SPECIFICATION

AGM-070S0-V0-R

Atualizado pelo MKT em 16/02/2016

Record of Revision

Version	Revise Date	Page	Content
Pre-spec.A	2015/09/29		Initial Release

Contents

1. General Specifications

No.	Item	Specification	Remark
1	LCD size	7.0 inch(Diagonal)	
2	Driver element	a-Si TFT active matrix	
3	Resolution	800 × 3(RGB) ×480	
4	Display mode	Normally White, Transmissive	
5	Pixel pitch	0.1926(H) X 0.1790(V) mm	
6	Active area	154.08(H) X 3(RGB) X 85.92(V) mm	
7	Outline dimensions	165(H) X 100(V) X 7.3(D) mm	
8	Surface treatment	Anti-Glare	
9	Color arrangement	RGB-stripe	
10	Interface	TTL RGB-24bit parallel interface	
11	Backlight Power consumption	TBD	
12	Panel Power consumption	TBD	
13	Weight	TBD	

2. Pin Assignment

FPC Connector is used for the module electronics interface. The recommended model is FH12A-50S-0.5SH manufactured by Hirose.

Pin No.	Symbol	I/O	Function	Remark
1	VLED+	P	Power for LED backlight(anode)	Note 8
2	VLED+	P	Power for LED backlight(anode)	Note 8
3	VLED-	P	Power for LED backlight(Cathode)	Note 8
4	VLED-	P	Power for LED backlight(Cathode)	Note 8
5	GND	P	Power ground	
6	V_{COM}	I	Common voltage	
7	DV_{DD}	P	Power for Digital Circuit	
8	MODE	I	DE/SYNC mode select	Note 1
9	DE	I	Data Input Enable	
10	VS	I	Vertical Sync Input	
11	HS	I	Horizontal Sync Input	
12	B7	I	Blue data(MSB)	
13	B6	I	Blue data	
14	B5	I	Blue data	
15	B4	I	Blue data	
16	B3	I	Blue data	
17	B2	I	Blue data	
18	B1	I	Blue data	Note 2
19	B0	I	Blue data(LSB)	Note 2
20	G7	I	Green data(MSB)	
21	G6	I	Green data	
22	G5	I	Green data	
23	G4	I	Green data	
24	G3	I	Green data	
25	G2	I	Green data	
26	G1	I	Green data	Note 2

27	G0	I	Green data(LSB)	Note 2
28	R7	I	Red data(MSB)	
29	R6	I	Red data	
30	R5	I	Red data	
31	R4	I	Red data	
32	R3	I	Red data	
33	R2	I	Red data	
34	R1	I	Red data	Note 2
35	R0	I	Red data(LSB)	Note 2
36	GND	P	Power Ground	
37	DCLK	I	Sample clock	Note 3
38	GND	P	Power Ground	
39	L/R	I	Left / right selection	Note 4,5
40	U/D	I	Up/down selection	Note 4,5
41	V_{GH}	P	Gate ON Voltage	
42	V_{GL}	P	Gate OFF Voltage	
43	AV_{DD}	P	Power for Analog Circuit	
44	RESET	I	Global reset pin.	Note 6
45	NC	-	No connection	
46	V_{COM}	I	Common Voltage	
47	DITHB	I	Dithering function	Note 7
48	GND	P	Power Ground	
49	NC	-	No connection	
50	NC	-	No connection	

I: input, O: output, P: Power

Note 1: DE/SYNC mode select. Normally pull high.
When select DE mode, MODE="1", VS and HS must pull high.
When select SYNC mode, MODE= "0", DE must be grounded.

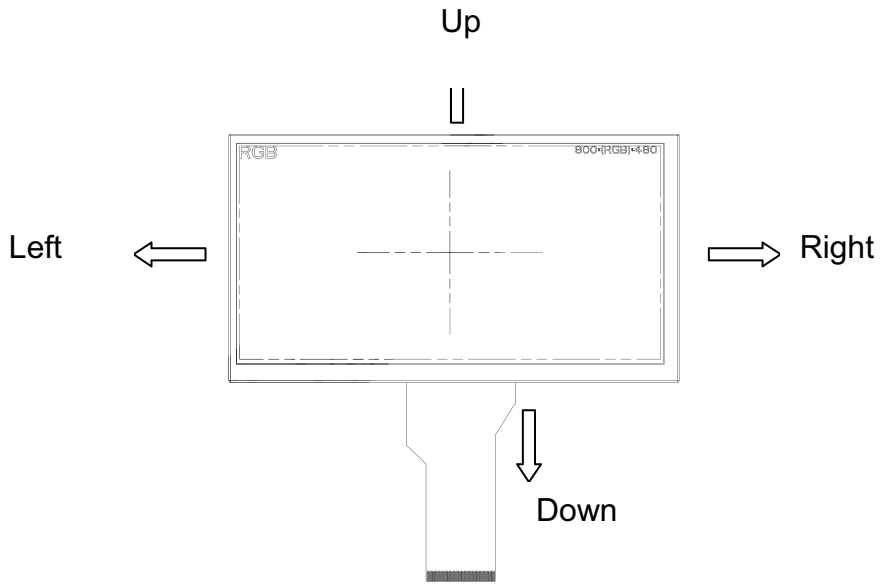
Note 2: When input 18 bits RGB data, the two low bits of R,G and B data must be grounded.

Note 3: Data shall be latched at the falling edge of DCLK.

Note 4: Selection of scanning mode

Setting of scan control input		Scanning direction
U/D	L/R	
GND	DV_{DD}	Up to down, left to right
DV_{DD}	GND	Down to up, right to left
GND	GND	Up to down, right to left
DV_{DD}	DV_{DD}	Down to up, left to right

Note 5: Definition of scanning direction.
Refer to the figure as below:



Note 6: Global reset pin. Active low to enter reset state. Suggest to connect with an RC reset circuit for stability. Normally pull high.

Note 7: Dithering function enable control, normally pull high.
When DITHB="1",Disable internal dithering function,
When DITHB="0",Enable internal dithering function,

Note 8: Reserve for LED power input.

3. Operation Specifications

3.1. Absolute Maximum Ratings

(Note 1)

Item	Symbol	Values		Unit	Remark
		Min.	Max.		
Power voltage	DV_{DD}	-0.3	3.96	V	
	AV_{DD}	-0.5	14.85	V	
	V_{GH}	-0.3	40.0	V	
	V_{GL}	-20.0	0.3	V	
	V_{GH}-V_{GL}	12	40.0	V	
Operation Temperature	T_{OP}	-20	70	℃	
Storage Temperature	T_{ST}	-30	80	℃	

Note 1: The absolute maximum rating values of this product are not allowed to be exceeded at any times. Should a module be used with any of the absolute maximum ratings exceeded, the characteristics of the module may not be recovered, or in an extreme case, the module may be permanently destroyed.

3.1.1. Typical Operation Conditions

(Note 1)

Item	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Power voltage	DV_{DD}	3.0	3.3	3.6	V	Note 2
	AV_{DD}	9.4	9.6	9.8	V	
	V_{GH}	17	18	19	V	
	V_{GL}	-6.6	-6.0	-5.4	V	
Input signal voltage	V_{COM}	3.7	3.9	4.1	V	
Input logic high voltage	V_{IH}	0.7 DV_{DD}	-	DV_{DD}	V	Note 3
Input logic low voltage	V_{IL}	0	-	0.3 DV_{DD}	V	

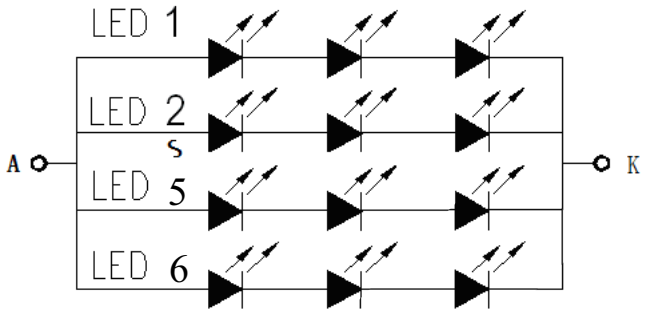
Note 1: Be sure to apply DV_{DD} and V_{GL} to the LCD first, and then apply V_{GH}.
Note 2: DV_{DD} setting should match the signals output voltage (refer to Note 3) of customer's system board.
Note 3: DCLK,HS,VS,RESET,U/D, L/R,DE,R0~R7,G0~G7,B0~B7,MODE,DITHB.

3.1.2. Current Consumption

Item	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Current for Driver	I_{GH}	-	0.2	1.0	mA	V_{GH} =18.0V
	I_{GL}	-	0.2	1.0	mA	V_{GL} = -6.0V
	IDV_{DD}	-	4.0	10	mA	DV_{DD} =3.3V
	IAV_{DD}	-	20	50	mA	AV_{DD} =9.6V

3.1.3. Backlight Driving Conditions (18 White Chips)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Supply voltage of white LED backlight	VL	8.7	9.6	10.5	V	Note 1
Curt for LED backlight	IL	90	120	150	mA	
Luminance (on the module surface,BM-7)		170	220	-	cd/m^2	
LED life time	-	50,000	-	-	Hr	Note 2



3.2. Power Sequence

To prevent the device damage from latch up, the power on/off sequence shown below must be followed.

Power ON: VDD, GND → AVDD, AVSS → V1 to V14
Power OFF: V1 to V14 → AVDD, AVSS → VDD, GND

Power on/off control

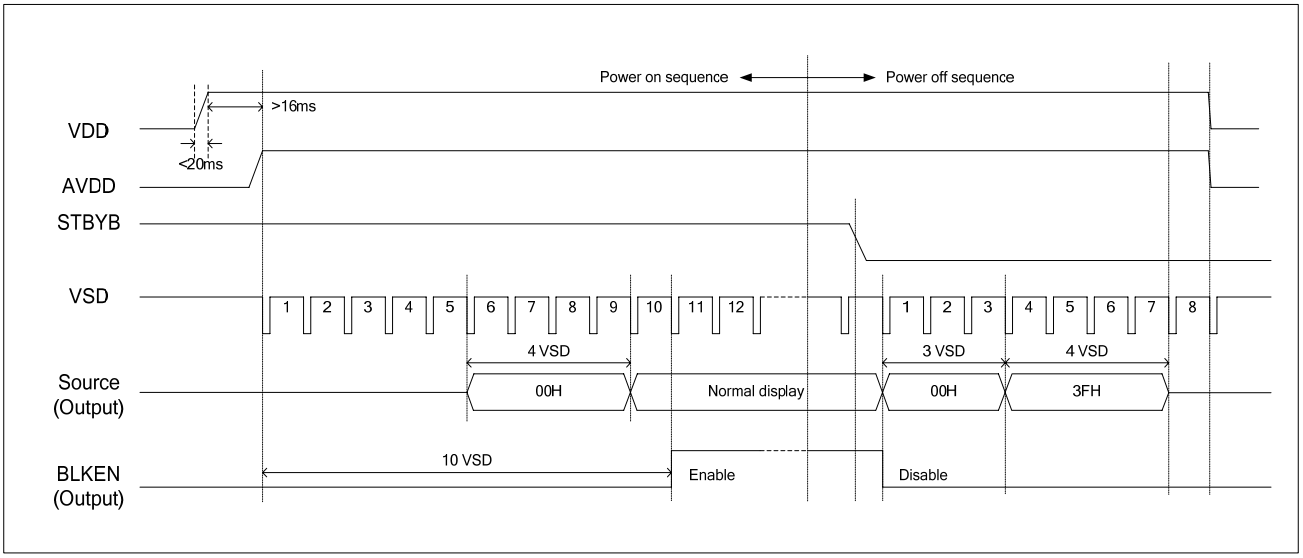


Figure 3.1: Power on/off timing sequence

Enter and exit standby mode sequence

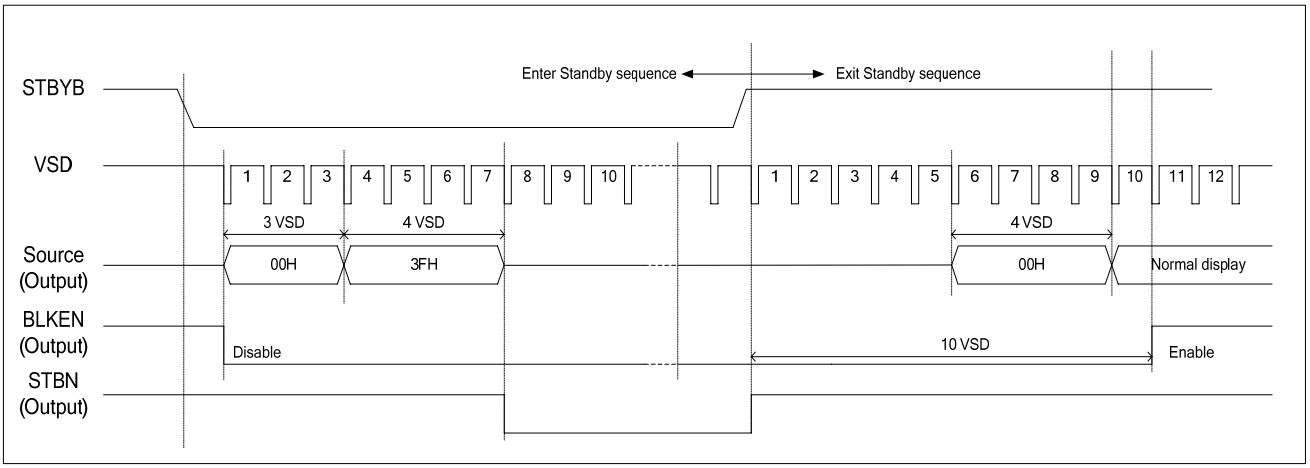


Figure 3.2: Enter and exit standby mode sequence

3.3. Timing Characteristics

3.3.1 AC electrical characteristics

Parameter	Symbol	Spec.			Unit
		Min.	Typ.	Max.	
HS setup time	Thst	8	-	-	ns
HS hold time	Thhd	8	-	-	ns
VS setup time	Tvst	8	-	-	ns
VS hold time	Tvhd	8	-	-	ns
Data setup time	Tdsu	8	-	-	ns
Data hold time	Tdhd	8	-	-	ns
DE setup time	Tesu	8	-	-	ns
DE hold time	Tehd	8	-	-	ns
VDD Power On Slew rate	TPOR	-	-	20	ms
RSTB pulse width	TRst	10	-	-	μs
CLKIN cycle time	Tcph	20	-	-	ns
CLKIN pulse duty	Tcwh	40	50	60	%
Output stable time	Tsst	-	-	6	μs

3.3.2. Data Input Format

- **Horizontal timing**

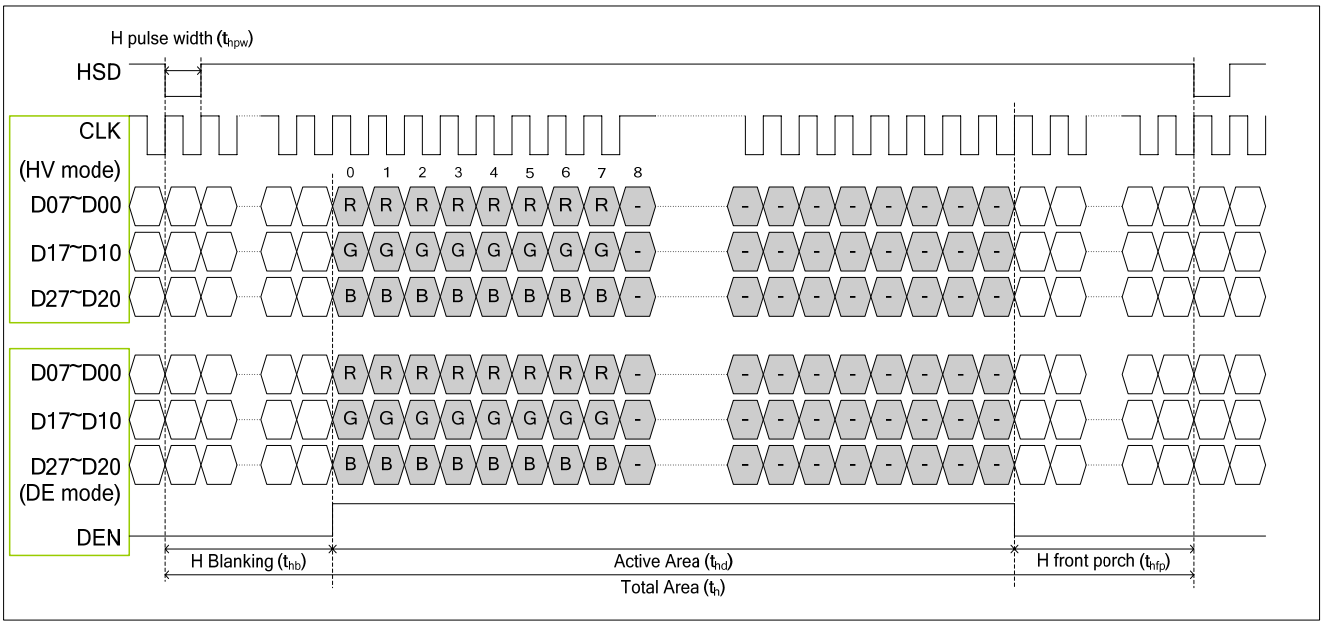


Figure 3.3 Horizontal input timing diagram

- **Vertical Timing**

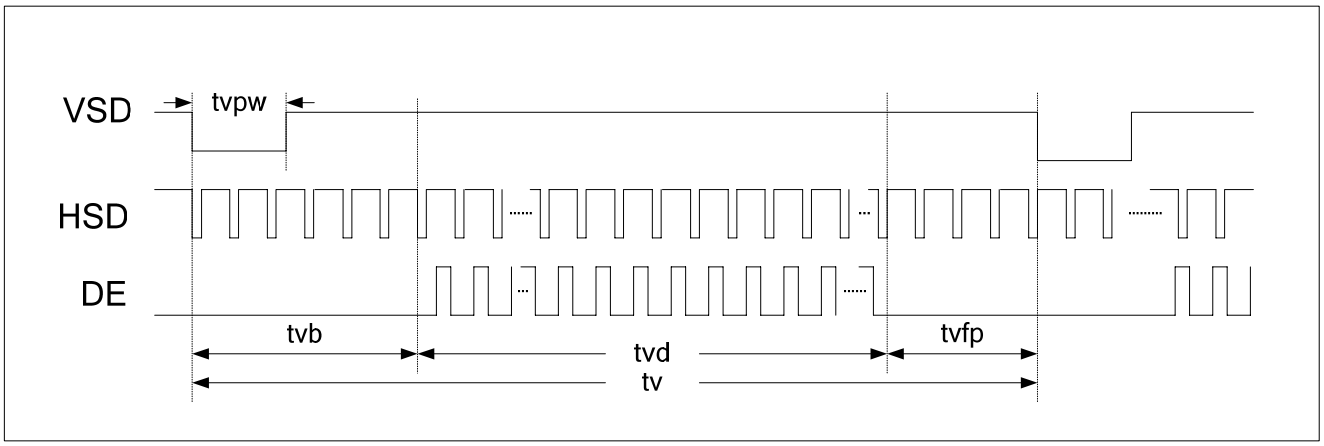


Figure 3.4: Vertical input timing diagram

3.3.3. Timing

● Horizontal Timing

Parameter	Symbol	Spec.			Unit
		Min.	Typ.	Max.	
Horizontal Display Area	thd	-	800	-	DCLK
DCLK frequency	fclk	-	33.3	50	MHz
One Horizontal Line	th	862	1056	1200	DCLK
HS pulse width (Min.)	thpw		1		DCLK
HS pulse width (Typical.)	thpw		-		DCLK
HS pulse width (Max.)	thpw		40		DCLK
HS Back Porch (Blanking)	thb	46	46	46	DCLK
HS Front Porch	thfp	16	210	354	DCLK
DE mode Blanking	th-thd	45	256	400	DCLK

● Vertical Timing

Parameter	Symbol	Spec.			Unit
		Min.	Typ.	Max.	
Vertical Display Area	tvd		480		TH
VS period time	tv	510	525	650	TH
VS pulse width	tvpw	1	-	20	TH
VS Back Porch (Blanking)	tvb	23	23	23	TH
VS Front Porch	tvfp	7	22	147	TH
DE mode Blanking	tv-tvd	4	45	170	TH

4. Optical Specifications

Ta=25 ℃

Item		Symbol	Condition	Min	Typ	Max	Unit	Remark
View Angles		θT	CR≧10	40	50	--	Degree	Note1
		θB		60	70	--		
		θL		60	70	--		
		θR		60	70	--		
Contrast Ratio		CR	θ=0°	320	400	--		Note4
Response Time		T_{ON}	25℃	--	25	35	ms	Note3
		T_{OFF}						
Chromaticity	White	x	Backlight is on	0.273	0.313	0.353		Note2 Note5 Note6
		y		0.289	0.329	0.369		
	Red	x		0.562	0.602	0.642		
		y		0.297	0.337	0.377		
	Green	x		0.309	0.349	0.389		
		y		0.547	0.587	0.627		
	Blue	x		0.123	0.163	0.203		
		y		0.074	0.114	0.154		
Uniformity		U		75	80	--	%	Note7
NTSC				--	50	--	%	
Luminance		L		170	220	--	cd/m^2	Note6

Test Conditions:

1. DV_{DD}=3.3V, I_L=120mA(Backlight current),the amblent temperature is25 ℃.
2. The test systems refer to Note 2.

5.Touch Panel Specification

5.1 Electrical Characteristis

Item	Value			Unit	Remark
	Min.	Typ.	Max.		
Lineanty	-1.5	-	+1.5	%	Afterenvinronment andlifelest
TerminalResistance	300	-	1000	Ω	X(Glassside)
	100	-	500	Ω	Y(Glassside)
Insulation Resistance	20	-	-	MΩ	DC25V1min
OperatingVoltage	-	5	-	V	DC

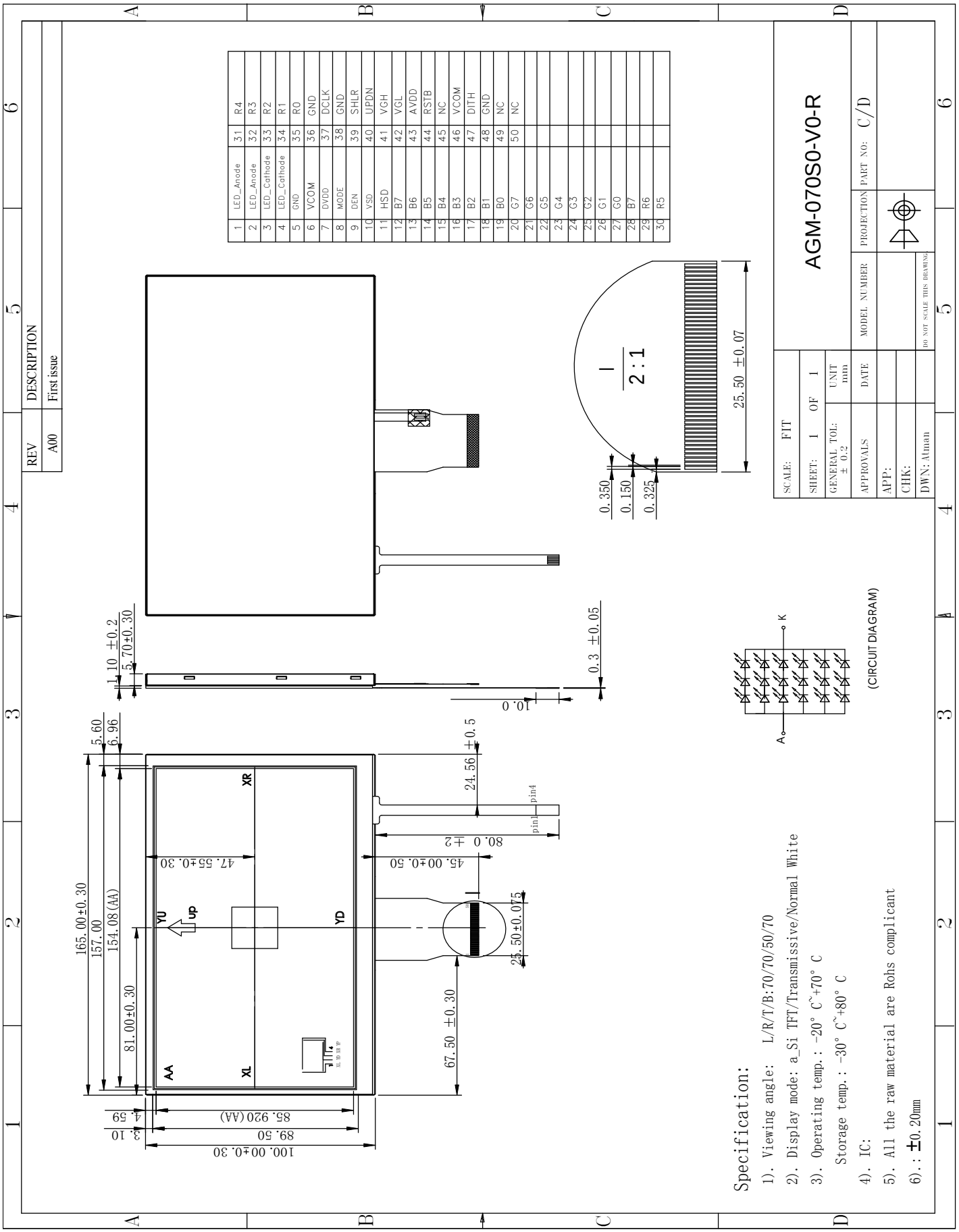
5.2 Optical Characteristcs

Item	Value			Unit	Remark
	Min.	Typ.	Max.		
ResponseTime	-	-	10	ms	100KΩ pull-up
LightTransparency	80	-	-	%	-

5.3 Mechanical Characteristics

Item	Value			Unit	Remark
	Min.	Typ.	Max.		
ActiveForce	10	-	100	g	
SurfaceHardness	3	-	-	H	
PenSlidingDurability	100.000	-	-	time	
HittingDurability	1.000.000	-	-	time	

6. Mechanical Drawing



SPECIFICATION SHEET

7 &10.1 INCH VGA PCB

- Model No.:AGM-070S0-V0-R
- System: PAL/NTSC Automatic

1. INTRODUCTION

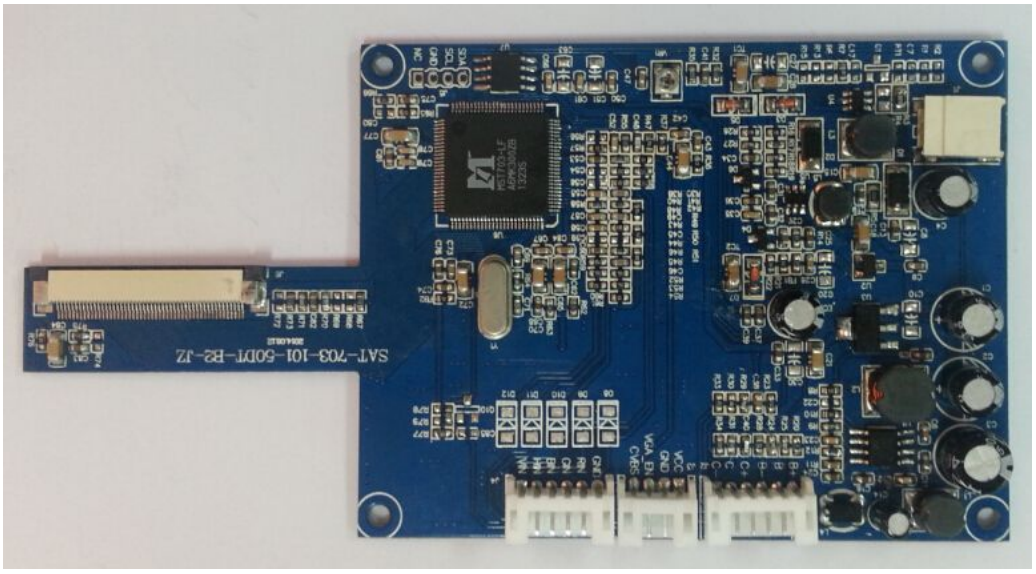
AGM-070S0-V0-R can support 7 inch & 10.1 inch digital panel,using MST703 solution;supports VGA ans CVBS signal input;supports both PAL system and NTSC, which can be automatically converted. The whole module use high light white LED as backlight, which has low consumption and disturbances. This TFT module can be used for visual doorbell,video telephony,automotive displays, portable DVD, instruments, meters and measuring equipment etc.

2. MAIN PARAMETERS

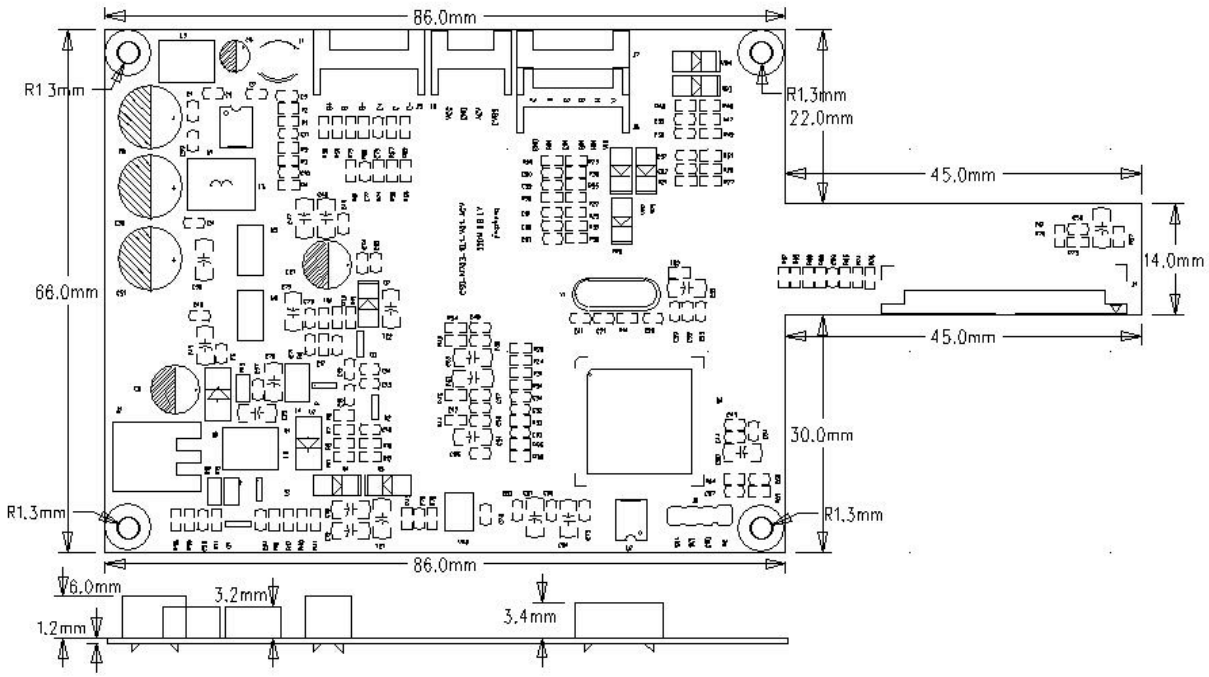
Input Signal Type	PAL/NTSC/VGA
Scope of input signal	Standard: 1.0 Vp-p,Minimum:0.5 Vp-p,Maximum:2.0 Vp-p
Working Consumption	≤ 1.0W
Startup time	≤1.9S
Working current	DC90mA±20mA
Working temperature scope	-20℃-60℃
Storage temperature scope	-40℃-70℃

3. PRODUCT PICTURE (JUST FOR REFERENCE)

PCB PICTURE



4.DIAGRAM



5. INTERFACE DEFINITION

J4:6-wire leads out(PH specifications, 2.0mm space between)for VGA input.

Pin	Symbol	Definitions
1	VIN	Vertical Sync Input
2	HIN	Horizontal Sync Input
3	BIN	Blue Signal Input
4	GIN	Green Signal Input
5	RIN	Red Signal input
6	GND	ground

J3:4-wire leads out(PH specifications, 2.0mm space between)used for video,power and signal cutting function.

Pin	Symbol	Definitions
1	CVBS	PAL/NTSC video input
2	VGA_EN	VGA/CVBS signal input switch;When the pin in low electricity(GND),it shows CVBS mode;When the pin hang

		in the air,it shows VGA mode.
3	GND	ground
4	VCC	9V~18V power input

J2:6-wire leads out (PH specifications, 2.0mm space between), used for potentiometer.

Pin	Symbol	Definitions
1	C-	Color VR (－)
2	C	Color VR
3	C+	Color VR(+)
4	B-	Brightness VR(－)
5	B	Brightness VR
6	B+	Brightness VR(+)

J1:2-wire leads out (PH specifications, 3.5mm space between), used for connecting 10.1”digital panel backlight power supply.

Pin	Symbol	Definitions
1	LED+	Power for LED backlight(anode)
2	LED-	Power for LED backlight(Cathode)

J5: 0.5mm*50PIN FPC connector，used for connecting 7&10.1 inch digital panel.

Pin	Symbol	Definitions
1	LED+	Power for LED backlight(anode)
2	LED+	Power for LED backlight(anode)
3	LED-	Power for LED backlight(Cathode)
4	LED-	Power for LED backlight(Cathode)
5	GND	Power ground

6	VCOM	Common voltage
7	DVDD	Power for Digital Circuit
8	MODE	DE/SYNC mode select
9	DE	Data Input Enable
10	VS	Vertical Sync Input
11	HS	Horizontal Sync Input
12	B7	Blue data
13	B6	Blue data
14	B5	Blue data
15	B4	Blue data
16	B3	Blue data
17	B2	Blue data
18	B1	Blue data
19	B0	Blue data
20	G7	Green data
21	G6	Green data
22	G5	Green data
23	G4	Green data
24	G3	Green data
25	G2	Green data
26	G1	Green data
27	G0	Green data
28	R7	Red data
29	R6	Red data
30	R5	Red data
31	R4	Red data
32	R3	Red data
33	R2	Red data
34	R1	Red data
35	R0	Red data
36	GND	Power Ground
37	DCLK	Sample clock
38	GND	Power Ground

39	L/R	Left/right selection
40	U/D	Up/down selection
41	VGH	Gate ON Voltage
42	VGL	Gate OFF Voltage
43	AVDD	Power for Analog Circuit
44	RESET	Global reset pin
45	NC	No connection
46	VCOM	Common Voltage
47	DITHB	Dithering function
48	GND	Power Ground
49	NC	No connection
50	NC	No connection

6.PACKING, TRANSPORT AND STORAGE

6.1.Package:

Sample packing dimension: 180×120×30mm

Large box of packing specifications:447(L)*382(W)*292(H)mm

Carton quantity:60PCS with paper carton packing

6.2.TRANSPORT AND STORAGE

☆To avoid transport during rain or snow days. Prohibited to store with chemical materials and wet things.

8. ATTENTION

☆The input voltage should not be higher than upper limit of designed voltage.

☆Distinguish power line and signal line; if connect reversely, the board can be burn out easily.

☆The board is electronic product, so static electricity should be precaution during process, assembling,operate.

☆When using, the signal resistance should be match with the module internal resistance. 75ohm is the right resistance of input signal resistance on the board: R37 position, if have this resistance, the signal resistance is 75ohm input, if not, the signal resistance is 50Kohm high resistance input.