SPECIFICATIONS
FOR
LCD MODULE

CUSTOMER	
MODEL	**SCT070009-V04**
CUSTOMER APPROVED	

APPROVED BY	CHECKED BY	ORGANIZED BY
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Contents

1. General Description

SCT070009-V04 is a transmissive type a-Si TFT-LCD module, which is composed of a TFT-LCD panel, a driver circuit and a backlight unit. The panel size is 7.0 inch and the resolution is 1024(RGB)*600, the panel can display up to 16.7M colors. The LCM can be easily accessed by micro-controller via parallel interface.

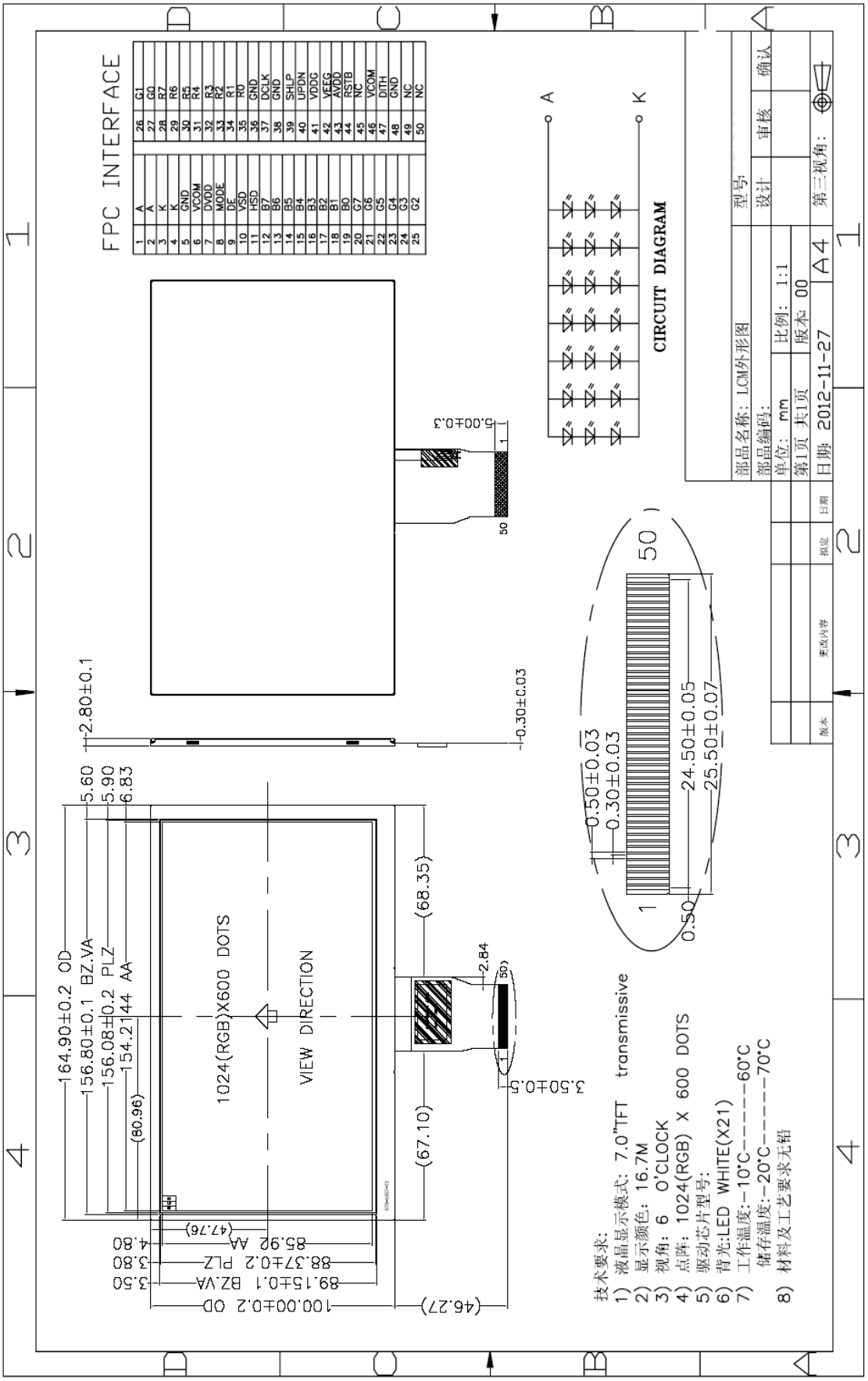
2. Physical Features

Display Mode	TFT-LCD Module
	Active matrix TFT, Transmissive type
Display Format	Graphic 1024(RGB)×600 Dot-matrix
Input Data	24 bit RGB interface
Viewing Direction	6 O'clock

3. Mechanical Specification

Item	Contents	Unit
Module size (W×H×T)	164.90 ×100.00 × 2.80	mm
Number of dots	1024(RGB) × 600	---
Active area (W×H)	154.21× 85.92	mm

4. Outline Dimension



5. Absolute Maximum Ratings

Item	Symbol	Min	Max	Unit	Remark
Power Voltage	DVDD	-0.5	3.96	V	Note1、Note2
Operating temperature	TOPR	-10	60	℃	
Storage temperature	TSTR	-20	70	℃	
Humidity	---	---	90	%RH	---

Remark:

Note 1) The driver IC may be permanently damaged if it is used under the condition exceeding the above absolute maximum values. It is also recommended to use the driver IC within the limit of its electric characteristics during normal operation. Exceeding the conditions may lead to malfunction of it and affect its credibility.

Note 2) The voltage from GND.

6. Electrical Characteristics

Item		Symbol	Rating			Unit	Remark
			Min	Typ	Max		
Digital Supply Voltage		DVDD	3.0	3.3	3.6	V	---
Analog Supply Voltage		AVDD	9.4	9.6	9.8	V	---
Gate On Voltage		VDDG	17	18	19	V	---
Gata Off Voltage		VEEG	-5	-6	-7	V	---
Common Voltage		VCOM	3.1	3.3	3.5	V	Note1
Input Voltage	L level	VIL	GND	---	0.3*DVDD	V	DVDD=3.3 ~ 3.6V
	H level	VIH	0.7* DVDD	---	DVDD	V	
Digital current		IDVDD	---	8	---	mA	
Analog current		IAVDD	---	30	---	mA	
Gate On current		IVDDG	---	0.5	---	mA	
Gata Off current		IVDDE	---	0.5	---	mA	

Remark:

Note1:Vcom must be adjusted to optimize display quality: Cross-talk, Contrast Ratio and etc.

7. Module Function Description

7-1. Pin Description

PIN NO.	Symbol	I/O	Description
1~2	A	P	LED backlight anode
3~4	K	P	LED backlight cathode
5	GND	P	Power ground
6	VCOM	P	Power supply for Vcom drive ouput
7	DVDD	P	Power voltage
8	MODE	I	DE/SYNC mode select
9	DE	I	Input data enable control
10	VSD	I	Vertical sync input
11	HSD	I	Horizontal sync input
12~19	B7~B0	I	Blue data
20~27	G7~G0	I	Green data
28~35	R7~R0	I	Red data
36	GND	P	Power ground
37	DCLK(CLKIN)	I	Data clock input
38	GND	P	Power ground
39	SHLP	I	Source shift direction control
40	UPDN	I	Gate scan direction control
41	VDDG(VGH)	P	Power supply for Gate drive ouput High
42	VEEG(VGL)	P	Power supply for Gate drive ouput Low
43	AVDD	P	Power supply for analog
44	RSTB	I	Reset
45	NC	-	No connection
46	VCOM	P	Power supply for Vcom drive ouput
47	DITH	I	Dithering function enable control
48	GND	P	GND
49	NC	-	No connection
50	NC	-	No connection

7-2. Timing Characteristics

Vertical timing

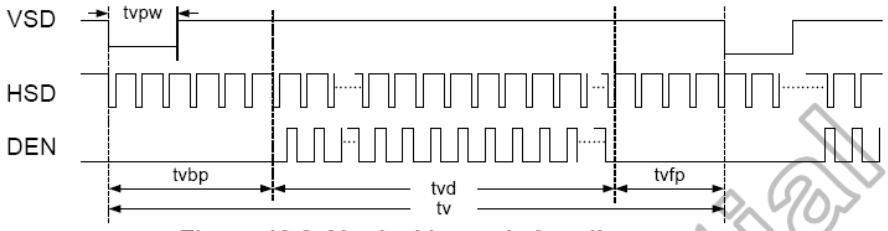


Figure 10.2: Vertical input timing diagram

Horizontal timing

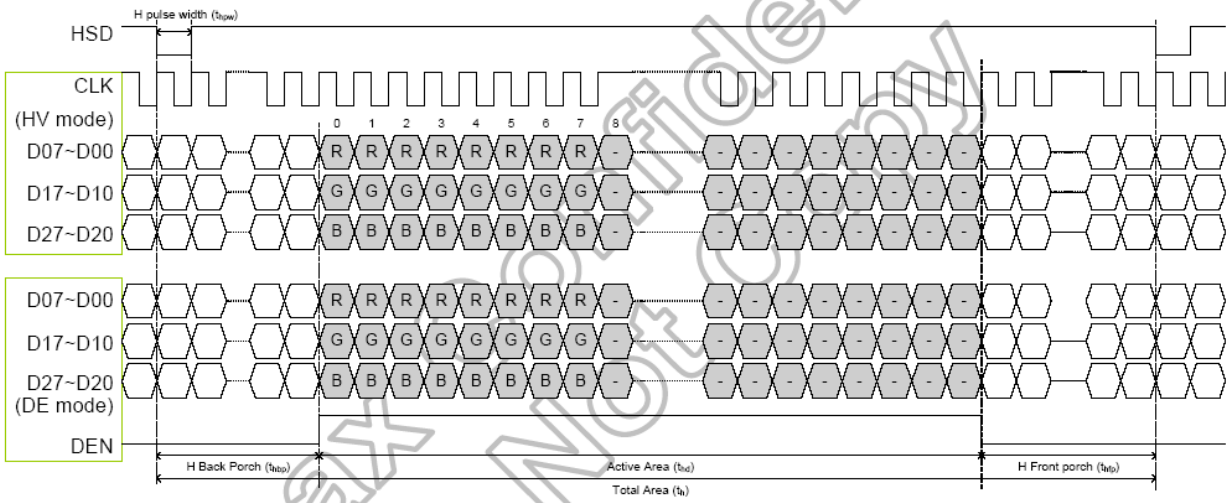


Figure 10.3: Horizontal input timing diagram

- **DE mode**

Parameter	Symbol	Spec.			Unit
		Min.	Typ.	Max.	
DCLK Frequency	fclk	40.8	51.2	67.2	MHz
Horizontal Display Area	thd		1024		DCLK
HSD Period	th	1114	1344	1600	DCLK
HSD Blanking	thb+ thfp	90	320	376	DCLK
Vertical Display Area	tvd		600		T_H
VSD Period	tvbp	610	635	800	T_H
VSD Blanking	tvbp+ tvfp	10	35	200	T_H

Table 10.4: DE mode (1024x600)

- **HV mode**

Horizontal timing

Parameter	Symbol	Spec.			Unit
		Min.	Typ.	Max.	
DCLK Frequency	fclk	44.9	51.2	63	MHz
Horizontal Display Area	thd		1024		DCLK
HSD Period	th	1200	1344	1400	DCLK
HSD Pulse Width	thpw	1	-	140	DCLK
HSD Back Porch	thbp		160		DCLK
HSD Front Porch	thfp	16	160	216	DCLK

Table 10.5: HV mode horizontal timing (1024x600)

Vertical Timing

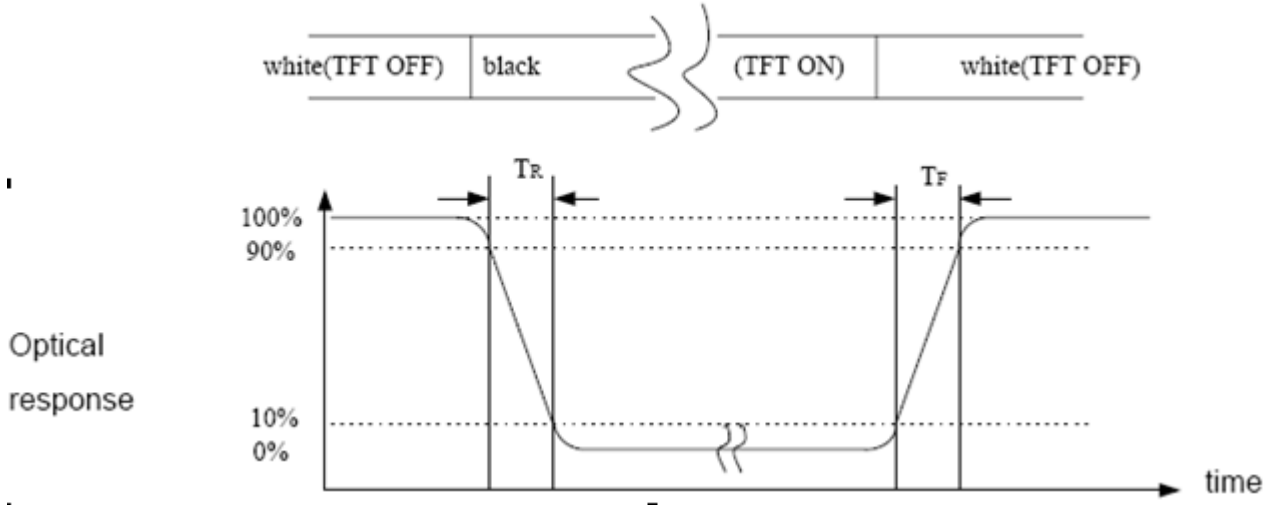
Parameter	Symbol	Spec.			Unit
		Min.	Typ.	Max.	
Vertical Display Area	tvd		600		T_H
VSD Period	tv	624	635	750	T_H
VSD Pulse Width	tvpw	1	-	20	T_H
VSD Back Porch	tvbp		23		T_H
VSD Front Porch	tvfp	1	12	127	T_H

Table 10.6: HV Mode Vertical Timing (1024x600)

8. Electro-Optical Characteristics

Item		Symbol	Condition	Min.	Typ.	Max.	Unit	Remark
Response time		Tr +Tf		---	25	40	ms	Note 1
Contrast Ratio		CR		600	800	---	---	Note 2
Transmittance		T%		3.9	4.2	---	%	
Color chromaticity	white	Wx	θx = θy =0	0.293	0.313	0.333	---	Reference Only
		Wy		0.309	0.329	0.349		
Viewing Angle		Left 70	CR ≥ 10	---	75		---	Note4
		Right 70		---	75			
		7 Down 60		---	5			
		Up		50	75 ---			
Luminance		L	I_F =140mA	---	200	---	cd/m2	Note3
NTSC				---	50	---	%	

Note(1) Definition of Response Time:Sum of T_R and T_F



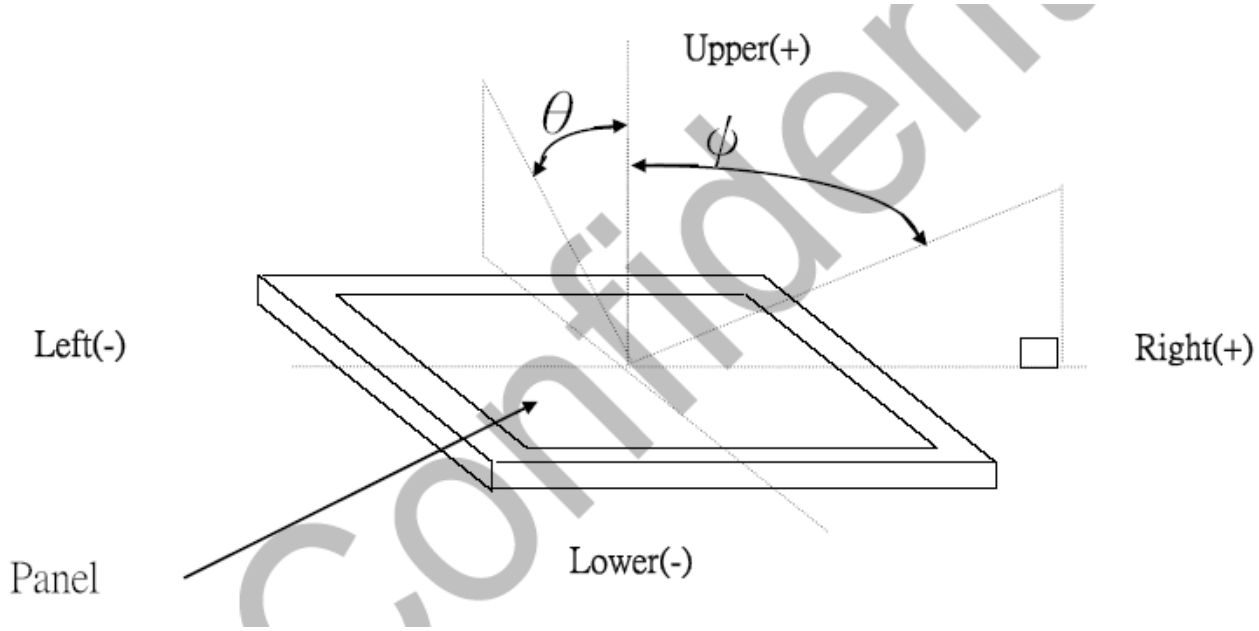
Note (2) Definition of Contrast Ratio(CR):measureed at the center point of panel

$$CR = \frac{\text{Luminance with all pixels white}}{\text{Luminance with all pixels black}}$$

Note(3) Backlight circuit

a. Test Instrument:BM-7(Distance:500mm;Field=1°)
b. Light Source: LED*21(White)
c. Conditions: $I_F = 140mA, V_{BL} = 9.6V$

Note (4) Definition of Viewing Angle:



9. Reliability

No.	ITEM	CONDITION	CRITERION
1	High Temperature Non-Operating Test	70℃ * 240Hrs	1.No Defect Of Operational Function In Room Temperature Are Allowable. 2.IDD of LCM in Pre-and Post-Test Should Folllow Specification
2	Low Temperature Non-Operating Test	-20℃ * 240Hrs	
3	High Temperature/Humidity Non-Operating Test	40℃ * 75%RH * 240Hrs	
4	High Temperature Operating Test	60℃ * 240Hrs	
5	Low Temperature Operating Test	-10℃ * 240Hrs	

10. Records Of Version

Version	Revise Date	Page	Content
V.1 2012-11-27	All released New		