



RAYSTAR

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RFE430W-AWH-SNN

SPECIFICATION

CUSTOMER:

APPROVED BY	
PCB VERSION	
DATE	

FOR CUSTOMER USE ONLY

SALES BY	APPROVED BY	CHECKED BY	PREPARED BY

Release DATE:

TFT Display Inspection Specification: <https://www.raystar-optronics.com/download/products.htm>

Precaution in use of TFT module: <https://www.raystar-optronics.com/download/declaration.htm>

Revision History

VERSION	DATE	REVISED PAGE NO.	Note
0	2024/12/23		First issue
A	2025/01/03		Modify Reliability
B	2025/02/06		TFT FPC changed to direct out

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2.Summary

TFT 4.3" is a IPS transmissive type color active matrix TFT liquid crystal display that use amorphous silicon TFT as switching devices. This module is a composed of a TFT_LCD module, It is usually designed for industrial application and this module follows RoHs,

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3. General Specifications

- Size: 4.3 inch
- Dot Matrix: 480 x RGBx272(TFT) dots
- Module dimension: 105.5(W) x 67.2(H) x 2.95(D) mm
- Active area: 95.04 x 53.856 mm
- Pixel pitch: 0.198 x 0.198 mm
- LCD type: TFT, Normally Black, Transmissive
- Viewing Angle: 80/80/80/80
- Aspect Ratio: 16:9
- TFT Driver IC: NV3041A-01 or equivalent
- TFT Interface: 4 Line data QSPI
- Backlight Type: LED, Normally White
- With /Without TP: Without TP
- Surface: Glare

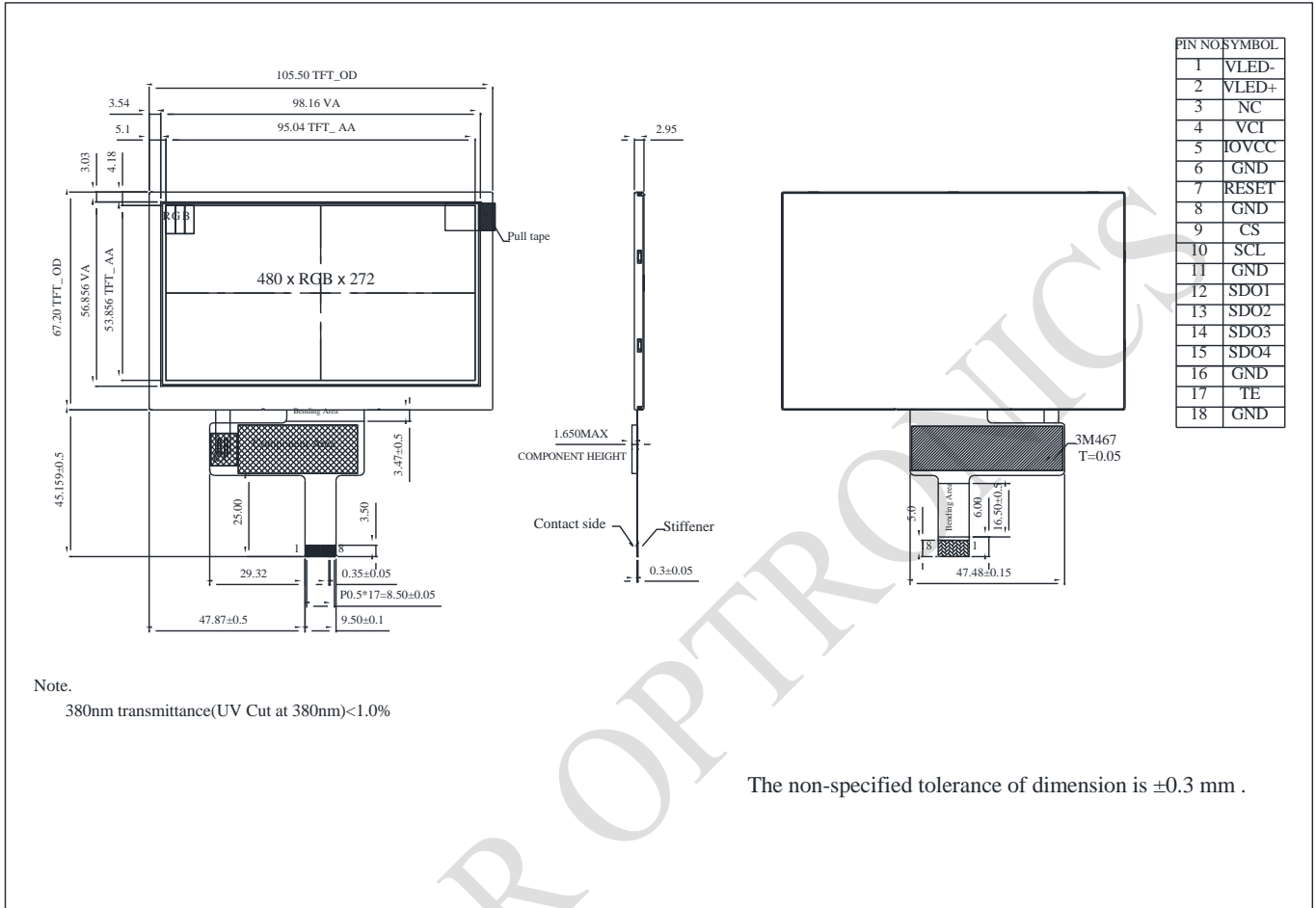
*Color tone slight changed by temperature and driving voltage.

4.Interface

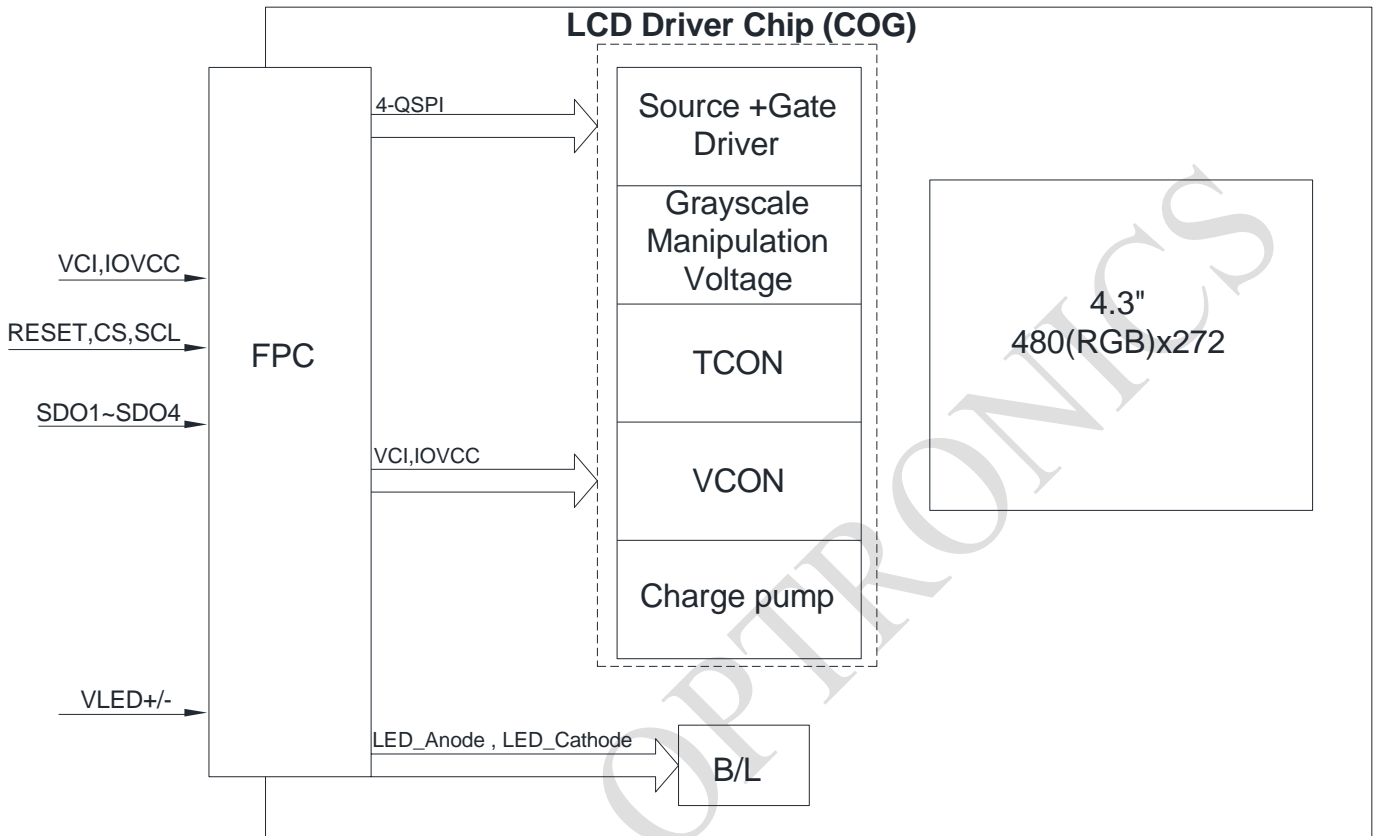
4.1. LCM PIN Definition

Pin	Symbol	Function	Remark
1	VLED-	Power for LED backlight cathode	
2	VLED+	Power for LED backlight anode	
3	NC	No connection	
4	VCI	Power supply for analog circuit	
5	IOVCC	Power supply for digital interface I/O pins	
6	GND	Ground	
7	RESET	Reset.	
8	GND	Ground	
9	CS	Chip select, internal pull high. (CSX)	
10	SCL	This pin is used serial interface clock	
11	GND	Ground	
12	SDO1	SPI bi-direction data pin (SDA)	
13	SDO2	Std-SPI(4 wire): command or parameter select. Quard-SPI: the second data pin (DCX)	
14	SDO3	The third pin of Quard-SPI (DB[2])	
15	SDO4	The fourth pin of Quard-SPI (DB[3])	
16	GND	Ground	
17	TE	Tearing effect output pin is used to synchronize MCU frame writing, activated by S/W command. When this pin is not activated (TE function OFF), this pin is GND level.	
18	GND	Ground	

5. Contour Drawing



6. Block Diagram



7. Absolute Maximum Ratings

Item	Symbol	Min	Typ	Max	Unit
Operating Temperature	TOP	-30	—	+80	□
Storage Temperature	TST	-30	—	+80	□

Note: Device is subject to be damaged permanently if stresses beyond those absolute maximum ratings listed above

- Temp. □60□, 90% RH MAX. Temp. > 60□, Absolute humidity shall be less than 90% RH at 60□

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8. Electrical Characteristics

8.1. Operating conditions:

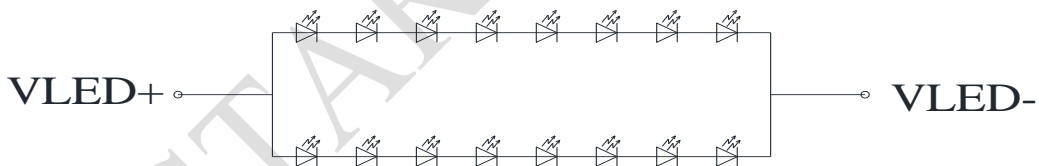
Item	Symbol	Min	Typ	Max	Unit	Remark
Power supply for analog circuit	VCI	3.0	3.3	3.6	V	
Power supply for logic circuit	IOVCC	1.65	1.8	3.3	V	VCI= 3.3V
Current for Driver	Ivci	-	30	45	mA	VCI= 3.3V
	IioVCC	-	20	30	mA	IOVCC=1.8V

Note 1 : This value is test for VCI=3.3V , Ta=25 °C only, to avoid power supply noise, please avoid using driving conditions close to min, or max value

8.2. LED driving conditions

Parameter	Symbol	Min.	Typ.	Max.	Unit	Remark
LED current	-	-	40	-	mA	-
Power Consumption	-	864	1024	1088	mW	-
LED voltage	VLED+	21.6	25.6	27.2	V	Note 1
LED Life Time	-	50,000	-	-	Hr	Note 2,3,4

Note 1 : There are 1 Groups LED



CIRCUIT DIAGRAM(8*2)

Note 2 : Ta = 25 °C

Note 3 : Brightness to be decreased to 50% of the initial value

Note 4 : The single LED lamp case

Signal	Symbol	Parameter	MIN	MAX	UNIT	Description
CSX	T _{CSS}	Chip Select Setup Time	10		ns	
	T _{CSH}	Chip Select Hold Time	30		ns	
	T _{CHW}	Chip Select "H" Pulse Width	30		ns	
SCL	T _{SCYCW}	Serial Clock Cycle(Write)	12.5		ns	
	T _{SHW}	S "L" "H" Pulse Width(Write)	T _{SCYCW} / 2		ns	
	T _{SLW}	S "L" "L" Pulse Width(Write)	T _{SCYCW} / 2		ns	
	T _{SCYCR}	Serial Clock Cycle(Read)	150		ns	
	T _{SHR}	S "L" "H" Pulse Width(Read)	T _{SCYCR} / 2		ns	
	T _{SLR}	S "L" "L" Pulse Width(Read)	T _{SCYCR} / 2		ns	
D/CX	T _{DCS}	D/CX Setup Time	5		ns	
	T _{DCH}	D/CX Hold Time	5		ns	
SDA(DIN) (DOUT)	T _{SDS}	Data Setup Time	5		ns	
	T _{SDH}	Data Hold Time	5		ns	
	T _{ACC}	Access Time	5		ns	
	T _{OH}	Output Disable Time	10		ns	CLmax=30pF CLmin=8pF

Table 2: 4 wire Serial Interface Characteristics

Note 1: IOVCC=1.8 V, VCI= 3.3V, GND=0V. Ta= 25 °C

Note 2: The input signal rise time and fall time (tr, tf) is specified at 15 ns or less. Logic high and low levels are specified as 10% and 90% of IOVCC for Input signals.

9.2. Display Date Writing Format

1.QSPI 4 lane RGB format(5-6-5)

<1> IM[2:0] = 3'b011
 <2> Register 3AH = 01h
 <3> Register 43H[0] = 1'b0

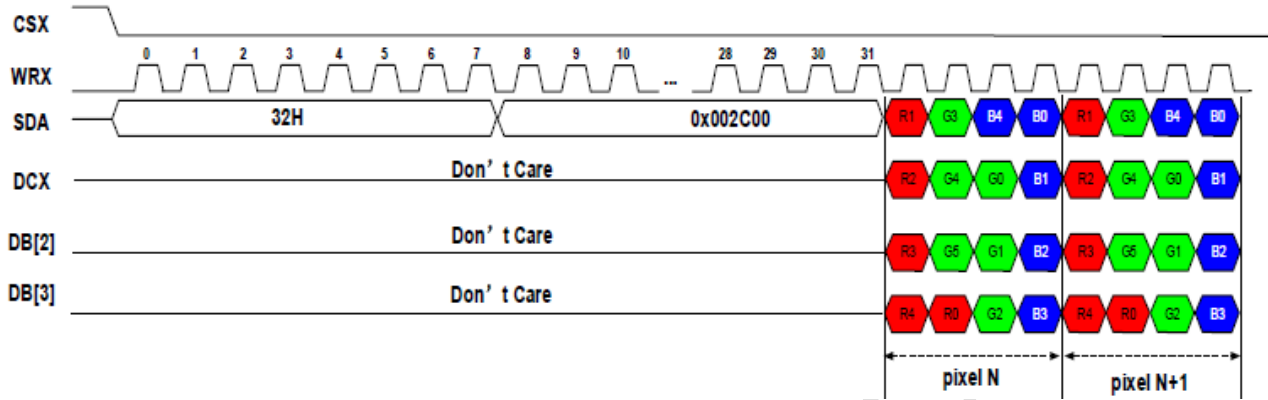


Figure 3

<1> IM[2:0] = 3'b011
 <2> Register 3AH = 01h
 <3> Register 43H[0] = 1'b1

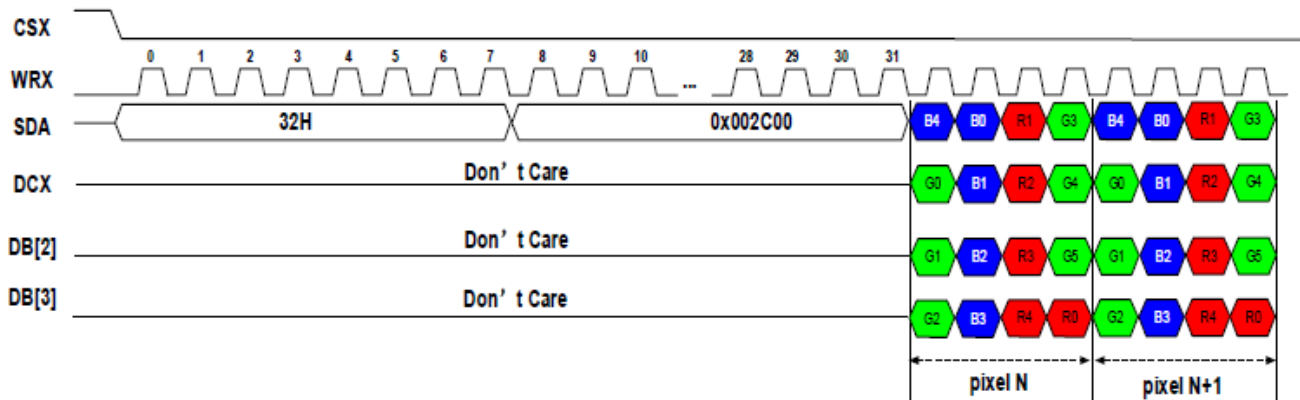


Figure 4

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<1> IM[2:0] = 3'b011
 <2> Register 3AH = 01h
 <3> Register 43H[0] = 1'b0

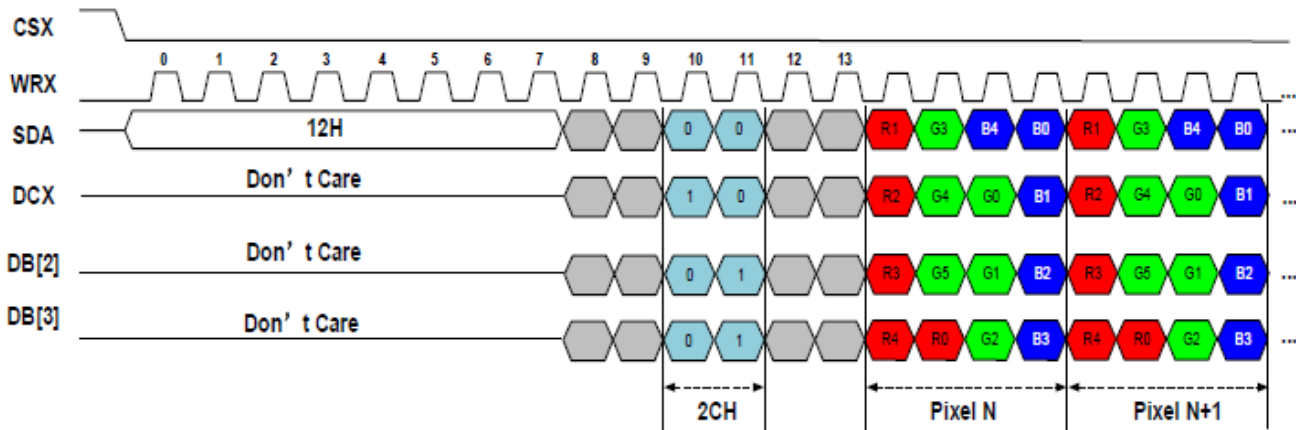


Figure 5

<1> IM[2:0] = 3'b011
 <2> Register 3AH = 01h
 <3> Register 43H[0] = 1'b1

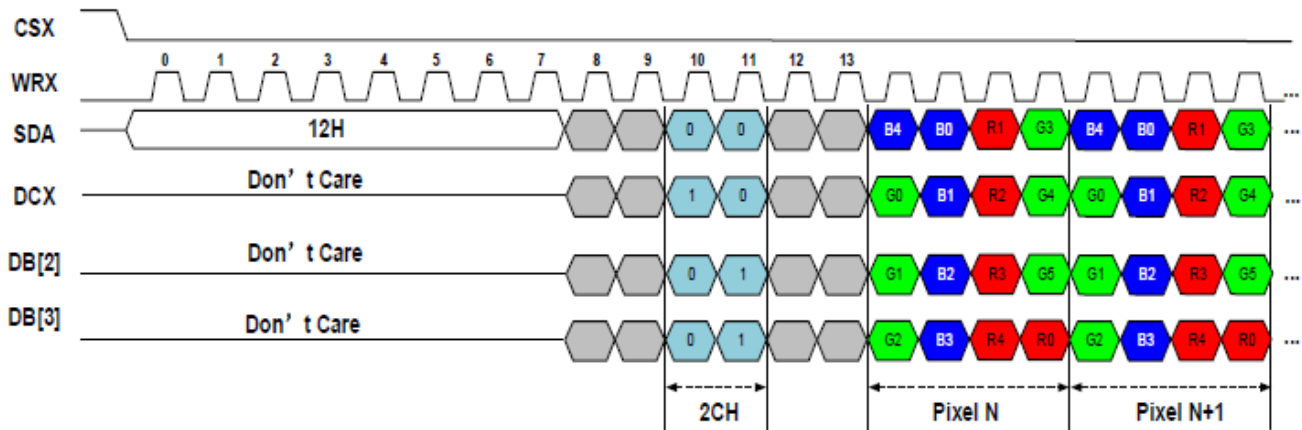


Figure 6

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2.QSPI 4 lane RGB format(6-6-6)

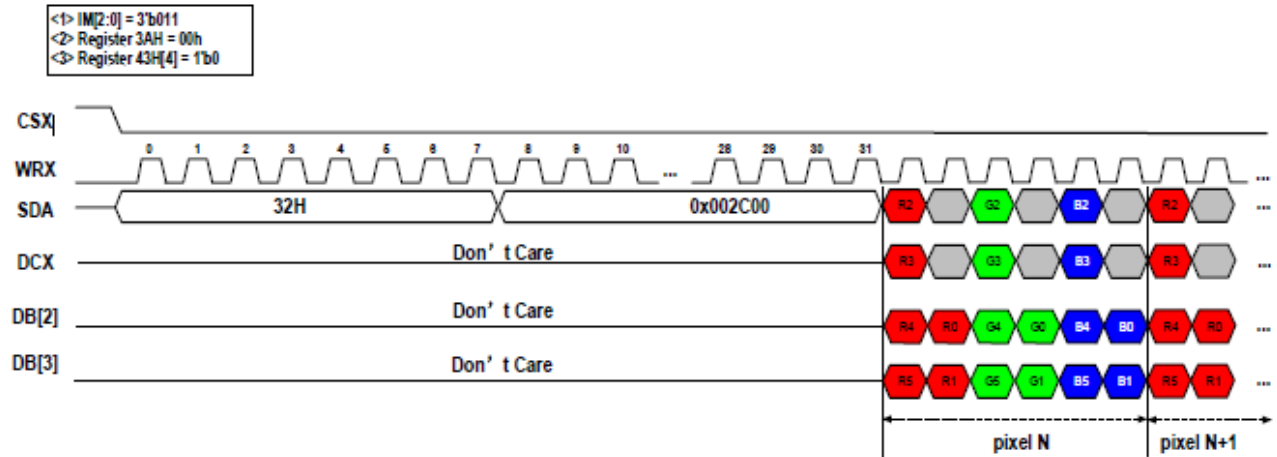


Figure 7

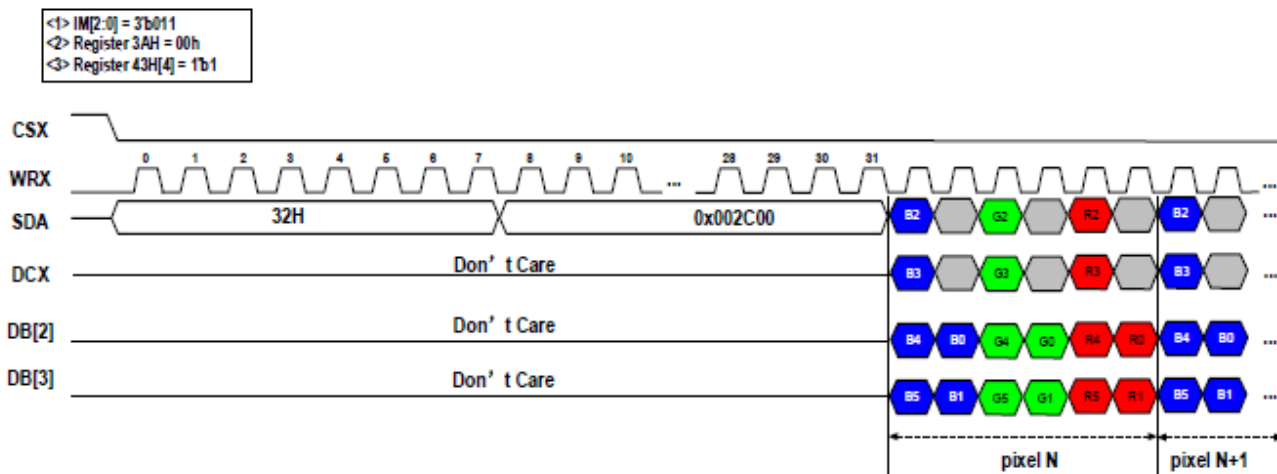


Figure 8

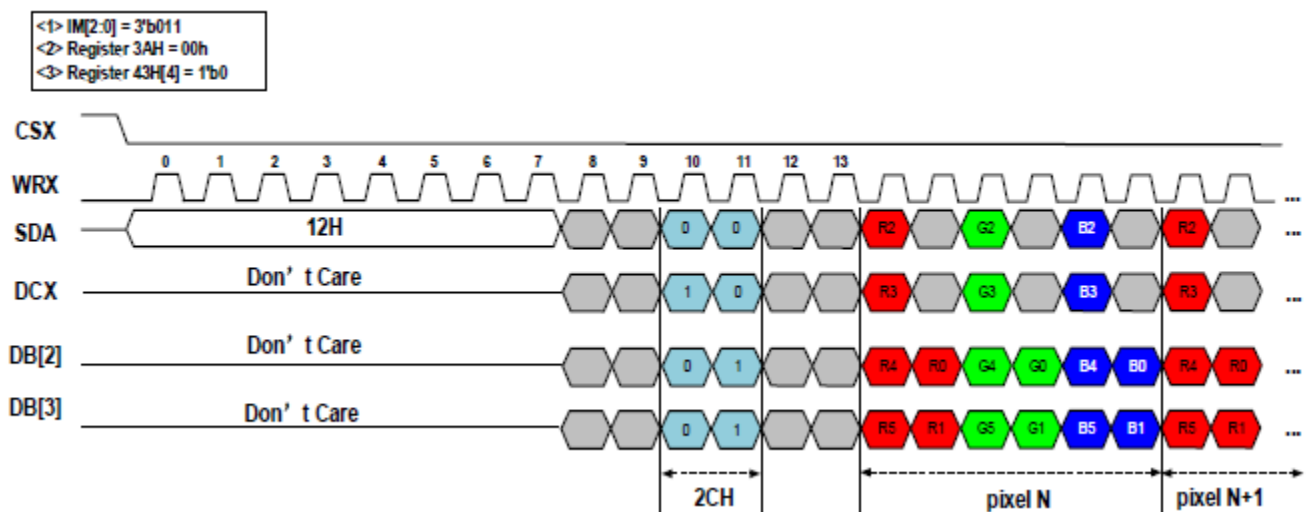


Figure 9

<1> IM[2:0] = 3'b011
 <2> Register 3AH = 00h
 <3> Register 43H[4] = 1'b1

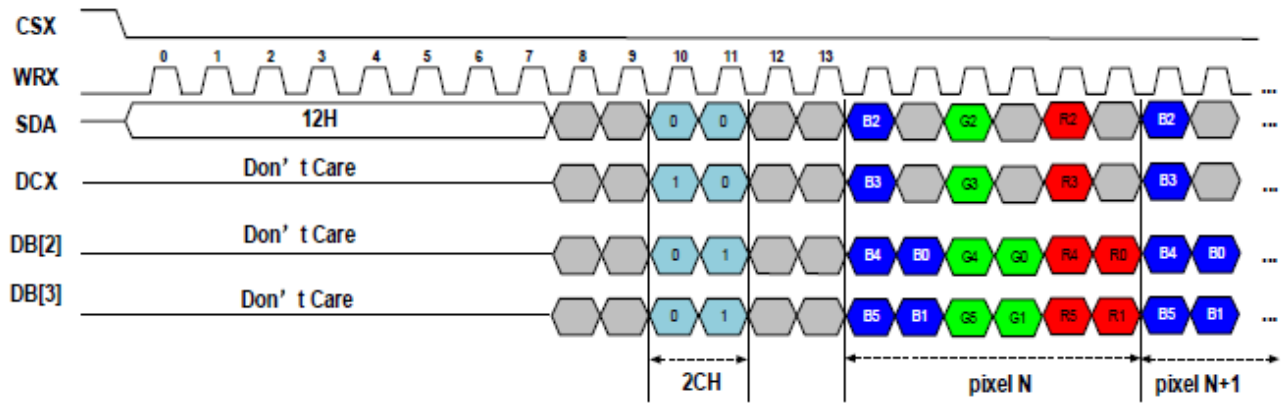


Figure 10

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10. Power sequence

10.1. Power On Sequence

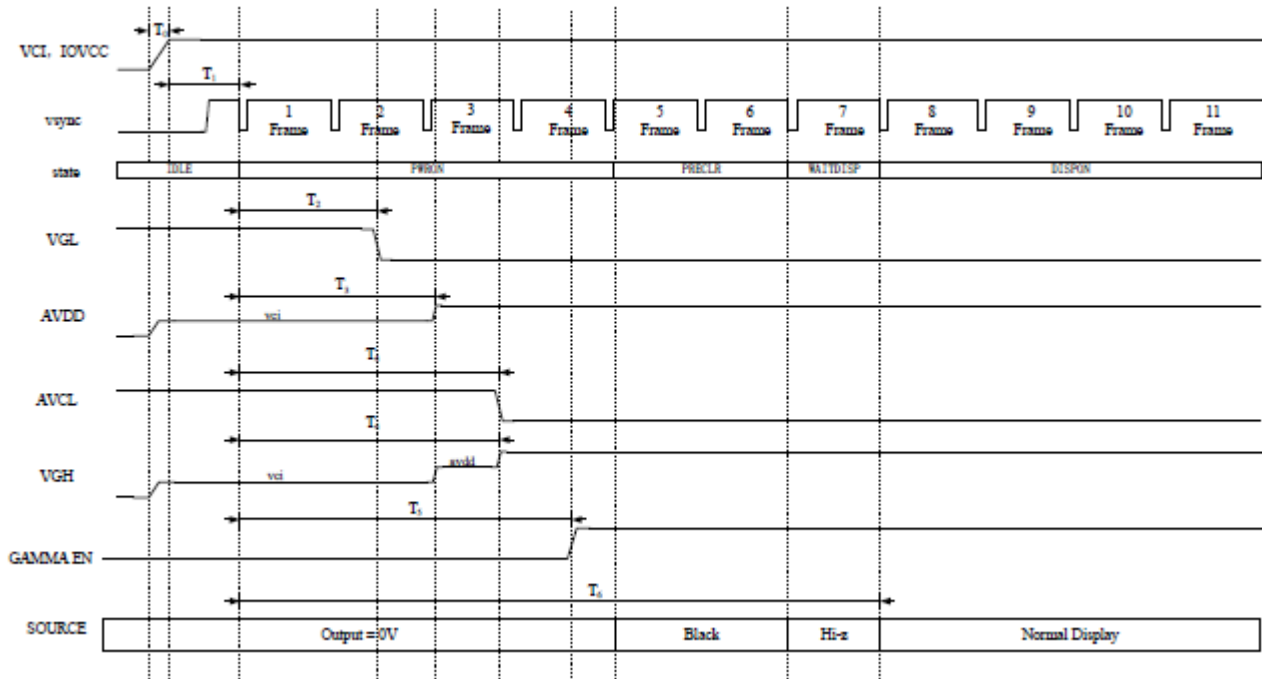


Figure 11

Symbol	Description	Min. Time	Unit
T ₀	Determined by the external power	0 ^{Note1}	ms
T ₁	Time from stable VCL, IOVCC (reset finished) set-up to Command "11H"	Decide by 11H command	ms
T ₂	Time from Command "11H" to VGL voltage stabilization	23	ms
T ₃	Time from Command "11H" to AVDD voltage stabilization	30.7	ms
T ₄	Time from Command "11H" to AVCL/VGH voltage stabilization	40.8	ms
T ₅	Gamma output enable	55.3	ms
T ₆	Source normal display	Decide by 29H command	ms

Table 3

Note1: Condition: AVDD and AVCL without stabilized capacitance

10.2. Power Off Sequence

When host sends "10H" command, State from WAIT_PD to PWRDOWN, in which power disabled sequentially.

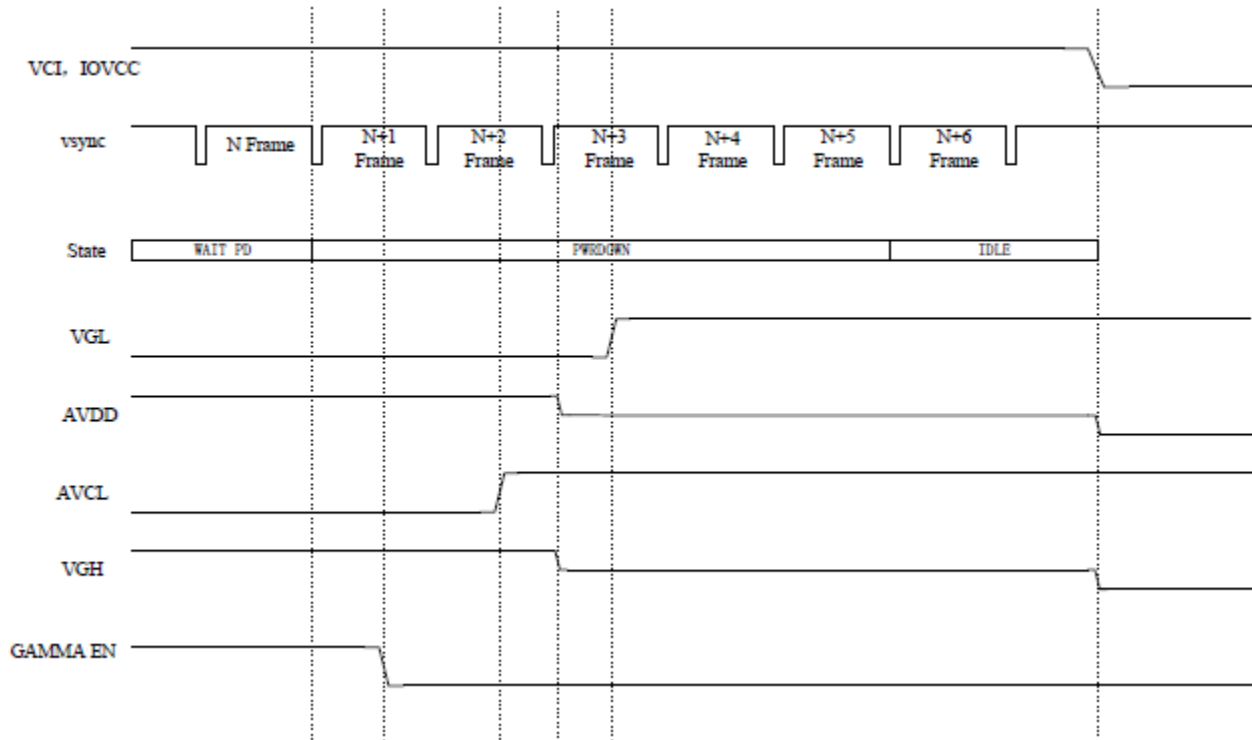


Figure 12

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11. Optical Characteristics

Item	Symbol	Condition.	Min	Typ.	Max.	Unit	Remark	
Response time	Tr+ Tf	$\theta=0^\circ$ 、 $\phi=0^\circ$	-	30	40	ms	Note 3	
Contrast ratio	CR	At optimized viewing angle	640	800	-	-	Note 4	
Color Chromaticity	White	Wx	$\theta=0^\circ$ 、 $\phi=0$	0.27	0.32	0.37	-	Note 2,6,7
		Wy		0.295	0.345	0.395	-	
Viewing angle	Hor.	Θ_R	CR \geq 10	70	80	-	Deg.	Note 1
		Θ_L		70	80	-		
	Ver.	Φ_T		70	80	-		
		Φ_B		70	80	-		
Brightness	-	-	850	1000	-	cd/m ²	Center of display	
Uniformity	(U)	-	75	-	-	%	Note 5	

Ta=25±2°C, IL=40mA

Note 1: Definition of viewing angle range

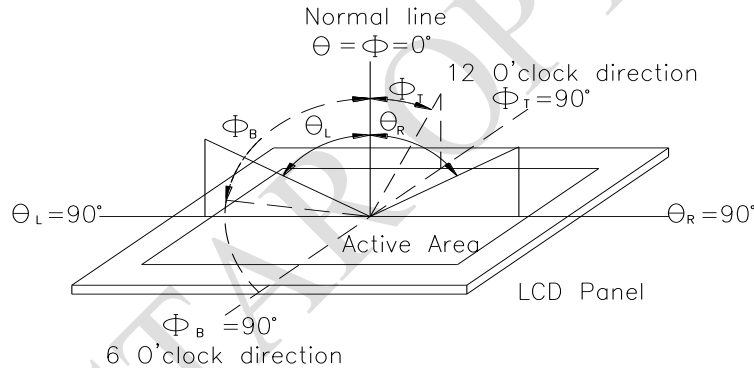


Fig. 11.1. Definition of viewing angle

Note 2: Test equipment setup:

After stabilizing and leaving the panel alone at a driven temperature for 10 minutes, the measurement should be executed. Measurement should be executed in a stable, windless, and dark room. Optical specifications are measured by Topcon BM-7orBM-5 luminance meter 1.0° field of view at a distance of 50cm and normal direction.

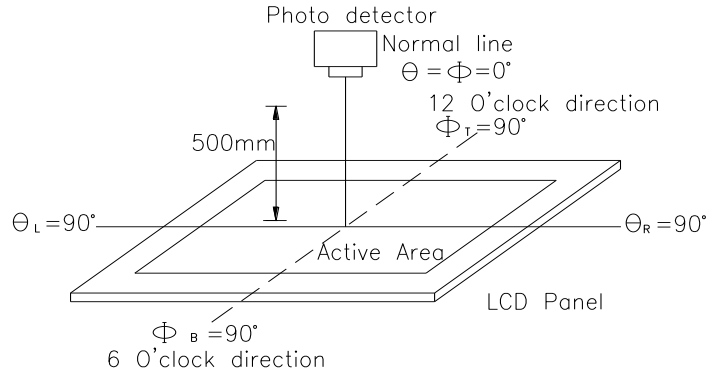
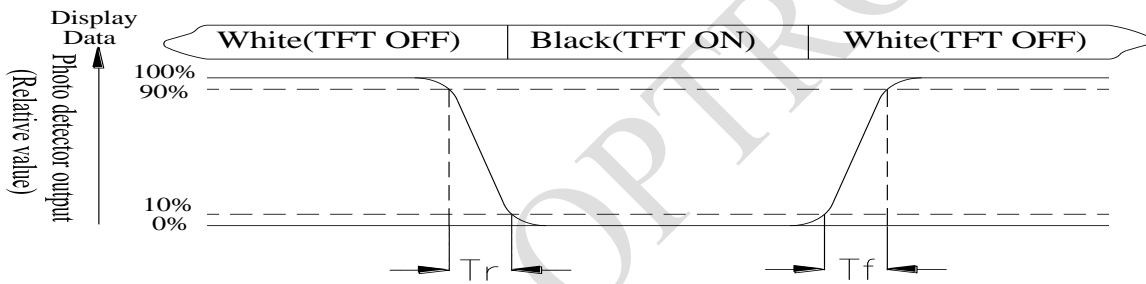


Fig. 11.2. Optical measurement system setup

Note 3: Definition of Response time:

The response time is defined as the LCD optical switching time interval between “White” state and “Black” state. Rise time, T_r , is the time between photo detector output intensity changed from 90% to 10%. And fall time, T_f , is the time between photo detector output intensity changed from 10% to 90%



Note 4: Definition of contrast ratio:

The contrast ratio is defined as the following expression.

$$\text{Contrast ratio (CR)} = \frac{\text{Luminance measured when LCD on the "White" state}}{\text{Luminance measured when LCD on the "Black" state}}$$

Note 5: Definition of Luminance Uniformity

Active area is divided into 9 measuring areas (reference the picture in below). Every measuring point is placed at the center of each measuring area.

Luminance Uniformity (U) = $L_{min}/L_{max} \times 100\%$

L = Active area length

W = Active area width

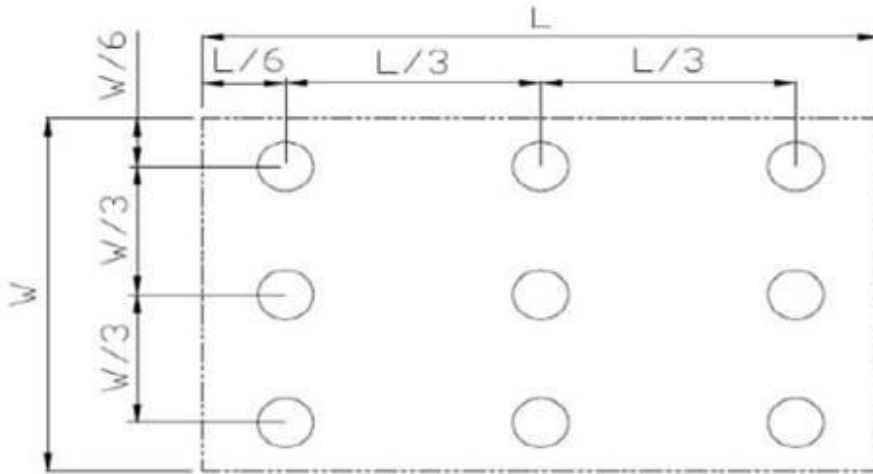


Fig 11.3. Definition of uniformity

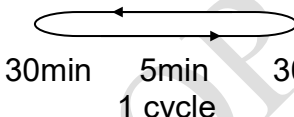
Note 6: Definition of color chromaticity (CIE 1931)

Color coordinates measured at the center point of LCD

Note 7: Measured at the center area of the panel when all the input terminals of LCD panel are electrically opened.

12. Reliability

Content of Reliability Test (Wide temperature, -30°C~80°C)

Environmental Test			
Test Item	Content of Test	Test Condition	Note
High Temperature storage	Endurance test applying the high storage temperature for a long time.	80°C 200hrs	2
Low Temperature storage	Endurance test applying the low storage temperature for a long time.	-30°C 200hrs	1,2
High Temperature Operation	Endurance test applying the electric stress (Voltage & Current) and the thermal stress to the element for a long time.	80°C 200hrs	2
Low Temperature Operation	Endurance test applying the electric stress under low temperature for a long time.	-30°C 200hrs	1,2
High Temperature/ Humidity Operation	The module should be allowed to stand at 60°C,90%RH max	60°C,90%RH 96hrs	1,2
Thermal shock resistance	<p>The sample should be allowed stand the following 10 cycles of operation</p> <p style="text-align: center;">-30°C 25°C 80°C</p>  <p style="text-align: center;">30min 5min 30min</p> <p style="text-align: center;">1 cycle</p>	-30°C/80°C 10 cycles	2
Vibration test	Endurance test applying the vibration during transportation and using.	Total fixed amplitude : 1.5mm Vibration Frequency : 10~55Hz One cycle 60 seconds to 3 directions of X,Y,Z for Each 15 minutes	3
Static electricity test	Endurance test applying the electric stress to the terminal.	VS=±6KV(contact), ±8KV(air), RS=330Ω CS=150pF 10 times	4

Note1: No dew condensation to be observed.

Note2: The function test shall be conducted after 4 hours storage at the normal Temperature and humidity after remove from the test chamber.

Note3: The packing have to including into the vibration testing.

Note4: Endurance test applying the electric stress to the finished product housing

13.Initial Code For Reference

```

void LCD_43W_Init(void)
{
    qspi_simulation_res = 1;
    delay_ms(80);
    qspi_simulation_res = 0;
    delay_ms(80);
    qspi_simulation_res = 1;
    delay_ms(150);

    //-----Start Initial Code -----//
    qspi_simulation_write_cmd(0xff);
    qspi_simulation_write_data(0xa5);
    qspi_simulation_write_cmd(0xE7); // TE_output_en
    qspi_simulation_write_data(0x10);
    qspi_simulation_write_cmd(0x35); // TE_interface_en
    qspi_simulation_write_data(0x01);
    qspi_simulation_write_cmd(0x3A);
    qspi_simulation_write_data(0x01); // 00---666//01--565
    qspi_simulation_write_cmd(0x40);
    qspi_simulation_write_data(0x01); // 01:IPS/00:TN
    qspi_simulation_write_cmd(0x41);
    qspi_simulation_write_data(0x03); // 01--8bit//03--16bit
    qspi_simulation_write_cmd(0x55);
    qspi_simulation_write_data(0x01);
    qspi_simulation_write_cmd(0x44); // VBP
    qspi_simulation_write_data(0x15); // 21
    qspi_simulation_write_cmd(0x45); // VFP
    qspi_simulation_write_data(0x15); // 21
    qspi_simulation_write_cmd(0x7d); // vdds_trim[2:0]
    qspi_simulation_write_data(0x03); // 2.07V

    qspi_simulation_write_cmd(0xc1); // avdd_clp_en avdd_clp[1:0] avcl_clp_en
    avcl_clp[1:0]
    qspi_simulation_write_data(0xab); // 6.74V/-5.16V
    qspi_simulation_write_cmd(0xc2); // vgh_clp_en vgl_clp[2:0]
    qspi_simulation_write_data(0x17);
    qspi_simulation_write_cmd(0xc3); // vgl_clp_en vgl_clp[2:0]
    qspi_simulation_write_data(0x10); //-10.951
    qspi_simulation_write_cmd(0xc6); // avdd_ratio_sel avcl_ratio_sel vgh_ratio_sel[1:0]
    vgl_ratio_sel[1:0]
    qspi_simulation_write_data(0x3a); // 35

    qspi_simulation_write_cmd(0xc7); // mv_clk_sel[1:0] avdd_clk_sel[1:0] avcl_clk_sel[1:0]
    qspi_simulation_write_data(0x25); // 2e
    qspi_simulation_write_cmd(0xc8); // VGL_CLK_sel
    qspi_simulation_write_data(0x00);

```

```

qspi_simulation_write_cmd(0x7a); // user_vgsp
qspi_simulation_write_data(0x67); // 5f
qspi_simulation_write_cmd(0x6f); // user_gvdd
qspi_simulation_write_data(0x3f); // 3f
qspi_simulation_write_cmd(0x78); // user_gvcl
qspi_simulation_write_data(0x37); // 4a

qspi_simulation_write_cmd(0x73); // osc
qspi_simulation_write_data(0x08);
qspi_simulation_write_cmd(0x74);
qspi_simulation_write_data(0x12);
qspi_simulation_write_cmd(0xc9);
qspi_simulation_write_data(0x00);
qspi_simulation_write_cmd(0x67);
qspi_simulation_write_data(0x11);
// gate_ed
qspi_simulation_write_cmd(0x51); // gate_st_o[7:0]
// qspi_simulation_write_data(0x4b);
qspi_simulation_write_data(0x20);
qspi_simulation_write_cmd(0x52); // gate_ed_o[7:0]
qspi_simulation_write_data(0x7c);
qspi_simulation_write_cmd(0x53); // gate_st_e[7:0]
// qspi_simulation_write_data(0x45);
qspi_simulation_write_data(0x1c);
qspi_simulation_write_cmd(0x54); // gate_ed_e[7:0]
qspi_simulation_write_data(0x77);

qspi_simulation_write_cmd(0x46); // fsm_hbp_o[5:0]
qspi_simulation_write_data(0x0a);
qspi_simulation_write_cmd(0x47); // fsm_hfp_o[5:0]
qspi_simulation_write_data(0x2a);
qspi_simulation_write_cmd(0x48); // fsm_hbp_e[5:0]
qspi_simulation_write_data(0x0a);
qspi_simulation_write_cmd(0x49); // fsm_hfp_e[5:0]
qspi_simulation_write_data(0x1a);
qspi_simulation_write_cmd(0x56); // src_ld_wd[1:0] src_ld_st[5:0]
qspi_simulation_write_data(0x43);

qspi_simulation_write_cmd(0x57); // pn_cs_en src_cs_st[5:0]
qspi_simulation_write_data(0x42);
qspi_simulation_write_cmd(0x58); // src_cs_p_wd[6:0]
qspi_simulation_write_data(0x3c);
qspi_simulation_write_cmd(0x59); // src_cs_n_wd[6:0]
qspi_simulation_write_data(0x64);
qspi_simulation_write_cmd(0x5a); // src_pchg_st_o[6:0]
qspi_simulation_write_data(0x41);
qspi_simulation_write_cmd(0x5b); // src_pchg_wd_o[6:0]
qspi_simulation_write_data(0x3c);

```

```

qspi_simulation_write_cmd(0x5c); // src_pchg_st_e[6:0]
qspi_simulation_write_data(0x02);
qspi_simulation_write_cmd(0x5d); // src_pchg_wd_e[6:0]
qspi_simulation_write_data(0x3c);
qspi_simulation_write_cmd(0x5e); // src_pol_sw[7:0]
qspi_simulation_write_data(0x1f);
qspi_simulation_write_cmd(0x60); // src_op_st_o[7:0]
qspi_simulation_write_data(0x80);
qspi_simulation_write_cmd(0x61); // src_op_st_e[7:0]
qspi_simulation_write_data(0x3f);
qspi_simulation_write_cmd(0x62); // src_op_ed_o[9:8] src_op_ed_e[9:8]
qspi_simulation_write_data(0x21);
qspi_simulation_write_cmd(0x63); // src_op_ed_o[7:0]
qspi_simulation_write_data(0x07);
qspi_simulation_write_cmd(0x64); // src_op_ed_e[7:0]
qspi_simulation_write_data(0xe0);
qspi_simulation_write_cmd(0x65); // chopper
qspi_simulation_write_data(0x01); // 01-A2,02--A1
qspi_simulation_write_cmd(0xca); // avdd_mux_st_o[7:0]
qspi_simulation_write_data(0x20);
qspi_simulation_write_cmd(0xcb); // avdd_mux_ed_o[7:0]
qspi_simulation_write_data(0x52);
qspi_simulation_write_cmd(0xcc); // avdd_mux_st_e[7:0]
qspi_simulation_write_data(0x10);
qspi_simulation_write_cmd(0xcd); // avdd_mux_ed_e[7:0]
qspi_simulation_write_data(0x42);
qspi_simulation_write_cmd(0xd0); // avcl_mux_st_o[7:0]

qspi_simulation_write_data(0x20);
qspi_simulation_write_cmd(0xd1); // avcl_mux_ed_o[7:0]
qspi_simulation_write_data(0x52);
qspi_simulation_write_cmd(0xd2); // avcl_mux_st_e[7:0]
qspi_simulation_write_data(0x10);
qspi_simulation_write_cmd(0xd3); // avcl_mux_ed_e[7:0]
qspi_simulation_write_data(0x42);
qspi_simulation_write_cmd(0xd4); // vgh_mux_st[7:0]
qspi_simulation_write_data(0x0a);
qspi_simulation_write_cmd(0xd5); // vgh_mux_ed[7:0]
qspi_simulation_write_data(0x32);
qspi_simulation_write_cmd(0xe5); // DVDD_TRIM
qspi_simulation_write_data(0x06); // 1.65 05
qspi_simulation_write_cmd(0xe6); // ESD_CTRL
qspi_simulation_write_data(0x00);
qspi_simulation_write_cmd(0x6e); // LVD_en
qspi_simulation_write_data(0x14);
// gamma 01 20240416
qspi_simulation_write_cmd(0x80); // gam_vrp0 63
qspi_simulation_write_data(0x08);

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qspi_simulation_write_cmd(0xA0); // gam_VRN0 63
qspi_simulation_write_data(0x08);
qspi_simulation_write_cmd(0x81); // gam_vrp1 62
qspi_simulation_write_data(0x09);
qspi_simulation_write_cmd(0xA1); // gam_VRN1 62-
qspi_simulation_write_data(0x08);
qspi_simulation_write_cmd(0x82); // gam_vrp2 61
qspi_simulation_write_data(0x07);
qspi_simulation_write_cmd(0xA2); // gam_VRN2 61-
qspi_simulation_write_data(0x06);
qspi_simulation_write_cmd(0x83); // gam_vrp3 2
qspi_simulation_write_data(0x37);
qspi_simulation_write_cmd(0xA3); // gam_VRN3 2-
qspi_simulation_write_data(0x37);
qspi_simulation_write_cmd(0x84); // gam_vrp4 1
qspi_simulation_write_data(0x38);
qspi_simulation_write_cmd(0xA4); // gam_VRN4 1-
qspi_simulation_write_data(0x38);
qspi_simulation_write_cmd(0x85); // gam_vrp5 0
qspi_simulation_write_data(0x3f); // 2a~39-0.43
qspi_simulation_write_cmd(0xA5); // gam_VRN5 0-
qspi_simulation_write_data(0x3f);

qspi_simulation_write_cmd(0x86); // gam_prp0 50
qspi_simulation_write_data(0x27); // 33
qspi_simulation_write_cmd(0xA6); // gam_PRN0 50-
qspi_simulation_write_data(0x28); // 2a

qspi_simulation_write_cmd(0x87); // gam_prp1 14
qspi_simulation_write_data(0x3b); // 2d
qspi_simulation_write_cmd(0xA7); // gam_PRN1 14-
qspi_simulation_write_data(0x3b); // 2d
qspi_simulation_write_cmd(0x88); // gam_pkp0 59
qspi_simulation_write_data(0x07); // 0b
qspi_simulation_write_cmd(0xA8); // gam_PKN0 59-
qspi_simulation_write_data(0x07); // 0b
qspi_simulation_write_cmd(0x89); // gam_pkp1 57
qspi_simulation_write_data(0x0e); // 14
qspi_simulation_write_cmd(0xA9); // gam_PKN1 57-
qspi_simulation_write_data(0x0e); // 14
qspi_simulation_write_cmd(0x8a); // gam_pkp2 54
qspi_simulation_write_data(0x16); // 1a
qspi_simulation_write_cmd(0xAa); // gam_PKN2 54-
qspi_simulation_write_data(0x17); // 1a
qspi_simulation_write_cmd(0x8b); // gam_PKP3 44
qspi_simulation_write_data(0x0f);
qspi_simulation_write_cmd(0xAb); // gam_PKN3 44-
qspi_simulation_write_data(0x0e);

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qspi_simulation_write_cmd(0x8c); // gam_PKP4 38
qspi_simulation_write_data(0x14);
qspi_simulation_write_cmd(0xAc); // gam_PKN4 38-
qspi_simulation_write_data(0x14);
qspi_simulation_write_cmd(0x8d); // gam_PKP5 32
qspi_simulation_write_data(0x12);
qspi_simulation_write_cmd(0xAd); // gam_PKN5 32-
qspi_simulation_write_data(0x12);
qspi_simulation_write_cmd(0x8e); // gam_PKP6 26
qspi_simulation_write_data(0x10); // 16
qspi_simulation_write_cmd(0xAe); // gam_PKN6 26-
qspi_simulation_write_data(0x10); // 13
qspi_simulation_write_cmd(0x8f); // gam_PKP7 20
qspi_simulation_write_data(0x13); // 1c
qspi_simulation_write_cmd(0xAf); // gam_PKN7 20-
qspi_simulation_write_data(0x12); // 0a
qspi_simulation_write_cmd(0x90); // gam_PKP8 10
qspi_simulation_write_data(0x05);
qspi_simulation_write_cmd(0xB0); // gam_PKN8 10-
qspi_simulation_write_data(0x04);
qspi_simulation_write_cmd(0x91); // gam_PKP9 6
qspi_simulation_write_data(0x0e); // 0e
qspi_simulation_write_cmd(0xB1); // gam_PKN9 6-
qspi_simulation_write_data(0x0e); // 0e
qspi_simulation_write_cmd(0x92); // gam_PKP10 4
qspi_simulation_write_data(0x14);
qspi_simulation_write_cmd(0xB2); // gam_PKN10 4-
qspi_simulation_write_data(0x14);

qspi_simulation_write_cmd(0x11); // exit sleep
qspi_simulation_write_data(0x00);
delay_ms(200);
qspi_simulation_write_cmd(0x29); // display on
qspi_simulation_write_data(0x00);
delay_ms(120);

```

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}

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LCM Sample Estimate Feedback Sheet

Module Number : _____

1 、 Panel Specification :

1. Panel Type :	<input type="checkbox"/> Pass	<input type="checkbox"/> NG , _____
2. View Direction :	<input type="checkbox"/> Pass	<input type="checkbox"/> NG , _____
3. Numbers of Dots :	<input type="checkbox"/> Pass	<input type="checkbox"/> NG , _____
4. View Area :	<input type="checkbox"/> Pass	<input type="checkbox"/> NG , _____
5. Active Area :	<input type="checkbox"/> Pass	<input type="checkbox"/> NG , _____
6. Operating Temperature :	<input type="checkbox"/> Pass	<input type="checkbox"/> NG , _____
7. Storage Temperature :	<input type="checkbox"/> Pass	<input type="checkbox"/> NG , _____
8. Others :	_____	

2 、 Mechanical Specification :

1. PCB Size :	<input type="checkbox"/> Pass	<input type="checkbox"/> NG , _____
2. Frame Size :	<input type="checkbox"/> Pass	<input type="checkbox"/> NG , _____
3. Material of Frame :	<input type="checkbox"/> Pass	<input type="checkbox"/> NG , _____
4. Connector Position :	<input type="checkbox"/> Pass	<input type="checkbox"/> NG , _____
5. Fix Hole Position :	<input type="checkbox"/> Pass	<input type="checkbox"/> NG , _____
6. Backlight Position :	<input type="checkbox"/> Pass	<input type="checkbox"/> NG , _____
7. Thickness of PCB :	<input type="checkbox"/> Pass	<input type="checkbox"/> NG , _____
8. Height of Frame to PCB :	<input type="checkbox"/> Pass	<input type="checkbox"/> NG , _____
9. Height of Module :	<input type="checkbox"/> Pass	<input type="checkbox"/> NG , _____
10. Others :	<input type="checkbox"/> Pass	<input type="checkbox"/> NG , _____

3 、 Relative Hole Size :

1. Pitch of Connector :	<input type="checkbox"/> Pass	<input type="checkbox"/> NG , _____
2. Hole size of Connector :	<input type="checkbox"/> Pass	<input type="checkbox"/> NG , _____
3. Mounting Hole size :	<input type="checkbox"/> Pass	<input type="checkbox"/> NG , _____
4. Mounting Hole Type :	<input type="checkbox"/> Pass	<input type="checkbox"/> NG , _____
5. Others :	<input type="checkbox"/> Pass	<input type="checkbox"/> NG , _____

4 、 Backlight Specification :

1. B/L Type :	<input type="checkbox"/> Pass	<input type="checkbox"/> NG , _____
2. B/L Color :	<input type="checkbox"/> Pass	<input type="checkbox"/> NG , _____
3. B/L Driving Voltage (Reference for LED Type) :	<input type="checkbox"/> Pass	<input type="checkbox"/> NG , _____
4. B/L Driving Current :	<input type="checkbox"/> Pass	<input type="checkbox"/> NG , _____
5. Brightness of B/L :	<input type="checkbox"/> Pass	<input type="checkbox"/> NG , _____
6. B/L Solder Method :	<input type="checkbox"/> Pass	<input type="checkbox"/> NG , _____
7. Others :	<input type="checkbox"/> Pass	<input type="checkbox"/> NG , _____

>> Go to page 2 <<

Module Number : _____

5、Electronic Characteristics of Module :

1.Input Voltage :	<input type="checkbox"/> Pass	<input type="checkbox"/> NG , _____
2.Supply Current :	<input type="checkbox"/> Pass	<input type="checkbox"/> NG , _____
3.Driving Voltage for LCD :	<input type="checkbox"/> Pass	<input type="checkbox"/> NG , _____
4.Contrast for LCD :	<input type="checkbox"/> Pass	<input type="checkbox"/> NG , _____
5.B/L Driving Method :	<input type="checkbox"/> Pass	<input type="checkbox"/> NG , _____
6.Negative Voltage Output :	<input type="checkbox"/> Pass	<input type="checkbox"/> NG , _____
7.Interface Function :	<input type="checkbox"/> Pass	<input type="checkbox"/> NG , _____
8.LCD Uniformity :	<input type="checkbox"/> Pass	<input type="checkbox"/> NG , _____
9.ESD test :	<input type="checkbox"/> Pass	<input type="checkbox"/> NG , _____
10.Others :	<input type="checkbox"/> Pass	<input type="checkbox"/> NG , _____

6、Summary :

Sales signature : _____

Customer Signature : _____

Date : / /