WINSTAR Display

# OLED SPECIFICATION

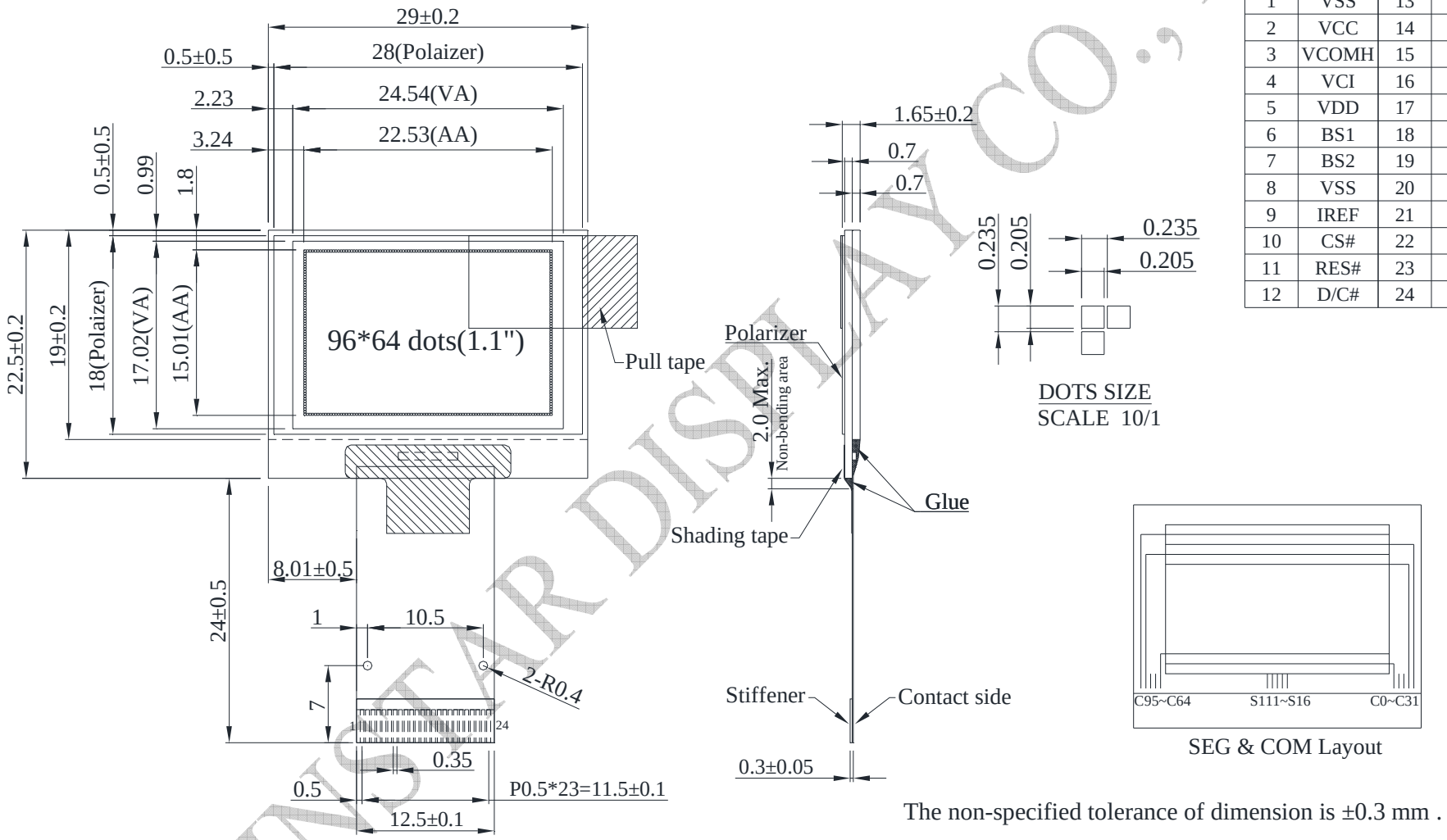
Model No:

***WEO009664B***

# General Specification

| Item | Dimension | Unit |
|---|---|---|
| Dot Matrix | 96 x 64 Dots | — |
| Module dimension | 29.00 x 22.50 x 1.65 | mm |
| Active Area | 22.53 x 15.01 | mm |
| Pixel Size | 0.205 x 0.205 | mm |
| Pixel Pitch | 0.235 x 0.235 | mm |
| Display Mode | Passive Matrix | |
| Display Color | Monochrome | |
| Drive Duty | 1/64 Duty | |
| IC | SSD1327 | |
| Interface | 4-Wire SPI, I2C, 6800, 8080 | |
| Size | 1.1 inch | |

# Contour Drawing & Block Diagram




| PIN No. | SYMBOL | PIN No. | SYMBOL |
|---|---|---|---|
| 1 | VSS | 13 | R/W# |
| 2 | VCC | 14 | E |
| 3 | VCOMH | 15 | D0 |
| 4 | VCI | 16 | D1 |
| 5 | VDD | 17 | D2 |
| 6 | BS1 | 18 | D3 |
| 7 | BS2 | 19 | D4 |
| 8 | VSS | 20 | D5 |
| 9 | IREF | 21 | D6 |
| 10 | CS# | 22 | D7 |
| 11 | RES# | 23 | VCC |
| 12 | D/C# | 24 | VSS |

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>VSS</td><td>Ground pin. It must be connected to external ground.</td></tr>
<tr><td>2</td><td>VCC</td><td>Power supply for panel driving voltage. This is also the most positive power voltage supply pin. It is supplied by external high voltage source.</td></tr>
<tr><td>3</td><td>VCOMH</td><td>COM signal deselected voltage level.<br>A capacitor should be connected between this pin and VSS. No external power supply is allowed to connect to this pin.</td></tr>
<tr><td>4</td><td>VCI</td><td>Low voltage power supply and power supply for interface logic level. It should match with the MCU interface voltage level and must be connected to external source.<br>VCI must always set to be equivalent to or higher than VDD.</td></tr>
<tr><td>5</td><td>VDD</td><td>Power supply pin for core logic operation.</td></tr>
<tr><td>6</td><td>BS1</td><td rowspan="2">MCU bus interface selection pins. Select appropriate logic setting as described in the following table. BS2, BS1 and BS0 are pin select.<br>Bus Interface selection<br><table><tr><td>BS[2:1]</td><td>Interface</td></tr><tr><td>00</td><td>4 line SPI</td></tr><tr><td>01</td><td>I2C</td></tr><tr><td>11</td><td>8-bit 8080 parallel</td></tr><tr><td>10</td><td>8-bit 6800 parallel</td></tr></table>Note (1) 0 is connected to VSS (2) 1 is connected to VCI</td></tr>
<tr><td>7</td><td>BS2</td></tr>
<tr><td>8</td><td>VSS</td><td>Ground pin. It must be connected to external ground.</td></tr>
<tr><td>9</td><td>IREF</td><td>This pin is the segment output current reference pin</td></tr>
<tr><td>10</td><td>CS#</td><td>This pin is the chip select input connecting to the MCU.<br>The chip is enabled for MCU communication only when CS# is pulled LOW (active LOW).</td></tr>
<tr><td>11</td><td>RES#</td><td>This pin is reset signal input.<br>When the pin is pulled LOW, initialization of the chip is executed.<br>Keep this pin pull HIGH during normal operation.</td></tr>
<tr><td>12</td><td>D/C#</td><td>This pin is Data/Command control pin connecting to the MCU.<br>When the pin is pulled HIGH, the data at D[7:0] will be interpreted as data.<br>When the pin is pulled LOW, the data at D[7:0] will be transferred to a command register.<br>In I2C mode, this pin acts as SA0 for slave address selection.<br>When 3-wire serial interface is selected, this pin must be connected to VSS.</td></tr>
<tr><td>13</td><td>R/W#</td><td>This pin is read / write control input pin connecting to the MCU interface.<br>When 6800 interface mode is selected, this pin will be used as Read/Write (R/W#) selection input. Read mode will be carried out when this pin is pulled HIGH and write mode when LOW.<br>When 8080 interface mode is selected, this pin will be the Write (WR#) input. Data write operation is initiated when this pin is pulled LOW and the chip is selected.</td></tr>
</table>

| | | |
|---|---|---|
| 14 | E | This pin is MCU interface input.<br>When 6800 interface mode is selected, this pin will be used as the Enable (E) signal.<br>Read/write operation is initiated when this pin is pulled HIGH and the chip is selected.<br>When 8080 interface mode is selected, this pin receives the Read (RD#) signal. Read operation is initiated when this pin is pulled LOW and the chip is selected.<br>When serial or I2C interface is selected, this pin must be connected to VSS. |
| 15 | D0 | These pins are bi-directional data bus connecting to the MCU data bus.<br>Unused pins are recommended to tie LOW.<br>When serial interface mode is selected, D0 will be the serial clock input: SCLK; D1 will be the serial data input: SDIN and D2 should be kept NC.<br>When I2C mode is selected, D2, D1 should be tied together and serve as SDAout, SDAin in application and D0 is the serial clock input, SCL. |
| 16 | D1 | |
| 17 | D2 | |
| 18 | D3 | |
| 19 | D4 | |
| 20 | D5 | |
| 21 | D6 | |
| 22 | D7 | |
| 23 | VCC | Power supply for panel driving voltage. This is also the most positive power voltage supply pin. It is supplied by external high voltage source. |
| 24 | VSS | Ground pin. |

# Absolute Maximum Ratings

| Parameter | Symbol | Min | Max | Unit |
|---|---|---|---|---|
| Supply Voltage for Operation | VCI | -0.3 | 4.0 | V |
| Supply Voltage for Logic | VDD | -0.5 | 2.75 | V |
| Supply Voltage for Display | VCC | -0.5 | 19.0 | 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 | VCI | — | 2.8 | 3.0 | 3.3 | V |
| Supply Voltage for Display | VCC | — | 8.0 | 8.5 | 9.0 | V |
| Input High Volt. | VIH | — | 0.8×VCI | — | VCI | V |
| Input Low Volt. | VIL | — | VSS | — | 0.2×VCI | V |
| Output High Volt. | VOH | — | 0.9×VCI | — | VCI | V |
| Output Low Volt. | VOL | — | VSS | — | 0.1×VCI | V |
| 50% Check Board operating Current | ICC | VCC=8.5V | — | 13.0 | 26.0 | mA |