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Research & Development

Firmware

EMC tests

on-site service

Optical Bonding

In-house Manufacturing

Cover glass

System solutions

OEM Solutions

Custom Display

Production Custom designs Installation

Mechanical design



Project No. 项目编号	ET133FH03-TT
Customer 客户名称	
Module No. 客户型号	
Product type 产品内容	Standard LCD Module TFT: 1920*RGBx1080Dots 13.3" TFT LCD+CTP

客户确认Customer Approval	
项目负责人Project Manager	
品质主管Director of Quality	
采购工程师Purchasing Engineer	

PREPARED BY	CHECKED BY	APPROVED BY



1. Introduction

1.1 Scope of application

This specification applies to the LCD module that is supplied by YOURITECH Technology CO., LTD.

LCD specification: Dots 1920xRGBx1080.

All material & processing of the LCD module should be Lead Free.

1.2 TFT features:

Structure: TFT PANNEL+IC +FPC+BL+CTP;

ALL O'CLOCK Type LCD

1920dot-segment and1080 dot-common outputs;

16.7M Color can be selected by software;

White LED back light;

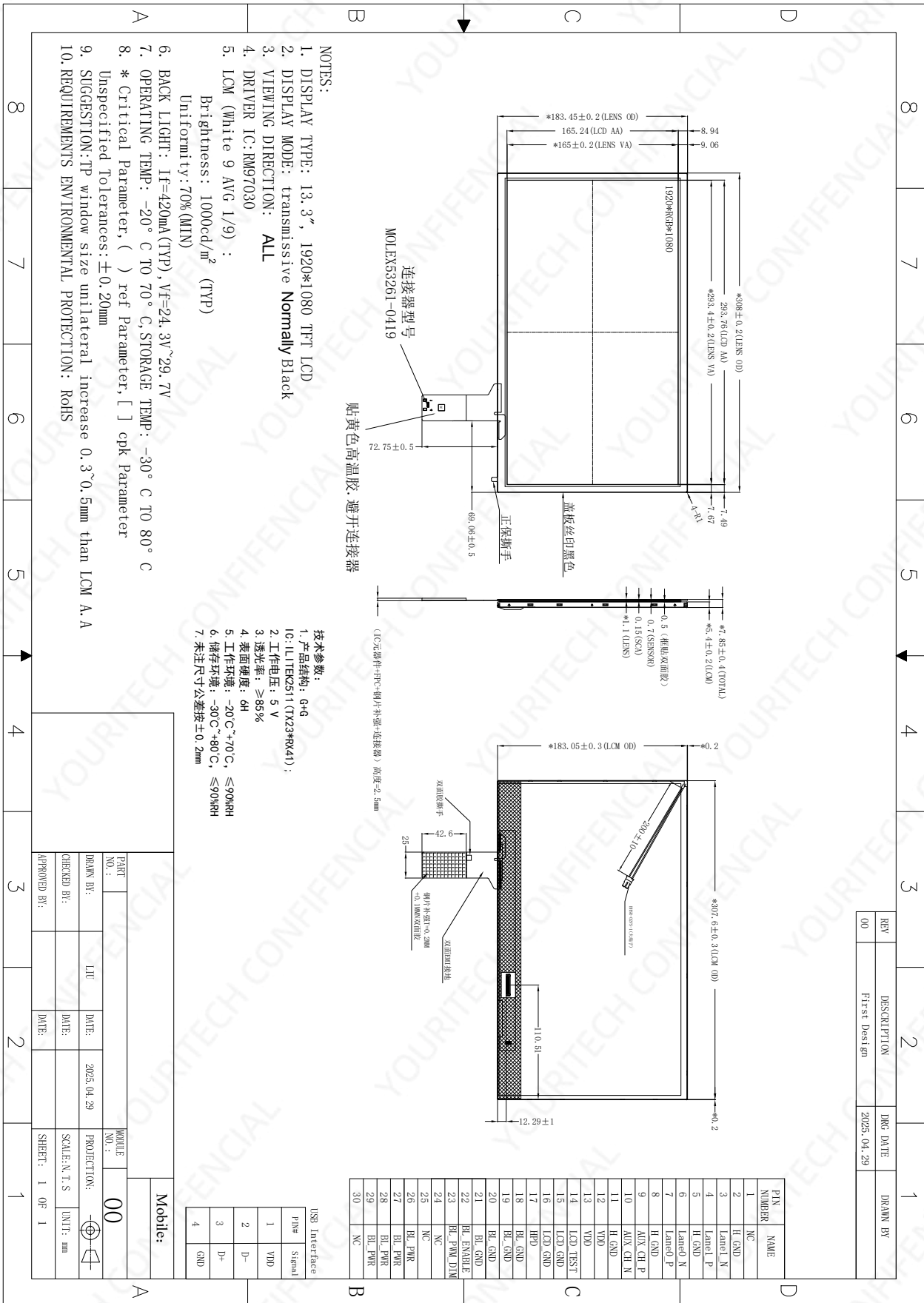
2lane EDP interface



2. LCM General specification

ITEM	Standard value	Unit
LCD Type	Normally Black	--
Drive element	TFT active matrix	--
Number of pixels	1920*3RGB(H)X1080(V)	Dots
Pixel arrangement	R,G,B vertical stripe	--
Pixel Pitch (W*H)	0.153 (H) × 0.153 (V)	mm
Active area	293.40(H) x 165.00(V)	mm
Viewing direction	ALL O'CLOCK	-
TFT Driver IC	RM97030	
TFT interface	2lane EDP interface	-
Approx. Weight	TBD	g
LCM Size(W*H*T)	307.60(W)x183.05(H) x 5.40(T)	mm
LCM+CTP Size(W*H*T)	308.00(W)x183.45(H) x 7.85(T)	mm
Touch structure	G+G	
Touch Driver IC	ILITEK2511(TX23*RX41)	-
Touch Interface	USB	





REV	DESCRIPTION	DWG DATE	DRAWN BY
00	First Design	2025.04.29	

PTN NUMBER	NAME
1	NC
2	H GND
3	Lane1_N
4	Lane1_P
5	H GND
6	Lane0_N
7	Lane0_P
8	H GND
9	AUX_CH_P
10	AUX_CH_N
11	H GND
12	VDD
13	VDD
14	LCD_TEST
15	LCD_GND
16	LCD_GND
17	HPD
18	BL_GND
19	BL_GND
20	BL_GND
21	BL_GND
22	BL_ENABLE
23	BL_PWM_DIM
24	NC
25	NC
26	BL_PWM
27	BL_PWM
28	BL_PWM
29	BL_PWM
30	NC

PTN#	Signal
1	VDD
2	D-
3	D+
4	GND

PART NO.	MOBILE NO.	PROTECTION	SCALE	UNIT
00	00		N.T.S	mm
DRAWN BY:	DATE:	2025.04.29		
CHECKED BY:	DATE:			
APPROVED BY:	DATE:			



3.Absolute Maximum Rating

Characteristics	Symbol	Min.	Max.	Unit
LCM Operating Temperature	T _{OPR}	-20	+70	°C
LCM Storage Temperature	T _{STG}	-30	+80	°C
TP Operating Temperature & Humidity (20% ~ 90%RH)	T _{OPR}	-20	+70	°C
TP SStorage Temperature & Humidity (20% ~ 90%RH)	T _{STG}	-30	+80	°C
Humidity	RH	-	90	%

4.Electrical Characteristics

4.1 TFT-LCD panel driving

Characteristics	Symbol	Min.	Typ.	Max.	Unit
Supply Voltage for(DC/DC)	VDD	3.0	3.3	3.3	V

4.2 Back-Light Unit Characeristics

Characteristics	Symbol	Min.	Type	Max.	Unit	Notes
Forward Voltage	V _F	24.3	--	29.7	V	--
Forward current	I _F	--	420	--	mA	--
Luminance(With LCD+CTP)	Lv	--	1000	--	cd/m ²	--
LED life time	N/A	--	30,000	--	Hr	Note 1



5. Module Function Description

LCM PIN Description:

PIN NO	Symbol	Function
1	NC	No Connect
2	H_GND	High Speed Ground
3	Lane1_N (2 Lane)	Comp Signal Link Lane 1
4	Lane1_P (2 Lane)	True Signal Link Lane 1
5	H_GND	High Speed Ground
6	Lane0_N	Comp Signal Link Lane 0
7	Lane0_P	True Signal Link Lane 0
8	H_GND	High Speed Ground
9	AUX_CH_P	True Signal Auxiliary Ch.
10	AUX_CH_N	Comp Signal Auxiliary Ch.
11	H_GND	High Speed Ground
12	LCD_VCC	LCD logic and driver power(3.3V)
13	LCD_VCC	LCD logic and driver power(3.3V)
14	LCD_Self_Test	LCD Panel Self Test , NC(No Connect, reverse for AUO test only)
15	LCD GND	LCD logic and driver ground
16	LCD GND	LCD logic and driver ground
17	HPD	HPD signal pin
18	BL_GND	Backlight_ground
19	BL_GND	Backlight_ground
20	BL_GND	Backlight_ground
21	BL_GND	Backlight_ground
22	BL_Enable	Backlight On / Off
23	BL PWM DIM	System PWM signal Input
24	NC	Reverse for AUO test only
25	NC	Reverse for AUO test only
26	BL_PWR	Backlight power (12V)
27	BL_PWR	Backlight power (12V)
28	BL_PWR	Backlight power (12V)
29	BL_PWR	Backlight power (12V)
30	NC	No Connect

USB PIN Description:

Pin No.	Symbol	CTP Functional	Notes
1	VDD	USB Power Voltage 5V	
2	D-	Negative data cable	
3	D+	Positive data cable	
4	GND	Power Ground	

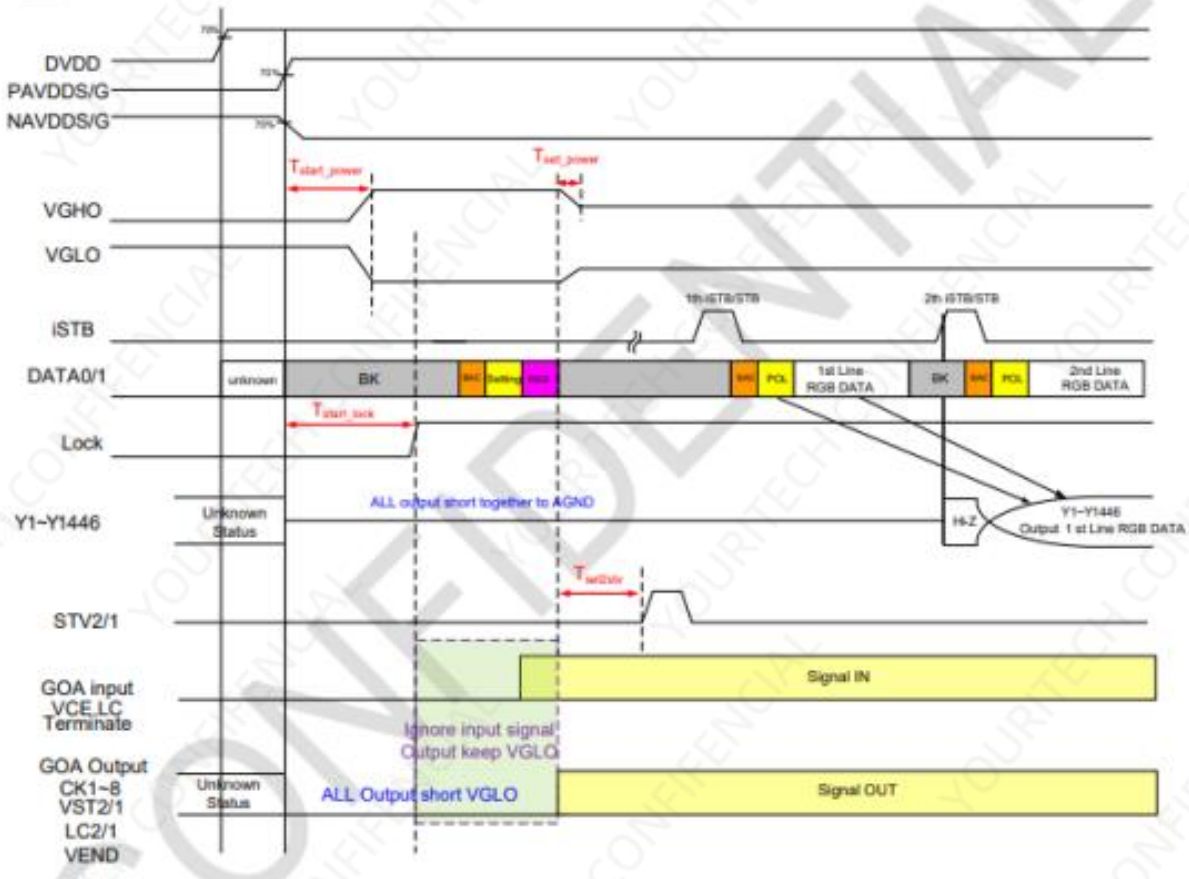


6. Timing Characteristics

Input Timing Characteristics

ITEM	Symbol	Min.	Typ.	Max.	Unit
Clock frequency	F_{DCLK}		141		MHz
Horizontal period area	T_H		2136		DCLK
Horizontal display area	T_{HD}		1920		DCLK
Horizontal blanking area	T_{HB}		184		DCLK
Vertical period area	T_V		1133		T_H
Vertical display area	T_{VD}		1080		T_H
Vertical blanking area	T_{VB}		36		T_H
Frame rate	F_R		60		Hz

Power on/off Timing



I/O AC CHARACTERISTICS

Parameter	Test Conditions	Min	Typ ²	Max	Unit
Supply ramp up time: $t_{2.5}$ 2.5V/3.3V supply ramp up time	10% to 90% of the 2.5V/3.3V supply voltage			10	ms
$t_{1.2}$ 1.2V supply ramp up time	10% to 90% of the 1.2V supply voltage			10	ms
Power ramp delay Δt_{POWER} Delay time from 2.5V/3.3V supply to 1.2V supply	90% of 2.5V/3.3V supply to 90% of 1.2V supply	-10		10	ms
$\Delta t_{POWER/STE}$ Delay from 1.2V power ready & 2.5V/3.3V power ready to RST# pin de-assertion	90% of 1.2V supply & 90% of 2.5V/3.3V supply (all power supplies ready) to 20% of the RST# de-assertion (rising edge)	-5			ms
CMOS output pins: GPIOx t_r Output rise time t_f Output fall time	$C_L = 10 \text{ pF}$			6 6	ns ns
Master I2C pins: MSCL, MSDA t_{RISE} Master I2C bus 10% to 90% rise time				300	ns

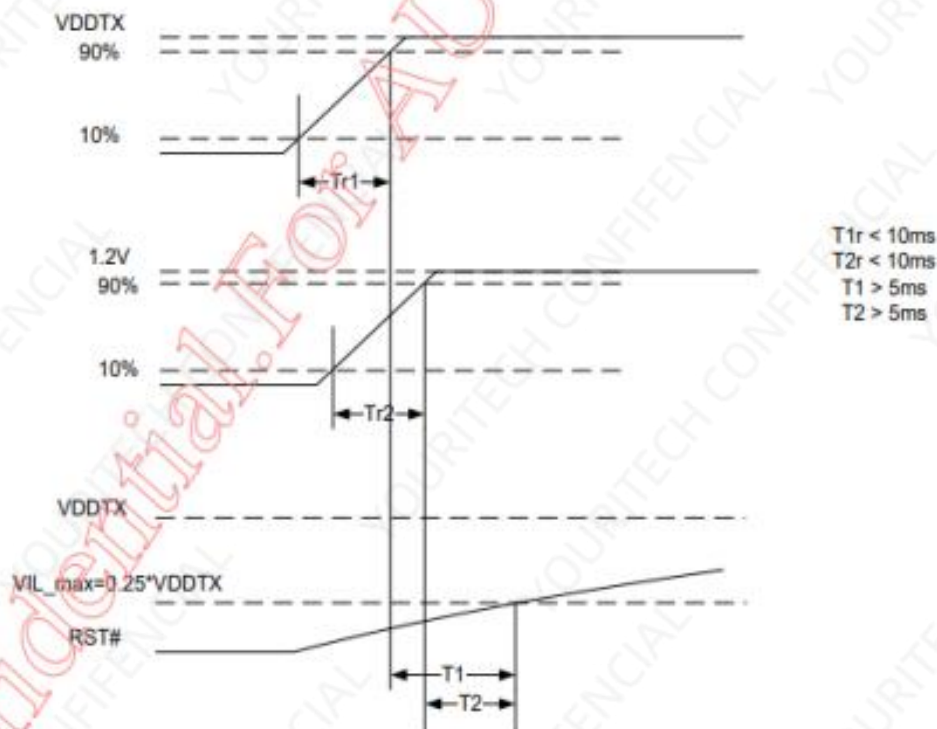


Figure 11. Power up and reset timing sequence



Electrical Characteristics

The following items are measured under stable condition and suggested application circuits.

DC Electrical Characteristics

NORMAL OPERATING CONDITIONS AND POWER CONSUMPTIONS

Parameter	Min	Typ ²	Max	Unit
Supply Voltage:				
2.5V Supply Voltage	2.25	2.5	2.75	V
3.3V Supply Voltage	3.0	3.3	3.6	V
1.8V Supply Voltage	1.7	1.8	1.9	V
1.2V Supply Voltage	1.09	1.2	1.28	V

I/O DC CHARACTERISTICS

Parameter	Test Conditions	Min	Typ ²	Max	Unit
I2C pins: xSCL, xSDA					
V _{OH} High-level output voltage	External 1.5 kΩ pull-up to VCC		VCC		V
V _{OL} Low-level output voltage	2.5V or 3.3V I _{OL} = 8 mA			0.4	V
LCD control pins:					
V _{OH} High-level output voltage	I _{OL} = 4 mA, I _{OH} = -4 mA	0.8VCC			V
V _{OL} Low-level output voltage				0.15VCC	V
General I/O pins					
V _{IH} LVCMOS input High-level voltage		0.7VCC			V
V _{IL} LVCMOS input Low-level voltage				0.25VCC	V
V _{OH} High-level output voltage	I _{OL} = 4 mA, I _{OH} = -4 mA	0.8VCC			V
V _{OL} Low-level output voltage				0.15VCC	V



7.Optical Characteristics

All optical specification is measured under typical condition (Note 1, 2)

Item	Symbol	Condition	Min.	Typ.	Max.	Unit	Remark
Response Time	Tr+Tf	$\theta=0^\circ$	–	25	35	ms	Note 3
Contrast ratio	CR	$\theta=0^\circ$	600	800	--	--	Note 4
NTSC	%	$\theta=0^\circ$	–	72%	--	%	C-light
Viewing Angle	Top	$CR \geq 10$	80	85	--	deg.	Note 5
	Bottom				--		
	Left				--		
	Right				--		
Chromaticity	White	X	$\theta=0^\circ$	0.275	0.325	0.375	@C-Light Note 6
		Y	$\theta=0^\circ$	0.316	0.366	0.416	
	Red	X	$\theta=0^\circ$	0.612	0.662	0.712	
		Y	$\theta=0^\circ$	0.274	0.324	0.374	
	Green	X	$\theta=0^\circ$	0.217	0.267	0.317	
		Y	$\theta=0^\circ$	0.548	0.598	0.648	
	Blue	X	$\theta=0^\circ$	0.085	0.135	0.185	
		Y	$\theta=0^\circ$	0.041	0.091	0.141	

Remark: **Above table, all Values are simulated only. AUO will amend the data, when the actual Products output**

Note 1: Measurement should be performed in the dark room, optical ambient temperature =25°C

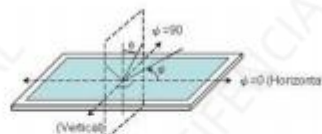
Note 2: To be measured on the center area of panel with a field angle of 1° by Topcon luminance meter BM-5, or SR3 or DMS-803 after 10 minutes operation.

Note 3: The Optical features are based on emissive spectrum of the reference light source by CIE1931C-light. The LCD spectrum of transmission must be verified with the reference light-source to achieve the specified optical characteristics.

Note 4: Contrast ratio is calculated with the following formula.

Contrast ratio = Photo detector output when LCD is at "White" state
Photo detector output when LCD is at "Black" state

Note 5. Definition of viewing angle: refer to figure as below (FPC direction is at $\psi=90^\circ$).



Note 6. The viewing angles are measured at the center area of the panel when all the input terminals of LCD panel are electrically opened.



8. Reliability Test Item

No.	Test Item	Test Condition	Notes
1	High Temp. Storage	+80°C / 96H	1. Functional test is OK. Missing Segment, short, unclear segment non-display, display abnormally and liquid crystal leakage un-allowed. 2. No low temperature bubbles, end seal loose and fall, frame rainbow.
2	Low Temp. Storage	-30°C / 96H	
3	High Temp. Operating	+70°C / 96H	
4	Low Temp. Operating	-20°C / 96H	
5	High Temperature / Humidity storage	60°C x 90%RH / 96H	
6	Thermal and cold shock	Static state, -20°C (30min) ~70°C (30min), 10 cycles	

9. Packing Method----TBD

- END -

