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#0P15-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) x3.8(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	
PCAP Driver IC	GT911 or equivalent	
PCAP Interface	I2C	
PCAP FW	V92	
PCAP Resolution	240 * 320	
Touch Panel	With PCAP	
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
Supply CTP	V_{CTP}	–	2.8	–	3.3	V
	I_{CTP}	–	–	8.0	12.0	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(YU)</td><td>No connection</td></tr>
<tr><td>3</td><td>NC(XL)</td><td>No connection</td></tr>
<tr><td>4</td><td>NC(YD)</td><td>No connection</td></tr>
<tr><td>5</td><td>NC(XR)</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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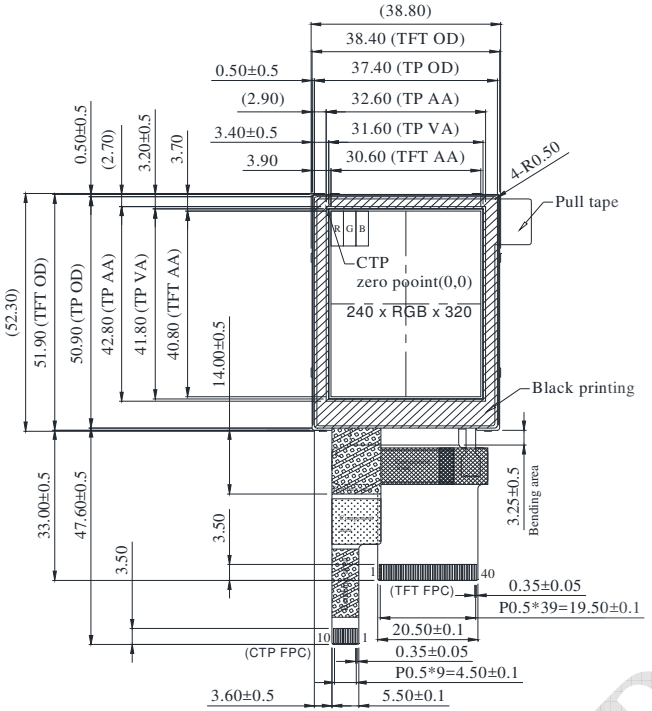
34~35	DB16~DB17	Data bus line
36	VLED-	Cathode of LED backlight.
37	VLED-	Cathode of LED backlight.
38	VLED+	Anode of LED backlight.
39	NC(SDA)	When SPI mode, This pin is SPI interface input/output pin. The data is latched on the rising edge of the SCL signal. If not used(NC), please fix this pin at VDDI or GND level.
40	NC	No connection

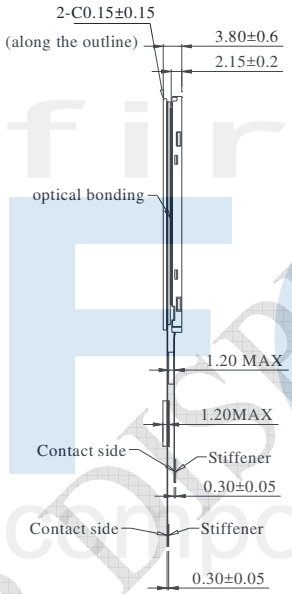
PCAP PIN Definition

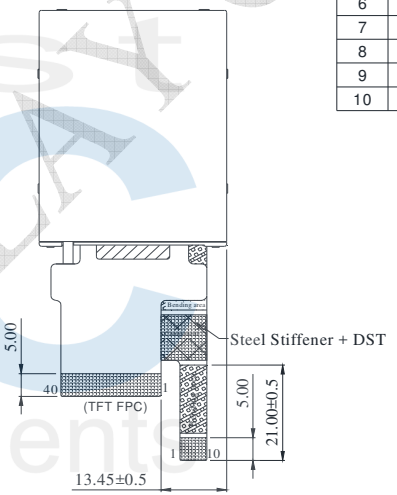
Pin	Symbol	Function
1	VSS	Ground for analog circuit
2	VDDT	Power Supply :
3	SCL	I2C clock inputI2C clock input
4	NC	No connect
5	SDA	I2C data input and output
6	NC	No connect
7	/RST	External Reset, Low is active
8	NC	No connect
9	/INT	External interrupt to the host
10	VSS	Ground for analog circuit

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Contour Drawing







CTP FPC

PIN NO.	SYMBOL
1	VSS
2	VDDT
3	SCL
4	NC
5	SDA
6	NC
7	RST
8	NC
9	INT
10	VSS

TFT FPC

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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