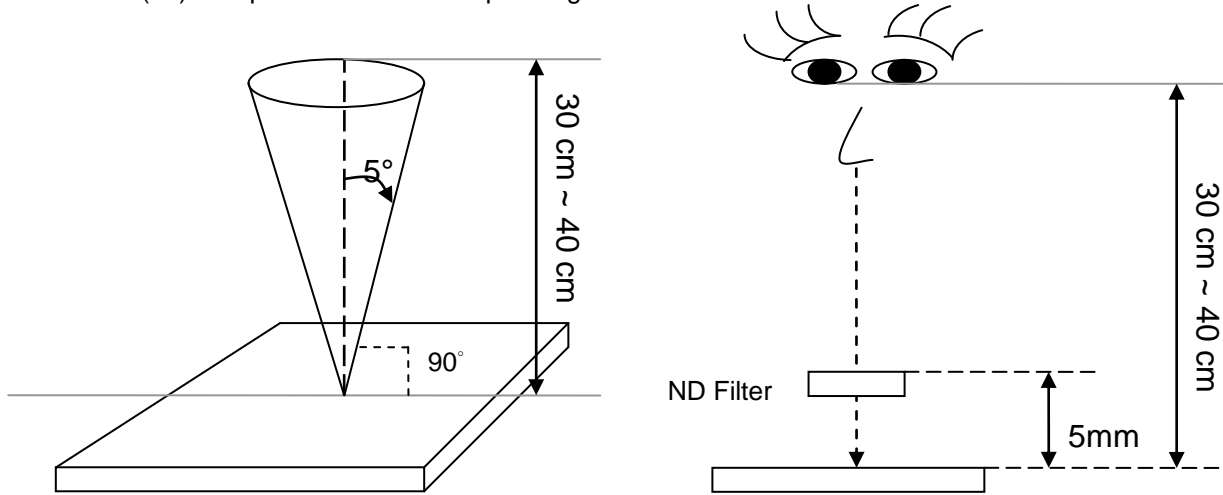
9.2 Inspection condition

9.2.1 Inspection conditions

9.2.1.1 Inspection Distance: 35 ± 5 cm

9.2.1.2 View Angle:

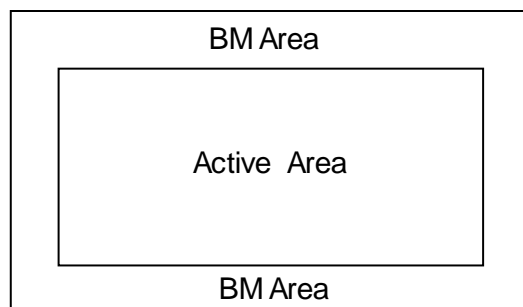
- (1) Inspection under operating condition : $\pm 5^\circ$
- (2) Inspection under non-operating condition : $\pm 45^\circ$



9.2.1.3 Environment conditions:

Ambient Temperature :		$25 \pm 5^\circ\text{C}$
Ambient Humidity :		$65 \pm 5\%$
Ambient Illumination	Cosmetic Inspection	More than 600lux
	Functional Inspection	300 ~ 800lux

9.2.2 Definition of applicable Zones



9.3 Inspection Parameters

No.	Parameter	Criteria																		
1	Operating	Display function: No Display malfunction (Major)																		
		Contrast ratio (Black, White): Does not meet specified range in the spec. (Major) (Note:3)																		
		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> D = (Long + Short) / 2 * : Disregard	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								
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																			
Foreign Material in Line or spiral shape ($W \leq 1/4L$) (Note: 4)																				
<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>$W > 0.2\text{mm}, L > 2.5\text{mm}$</td> <td>0</td> <td rowspan="3">Minor</td> <td rowspan="3">1.5</td> </tr> <tr> <td>$L \leq 2.5\text{mm}, 0.1\text{mm} < W \leq 0.2\text{mm}$</td> <td>4</td> </tr> <tr> <td>$L \leq 2.5\text{mm}, W < 0.1\text{mm}$</td> <td>*</td> </tr> </tbody> </table> L : Length W : Width * : Disregard	Dimension	Acceptable number	Class Of Defects	AQL Level	$W > 0.2\text{mm}, L > 2.5\text{mm}$	0	Minor	1.5	$L \leq 2.5\text{mm}, 0.1\text{mm} < W \leq 0.2\text{mm}$	4	$L \leq 2.5\text{mm}, W < 0.1\text{mm}$	*								
Dimension	Acceptable number	Class Of Defects	AQL Level																	
$W > 0.2\text{mm}, L > 2.5\text{mm}$	0	Minor	1.5																	
$L \leq 2.5\text{mm}, 0.1\text{mm} < W \leq 0.2\text{mm}$	4																			
$L \leq 2.5\text{mm}, W < 0.1\text{mm}$	*																			
2	External Inspection (non-operating)	Dimension: Outline (Major)																		
		Bezel appearance: uneven (Minor)																		
		Scratch on the Polarize & Touch Panel : (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>$W > 0.1\text{mm}, L > 10\text{mm}$</td> <td>0</td> <td rowspan="3">Minor</td> <td rowspan="3">1.5</td> </tr> <tr> <td>$L \leq 10\text{mm}, 0.07\text{mm} < W \leq 0.1\text{mm}$</td> <td>4</td> </tr> <tr> <td>$L \leq 10\text{mm}, W < 0.07\text{mm}$</td> <td>*</td> </tr> </tbody> </table> L : Length W : Width * : Disregard	Dimension	Acceptable number	Class Of Defects	AQL Level	$W > 0.1\text{mm}, L > 10\text{mm}$	0	Minor	1.5	$L \leq 10\text{mm}, 0.07\text{mm} < W \leq 0.1\text{mm}$	4	$L \leq 10\text{mm}, W < 0.07\text{mm}$	*						
		Dimension	Acceptable number	Class Of Defects	AQL Level															
		$W > 0.1\text{mm}, L > 10\text{mm}$	0	Minor	1.5															
		$L \leq 10\text{mm}, 0.07\text{mm} < W \leq 0.1\text{mm}$	4																	
		$L \leq 10\text{mm}, W < 0.07\text{mm}$	*																	
		Dent and spots shape on the polarize (Note:2): (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>6</td> </tr> <tr> <td>$D > 0.5$</td> <td>0</td> </tr> </tbody> </table> D = (Long + Short) / 2 * : Disregard	Dimension	Acceptable number	Class Of Defects	AQL Level	$D \leq 0.3$	*	Minor	1.5	$0.3 < D \leq 0.5$	6	$D > 0.5$	0						
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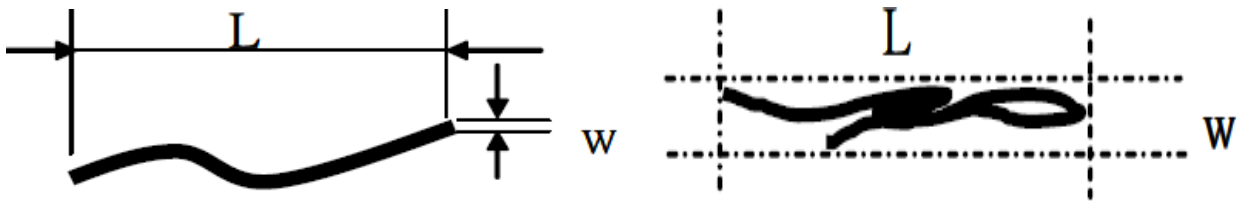
Class of defects	Major	AQL 0.65	Definition
			Minor

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

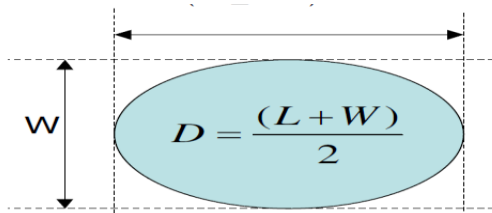
Note:2 The external inspection should be conducted at the distance 35 ± 5 cm between the eyes of inspector and the panel .

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 ($W \geq L/4$)



9.4 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: ISO 2859

Inspection level: Level II

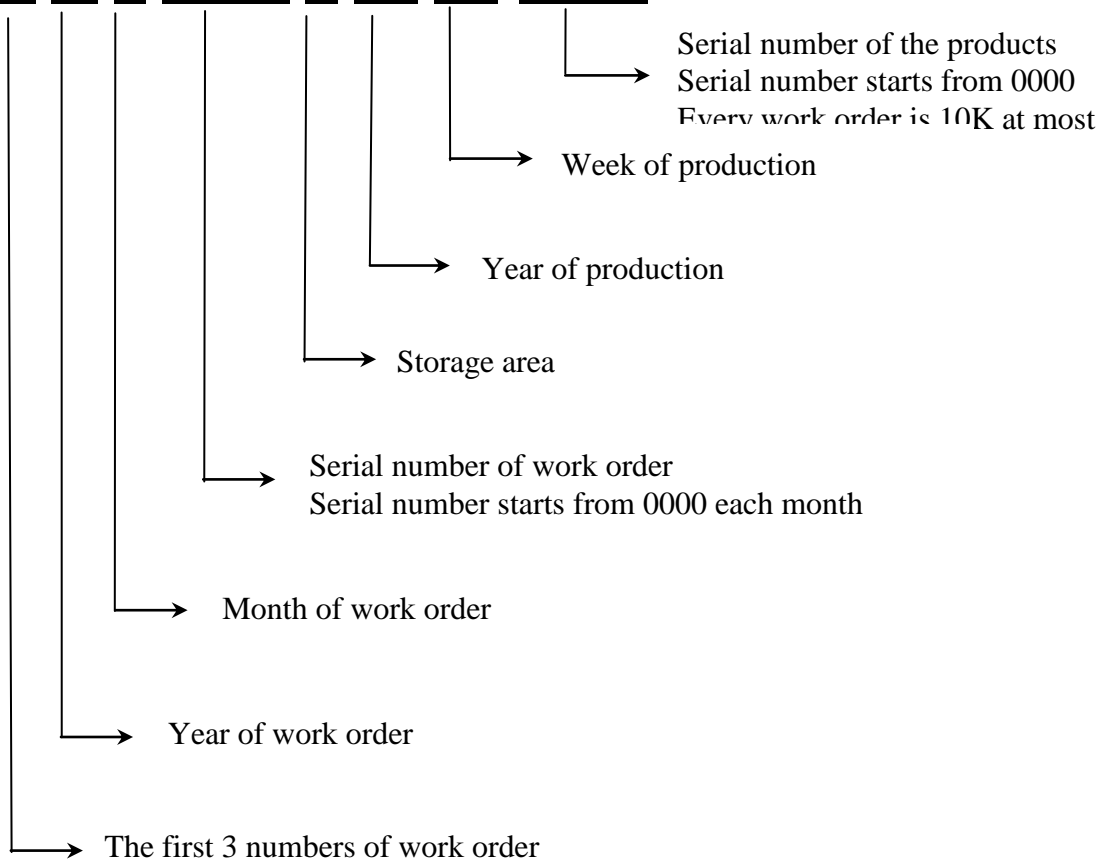
10. LCM PRODUCT LABEL DEFINE

Product Label style:

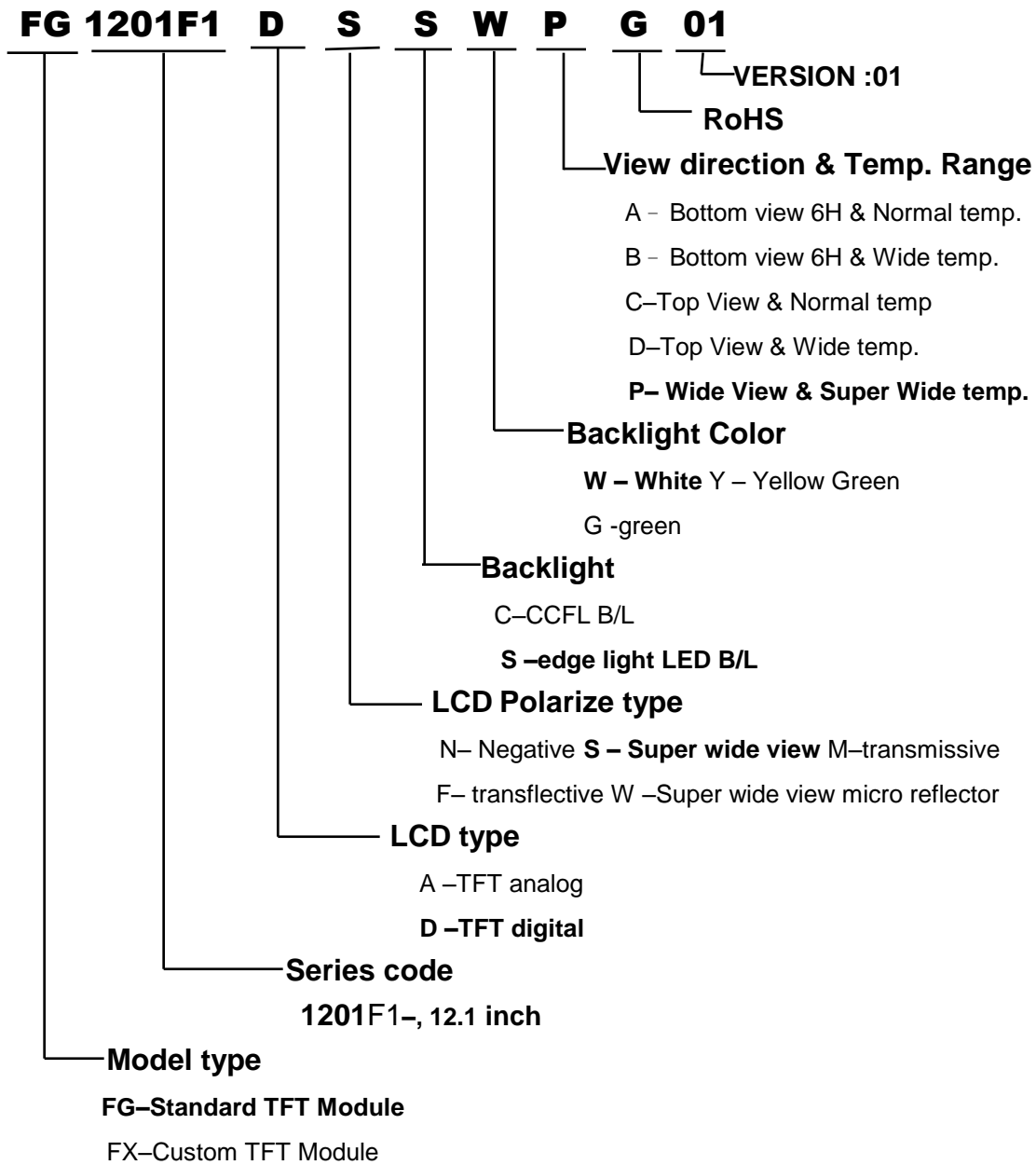


BarCode Define:

AA6001421026-0013



Product Name Define:



11. PRECAUTIONS IN USE LCM

1. ASSEMBLY PRECAUTIONS

- (1) You must mount a module using holes arranged in four corners or four sides.
- (2) You should consider the mounting structure so that uneven force (ex. Twisted stress) is not applied to the module. And the case on which a module is mounted should have sufficient strength so that external force is not transmitted directly to the module.
- (3) Do not touch, push or rub the exposed polarizers with glass, tweezers or anything harder than HB pencil lead. And please do not rub with dust clothes with chemical treatment.
- (4) Wipe off saliva or water drops as soon as possible. Their long time contact with polarizer causes deformations and color fading.
- (5) Do not open the case because inside circuits do not have sufficient strength.
- (6) Please do not take a LCD module to pieces and reconstruct it. Resolving and reconstructing modules may cause them not to work well.
- (7) Please do not touch metal frames with bare hands and soiled gloves. A color change of the metal frames can happen during a long preservation of soiled LCD modules.
- (8) Please pay attention to handling lead wire of backlight so that it is not tugged in connecting with inverter.

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 LCD module. They are adjusted to the most suitable value. If they are changed, it might happen LCD does not satisfy the characteristics specification
- (3) Be careful for condensation at sudden temperature change. Condensation makes damage to polarizer or electrical contacted parts. And after fading condensation, smear or spot will occur.
- (4) When fixed patterns are displayed for a long time, remnant image is likely to occur.
- (5) Module 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.
- (6) Please consider that LCD backlight takes longer time to become stable of radiation characteristics in low temperature than in room temperature.

3. ELECTROSTATIC DISCHARGE CONTROL

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

- (2) The modules 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 commutator 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 LCDs 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 the LCDs in the environment of high humidity and high temperature such as 60°C 90%RH
- (3) Please do not leave the LCDs in the environment of low temperature; below -20°C.

5. OTHERS

- (1) A strong incident light into LCD panel might cause display characteristics' changing inferior because of polarizer film, color filter, and other materials becoming inferior. Please do not expose LCD module direct sunlight and strong UV rays
- (2) Please pay attention to a panel side of LCD module not to contact with other materials in preserving it alone.
- (3) For the packaging box, please pay attention to the followings:
 - a. Please do not pile them up more than 5 boxes. (They are not designed so.) And please do not turn over.
 - b. Please handle packaging box with care not to give them sudden shock and vibrations. And also please do not throw them up.
 - c. Packing box and inner case for LCDs 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 LCD and LCM 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.

13. PACKAGE INFORMATION

TBD