WINSTAR Display

OLED SPECIFICATION

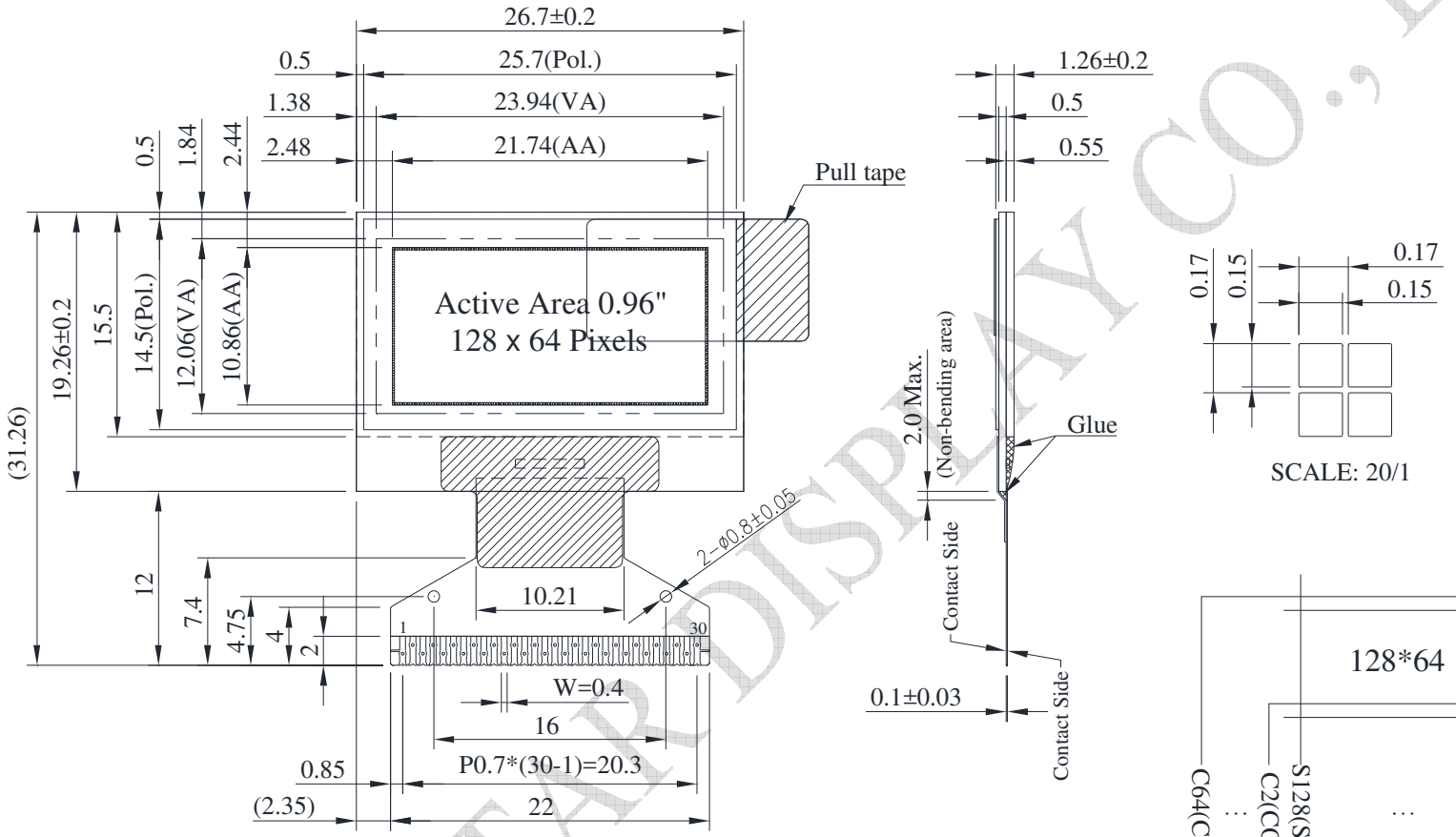
Model No:

WEO012864AD

General Specification

Item	Dimension	Unit
Dot Matrix	128 x 64 Dots	—
Module dimension	26.70 x 19.26 x 1.26	mm
Active Area	21.74 x 10.86	mm
Pixel Size	0.15 x 0.15	mm
Pixel Pitch	0.17 x 0.17	mm
Display Mode	Passive Matrix	
Display Color	Monochrome	
Drive Duty	1/64 Duty	
IC	ST7315	
Interface	6800,8080,SPI,I2C	
Size	0.96 inch	

Contour Drawing & Block Diagram



PIN	SYMBOL	PIN	SYMBOL
1	NC(GND)	16	RWR
2	C2N	17	ERD
3	C2P	18	D0
4	C1P	19	D1
5	C1N	20	D2
6	VBAT	21	D3
7	NC	22	D4
8	DGND	23	D5
9	VDD	24	D6
10	IF0	25	D7
11	IF1	26	IREF
12	IF2	27	VCOMH
13	CSB	28	VOLED
14	RSTB	29	PGND
15	A0	30	NC(GND)

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

Interface Pin Function

<table>
<tr><th>No.</th><th>Symbol</th><th>Function</th></tr>
<tr><td>1</td><td>N.C.
(GND)</td><td>The supporting pins can reduce the influences from stresses on the function pins. These pins must be connected to external ground.</td></tr>
<tr><td>2</td><td>C2N</td><td rowspan="4">DC/DC voltage converter.
Connect a capacitor between CA1P and CA1N.
Connect a capacitor between CA2P and CA2N.</td></tr>
<tr><td>3</td><td>C2P</td></tr>
<tr><td>4</td><td>C1P</td></tr>
<tr><td>5</td><td>C1N</td></tr>
<tr><td>6</td><td>VBAT</td><td>Analog power for internal booster. If VDD=VABT</td></tr>
<tr><td>7</td><td>NC</td><td>NC</td></tr>
<tr><td>8</td><td>DGND</td><td>Digital ground. Connect to GND</td></tr>
<tr><td>9</td><td>VDD</td><td>Power supply pin for core logic operation.</td></tr>
<tr><td>10
11
12</td><td>IF0
IF1
IF2</td><td>These pins select interface operation mode.
<table>
<tr><th>IF2</th><th>IF1</th><th>IF0</th><th>MPU interface type</th></tr>
<tr><td>L</td><td>L</td><td>L</td><td>4-line serial interface</td></tr>
<tr><td>L</td><td>L</td><td>H</td><td>3-line serial interface</td></tr>
<tr><td>L</td><td>H</td><td>L</td><td>I2C serial interface</td></tr>
<tr><td>H</td><td>H</td><td>L</td><td>8-bit 8080 parallel interface</td></tr>
<tr><td>H</td><td>L</td><td>L</td><td>8-bit 6800 parallel interface</td></tr>
</table></td></tr>
<tr><td>13</td><td>CSB</td><td>Chip select input pin.
CSB=“L”: This chip is selected and the MPU interface is active.
CSB=“H”: This chip is not selected and the MPU interface is disabled (D[7:0] are high impedance).</td></tr>
<tr><td>14</td><td>RSTB</td><td>This pin is reset signal input. When the pin is low, initialization of the chip is executed. Keep this pin HIGH (i.e. connect to VDD) during normal operation.</td></tr>
<tr><td>15</td><td>A0</td><td>It determines whether the access is related to data or command.
A0 = "H": Indicates that D[7:0] are display data;
A0 = "L": Indicates that D[7:0] are control data.
This pin is I2C slave address bit (SA0), when I2C interface is selected.</td></tr>
<tr><td>16</td><td>RWR</td><td>Read / Write execution control pin. (This pin is only used in parallel interface)
<table>
<tr><th>MPU Type</th><th>RWR</th><th>Description</th></tr>
<tr><td>6800-series</td><td>R/W</td><td>Read / Write control input pin
R/W = “H” : read
R/W = “L” : write</td></tr>
<tr><td>8080-series</td><td>/WR</td><td>Write enable input pin.
The data are latched at the rising edge of the /WR signal.</td></tr>
</table>
This pin is not used in serial interfaces and should be connected to DGND.</td></tr>
</table>

<table>
<tr><td>17</td><td>ERD</td><td>Read / Write execution control pin. (This pin is only used in parallel interface)
<table>
<tr><th>MPU Type</th><th>ERD</th><th>Description</th></tr>
<tr><td>6800-series</td><td>E</td><td>Read / Write control input pin.
R/W = “H”: When E is “H”, data bus is in output status.
R/W = “L”: The data are latched at the falling edge of the E signal.</td></tr>
<tr><td>8080-series</td><td>/RD</td><td>Read enable input pin.
When /RD is “L”, data bus is in output status.</td></tr>
</table>
This pin is not used in serial interfaces and should be connected to DGND.</td></tr>
<tr><td>18~25</td><td>D0~D7</td><td>When using 8-bit parallel interface: 8080 or 6800 mode 8 bit bi-directional data bus. Connect to the data bus of 8-bit microprocessor. When CSB is “H”, D[7:0] are high impedance.

When using serial interface : 3-line SPI or 4-line SPI mode
D[2:1] : serial input/output data (SDA).
D[0] : serial input clock (SCL).
D1 to D2 must be connected together (SDA)
D[7:3] : fix to “L” by DGND.

When using serial interface : I2C interface
D[2] : SDA_OUT, serial data and acknowledge output for the I2C interface.
D[1] : SDA_IN, serial input data
D[0] : SCL, serial input clock .
D1 to D2 must be connected together (SDA)
D[7:3] : fix to “L” by DGND.</td></tr>
<tr><td>26</td><td>IREF</td><td>Internal IREF is used, please leave this pin open.</td></tr>
<tr><td>27</td><td>VCOMH</td><td>VCOMH is the driving voltage for common and segment circuits.</td></tr>
<tr><td>28</td><td>VOLED</td><td>VOLED is the diving voltage for segment circuit.</td></tr>
<tr><td>29</td><td>PGND</td><td>Analog ground. Connect to GND</td></tr>
<tr><td>30</td><td>NC
(GND)</td><td>The supporting pins can reduce the influences from stresses on the function pins. These pins must be connected to external ground.</td></tr>
</table>

Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit
Supply Voltage for Logic	VDD	-0.3	5.5	V
Supply Voltage for Display	VOLED	0	18.0	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	–	2.4	3.0	5.0	V
Supply Voltage for Display (Supplied Externally)	VOLED	–	7.5	12.0	16.5	V
Charge Pump Regulator Supply Voltage	VBAT	–	3.0	3.5	5.0	V
Charge Pump Output Voltage for Display (Generated by Internal DC/DC)	Charge Pump VOLED	–	7.0	7.5	–	V
Input High Volt.	VIH	–	0.8×VDD	–	–	V
Input Low Volt.	VIL	–	–	–	0.2×VDD	V
Output High Volt.	VOH	–	0.9×VDD	–	–	V
Output Low Volt.	VOL	–	–	–	0.1×VDD	V
Display 50% Pixel on Operating Current for VOLED (VOLED Supplied Externally)	IOLED	VOLED=12V	–	6	12	mA
Display 50% Pixel on (VOLED Generated by Internal DC/DC)	IBAT	VBAT=3.5V	–	15	30	mA