TFT DISPLAY SPECIFICATION



WINSTAR Display Co.,Ltd.
華凌光電股份有限公司

Represented by:

first FC components

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SPECIFICATION

MODULE NO.: WF20-240320BD#0SP0-FC

General Specifications

Item	Dimension	Unit
Size	2.0”	inch
Dot Matrix	240 x RGB x 320(TFT)	dots
Module dimension	38.8(W) x 52.3(H) x 2.15(D)	mm
Active area	30.60 x 40.80	mm
Pixel Pitch	0.1275 x 0.1275	mm
LCD type	TFT, Normally Black, Transmissive	
TFT Interface	MCU / SPI	
TFT Driver IC	ST7789VI or Equivalent	
Viewing angle	80/80/80/80	
Aspect Ratio	3：4	
Backlight Type	LED, Normally White	
Touch Panel	Without Touch Panel	
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	℃
Storage Temperature	TST	-30	–	+80	℃

Electrical Characteristics

Operating conditions

Item	Symbol	Condition	Min	Typ	Max	Unit
Supply Voltage For Analog	V_{DD}	–	2.4	3.3	3.6	V
Interface Operation Voltage	V_{DDI}	–	1.65	1.8	3.6	V
Supply Current For LCM	I_{DD}	V_{DD} = V_{DDI} = V_{CC}=3.0V	–	6.0	9.0	mA

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Interface

LCM PIN Definition

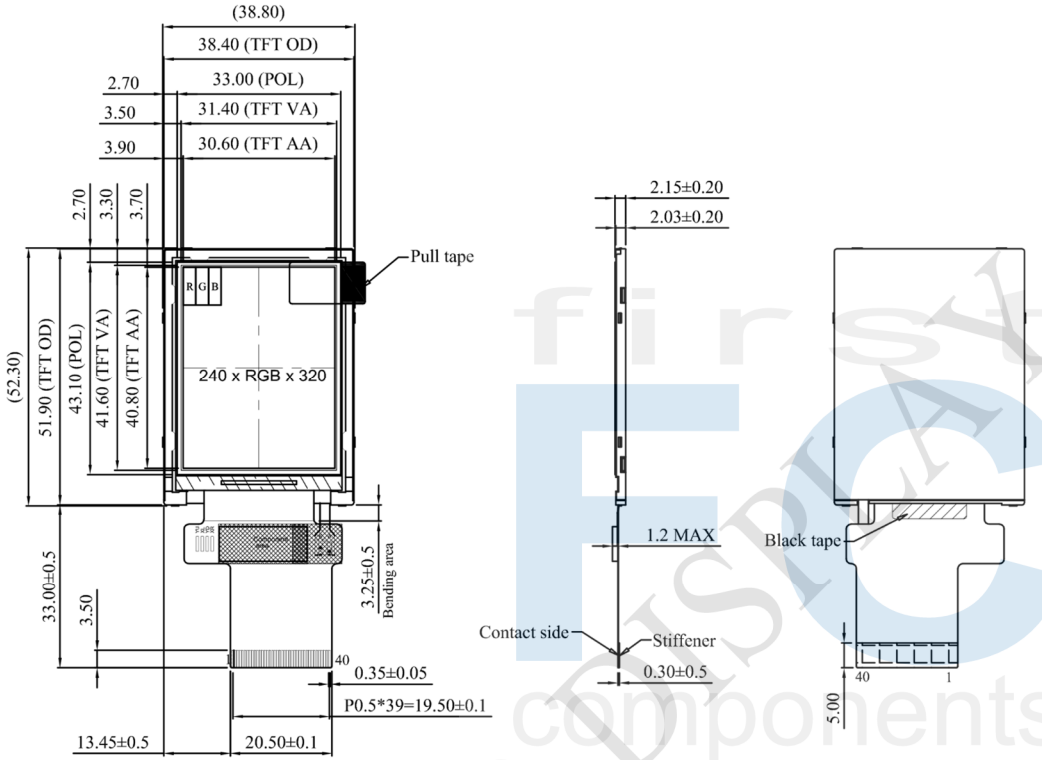
<table>
<tr><th>NO</th><th>Symbol</th><th>Function</th></tr>
<tr><td>1</td><td>GND</td><td>Ground</td></tr>
<tr><td>2</td><td>NC</td><td>No connection</td></tr>
<tr><td>3</td><td>NC</td><td>No connection</td></tr>
<tr><td>4</td><td>NC</td><td>No connection</td></tr>
<tr><td>5</td><td>NC</td><td>No connection</td></tr>
<tr><td>6</td><td>NC</td><td>No connection</td></tr>
<tr><td>7</td><td>VDD</td><td>Power supply</td></tr>
<tr><td>8</td><td>VDDI</td><td>Power Supply for I/O System.</td></tr>
<tr><td>9</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>10</td><td>CSX</td><td>Chip selection pin
Low enable.
High disable.</td></tr>
<tr><td>11</td><td>DCX(SCL)</td><td>(D/CX): This pin is used to select “Data or Command” in the parallel interface.
DCX=’1’: display data or parameter.
DCX=’0’: command data.
(SCL): When SPI mode,This pin is used to be serial interface clock.</td></tr>
<tr><td>12</td><td>WRX(D/CX)</td><td>Display data/command selection
Second Data lane in 2 data lane serial interface.
(WRX): Write enable in MCU parallel interface.
(D/CX): When 4-SPI mode,This pin in 4-line serial interface
If not used, please fix this pin at VDDI or GND.</td></tr>
<tr><td>13</td><td>RDX</td><td>-Read enable in 8080 MCU parallel interface.
-If not used, please fix this pin at VDDI or GND.</td></tr>
<tr><td>14~29</td><td>DB0~DB15</td><td>Data bus line</td></tr>
<tr><td>30</td><td>RESX</td><td>System reset pin.
signal is active low</td></tr>
<tr><td>31</td><td>IM0</td><td rowspan="3">The MCU interface mode select.
<table>
<tr><th>IM2</th><th>IM1</th><th>IM0</th><th>MPU Interface Mode</th><th>Data pin</th></tr>
<tr><td>0</td><td>0</td><td>0</td><td>80-8bit parallel I/F</td><td>DB[7:0]</td></tr>
<tr><td>0</td><td>0</td><td>1</td><td>80-16bit parallel I/F</td><td>DB[15:0]</td></tr>
<tr><td>0</td><td>1</td><td>0</td><td>80-9bit parallel I/F</td><td>DB[8:0]</td></tr>
<tr><td>0</td><td>1</td><td>1</td><td>80-18bit parallel I/F</td><td>DB[17:0],</td></tr>
<tr><td>1</td><td>0</td><td>1</td><td>3-line 9bit serial I/F</td><td>SDA: in/out</td></tr>
<tr><td>1</td><td>1</td><td>0</td><td>4-line 8bit serial I/F</td><td>SDA: in/out</td></tr>
</table>
</td></tr>
<tr><td>32</td><td>IM1</td></tr>
<tr><td>33</td><td>IM2</td></tr>
</table>

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34~35	DB16~DB17	Data bus line
36	VLED-	Cathode of LED backlight.
37	VLED-	Cathode of LED backlight.
38	VLED+	Anode of LED backlight.
39	NC(SDA)	When SPI mode, This pin is SPI interface input/output pin. The data is latched on the rising edge of the SCL signal. If not used(NC), please fix this pin at VDDI or GND level.
40	NC	No connection

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Contour Drawing



PIN NO.	SYMBOL
1	GND
2	NC(YU)
3	NC(XL)
4	NC(YD)
5	NC(XR)
6	NC
7	VDD
8	VDDI
9	TE
10	CSX
11	D/CX(SCL)
12	WRX(D/CX)
13	RDX
14~29	DB0~DB15
30	RESX
31	IM0
32	IM1
33	IM2
34	DB16
35	DB17
36	VLED-
37	VLED-
38	VLED+
39	NC(SDA)
40	NC

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

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