Reshine Display (HK) Technology Co., Limited

SPECIFICATION
FOR
OLED MODULE

MODULE NO: RXL055082-A

Customer Approval:

☐ Accept	☐ Reject

RESHINE	NAME	SIGNATURE	DATE
Prepare			
Check			
Verify			
Approval			

■ APPROVAL FOR SPECIFICATIONS ONLY

☐ APPROVAL FOR SPECIFICATIONS AND SAMPLE

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1. Revision History

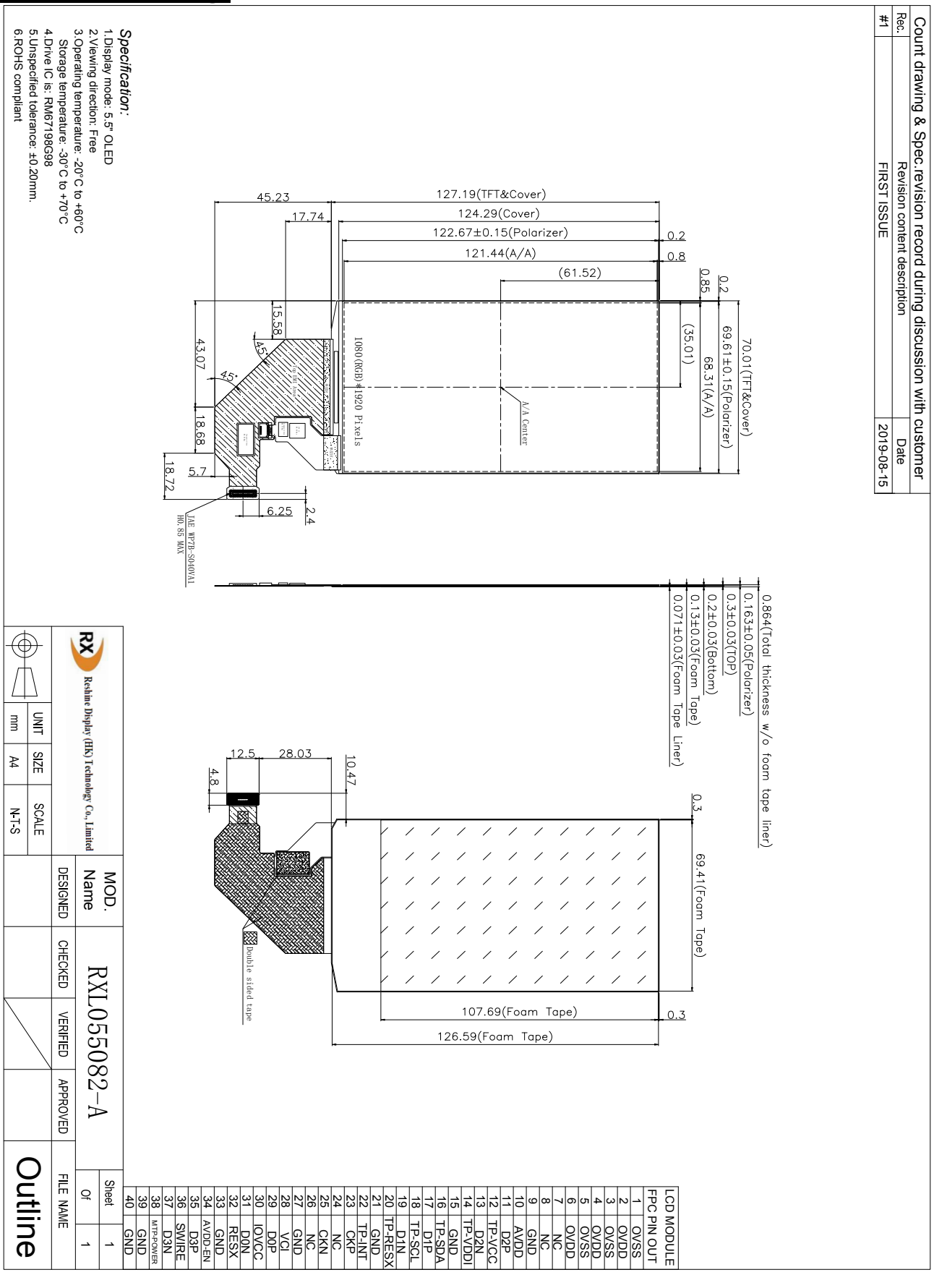
Sample Version	DOC. Version	DATE	DESCRIPTION		CHANGED BY
S0	00	2019-09-06	SPEC ONLY	First issue	Harison

2. Table of Contents:

4. General Specification:

ITEM	CONTENTS
Module Size	70.01 (W) * 127.19(H) * 0.864(T) mm
Panel Outline Dimension	70.01*127.19mm
Display Size(Diagonal)	5.5 inch
Display Format	1080(RGB)*1920 (Rendering)
Active Area	68.31(W) * 121.44(H) mm
Pixel pitch	63.25*63.25 um
View Direction	Free
Interface	MIPI 4 lanes
Driver IC	RM67198G98
Touch screen IC	CST148
Touch screen	On-Cell
Surface Treatment(Up Polarizer)	3H/2H
Weight	TBD

5. LCM drawing:



6. Electrical Characteristics

6-1 Absolute Maximum Ratings

Electrical Maximum Ratings – for IC Only

Parameter	Symbol	Min.	Max.	Unit	Note
Power supply voltage (IOVCC)	IOVCC	-0.3	5.5	V	1
Power supply voltage (VCI)	VCI	-0.3	5.5	V	1
Power supply voltage (AVDD)	AVDD	-0.3	6.6	V	1

Note:

1.IOVCC, VCI, AVDD, GND must be maintained.

2.The modules may be destroyed if they are used beyond the absolute maximum ratings.

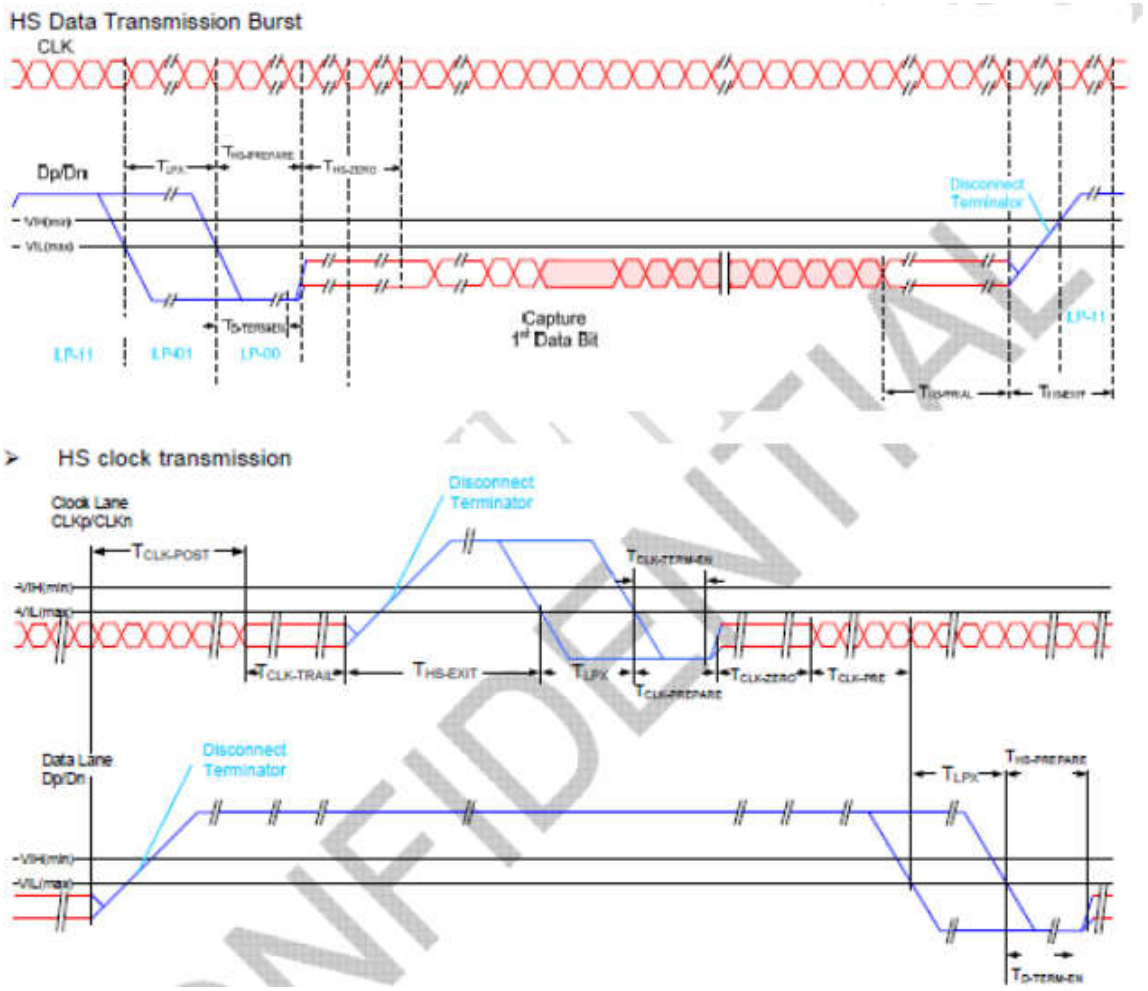
6-2 Operating Conditions

TA = 25 ℃, GND=0V.

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
I/O pin Power Supply Voltage	IOVCC		1.65	1.8	3.3	V
Analog Power Supply Voltage	VCI		2.5	3.3	3.6	V
AVDD Power Supply Voltage	AVDD		4.5	6.4	6.5	V
OLED positive voltage	OVDD		4.56	4.6	4.64	V
			-	165	-	mA
OLED negative voltage	OVSS		-3.54	-3.5	-3.46	V
			-	165	-	mA

6-3 Timing Characteristics

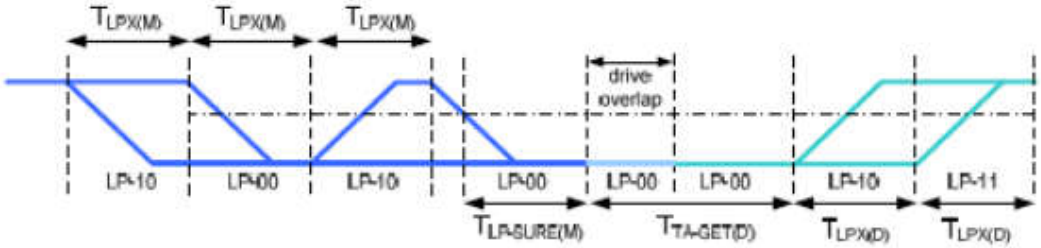
MIPI Interface Characteristics



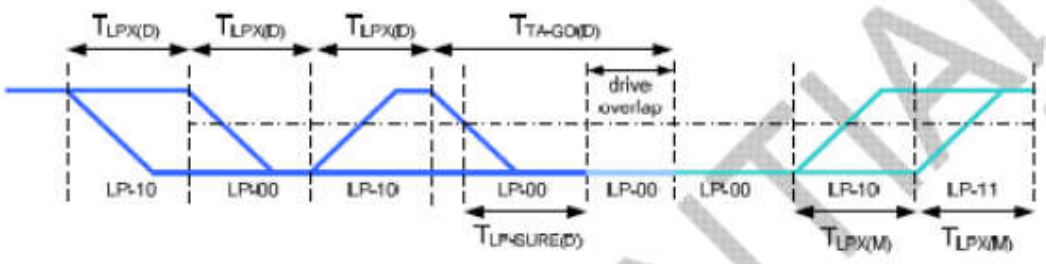
Parameter	Description	MIN	Typ	MAX	Unit
$T_{clk-post}$	Time that the transmitter continues to send HS clock after the last associated Data Lane has transitioned to LP Mode. Interval is defined as the period from the end of $T_{HS-TRAIL}$ to the beginning of $T_{CLK-TRAIL}$.	60ns + 52*UI		-	ns

$T_{clk-trail}$	Time that the transmitter drives the HS-0 state after the last payload clock bit of a HS transmission burst.	60		-	ns
$T_{hs-exit}$	Time that the transmitter drives LP-11 following a HS burst.	300		-	ns
$T_{clk-term-en}$	Time for the Clock Lane receiver to enable the HS line termination, starting from the time point when Dn crosses $V_{IL,MAX}$.	Time for Dn to reach $V_{TERM-EN}$		38	ns
$T_{clk-prepage}$	Time that the transmitter drives the Clock Lane LP-00 Line state immediately before the HS-0 Line state starting the HS transmission.	38		95	ns
$T_{clk-pre}$	Time that the HS clock shall be driven by the transmitter prior to any associated Data Lane beginning the transition from LP to HS mode.	8		-	ns
$T_{clk-prepage}$ + $T_{clk-zero}$	$T_{CLK-PREPARE}$ + time that the transmitter drives the HS-0 state prior to starting the Clock.	300			ns
$T_{d-term-en}$	Time for the Data Lane receiver to enable the HS line termination, starting from the time point when Dn crosses $V_{IL,MAX}$.	Time for Dn to reach $V_{TERM-EN}$		35 ns +4*UI	ns
$T_{hs-prepage}$	Time that the transmitter drives the Data Lane LP-00 Line state immediately before the HS-0 Line state starting the HS transmission.	40ns + 4*UI		85 ns + 6*UI	ns
$T_{hs-prepage}$ + $T_{hs-zero}$	$T_{HS-PREPARE}$ + time that the transmitter drives the HS-0 state prior to transmitting the Sync sequence.	145ns + 10*UI		-	ns
$T_{hs-trail}$	Time that the transmitter drives the flipped differential state after last payload data bit of a HS transmission burst.	60ns + 4*UI		-	ns

➢ Turnaround Procedure



Bus turnaround (BAT) from MPU to display module timing



Bus turnaround (BAT) from display module to MPU timing

Low Power Mode :

Parameter	Description	Min	Typ	Max	Unit	Notes
$T_{LPX(M)}$	Transmitted length of any Low-Power state period of MCU to display module	50		150	ns	1,2
$T_{TA-SURE(M)}$	Time that the display module waits after the LP-10 state before transmitting the Bridge state (LP-00) during a Link Turnaround.	$T_{LPX(M)}$		$2*T_{LPX(M)}$	ns	2
$T_{LPX(D)}$	Transmitted length of any Low-Power state period of display module to MCU	50		150	ns	1,2
$T_{TA-GET(D)}$	Time that the display module drives the Bridge state (LP-00) after accepting control during a Link Turnaround.	$5*T_{LPX(D)}$			ns	2
$T_{TA-GO(D)}$	Time that the display module drives the Bridge state (LP-00) before releasing control during a Link Turnaround.	$4*T_{LPX(D)}$			ns	2
$T_{TA-SURE(D)}$	Time that the MPU waits after the LP- 10 state before transmitting the Bridge state (LP-00) during a Link Turnaround.	$T_{LPX(D)}$		$2*T_{LPX(D)}$	ns	2

NOTE:

1. T_{LPX} is an internal state machine timing reference. Externally measured values may differ slightly from the specified values due to asymmetrical rise and fall times.
2. Transmitter-specific parameter

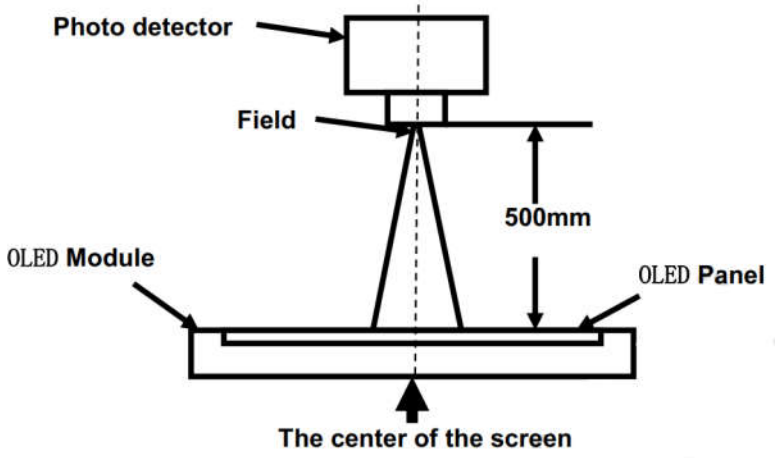
7. Electro-Optical Specification:

Item		Symbol	Condition	Min	Typ	Max	Unit	Remark
View Angles		θT	CR≧10	80	-	-	Degree	Note 2
		θB		80	-	-		
		θL		80	-	-		
		θR		80	-	-		
Contrast Ratio		CR	θ=0°	10000	-	-	-	Note1 Note3
Response Time		T_{ON}	25℃	-	-	1	ms	Note1 Note4
		T_{OFF}						
Chromaticity	White	x		0.279	0.299	0.329	-	Note5 Note1 Customer can adjust White coordinate freely
		y		0.295	0.315	0.335		
	Red	x		0.644	0.684	0.724		
		y		0.276	0.316	0.356		
	Green	x		0.18	0.24	0.30		
		y		0.657	0.717	0.777		
	Blue	x		0.108	0.138	0.168		
		y		0.007	0.047	0.087		
Uniformity		U	-	70	-	-	%	Note1 Note6
Color Gamut		-	-	90	100	-	%	Note5
Luminance (without Lens)		L	Normal	300	350	-	cd/m2	Note1 Note7

Test Conditions:

1. The ambient temperature is 25℃.
2. The test systems refer to Note 1 and Note 2.

Note 1: Definition of optical measurement system.
The optical characteristics should be measured in dark room. After 5 minutes operation, the optical properties are measured at the center point of the OLED screen. All input terminals OLED panel must be ground when measuring the center area of the panel.



Item	Photo detector
Contrast Ratio	PR730
Luminance	
Chromaticity	
Lum Uniformity	
Response Time	DMS803

Fig. 1 Optical measurement system

Note 2: Definition of viewing angle range and measurement system.
viewing angle is measured at the center point of the OLED by PR730.

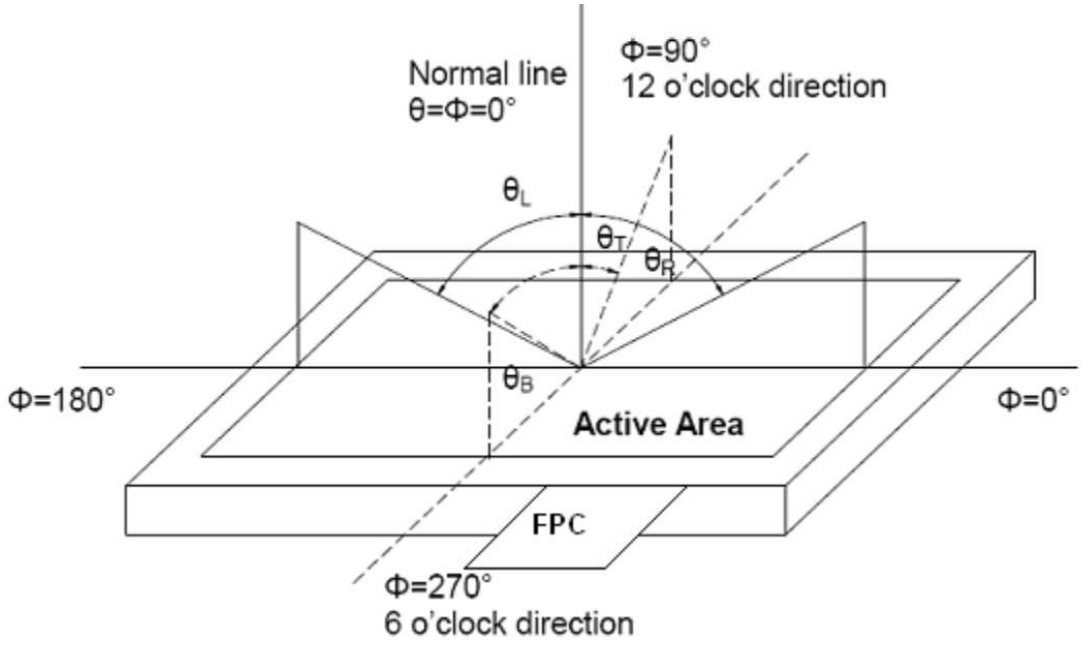


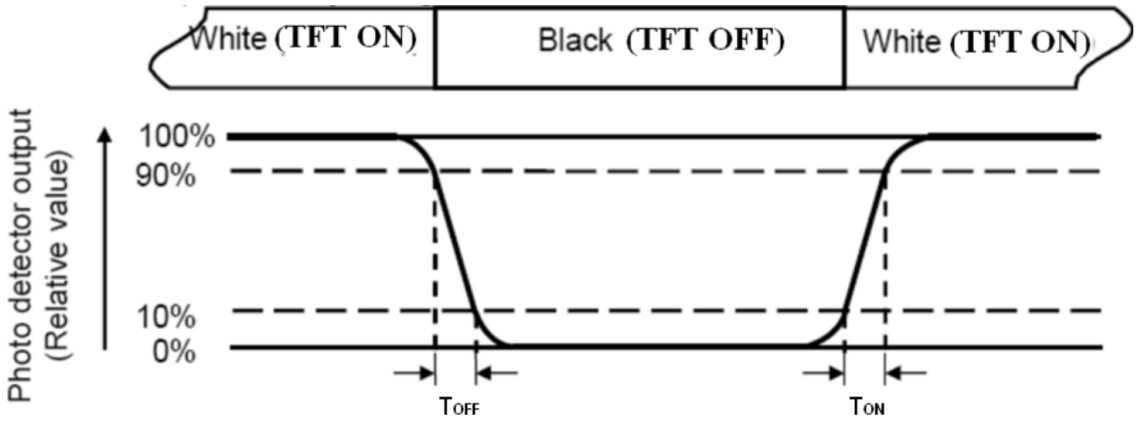
Fig. 2 Definition of viewing angle

Note 3: Definition of contrast ratio

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

"White state ":The state is that the OLED should be driven by Vwhite.
"Black state": The state is that the OLED should be driven by Vblack.

Note 4: Definition of Response time
The response time is defined as the OLED optical switching time interval between "White" state and



"Black" state. Rise time (TON) is the time between photo detector output intensity changed from 90% to 10%. And fall time (TOFF) is the time between photo detector output intensity changed from 10% to 90%.

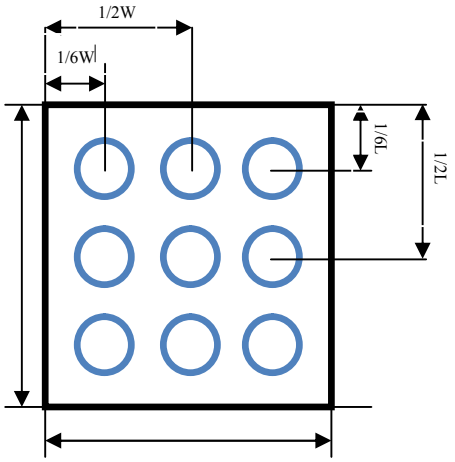
Note 5: Definition of color chromaticity (CIE1931)
Color coordinates measured at center point of OLED.

Note 6: Definition of Luminance Uniformity

Active area is divided into 9 measuring areas (Refer Fig. 3). Every measuring point is placed at the center of each measuring area.

Luminance Uniformity(U) = Lmin/ Lmax

L-------Active area length W----- Active area width



Lmax: The measured maximum luminance of all measurement position.

Lmin: The measured minimum luminance of all measurement position

Note 7: Definition of Luminance :

8. Interface Pin Assignment:

Pin No	Symbol	Description	Note
1	OVSS	OLED Power	
2	OVDD	OLED Power	
3	OVSS	OLED Power	
4	OVDD	OLED Power	
5	OVSS	OLED Power	
6	OVDD	OLED Power	
7-8	NC	No Connection.	
9	GND	Ground.	
10	AVDD	Power supply for Analog system.	
11	D2P	Positive polarity of low voltage differential data 2 signal	
12	TP-VCC	Power Supply For CTP 3.3V	
13	D2N	Negative polarity of low voltage differential data 2 signal	
14	TP-VDDI	No Connection.	
15	GND	Ground.	
16	TP-SDA	-TP Serial data input/output pin.	
17	D1P	Positive polarity of low voltage differential data 1 signal	
18	TP-SCL	-TP Serial clock signal pin.	
19	D1N	Negative polarity of low voltage differential data 1 signal	
20	TP-RESX	-TP Reset Signal input pin.	
21	GND	Ground.	
22	TP-INT	-TP CTP interrupt request.	
23	CKP	Positive polarity of low voltage differential clock signal	
24	NC	No Connection.	
25	CKN	Negative polarity of low voltage differential clock signal	
26	NC	No Connection.	
27	GND	Ground.	
28	VCI	Power Supply For LCD.	
29	D0P	Positive polarity of low voltage differential data 0 signal	
30	IOVCC	Power Supply For I/O.	
31	D0N	Negative polarity of low voltage differential data 0 signal	
32	RESX	Reset Signal input pin.	
33	GND	Ground.	
34	AVDD-EN	Power IC enable control pin.	
35	D3P	Positive polarity of low voltage differential data 3 signal	
36	SWIRE	Swire protocol setting pin.	

37	D3N	Negative polarity of low voltage differential data 3 signal	
38	MTP-POWER	MTP programming power supply pin (8V typical) Must be left open or connected to DVSS in normal condition.	
39-40	GND	Ground.	

9. Standard Specification for Reliability:

No	Test Item	Condition	Remark
1	High Temperature Operation	Ts=+60℃, 120hrs	Note1
2	Low Temperature Operation	Ta=-20℃,120hrs	
3	High Temperature Storage	Ta=+70℃, 120hrs	
4	Low Temperature Storage	Ta=-30℃, 120hrs	
5	High Temperature & High Humidity Storage	Ta=+60℃, 90% RH 120 hours	Note2
6	Thermal Shock (Non-operation)	-30℃ 30 min~+70℃ 30 min, Change time:3min, 24Cycles	Start with cold temperature, End with high temperature
7	Electro Static Discharge (Operation)	Air:±8KV, 5times, Contact:±6KV, 5 times	
8	Vibration (Non-operation)	Frequency range:10~55Hz, Stroke:1.5mm Sweep:10Hz~55Hz~10Hz 2 hours for each direction of X.Y.Z. (6 hours for total)(Package condition)	
9	Package Drop Test	Height:80 cm,(When Package weight 10≤M<20 Kg) 1 corner, 3 edges, 6 surfaces	

Note1: Ts is the temperature of panel's surface.

Note2: Ta is the ambient temperature of sample.

Note3: Before cosmetic and function test, the product must have enough recovery time, at least 2 hours at room temperature.

Note 4: In the standard condition, there shall be no practical problem that may affect the display function. After the reliability test, the product only guarantees operation, but don't guarantee all of the cosmetic specification.

10. Precautions For Use of OLED Modules:

11.1 Handling Precautions
11.1.1 The display panel is made of glass. Do not subject it to a mechanical shock by dropping it from a high place, etc.
11.1.2 If the display panel is damaged and the Organic Light-Emitting Diode inside it leaks out, be sure not to get any in your mouth, if the substance comes into contact with your skin or clothes, promptly wash it off using soap and water.
11.1.3 Do not apply excessive force to the display surface or the adjoining areas since this may cause the color tone to vary.
11.1.4 The polarizer covering the display surface of the OLED module is soft and easily scratched. Handle this polarizer carefully.
11.1.5 If the display surface is contaMinated, breathe on the surface and gently wipe it with a soft dry cloth. If still not completely clear, moisten cloth with one of the following solvents:
- Isopropyl alcohol
- Ethyl alcohol

Solvents other than those mentioned above may damage the polarizer. Especially, do not use the following:
- Water
- Ketone
- Aromatic solvents

11.1.6 Do not attempt to disassemble the OLED Module.
11.1.7 If the logic circuit power is off, do not apply the input signals.
11.1.8 To prevent destruction of the elements by static electricity, be careful to maintain an optimum work environment.
11.1.8.1 Be sure to ground the body when handling the OLED Modules.
11.1.8.2 Tools required for assembly, such as soldering irons, must be properly ground.
11.1.8.3 To reduce the amount of static electricity generated, do not conduct assembly and other work under dry conditions.
11.1.8.3 The OLED Module is coated with a film to protect the display surface. Be care when peeling off this protective film since static electricity may be generated.
11.2 Storage precautions
11.2.1 When storing the OLED modules, avoid exposure to direct sunlight or to the light of fluorescent lamps.
11.2.2 The OLED modules should be stored under the storage temperature range. If the OLED modules will be stored for a long time, the recommend condition is:
Temperature : 0℃ ～ 40℃ Relatively humidity: ≤80%

11. Guarantee:

Our products meet requirements of the environment.
RESHINE ROHS requirement is based on European Union Directive 2011/65/EU (ROHS)
Requirements and Update.