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MODEL NO : ET055FH08-OT

MODEL VERSION: 01

SPEC VERSION : 1.0

ISSUED DATE: 2021-05-08

■**Preliminary Specification**

□**Final Product Specification**

Customer :_____

Approved by	Notes

Youri Confirmation

Prepared by	Reviewed by	Approved by
John	Johnny	Wang

Table of Contents

Record of Revision

Rev	Issued Date	Description	Editor
1.0	2021-05-08	Preliminary Specification Release	John

1 General Specifications

Feature		Spec
Display Spec.	Size	5.44 inch
	Resolution	1080(RGB) X 1920
	Technology Type	AMOLED
	Pixel Configuration	Rendering
	Pixel pitch(um)	31.4*62.8
	Viewing Direction	ALL
Mechanical Characteristics	MODEL (W x H x D) (mm)	69.74 *126.6*0.84
	LCD Active Area(mm)	67.82 * 120.58
	With /Without TSP	On cell
	CTP cover lens	/
	CTP surface hardness	/
	Weight (g)	TBD
Electrical Characteristics	LCD Interface	MIPI 4 lane
	Driver IC	RM67199
	Touch IC	GT
	Color Depth	16.7M

Note 1: Viewing direction for best image quality is different from TFT definition. There is a 180 degree shift.

Note 2: Requirements on Environmental Protection: Q/S0002

Note 3: LCM weight tolerance: ± 5%

2 Terminals

ConnectorType:FH26-39S-0.3SHW

Pin No.	Symbol	Description
1~3	GND~GND	Ground
4~8	VBAT~VBAT	POWER IC INPUT VOLTAGE(+4.2V)
9	GND	Ground
10	VPP	NC
11	NC	
12	GND	Ground
13	D3P	MIPI DSI DATA3+
14	D3N	MIPI DSI DATA3-
15	GND	Ground
16	D0P	MIPI DSI DATA0+
17	D0N	MIPI DSI DATA0-
18	GND7	Ground
19	CLKP	MIPI DSI Clock+
20	CLKN	MIPI DSI Clock-
21	GND	Ground
22	D1P	MIPI DSI DATA1+
23	D1N	MIPI DSI DATA1-
24	GND	Ground
25	D2P	MIPI DSI DATA2+
26	D2N	MIPI DSI DATA2-
27	GND	Ground
28	RESX	OLED RESET, Low active
29	VDDIO	Digital I/O power supply, it shall be same with the MIPI I/O voltage of HOST MCU
30	VCI	Analog power, 3.3V
31	TE	Tearing effect output, it can be NC
32	GND	Ground.
33	TSP_AVDD	Analog power for TP driver IC
34	TSP_DVDD	Digital power for TP driver IC
35	TSP_SDA	IIC_SDA for TP driver IC
36	TSP_SCL	IIC_SCL for TP driver IC
37	TSP_RESET	TP Reset signal, low active
38	TSP_ATTN	Interrupt signal for TP driver IC
39	ID	NC

3 Absolute Maximum Ratings

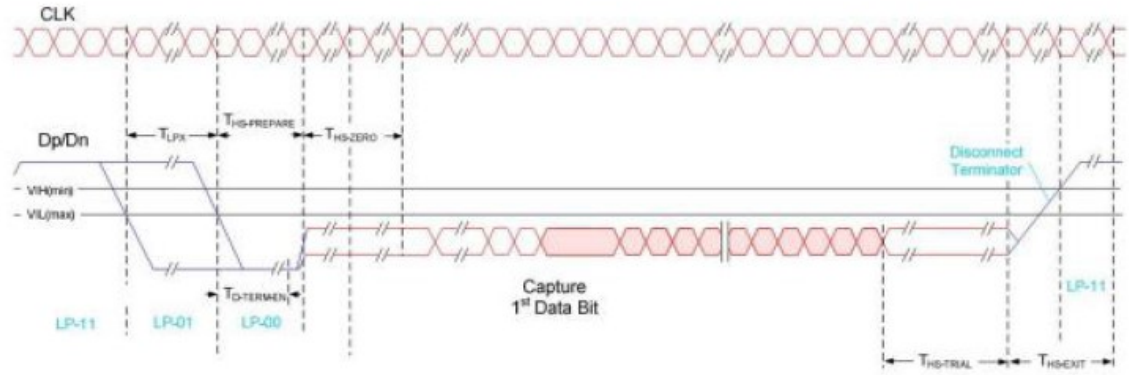
Characteristics	Symbol	Min.	Max.	Unit	Notes
Analog power voltage	VCI	-0.3	5.5	V	-
Digital I/O voltage	VDDIO	-0.3	5.5	V	-
Power IC Input voltage	VBAT	-0.3	6	V	-
Operating temperature	TOP	-20	70	℃	
Storage temperature	Tstg	-40	80	℃	

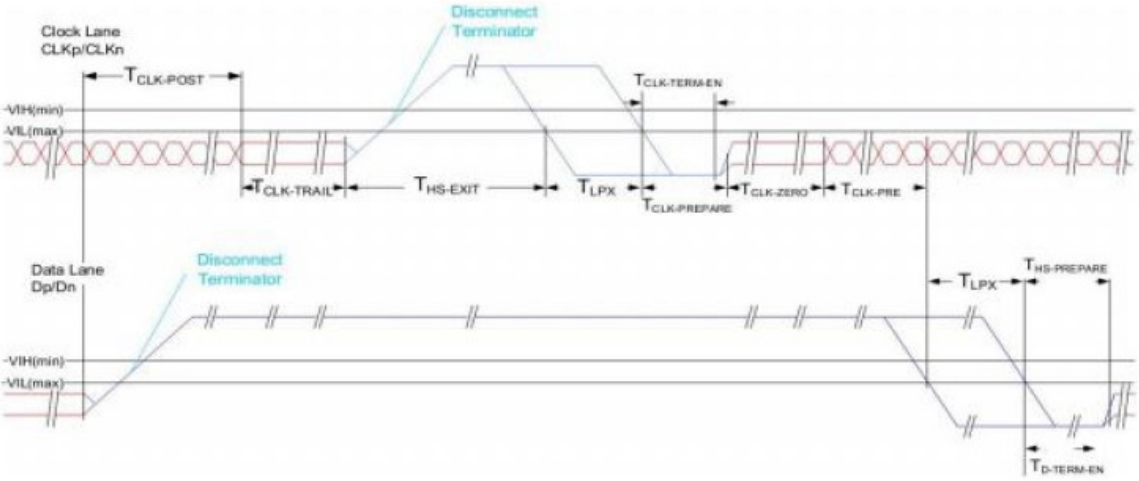
4 Electrical Characteristics

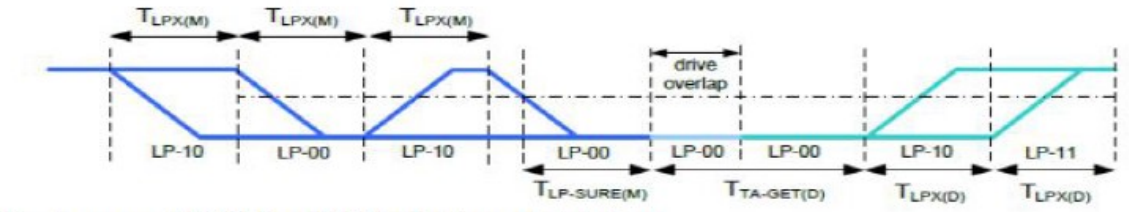
Item	Symbol	Min.	Typ.	Max.	Unit	Notes
Analog power voltage	VCI	2.6	2.8	3.6	V	-
Digital I/O voltage	VDDIO	1.65	1.8	3.6	V	-
Power IC Input voltage	VBAT	3.2	4.2	4.5	V	-
Analog power for TP	TSP_AVDD	2.8	3.3	3.6	V	-
Digital power for TP	TSP_DVDD	1.65	1.8	3.6	V	-

5 Timing Chart

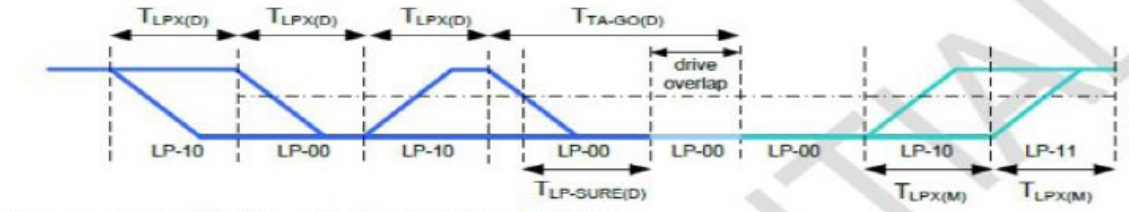
5.1System Bus Read/Write Characteristics.







Bus turnaround (BAT) from MPU to display module timing



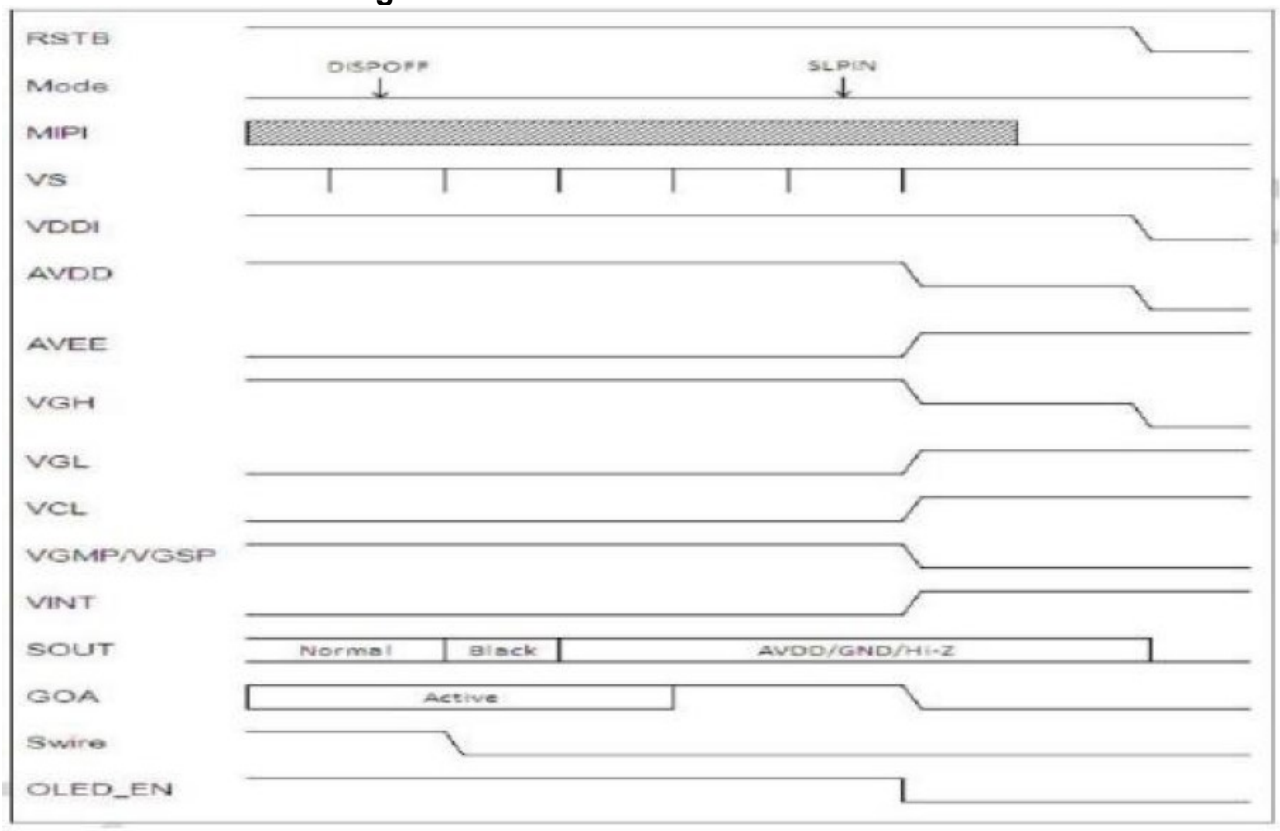
Bus turnaround (BAT) from display module to MPU timing

Timing Parameters:

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
$T_{CLK-PREPARE}$	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			UI
$T_{CLK-PREPARE}$ + $T_{CLK-ZERO}$	$T_{CLK-PREPARE}$ + 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	
$T_{HS-PREPARE}$	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
$T_{HS-PREPARE}$ + $T_{HS-ZERO}$	$T_{HS-PREPARE}$ + 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

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

5.2 Power ON/OFF Timing



6 Optical Characteristics

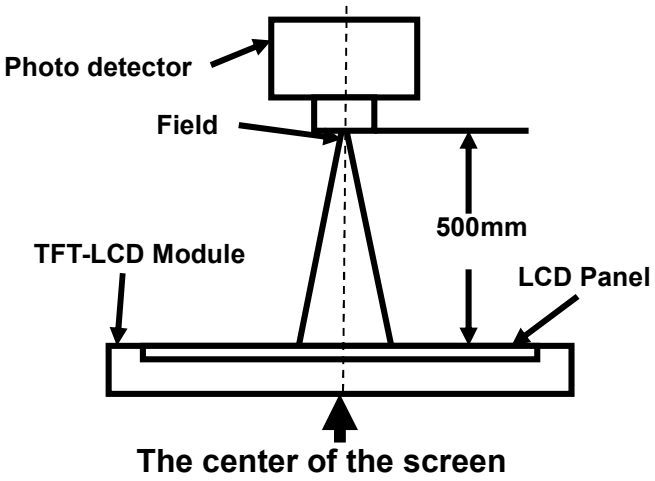
Item		Symbol	Condition	Min	Typ	Max	Unit	Remark
View Angles		θT	CR≧10	80	-	-	Degree	Note2,3
		θB		80	-	-		
		θL		80	-	-		
		θR		80	-	-		
Contrast Ratio		CR	θ=0°	60000	-	-		Note 3
Response Time		T_{ON}	25℃	-	-	-	ms	Note 4
		T_{OFF}						
Chromaticity	White	x	Normal to surface	0.25	0.28	0.31		Note 1,5
		y		0.26	0.29	0.32		
	Red	x						Note 1,5
		y						
	Green	x						Note 1,5
		y						
	Blue	x						Note 1,5
		y						
Color Gamut		-	vs. NTSC	90	109	--	%	-
Luminance		L		315	350	-	cd/m^2	Note 6

Test Conditions:

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

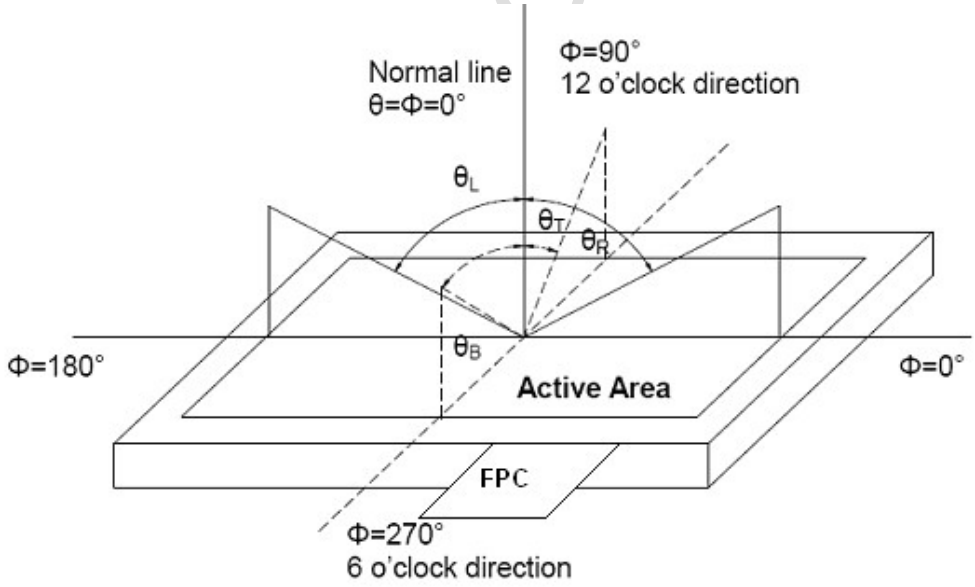
Note 1: Definition of optical measurement system.

The optical characteristics should be measured in dark room. After 5 Minutes operation, the optical properties are measured at the center point of the LCD screen. All input terminals LCD panel must be ground when measuring the center area of the panel.



Note 2: Definition of viewing angle range and measurement system.

viewing angle is measured at the center point of the LCD.



Note 3: Definition of contrast ratio

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

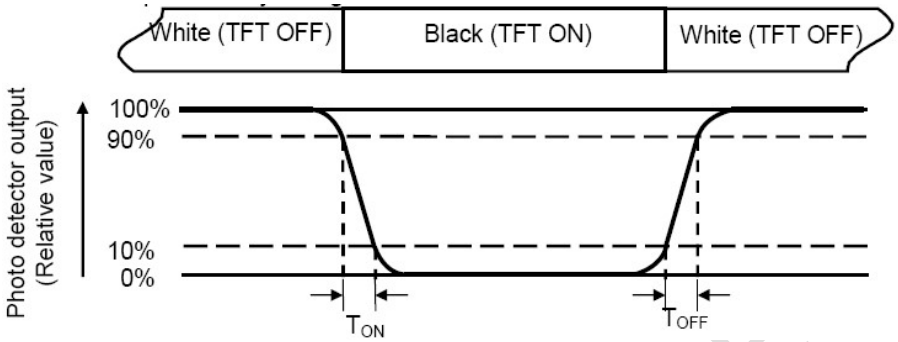
"White state ": The state is that the LCD should drive by Vwhite.

"Black state": The state is that the LCD should drive by Vblack.

Vwhite: To be determined Vblack: To be determined.

Note 4: 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_{ON}) is the time between photo detector output intensity changed from 90% to 10%. And fall time (T_{OFF}) 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 LCD.

Note 6: Definition of Luminance:

Measure the luminance of white state at center point.

7 Environmental / Reliability Test

No	Test Item	Condition	Remarks
1	High Temperature Operation	70℃, 120Hours	IEC60068-2-1:2007 GB2423.2-2008
2	Low Temperature Operation	-20℃, 120Hours	IEC60068-2-1:2007 GB2423.1-2008
3	High Temperature Storage	80℃, 120Hours	IEC60068-2-1:2007 GB2423.2-2008
4	Low Temperature Storage	-40℃, 120Hours	IEC60068-2-1:2007 GB2423.1-2008
5	Storage at High Temperature and Humidity	60℃, 90%RH, 120Hours	IEC60068-2-78 :2001 GB/T2423.3—2006
6	Thermal Shock (non-operation)	-40℃ ↔ 80℃, ON/OFF, 10CYC	Start with cold temperature, End with high temperature, IEC60068-2-14:1984,GB2423.22-2002

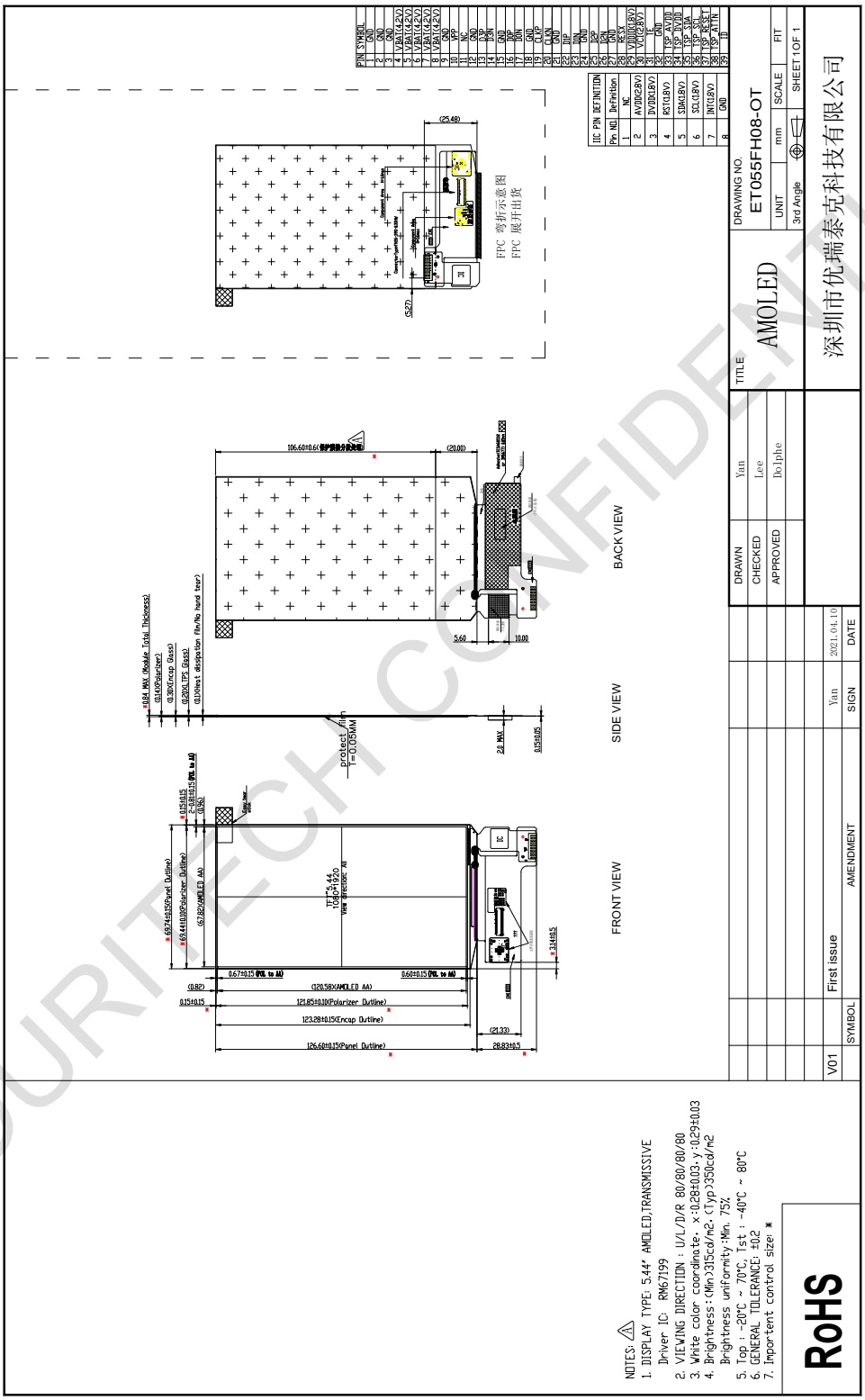
Note1: Ts is the temperature of panel’ s surface.

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.

8 Outline Dimension



9 Packing Drawing

TBD

10 Precautions for Use of LCD Modules

a) Handling Precautions

i. The display panel is made of glass. Do not subject it to a mechanical shock by dropping it from a high place, etc.

ii. If the display panel is damaged and the liquid crystal substance 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.

iii. Do not apply excessive force to the display surface or the adjoining areas since this may cause the color tone to vary.

iv. The polarizer covering the display surface of the LCD module is soft and easily scratched. Handle this polarizer carefully.

v. 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

vi. Do not attempt to disassemble the LCD Module.

vii. If the logic circuit power is off, do not apply the input signals.

viii. To prevent destruction of the elements by static electricity, be careful to maintain an optimum work environment.

10.1.8.1 Be sure to ground the body when handling the LCD Modules.

10.1.8.2 Tools required for assembly, such as soldering irons, must be properly ground.

10.1.8.3 To reduce the amount of static electricity generated, do not conduct assembly and other work under dry conditions.

10.1.8.4 The LCD 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.

b) Storage precautions

i. When storing the LCD modules, avoid exposure to direct sunlight or to the light of fluorescent lamps.

ii. The LCD modules should be stored under the storage temperature range. If the LCD modules will be stored for a long time, the recommend condition is:

Temperature : 0℃ ～ 40℃ Relatively humidity: ≤80%

iii. The LCD modules should be stored in the room without acid, alkali and harmful gas.

c) Transportation Precautions

i. The LCD modules should be no falling and violent shocking during transportation, and also should avoid excessive press, water, damp and sunshine.