

# WINSTAR Display

## OLED SPECIFICATION

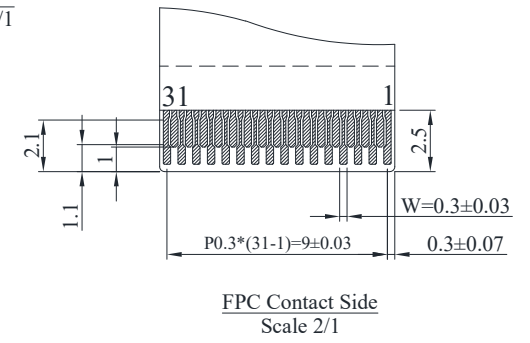
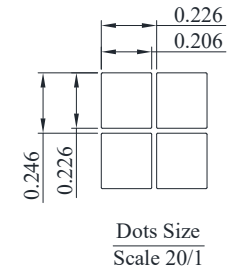
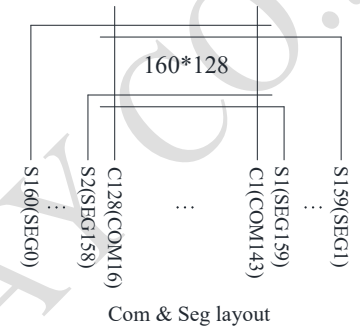
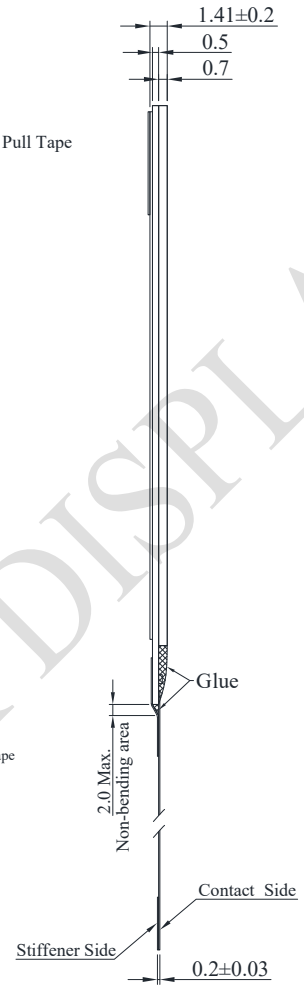
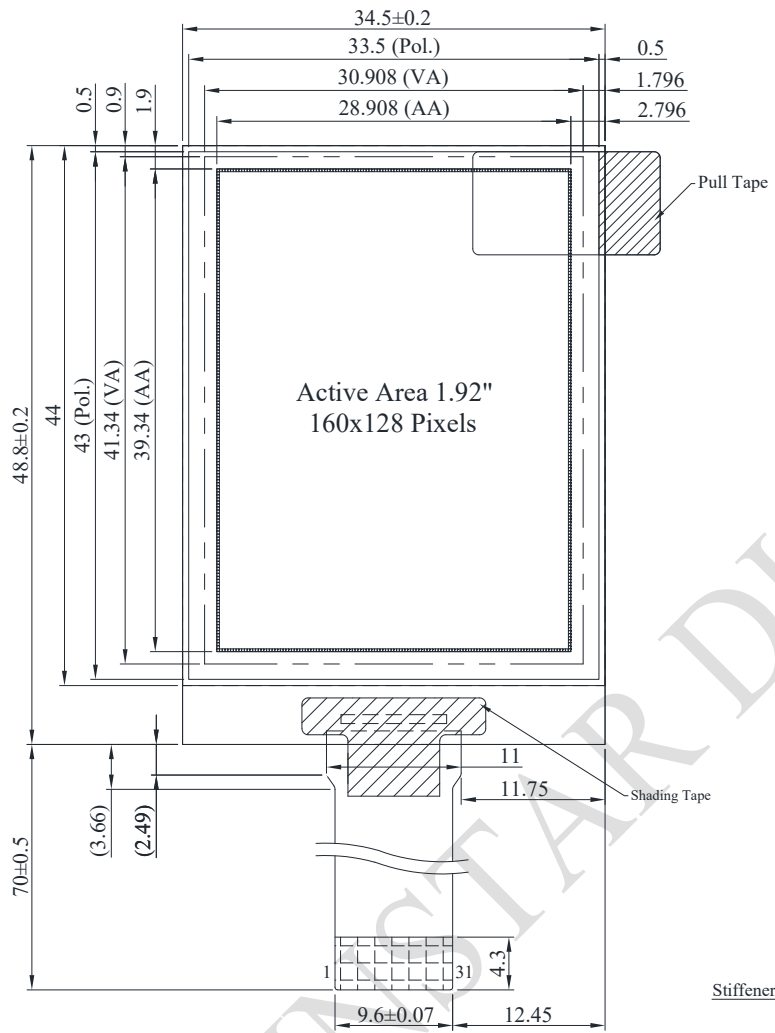
Model No:

**WEO160128B**

## General Specification

Item	Dimension	Unit
Dot Matrix	160 × 128 Dots	—
Module dimension	34.5 × 48.8 × 1.41	mm
Active Area	28.908 × 39.34	mm
Pixel Size	0.206 × 0.226	mm
Pixel Pitch	0.226 × 0.246	mm
Display Mode	Passive Matrix	
Display Color	Monochrome	
Drive Duty	1/128 Duty	
Gray Scale	4 bits	
IC	CH1120	
Interface	6800, 8080, SPI, I2C	
Size	1.92 inch	

# Contour Drawing & Block Diagram



PIN NO.	SYMBOL	PIN NO.	SYMBOL
1	NC	16	IM2
2	VPP	17	CSB
3	VSEGH	18	RESB
4	VCOMH	19	A0
5	VSL	20	WRB
6	NC	21	RDB
7	IREF	22	D0
8	VPP	23	D1
9	NC	24	D2
10	VSS	25	D3
11	VCL	26	D4
12	VDD	27	D5
13	IM0	28	D6
14	IM1	29	D7
15	VDD	30	NC
		31	VPP

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

## Interface Pin Function

No.	Symbol	Function																								
1	NC	No connection																								
2	VPP	This is the most positive voltage supply pad of the chip. It should be supplied externally.																								
3	VSEGH	This is a segment pre-charge voltage. A capacitor can be connected between this pad and VSS if necessary. When external capacitor is not used, this pin should be kept NC.																								
4	VCOMH	This is a pad for the voltage output high level for common signals. A capacitor should be connected between this pad and VSS.																								
5	VSL	Discharge voltage level pad. This pad should be connected to resistor and diode externally.																								
6	NC	No connection																								
7	IREF	This is a segment current reference pad. A resistor should be connected between this pad and VSS.																								
8	VPP	This is the most positive voltage supply pad of the chip. It should be supplied externally.																								
9	NC	No connection																								
10	VSS	Ground for logic and analog. This pad should be connected to GND externally.																								
11	VCL	This is a common voltage reference pad. This pad should be connected to VSS externally.																								
12	VDD	Power supply for logic and input/output																								
13	IM0	These are the MPU interface mode select pads. <table border="1" style="margin-left: 20px;"> <thead> <tr> <th></th> <th>8080</th> <th>3-Wire SPI</th> <th>4-Wire SPI</th> <th>6800</th> <th>I2C</th> </tr> </thead> <tbody> <tr> <td><b>IM0</b></td> <td>0</td> <td>0</td> <td>0</td> <td>1</td> <td>0</td> </tr> <tr> <td><b>IM1</b></td> <td>1</td> <td>0</td> <td>0</td> <td>0</td> <td>1</td> </tr> <tr> <td><b>IM2</b></td> <td>1</td> <td>1</td> <td>0</td> <td>0</td> <td>0</td> </tr> </tbody> </table>		8080	3-Wire SPI	4-Wire SPI	6800	I2C	<b>IM0</b>	0	0	0	1	0	<b>IM1</b>	1	0	0	0	1	<b>IM2</b>	1	1	0	0	0
	8080		3-Wire SPI	4-Wire SPI	6800	I2C																				
<b>IM0</b>	0		0	0	1	0																				
<b>IM1</b>	1		0	0	0	1																				
<b>IM2</b>	1	1	0	0	0																					
14	IM1																									
16	IM2																									
15	VDD	Power supply for logic and input/output																								

17	CSB	This pad is the chip select input. When CSB = "L", then the chip select becomes active, and data command I/O is enabled. When in I2C interface, this pin is not used, so it must be connected to "L".
18	RESB	This is a reset signal input pad. When RESB is set to "L", the settings are initialized. The reset operation is performed by the RESB signal level. This pin internal pull high.

19	A0	<p>This is the Data/Command control pad that determines whether the data bits are data or a command.</p> <p>A0 = "H": the inputs at D0 to D7 are treated as display data.</p> <p>A0 = "L": the inputs at D0 to D7 are transferred to the command registers.</p> <p>In I2C interface, this pad serves as SA0 to distinguish the different address of OLED driver.</p> <p>When in 3-wire interface, this pin is not used, so it must be connected to "L".</p>
20	WRB	<p>This is a MPU interface input pad.</p> <p>When connected to an 8080 MPU, this is active LOW. This pad connects to the 8080 MPU WR signal. The signals on the data bus are latched at the rising edge of the WR signal.</p> <p>When connected to a 6800 Series MPU: This is the read/write control signal input terminal.</p> <p>When R/W = "H": Read.</p> <p>When R/W = "L": Write.</p> <p>When in 3-wire.4-wire &amp; I2C interface, this pin is not used, so it must be connected to "L".</p>
21	RDB	<p>This is a MPU interface input pad.</p> <p>When connected to an 8080 series MPU, it is active LOW. This pad is connected to the RD signal of the 8080 series MPU, and the data bus is in an output status when this signal is "L".</p> <p>When connected to a 6800 series MPU, this is active HIGH. This is used as an enable clock input of the 6800 series MPU.</p> <p>When in 3-wire.4-wire &amp; I2C interface, this pin is not used, so it must be connected to "L".</p>
22	D0	<p>This is an 8-bit bi-directional data bus that connects to an 8-bit or 16-bit standard MPU data bus.</p> <p>When the serial interface(SPI) and I2C 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. D7~D2 is recommended to connect the VDD or GND. It is also allowed to leave D7~D2 unconnected.</p>
23	D1	
24	D2	
25	D3	
26	D4	
27	D5	
28	D6	
29	D7	
30	NC	No connection
31	VPP	This is the most positive voltage supply pad of the chip. It should be supplied externally.

## Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit
Supply Voltage for Logic	VDD	-0.3	3.5	V
Supply Voltage for Display	VPP	-0.3	15.0	V
Operating Temperature	TOP	-40	+80	°C
Storage Temperature	TSTG	-40	+85	°C

## Electrical Characteristics

### DC Electrical Characteristics

Item	Symbol	Condition	Min	Typ	Max	Unit
Supply Voltage for Logic	VDD	—	1.65	3.0	3.5	V
Supply Voltage for Display	VPP	—	8.0	12.0	12.5	V
Input High Volt.	VIH	—	0.8xVDD	—	VDD	V
Input Low Volt.	VIL	—	VSS	—	0.2xVDD	V
Output High Volt.	VOH	IOH=- 0.5mA	0.8xVDD	—	VDD	V
Output Low Volt.	VOL	IOL=0.5mA	VSS	—	0.2xVDD	V
Display 50% Pixel on	IPP	VPP=12V	—	25	37.5	mA