深圳市勋瑞光电科技有限公司
Xunrui Shenzhen Optoelectronics Technology Co., Ltd.

PRODUCT SPECIFICATION

MODEL: H101BWX40I3502-CT9

<◇> PRELIMINARY SPECIFICATION

<◆> APPROVAL SPECIFICATION

CUSTOMER
APPROVED BY
DATE:

DESIGNED	CHECKED	APPROVED

PREPAREDBY:

1 Document revision history :

DOCUMENT REVISION	DATE	DESCRIPTION	PREPARED BY	APPROVED BY

1.2 FEATURES:

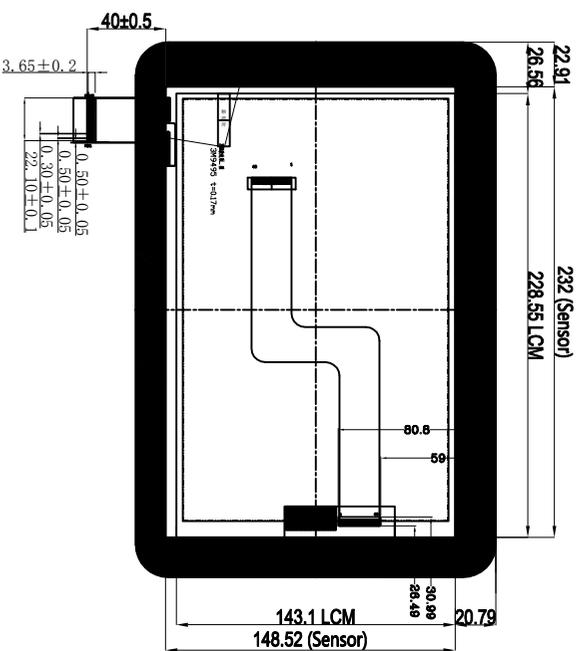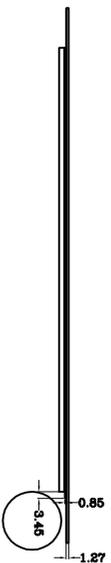| No.	Item	Specification	Unit
1	Panel Size	10.1"	inch
2	Number of Pixels	800×RGB (3) ×1280	pixels
3	Active Area	135.36(V)X216.576(H)	mm
4	Pixel Pitch	0.1692(H)X0.1692(V)	mm
5	Outline Dimension	275.4(W)X184.7(H)X4.92(D) (LCM+CTP)	mm
6	Number of Colors	-	-
7	Display Mode	Normally Black IPS	-
8	Viewing Direction	ALL Viewing Direction	-
9	Display Format	RGB vertical stripe	-
10	Luminance (cd/m^2)	300 (TYP.)	nit
11	Contrast Ratio	800(TYP.)	
12	Surface Treatment	Anti-Glare	-
13	Interface	MIPI	-
14	Backlight	White LED	-
15	NTSC	60(type)	%
16	Operation Temperature	-20~70	℃
17	Storage Temperature	-30~80	℃

2. Dimensional Outline

3. PIN DESCRIPTION

Pin No.	Symbol	Type	Function
1	NC	-	NC
2	VDDIN	P	Power supply 3.3V
3	VDDIN	P	Power supply 3.3V
4	GND	P	Ground
5	RESET		Device reset signal
6	NC	-	No connection
7	GND	P	Ground
8	MIPI-0N	I	MIPI Date negative signal
9	MIPI-0P	I	MIPI Date Positive signal
10	GND	P	Ground
11	MIPI-1N	I	MIPI Date negative signal
12	MIPI-1P	I	MIPI Date Positive signal
13	GND	P	Ground
14	MIPI-CLKN	I	MIPI clock- negative signal
15	MIPI-CLKP	I	MIPI clock+ Positive signal
16	GND	P	Ground
17	MIPI-2N	I	MIPI Date negative signal
18	MIPI-2P	I	MIPI Date Positive signal
19	GND	P	Ground
20	MIPI-3N	I	MIPI Date negative signal
21	MIPI-3P	I	MIPI Date Positive signal
22	GND	P	Ground
23	NC	-	No connection
24	NC	-	No connection
25	GND	P	Ground
26	NC	-	No connection
27	NC	-	No connection
28	NC	-	No connection
29	NC	-	No connection
30	GND	P	Ground
31	LED-	P	Power for LED backlight (Cathode)
32	LED-	P	Power for LED backlight (Cathode)
33	NC	-	No connection
34	NC	-	No connection
35	NC	-	No connection
36	NC	-	No connection
37	NC	-	No connection
38	NC	-	No connection
39	LED+	P	Power for LED backlight (Anode)
40	LED+	P	Power for LED backlight (Anode)

4. Electrical Characteristics

4-1 TFT LCD Module Operating Conditions

Item	Symbol	Min	Type	Max	Uint	NOTE
Supply Voltage	VDD	3.0	3.3	3.6	V	
Power IC provides voltage	AVEE	-6	-5	-4.5	V	
	AVDD	4.5	5.5	6.0	V	
Driver IC provides voltage internally	调整对比度，调大颜色变深，调小颜色变浅					
	VGH	9	18	20	V	
	VGL	-20	-10	-9	V	
	VIH	-20	-	VCC	V	
	VIL	-30	-	0.3VCC	V	

LED back light specification (per a chip)

4.2 BACK LIGHT UNIT

Ta=25℃

Item	Symbol	Min.	Typ.	Max.	Unit	Remark
LED current	ILED		180		mA	27LEDS
Forward voltage	VF	8.4	9.0	9.6	V	IF=180mA 21LEDS
Reverse current	IR			50	µA	VR=3V,1LED
Power dissipation	Pd		1890		mW	27LEDS
Peak forward current	IFP		20		mA	1LED
Reverse Voltage	VR		3		V	1LED

4.5.1 Internal Circuit Diagr am
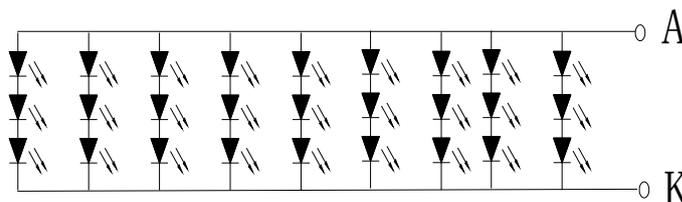
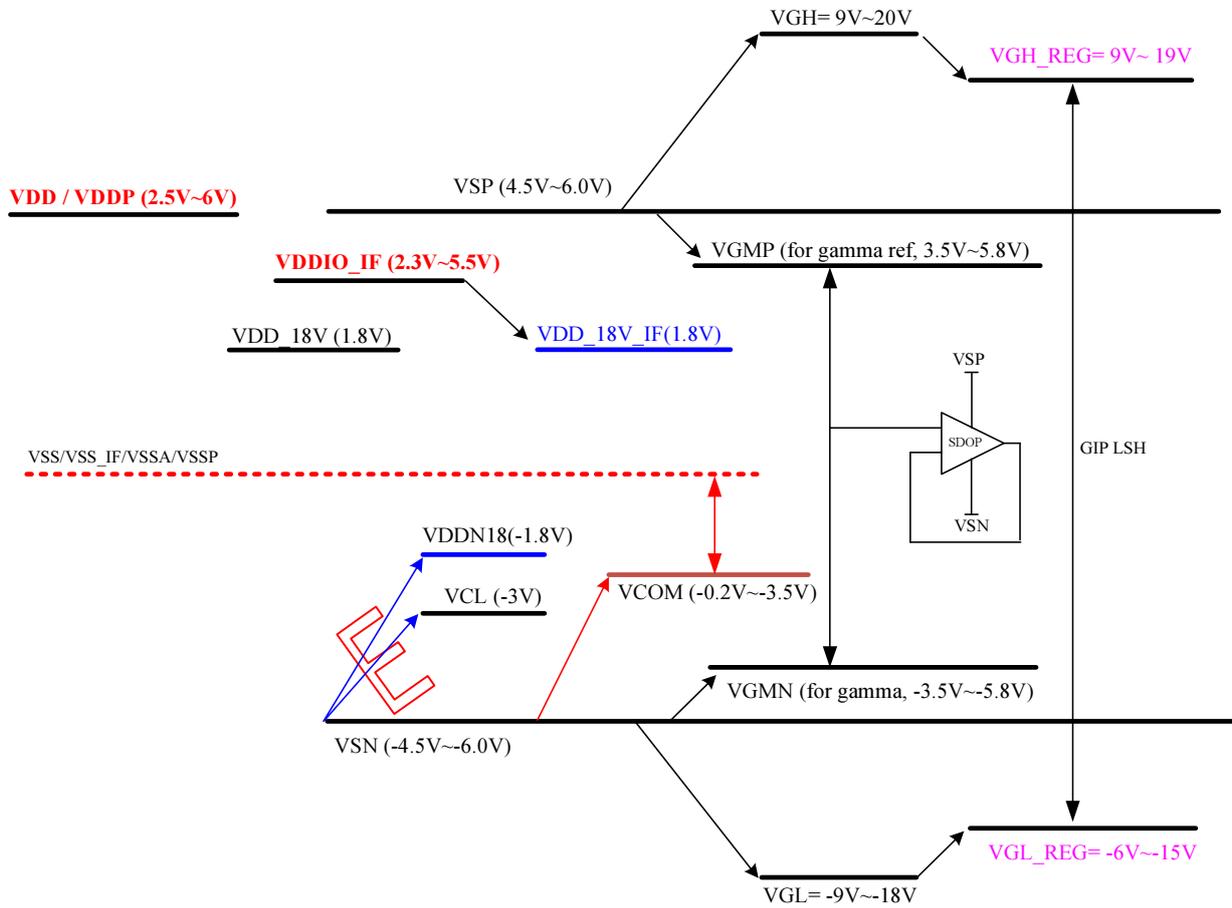## 3X9=27LED 9.0V   20X9=180mA

4-2 Power Generation

4.2 Power Generation

5. Power on/off sequence

5.1 Power on sequence PMODE[1:0]=00b
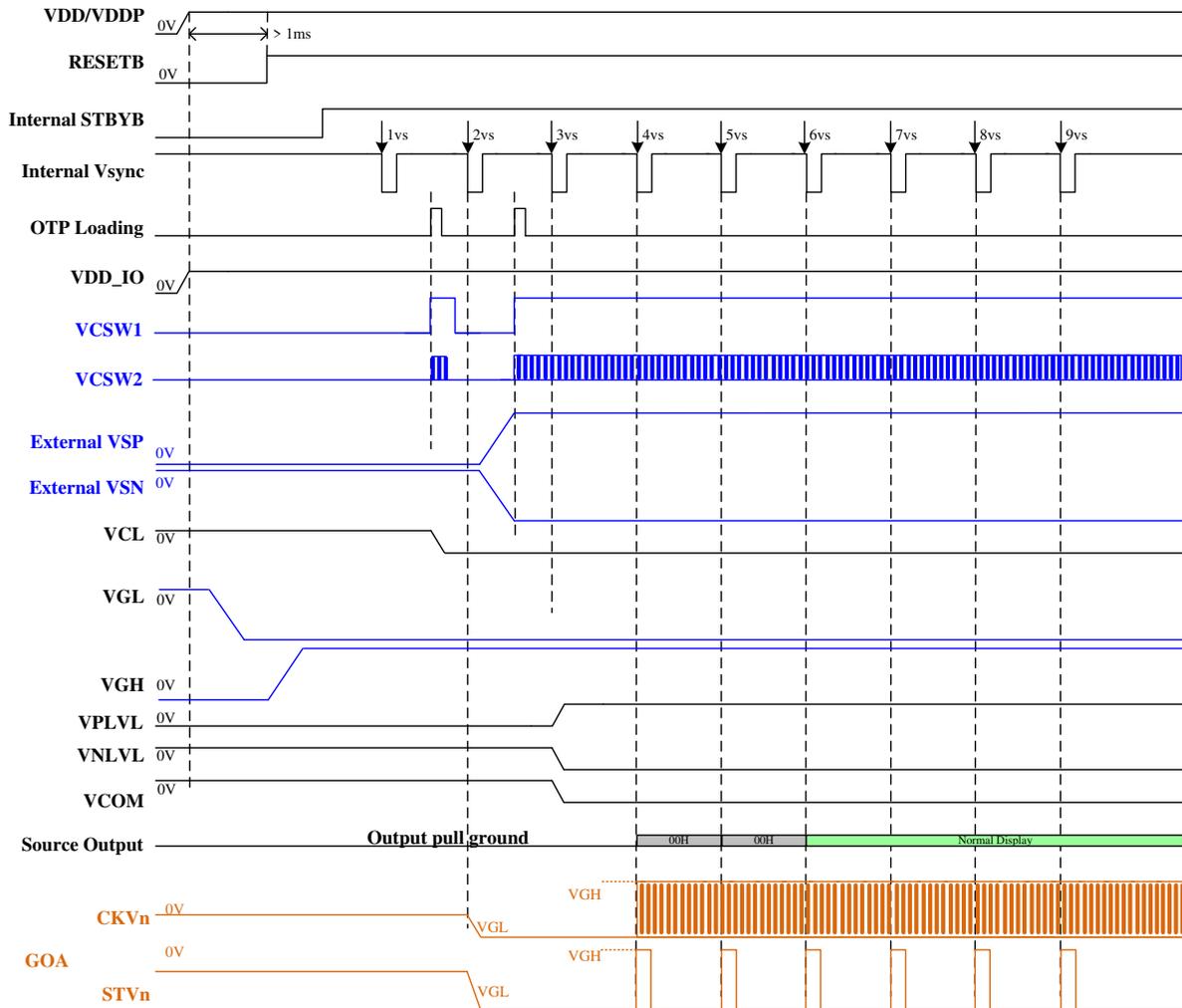
JD5001/2 VSP/VSN
External VGH/VGL

Figure 5.1: Power on sequence with PMODE[1:0]=00b

5.2 Power off sequence PMODE[1:0]=00b

JD5001/2 VSP/VSN
External VGH/VGL

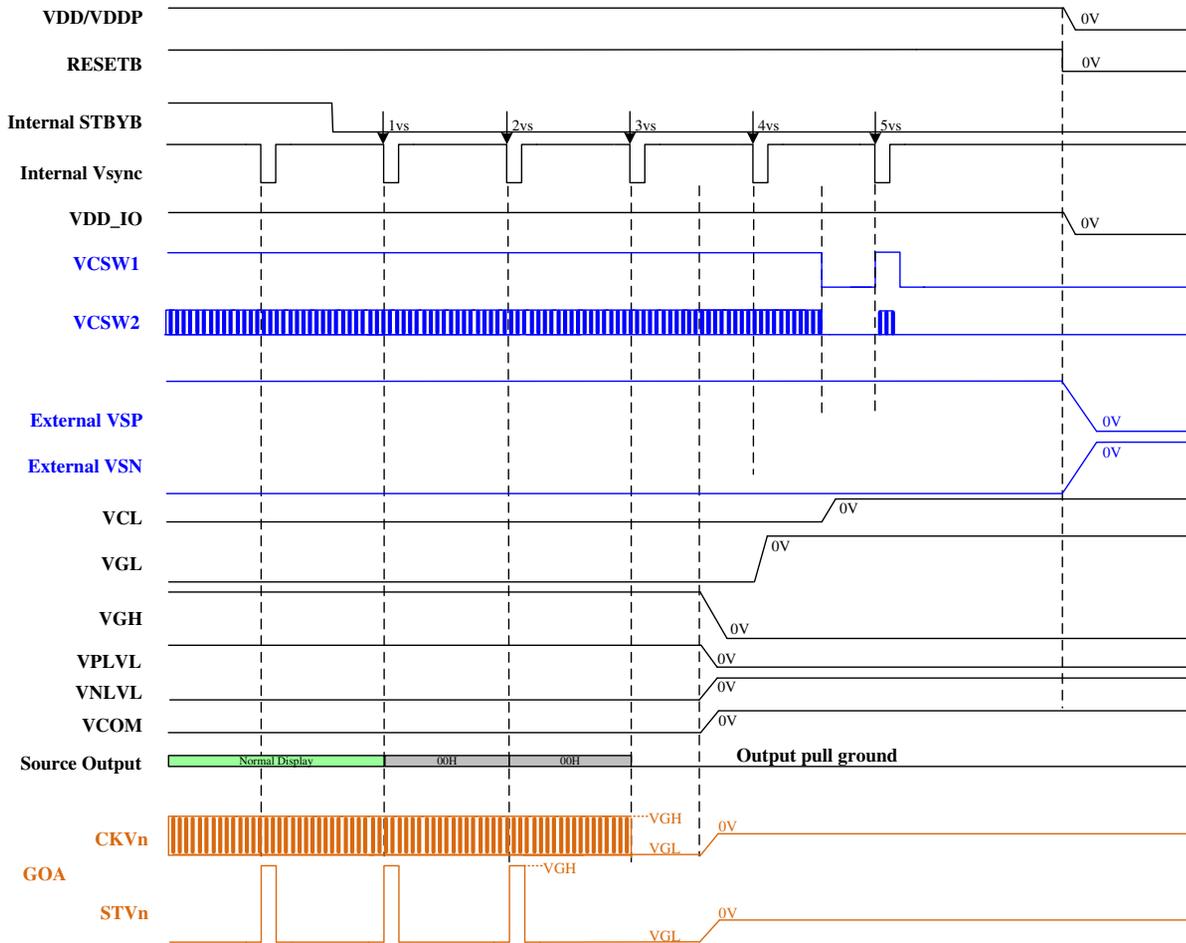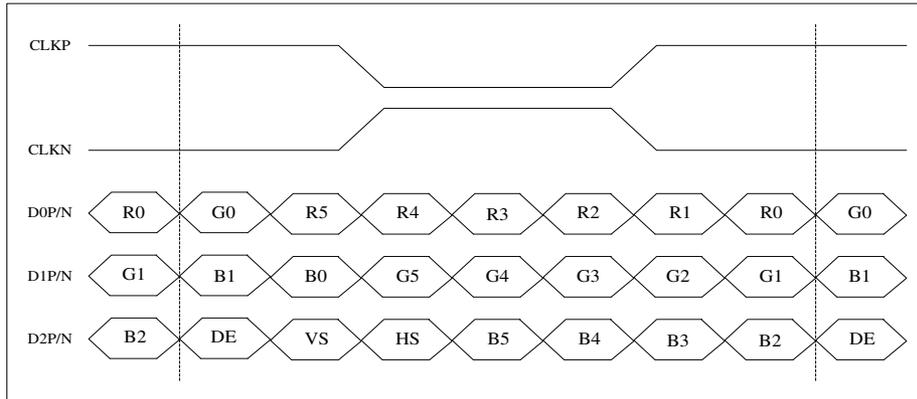**Figure 5.2: Power off sequence with PMODE[1:0]=00b**

6. INTERFACE

6.1 MIPI interface

6.1.1 Data input format for MIPI

CLKP									
CLKN									
D0P/N	R0	G0	R5	R4	R3	R2	R1	R0	G0
D1P/N	G1	B1	B0	G5	G4	G3	G2	G1	B1
D2P/N	B2	DE	VS	HS	B5	B4	B3	B2	DE

深圳市勋瑞光电科技有限公司
Xunrui Shenzhen Optoelectronics Technology Co., Ltd.

7.1 MIPI Input Timing Table

Parameter	Symbol	Value			Unit
		Min.	Typ.	Max.	
DCLK frequency @Frame rate=60Hz	F_{DCLK}		71.9		MHz
HSYNC period time	T_H		920		DCLK
Horizontal display area	T_{HD}		800		DCLK
HSYNC pulse width	T_{HPW}		24	-	DCLK
HSYNC back porch	T_{HBP}		24	-	DCLK
HSYNC front porch	T_{FBP}		72	-	DCLK
VSYNC period time	T_V		1304		H
Vertical display area	T_{VD}		1280		H
VSYNC pulse width	T_{VPW}		2	-	H
VSYNC back porch	T_{VBP}		10	-	H
VSYNC front porch	T_{VFP}		12	-	H

深圳市勋瑞光电科技有限公司

8.0 MIPI mode AC electrical characteristics

Parameter	Symbol	Spec.			Unit	Condition
		Min.	Typ.	Max.		
Clock frequency	R_{xFCLK}	30	-	TBD	MHz	Refer to input timing table for each display resolution
Input data skew margin	T_{RSKM}	500	-	-	ps	|VID| = 200mV RxVCM = 1.2V RxFCLK = 81MHz
Clock high time	T_{LVCH}	-	$4/(7* R_{xFCLK})$	-	ns	
Clock low time	T_{LVCL}	-	$3/(7* R_{xFCLK})$	-	ns	
PLL wake-up time	T_{enPLL}	-	-	150	us	

Table 13.1: MIPI mode AC electrical characteristics
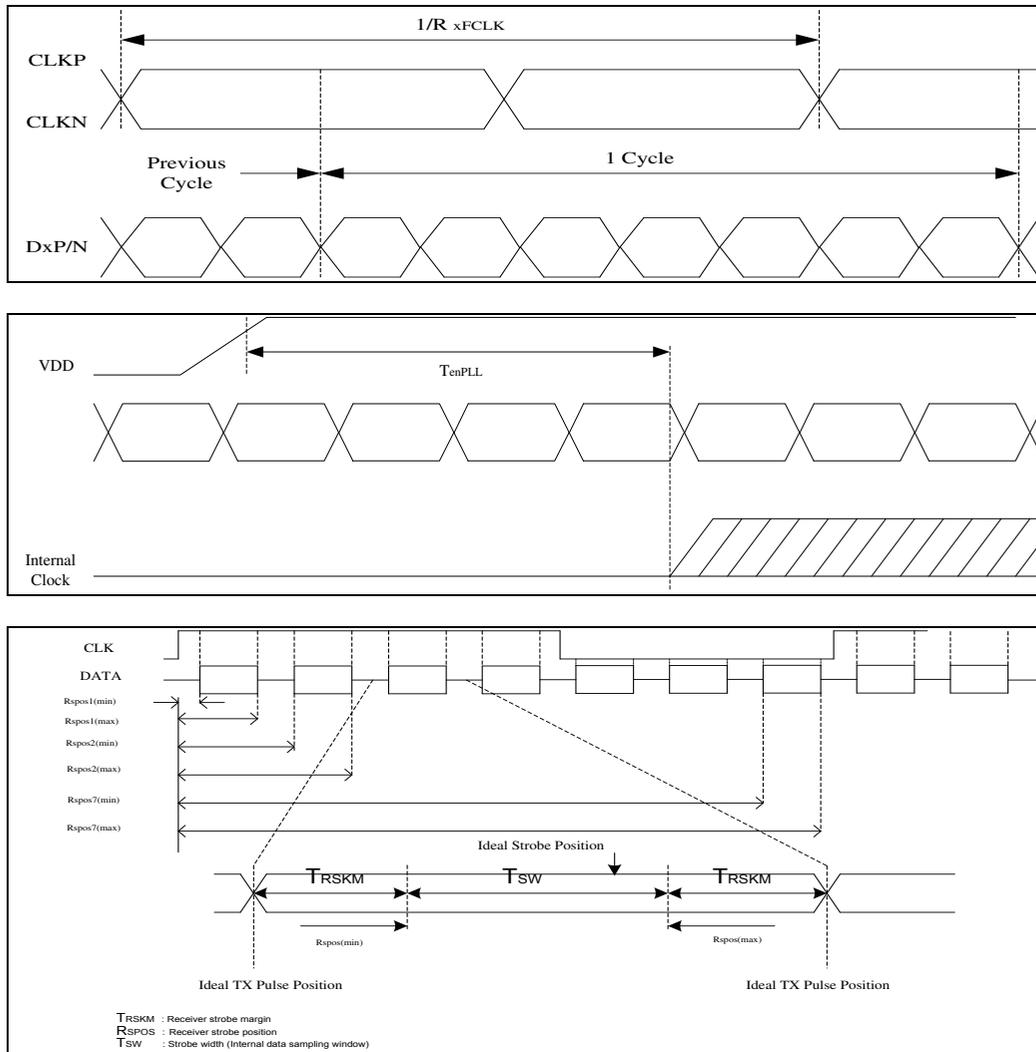
Figure 13 Mipi **.3 figure**

Parameter	Symbol	Min.	Typ.	Max.	Units	Condition
Modulation Frequency	SSC_{MF}	23	-	93	KHz	
Modulation Rate	SSC_{MR}	-	-	+3	%	

Table 12.2: SSC table

9.0 Panel Structure

9.1. Driving method for panel structure

This panel can support 2 types of driving method — stripe and zigzag. User could control Register: ZIGZAG, Z_LEFT, Z_SCAN, and Z_TYPE select Panel type as following Figure:

Normal driving method for panel structure

Normal driving method: ZIGZAG = 0
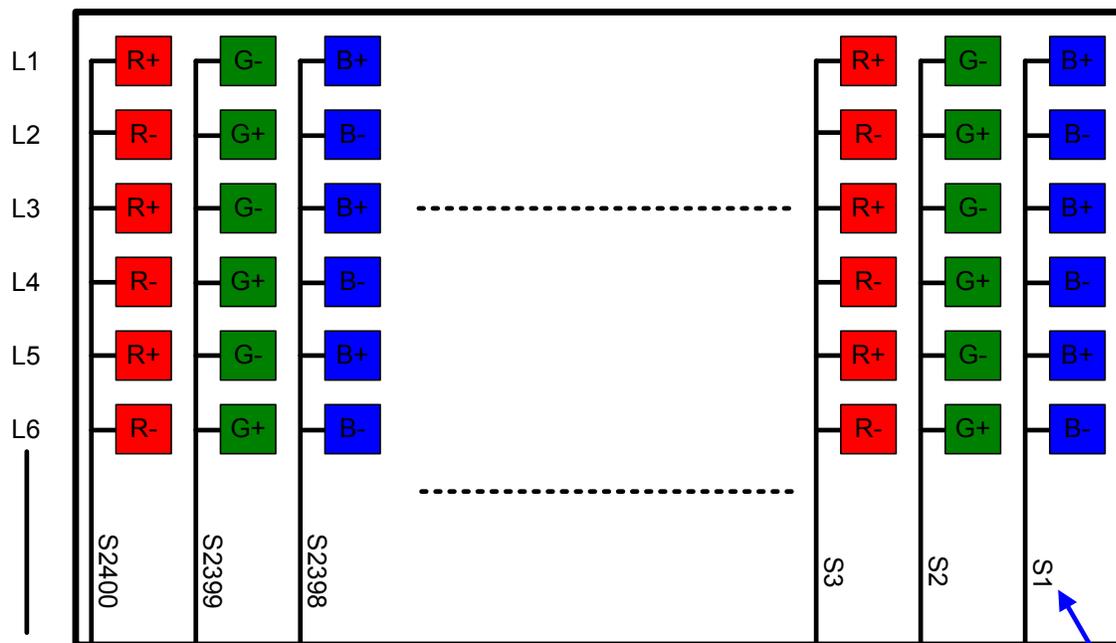

Figure 7.2 : Stripe driving method

10.0. **OPTICAL SPECIFICAT ION**

(Taransmittance, contrast ratio, response time, viewing angle results are using AYF LC + Polarizer + Corresponding Backlight, reference only)

Ambient condition：25 ± 2℃，60 ± 10% RH，under 10 Lunx in the darkroom

| ITEM		SYMBOL		CONDITION	MIN.	TYP.	MAX.	UNIT	REMARK
Transmittance (With Polarizer)		T_{PL}		$\vartheta = \phi = 0°$	4.4	4.9	--	%	Note 1 Base on AYF Pol condition & AYF BL
Contrast Ratio		CR			600	800	---		Note 2
Response Time		Tr+Tf		$\vartheta = \phi = 0°$	---	30	35	ms	Note 3
Viewing angle	Vertical	U	$\theta*2$	CR≧10	80	85		degree	Note 4
		D			80	85		degree	
	Horizontal	L	$\phi*2$		80	85		degree	
		R			80	85		degree	
Color Filter Chromacicity	W	x		$\vartheta = \phi = 0°$	0.276	0.296	0.316		Note 1 (Base on C Light)
		y			0.302	0.322	0.342		
	R	x			0.601	0.621	0.641		
		y			0.294	0.314	0.334		
	G	x			0.252	0.272	0.292		
		y			0.560	0.580	0.600		
	B	x			0.121	0.141	0.161		
		y			0.093	0.113	0.133		
	NTSC						60		

Note 1. .Measure device：BM-5A (TOPCON)，viewing cone= 1 °，I_L=20mA。
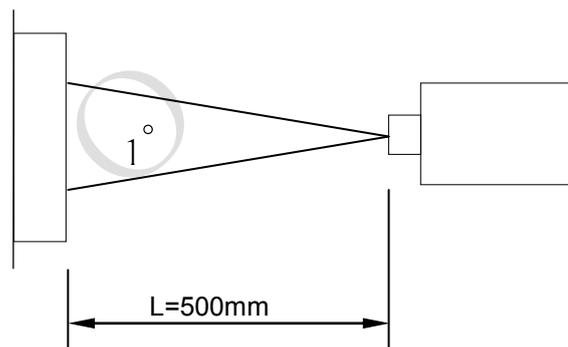

Note 2. Definition of Contrast Ratio：

CR = White Luminance (ON) / Black Luminance (OFF)

Note 3. The output signals of photo detector are measured when the input signals are changed from "black" to "white" (rising time) and from "white" to "black" (falling time), respectively. Definition of response time：The response time is defined as the time interval between the 10% and 90% amplitudes.
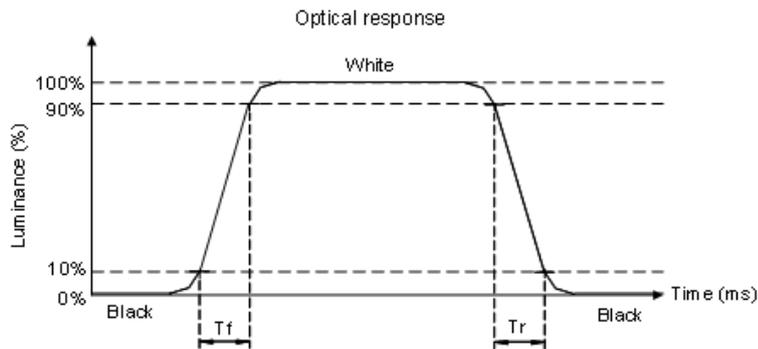
Note 4 Definition of view angle(θ，ϕ)：
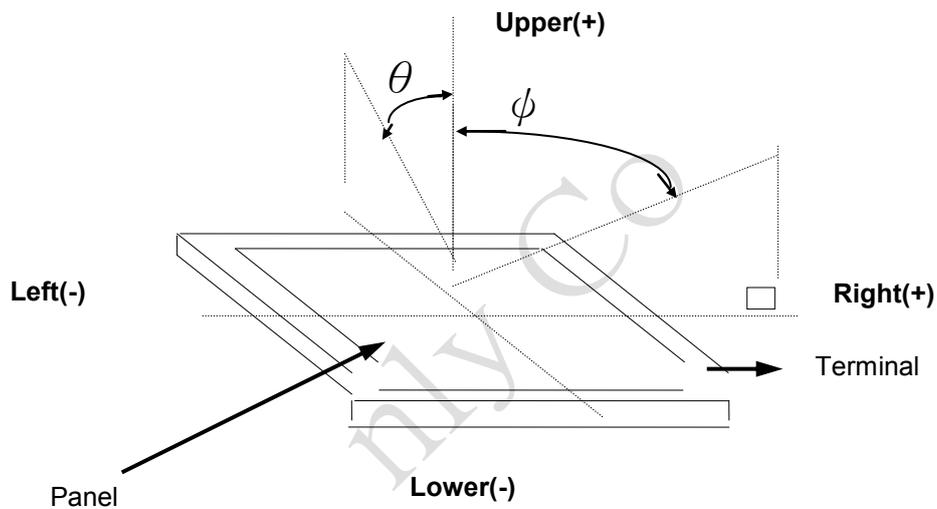
NO.	TEST ITEM	CONDITIONS
1	HighTemperature Operation	70°℃, 240 hrs
2	Low Temperature Operation	-20°℃, 240 hrs
3	High Temperature and High Humidity Operation	60 °℃, 90% RH, 240 hrs

NOTE
1. All judgement of display are performed after temperature of panel return to room temperature.
2. Display function should be no change under normal operating condition.
3. Under no condensation of dew.
4. AYF only guarantee the above 3 test items, and without guarantee the others.
5. Judgment Standard:
   The Judgment of the above test should be made as follow:
   Pass: Normal display image and no line defect.Partial transformation of the
   module parts should be ignored.
   Fail: No display image, function NG, or line defects.

WARRANTY
 8.1 The period is within 3 months since the date of shipping out under normal using and
    storage conditions.
 8.2 The warranty will be avoided in case of defect induced by customer.