



SPECIFICATION AGM 0057W

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	AGT echn	ologie	MODLE NO : AGM 0057W
REC	ORDS OF REV	ISION	DOC. FIRST ISSUE
VERSION	DATE	REVISED PAGE NO.	SUMMARY
0	2013/07/02		First issue
А	2014/05/06		Modify Package
В	2015/05/05		Specification & ptical Characteristics. Add size & Surface. Modify Pixel Data Format, Block Diagram & Reliability

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1.Summary

This technical specification applies to 5.7' color TFT-LCD panel. The 5.7' color TFT-LCD panel is designed for camcorder, digital camera application and other electronic products which require high quality flat panel displays. This module follows RoHS.

2.General Specifications

Item	Dimension	Unit
Size	5.7	inch
Dot Matrix	320 x RGBx240(TFT)	dots
Module dimension	126.00x 101.55 x 10.5	mm
Active area	115.2 x 86.4	mm
Dot pitch	0.12 x 0.36	mm
LCD type	TFT, Normally White, Transmissive	
View Direction	12 o'clock	
Gray Scale Inversion Direction	6 o'clock	
Backlight Type	LED ,Normally White	
Controller IC	SSD1963	
Interface	Digital 8080 family MPU	
With /Without TP	Without TP	
Surface	Glare	

*Color tone slight changed by temperature and driving voltage.

3.Absolute Maximum Ratings

Item	Symbol	Min	Тур	Max	Unit
Operating Temperature	ТОР	-20	—	+70	°C
Storage Temperature	TST	-30	—	+80	°C

Note: Device is subject to be damaged permanently if stresses beyond those absolute maximum ratings listed above

1. Temp. $\leq 60^{\circ}$ C, 90% RH MAX. Temp. $> 60^{\circ}$ C, Absolute humidity shall be less than 90% RH at 60° C



4.Electrical Characteristics

4.1. Operating conditions:

Item	Symbol	Condition	Min	Тур	Max	Unit	Remark
Supply Voltage For LCM	VDD	_	3.0	3.3	3.6	V	-
Supply Current For LCM	Idd	_	_	120	180	mA	Note1

Note 1 : This value is test for VDD=3.3V , Ta=25 $^{\circ}$ C only

4.2. LED driving conditions

Parameter	Symbol	Min.	Тур.	Max.	Unit	Remark
LED current		-	140	-	mA	
Power Consumption		1260	-	1470	mW	
LED voltage	VBL+	9.0	-	10.5	V	Note 1
LED Life Time		-	50,000	-	Hr	Note 2,3,4

Note 1 : There are 1 Groups LED



Note 2 : Ta = 25 $^{\circ}C$

Note 3 : Brightness to be decreased to 50% of the initial value

Note 4 : The single LED lamp case

5.DC CHARATERISTICS

Parameter	Symbol		Rating	∐nit	Condition	
i ul ullictor	Symbol	Min	Тур	Max	omt	Condition
Low level input voltage	VIL	0	-	0.3VDD	V	
High level input voltage	VIH	0.7VDD	-	VDD	V	

6.Interface timing

6.1. 8080 Mode

The 8080 mode MCU interface consist of CS#, D/C#, RD#, WR#, Data Bus. This interface use WR# to define a write cycle and RD# for read cycle. If the WR# goes low when the CS# signal is low, the data or command will be latched into the system at the rising edge of WR#. Similarly, the read cycle will start when RD# goes low and end at the rising edge of RD#.

Symbol	Parameter	Min	Тур	Max	Unit
fMCLK	System Clock Frequency	1	-	110	MHz
tMCLK	System Clock Period	1/ fMCLK	-	-	ns
tPWCSH	Control Pulse High Width Write	13	1.5* t MCLK	-	ns
	Read	30	3.5* U MCLK		
DUICOL	Control Pulse Low Width Write (next write cycle)	13	1.5* t MCLK		
tPWCSL	Write (next read cycle)	80	9* tMCLK	-	ns
	Read	80	9* tNICLK		
tAS	Address Setup Time	1	-	-	ns
tAH	Address Hold Time	2	-	-	ns
tDSW	Write Data Setup Time	4			ns
tDHW	Write Data Hold Time	1	-	-	ns
tPWLW	Write Low Time	12			ns
tDHR	Read Data Hold Time	1	-	-	ns
tACC	Access Time	32			ns
tPWLR	Read Low Time	36	-	-	ns
tR	Rise Time	-		0.5	ns
tF	Fall Time	-	-	0.5	ns
tCS	Chip select setup time	2		-	ns
tCSH	Chip select hold time to read signal	3	-	-	ns

6.2. 8080 Mode Write Cycle

6.3. Parallel 8080-series Interface Timing Diagram(Write Cycle)



6.4. Parallel 8080-series Interface Timing Diagram(Read Cycle)



6.5. Pixel Data Format

Interface	Cycle	D[15]	D[14]	D[13]	D[12]	D[11]	D[10]	D[9]	D[8]	D[7]	D[6]	D[5]	D[4]	D[3]	D[2]	D[1]	D[0]
16 bits (565 format)	1 st	R5	R4	R3	R2	R1	G5	G4	G3	G2	G1	GO	B5	B4	B3	B2	B1
	1 st	R7	R6	R5	R4	R3	R2	R1	RO	G7	G6	G5	G4	G3	G2	G1	GO
16 bits	2 nd	B7	B6	B5	B4	B3	B2	B1	B0	R7	R6	R5	R4	R3	R2	R1	R0
	3 rd	G7	G6	G5	G4	G3	G2	G1	GO	B7	B6	B5	B4	B3	B2	B1	BO
	1 st									R7	R6	R5	R4	R3	R2	R1	RO
8 bits	2 nd									G7	G6	G5	G4	G3	G2	G1	GO
	3 rd									B7	B6	B5	B4	B3	B2	B1	BO

7.Optical Characteristics

Item		Symbol	Condition.	Min	Тур.	Max.	Unit	Remark	
Basnonsa tima		Tr	θ _0° 、	-	15	30	ms	Note 25	
Kesponse unie		Tf	$0 = 0 \cdot \mathbf{\Psi} = 0$	-	35	50	ms	Note 5,5	
Contrast ratio		CR	At optimized viewing angle	150	250	-	-	Note 4,5	
Color Chromoticity	White	Wx	$\theta = 0^{\circ} \cdot \Phi = 0$	0.282	0.312	0.342		Note 2,6,7	
Color Chromaticity		Wy		0.319	0.349	0.379			
	Hor	ΘR	CD > 10	60	70				
Viewing angle	поі.	ΘL		60	70			Nota 1	
(Gray Scale Inversion Direction)	Vor	ΦТ	$CK \leq 10$	40	50		Deg.	Note 1	
Direction)	ver.	ΦB		60	70				
Brightness		-	-	400	500		cd/ m ²	Center of display	

Ta= $25\pm2^{\circ}$ C, IL=140mA

Note 1: Definition of viewing angle range



Note 2: Test equipment setup:

After stabilizing and leaving the panel alone at a driven temperature for 10 minutes, the measurement should be executed. Measurement should be executed in a stable, windless, and dark room. Optical specifications are measured by Topcon BM-7orBM-5 luminance meter 1.0° field of view at a distance of 50cm and normal direction.



Note 3: Definition of Response time:

The response time is defined as the LCD optical switching time interval between "White" state and "Black" state. Rise time, Tr, is the time between photo detector output intensity changed from 90% to 10%. And fall time, Tf, is the time between photo detector output intensity changed from 10% to 90%



Note 4: Definition of contrast ratio:

The contrast ratio is defined as the following expression.

Contrast ratio (CR) = Luminance measured when LCD on the "White" state Luminance measured when LCD on the "Black" state

Note 5: White $Vi = Vi50 \pm 1.5V$ Black $Vi = Vi50 \pm 2.0V$

"±" means that the analog input signal swings in phase with VCOM signal.

"±" means that the analog input signal swings out of phase with VCOM signal.

The 100% transmission is defined as the transmission of LCD panel when all the input terminals of module are electrically opened.

Note 6: Definition of color chromaticity (CIE 1931) Color coordinates measured at the center point of LCD

Note 7: Measured at the center area of the panel when all the input terminals of LCD panel are electrically opened.

8.Interface

8.1. LCM PIN Definition

Pin No.	Symbol	Description	Remark
1	GND	System ground pin of the IC. Connect	
		to system ground.	
2	VDD	Power Supply : +3.3V	
3	NC	No connection	
4	D/C	Data/Command select	
5	WR	Write strobe signal	
6	RD	Read strobe signal	
7	DB0	Data bus	
8	DB1	Data bus	
9	DB2	Data bus	
10	DB3	Data bus	
11	DB4	Data bus	
12	DB5	Data bus	
13	DB6	Data bus	
14	DB7	Data bus	
15	CS	Chip select	
16	RST	Hardware reset	Note 1
17	NC	No connection	
18	RL	Left /right selection; Scan Direction; Default RL=H	Note 2,3
19	UD	Up/down selection; Scan Direction; Default UD=L	Note 2,3
20	NC	No connection	

Note 1: Global reset pin. Active low to enter reset state. Suggest to connect with an RC reset circuit for stability. Normally pull high.

Note 2: Selection of scanning mode

Setting of scan	control input	Coopping direction				
U/D	L/R	Scanning direction				
GND	VDD	Up to down, left to right				
VDD	GND	Down to up, right to left				
GND	GND	Up to down, right to left				
VDD	VDD	Down to up, left to right				

Note 3: Definition of scanning direction. Refer to the figure as below:



U/D=L, L/R=H

U/D=L, L/R=L



U/D=H, L/R=H

U/D=H, L/R=L

9. Block Diagram



10.Reliability

Content of Reliability Test (Wide temperature, $-20^{\circ}C \sim 70^{\circ}C$)

Environmental Test			
Test Item	Content of Test	Test Condition	Note
High Temperature storage	Endurance test applying the high storage temperature for a long time.	80°C 200hrs	2
Low Temperature storage	Endurance test applying the low storage temperature for a long time.	-30°C 200hrs	1,2
High Temperature Operation	Endurance test applying the electric stress (Voltage & Current) and the thermal stress to the element for a long time.	70℃ 200hrs	
Low Temperature Operation	Endurance test applying the electric stress under low temperature for a long time.	-20°C 200hrs	1
High Temperature/ Humidity Operation	The module should be allowed to stand at 60 °C,90%RH max	60°C,90%RH 96hrs	1,2
Thermal shock resistance	The sample should be allowed stand the following 10 cycles of operation $-20^{\circ}C$ $25^{\circ}C$ $70^{\circ}C$ 30min 5min 30min 1 cycle	-20°C /70°C 10 cycles	
Vibration test	Endurance test applying the vibration during transportation and using.	Total fixed amplitude : 15mm Vibration Frequency : 10~55Hz One cycle 60 seconds to 3 directions of X,Y,Z for Each 15 minutes	3
Static electricity test	Endurance test applying the electric stress to the terminal.	VS=800V, RS=1.5k Ω CS=100pF 1 time	

Note1: No dew condensation to be observed.

Note2: The function test shall be conducted after 4 hours storage at the normal Temperature and humidity after remove from the test chamber.

Note3: The packing have to including into the vibration testing.

11.Contour Drawing



12.Initial Code For Reference

void Initial_SSD1963()

Write_Command(0x01); Delay_ms(10); Write_Command(0xe0); Write_Parameter(0x01); Delay_ms(50); Write_Command(0xe0); Write_Parameter(0x03); Delay_ms(5);

Write_Command(0xb0); Write_Parameter(0x0c); Write_Parameter(0x80); Write_Parameter(0x01); Write_Parameter(0x3f); Write_Parameter(0x00); Write_Parameter(0x00);

Write_Command(0xf0); Write_Parameter(0x03);

Write_Command(0xe2); Write_Parameter(0x1d); Write_Parameter(0x02); Write_Parameter(0x54);

Write_Command(0xe6); Write_Parameter(0x01); Write_Parameter(0x40); Write_Parameter(0xff);

Write_Command(0xb4); Write_Parameter(0x01); Write_Parameter(0xb8); Write_Parameter(0x00); Write_Parameter(0x44); Write_Parameter(0x07); Write_Parameter(0x00); Write_Parameter(0x00);

Write_Command(0xb6); Write_Parameter(0x01); Write_Parameter(0x08); Write_Parameter(0x00); Write_Parameter(0x13); Write_Parameter(0x07); Write_Parameter(0x00); Write_Parameter(0x00);

Write_Command(0x2a); Write_Parameter(0x00); Write_Parameter(0x00); Write_Parameter(0x01); Write_Parameter(0x3f);

Write_Command(0x2b); Write_Parameter(0x00); Write_Parameter(0x00); Write_Parameter(0x00); Write_Parameter(0xef);

Write_Command(0x29);
Write_Command(0x2c);

}