

# TFT DISPLAY SPECIFICATION



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



## SPECIFICATION

**MODULE NO.: WF24LSYAJDNG0#**

### General Specifications

| Item             | Dimension                         | Unit |
|------------------|-----------------------------------|------|
| Size             | 2.4"                              |      |
| Dot Matrix       | 240 x RGB x 320(TFT)              | dots |
| Module dimension | 43.72(W) x 61.26(H) x 4.5(D)      | mm   |
| Active area      | 36.72 x 48.96                     | mm   |
| Pixel Pitch      | 0.153 x 0.153                     | mm   |
| LCD type         | TFT, Normally Black, Transmissive |      |
| Controller IC    | ILI9341V or equivalent            |      |
| Viewing angle    | 80/80/80/80                       |      |
| Aspect Ratio     | Portrait                          |      |
| Backlight Type   | LED, Normally White               |      |
| CTP Driver IC    | CF1124 or equivalent              |      |
| CTP Interface    | I2C                               |      |
| CTP FW Version   | 0x01                              |      |
| CTP Resolution   | 240 * 320                         |      |
| Touch Panel      | Projected Capacitive Touch Panel  |      |
| Surface          | 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

### 1. Operating conditions:

| Item                      | Symbol | Min | Typ  | Max  | Unit |
|---------------------------|--------|-----|------|------|------|
| Supply Voltage For Analog | VCI    | 2.5 | —    | 3.3  | V    |
| Supply Voltage For Logic  | IOVCC  | 2.5 | —    | 3.3  | V    |
| Supply Current For LCM    | ICC    | —   | 6    | 9    | mA   |
| Supply CTP                | VDDT   | 3.0 | 3.3  | 3.6  | V    |
|                           | IDDT   | —   | 14.0 | 25.0 | mA   |

### 2. LED driving conditions

| Parameter     | Symbol | Min.   | Typ. | Max. | Unit |
|---------------|--------|--------|------|------|------|
| LED current   | —      | —      | 40   | —    | mA   |
| LED voltage   | VBL+   | 10.8   | 11.6 | 12.4 | V    |
| LED Life Time | —      | 30,000 | —    | —    | Hr   |

# Interface

## LCM PIN Definition

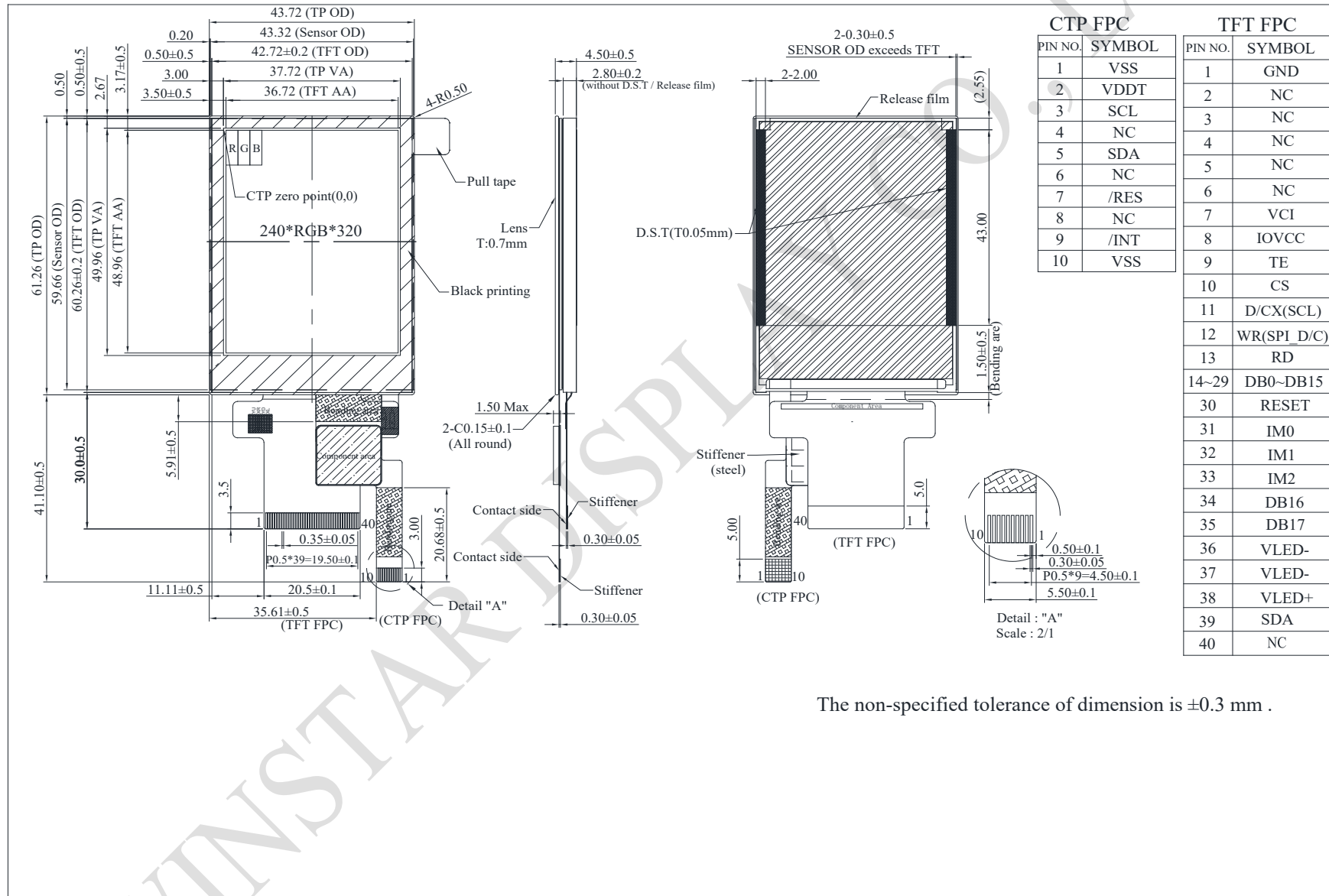
| NO    | Symbol      | Function                                                                                                                                                                                                                                                                                                                                  | I/O |
|-------|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| 1     | GND         | Ground                                                                                                                                                                                                                                                                                                                                    | P   |
| 2-6   | NC          | No connection                                                                                                                                                                                                                                                                                                                             | -   |
| 7     | VCI         | High voltage power supply for analog circuit blocks<br>(2.5 ~ 3.3 V)                                                                                                                                                                                                                                                                      | P   |
| 8     | IOVCC       | Low voltage power supply for interface logic circuits<br>(2.5 ~ 3.3 V)                                                                                                                                                                                                                                                                    | P   |
| 9     | TE          | Tearing effect output pin to synchronize MPU to frame writing,<br>activated by S/W command. When this pin is not activated,<br>this pin is low.<br>If not used, open this pin.                                                                                                                                                            | O   |
| 10    | CS          | Chip select signal.                                                                                                                                                                                                                                                                                                                       | I   |
| 11    | D/CX(SCL)   | (D/CX): This pin is used to select "Data or Command" in the<br>parallel interface.<br>When DCX = 1, data is selected.<br>When DCX = 0, command is selected.<br>(SCL): This pin is used as the serial interface clock in 3-wire<br>9-bit/4-wire 8-bit serial data interface.<br>If not used, this pin should be connected to IOVCC or GND. | I   |
| 12    | WR(SPI_D/C) | (WRX) - 8080- I /8080- II system: Serves as a write signal<br>and writes data at the rising edge.<br>(D/CX) - 4-line system: Serves as the selector of command or<br>parameter.<br>Fix to IOVCC level when not in use.                                                                                                                    | I   |
| 13    | RD          | 8080- I /8080- II system (RDX): Serves as a read signal and<br>MCU read data at the rising edge.<br>Fix to IOVCC level when not in use.                                                                                                                                                                                                   | I   |
| 14-29 | DB0~DB15    | 18-bit parallel bi-directional data bus for MCU system.<br>Fix to GND level when not in use.                                                                                                                                                                                                                                              | I/O |
| 30    | RESET       | This signal will reset the device and must be applied to<br>properly initialize the chip.<br>Signal is active low.                                                                                                                                                                                                                        | I   |
| 31    | IM0         | Select the MCU interface mode                                                                                                                                                                                                                                                                                                             | I   |
| 32    | IM1         |                                                                                                                                                                                                                                                                                                                                           |     |
| 33    | IM2         |                                                                                                                                                                                                                                                                                                                                           |     |

|                                                                                                                                                   |       | IM2                                                                                                                                    | IM1 | IM0 | MCU-Interface Mode                   | DB Pin in use    |         |     |
|---------------------------------------------------------------------------------------------------------------------------------------------------|-------|----------------------------------------------------------------------------------------------------------------------------------------|-----|-----|--------------------------------------|------------------|---------|-----|
|                                                                                                                                                   |       |                                                                                                                                        |     |     |                                      | Register/Content | GRAM    |     |
|                                                                                                                                                   |       |                                                                                                                                        |     |     |                                      |                  |         |     |
|                                                                                                                                                   |       | 0                                                                                                                                      | 0   | 0   | 80 MCU 8-bit bus interface I         | D[7:0]           | D[7:0]  |     |
|                                                                                                                                                   |       | 0                                                                                                                                      | 0   | 1   | 80 MCU 16-bit bus interface I        | D[7:0]           | D[15:0] |     |
|                                                                                                                                                   |       | 0                                                                                                                                      | 1   | 0   | 80 MCU 9-bit bus interface I         | D[7:0]           | D[8:0]  |     |
|                                                                                                                                                   |       | 0                                                                                                                                      | 1   | 1   | 80 MCU 18-bit bus interface I        | D[7:0]           | D[17:0] |     |
|                                                                                                                                                   |       | 1                                                                                                                                      | 0   | 1   | 3-wire 9-bit data serial interface I | SDA: In/OUT      |         |     |
|                                                                                                                                                   |       | 1                                                                                                                                      | 1   | 0   | 4-wire 8-bit data serial interface I | SDA: In/OUT      |         |     |
| MPU Parallel interface bus and serial interface select<br>If use RGB Interface must select serial interface.<br>* : Fix this pin at IOVCC or GND. |       |                                                                                                                                        |     |     |                                      |                  |         |     |
| 34                                                                                                                                                | DB16  | 18-bit parallel bi-directional data bus for MCU system and RGB interface mode<br>Fix to GND level when not in use.                     |     |     |                                      |                  |         | I/O |
| 35                                                                                                                                                | DB17  |                                                                                                                                        |     |     |                                      |                  |         |     |
| 36                                                                                                                                                | VLED- | Cathode of LED backlight.                                                                                                              |     |     |                                      |                  |         | P   |
| 37                                                                                                                                                | VLED- | Cathode of LED backlight.                                                                                                              |     |     |                                      |                  |         | P   |
| 38                                                                                                                                                | VLED+ | Anode of LED backlight.                                                                                                                |     |     |                                      |                  |         | P   |
| 39                                                                                                                                                | SDA   | SDA : Serial in/out signal.<br>The data is applied on the rising edge of the SCL signal.<br>If not used, fix this pin at IOVCC or GND. |     |     |                                      |                  |         | I/O |
| 40                                                                                                                                                | NC    | Not used, open this pin                                                                                                                |     |     |                                      |                  |         | N   |

## 2. CTP PIN Definition

| Pin | Symbol | Function                       |
|-----|--------|--------------------------------|
| 1   | VSS    | Ground for analog circuit      |
| 2   | VDDT   | Power Supply : +3.3V           |
| 3   | SCL    | I2C clock input                |
| 4   | NC     | No connect                     |
| 5   | SDA    | I2C data input and output      |
| 6   | NC     | No connect                     |
| 7   | /RST   | External Reset, Low is active  |
| 8   | NC     | No connect                     |
| 9   | /INT   | External interrupt to the host |
| 10  | VSS    | Ground for analog circuit      |

# Contour Drawing



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