WINSTAR Display

OLED SPECIFICATION

Model No:

WEO12864L#AMP3N00G00-FC

Represented by:

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SPECIFICATION Version: 0

CUSTOMER :	
MODULE NO. :	**WEO12864L#AMP3N00G00-FC**

APPROVED BY: **(FOR CUSTOMER USE ONLY)**	

SALES BY	APPROVED BY	CHECKED BY	PREPARED BY
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RELEASE DATE:			

■APPROVAL FOR SPECIFICATIONS ONLY

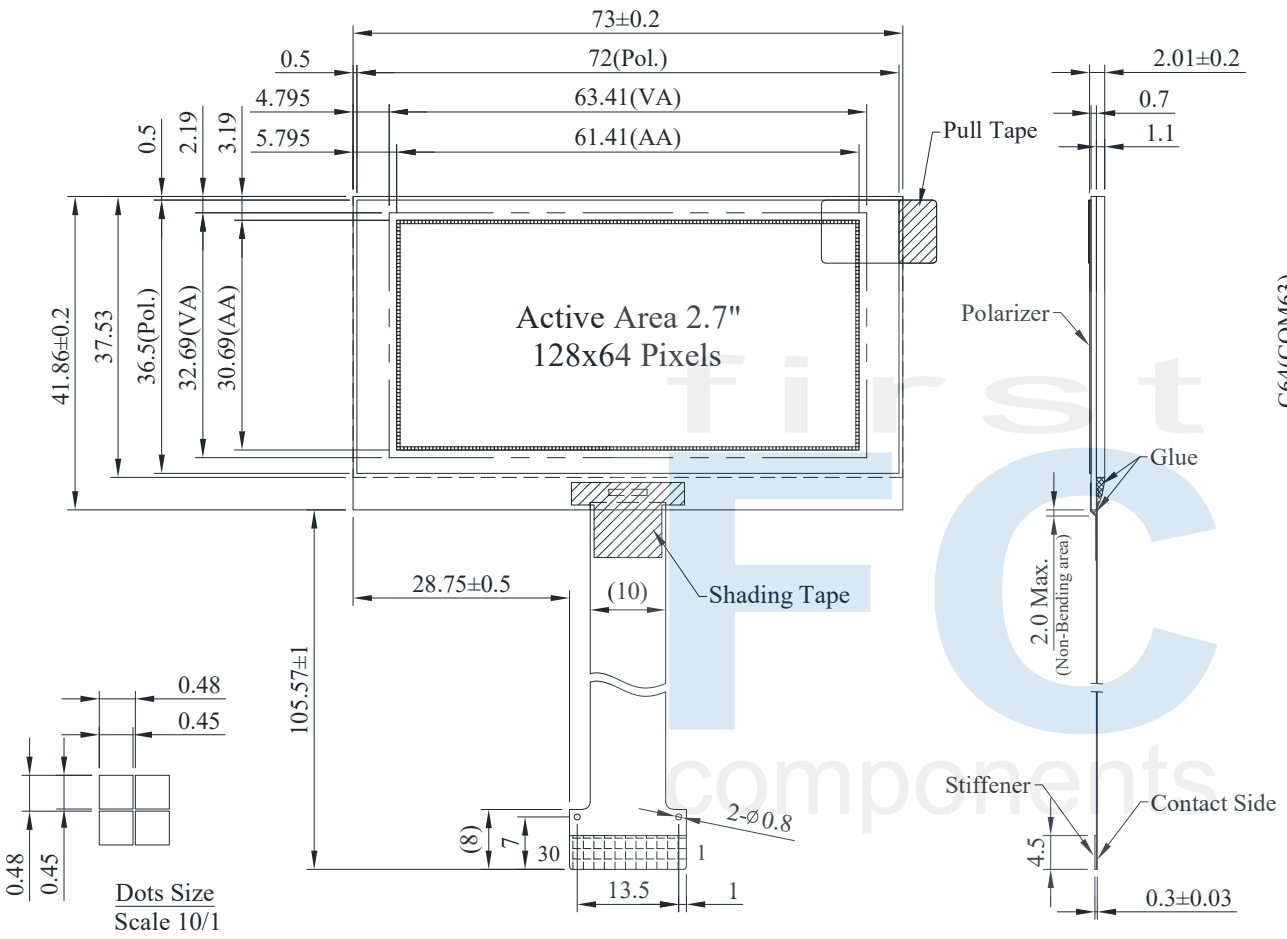
□APPROVAL FOR SPECIFICATIONS AND SAMPLE

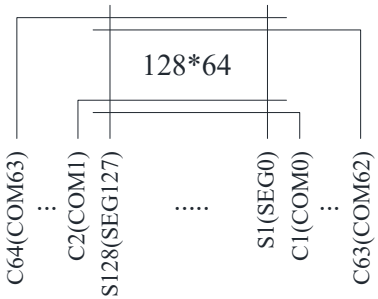
2.General Specification

Item	Dimension	Unit
Dot Matrix	128 x 64	—
Module dimension	73.0 × 41.86 × 2.01	mm
Active Area	61.41 × 30.69	mm
Pixel Size	0.45 × 0.45	mm
Pixel Pitch	0.48 × 0.48	mm
Display Mode	Passive Matrix	
Display Color	Monochrome (Yellow)	
Drive Duty	1/64 Duty	
IC	SH1106	
Interface	I2C, 4-Wire SPI ,6800, 8080	
Size	2.7 inch	

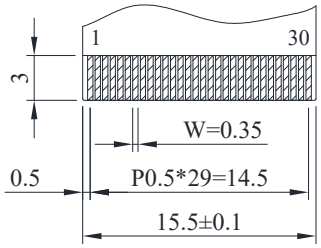
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3.Contour Drawing & Block Diagram





Seg&Com Layout



FPC Contact Side
Scale 2/1

PIN	SYMBOL
1	ESD_GND
2	VPP
3	VCOMH
4	IREF
5	D7
6	D6
7	D5
8	D4
9	D3
10	D2
11	D1
12	D0
13	E/$\overline{RD}$
14	$\overline{WR}$
15	A0
16	$\overline{RES}$
17	$\overline{CS}$
18	NC
19	IM2
20	IM1
21	VDD1
22	NC
23	NC
24	NC
25	NC
26	NC
27	NC
28	NC
29	VSS
30	ESD_GND

The non-specified tolerance of dimension is ±0.3 mm .

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4.Interface Pin Function

No.	Symbol	Function
1	ESD_GND	ESD Ground pin
2	VPP	OLED panel power supply. Generated by internal charge pump. Connect to capacitor. It could be supplied externally.
3	VCOMH	This is a pad for the voltage output high level for common signals. A capacitor should be connected between this pad and VSS.
4	IREF	This is a segment current reference pad. A resistor should be connected between this pad and VSS. Set the current at 18.75uA.
5~12	D7~D0	This is an 8-bit bi-directional data bus that connects to an 8-bit or 16-bit standard MPU data bus. When the serial interface is selected, then D0 serves as the serial clock input pad (SCL) and D1 serves as the serial data input pad (SI). At this time, D2 to D7 are set to high impedance. When the I2C interface is selected, then D0 serves as the serial clock input pad (SCL) and D1 serves as the serial data input pad (SDAI). At this time, D2 to D7 are set to high impedance.
13	E/$\overline{RD}$	This is a MPU interface input pad. When connected to an 8080 series MPU, it is active LOW. This pad is connected to the $\overline{RD}$ signal of the 8080 series MPU, and the data bus is in an output status when this signal is “L”. When connected to a 6800 series MPU, this is active HIGH. This is used as an enable clock input of the 6800 series MPU. When $\overline{RD}$ = “H”: Enable. When $\overline{RD}$ = “L”: Disable.
14	$\overline{WR}$ (R/$\overline{W}$)	This is a MPU interface input pad. When connected to an 8080 MPU, this is active LOW. This pad connects to the 8080 MPU $\overline{WR}$ signal. The signals on the data bus are latched at the rising edge of the $\overline{WR}$ signal. When connected to a 6800 Series MPU: This is the read/write control signal input terminal. When R/$\overline{W}$ = “H”: Read. When R/$\overline{W}$ = “L”: Write.
15	A0	This is the Data/Command control pad that determines whether the data bits are data or a command. A0 = “H”: the inputs at D0 to D7 are treated as display data. A0 = “L”: the inputs at D0 to D7 are transferred to the command registers. In I2C interface, this pad serves as SA0 to distinguish the different address of OLED driver.

<table>
<tr><td>16</td><td>$\overline{RES}$</td><td>This is a reset signal input pad. When $\overline{RES}$ is set to “L”, the settings are initialized. The reset operation is performed by the $\overline{RES}$ signal level.</td></tr>
<tr><td>17</td><td>$\overline{CS}$</td><td>This pad is the chip select input. When $\overline{CS}$ = “L”, then the chip select becomes active, and data/command I/O is enabled.</td></tr>
<tr><td>18</td><td>NC</td><td>No connection</td></tr>
<tr><td>19</td><td>IM2</td><td rowspan="2">These are the MPU interface mode select pads.
<table>
<tr><td></td><td>8080</td><td>I2C</td><td>6800</td><td>4-wire SPI</td></tr>
<tr><td>IM1</td><td>1</td><td>1</td><td>0</td><td>0</td></tr>
<tr><td>IM2</td><td>1</td><td>0</td><td>1</td><td>0</td></tr>
</table>
Note
(1) 0 is connected to VSS
(2) 1 is connected to VDD1</td></tr>
<tr><td>20</td><td>IM1</td></tr>
<tr><td>21</td><td>VDD1</td><td>Power supply input</td></tr>
<tr><td>22~28</td><td>NC</td><td>No connection</td></tr>
<tr><td>29</td><td>VSS</td><td>Ground.</td></tr>
<tr><td>30</td><td>ESD_GND</td><td>ESD Ground pin</td></tr>
</table>

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5.Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit	Notes
Supply Voltage for Logic	VDD1	-0.3	3.6	V	1, 2
Supply Voltage for Display	VPP	-0.3	14.5	V	1, 2
Operating Temperature	TOP	-40	+80	°C	-
Storage Temperature	TSTG	-40	+85	°C	-

Note ：

1. All the above voltages are on the basis of “VSS = 0V”.
2. When this module is used beyond the above absolute maximum ratings, permanent breakage of the module may occur. Also, for normal operations, it is desirable to use this module under the conditions according to Section 6 ‘’Electrical Characteristics’’. If this module is used beyond these conditions, malfunctioning of the module can occur and the reliability of the module may deteriorate.
3. The absolute limit temperature was verified according to the test conditions of reliability test (See section 9. Reliability) , and module was met all criteria.
4. The defined temperature ranges do not include the polarizer. The maximum withstood temperature of the polarizer should be 80 °C.

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6.Electrical Characteristics

6.1 DC Electrical Characteristics

Item	Symbol	Condition	Min	Typ	Max	Unit
Supply Voltage for Logic	VDD1	—	1.65	3.0	3.3	V
Supply Voltage for Display	VPP	—	6.4	13.0	13.5	V
High Level Input	VIH	—	0.8×VDD1	—	VDD1	V
Low Level Input	VIL	—	VSS	—	0.2×VDD1	V
High Level Output	VOH	—	0.8×VDD1	—	VDD1	V
Low Level Output	VOL	—	VSS	—	0.2×VDD1	V
Display 50% Pixel on	IPP	VPP =13V	—	24	36	mA

Note: The VCC (VPP) value can be adjusted according to the demand brightness. When VCC (VPP) is lowered, the brightness decreases or when VCC (VPP) is increased, the brightness increases. The VCC (VPP) value is set within the recommended range. The life time of OLED is directly related to the set brightness, and lower brightness helps to improve the life time.

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7.Optical Characteristics

Item	Symbol	Condition	Min	Typ	Max	Unit
View Angle	(V)θ	—	160	—	—	deg
	(H)φ	—	160	—	—	deg
Contrast Ratio	CR	Dark	10,000:1	—	—	—
Response Time	T rise	—	—	10	—	μs
	T fall	—	—	10	—	μs
Display with 50% checkerboard Brightness(1)			100	150	—	cd/m²
CIEx(Yellow)		(CIE1931)	0.45	0.47	0.49	—
CIEy(Yellow)		(CIE1931)	0.48	0.50	0.52	—

Note：

1. The brightness value is based on the setting of VCC(VPP) equal to the Typical value.
2. 50% checkerboard means half of the display area turn on & half area turn off, shown as a checkerboard.

