# OLED DISPLAY SPECIFICATION


RAYSTAR Optronics, Inc.
曜凌光電股份有限公司

曜凌光電股份有限公司
Raystar Optronics, Inc.
T: +886-4-2565-0761 | F: +886-4-2565-0760
salescontact@raystar-optronics.com | www.raystar-optronics.com

# REX009664A

## General Specification

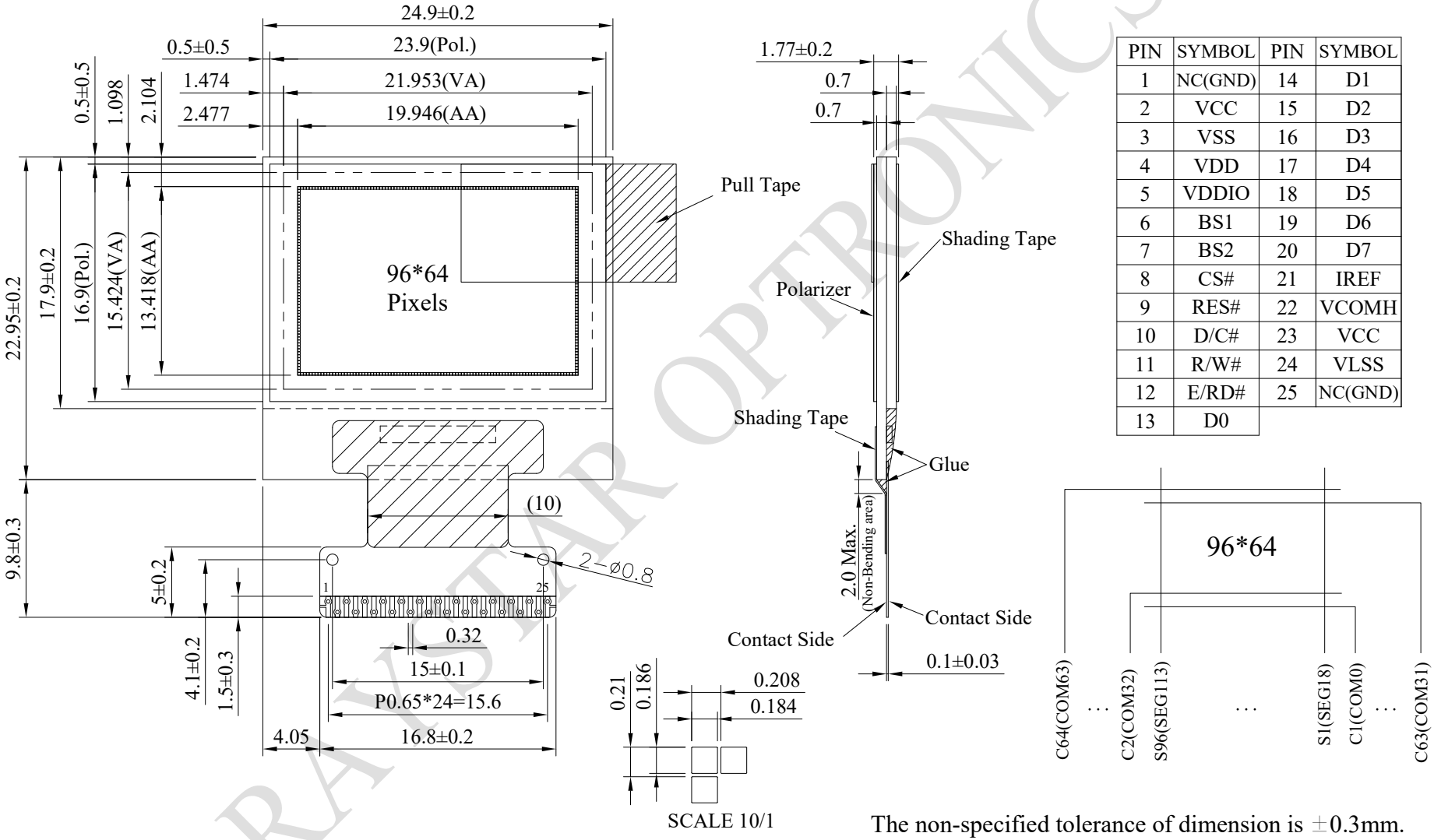
- Module dimension: 24.9 × 22.95 × 1.77 mm
- Active area: 19.946 × 13.418mm
- Dot Matrix: 96 × 64
- Pixel Size: 0.184 × 0.186 mm
- Pixel Pitch: 0.208 × 0.21 mm
- Duty: 1/64 Duty
- Display Mode：Passive Matrix
- Display Color: Monochrome
- IC: SSD1305
- Interface: 6800 / 8080 / 4-Wire SPI / I2C
- Size: 0.95 inch

# Interface Pin Function

<table>
<tr><th>Pin Number</th><th>Symbol</th><th>I/O</th><th>Function</th></tr>
<tr><td>1.</td><td>N.C. (GND)</td><td>-</td><td>ESD Ground pin.</td></tr>
<tr><td>2.</td><td>VCC</td><td>P</td><td>Power supply for panel driving voltage.<br>This is also the most positive power voltage supply pin.</td></tr>
<tr><td>3.</td><td>VSS</td><td>P</td><td>This is a ground pin.</td></tr>
<tr><td>4.</td><td>VDD</td><td>P</td><td>Power supply pin for core logic operation.</td></tr>
<tr><td>5.</td><td>VDDIO</td><td>P</td><td>Power supply for interface logic level.<br>It should be match with MCU interface voltage level. VDDIO must always be equal or lower than VDD.</td></tr>
<tr><td>6.</td><td>BS1</td><td rowspan="2">I</td><td rowspan="2">Communicating Protocol Select<br>These pins are MCU interface selection input. See the following table:
<table>
<tr><td></td><td>68XX-parallel</td><td>80XX-parallel</td><td>Serial</td><td>I2C</td></tr>
<tr><td>BS1</td><td>0</td><td>1</td><td>0</td><td>1</td></tr>
<tr><td>BS2</td><td>1</td><td>1</td><td>0</td><td>0</td></tr>
</table></td></tr>
<tr><td>7.</td><td>BS2</td></tr>
<tr><td>8.</td><td>CS#</td><td>I</td><td>This pin is the chip select input. (active LOW)</td></tr>
<tr><td>9.</td><td>RES#</td><td>I</td><td>Power Reset for Controller and Driver<br>This pin is reset signal input. When the pin is low, initialization of the chip is executed.</td></tr>
<tr><td>10.</td><td>D/C#</td><td>I</td><td>This is Data/Command control pin. When it is pulled HIGH (i.e. connect to VDDIO), the data at D[7:0] is treated as data. When it is pulled LOW, the data at D[7:0] will be transferred to the command register.<br>In I2C mode, this pin acts as SA0 for slave address selection.</td></tr>
<tr><td>11.</td><td>R/W#</td><td>I</td><td>This is read / write control input pin connecting to the MCU interface.<br>When interfacing to a 6800-series microprocessor, this pin will be used as Read/Write (R/W#) selection input. Read mode will be carried out when this pin is pulled HIGH (i.e. connect to VDDIO) 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.<br>When serial interface is selected, this pin must be connected to VSS.</td></tr>
</table>

| | | | |
|---|---|---|---|
| 12. | E/RD# | I | When interfacing to a 6800-series microprocessor, this pin will be used as the Enable (E) signal. Read/write operation is initiated when this pin is pulled HIGH (i.e. connect to VDDIO) and the chip is selected.<br>When connecting to an 8080-microprocessor, 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 interface is selected, this pin must be connected to VSS. |
| 13.<br>14.<br>15.<br>16.<br>17.<br>18.<br>19.<br>20. | D0~D7 | I/O | These pins are 8-bit bi-directional data bus to be connected to the microprocessor's data bus. When serial mode is selected, D1 will be the serial data input SDIN and D0 will be the serial clock input SCLK. When I2Cmode is selected, D2 & D1 should be tired together and serve as SDAout & SDAin in application and D0 is the serial clock input SCL. |
| 21. | IREF | I | Current Reference for Brightness Adjustment<br>This pin is segment current reference pin. A resistor should be connected between this pin and VSS. Set the current lower than 10μA. |
| 22. | VCOMH | O | Voltage Output High Level for COM Signal<br>This pin is the input pin for the voltage output high level for COM signals. A capacitor should be connected between this pin and VSS. |
| 23. | VCC | P | Power supply for panel driving voltage.<br>This is also the most positive power voltage supply pin. |
| 24. | VLSS | P | Ground of Analog Circuit<br>This is an analog ground pin. It should be connected to VSS externally. |
| 25. | N.C. (GND) | - | ESD Ground pin. |

# Contour Drawing




| PIN | SYMBOL | PIN | SYMBOL |
|---|---|---|---|
| 1 | NC(GND) | 14 | D1 |
| 2 | VCC | 15 | D2 |
| 3 | VSS | 16 | D3 |
| 4 | VDD | 17 | D4 |
| 5 | VDDIO | 18 | D5 |
| 6 | BS1 | 19 | D6 |
| 7 | BS2 | 20 | D7 |
| 8 | CS# | 21 | IREF |
| 9 | RES# | 22 | VCOMH |
| 10 | D/C# | 23 | VCC |
| 11 | R/W# | 24 | VLSS |
| 12 | E/RD# | 25 | NC(GND) |
| 13 | D0 | | |

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

# Absolute Maximum Ratings

| Parameter | Symbol | Min | Max | Unit |
|---|---|---|---|---|
| Supply Voltage for Logic | VDD | -0.3 | 4.0 | V |
| Supply Voltage for Display | VCC | 0 | 15.0 | V |
| Logic Supply Voltage for MCU interface | VDDIO | 0.3 | VDD+0.5 | 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 | 3.3 | V |
| Supply Voltage for Display | VCC | — | 7.0 | 12.0 | 12.5 | V |
| Logic Supply Voltage for MCU interface | VDDIO | — | 1.6 | — | VDD | V |
| Input High Volt. | VIH | — | 0.8×VDDIO | — | VDDIO | V |
| Input Low Volt. | VIL | — | 0 | — | 0.2×VDDIO | V |
| Output High Volt. | VOH | — | 0.9×VDDIO | — | VDDIO | V |
| Output Low Volt. | VOL | — | 0 | — | 0.1×VDDIO | V |
| Display 50% Pixel on | ICC | VCC=12V | — | 6.0 | 9.0 | mA |