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

MODULE NO.: WF28-240320KS#001-FC

General Specifications

Item	Dimension	Unit
Size	2.8	inch
Dot Matrix	240 x RGB x 320(TFT)	dots
Module dimension	50.0(W) x 69.2(H) x 3.48(D)	mm
Active area	43.2 x 57.6	mm
Pixel pitch	0.18 x 0.18	mm
LCD type	TFT, Normally White, Transmissive	
TFT Interface	SPI	
TFT Driver IC	ST7789V or Equivalent	
View Direction	6 o'clock	
Gray Scale Inversion Direction	12 o'clock	
Aspect Ratio	Portrait	
Backlight Type	LED, Normally White	
Touch Panel	Resistive Touch Screen	
Surface	Glare	

*Color tone slight changed by temperature and driving voltage.

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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	Min	Typ	Max	Unit
Supply Voltage For Analog	V_{CC}	2.4	3.3	3.6	V
Supply Current For LCM	I_{CC}	—	6.7	10.0	mA

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components

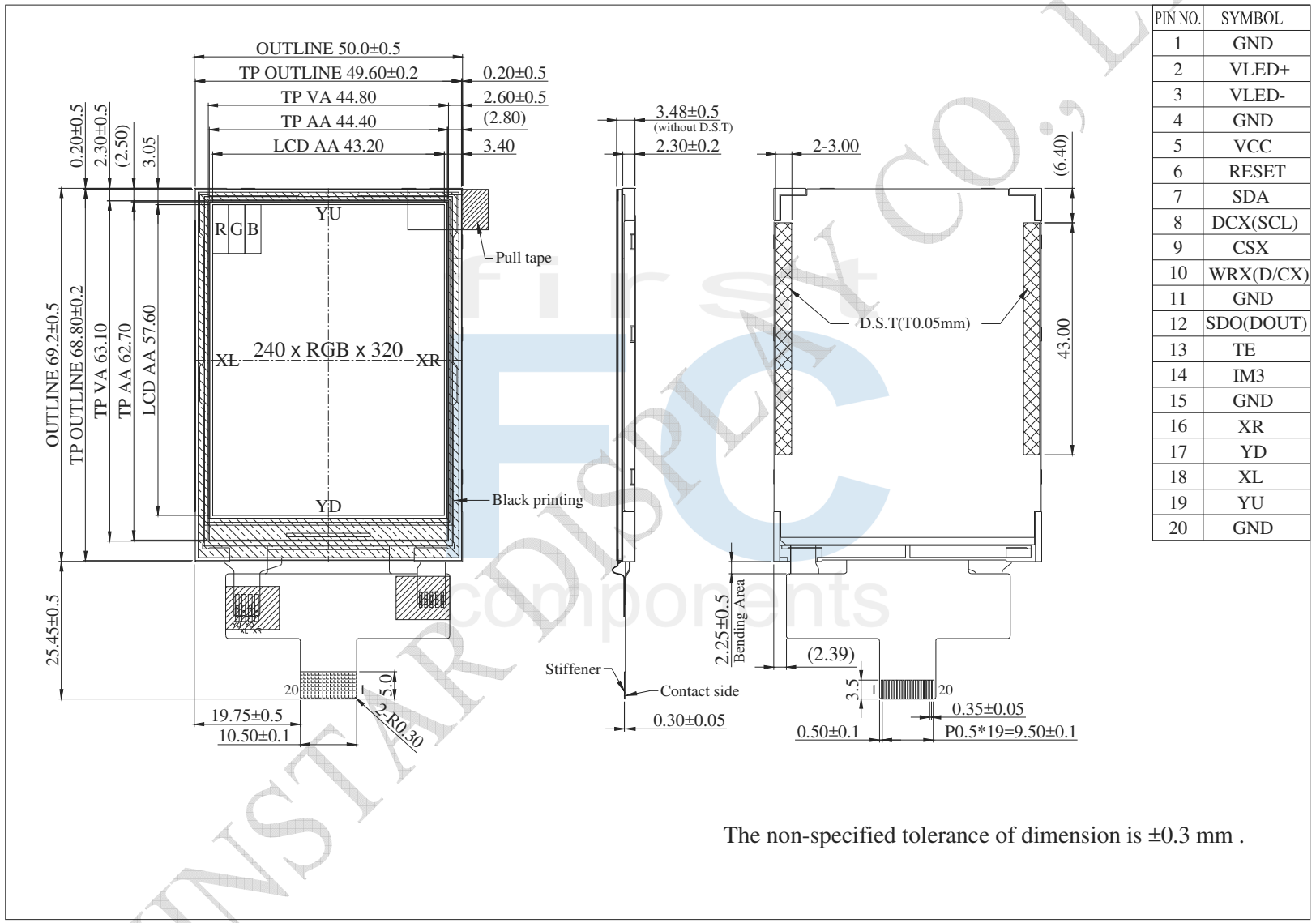
Interface

LCM PIN Definition

<table>
<tr><th>NO</th><th>Symbol</th><th>Function</th></tr>
<tr><td>1</td><td>GND</td><td>Ground</td></tr>
<tr><td>2</td><td>VLED+</td><td>Anode of LED backlight.</td></tr>
<tr><td>3</td><td>VLED-</td><td>Cathode of LED backlight.</td></tr>
<tr><td>4</td><td>GND</td><td>Ground</td></tr>
<tr><td>5</td><td>VCC</td><td>Power supply</td></tr>
<tr><td>6</td><td>RESET</td><td>System reset pin. (RESX)
signal is active low</td></tr>
<tr><td>7</td><td>SDA</td><td>When IM3: Low, SPI interface input/output pin.
When IM3: High, SPI interface input pin.
The data is latched on the rising edge of the SCL signal.
If not used, please fix this pin at VDDI or DGND level.</td></tr>
<tr><td>8</td><td>DCX(SCL)</td><td>This pin is used to be serial interface clock.
DCX=’1’: display data or parameter.
DCX=’0’: command data.
If not used, please fix this pin at VDDI or DGND.</td></tr>
<tr><td>9</td><td>CSX</td><td>Chip selection pin
Low enable.
High disable.</td></tr>
<tr><td>10</td><td>WRX(D/CX)</td><td>Display data/command selection pin in 4-line serial interface.
Second Data lane in 2 data lane serial interface.
If not used, please fix this pin at VDDI or DGND.</td></tr>
<tr><td>11</td><td>GND</td><td>Ground</td></tr>
<tr><td>12</td><td>SDO(DOUT)</td><td>SPI interface output pin.
The data is output on the falling edge of the SCL signal.
If not used, let this pin open.</td></tr>
<tr><td>13</td><td>TE</td><td>Tearing effect signal is used to synchronize MCU to frame memory writing.
If not used, please let this pin open</td></tr>
<tr><td>14</td><td>IM3</td><td>The MCU interface mode select.
<table>
<tr><th>IM3</th><th>IM2</th><th>IM1</th><th>IM0</th><th>MPU Interface Mode</th><th>Data pin</th></tr>
<tr><td>0</td><td>1</td><td>1</td><td>0</td><td>4-line 8bit serial I/F</td><td>SDA: in/out</td></tr>
<tr><td>1</td><td>1</td><td>1</td><td>0</td><td>4-line 8bit serial I/F Ⅱ</td><td>SDA:in/
SDO: out</td></tr>
</table></td></tr>
<tr><td>15</td><td>GND</td><td>Ground</td></tr>
<tr><td>16</td><td>XR</td><td>Right electrode</td></tr>
<tr><td>17</td><td>YD</td><td>Bottom electrode</td></tr>
<tr><td>18</td><td>XL</td><td>Left electrode</td></tr>
<tr><td>19</td><td>YU</td><td>Top electrode</td></tr>
<tr><td>20</td><td>GND</td><td>Ground</td></tr>
</table>

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Contour Drawing



PIN NO.	SYMBOL
1	GND
2	VLED+
3	VLED-
4	GND
5	VCC
6	RESET
7	SDA
8	DCX(SCL)
9	CSX
10	WRX(D/CX)
11	GND
12	SDO(DOUT)
13	TE
14	IM3
15	GND
16	XR
17	YD
18	XL
19	YU
20	GND

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

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first components