



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



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WEB: <http://www.winstar.com.tw> E-mail: [sales@winstar.com.tw](mailto:sales@winstar.com.tw)

### SPECIFICATION

MODULE NO.: **WF18FTLAADNN0#**

### General Specifications

| Item                           | Dimension                         | Unit |
|--------------------------------|-----------------------------------|------|
| Size                           | 1.77                              | inch |
| Dot Matrix                     | 128 x RGB x 160(TFT)              | dots |
| Module dimension               | 34.0(W) x 45.83(H) x 2.65(D)      | mm   |
| Active area                    | 28.03 x 35.04                     | mm   |
| Dot pitch                      | 0.073 x 0.219                     | mm   |
| LCD type                       | TFT, Normally White, Transmissive |      |
| View Direction                 | 6 o'clock                         |      |
| Gray Scale Inversion Direction | 12 o'clock                        |      |
| Aspect Ratio                   | Portrait                          |      |
| IC                             | ST7735S                           |      |
| Backlight Type                 | LED, Normally White               |      |
| Touch Panel                    | Without Touch Panel               |      |
| Surface                        | Anti-Glare                        |      |

\*Color tone slight changed by temperature and driving voltage.

## Absolute Maximum Ratings

| Item                  | Symbol | Min | Typ | Max | Unit |
|-----------------------|--------|-----|-----|-----|------|
| Operating Temperature | TOP    | -20 | —   | +70 | °C   |
| Storage Temperature   | TST    | -30 | —   | +80 | °C   |

## Electrical Characteristics

### Operating conditions

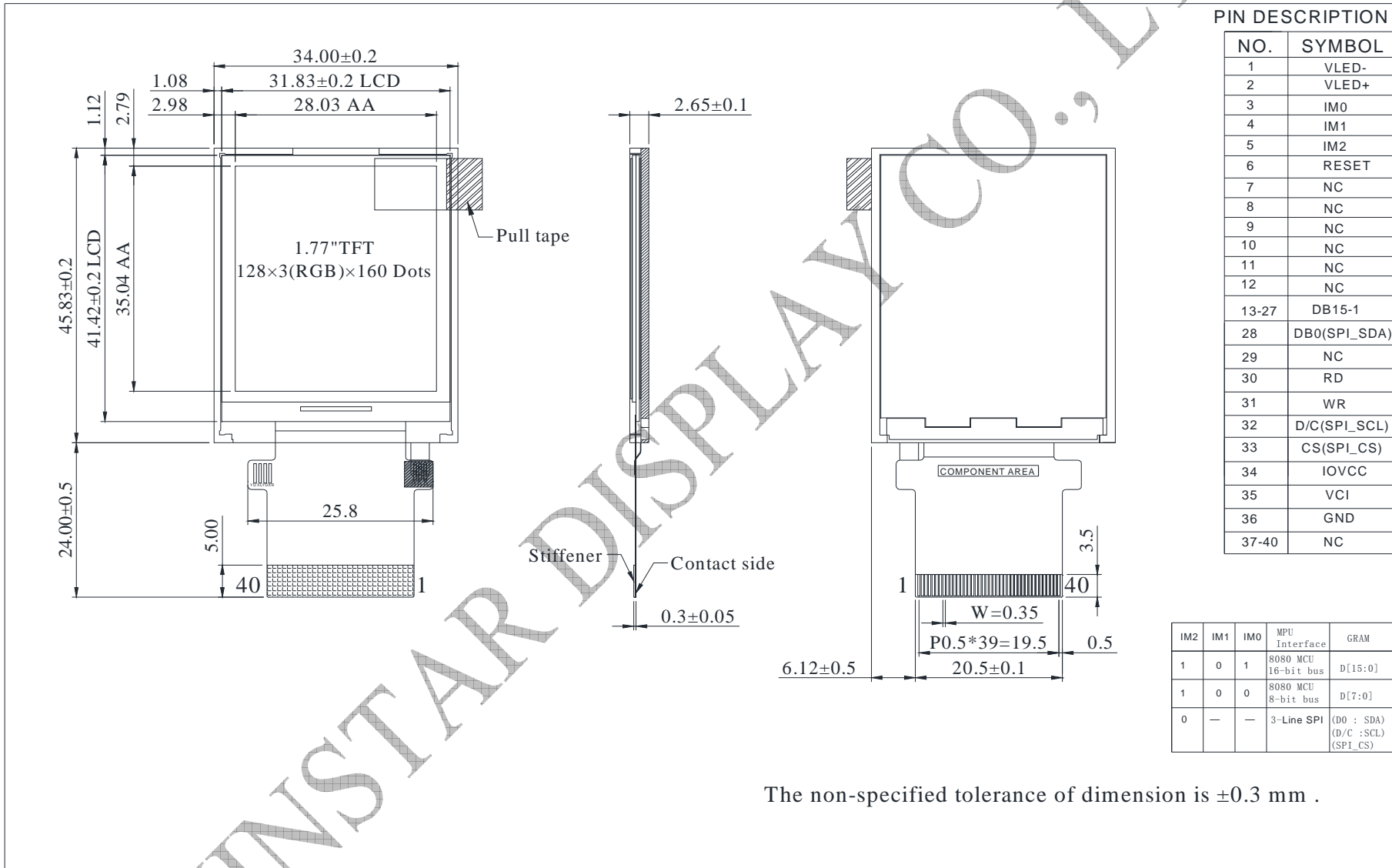
| Item                        | Symbol  | Condition | Min  | Typ  | Max | Unit |
|-----------------------------|---------|-----------|------|------|-----|------|
| Supply Voltage For Analog   | VCI     | —         | 2.5  | 2.75 | 4.8 | V    |
| Interface Operation Voltage | IOVCC   | —         | 1.65 | 1.8  | 3.7 | V    |
| Supply LCM current          | ICI(mA) | —         | -    | 0.9  | 2   | mA   |

# Interface

## LCM PIN Definition

| Pin   | Symbol            | I/O                 | Function  |                    |     |                    |   |   |                    |   |   |                     |   |   |                    |   |   |                     |
|-------|-------------------|---------------------|---|--------------------|-----|--------------------|---|---|--------------------|---|---|---------------------|---|---|--------------------|---|---|---------------------|
| 1     | VLED-             | P                   | Back light cathode  |                    |     |                    |   |   |                    |   |   |                     |   |   |                    |   |   |                     |
| 2     | VLED+             | P                   | Back light anode  |                    |     |                    |   |   |                    |   |   |                     |   |   |                    |   |   |                     |
| 3     | IM0               | I                   | - MCU Parallel Interface Type Selection<br>-If Not Used, Please Fix this Pin at VDDI or DGND Level. <table border="1" data-bbox="603 645 1267 860"> <thead> <tr> <th>IM1</th> <th>IM0</th> <th>Parallel Interface</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>MCU 8-bit Parallel</td> </tr> <tr> <td>0</td> <td>1</td> <td>MCU 16-bit Parallel</td> </tr> <tr> <td>1</td> <td>0</td> <td>MCU 9-bit Parallel</td> </tr> <tr> <td>1</td> <td>1</td> <td>MCU 18-bit Parallel</td> </tr> </tbody> </table> | IM1                | IM0 | Parallel Interface | 0 | 0 | MCU 8-bit Parallel | 0 | 1 | MCU 16-bit Parallel | 1 | 0 | MCU 9-bit Parallel | 1 | 1 | MCU 18-bit Parallel |
| IM1   | IM0               |                     |   | Parallel Interface |     |                    |   |   |                    |   |   |                     |   |   |                    |   |   |                     |
| 0     | 0                 | MCU 8-bit Parallel  |   |                    |     |                    |   |   |                    |   |   |                     |   |   |                    |   |   |                     |
| 0     | 1                 | MCU 16-bit Parallel |   |                    |     |                    |   |   |                    |   |   |                     |   |   |                    |   |   |                     |
| 1     | 0                 | MCU 9-bit Parallel  |   |                    |     |                    |   |   |                    |   |   |                     |   |   |                    |   |   |                     |
| 1     | 1                 | MCU 18-bit Parallel |   |                    |     |                    |   |   |                    |   |   |                     |   |   |                    |   |   |                     |
| 4     | IM1               |                     |   |                    |     |                    |   |   |                    |   |   |                     |   |   |                    |   |   |                     |
| 5     | IM2               | I                   | MCU Parallel Interface Bus and Serial Interface select<br>IM2='1', Parallel Interface<br>IM2='0', Serial Interface  |                    |     |                    |   |   |                    |   |   |                     |   |   |                    |   |   |                     |
| 6     | RESET             | P                   | Reset signal  |                    |     |                    |   |   |                    |   |   |                     |   |   |                    |   |   |                     |
| 7-12  | NC                | -                   | No Connect  |                    |     |                    |   |   |                    |   |   |                     |   |   |                    |   |   |                     |
| 13-28 | DB15-DB0(SPI_SDA) | I/O                 | DB15:0] are used as MCU parallel interface data bus.<br>-DBis the serial input/output signal in serial interface mode.<br>-In serial interface, DB15:1] are not used and should be fixed at VDDI or DGND level.   |                    |     |                    |   |   |                    |   |   |                     |   |   |                    |   |   |                     |
| 29    | NC                | -                   | No Connect  |                    |     |                    |   |   |                    |   |   |                     |   |   |                    |   |   |                     |
| 30    | RD                | I                   | Read Enable in 8080 MCU Parallel Interface.<br>-If not used, please fix this pin at VDDI or DGND level.   |                    |     |                    |   |   |                    |   |   |                     |   |   |                    |   |   |                     |
| 31    | WR                | I                   | Serial clock<br>-Write Enable in MCU Parallel Interface.<br>-If not used, please fix this pin at VDDI or DGND level.  |                    |     |                    |   |   |                    |   |   |                     |   |   |                    |   |   |                     |
| 32    | D/C(SPI_SCL)      | I                   | -Display data/command Selection Pin in MCU Interface.<br>-D/CX='1': Display Data or Parameter.<br>-D/CX='0': Command Data.<br>-In Serial Interface, this is used as SCL.<br>-If not used, please fix this pin at VDDI or DGND level.  |                    |     |                    |   |   |                    |   |   |                     |   |   |                    |   |   |                     |
| 33    | CS(SPI_CS)        | I                   | Chip enable   |                    |     |                    |   |   |                    |   |   |                     |   |   |                    |   |   |                     |
| 34    | IOVCC             | P                   | Interface Operation Voltage   |                    |     |                    |   |   |                    |   |   |                     |   |   |                    |   |   |                     |
| 35    | VCI               | P                   | Analog Supply Voltage   |                    |     |                    |   |   |                    |   |   |                     |   |   |                    |   |   |                     |
| 36    | GND               | P                   | Ground  |                    |     |                    |   |   |                    |   |   |                     |   |   |                    |   |   |                     |
| 37-40 | NC                | -                   | No Connect  |                    |     |                    |   |   |                    |   |   |                     |   |   |                    |   |   |                     |

# Contour Drawing



## PIN DESCRIPTION

| NO.   | SYMBOL       |
|-------|--------------|
| 1     | VLED-        |
| 2     | VLED+        |
| 3     | IM0          |
| 4     | IM1          |
| 5     | IM2          |
| 6     | RESET        |
| 7     | NC           |
| 8     | NC           |
| 9     | NC           |
| 10    | NC           |
| 11    | NC           |
| 12    | NC           |
| 13-27 | DB15-1       |
| 28    | DB0(SPI_SDA) |
| 29    | NC           |
| 30    | RD           |
| 31    | WR           |
| 32    | D/C(SPI_SCL) |
| 33    | CS(SPI_CS)   |
| 34    | IOVCC        |
| 35    | VCI          |
| 36    | GND          |
| 37-40 | NC           |

| IM2 | IM1 | IM0 | MPU Interface       | GRAM                                  |
|-----|-----|-----|---------------------|---------------------------------------|
| 1   | 0   | 1   | 8080 MCU 16-bit bus | D[15:0]                               |
| 1   | 0   | 0   | 8080 MCU 8-bit bus  | D[7:0]                                |
| 0   | —   | —   | 3-Line SPI          | (D0 : SDA)<br>(D/C : SCL)<br>(SPI_CS) |

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