

Project No. 项目编号	LCD700015S0-IPS
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

客户确认Customer Approval

项目负责人Project Manager	
品质主管Director of Quality	
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REVISION	DATE	DESCRIPTION	PREPARED BY	APPROVED BY
00	2019.01.12	First Release.	MR.Y	

1. General Description

LCD700015S0-IPS is a transmissive type color active matrix TFT (Thin Film Transistor) liquid crystal display (LCD) that uses amorphous silicon TFT as a switching device. This model is composed of a TFT-LCD module (TFT-LCD panel, driver IC and FPC), a back-light unit and. The resolution of 7.0" contains 1024RGBX600 pixels and can display up to 16.7M colors.

2. Features

Display Mode	Transmissive
	a-TFT
Display Format	Graphic 1024RGB*600Dot-matrix
Viewing Direction	ALL o'clock
LCD Input Data	6/8-bit LVDS
TP Input Data	----
LCD Drive	----
TP Drive	----

3. Mechanical Specifications

Parameter		Specifications	Unit
Main LCD Panel Color TFT 1024RGBx600	Outline dimensions	165(W) x100(H) X2.8(D)	mm
	TP view area	-----	mm
	LCD active area	154.21(W) x85.92(H)	mm
	Color configuration	RGB stripes	-
	Pixel pitch	0.1506(H) x 0.1432(V)	mm
Weight		TBD	grams

(Ta=25±2°C, Vss=GND=0V)

Characteristics	Symbol	Min.	Max.	Unit	Notes
Digital Supply Voltage VDD	VDD	2.3	3.6	V	
Power for analog circuit(AVDD)	AVDD	8	13.5	V	
TP Power Supply	TP_VDD	--	--	V	
LCM Operating Temperature	T _{OPR}	-10	+60	°C	(1), (3)
LCM Storage Temperature	T _{STG}	-30	+70	°C	(2), (3)
TP Operating Temperature & Humidity(20% ~ 90%RH)				°C	
TP SStorage Temperature & Humidity(20% ~ 90%RH)				°C	
Humidity	RH	-	90	%	Max. 60 °C

Notes:

- (1) In case of below 0 °C, the response time of liquid crystal (LC) becomes slower and the color of panel becomes darker than normal one. Level of retardation depends on temperature, because of the LC characteristics.
- (2) If product is exposed to high temperatures for extended time, there is a possibility of the polarizer film damage which could degrade the optical characteristics.
- (3) Permanent damage to the device may occur if maximum values are exceeded or reverse voltage is loaded.

Functional operation should be restricted to the conditions described under normal operating conditions.

6.Electrical Characteristics

6.1LCM DC CHARACTERISTICS

(Ta=25±2°C)

Characteristics	Symbol	Min.	Typ.	Max.	Unit	Note
Digital Supply Voltage	VDD	2.3	3.3	3.6	V	
Analog Supply Voltage	AVDD	8.0	8.9	12.5	V	
TFT Common Voltage	VCOM	2.3	3.8	4.2	V	
TFT Gate ON Voltage	VGH	15	18	21	V	
TFT Gate OFF Voltage	VGL	-10	-7	-6	V	
Current Consumption	I _{DD}	-	TBD	-	mA	Normal mode
	I _{DD-SLEEP}		TBD		uA	Sleep mode

Item	Symbol	Condition	Values			Unit
			Min.	Typ.	Max.	
Gate on Current	IVGH	VGH =21.0V	-	5.2	10.2	mA
Gate off Current	IVGL	VGL= -7.5V	-	4.7	9.7	mA
Digital Current	IVDD	VDD = 3.3V	-	14	19	mA
Analog Current	IAVDD	AVDD = 9.0V	-	31.2	36.2	mA

6.4 Back-Light Unit Characteristics

The back-light system is an edge-lighting type with 24white LEDs. The characteristics of the back-light are shown in the following tables.

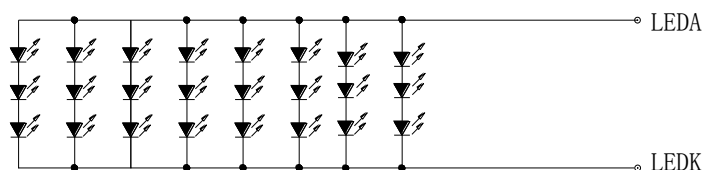
(Ta=25±2°C)

Characteristics	Symbol	Min.	Type	Max.	Unit	Notes
Forward Voltage	V_F	--	--	--	V	-
Forward current	I_F	--	160	-	mA	-
Luminance(With LCD)	L_v		280	--	cd/m ²	-
LED life time	N/A	----	50,000	--	Hr	Note 1

Note:

- (1) The “LED life time” is defined as the module brightness decrease to 50% of original brightness at $I_L=20\text{mA/LED}$. The LED life time could be decreased if operating I_L is larger than 25mA/LED.

Backlight circuit diagram shown in below:



7. Module Function Description

7.1 LCM Pin Descriptions

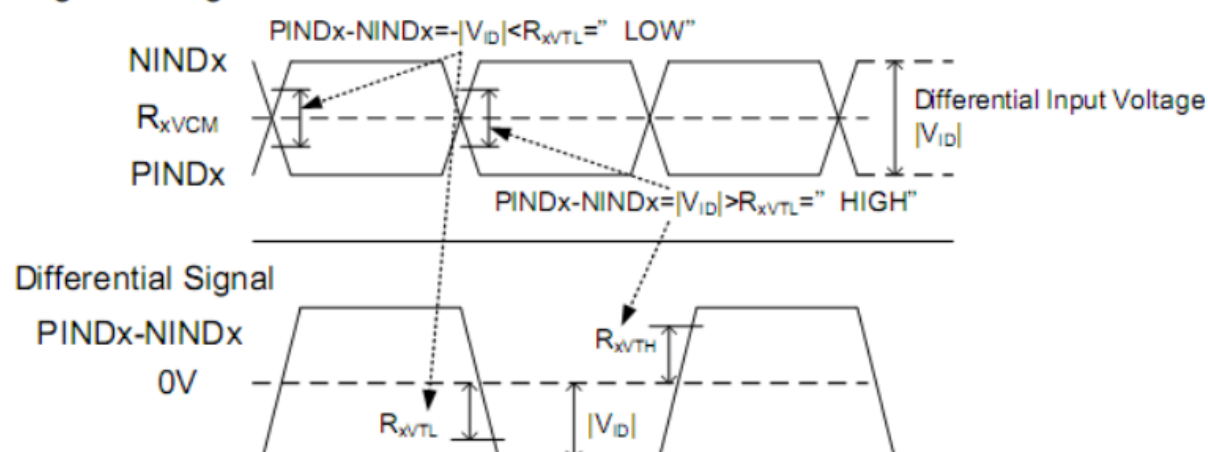
Pin No.	Symbol	Function
1	VCOM	Common Voltage
2	VDD	Power voltage for digital circuit
3	VDD	Power voltage for digital circuit
4	NC	No Connection
5	RESET(3.3V)	Global reset pin
6	STBYB(3.3V)	Standby mode, Normally pulled high STBYB = 1 ,normal operation STBYB = 0 ,timing controller ,source driver will turn off,all output are High-Z
7	GND	Ground
8	RXIN0-	-LVDS differential data input
9	RXIN0+	+LVDS differential data input
10	GND	Ground
11	RXIN1-	-LVDS differential data input
12	RXIN1+	+LVDS differential data input
13	GND	Ground
14	RXIN2-	-LVDS differential data input
15	RXIN2+	+LVDS differential data input
16	GND	Ground
17	RXCLKIN-	-LVDS differential clock input
18	RXCLKIN+	+LVDS differential clock input
19	GND	Ground
20	RXIN3-	-LVDS differential data input
21	RXIN3+	+LVDS differential data input
22	GND	Ground
23	NC	No Connection
24	NC	No Connection
25	GND	Ground
26	NC	No Connection
27	DIMO(3.3V)	Backlight CABC controller signal output
28	SELB (1.8V)	6bit/8bit mode select (Note1) LVBIT="L", 6-bit. LVBIT="H", 8-bit. (default)
29	AVDD	Power for Analog circuit
30	GND	Ground
31	LED-	LED Cathode
32	LED-	LED Cathode
33	L/R(1.8V)	Horizontal inversion SHLR = "L", shift left: SHLR = "H", shift right:
34	U/D(1.8V)	Vertical inversion UPDNB="L", STV1 output vertical start pulse and UD pin output "H" UPDNB = "H", STV2 output vertical start pulse and UD pin output "L" (
35	VGL	Gate OFF Voltage
36	GND	Ground
37	GND	Ground
38	VGH	Gate On Voltage
39	LED+	LED Anode
40	LED+	LED Anode

8. Timing Characteristics

8.1 LVDS Interface Timing Characteristics of IC

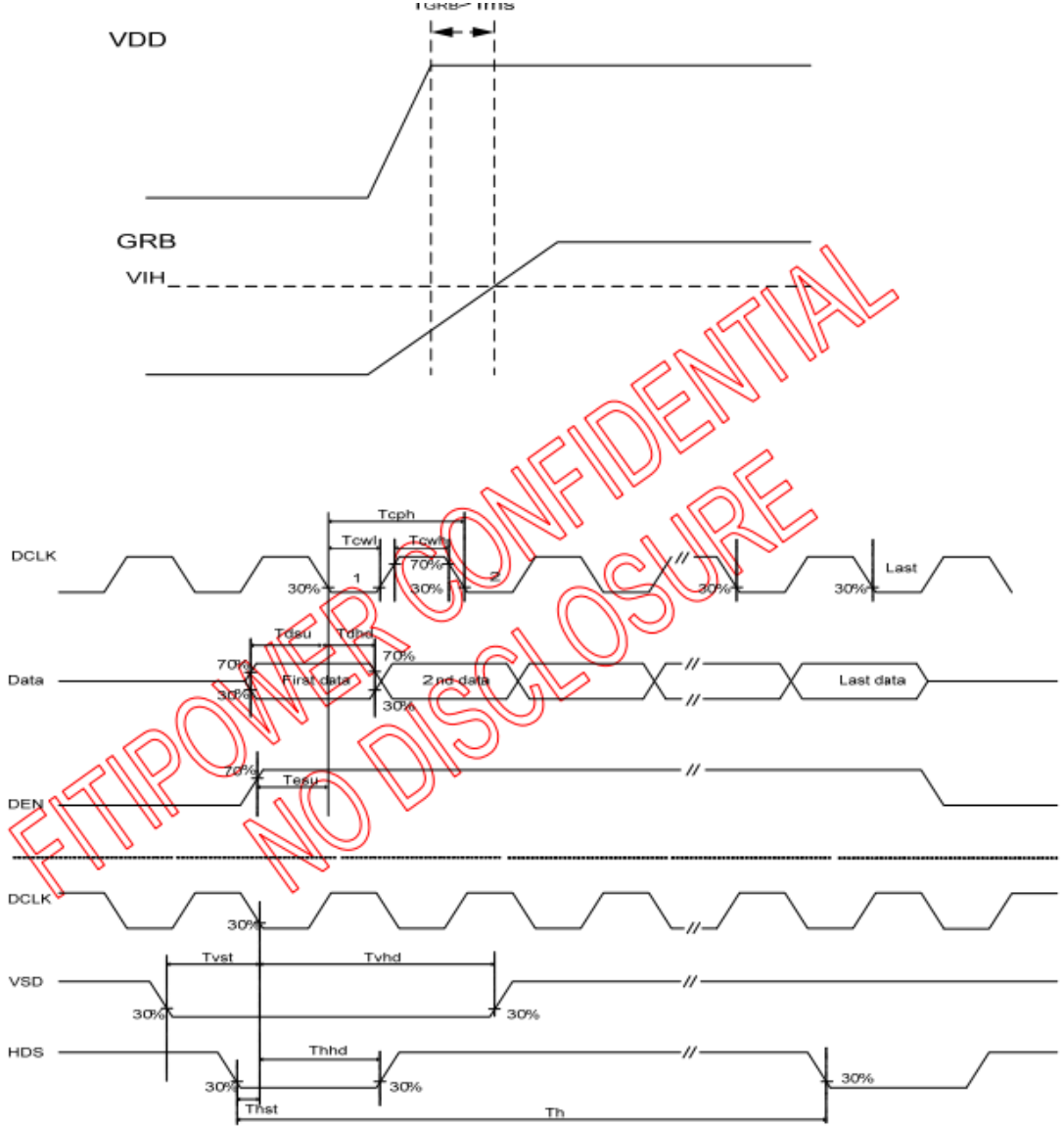
Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Differential input high threshold voltage	R_{xVTH}	0.1	0.2	0.3	V	$R_{xVCM} = 1.2V$
Differential input low threshold voltage	R_{xVTL}	-0.3	-0.2	-0.1	V	
Input voltage range (singled-end)	R_{xVIN}	0.7	-	1.7	V	
Differential Input Impedance	Z_{ID}	80	100	125	ohm	
Differential input common mode voltage	R_{xVCM}	1	1.2	1.4	V	$ V_{ID} = 0.2V$
Differential input voltage	$ V_{ID} $	0.2	-	0.6	V	
Differential input leakage current	I_{LCLVDS}	-10	-	+10	μA	
LVDS Digital Operating Current	$I_{VDDLVDs}$	-	TBD	TBD	mA	$F_{CLK} = 52 \text{ MHz}$, frame rate 60Hz, $V_{DD} = 3.3V$.
LVDS Digital Stand-by Current	I_{STLVDS}	-	TBD	TBD	μA	Clock & all Functions are stopped.

Single-end Signals



8.2 Reset Operation of IC

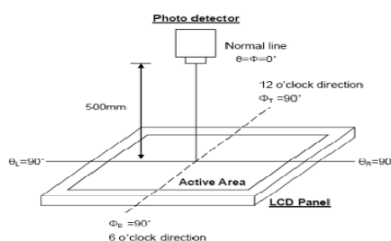
Table 9: Reset Timing Characteristics (VCC = IOVCC=2.4~3.3V)



9. OPTICAL CHARACTERISTICS

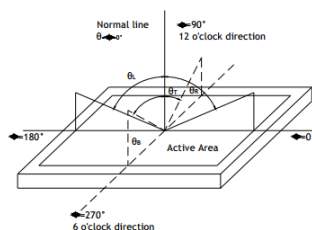
Item		Symbol	Condition	Min.	Typ.	Max.	Unit
Transmittance (Without Polarizer)		T (%)	—	—	(3.93)	—	%
Contrast Ratio		CR	$\Theta=0$ Normal viewing angle	640	800	—	—
Response time	Rising	T _R		—	4	8	msec
	Falling	T _F		—	12	24	
Color gamut		S (%)			50		%
Color chromaticity (CIE1931)	White	W _x		TBD	(0.319)	TBD	
		W _y		TBD	(0.346)	TBD	
	Red	R _x		TBD	TBD	TBD	
		R _y		TBD	TBD	TBD	
	Green	G _x		TBD	TBD	TBD	
		G _y		TBD	TBD	TBD	
	Blue	B _x		TBD	TBD	TBD	
		B _y		TBD	TBD	TBD	
Viewing angle (With EWV PZ)	Hor.	Θ_L	CR>10	80	85	—	
		Θ_R		80	85	—	
	Ver.	Θ_U		80	85	—	
		Θ_D		80	85	—	
Optima View Direction		ALL					

: Definition of optical measurement system (BM-7).



: Definition of viewing angle range and measurement system

Viewing angle is measured at the center point of the LCD by CONOSCOPE (ergo-80).



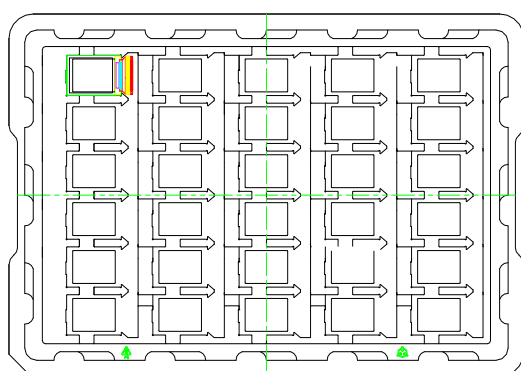
10. Reliability Test Item

Test Item	Sample Type	Test Condition	Test result determinant gist
High temperature storage	Normal temperature	$70 \pm 3^{\circ}\text{C}; 200\text{H}$	the inspection of appearance and function character.
	Wide temperature	$70 \pm 3^{\circ}\text{C}; 200\text{H}$	
Low temperature storage	Normal temperature	$-30 \pm 3^{\circ}\text{C}; 200\text{H}$	
	Wide temperature	$-30 \pm 3^{\circ}\text{C}; 200\text{H}$	
High temperature /humidity storage	Normal temperature	$60^{\circ}\text{C} \pm 3^{\circ}\text{C}, 90\% \pm 3\%\text{RH}; 120\text{H}$	no objection of the function character; no fatal objection of the appearance.
	Wide temperature	$60^{\circ}\text{C} \pm 3^{\circ}\text{C}, 90\% \pm 3\%\text{RH}; 120\text{H}$	
High temperature operation	Normal temperature	$60 \pm 3^{\circ}\text{C}; 120\text{H}$	
	Wide temperature	$60 \pm 3^{\circ}\text{C}; 120\text{H}$	
Low temperature operation	Normal temperature	$-10 \pm 3^{\circ}\text{C}; 120\text{H}$	inspect the objections appearance、function & the whole structure
	Wide temperature	$-10 \pm 3^{\circ}\text{C}; 120\text{H}$	
High temperature /humidity operation	Normal temperature	$50^{\circ}\text{C} \pm 3^{\circ}\text{C}, 90\% \pm 3\%\text{RH}; 120\text{H}$	
	Wide temperature	$50^{\circ}\text{C} \pm 3^{\circ}\text{C}, 90\% \pm 3\%\text{RH}; 120\text{H}$	
Temperature Shock	Normal temperature	$-10 \pm 3^{\circ}\text{C}, 30\text{min} \rightarrow 25-60 \pm 3^{\circ}\text{C}, 30\text{min}; 10\text{cycle}$	The inspection of appearance、function & the whole structure
	Wide temperature	$-10 \pm 3^{\circ}\text{C}, 30\text{min}$ $60 \pm 3, 30\text{min}; 10\text{cycle}$	

10. Packing (Reference only)

Packing Method

(1)



(2)

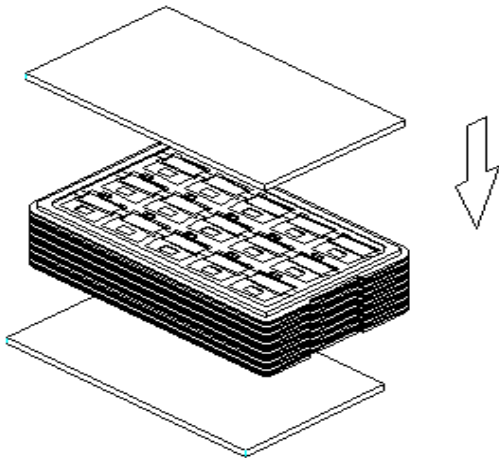
Use empty tray



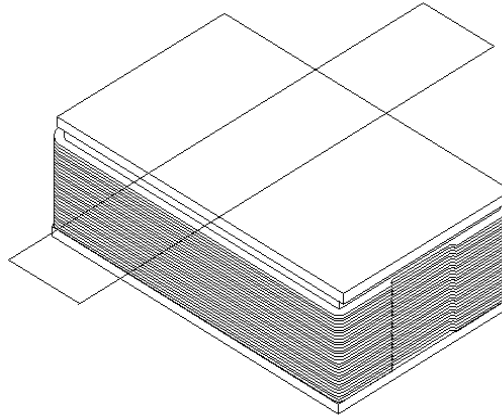
Put products into the tray



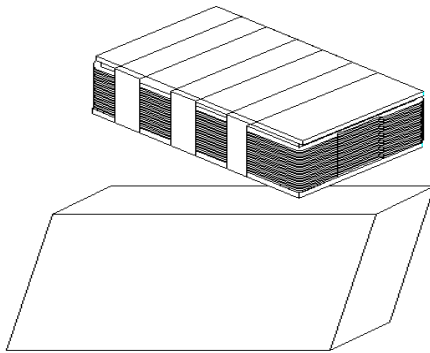
(3)



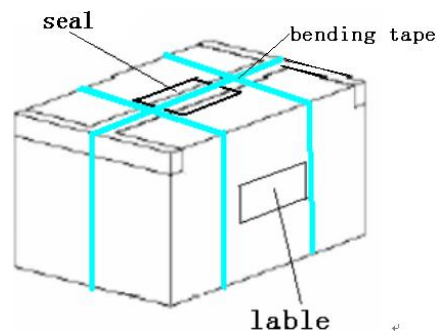
(4)



(5)



(6)



1. Put module into tray cavity :
2. Tray stacking
3. Put 1 cardboard under the tray stack and 1 cardboard above:
4. Fix the cardboard to the tray stack with adhesive tape:
5. Put the tray stack into carton.
6. Carton sealing with adhesive tape.

- END -