



Surenoo STP0280A1-240320 Series TFT LCD Panel User Manual

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Surenoo®
Display
STP0280A2-240320 Series
TFT LCD PANEL
USER MANUAL



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STP0280A2-240320 Series TFT LCD Panel

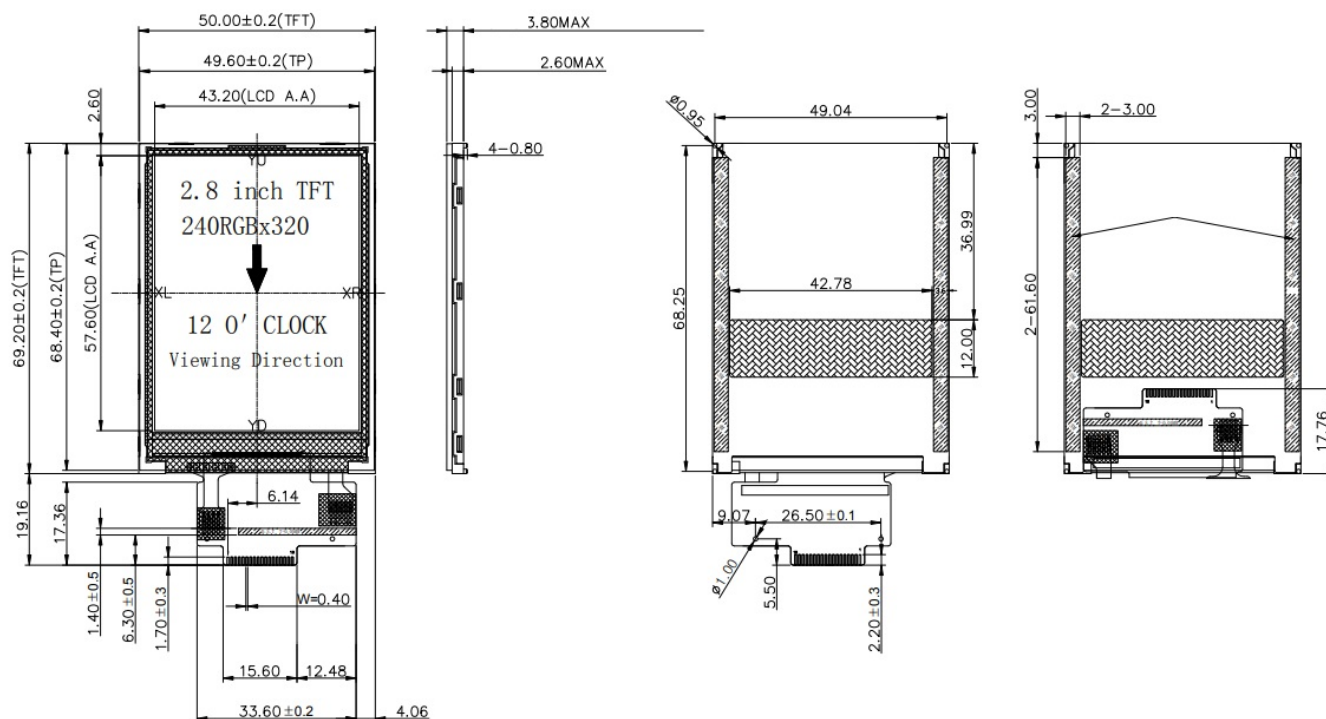
Please click the following image to buy the sample

General Description

MODEL NO	STP0280A2-240320 (Z280IT010)
Display Mode	Transmissive
Display Format	Graphic 240RGB*320 Dot-matrix 240xRGBx32
Input Data	4 Line-SPI interface
Viewing Direction	2 o'clock
Drive	ST7789V

Mechanical Specification

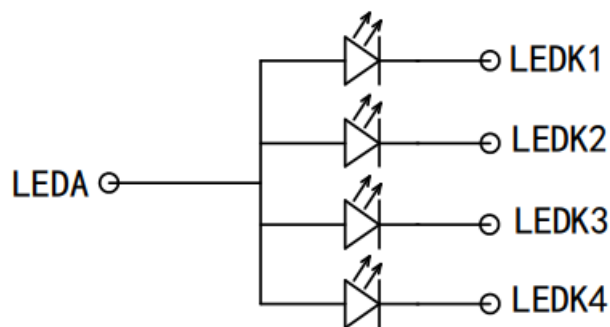
Item	Specifications	Unit
Dimensional outline	50.00(W)*69.20(H)*2.60(T) (NTP) 50.00(W)*69.20(H)*3.80(T) (RIP) (FPC not include)	mm
Resolution	240RGB*320	dots
LCD Active area	43.20(W)*57.60 (H)	mm
Pixel size	0.18W)*0.18(H)	mm



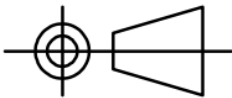
PIN	SYMBOL
1	GND
2	RESET
3	SCL
4	D/C
5	CSX
6	SDA
7	SDO
8	GND
9	VDD
10	LEDA
11	LEDK1
12	LEDK2
13	LEDK3
14	LEDK4
15	XL
16	YU
17	XR
18	YD

NOTES:

1. DISPLAY TYPE:TFT
2. OPERATING TEMP: -20°C~70°C
3. STORAGE TEMP: -30°C~80°C
4. LCD DRIVER: COG(IC:ST7789V);
5. BACKLIGHT: 4 CHIP-WHITE LED(Parellel)
6. GENERAL TOLERANCE:±0.20
7. ROHS



CIRCUIT DIAGRAM
(I=60MA V=3.0-3.4V)

 Surenoo® Display SHENZHEN SUREN00 TECHNOLOGY CO.,LTD.					Third Perspective: 					
Product number:		STP0280A1-240320 (Z280IT010)								
Part Model:		LCM Outline			confirm:					
Version:		v0.0		unit:		MM		Audit:		
date:		2018.08.16		Proportion:		1:01		design:		
UNMRKED TOLERANCE:+0.20 mm							page number:		1 OF 1	

Electrical Maximum Ratings

Item	Symbol	Min	Max	Unit	Note
Supply voltage VDDI	V	1.8	3.3	V	—
Supply voltage VDD	V	2.8	3.3	V	—
Operating temperature	TOPR	-20	70	°C	—
Storage temperature	TSTR	-30	80	°C	—

❖**NOTE:** VDDI and VDD can be directly connected together and share a set of voltage (2.8V~3.3V) for power supply.

Brightness characteristic&Power dissipation

Item	Symbol	Min	Typical	Max	Unit
LED module Forward voltage	VLED	2.9	3.1	3.3	V
LED module current	ILED	—	60	—	mA
LCD Surface Luminance	LS	250	300	—	Cd/m ²
LCM Surface brightness uniform	LD	80	—	—	%
LCD power dissipation	PLCD	—	0.22	—	W

※NOTE:PLCD=VDD * (ILED+ILCD)

Module Function Description

PIN No.	Symbol	Description	Notes
1	GND	Ground	—
2	RESET	-This signal will reset the device and it must be applied to properly initialize the chip. -Signal is active low.	—
3	SCL	-This pin is used to be serial interface clock.	—
4	D/C	— Display data/command selection pin in 4-line serial interface.	—
5	CSX	-Chip selection pin Low enable. High disable.	—
6	SDA	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.	—
7	SDO	-SPI interface output pin. -The data is output on the falling edge of the SCL signal. -If not used, let this pin open.	—
8	GND	Ground	—
9	VDD	Power Supply for Analog, Digital System and Booster Circuit.	—
10	LEDA	Anode of Backlight (2.9V-3.3V Typical:3.1V)	—
11	LEDK1	Cathode of Backlight	—
12	LEDK2	Cathode of Backlight	—
13	LEDK3	Cathode of Backlight	—
14	LEDK4	Cathode of Backlight	—
15	XL	Touch panel Logical foot	—
16	YU	Touch panel Logical foot	—
17	XR	Touch panel Logical foot	—
18	YD	Touch panel Logical foot	—

Figure 6-1: Display STP0280A1 4-wire-SPI serial port reference application circuit

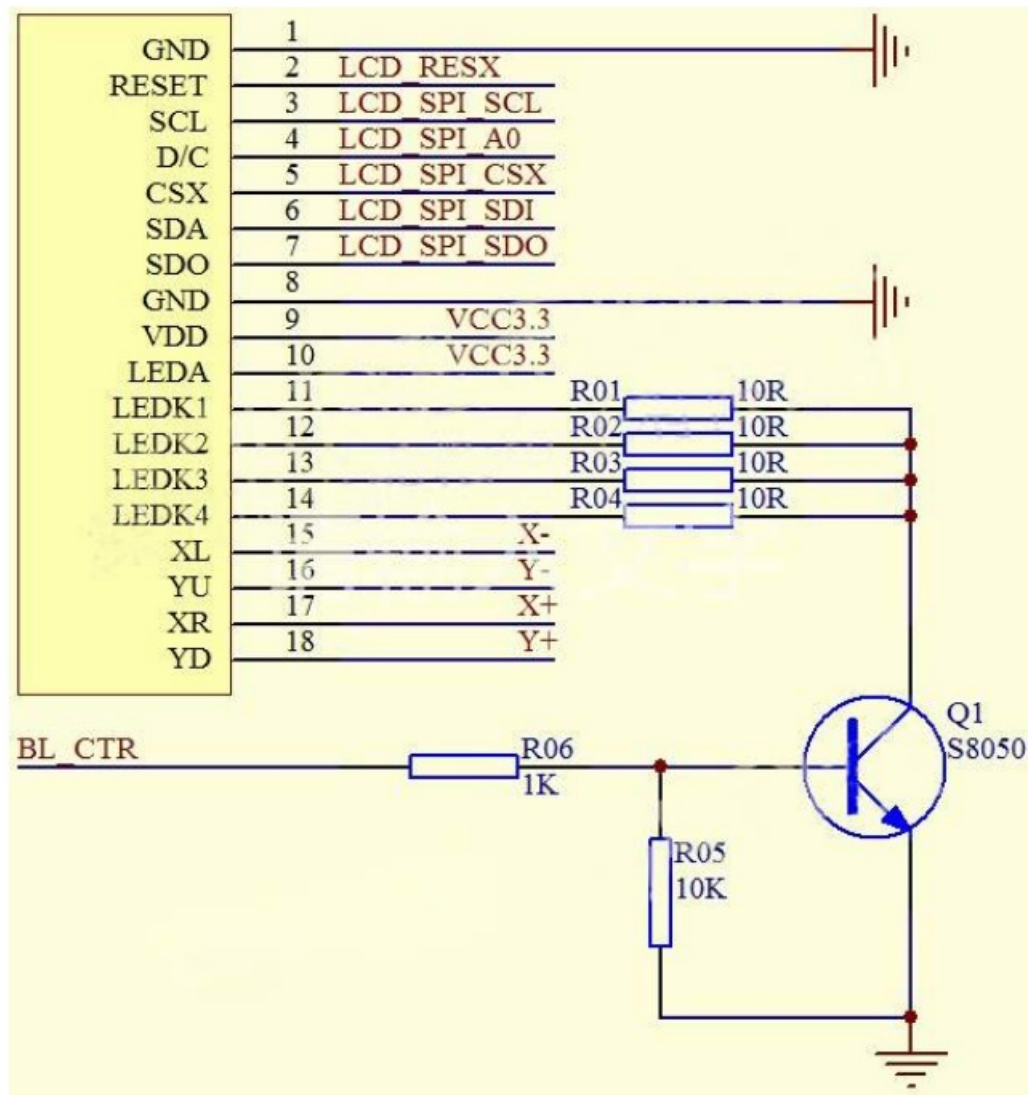
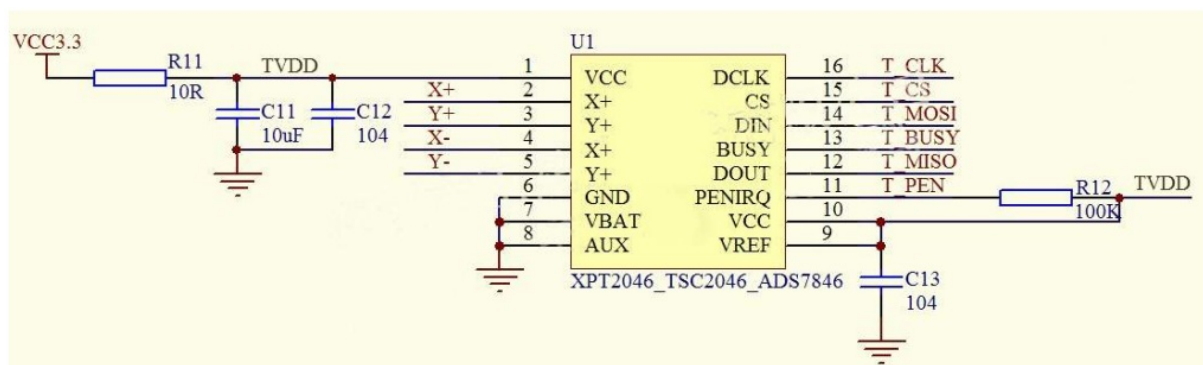


Figure 6-2: Touch screen reference application circuit

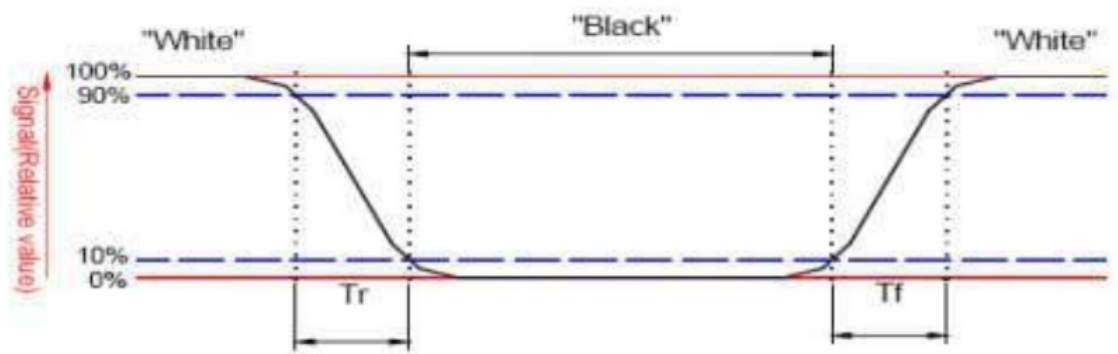


***NOTE:**

1. If it is a version without touch, refer to the attached circuit in Figure 6-1, and hang the four touch pins XL, YU, XR, and YD of the display in the air That's it.
2. For the version with touch, refer to Figure 6-2 Touch Application Connection Circuit.

Response time&Contrast ratio

Item	Symbol	Condition	Remark			Unit
			Min.	Typ.	Max.	
Response time	Tr+Tf	$\theta = 0^\circ$	—	25	40	ms
Contrast ratio	CR	$\theta = 0^\circ$	350	500	—	—



Contrast ratio (CR)=

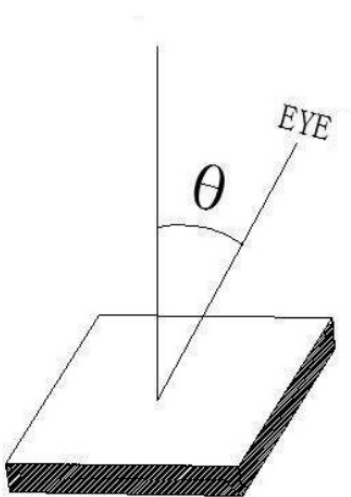
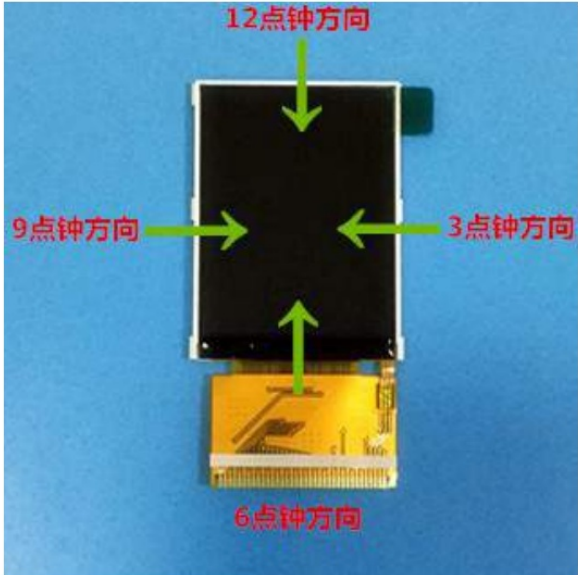
Brightness on the "white" state

Brightness on the "black" state

Contrast calculation formula

Viewing Angle

Item	Symbol	Condition	Remark			Unit
			Min.	Typ.	Max.	
Viewing angle	I op	CR ≥ 10	40	50	—	Deg.
	Bottom	CI ≥ 10	55	65	—	
	Left	CR ≥ 10	55	65	—	
	Right	CR ≥ 10	55	65	—	



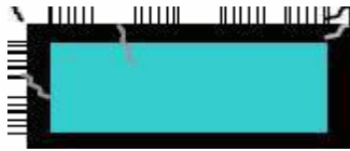
NOTE: The angle of view of 3 o'clock, 6 o'clock, 9 o'clock, and 12 o'clock refers to the angle (0) between the lines perpendicular to the surface of the screen and the line of sight of the eye.

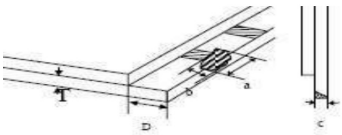
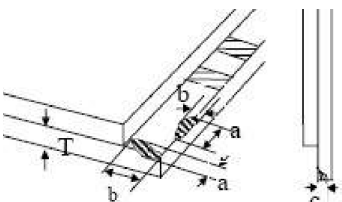
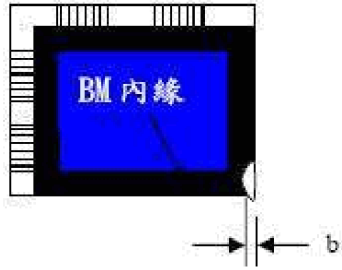
Reliability Trial

NO.	ITEM	CONDITION	CRITERION
1	High Temperature Non-Operating Test	80°C *120Hrs	No Defect Of Operational Function In Room Temperature Are Allowable
2	Low Temperature Non-Operating Test	-30 C*120Hrs	
3	High Temperature/Humidity Non Operating Test	60°C*90%RH*120Hrs	
4	High Temperature Operating Test	70 C*72Hrs	
5	Low Temperature Operating Test	20°C *72Hrs	
6	1 hermal Shock Test	-20 °C (30Min) Q 70 °C (30 Min) *10CYCLES	

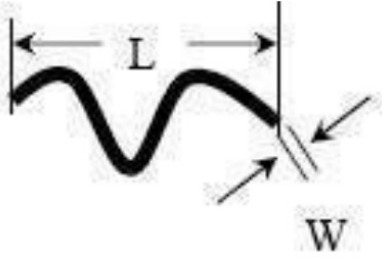
Inspection standards

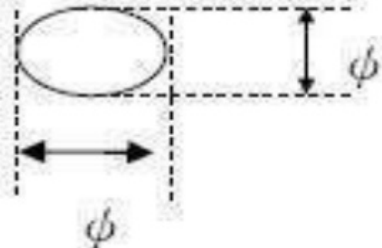
10.1Glass defect

NO	Defect item	Criteria	Remark
1	Dimension Unconformity (Major defect)	By Engineering Drawing	
2	Cracks (Major defect)	1. Linear cracks panel Reject 2. Nonlinear crack contrast by limited sample	
3	Glass extrude the conductive area (minor defect)	a: disregards and no influence assemblage. 1) $b \leq 1/3$ Pin width (non bonding area) Accept 2) bonding area ≤ 0.5 mm Accept	A: Length, b: Width

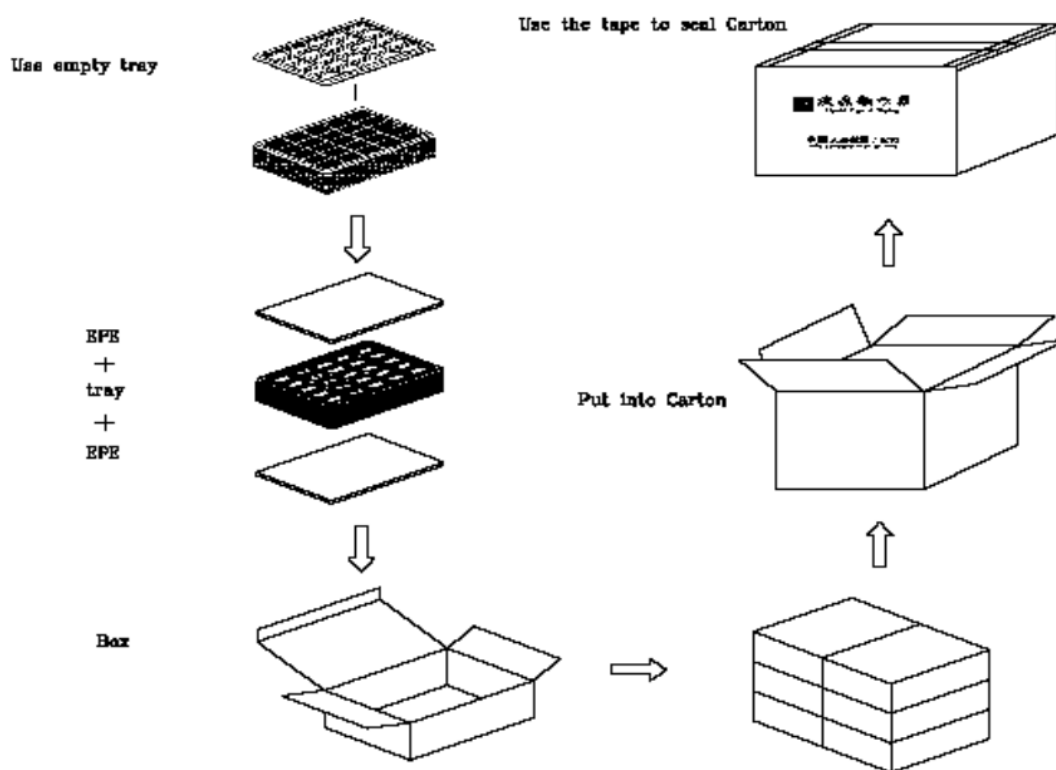
4	Pin-side ,conductive area damaged (minor defect)	(a c: disregards) $b \leq 1/3$ of effective length for bonding electrode Accept	a: length, b: Width, c: Thickness 
5	Pin-side, non-conductive area damaged (minor defect)	1) Damage area don't touch the ITO (including contraposition mark, except scribing mark) Accept 2) $C < T$ $b \leq BM1/3$ of width Accept 3) $c = T$ b not touch the seal glue Accept 4) a disregards	a: Length, b: Width c: Thickness 
6	Non-pin-side damage (minor defect)	$c < T$ 1) b exceeds $1/3 BM$ Reject $c = T$ b not touch the seal glue Reject	c: Thickness b: width of damage 

10.2 LCD appearance defect (View area)

NO	Defect item	Criteria		Remark
1	Fiber, glass scratch, polarizer scratch/folded (minor defect)	Specification	Allowable	note1: L: Length, W: Width note2: disregard if out of AA 
		$W < 0.03 \text{ mm}$	disregard	
		$0.03 \text{ mm} < W \leq 0.05 \text{ mm}; L \leq 3.0 \text{ mm}$	2	
		$0.05 \text{ mm} < W \leq 0.1 \text{ mm}; L \leq 3.0 \text{ mm}$	1	
		$W > 0.1 \text{ mm}; L > 3.0 \text{ mm}$	0	
2	Polarizer bubble, concave and convex (minor defect)	0.2 mm	disregard	note1: $(I) = (L+W) / 2$, L: Length, W: Width note2: disregard if out of AA
		$0.2 \text{ mm} < (I) \leq 0.3 \text{ mm}$	2	
		$0.3 \text{ mm} < (I) \leq 0.5 \text{ mm}$	1	
		$0.5 \text{ mm} < (I)$	0	
3	Black dots, dirty dots,	(1) 0.15 mm	disregard	note2: disregard if out of AA

	impurities, eye winker (minor defect)	0.15mm< (1) -.. O. 25m m	2	
		0.25mm< (1) -.. 0. 3m	1	
		0.3mm< (1)	0	
4	Polarizer prick (minor defect)	(1) 0.1mm	disregard	notel: (1) = (L+W) /2, L=Length, W=Width note2:the distance between two dots>5mm
		0.1mm< (1) 0. 25m	3	
		(1) >0. 25mm	0	

Package Method



<https://wa.me/qr/4GGOIDYZ2PXXN1>



<https://wa.me/qr/4GGOIDYZ2PXXN1>



<http://qr.kakao.com/talk/THom9tzJN5OMzv x1vTL1V.LvnEc->

 LINE	 WeChat
https://line.me/ti/p/oas8BmVLVd	https://u.wechat.com/EAK0B_I2YfPLwx3tRqiKkf4

Shenzhen Surenoo Technology Co.,Ltd.

www.surenoot.com

Skype: Surenoo365

Reference Controller Datasheet

TFT LCD Panel Selection Guide

ILI9341



Documents / Resources

	Surenoo STP0280A1-240320 Series TFT LCD Panel [pdf] User Manual STP0280A1-240320 Series TFT LCD Panel, STP0280A1-240320 Series, TFT LCD Panel, LCD Panel, Panel
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References

- [Surenoo Tech: Professional LCD Module Supplier Since 2005](#)