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SPEC. NUMBER

PRODUCT GROUP

REV.

ISSUE DATE

PAGE

TFT- LCD

P0

2020.10

1 OF 31

B3 GV185FHM-N10 Product Specification Rev.P0

SUPPLIER	HEFEI BOE Optoelectronics Technology CO., LTD
FG-Code	GV185FHM-N10-DM30

ITEM	BUYER SIGNATURE	DATE
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Prepared	_____	_____
Reviewed	_____	_____
Approved	_____	_____

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SPEC. NUMBER

PRODUCT GROUP

REV.

ISSUE DATE

PAGE

TFT- LCD

OF 31

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2020.10.15

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SPEC. NUMBER

PRODUCT GROUP

REV.

ISSUE DATE

PAGE

TFT- LCD

OF 31

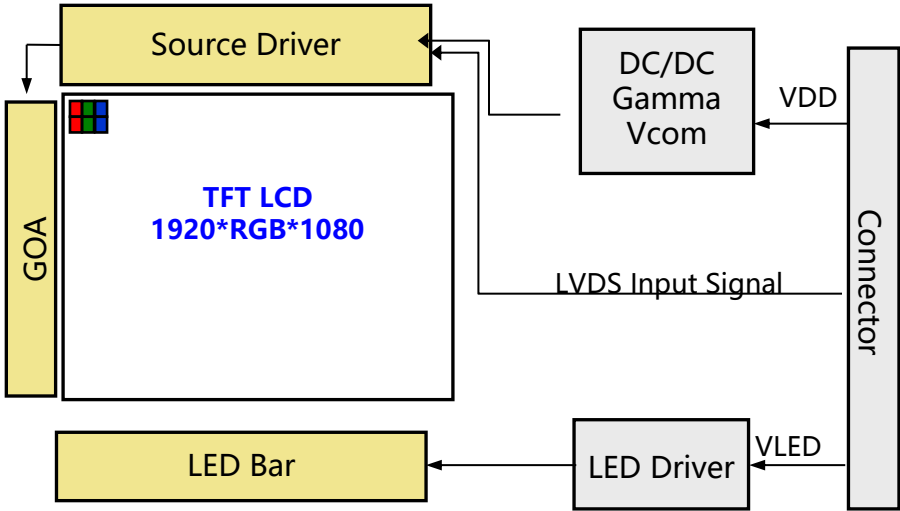
Contents

No.	Items	Page
1.0	General Description	4
2.0	Absolute Maximum ratings	6
3.0	Electrical specifications.	7
4.0	Interface Connection	10
5.0	Signal Timing Specifications	13
6.0	Signal Timing Waveforms Of Interface Signal	15
7.0	Power Sequence	17
8.0	Optical specifications.	18
9.0	Mechanical Outline Dimension	22
10.0	Reliability Test	24
11.0	Precautions	25
12.0	Label	29
13.0	Packing information	31

BOE	PRODUCT GROUP	REV	ISSUE DATE
	TFT LCD PRODUCT	P0	2019.04.16

1.0 GENERAL DESCRIPTION

GV185FHM-N10-DM30 is a color active matrix TFT LCD module using amorphous silicon TFT's (Thin Film Transistors) as an active switching devices. This module has a **18.5** inch diagonally measured active area with FHD resolutions (1920 horizontal by 1080 vertical pixel array). Each pixel is divided into RED, GREEN, BLUE dots which are arranged in vertical stripe and this module can display **16.7 M colors**.



1.0.2 Features

- LED back-light
- LVDS interface
- RoHS Compliant
- 16.7M color depth

1.0.3 Application

- Video Phone/IP Phone/Smart Key/ e-cigarettes etc.

SPEC. NUMBER	SPEC TITLE	PAGE
S801-5126	XX产品 FG-code Product Specification	4 OF 31

BOE	PRODUCT GROUP	REV	ISSUE DATE
	TFT LCD PRODUCT	P0	2019.04.16
1.0.4 General Specification			
< Table 1. General Specifications >			
Parameter	Specification (15inch 参考)	Unit	Remarks
Active area	408.96 (H) × 230.04(V)	mm	
Number of pixels	1920(H) × 1080(V)	Pixels	
Pixel pitch	0.213(H) × 0.213 (V)	mm	
Pixel arrangement	RGB Vertical stripe		
Display colors	16.7M(8bit)	Colors	
Display mode	Normally Black		
Dimensional outline	430.4 (H) × 254.6(V) × 12(D) typ.	mm	
Weight	1800	g	
Surface treatment	AG25 , 3H		
Back-light	Edge side, 1-LED Lighting Bar Type		44*LED
SPEC. NUMBER	SPEC TITLE		PAGE
S801-5126	XX产品 FG-code Product Specification		5 OF 31

2.0 ABSOLUTE MAXIMUM RATINGS

The followings are maximum values which, if exceed, may cause faulty operation or damage to the unit. The operational and non-operational maximum voltage and current values are listed in Table 2.

< Table 3. Environment Absolute Maximum Ratings> [Ta =25 ± 2 °C]

Parameter	Symbol	Min.	Type.	Max.	Unit	Remarks
Back-light Power Supply Voltage	HV _{DDOUT}	-	33V	-	V	Ta = 25 °C Note 1&2
Back-light LED Current	I _{HVDD}		360		mA	
Back-light LED Reverse Voltage	V _R		-		V	

Note:

1. These range above is maximum value not the actual operating temperature . Actual Operating temperature is no more than 40°C and temperature refers to the LCM surface temperature ;
2. BOE is not responsible for product problems beyond the use conditions.
3. When the ambient temperature is T °C, the surface temperature of Panel can not exceed (T+15)°C.

3.0 ELECTRICAL SPECIFICATIONS

3.0.1 TFT LCD Module

< Table 4. LCD Module Electrical Specifications >

[Ta =25 ± 2 °C]

Parameter	Symbol	Values			Unit	Notes
		Min	Typ	Max		
Power Supply Input Voltage	V _{DD}	4	5	6	V	Note 1
Power Supply Current	I _{DD}	-	500		mA	
LED Driver Power Supply Voltage	H _{VDD}	10.8	12	12.6	V	Note 2
LED Driver Power Supply Current	I _{HVDD}		TBD		mA	
LED Power Consumption	P _{LED}		TBD		W	
Positive-going Input Threshold Voltage	V _{IT+}	-		+100	mV	V _{com} = 1.2V typ.
Negative-going Input Threshold Voltage	V _{IT-}	-100		-	mV	
Differential input common mode voltage	V _{com}		1.2		V	V _{IH} =100mV, V _{IL} =-100mV

Notes : 1. The supply voltage is measured and specified at the interface connector of LCM.
The current draw and power consumption specified is for 3.3V at 25 °C
Max value at Black Pattern

2. Calculated value for reference $I_{LED} \times V_{LED} \div 0.85 = P_{LED}$

BOE	PRODUCT GROUP	REV	ISSUE DATE
	TFT LCD PRODUCT	P0	2019.04.16

3.1 Back-light Unit

< Table 6. LED Driving guideline specifications > Ta=25+/-2°C

Parameter		Min.	Typ.	Max.	Unit	Remarks
Power supply voltage for Back light			12		V	
Power supply Current for Back light		-	TBD	-	mA	
Power supply for Back light			TBD		W	Note 1
EN Control Level	Backlight on	2.5	-	-	V	EN logic high voltage
	Backlight off	-	-	0.8	V	EN logic low voltage
PWM Control Level	PWM High Level	2.5	-	-	V	
	PWM Low Level	-	-	0.8	V	
PWM Control Frequency		0.12	-	1	KHz	
Duty Ratio		5	-	100	%	

Notes : 1. Calculator Value for reference $I_{LED} \times V_{LED} = P_{LED}$

2. The LED Life-time define as the estimated time to 50% degradation of initial luminous under the condition of the ambient temperature of 25°C.

SPEC. NUMBER S801-5126	SPEC TITLE XX产品 FG-code Product Specification	PAGE 8 OF 31
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BOE	PRODUCT GROUP	REV	ISSUE DATE
	TFT LCD PRODUCT	P0	2019.04.16

4.0 INTERFACE CONNECTION.

4.0.1 Electrical Interface Connection

The electronics interface connector IS100-L300-C23(UJU).
The LED connector is CI4205M2HRD-NH
The connector interface pin assignments are listed in Table 7 and 8.

<Table 7. Pin Assignments for the Interface Connector>

Pin No.	Symbol	Description	remark
1	RxOIN0-	LVDS data input	
2	RxOIN0+	LVDS data input	
3	RxOIN1-	LVDS data input	
4	RxOIN1+	LVDS data input	
5	RxOIN2-	LVDS data input	
6	RxOIN2+	LVDS data input	
7	VSS	Ground	
8	RxOCLKIN-	LVDS clock input	
9	RxOCLKIN+	LVDS clock input	
10	RxOIN3-	LVDS data input	
11	RxOIN3+	LVDS data input	
12	RxEIN0-	LVDS data input	
13	RxEIN0+	LVDS data input	
14	VSS	Ground	
15	RxEIN1-	LVDS data input	
16	RxEIN1+	LVDS clock input	
17	VSS	Ground	
18	RxEIN2-	LVDS clock input	
19	RxEIN2+	LVDS clock input	
20	RxECLKIN-	LVDS clock input	
21	RxECLKIN+	LVDS clock input	
22	RxEIN3-	LVDS clock input	
23	RxEIN3+	LVDS clock input	
24	VSS	Ground	

SPEC. NUMBER	SPEC TITLE	PAGE
S801-5126	XX产品 FG-code Product Specification	9 OF 31

BOE	PRODUCT GROUP	REV	ISSUE DATE
	TFT LCD PRODUCT	P0	2019.04.16

Pin No.	Symbol	Description	remark
25	SCL	I2C BUS	
26	SDA	I2C BUS	
27	WP	EEPROM write EN	
28	VCC	Power supply(5V)	
29	VCC	Power supply(5V)	
30	VCC	Power supply(5V)	

<Table 8. Pin Assignments for the LED Connector>

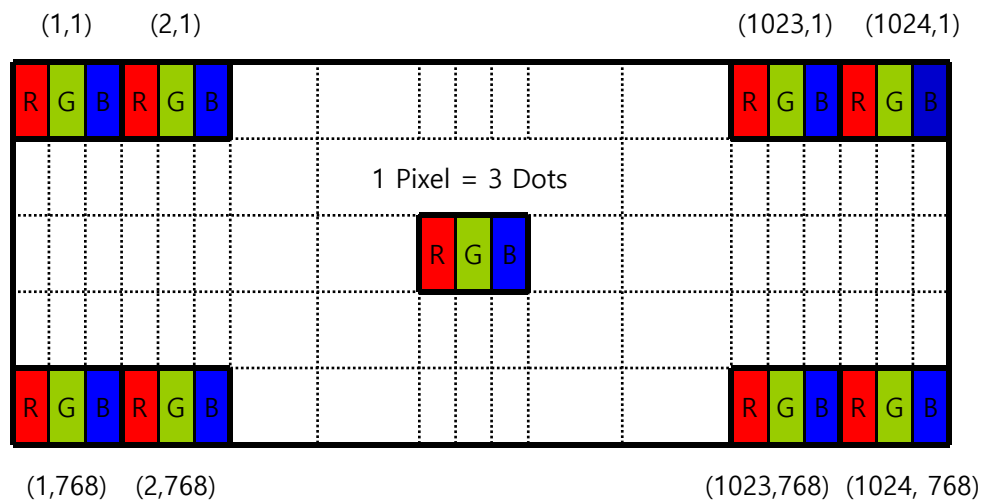
Terminal	Symbol	Functions
Pin No.	Symbol	Description
1	VCC	12V
2	GND	GND
3	Enable	5V-On / 0V-Off
4	Dimming	PWM Dimming
5	NC	No Connection

SPEC. NUMBER	SPEC TITLE	PAGE
S801-5126	XX产品 FG-code Product Specification	10 OF 31

BOE	PRODUCT GROUP	REV	ISSUE DATE
	TFT LCD PRODUCT	P0	2019.04.16

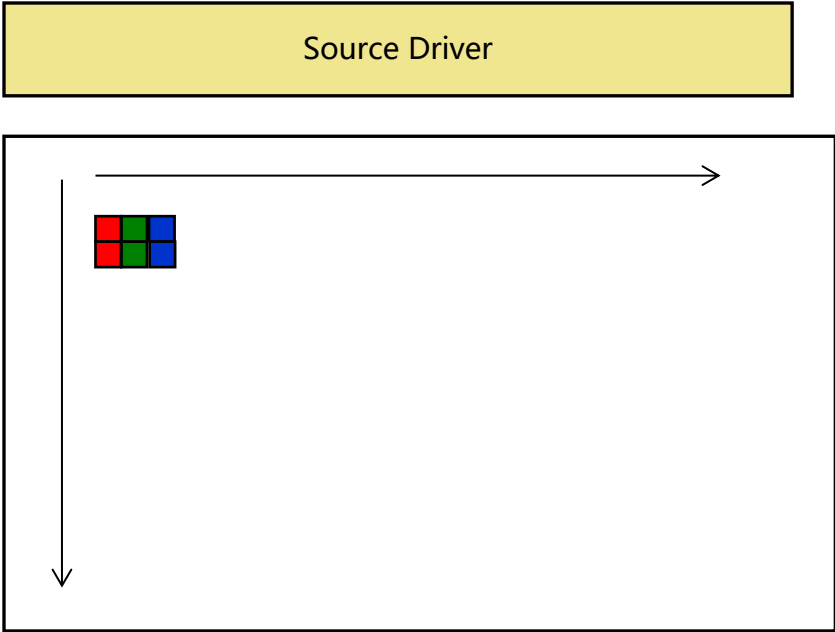
4.2 Data Input Format

Figure 5. Pixel Format



Display Position of Input Data (V-H)

Figure 6. Scan direction



SPEC. NUMBER	SPEC TITLE	PAGE
S801-5126	XX产品 FG-code Product Specification	11 OF 31

BOE	PRODUCT GROUP	REV	ISSUE DATE
	TFT LCD PRODUCT	P0	2019.04.16

5.0 SIGNAL TIMING SPECIFICATION

5.0.1 The **XX-FG code** is operated by the DE only. （以19inch为例，需根据具体项目变更）

Item	Symbols		Min	Typ	Max	Unit	Note
DCLK	Period	tCLK	9.5	TBD	25	ns	
	Frequency	-	40	-	105	MHz	
Hsync	Period	tHP	990	1040		tCLK	
	Horizontal Valid	tHV		960		tCLK	
	Horizontal Blank	tHB	30	80		tCLK	
Vsync	Period	tVP	1100	1125	1138	tHP	
	Vertical Valid	tVV		1080		tHP	
	Vertical Blank	tVB	30	45	58	tHP	
	Frequency	fV		60		Hz	
LVDS Receiver clock	Input spread spectrum ratio	SSr		TBD		%	

Note: The DCLK range at last line of V-blanking should be set in 0-H-active/2.

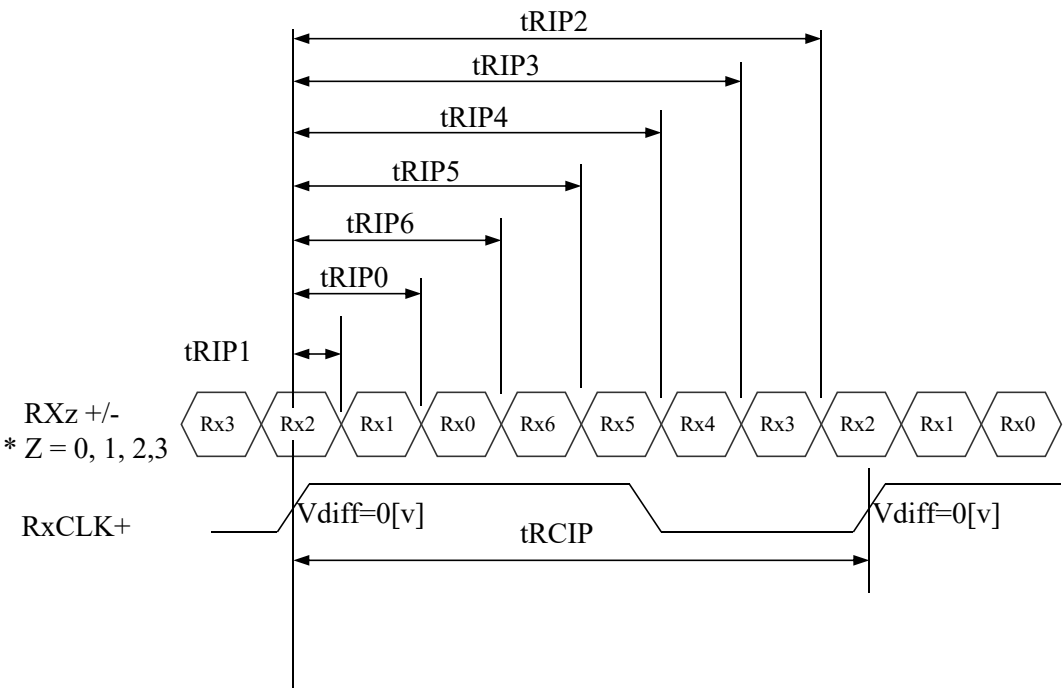
SPEC. NUMBER S801-5126	SPEC TITLE XX产品 FG-code Product Specification	PAGE 12 OF 31
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5.02 LVDS Rx Interface Timing Parameter

The specification of the LVDS Rx interface timing parameter is shown in Table 4.

<Table 9. LVDS Rx Interface Timing Specification>

Item	Symbol	Min	Typ	Max	Unit	Remark
CLKIN Period	tRCIP	9.5		25	nsec	
Input Data 0	tRIP1	-0.4	0.0	+0.4	nsec	
Input Data 1	tRIP0	tRCIP/7-0.4	tRCIP/7	tRCIP/7+0.4	nsec	
Input Data 2	tRIP6	2 × tRCIP/7-0.4	2 × tRCIP/7	2 × tRCIP/7+0.4	nsec	
Input Data 3	tRIP5	3 × tRCIP/7-0.4	3 × tRCIP/7	3 × tRCIP/7+0.4	nsec	
Input Data 4	tRIP4	4 × tRCIP/7-0.4	4 × tRCIP/7	4 × tRCIP/7+0.4	nsec	
Input Data 5	tRIP3	5 × tRCIP/7-0.4	5 × tRCIP/7	5 × tRCIP/7+0.4	nsec	
Input Data 6	tRIP2	6 × tRCIP/7-0.4	6 × tRCIP/7	6 × tRCIP/7+0.4	nsec	

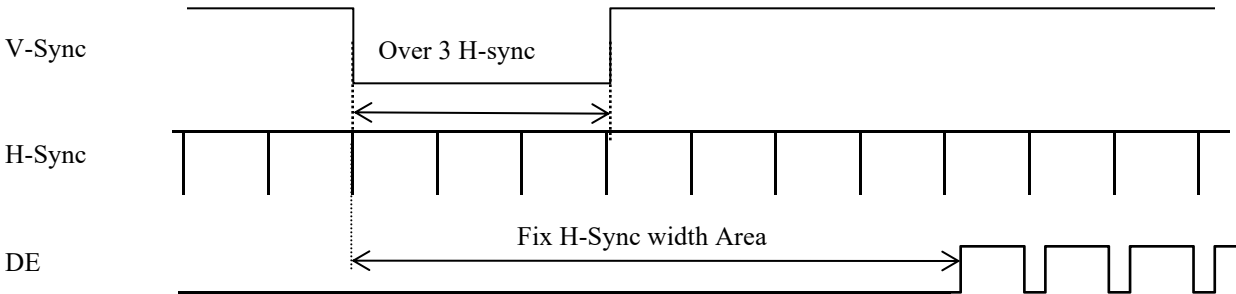


* Vdiff = (RXz+)-(RXz-),.... ,(RXCLK+)-(RXCLK-)

BOE	PRODUCT GROUP	REV	ISSUE DATE
	TFT LCD PRODUCT	P0	2019.04.16

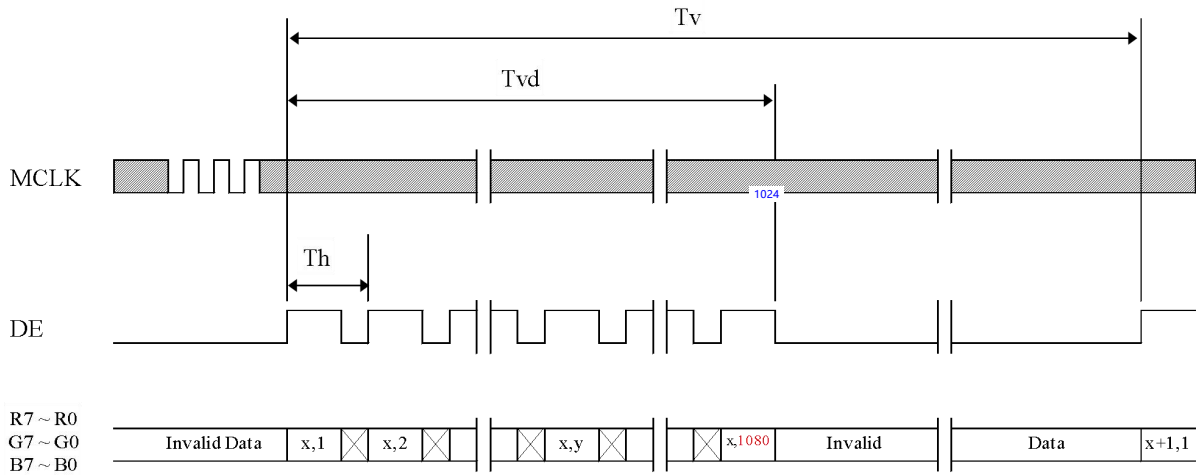
6. SIGNAL TIMING WAVEFORMS OF INTERFACE SIGNAL

6.01 Sync Timing Waveforms



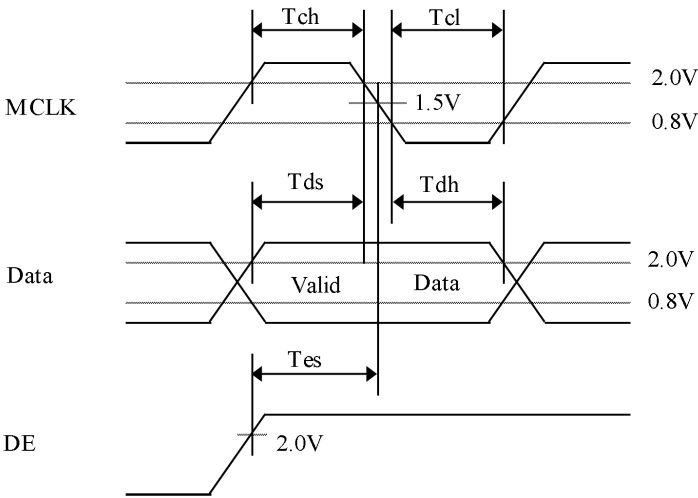
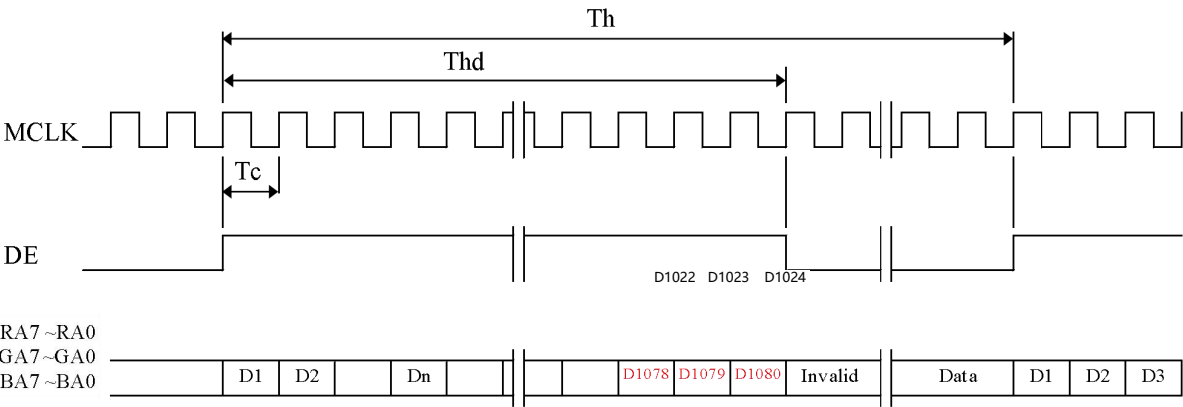
- 1) Need over 3 H-sync during V-Sync Low
- 2) Fix H-Sync width from V-Sync falling edge to first rising edge

6.02 Vertical Timing Waveforms



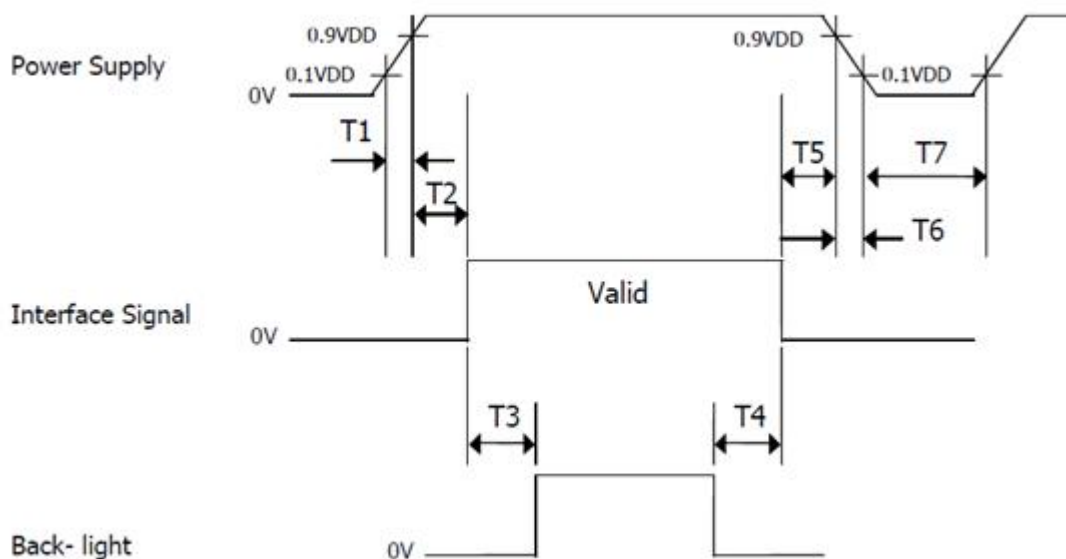
SPEC. NUMBER	SPEC TITLE	PAGE
S801-5126	XX产品 FG-code Product Specification	14 OF 31

6.03 Horizontal Timing Waveforms



7.0 POWER SEQUENCE

To prevent a latch-up or DC operation of the LCD module, the power on/off sequence shall be as shown in below



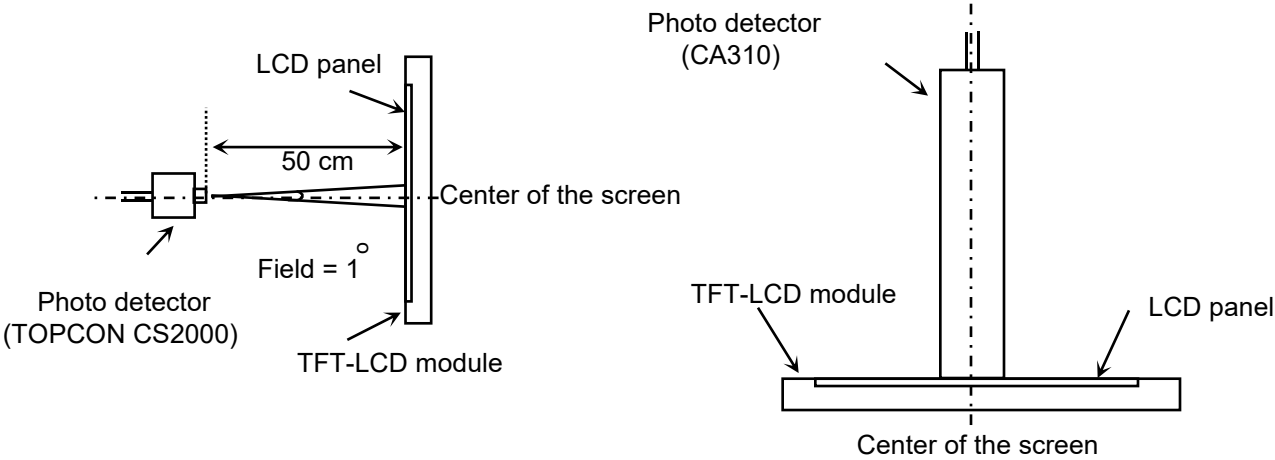
Parameter	Values			Units
	Min	Typ	Max	
T1	0	-	10	ms
T2	0	-	50	ms
T3	200	-	-	ms
T4	500	-	-	ms
T5	0	-	50	ms
T6	0	-	10	ms
T7	500	-	-	ms

BOE	PRODUCT GROUP	REV	ISSUE DATE
	TFT LCD PRODUCT	P0	2019.04.16
<p>Notes : 1. Viewing angle is the angle at which the contrast ratio is greater than 10. The viewing angles are determined for the horizontal or 3, 9 o'clock direction and the vertical or 6, 12 o'clock direction with respect to the optical axis which is normal to the LCD surface (see FIGURE 1).</p> <p>2. Contrast measurements shall be made at viewing angle of $\Theta = 0$ and at the center of the LCD surface. Luminance shall be measured with all pixels in the view field set first to white, then to the dark (black) state . (see FIGURE 1) Luminance Contrast Ratio (CR) is defined mathematically.</p> $CR = \frac{\text{Luminance when displaying a white raster}}{\text{Luminance when displaying a black raster}}$ <p>3. Luminance of white is defined as luminance values of center of the LCD surface. Luminance shall be measured with all pixels in the view field set first to white. This measurement shall be taken at the locations shown in FIGURE 2 for a total of the measurements per display. The luminance is measured by CS2000/CA310 when the LED current is set at 60mA.</p> <p>4. The White luminance uniformity on LCD surface is then expressed as : $\Delta Y = \text{Minimum Luminance of 9 Points or 5 points} / \text{Maximum Luminance of 9 Points or 5 points}$ (See FIGURE 2).</p> <p>5. The color chromaticity coordinates specified in Table 5. shall be calculated from the spectral data measured with all pixels first in red, green, blue and white. Measurements shall be made at the center of the panel.</p> <p>6. The electro-optical response time measurements shall be made as FIGURE 3 by switching the “data” input signal ON and OFF. The times needed for the luminance to change from 10% to 90% is Tr, and 90% to 10% is Td.</p>			
SPEC. NUMBER S801-5126	SPEC TITLE XX产品 FG-code Product Specification		PAGE 18 OF 31

BOE	PRODUCT GROUP	REV	ISSUE DATE
	TFT LCD PRODUCT	P0	2019.04.16

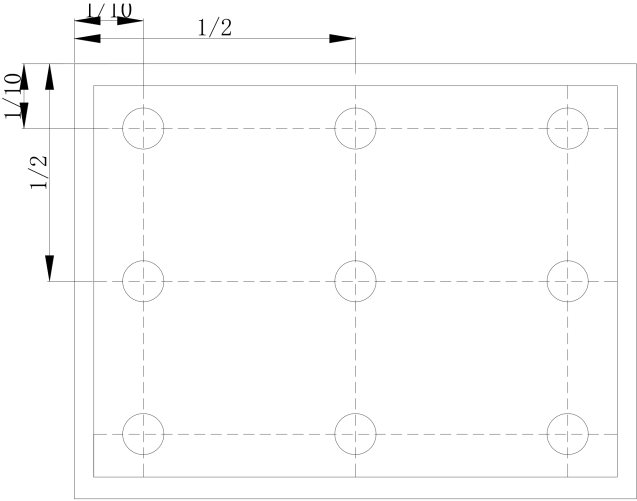
8.0.2 Optical measurements

Figure 1. Measurement Set Up



View angel range, uniformity, etc. measurement setup Flicker, measurement setup

Figure 2. White Luminance and Uniformity Measurement Locations (9 points)



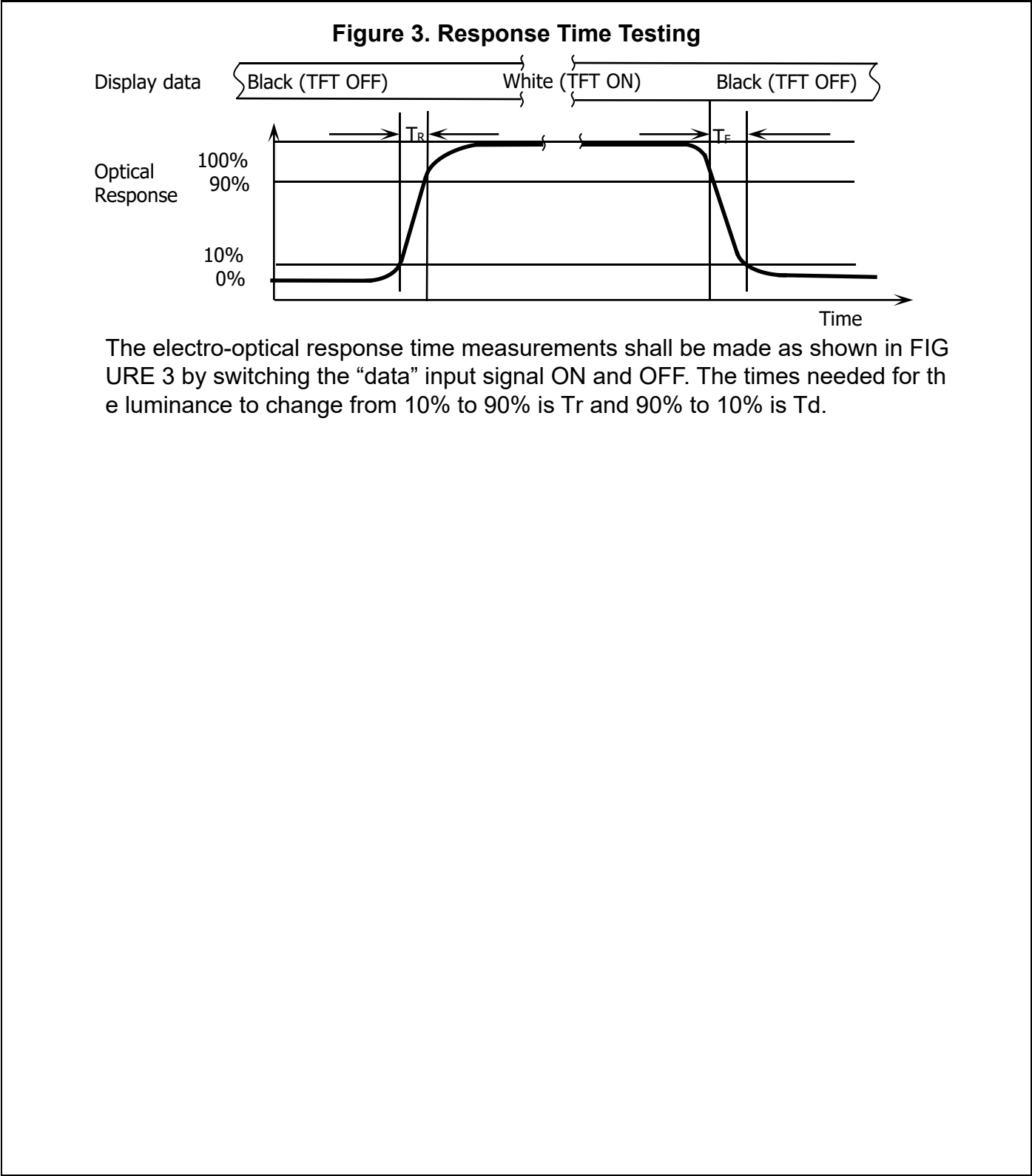
根据客户需求 填写
5points or 9points位置
, 更新示意图

Luminance of white is defined as luminance values of center of the LCD surface. Luminance shall be measured with all pixels in the view field set first to white. This measurement shall be taken at the locations shown in FIGURE 2 for a total of the measurements per display.

The White luminance uniformity on LCD surface is then expressed as : $\Delta Y9 = \text{Minimum Luminance of 9 points} / \text{Maximum Luminance of 9points}$ (see FIGURE 2).

SPEC. NUMBER S801-5126	SPEC TITLE XX产品 FG-code Product Specification	PAGE 19 OF 31
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BOE	PRODUCT GROUP	REV	ISSUE DATE
	TFT LCD PRODUCT	P0	2019.04.16

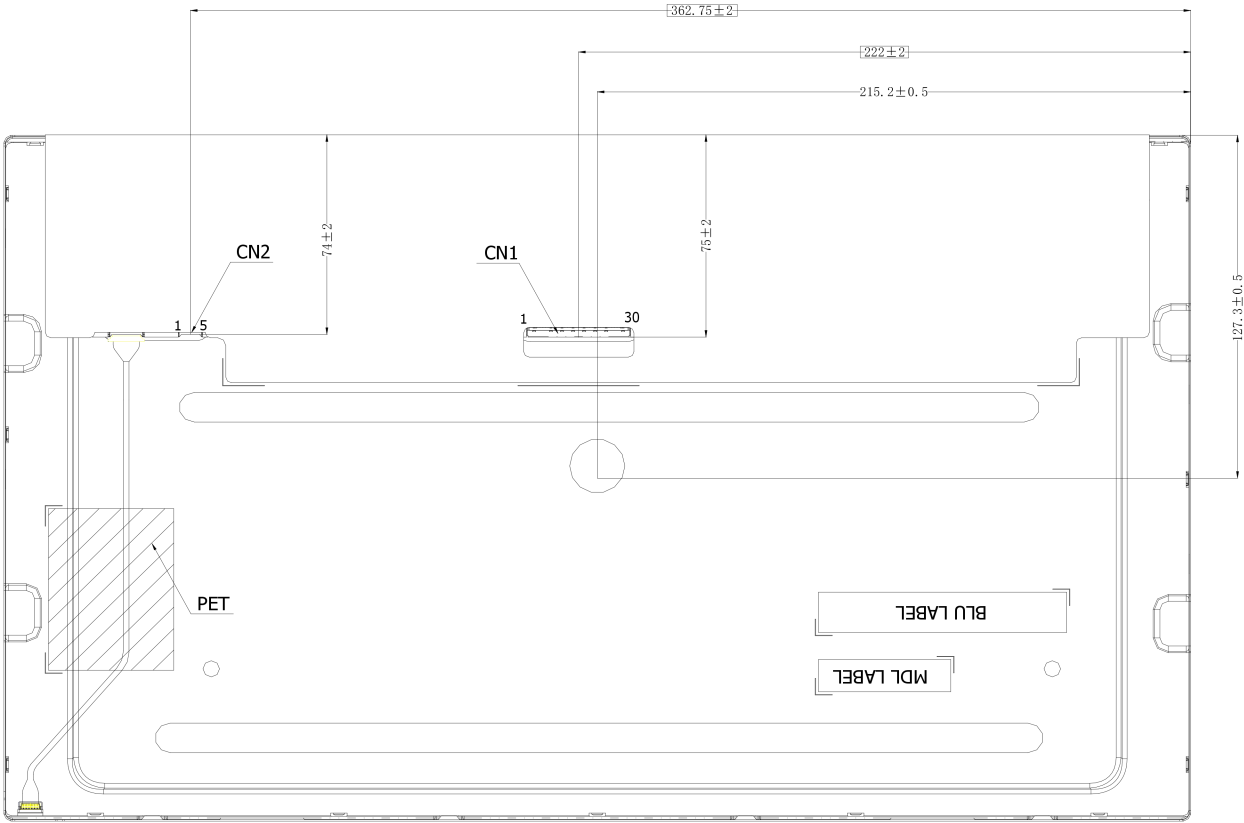


The electro-optical response time measurements shall be made as shown in FIG URE 3 by switching the “data” input signal ON and OFF. The times needed for th e luminance to change from 10% to 90% is T_r and 90% to 10% is T_d .

SPEC. NUMBER	SPEC TITLE	PAGE
S801-5126	XX产品 FG-code Product Specification	20 OF 31

BOE	PRODUCT GROUP	REV	ISSUE DATE
	TFT LCD PRODUCT	P0	2019.04.16

Figure 2. TFT-LCD Module Outline Dimensions (Rear view)



SPEC. NUMBER	SPEC TITLE	PAGE
S801-5126	XX产品 FG-code Product Specification	21 OF 31

BOE	PRODUCT GROUP	REV	ISSUE DATE
	TFT LCD PRODUCT	P0	2019.04.16

10.0 RELIABILITY TEST
(以客户规格为主，若客户无具体规格，以厂内标准为准)

The Reliability test items and its conditions are shown in below.

<Table 11. Reliability test>

No	Test Items	Conditions	Remark
1	High temperature storage test	Ta = 80℃, 240 hrs	The test result shall be evaluated after the sample has been left at room temperature and humidity for 2 hours. These defects can't be accepted: 1.Air bubble 2.Seal leak 3.Non-display 4.Missing segments 5.Glass crack
2	Low temperature storage test	Ta = -30 ℃, 240 hrs	
3	High temperature operation test	Ta = 70℃, 240 hrs	
4	Low temperature operation test	Ta = -20 ℃, 240 hrs	
5	High temperature & high humidity	Ta = 60 ℃, 90%RH, 240 hrs	
6	Thermal shock(Non-operation)	Ta = -20 ℃ ↔ 70℃ (0.5 hr), 1hour/Cycle,100 cycle	
7	Shock test (Non-operation)	50G,20ms,half sine Wave,1time for each axis, ±X,Y,Z directions	
8	ESD test(operation)	C=150pF, R=330Ω, Air: ±15KV, 9points, 25times/point; Contact: ±8KV,9points,25times/point	Air: PANEL AA around Contact: BEZEL Class B
9	Vibration Test(Non-operation)	1.5G,10~200Hz,30min/AXIS X,Y,Z directions Wave: random	

Note : After the reliability test, the product only guarantee function normally without any fatal defect (non-display, line defect, abnormal display etc). All the cosmetic specification is judged before the reliability test.

SPEC. NUMBER S801-5126	SPEC TITLE XX产品 FG-code Product Specification	PAGE 23 OF 31
---------------------------	--	------------------

BOE	PRODUCT GROUP	REV	ISSUE DATE
	TFT LCD PRODUCT	P0	2019.04.16
<p>• 11.0 Precautions</p> <p>Please pay attention to the followings when you use this TFT LCD Panel.</p> <p>• 11.1 Mounting Precautions</p> <p>• (1) Use fingerstalls with soft gloves in order to keep display clean during the incoming inspection and assembly process.</p> <p>• (2) You must mount a module using specified mounting holes (Details refer to the drawings).</p> <p>• (3) Please make sure to avoid external forces applied to the Source PCB or FPC and D-IC during the process of handling or assembling. If not, It causes panel damage or malfunction.</p> <p>• (4) Note that polarizers are very fragile and could be easily damaged. 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.</p> <p>• (5) Do not pull or fold the source D-IC which connect the source PCB or FPC and the panel.</p> <p>• Do not pull or fold the LED wire.</p> <p>• (6) After removing the protective film, when the surface becomes dusty, please wipe gently with absorbent cotton or other soft materials like chamois soaks with alcohol or purified water.</p> <p>• Do not strong polar solvent because they cause chemical damage to the polarizer.</p> <p>• (7) Wipe off saliva or water drops as soon as possible. Their long time contact with polarizer causes deformations and color fading.</p> <p>• (8) Protection film for polarizer on the module shall be slowly peeled off just before use so that the electrostatic charge can be minimized.</p> <p>• (9) Since the LCD is made of glass, do not apply strong mechanical impact or static load onto it. Handling with care since shock, vibration, and careless handling may seriously affect the product. If it falls from a high place or receives a strong shock, the glass may be broken.</p> <p>• (10) Do not disassemble the module.</p> <p>• (11) To determine the optimum mounting angle, refer to the viewing angle range in the specification for each model.</p> <p>• (12) If the customer's set presses the main parts of the LCD, the LCD may show the abnormal display. But this phenomenon does not mean the malfunction of the LCD and should be pressed by the way of mutual agreement.</p> <p>• (13) Do not drop water or any chemicals onto the LCD's surface.</p> <p>• (14) The ITO pad area needs special careful caution because it could be easily corroded. Do not contact the ITO pad area with HCFC, Soldering flux, Chlorine, Sulfur, saliva or fingerprint. To prevent the ITO corrosion, customers are recommended that the ITO area would be covered by UV or silicon.</p> <p>注：① (4)(6)(7)(8) 涉及到Pol相关条目适用于OC/MDL出货产品，针对Q/Single建议将pol改为LCD surface，同时删除第8条</p> <p>②第(14)条适用于Q/Single出货产品（MDL/OC可去除此条）</p>			
SPEC. NUMBER	SPEC TITLE	PAGE	
S801-5126	XX产品 FG-code Product Specification	24 OF 31	

BOE	PRODUCT GROUP	REV	ISSUE DATE
	TFT LCD PRODUCT	P0	2019.04.16
<div>11.2 Operating Precautions</div> <div><ul style="list-style-type: none">(1) 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.(2) 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 minimized the interference.(3) The electrochemical reaction caused by DC voltage will lead to LCD degradation, so DC drive should be avoided.(4) The LCD modules use C-MOS LSI drivers, so customers are recommended that any unused input terminal would be connected to Vdd or Vss, do not input any signals before power is turn on, and ground you body, work/assembly area, assembly equipments to protect against static electricity.(5) Do not exceed the absolute maximum rating value. (supply voltage variation, input voltage variation, variation in part contents and environmental temperature, and so on) Otherwise the Module may be damaged.(6) Design the length of cable to connect between the connector for back-light and the converter as short as possible and the shorter cable shall be connected directly. The longer cable between that of back-light and that of converter may cause the luminance of LED to lower and need a higher startup voltage(Vs).(7) Connectors are precise devices for connecting PCB and transmitting electrical signals. Operators should insert and unplug MDL in parallel when assembling MDL.(8) Do not connect or disconnect the cable to/ from the module at the "Power On" condition.(9) When the module is operating, do not lose CLK, ENAB signals. If any one these signals is lost, the LCD panel would be damaged.(10) Obey the supply voltage sequence. If wrong sequence is applied, the module would be damaged.(11) Do not re-adjust variable resistor or switch etc.(12) Long Side LED Bar design is recommended when using E-LED type Back Light (GOA Panel Q /Single/OC出货时填写)</div> <div>注: ①(1)涉及到Pol相关条目适用于OC/MDL出货产品, ②(6)(7)涉及到connector相关适用于OC/MDL出货产品</div> <div>11.3 Electrostatic Discharge Control</div> <div><ul style="list-style-type: none">(1) Since a module is composed of electronic circuits, it is not strong to electrostatic discharge. Make certain that treatment persons are connected to ground through wrist band etc. And don't touch interface pin directly. Keep products as far away from static electricity as possible.(2) Avoid the use work clothing made of synthetic fibers. We recommend cotton clothing or other conductivity-treated fibers.(3) In order to prevent potential problems, Flicker should be adjusted by Optimizing the Vcom value in customer LCM line through the I2C interface.此条适用于Q/Single/OC出货</div>			
SPEC. NUMBER	SPEC TITLE	PAGE	
S801-5126	XX产品 FG-code Product Specification	25 OF 31	

BOE	PRODUCT GROUP	REV	ISSUE DATE
	TFT LCD PRODUCT	P0	2019.04.16

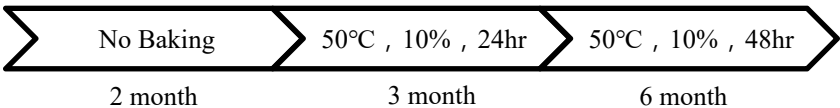
11.4 Precautions for Strong Light Exposure

It is not allowed to store or Operate directly in strong light or in high temperature and humidity for a long time; Strong light exposure causes degradation of polarizer and color filter.

11.5 Storage Precautions

When storing modules as spares for a long time, the following precautions are necessary.

- (1) The polarizer surface should not come in contact with any other object.
It is recommended that they be stored in the container in which they were shipped.
Temperature : 5 ~ 40 °C
- (2) Humidity : 35 ~ 75 %RH
- (3) Period : 6 months
- (4) Control of ventilation and temperature is necessary.
- (5) Please make sure to protect the product from strong light exposure, water or moisture.
Be careful for condensation.
- (6) Store in a polyethylene bag with sealed so as not to enter fresh air outside in it.
- (7)Do not store the LCD near organic solvents or corrosive gasses.
- (8) Please keep the Modules/OC/FOG at a circumstance shown below Fig.



11.6 Precautions for Protection Film (适用通用产品，含Q/Single Production)

- (1) Remove the protective film slowly, keeping the removing direction approximate 30-degree not vertical from panel surface, If possible, under ESD control device like ion blower, and the humidity of working room should be kept over 50%RH to reduce the risk of static charge.
- (2) In handling the LCD, wear non-charged material gloves. And the conducting wrist to the earth and the conducting shoes to the earth are necessary.

11.7 Appropriate Condition for Display

- (1) Normal operating condition
 - Temperature: 0 ~ 40°C
 - Operating Ambient Humidity : 10 ~ 90 %
 - Display pattern: dynamic pattern (Real display)
 - Suitable operating time: under XX hours a day. (Please contract BOE in advance for 7*24hrs or more than suggested Operating time,每天可使用的小时数需根据不同产品填写)
 - Long-term lighting products recommended regular shutdown
- (2) Special operating condition
If the product will be used in extreme conditions such as high temperature, humidity, display patterns or 7*24hrs operation time etc., It is strongly recommended to contact BOE for Application engineering advice. Otherwise, its reliability and function may not be guaranteed.
- (3)Black image or moving image is strongly recommended as a screen save.

SPEC. NUMBER	SPEC TITLE	PAGE
S801-5126	XX产品 FG-code Product Specification	26 OF 31

BOE	PRODUCT GROUP	REV	ISSUE DATE
	TFT LCD PRODUCT	P0	2019.04.16
<ul style="list-style-type: none">• (4) Lifetime in this spec. is guaranteed only when commercial display is used according to operating usages.• (5) Please contract BOE in advance when you want to switch between portrait and landscape screen (横竖屏兼容设计可删除此项)• (6) Please contact BOE in advance for outdoor operation.• (7) Please contact BOE in advance when you display the same pattern for a long time.• (8) If the Module keeps displaying the same pattern for a long period of time, the image may be "sticked" to the screen. To avoid image sticking, it is recommended to use a screen saver.• (9) Do not exceed the absolute maximum rating value. (supply voltage variation, input voltage variation, variation in part contents and environmental temperature, and so on) Otherwise the Module may be damaged.• (10) Dew drop atmosphere should be avoided.• (11) The storage room should be equipped with a good ventilation facility and avoid to expose to corrosive gas , which has a temperature controlling system.• (12) When expose to drastic fluctuation of temperature (hot to cold or cold to hot) ,the LCD may be affected; Specifically, drastic temperature fluctuation from cold to hot ,produces dew on the LCD's surface which may affect the operation of the polarizer and the LCD.• (13) Response time will be extremely delayed at lower temperature than the operating temperature range and on the other hand at higher temperature LCD may turn black at temperature above its operational range. However those phenomena do not mean malfunction or out of order with the LCD. The LCD will revert to normal operation once the temperature returns to the recommended temperature range for normal operation <h3>11.8 Others</h3> <h4>A. LC Leak</h4> <ul style="list-style-type: none">• If the liquid crystal material leaks from the panel, it is recommended to wash the LC with acetone or ethanol and then burn it.• In case of contact with hands, skin or clothes, it has to be washed away thoroughly with soap.• If LC in mouth, mouth need to be washed, drink plenty of water to induce vomiting and follow medical advice.• If LC touch eyes, eyes need to be washed with running water at least 15 minutes. <h4>B. Rework</h4> <ul style="list-style-type: none">• When returning the module for repair or etc., Please pack the module not to be broken. We recommend to use the original shipping packages.			
SPEC. NUMBER S801-5126	SPEC TITLE XX产品 FG-code Product Specification		PAGE 27 OF 31

BOE	PRODUCT GROUP	REV	ISSUE DATE
	TFT LCD PRODUCT	P0	2019.04.16

12.0 LABEL

(1) Product label



MDL ID 编码规则

序列号	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
代码	X	X	P	3	5	2	7	X	X	X	X	0	0	1	E	E	J
描述	生管指定		等级 S,A,P,Q等	工厂 B3	年		月	FG Code后四位				流水码 36进制(无I和O)					

年: 2015—15, 2016—16 2020---20, 2021---21.....
 月: 1~12月→ 1~9, X, Y, Z

(2) High voltage caution label

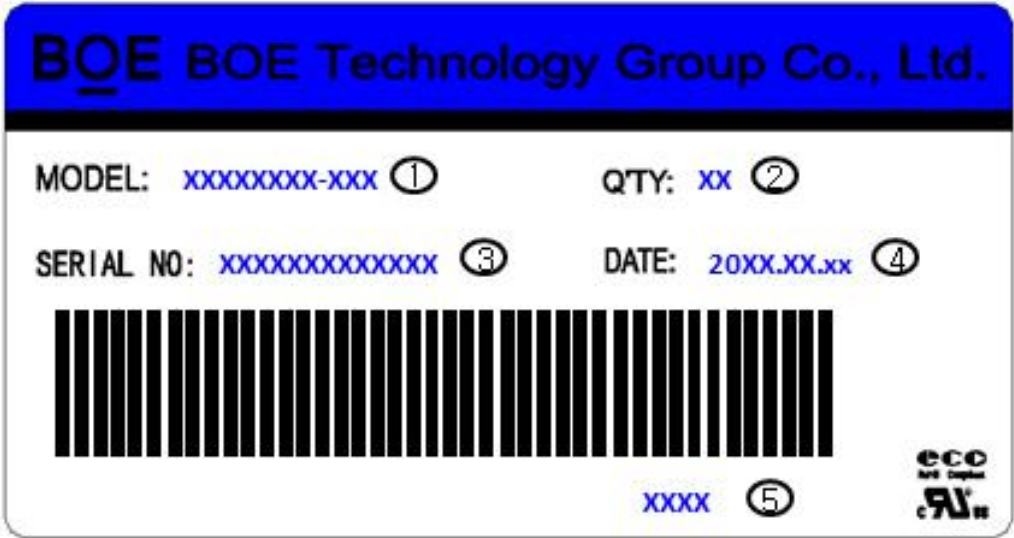
HIGH VOLTAGE CAUTION

RISK OF ELECTRIC SHOCK. DISCONNECT THE ELECTRIC POWER BEFORE SERVICING

COLD CATHODE FLUORESCENT LAMP IN LCD PANEL CONTAINS A SMALL AMOUNT OF MERCURY. PLEASE FOLLOW LOCAL ORDINANCES OR REGULATIONS FOR DISPOSAL.

BOE	PRODUCT GROUP	REV	ISSUE DATE
	TFT LCD PRODUCT	P0	2019.04.16

(3) Box label


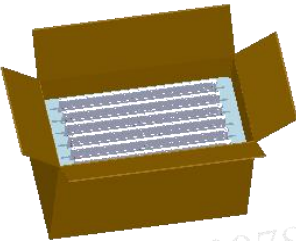



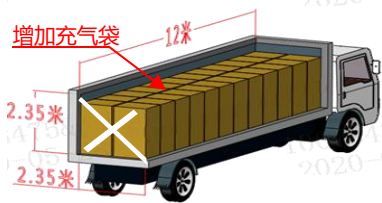


Serial number marked part needs to print, show as follows:

1. FG-CODE(Before 12 bit) : GV185FHM-N10
2. Product quantity
3. Box ID
4. Date
- 5.FG-Code After four---DM30

Total Size:110×55mm

SPEC. NUMBER S801-5126	SPEC TITLE XX产品 FG-code Product Specification	PAGE 29 OF 31
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BOE	PRODUCT GROUP	REV	ISSUE DATE
	TFT LCD PRODUCT	P0	2019.04.16
13.0 PACKING INFORMATION			
将 EPE Bottom 放入纸箱内		将LCM装入PE袋中，并沿产品边缘折叠，再将9pcs套有PE袋的LCM（PCB朝下）依次放入Bottom对应的卡槽内	
 Step 1		 Step 2	
将 EPE Cover 盖在 Bottom 上，再将纸箱用胶带封装 容量：9 LCM/Box，9 PE Bag/Box		将16ea 封装好的纸箱放到木托上，回字形排布 容量：144 LCM/Pallet	
 Step 3		 Step 4	
放置8ea纸护角，用缠绕裹包（≥3层）再用打包带“井”字形固定		厢车装载方式：两横摆放，单层码放 厢车装载量_12m：3168 pcs（22托）	
 Step 5		 Step 6	
SPEC. NUMBER S801-5126	SPEC TITLE XX产品 FG-code Product Specification		PAGE 30 OF 31