**WINSTAR**

# WINSTAR Display Co.,Ltd.
# 華凌光電股份有限公司

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*WEB: https://www.winstar.com.tw E-mail: sales@winstar.com.tw*

# SPECIFICATION

# MODULE NO.: WO24064B

# General Specification

| Item | Dimension | Unit |
|------|-----------|------|
| Number of dots | 240 x 64 | — |
| Module dimension | 142.5 x 51.7 x 6.10 | mm |
| View area | 129.0 x 37.6 | mm |
| Active area | 127.17 x 33.89 | mm |
| Dot size | 0.5 x 0.5 | mm |
| Dot pitch | 0.53 x 0.53 | mm |
| Duty | 1/64 | |
| Backlight Type | LED | |
| IC | ST7586S-G4 | |
| Interface | 6800/8080/3-Line/4-Line | |

# Absolute Maximum Ratings

| Item | Symbol | Min | Typ | Max | Unit |
|------|--------|-----|-----|-----|------|
| Operating Temperature | $T_{OP}$ | -20 | — | +70 | ℃ |
| Storage Temperature | $T_{ST}$ | -30 | — | +80 | ℃ |
| Digital Power Supply Voltage | VDDI | -0.3 | — | 3.6 | V |
| Analog Power supply voltage | VDDA | -0.3 | — | 3.6 | V |
| LCD Power supply voltage | V0-XV0 | -0.3 | — | 19 | V |
| LCD Power supply voltage | VG | -0.3 | — | 5.5 | V |

# Electrical Characteristics

| Item | Symbol | Condition | Min | Typ | Max | Unit |
|------|--------|-----------|-----|-----|-----|------|
| Supply Voltage For Logic | $V_{DD}$-$V_{SS}$ | — | 3.0 | 3.3 | 3.4 | V |
| Supply Voltage For LCM | V0-XV0 | Ta=-20℃ | — | — | — | V |
| | | Ta=25℃ | 9.8 | 10.0 | 10.2 | V |
| | | Ta=+70℃ | — | — | — | V |
| Input High Volt. | $V_{IH}$ | — | $0.7V_{DD}$ | — | $V_{DD}$ | V |
| Input Low Volt. | $V_{IL}$ | — | Vss | — | $0.3 V_{DD}$ | V |
| Output High Volt. | $V_{OH}$ | — | $0.8 V_{DD}$ | — | $V_{DD}$ | V |
| Output Low Volt. | $V_{OL}$ | — | Vss | — | $0.2V_{DD}$ | V |
| Supply Current(No include LED Backlight) | $I_{DD}$ | $V_{DD}$=3.3V | — | 1.5 | — | mA |

# Interface Pin Function

| Pin No. | Symbol | I/O | Description |
|---------|--------|-----|-------------|
| 1 | VG | P | VG is the power of SEG-drivers. |
| 2 | XV0 | P | Negative operating voltage of COM-drivers. |
| 3 | V0 | P | Positive operating voltage of COM-drivers.<br>V0O is the output of the positive Vop generator.<br>V0I is the positive Vop supply of LCD drivers.<br>V0S is the sensor of the positive Vop generator.<br>V0O, V0I & V0S should be separated on ITO and be connected together by FPC. |
| 4 | VM | P | VM is the non-select voltage level of COM-drivers. |
| 5 | VDDA | P | Analog power for internal booster. |
| 6 | VSS | P | Ground |
| 7 | VD1 | P | VD1I is the power source of digital circuits. |
| 8 | VDDI | P | Power of interface I/O circuit. |
| 9 | CSB | Input | Chip select input pin.<br>CSB="L": This chip is selected and the MPU interface is active. |
| 10 | IF3 | Input | These pins select interface operation mode.<br><table><tr><th>IF3</th><th>IF2</th><th>IF1</th><th>MPU interface type</th></tr><tr><td>H</td><td>H</td><td>L</td><td>80 series 8-bit parallel</td></tr><tr><td>H</td><td>L</td><td>L</td><td>68 series 8-bit parallel</td></tr><tr><td>L</td><td>H</td><td>H</td><td>8-bit serial (4-Line)</td></tr><tr><td>L</td><td>H</td><td>L</td><td>9-bit serial (3-Line)</td></tr></table>Note: Refer to "Interface Selection" for detailed information. |
| 11 | IF2 | | |
| 12 | IF1 | | |
| 13 | RSTB | Input | Reset input pin. When RSTB is "L", internal initialization procedure is executed. |
| 14 | /RD(E) | Input | Read / Write execution control pin. (This pin is only used in parallel interface) |
| 15 | D7 | I/O | The bi-directional data bus of the MPU interface. When CSB is "H", they are high impedance.<br>If using serial interface:<br>D0 is the SDA signal in 4-Line & 3-Line interface.<br>D1 is the A0 signal in 4-Line interface |
| 16 | D6 | | |
| 17 | D5 | | |
| 18 | D4 | | |
| 19 | D3 | | |
| 20 | D2 | | |
| 21 | D1 | | |
| 22 | D0 | | |
| 23 | NC | | No connection |

| 24 | /WR(R/W) | Input | Read / Write execution control pin. (This pin is only used in parallel interface) |
| --- | --- | --- | --- |
| 25 | A0(SCL) | Input | The function of this pin is different in parallel and serial interface. In parallel interface: A0 is register selection input. |
| 26 | VSS | P | Ground |

# Contour Drawing



240*64 DOTS

(60.85)
13.50
26 ... 1
80±0.5
2.0min
(Unbending)

3.40
3.20
44.70
3.50
2-O3.5PTH
4.015
3.10max
1.50
7.15

127.17(AA)
129.00 (V.A)
132.20±0.2
135.20
142.50±0.3

6.10

CN3
1 2
200.0±1.0

4-R3.50
2 3.20
(BEAK-OUT)
33.89(AA)
37.6(V.A)
41.40
49.90±0.2
51.70±0.3
3.985
3.0
0.9

0.30±0.05
CONTACT SIDE
STIFFNER
JST:PHR-2

CN3
2 1

1 ... 26

| CN3 | PIN NO. | SYMBOL |
|-----|---------|--------|
|     | 1       | A      |
|     | 2       | K      |

IC:ST7586S

COM0                    COM1

COM62          COM63
SEG239         SEG0

LCD

13.50±0.1
0.50  P0.5*25=12.50
0.25
6.0
4.0
1 ... 26
R0.30

Contact Side
SCALE 3/1

0.53
0.5
0.53
0.5

DOT SIZE
SCALE 10/1

| PIN NO. | SYMBOL | PIN NO. | SYMBOL | PIN NO. | SYMBOL |
|---------|--------|---------|--------|---------|--------|
| 1 | VG | 10 | IF3 | 19 | D3 |
| 2 | XV0 | 11 | IF2 | 20 | D2 |
| 3 | V0 | 12 | IF1 | 21 | D1 |
| 4 | VM | 13 | RSTB | 22 | D0 |
| 5 | VDDA | 14 | /RD(E) | 23 | NC |
| 6 | VSS | 15 | D7 | 24 | /WR(R/W) |
| 7 | VD1 | 16 | D6 | 25 | A0(SCL) |
| 8 | VDDI | 17 | D5 | 26 | VSS |
| 9 | CSB | 18 | D4 |  |  |

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