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SPECIFICATION

[☒] Preliminary Specification
[] Final Specification

Description **6.97" 1080xRGBx1920 TFT-LCD Module**
Part Number **ET070FH01-HT**

Customer			
Signatures	Date	Approved By	Date
_____	_____	_____	2022/09/20
_____	_____	Reviewed By	_____
		_____	2022/09/20
		Prepared By	_____
			2022/09/20
Comments:			



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1. Summary

1.1 General Description

This is a 6.97 inch LTPS-TFT-LCD (Thin Film Transistor Liquid Crystal Display) module with normal-black technology. It is composed of a TFT-LCD panel, LCD Driver IC with T-con integrated, POL, FPC, cover glass and a LED backlight unit.

1.2 Features

- Ultra-wide viewing angle
- High resolution 1080(H) × RGB × 1920(V)
- Interface: MIPI
- Compliant with the European RoHS Directive (2011/65/EU) and Delegated Directive (2015/863/EU, Amending Annex II of 2011/65/EU)



2. General Specifications

Feature		Spec	Unit
Display Spec	Size	6.97 inches	
	Resolution	1080(H) ×RGB×1920(V)	
	Pixel Pitch	0.0804x0.0804	mm
	TFT Active Area	86.832X154.368	mm
	Technology Type	LTPS	
	Pixel Configuration	R.G.B Vertical Stripe	
	Display Mode	SFT	
	Surface Treatment	HC	
	Viewing Direction	All direction	
	Gray Scale Inversion Direction	NA	
Mechanical Characteristics	LCM (W x H x D)	163.73x91.33x2.36	mm
	Weight	72.5	g
Optical Characteristics	Luminance	3000	cd/m ²
	Contrast Ratio	1000:1	
	NTSC	80	%
	Viewing Angle	88/88/88/88	degree
Electrical Characteristics	Interface	MIPI	
	Color Depth	16.7 Million	color
	Power Consumption	LCD:TBD	mW

Table 2.1 General TFT Specifications



3. Input / Output Terminals

3.1 CN1 Pin assignment (LCD Interface)

Connector Information	
LCD Module connector	FH35C-39S-0.3SHW

Table 3.1.1 Connector information

No	Symbol	I/O	Description	Comment
1	GND	P	GND	
2	LED_K3	P	LED Cathode	NC
3	LED_K2	P	LED Cathode	NC
4	LED_K1	P	LED Cathode	NC
5	NC	N	No connection	
6	LED_A	P	LED Anode	NC
7	NC	N	No connection	
8	AVEE	P	Power Supply, -5.5V	
9	AVEE	P	Power Supply, -5.5V	
10	NC	N	No connection	
11	AVDD	P	Power Supply, 5.5V	
12	AVDD	P	Power Supply, 5.5V	
13	NC	N	No connection	
14	VDDI	P	Power Supply, 1.8V	
15	NC	N	No connection	
16	LCD_RST	I	Reset pin for display	
17	TP_RST	I	reset pin for touch	
18	TP_INT	O	Touch screen interrupt line	
19	TP_SDA	I/O	I2C interface data pin for touch	
20	TP_SCL	I	I2C interface clock pin for touch	
21	GND	P	GND	
22	CABC_PWM	O	LCD backlight control.	
23	TE	O	Tearing Effect output signal	
24	GND	P	GND	
25	D3N	I	Negative MIPI_DSI Data differential signal input pin	
26	D3P	I	Positive MIPI_DSI Data differential signal input pin	
27	GND	P	GND	
28	D0N	I/O	Negative MIPI_DSI Data differential signal input and output pin	
29	D0P	I/O	Positive MIPI_DSI Data differential signal input and output pin	
30	GND	P	GND	
31	CLKN	I	Positive MIPI_DSI clock differential signal input pin	
32	CLKP	I	Negative MIPI_DSI clock differential signal input pin	
33	GND	P	GND	



34	D1N	I	Negative MIPI_DSI Data differential signal input pin	
35	D1P	I	Positive MIPI_DSI Data differential signal input pin	
36	GND	P	GND	
37	D2N	I	Negative MIPI_DSI Data differential signal input pin	
38	D2P	I	Positive MIPI_DSI Data differential signal input pin	
39	GND	P	GND	

Table 3.1.2 Pin Assignment for LCD Interface

Note1: I/O definition: I---Input, O---Output, P---Power/Ground, N---No connection

Note2: All of the GND pins should be connected to the system ground.

4. Absolute Maximum Ratings

Item	Symbol	MIN	MAX	Unit	Remark
LCD logic Voltage	IOVCC	-0.3	1.95	V	
LCD Analog Voltage	VSP	-0.3	6.3	V	
LCD Analog Voltage	VSN	-6.3	0.3	V	
Operating Temperature	Top	-20	70	°C	
Storage Temperature	Tst	-30	80	°C	
Relative Humidity Note2	RH	--	≤95	%	Ta≤40°C
		--	≤85	%	40°C < Ta≤50°C
		--	≤55	%	50°C < Ta≤60°C
		--	≤36	%	60°C < Ta≤70°C
		--	≤24	%	70°C < Ta≤80°C
Absolute Humidity	AH	--	≤70	g/m ³	Ta>70°C

Table 4.1 Absolute Maximum Ratings

Note1: Input voltage include all in put data.

Note2: Ta means the ambient temperature. It is necessary to limit the relative humidity to the specified temperature range. Condensation on the module is not allowed.

Note3: The absolute maximum rating values of this product are not allowed to be exceeded at any times. A module should be used with any of the absolute maximum ratings exceeded, the characteristics of the module may not be recovered, or in an extreme condition, the module may be permanently destroyed



5. Electrical Characteristics

5.1 DC Characteristics for Panel Driving

Item		Symbol	MIN	TYP	MAX	Unit	Remark
LCD Input Analog Voltage		VSP-Vss	5.4	5.5	5.6	V	
		VSN-Vss	-5.6	-5.5	-5.4	V	
LCD Logic I/O Voltage		IOVCC-Vss	1.7	1.8	1.9	IOVC C- Vss	
“H” Level Input Voltage		VIH	0.7xIOVCC	-	IOVCC	VIH	
“L” Level Input Voltage		VIL	VSS	-	0.3xIOVCC	VIL	
“H” Level Output Voltage		VOH	0.8xIOVCC	-	IOVCC	VOH	
“L” Level Output Voltage		VOL	0.0	-	0.2xIOVCC	VOL	
Power Consumption	60Hz	P	--	TBD	--	mW	Black pattern

Table 5.1.1 Operating Voltages

Note1: Indicated the subsequent version may be updated.

5.2 Logic Power Consumption

Parameter	Symbol	Values		Units	Notes
		Typ	Max		
Normal Mode	I _{IOVCC}	TBD		mA	White Pattern (no touch)
	I _{Vsp}	TBD		mA	
	I _{Vsn}	TBD		mA	
Sleep Mode	I _{IOVCC}	TBD		uA	
	I _{Vsp}	TBD		uA	
	I _{Vsn}	TBD		uA	



7. Optical Characteristics

Item		Symbol	Condition	Min	Typ	Max	Unit	Remark
View Angles		θT	CR≧10	80	85		degree	Note2,3
		θB		80	85			
		θL		80	85			
		θR		80	85			
Contrast Ratio		CR	θ=0°	800	1000			Note 3
Response Time		T _{ON}	25℃	-	-	30	ms	Note 4
		T _{OFF}						
Chromaticity	White	x	Backlight is on	-	0.334	-		Note 1,5
		y		-	0.341	-		
	Red	x		-	0.641	-		Note 1,5
		y		-	0.335	-		
	Green	x		-	0.260	-		Note 1,5
		y		-	0.658	-		
	Blue	x		-	0.151	-		Note 1,5
		y		-	0.069	-		
Uniformity		U		75	80	-	%	Note 6
NTSC		-		75	80	-	%	Note 5
Luminance		L		1800	3000	-	cd/m ²	Note 7

Table 7.1 Optical Parameters

Test Conditions:

1. $I_F = 3 \times 16.5\text{mA}$, and the ambient temperature is 25℃.
2. The test systems refer to Note1 and Note2.

