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Cover glass

System solutions

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Custom Display

Production Custom designs Installation

Mechanical design



Project No. 项目编号	ET070WS05-TT
Customer 客户名称	
Module No. 客户型号	
Product type 产品内容	Standard LCD Module TFT: 1024*RGBx600Dots 7.0" 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. This LCD module should be designed for mobile phone use.

LCD specification: Dots 1024xRGBx600.

As to basic specification of the driver IC, refer to the IC (TBD) specification and data book.

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

1024 dot-segment and 600 dot-common outputs;

16.7M Color can be selected by software;

White LED back light;

LVDS interface



2. LCM General specification

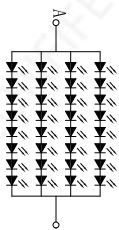
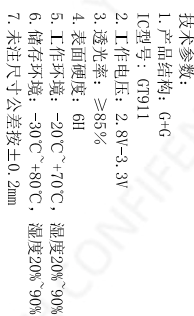
ITEM	Standard value	Unit
LCD Type	Normally Black	--
Drive element	TFT active matrix	--
Number of pixels	1024*3RGB(H)X600(V)	Dots
Pixel arrangement	RGB stripe	--
Pixel Pitch (W*H)	0.1506(W)x 0.1432(H)	mm
Active area	154.21 (H) × 85.92 (V)	mm
Viewing direction	ALL O'CLOCK	--
TFT Driver IC	TBD	--
TFT interface	LVDS Interface	--
Approx. Weight	TBD	g
LCM Size(W*H*T)	164.90(W) x100.00(H) x5.56(T)	mm
LCM+CTP Size(W*H*T)	176.40(W) x111.00(H) x7.34(T)	mm
Touch structure	G+G	--
Touch Driver IC	GT911	--
Touch Interface	I2C	--



REV	DESCRIPTION	DRG DATE	DRAWN BY
00	First Design	2025. 12. 30	

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Pin	Symbol	Value
1	VDD	1
2	VDD	3
3	VDD	3
4	NC	4
5	RESET	5
6	STRB	6
7	GND	7
8	R1X0+	8
9	R1X0+	9
10	GND	10
11	R1X1+	11
12	R1X1+	12
13	GND	13
14	R1X2+	14
15	R1X2+	15
16	GND	16
17	R1X3+	17
18	R1X3+	18
19	GND	19
20	R1X3+	20
21	R1X3+	21
22	GND	22
23	NC	23
24	NC	24
25	GND	25
26	DIO	26
27	DIO	27
28	SELB	28
29	AVDD	29
30	GND	30
31	LEB+	31
32	LEB+	32
33	I/E	33
34	VDD	34
35	VDD	35
36	NC	36
37	NC	37
38	VDD	38
39	LEB+	39
40	LEB+	40



Backlight LED Circuit

- NOTES:
1. DISPLAY TYPE: 7.0", 1024*600 TFT LCD
 2. DISPLAY MODE: transmissive **Normally Black**
 3. VIEWING DIRECTION: ALL 0° CLOCK
 4. DRIVER IC:HX
 5. LCM (White 9 AVG 1/9) :
 Brightness: 1000cd/m²
 Uniformity:80%(MIN)
 BACK LIGHT: 32 chip white LEDs If=160mA, Vf=22, 4V~25, 6V
 7. OPERATING TEMP: -30° C TO 80° C, STORAGE TEMP: -40° C TO 85° C
 8. * Critical Parameter, () ref Parameter, [] cpk Parameter
 Unsimplified Tolerances:±0.20mm
 Modification mark:
 9. SUGGESTION:TP window size unilateral increase 0.3~0.5mm than LCM A. A
 10. REQUIREMENTS ENVIRONMENTAL PROTECTION: RoHS

PART NO.:		MODULE NO.:		00	
				Mobile:	
DRAWN BY:	LIU	DATE:	2025.12.30	PROJECTION:	
CHECKED BY:		DATE:		SCALE:N.T.S	UNIT: mm
APPROVED BY:		DATE:		SHEET: 1 OF 1	

3.Absolute Maximum Rating

Characteristics	Symbol	Min.	Max.	Unit
LCM Operating Temperature	T _{OPR}	-30	+80	°C
LCM Storage Temperature	T _{STG}	-40	+85	°C
Humidity	RH	10	90	%

4.Electrical Characteristics

4.1 TFT DC Characteristics

Characteristics	Symbol	Min.	Typ.	Max.	Unit	Note
TFT OperationFrame rate	Hz	--	60	--	Hz	
Supply Voltage for(DC/DC)	VDD	3.0	3.3	3.6	V	
TFT Gate ON Voltage	VGH	15	17	18.5	V	Note 2
TFT Gate OFF Voltage	VGL	-7.5	-7	-6.5	V	Note 2
TFT Common Voltage	Vcom	--	3.3	4.7	V	Note 1
AVDD	Avdd	9.0	9.6	10.2	V	Note 3

Note: (1) Vcom must be adjusted to optimize display quality: cross-talk, contrast ratio and etc.

(2) VGH is TFT gate operating voltage

(3) VGL is TFT gate operating voltage

(4) Environmental condition: 25±5

4.2 Back-Light Unit Characeristics

The back-light system is an edge-lighting type with 32 white LEDs. The characteristics of the back-light are shown in the following tables.

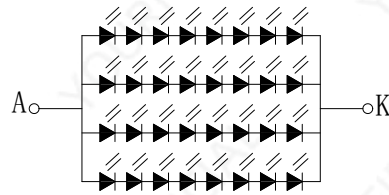
Characteristics	Symbol	Min.	Type	Max.	Unit	Notes
Forward Voltage	V _F	22.4	--	25.6	V	--
Forward current	I _F	--	160	--	mA	--
Luminance(With LCD)	L _v	--	1000	--	cd/m ²	--
LED life time	N/A	--	20,000	--	Hr	Note 1

Note:

(1) The “LED life time” is defined as the module brightness decrease to 50% of original brightness at I_L=40mA/LED. The LED life time could be decreased if operating I_L is larger than 45mA/LED.

Backlight circuit diagram shown in below:





5. Module Function Description

LCM PIN Description:

Pin No.	Symbol	LCM Description	remarks
1	VCOM	Common Voltage 3.3V	
2	VDD	Power for Digital Circuit 3.3V	
3	VDD	Power for Digital Circuit 3.3V	
4	NC	No connection	
5	RESET	Global reset pin 3.3V	
6	STBYB	Standby mode: STBYB = "H", normal operation(default) STBYB = "L", timing controller, source driver will turn off, all output are High-Z.	
7	GND	Ground	
8	NIND0	-LVDS differential data input	
9	PIND0	+LVDS differential data input	
10	GND	Ground	
11	NIND1	-LVDS differential data input	
12	PIND1	+LVDS differential data input	
13	GND	Ground	
14	NIND2	-LVDS differential data input	
15	PIND2	+LVDS differential data input	
16	GND	Ground	
17	NIND	-LVDS CLOCK differential signal input	
18	PIND	+LVDS CLOCK differential signal input	
19	GND	Ground	
20	NIND3	-LVDS differential data input	
21	PIND3	+LVDS differential data input	
22	GND	Ground	
23	NC	No connection	
24	NC	No connection	
25	GND	Ground	



26	NC	No connection	
27	DIMO	No connection	
28	SELB	6bit/8bit mode select	Note1
29	AVDD	Power for Analog Circuit 9.6V	
30	GND	Ground	
31	LEDK	Power supply for LED backlight cathode input.	
32	LEDK	Power supply for LED backlight cathode input.	
33	L/R	Horizontal inversion Left/right selection	Note2
34	U/D	Vertical inversion Up/down selection	Note2
35	VGL	Gate OFF Voltage -7V	
36	NC	No connection	
37	NC	No connection	
38	VGH	Gate ON Voltage 17V	
39	LEDA	Power supply for LED backlight anode input.	
40	LEDA	Power supply for LED backlight anode input.	

Note1:

If LVDS input data is 6 bits, SELB must be set to High;

If LVDS input data is 8 bits, SELB must be set to Low.

Note2:

When L/R="0", set right to left scan direction.

When L/R="1", set left to right scan direction.

When U/D="0", set up to down scan direction.

When U/D="1", set down to up scan direction.



Reset Input Timing:

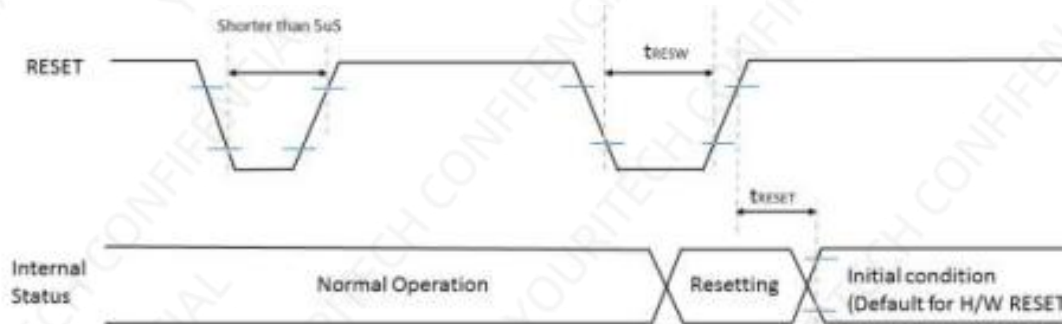


Figure 4-13 Reset Input Timing

Table 4-2 Reset Input Timing

Signal	Symbol	Parameter	Description	Specification			Unit	Notes
				MIN	TYP	MAX		
RESET	tRESW	Reset "L" pulse width		10			uS	1
	tRESET	Reset complete time	When reset applied during Sleep in mode			5	mS	2
			When reset applied during Sleep Out mode			120	mS	5

Note 1: Condition : Ta =25℃

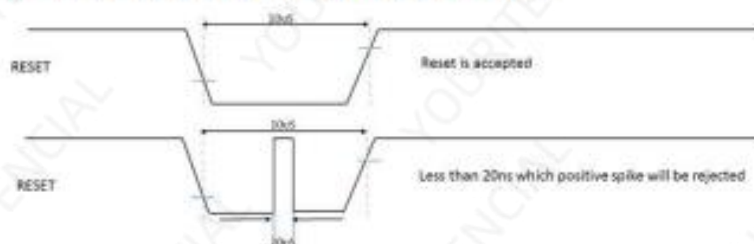
Note 2: Spike due to an electrostatic discharge on RESET line does not cause irregular system reset according to the table below.

RESET Pulse	Action
Less than 5us	Reset Rejected
More than 10uS	Reset
Between 5us and 10uS	Reset Start

Note 2: During the resetting period, the display will be blanked (The display is entering blanking sequence, which maximum time is 120ms, when Reset Starts in sleep out mode. The display remains the blank state in sleep in mode) and then return to Default condition for H/W RESET.

Note3: During Reset Complete Time, values in OTP memory will be latched to internal register during this period. This loading is done every time when there is H/W RESET complete time (tRESET) within 5ms after a rising edge of RESET.

Note 4: Spike Rejection also applies during a valid reset pulse as shown below:



Note 5: It is necessary to wait 5ms after releasing RESET when sending commands, and Sleep Out command can not be sent within 120ms.



7.Optical Characteristics

Item		Symbol	Condition	Specification			Unit	Remark	Notes
				Min.	Typ.	Max.			
T% (w/o APCF, w/o haze) @ C-light		T%	1.Viewing normal angle $\theta_x=\theta_y=0^\circ$ (Center) 2.At 25°C	4.73	5.27	--	%	Center	All left side data are based on INX' s following condition (at 25 °C) 1. LC : AAS 2.BLU : under C light 3.Machine : DMS-900 V LC : Vbright $\geq$ 5.3V Vdark $\leq$ 0.3V
Contrast Ratio (w/o WPA)		CR		800	1000	--	--	Center Note (1)	
Response Time (w/o WPA)		Ton+Toff		--	25	35	ms	Center Note (2)	
Viewing Angle	Hor.	θ_{x+}	Center CR>10	80	--	--	deg	Note (3)	
		θ_{x-}		80	--	--			
	Ver.	θ_{y+}		80	--	--			
		θ_{y-}		80	--	--			
CF only Chromaticity (CIE1931)	Red	Rx	Viewing normal angle $\theta_x=\theta_y=0^\circ$	0.594	0.614	0.634	--	--	CF Glass with C-light
		Ry		0.320	0.340	0.360	--	--	
	Green	Gx		0.268	0.288	0.308	--	--	
		Gy		0.513	0.533	0.553	--	--	
	Blue	Bx		0.118	0.138	0.158	--	--	
		By		0.116	0.136	0.156	--	--	
	White	Wx		0.289	0.309	0.329	--	--	
		Wy		0.310	0.330	0.350	--	--	
	NTSC	xy		45	50		%	--	

*Note (1) Definition of Contrast Ratio (CR):

The contrast ratio can be calculated by the following expression.

Contrast Ratio (CR) = L255 / L0

L 255 : Luminance of gray level 255

L 0: Luminance of gray level 0

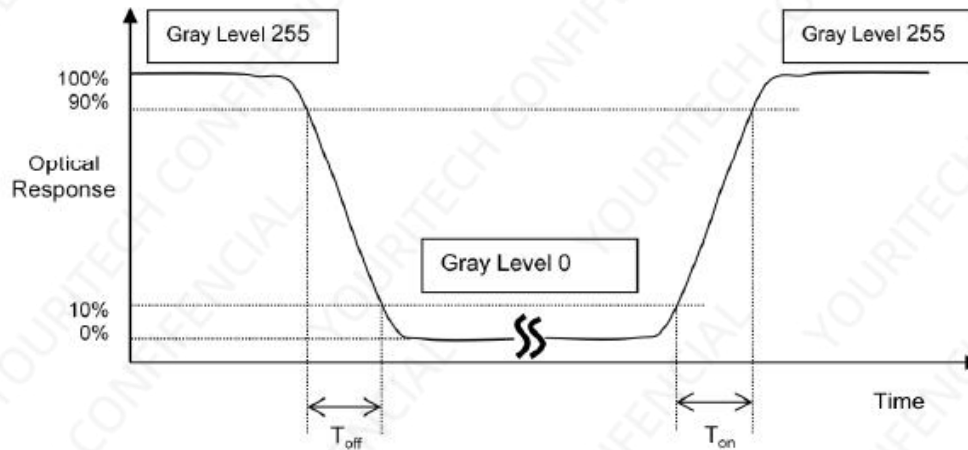
Note 4: Definition of contrast ratio:

Contrast ratio is measured at the center point of LCD and calculated by the following formula:

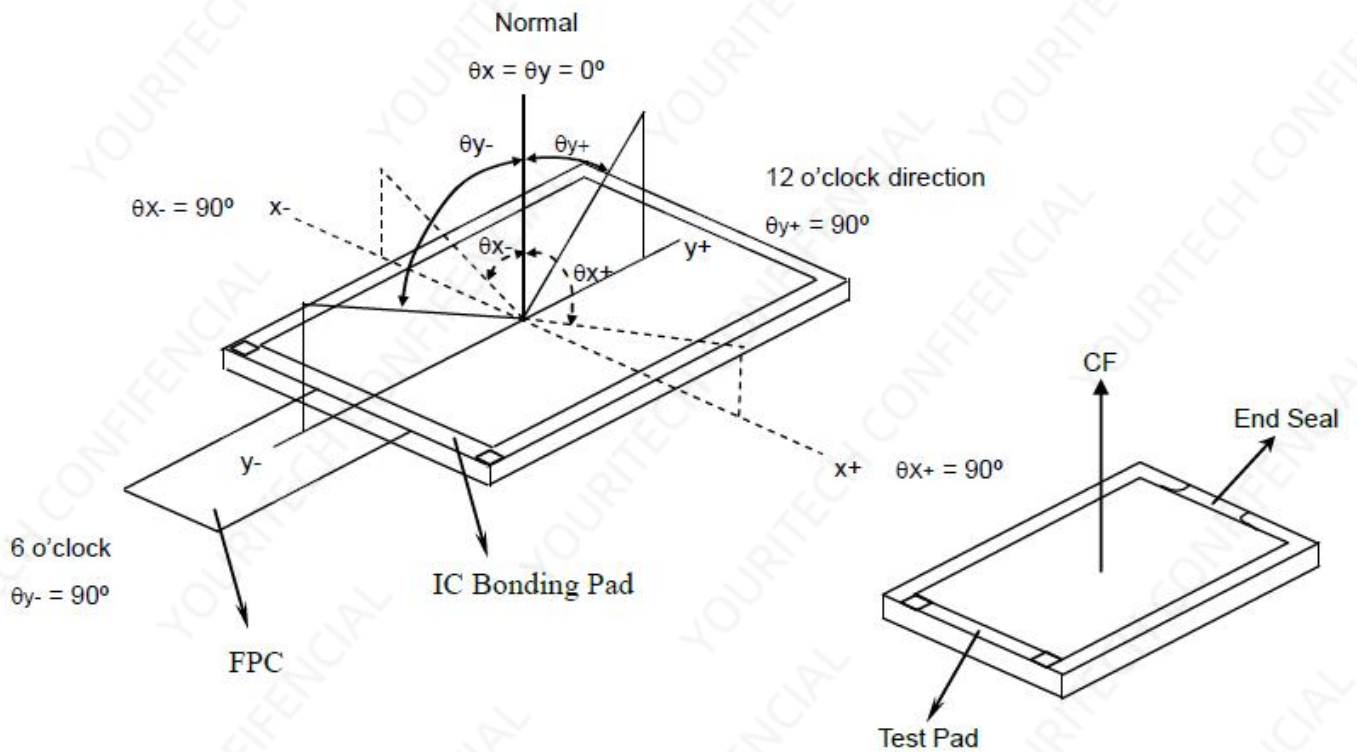
$$\text{Contrast Ratio (CR)} = \frac{\text{Luminance measured when LCD on the "White" state}}{\text{Luminance measured when LCD on the "Black" state}}$$



*Note (2) Definition of Response Time (T_{on} , T_{off}):



*Note(3) Definition of Viewing Angle



8. Reliability Test Item

No.	Test Item	Test Condition	Notes
1	High Temp. Storage	+85°C / 240H	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	-40°C / 240H	
3	High Temp. Operating	+80°C / 240H	
4	Low Temp. Operating	-30°C / 240H	
5	High Temperature / Humidity storage	60°C x 90%RH / 240H	
6	Thermal and cold shock	Static state, -30°C (30min) ~80°C (30min), 10 cycles	

9. Inspection standards

- END -

