

TFT DISPLAY SPECIFICATION



WINSTAR Display Co.,Ltd.
華凌光電股份有限公司



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SPECIFICATION

MODULE NO.: WF28KTZAJDNG0#

General Specifications

Item	Dimension	Unit
Size	2.8"	
Dot Matrix	240 x RGB x 320(TFT)	dots
Module dimension	52.0(W) x 69.2(H) x 3.93(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 Angle	75/75/75/75	
Aspect Ratio	Portrait	
Backlight Type	LED, Normally White	
PCAP Driver IC	CF1124 or equivalent	
PCAP Interface	I2C	
PCAP FW version	01	
PCAP Resolution	240*320	
Touch Panel	Projected capacitive touch panel (PCAP)	
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	V _{CC}	2.4	3.3	3.6	V
Supply Current For LCM	I _{CC}	—	6.7	10.0	mA
Supply Voltage For Touch Logic	VDDT	3.0	3.3	3.6	V
	IDDT	—	15	25	mA

2. LED driving conditions

Parameter	Symbol	Min.	Typ.	Max.	Unit
LED current	—	—	80	—	mA
Power Consumption	—	232	256	272	mW
LED voltage	VLED+	2.9	3.2	3.4	V
LED Life Time	—	50,000	—	—	Hr

Optical Characteristics

Item		Symbol	Condition.	Min	Typ.	Max.	Unit	Remark
Response time		Tr	$\theta=0^{\circ}$ 、 $\Phi=0^{\circ}$	-	4	8	ms	Note 3
		Tf		-	12	24	ms	
Contrast ratio		CR	At optimized viewing angle	400	500	-	-	Note 4
Color Chromaticity	White	Wx	$\theta=0^{\circ}$ 、 $\Phi=0$	0.253	0.303	0.353		Note 2,6,7
		Wy		0.275	0.325	0.375		
Viewing angle (Gray Scale Inversion Direction)	Hor.	ΘR	$CR\geq 10$	-	75	-	Deg.	Note 1
		ΘL		-	75	-		
	Ver.	ΦT		-	75	-		
		ΦB		-	75	-		
Brightness		-	-	250	350	-	cd/m ²	Center of display
Uniformity		(U)	-	75	-	-	%	Note5

Interface

1. LCM PIN Definition

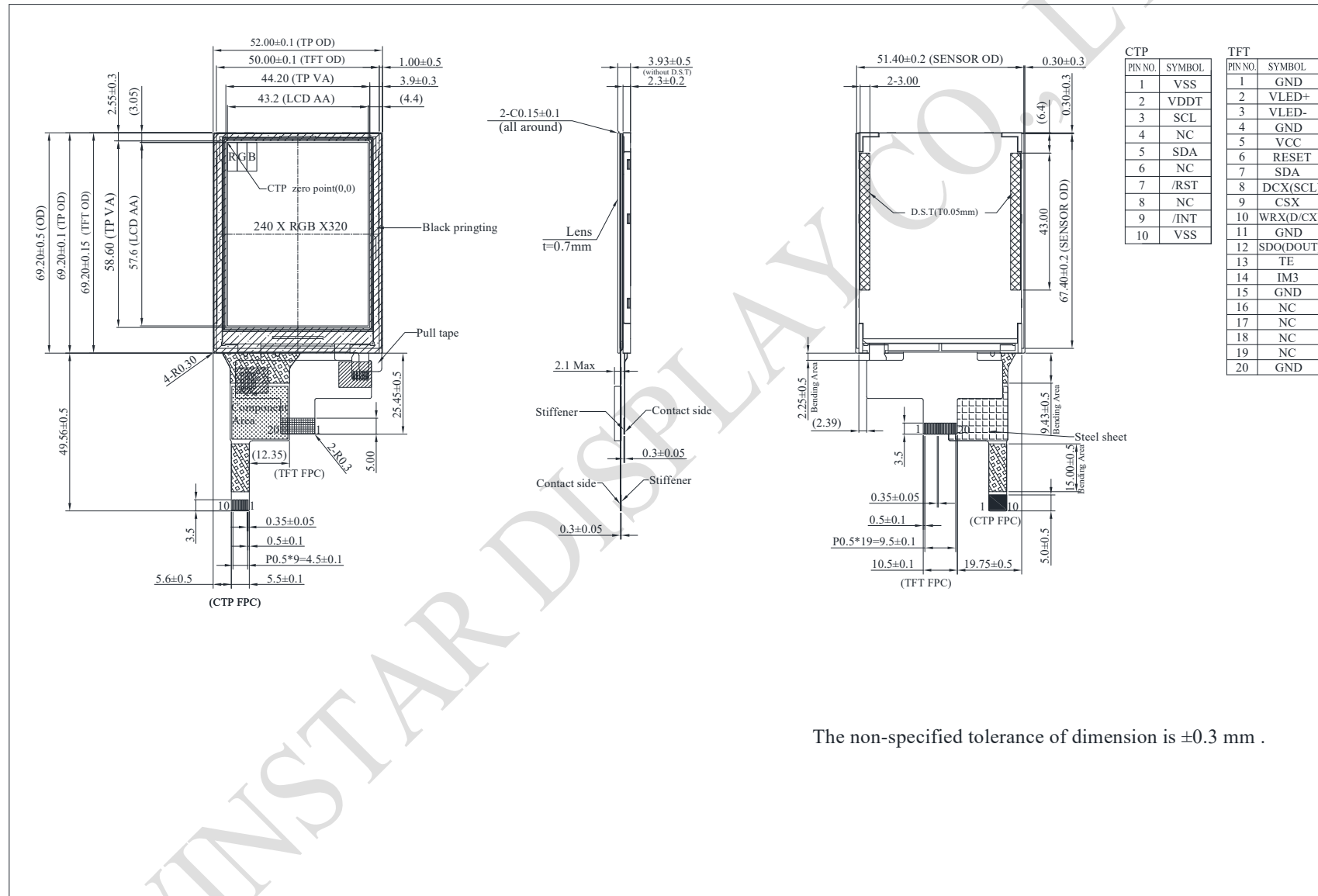
NO	Symbol	Function																		
1	GND	Ground																		
2	VLED+	Anode of LED backlight.																		
3	VLED-	Cathode of LED backlight.																		
4	GND	Ground																		
5	VCC	Power supply																		
6	RESET	System reset pin. (RESX) signal is active low																		
7	SDA	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.																		
8	DCX(SCL)	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.																		
9	CSX	Chip selection pin Low enable. High disable.																		
10	WRX(D/CX)	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.																		
11	GND	Ground																		
12	SDO(DOUT)	SPI interface output pin. The data is output on the falling edge of the SCL signal. If not used, let this pin open.																		
13	TE	Tearing effect signal is used to synchronize MCU to frame memory writing. If not used, please let this pin open																		
14	IM3	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>	IM3	IM2	IM1	IM0	MPU Interface Mode	Data pin	0	1	1	0	4-line 8bit serial I/F	SDA: in/out	1	1	1	0	4-line 8bit serial I/F II	SDA:in/ SDO: out
IM3	IM2	IM1	IM0	MPU Interface Mode	Data pin															
0	1	1	0	4-line 8bit serial I/F	SDA: in/out															
1	1	1	0	4-line 8bit serial I/F II	SDA:in/ SDO: out															
15	GND	Ground																		
16-19	NC	No connect																		
20	GND	Ground																		

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2. PCAP 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 .