**Winstar Display Co., LTD**
**華凌光電股份有限公司**
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# SPECIFICATION

**CUSTOMER :** _____

**MODULE NO.: WO12864-85HT1#FC**

| **APPROVED BY:** | |
|---|---|
| **( FOR CUSTOMER USE ONLY )** | **PCB VERSION:** **DATA:** |

Represented by:
first FC components
FIRST Components s.r.l.
www.first-components.com
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| VERSION | DATE | REVISED PAGE NO. | SUMMARY |
|---|---|---|---|
| 0 | 2021/09/30 | | First issue |

# General Specification

| Item | Dimension | Unit |
|---|---|---|
| Number of dots | 128 x 64 | — |
| Module dimension | 38.0 x 26.42 x 8.8 | mm |
| View area | 29.58 x 16.22 | mm |
| Active area | 25.58x 14.06 | mm |
| Dot size | 0.18 x 0.20 | mm |
| Dot pitch | 0.20 x 0.22 | mm |
| LCD type | FSTN Positive Transflective<br>(In LCD production, It will occur slightly color difference. We can only guarantee the same color in the same batch.) | |
| Duty | 1/65 DUTY,1/9 BIAS | |
| View direction | 6 o'clock | |
| Backlight Type | LED White | |
| IC | ST7567S | |
| Interface | 6800/8080/4-Line SPI | |

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# Absolute Maximum Ratings

| Item | Symbol | Min | Typ | Max | Unit |
|---|---|---|---|---|---|
| Operating Temperature | $T_{OP}$ | -20 | – | +70 | ℃ |
| Storage Temperature | $T_{ST}$ | -30 | – | +80 | ℃ |
| Input Voltage | $V_I$ | -0.3 | – | $V_{DD}$+0.3 | V |
| Digital Power Supply Voltage | $V_{DD}$-Vss | -0.3 | – | 4.0 | V |
| LCD Power supply voltage | V0-XV0 | -0.3 | – | 14.0 | V |

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# Electrical Characteristics

| Item | Symbol | Condition | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| Supply Voltage For Logic | $V_{DD}$-$V_{SS}$ | – | 2.7 | 3.0 | 3.3 | V |
| Supply Voltage For LCD | $V_{OP}$ | Ta=-20℃ | – | – | – | V |
| | | Ta=25℃ | 8.9 | 9.1 | 9.3 | V |
| | | Ta=70℃ | – | – | – | V |
| Input High Volt. | $V_{IH}$ | – | 0.7$V_{DD}$ | – | $V_{DD}$ | V |
| Input Low Volt. | $V_{IL}$ | – | $V_{SS}$ | – | 0.3$V_{DD}$ | V |
| Output High Volt. | $V_{OH}$ | – | 0.8$V_{DD}$ | – | $V_{DD}$ | V |
| Output Low Volt. | $V_{OL}$ | – | $V_{DD}$ | – | 0.2$V_{DD}$ | V |
| Supply Current | $I_{DD}$ | $V_{DD}$=3.0V | – | – | 1.5 | mA |

Please kindly consider to design the Vop to be adjustable while programing the software to match LCD contrast tolerance.

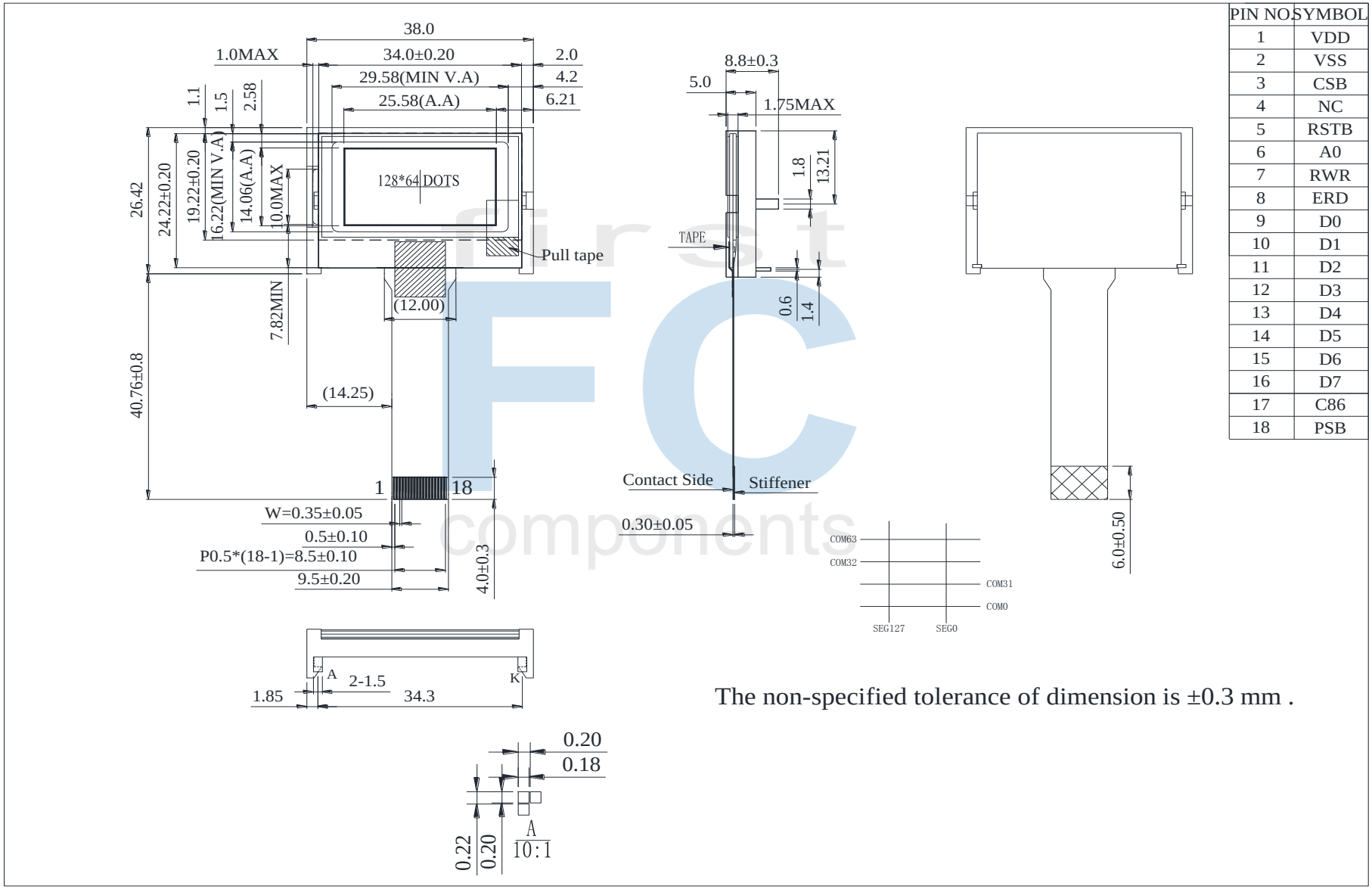
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# Interface Pin Function

<table>
<tr><th>Pin No.</th><th>Symbol</th><th>Description</th></tr>
<tr><td>1</td><td>VDD</td><td>Power supply pin for logic.</td></tr>
<tr><td>2</td><td>VSS</td><td>Ground pin, connected to 0V</td></tr>
<tr><td>3</td><td>CSB</td><td>Chip select input pin.</td></tr>
<tr><td>4</td><td>NC</td><td>NC</td></tr>
<tr><td>5</td><td>RSTB</td><td>Hardware reset input pin</td></tr>
<tr><td>6</td><td>A0</td><td>It determines whether the access is related to data or command.</td></tr>
<tr><td>7</td><td>RWR</td><td>
<table>
<tr><th>C86</th><th>MPU Type</th><th>RWR</th><th>Description</th></tr>
<tr><td>H</td><td>6800 series</td><td>R/W</td><td>Read/Write control input pin.<br>R/W="H": read.<br>R/W="L": write.</td></tr>
<tr><td>L</td><td>8080 series</td><td>/WR</td><td>Write enable input pin.<br>Signals on D[7:0] will be latched at the rising edge of /WR signal.</td></tr>
</table>
</td></tr>
<tr><td>8</td><td>ERD</td><td>
<table>
<tr><th>C86</th><th>MPU Type</th><th>ERD</th><th>Description</th></tr>
<tr><td>H</td><td>6800 series</td><td>E</td><td>Read/Write control input pin.<br>R/W="H": When E is "H", D[7:0] are in output mode.<br>R/W="L": Signals on D[7:0] are latched at the falling edge of E signal.</td></tr>
<tr><td>L</td><td>8080 series</td><td>/RD</td><td>Read enable input pin.<br>When /RD is "L", D[7:0] are in output mode.</td></tr>
</table>
</td></tr>
<tr><td>9~16</td><td>D0~D7</td><td>8-bit bi-directional data bus. Connect to the data bus of 8-bit microprocessor. When CSB is non-active (CSB="H"), D[7:0] pins are high impedance.</td></tr>
<tr><td>17</td><td>C86</td><td>C86 selects the microprocessor type in parallel interface mode</td></tr>
<tr><td>18</td><td>PSB</td><td>Interface selection</td></tr>
</table>

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# Contour Drawing




| PIN NO. | SYMBOL |
|---|---|
| 1 | VDD |
| 2 | VSS |
| 3 | CSB |
| 4 | NC |
| 5 | RSTB |
| 6 | A0 |
| 7 | RWR |
| 8 | ERD |
| 9 | D0 |
| 10 | D1 |
| 11 | D2 |
| 12 | D3 |
| 13 | D4 |
| 14 | D5 |
| 15 | D6 |
| 16 | D7 |
| 17 | C86 |
| 18 | PSB |

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

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