SeeYA 1.03”Micro-OLED（2560×2560RGB）

Specification

Model Name：SY103WAM01

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Revision

Version	Date	Description
V1.0	2021.4.15	Initial release

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1 General Description

This display is a 1.03 inch diagonal, 2560(RGB) × 2560 dots active matrix color OLED panel module based on single-crystal silicon transistors. This panel integrates panel driver and logic driver, and realizes small size, light weight, low power consumption and high resolution.
Applications: View finders, Head mounted displays, etc.

- 2560 x 2560 Real RGB Resolution
- AP Operated Resolution

  -- 2560 x 2560: (8 x M, M=160~320) x RGB x (8 x N, N=90~320)
- Frame rate:

  -- 1920 x1920 input, x1.33scaling up to 2560 x2560, VESA DSC on, maximum 90Hz

  -- 2560 x2560, input, x1scaling up , VESA DSC on, maximum 75Hz
- Normal operation supports full color mode: 16.7M colors
- Interface

  -- MIPII + I2C

  -- MIPI DPHY v1.2 with one / two port (4 / 8 lanes), 1.0Gbps/Lane

  -- MIPI DSI v1.01 R11 Video mode

  -- Support VESA-DSC v1.1 in-chip decoder (3X compression ratio)

  -- Support scaling up 1.33x (1920x1920 to 2560 x 2560) and 2x (1280x1280 to 2560 x 2560)
- Scan direction selection, up or down and right or left
- Orbit supported
- Wide range Brightness adjustment
- Sequential/Global emission
- Temperature compensation

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2 General Feature

Parameter	Specification
Resolution	2560(H) x 2560 (V)
Number of dots	19.66M (2560x2560x3)
Pixel Size	7.2μm x 7.2μm
Pixel Arrangement	RGB π type
Useable Display Area	18.432mm x 18.432mm / 1.03" diagonal
Luminance	1800cd/m² typical
Contrast Ratio	500,000:1 typical
Uniformity	> 85%
Operating Voltage	VDDI=1.8V AVDD=5.8V~6V AVEE=-4V~-5.5V
Power Consumption (1800nits，100%duty_1920×1920input_1.33scaling up_No DSC_72Hz)	1600mW
Gray Levels	256
Interface	MIPI (1 or 2-port D-PHY)
Frame Rate	60HZ~90HZ
Weight	2g
Operating Temperature	-20°C to +70°C
Storage Temperature	-40°C to +80°C

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3 Optical Specification

Item	Description	Min.	Typ.	Max.	Unit
Brightness	Tpanel=30℃		1800		cd/m2
Brightness	Tpanel=10℃ ~70℃	1350	1800	2250	cd/m2
CR	white to Black Contrast Ratio	200,000:1	500,000:1		
Uniformity	End to end large-area uniformity	85			%
CIE Red	CIE-x	0.635	0.655	0.675	
	CIE-y	0.315	0.335	0.355	
CIE Green	CIE-x	0.197	0.232	0.267	
	CIE-y	0.675	0.695	0.715	
CIE Blue	CIE-x	0.141	0.161	0.181	
	CIE-y	0.045	0.065	0.085	
CIE White	CIE-x	0.298	0.313	0.328	
	CIE-y	0.314	0.329	0.344	
Color Gamut	DCI-P3	80%	90%		
View angle (White)	Luminance decay to 50%	35°			
Frame rate		60		90	HZ
Power consumption	1800nits，100%duty_1920×1920input_1.33scaling up_No DSC_72Hz		1600	2000	mW

Note1: If there is no specified, the specification of optical is specified at 30 degree Celsius.

Note2: Definition of optical measurement system.

The optical characteristics should be measured in dark room. Brightness is measured as peak luminance at full white pattern (Gray level=255);

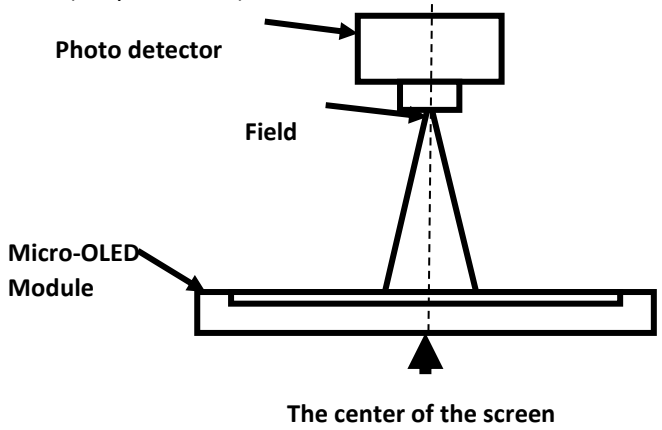

Fig.1

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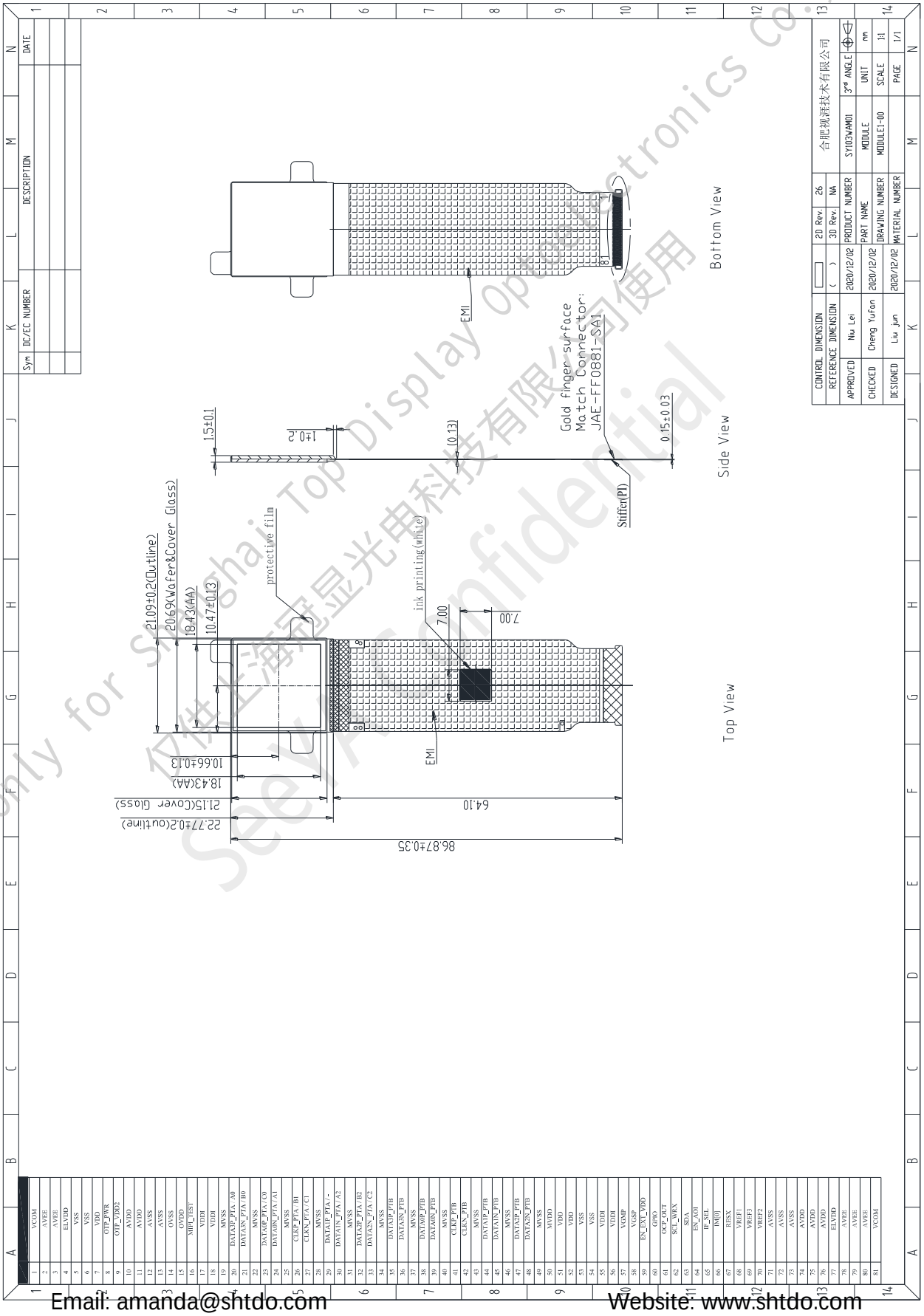
6 Module Diagram



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7 Pin Description

7.1 Pin Description

Pin No.	Symbol	Type	Description
1	VCOM	Output	Regulator output for common electrode voltage. connect a capacitor for stabilization, connect a TVS diode to GND.
2	AVEE	Power	-4.0V~-6.0V Power supply for OLED cell. connect a capacitor for stabilization.
3	AVEE	Power	-4.0V~-6.0V Power supply for OLED cell. then connect a capacitor for stabilization.
4	ELVDD	Output	Power supply for OLED cell. connect a capacitor for stabilization.
5	VSS	Power	System GND for internal digital system.
6	VSS	Power	System GND for internal digital system.
7	VDD	Output	Connect a capacitor for stabilization.
8	OTP_PWR	Input	OTP program power. If not use, please connect to GND or OPEN.
9	OTP_VDD2	Output	Regulator output for MTP analog system power. Connect a capacitor for stabilization.
10	AVDD	Power	5.8V~6.0VPower supply for analog system. connect a capacitor for stabilization.
11	AVDD	Power	5.8V~6.0VPower supply for analog system. connect a capacitor for stabilization.
12	AVSS	Power	System GND for analog system.
13	AVSS	Power	System GND for analog system.
14	OVSS	Power	System GND for oscillator.
15	OVDD	Output	Regulator output for common electrode voltage. Connect a capacitor for stabilization.
16	MIPI_TEST	Input/ Output	Test pin for MIPI.
17	VDDI	Power	Power supply for interface system except for the interface.
18	VDDI	Power	Power supply for interface system except for the interface.
19	MVSS	Power	System GND for MIPI interface.
20	DATA3P_PTA	Input/Output	This pin is DSI D3+ signal if MIPI Port A interface is used. DATA3P/N_PTA is differential small amplitude signals. If not used, please keep it open.
21	DATA3N_PTA	Input/Output	This pin is DSI D3- signal if MIPI Port A interface is used. DATA3P/N_PTA is differential small amplitude signals. If not used, please keep it open.
22	MVSS	Power	System GND for MIPI interface.
23	DATA0P_PTA	Input/Output	This pin is DSI D0+ signal if MIPI Port A interface is used. DATA0P/N_PTA is differential small amplitude signals. If not used, please keep it open.
24	DATA0N_PTA	Input/Output	This pin is DSI D0- signal if MIPI Port A interface is used. DATA0P/N_PTA is differential small amplitude signals. If not used, please keep it open.
25	MVSS	Power	System GND for MIPI interface.
26	CLKP_PTA	Input	This pin is DSI CLK+ signal if MIPI Port A interface is used. CLKP/N_PTA is differential small amplitude signals. If not used, please keep it open.
27	CLKN_PTA	Input	This pin is DSI CLK- signal if MIPI Port A interface is used. CLKP/N_PTA is differential small amplitude signals. If not used, please keep it open.
28	MVSS	Power	System GND for MIPI interface.
29	DATA1P_PTA	Input/Output	This pin is DSI D1+ signal if MIPI Port A interface is used. DATA1P/N_PTA is differential small amplitude signals. If not used, please keep it open.

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30	DATA1N_PTA	Input/Output	This pin is DSI D1- signal if MIPI Port A interface is used. DATA1P/N_PTA is differential small amplitude signals. If not used, please keep it open.
31	MVSS	Power	System GND for MIPI interface.
32	DATA2P_PTA	Input/Output	This pin is DSI D2+ signal if MIPI Port A interface is used. DATA2P/N_PTA is differential small amplitude signals. If not used, please keep it open.
33	DATA2N_PTA	Input/Output	This pin is DSI D2- signal if MIPI Port A interface is used. DATA2P/N_PTA is differential small amplitude signals. If not used, please keep it open.
34	MVSS	Power	System GND for MIPI interface.
35	DATA3P_PTB	Input/Output	This pin is DSI D3+ signal if MIPI Port B interface is used. DATA3P/N_PTB is differential small amplitude signals. If not used, pleased keep it open.
36	DATA3N_PTB	Input/Output	This pin is DSI D3- signal if MIPI Port B interface is used. DATA3P/N_PTB is differential small amplitude signals. If not used, pleased keep it open.
37	MVSS	Power	System GND for MIPI interface.
38	DATA0P_PTB	Input/Output	This pin is DSI D0+ signal if MIPI Port B interface is used. DATA0P/N_PTB is differential small amplitude signals. If not used, pleased keep it open.
39	DATA0N_PTB	Input/Output	This pin is DSI D0- signal if MIPI Port B interface is used. DATA0P/N_PTB is differential small amplitude signals. If not used, pleased keep it open.
40	MVSS	Power	System GND for MIPI interface.
41	CLKP_PTB	Input	This pin is DSI CLK+ signal if MIPI Port B interface is used. CLKP/N_PTB is differential small amplitude signals. If not used, pleased keep it open.
42	CLKN_PTB	Input	This pin is DSI CLK- signal if MIPI Port B interface is used. CLKP/N_PTB is differential small amplitude signals. If not used, please keep it open.
43	MVSS	Power	System GND for MIPI interface.
44	DATA1P_PTB	Input/ Output	This pin is DSI D1+ signal if MIPI Port B interface is used. DATA1P/N_PTB is differential small amplitude signals. If not used, please keep it open.
45	DATA1N_PTB	Power	This pin is DSI D1- signal if MIPI Port B interface is used. DATA1P/N_PTB is differential small amplitude signals. If not used, please keep it open.
46	MVSS	Input/ Output	System GND for MIPI interface.
47	DATA2P_PTB	Input/ Output	This pin is DSI D2+ signal if MIPI Port B interface is used. DATA2P/N_PTB is differential small amplitude signals. If not used, please keep it open.
48	DATA2N_PTB	Input/ Output	This pin is DSI D2- signal if MIPI Port B interface is used. DATA2P/N_PTB is differential small amplitude signals. If not used, please keep it open.
49	MVSS	Power	System GND for MIPI interface.
50	MVDD	Output	Regulator output for MIPI digital system power. Connect a capacitor for stabilization.
51	VDD	Output	Connect a capacitor for stabilization.
52	VDD	Output	Connect a capacitor for stabilization.
53	VSS	Power	System GND for internal digital system.
54	VSS	Power	System GND for internal digital system.
55	VDDI	Power	power supply for interface system except for MIPI interface.
56	VDDI	Power	power supply for interface system except for MIPI interface.
57	VGMP	Output	Regulator output for gamma high voltage generation. Connect a capacitor for stabilization.
58	VGSP	Output	Regulator output for gamma low voltage generation. Connect a capacitor for stabilization.
59	EN_EXT_VDD	Input	Connect to GND.
60	GPIO	Output	Digital global purpose in/out test pin
61	OCP_OUT	Output	Over current protect output flag.

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<table>
<tr><td>62</td><td>SCL_WRX</td><td>Input/
Output</td><td>Synchronous clock signal in I2C I/F.
If this pin is not used, please connect to VDDI.</td></tr>
<tr><td>63</td><td>SDA</td><td>Input/
Output</td><td>Bi-direction data PIN in I2C I/F.
If this pin is not used, please connect to VDDI.</td></tr>
<tr><td>64</td><td>EN_AOI</td><td>Input</td><td>Connect to GND.</td></tr>
<tr><td>65</td><td>IF_SEL</td><td>Input</td><td>Connect to GND.</td></tr>
<tr><td>66</td><td>IM[0]</td><td>Input</td><td>Use to select the Interface type.
<table>
<tr><td>IM[0]</td><td>Command</td><td>Display Data</td></tr>
<tr><td>0V</td><td>MIPI</td><td>MIPI</td></tr>
<tr><td>1.8V</td><td>I2C or MIPI</td><td>MIPI</td></tr>
</table></td></tr>
<tr><td>67</td><td>RESX</td><td>Input</td><td>This signal will reset the device and must be applied to properly initialize the chip. Signal is active low.</td></tr>
<tr><td>68</td><td>VREF1</td><td>Output</td><td>Regulator output for internal reference voltage.
Connect a capacitor for stabilization.</td></tr>
<tr><td>69</td><td>VREF3</td><td>Output</td><td>Regulator output for internal reference voltage.
Connect a capacitor for stabilization.
Connect a Schottky diode to GND</td></tr>
<tr><td>70</td><td>VREF2</td><td>Output</td><td>Regulator output for internal reference voltage.
Connect a capacitor for stabilization.</td></tr>
<tr><td>71</td><td>AVSS</td><td>Power</td><td>System GND for analog system.</td></tr>
<tr><td>72</td><td>AVSS</td><td>Power</td><td>System GND for analog system.</td></tr>
<tr><td>73</td><td>AVSS</td><td>Power</td><td>System GND for analog system.</td></tr>
<tr><td>74</td><td>AVDD</td><td>Power</td><td>5.8V~6.0VPower supply for analog system.
connect a capacitor for stabilization.</td></tr>
<tr><td>75</td><td>AVDD</td><td>Power</td><td>5.8V~6.0VPower supply for analog system.
connect a capacitor for stabilization.</td></tr>
<tr><td>76</td><td>AVDD</td><td>Power</td><td>5.8V~6.0VPower supply for analog system.
connect a capacitor for stabilization.</td></tr>
<tr><td>77</td><td>ELVDD</td><td>Power</td><td>Power supply for OLED cell.
connect a capacitor for stabilization.</td></tr>
<tr><td>78</td><td>AVEE</td><td>Power</td><td>-4.0V~-6.0V Power supply for OLED cell.
connect a capacitor for stabilization.</td></tr>
<tr><td>79</td><td>AVEE</td><td>Power</td><td>-4.0V~-6.0V Power supply for OLED cell.
connect a capacitor for stabilization.</td></tr>
<tr><td>80</td><td>AVEE</td><td>Power</td><td>-4.0V~-6.0V Power supply for OLED cell.
connect a capacitor for stabilization.</td></tr>
<tr><td>81</td><td>VCOM</td><td>Output</td><td>Regulator output for common electrode voltage.
connect a capacitor for stabilization, connect a TVS diode to GND.</td></tr>
</table>

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