



Surenoo ST7789V TFT LCD Panel User Manual

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Surenoo ST7789V TFT LCD Panel



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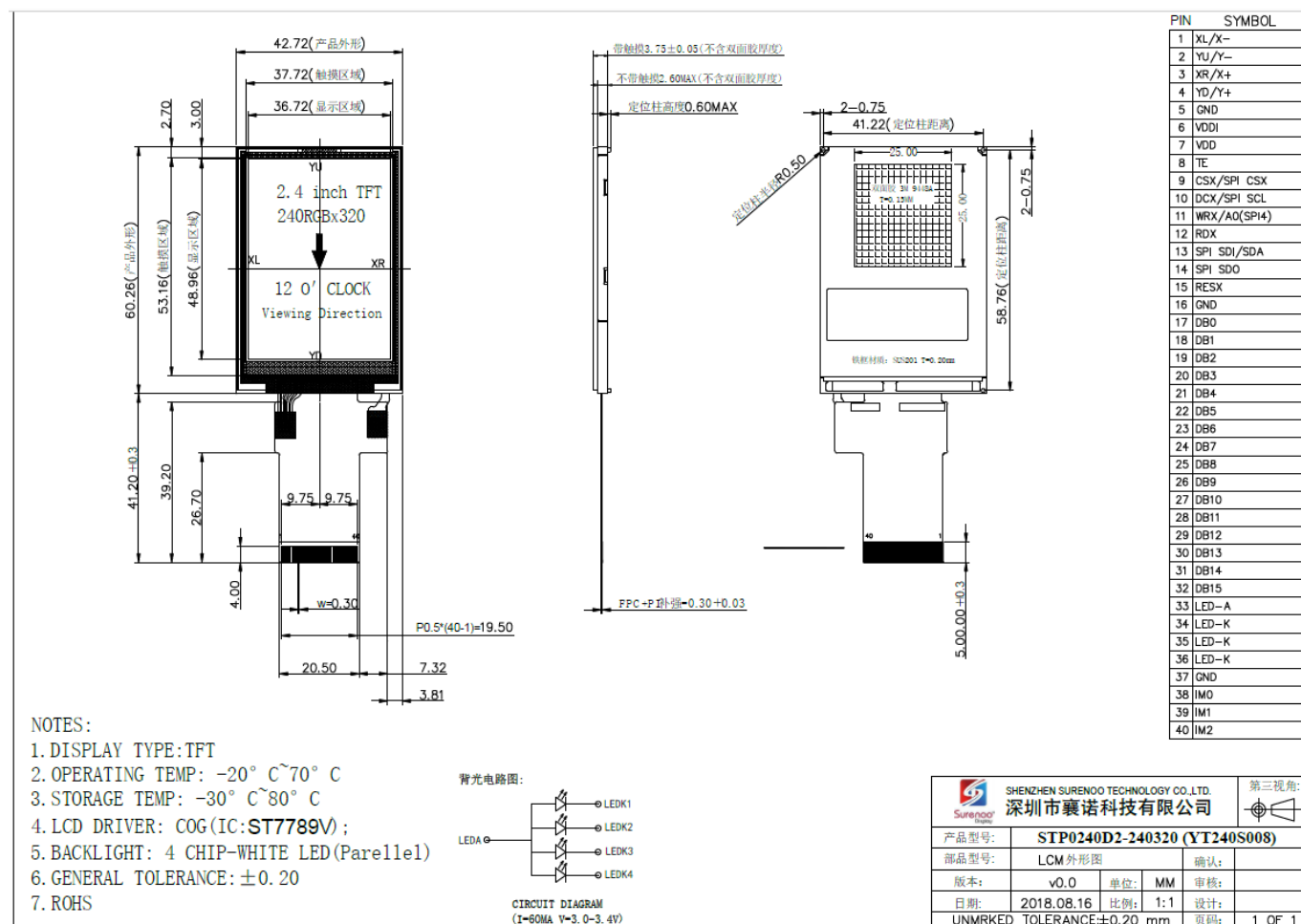
General Description

MODEL NO	STP0240D2-240320 YT240L008
Display Mode	Transmissive
Display Format	Graphic 240RGB*320 Dot-matrix 240xRGBx320
Input Data	4 Line-SPI/8bit/16bit interface 4
Viewing Direction	12 o'clock
Drive	ST7789V

Mechanical Specification

Item	Specifications	Unit
Dimensional outline	42.72(W)*60.26(H)*2.55(T) NTP 42.72(W)*60.26(H)*3.75(T) RTP (FPC not include)	mm
Resolution	240RGB*320	dots
LCD Active area	36.72(W)*48.96 (H)	mm
Pixel size	0.153(W)*0.153(H)	mm

Mechanical Dimension



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	—

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: $PLCD = VDD * (I_{LED} + I_{LCD})$

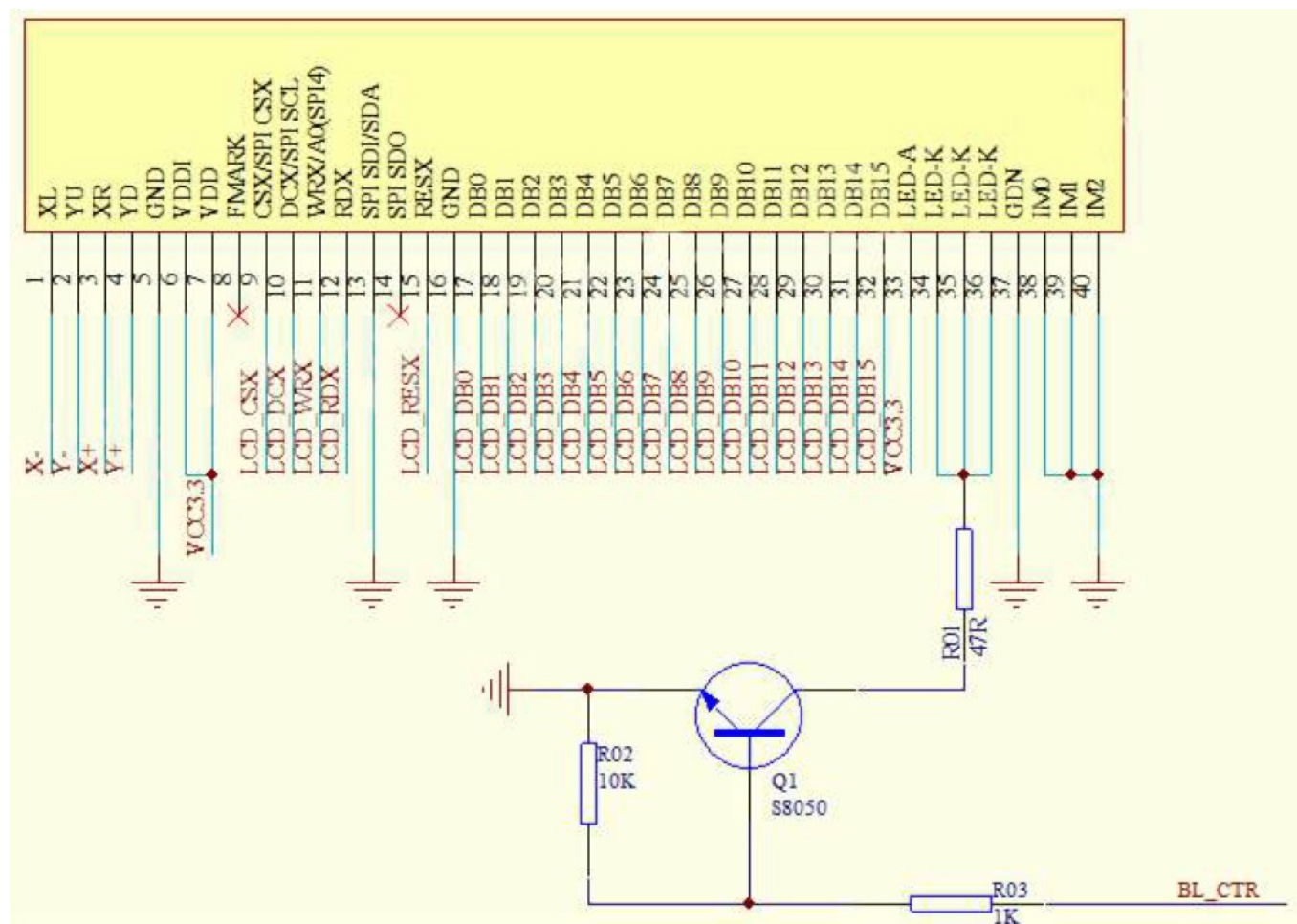
Module Function Description

PIN No.	Symbol	Description	Notes
1	XL(X-)	Touch panel Logical foot	—
2	YU(Y+)	Touch panel Logical foot	—
3	XR(X+)	Touch panel Logical foot	—
4	YD(Y+)	Touch panel Logical foot	—
5	GND	Ground	—
6	VDDI	Power Supply for I/O System. I/O 1.8-3.3V)	—
7	VDD	Power Supply for Analog, Digital System and Booster Circuit. 2.8-3.3V)	—
8	TE	Tearing effect signal is used to synchronize MCU to frame memory	—
9	CSX/SPI CSX	-Chip selection pin Low enable. High disable.	—
10	DCX/SPI SCL	-Display data/command selection pin in parallel interface. -This pin is used to be serial interface clock.	
11	WRX/A0(SPI4)	-Write enable in MCU parallel interface. — Display data/command selection pin in 4-line serial interface.	
12	RDX	-Read enable in 8080 MCU parallel interface. -If not used, please fix this pin at VDDI or GND.	—

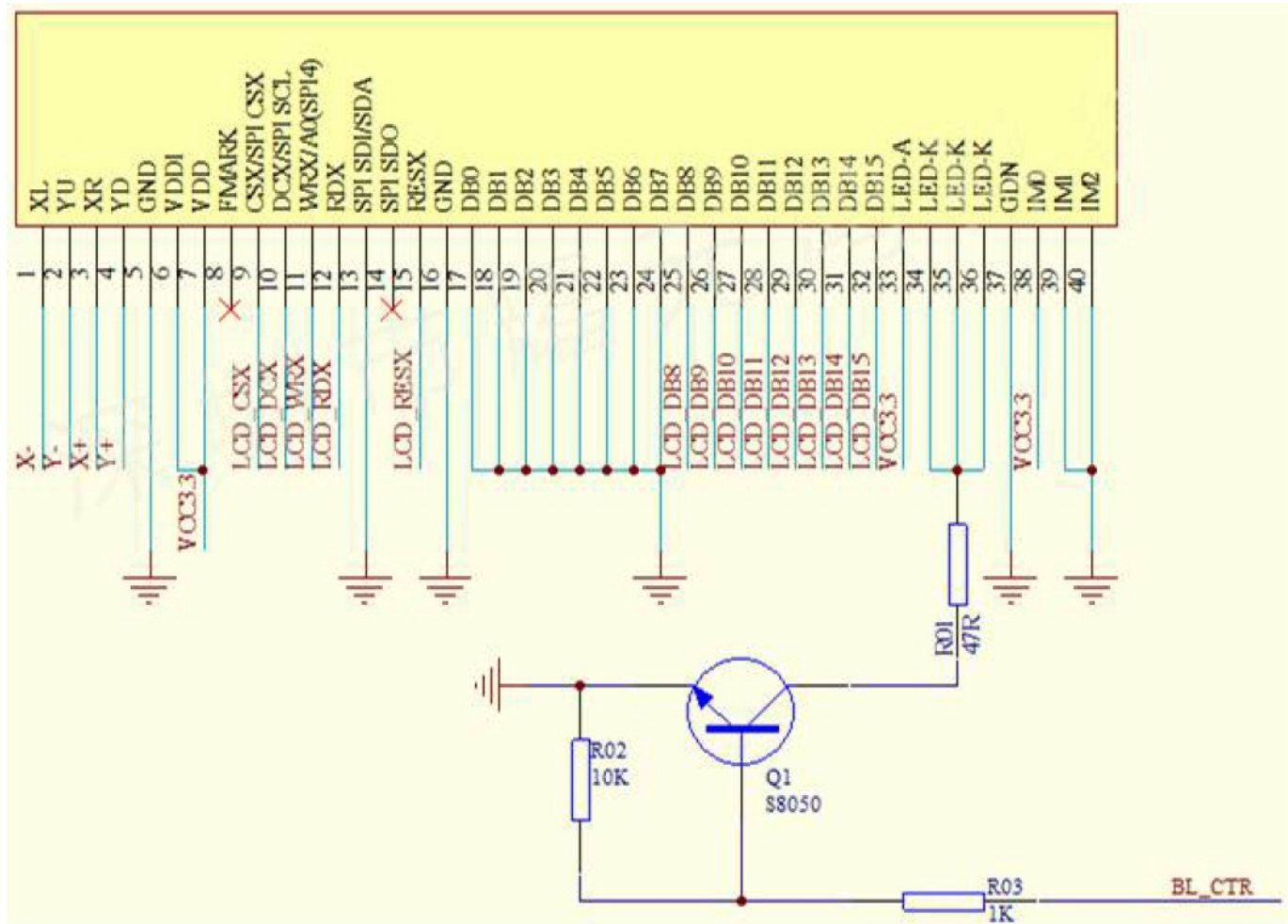
13	SPI SDI/SDA	SPI interface input pin. -The data is latched on the rising edge of the SCL signal. -If not used, please fix this pin at VDDI or DGND level. 4 -SPI VDDI GND	—
14	SPI SDO	-SPI interface output pin. -The data is output on the falling edge of the SCL signal. -If not used, let this pin open. 4 SPI	—
15	RESX	-This signal will reset the device and it must be applied to properly initialize the chip. -Signal is active low.	—
16	GND	Ground	—
17-24	DB0-DB7	MCU parallel interface data bus. MCU 8	—
25-32	DB8-DB15	MCU parallel interface data bus. MCU 8	—
33	LED-A	Anode of Backlight (2.9V-3.3V Typical:3.1V) 2.9-3.3V;3.1V	—

34-36	LED-K	Cathode of Backlight	—
37	GND	Ground	—
38	IM0	-The MCU interface mode select.	—
39	IM1		—
40	IM2	*NOTE IM3	—

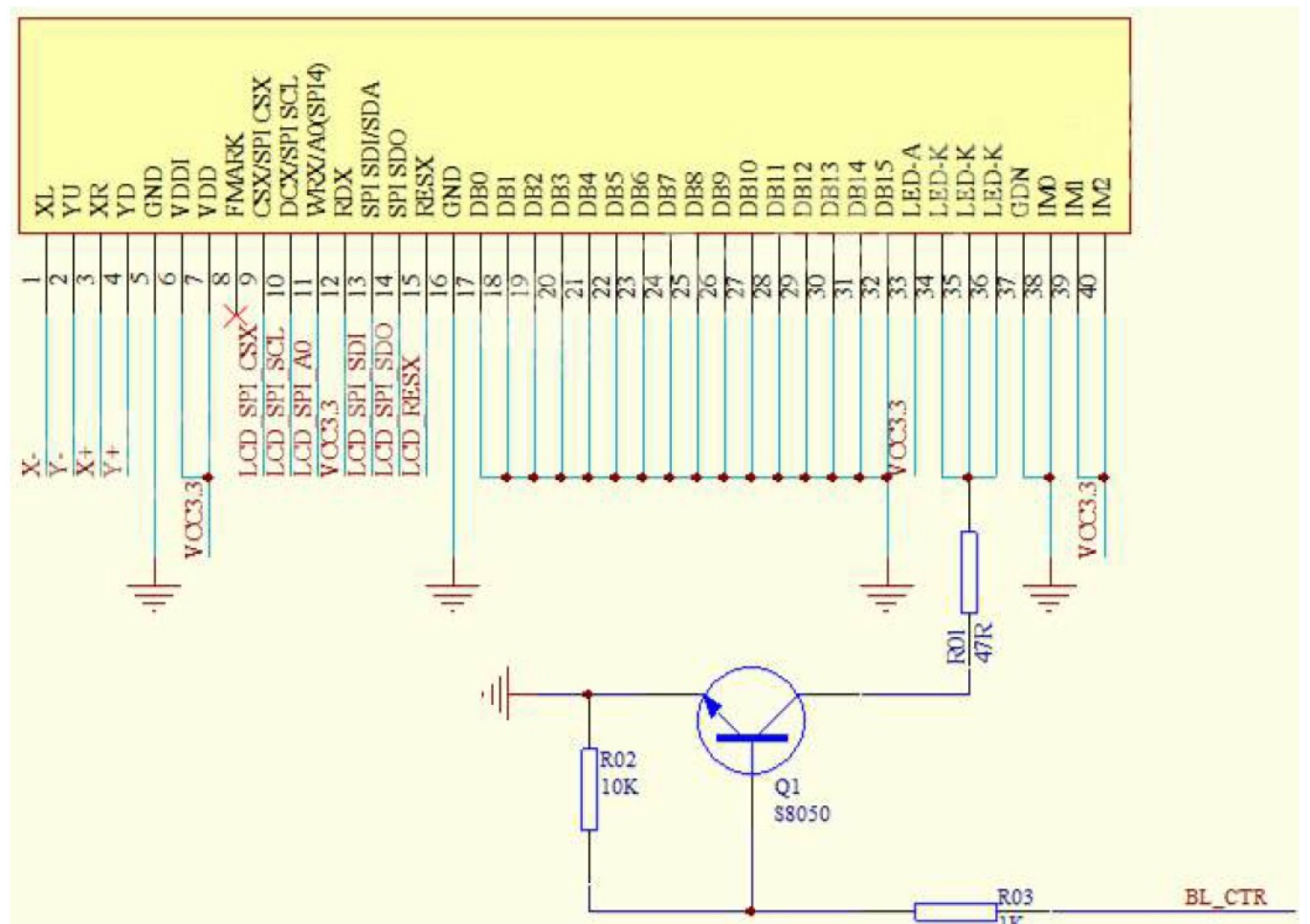
STP0240D2 MCU-16

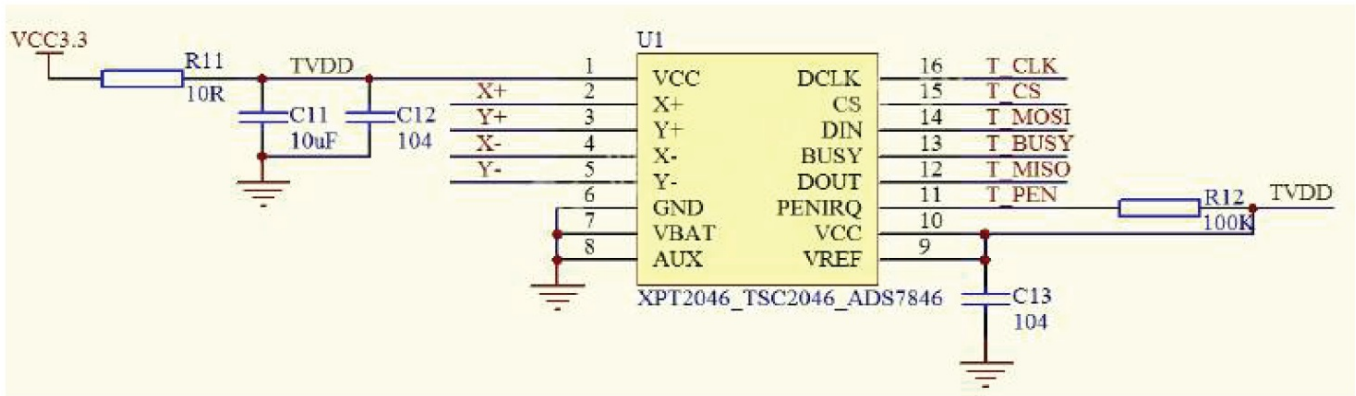


STP0240D2 MCU-8



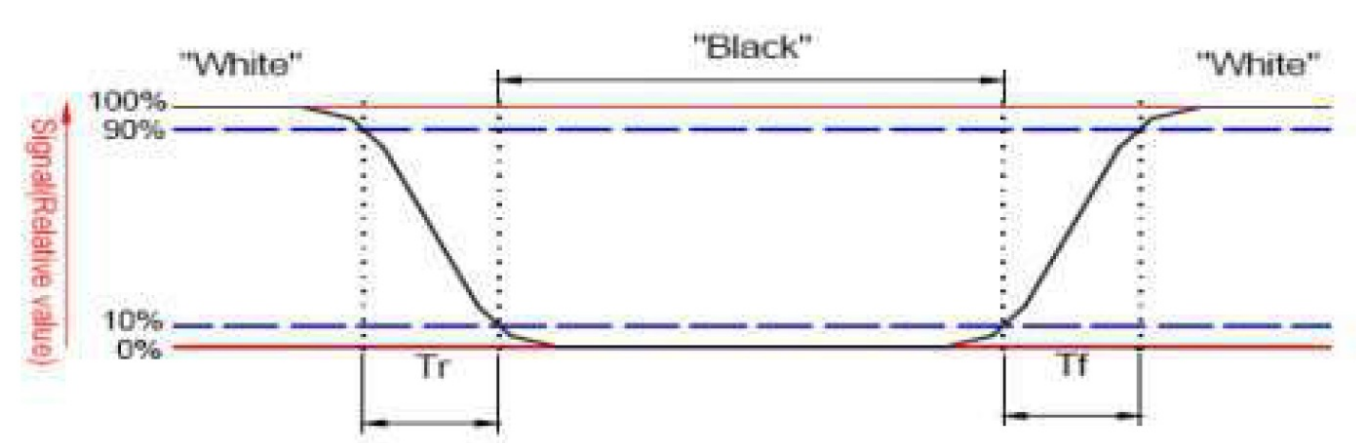
STP0240D2 4-W SPI





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	–	–



$$\text{Contrast ratio (CR)} = \frac{\text{Brightness on the "white" state}}{\text{Brightness on the "black" state}}$$

Viewing Angle

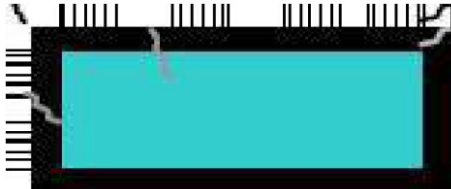
Item	Symbol	Condition	Remark			Unit
			Min.	Typ.	Max.	
Viewing angle	Top 12	CR≥10	40	50	—	Deg.
	Bottom 6	CR≥10	55	65	—	
	Left 9	CR≥10	55	65	—	
	Right 3	CR≥10 10	55	65	—	

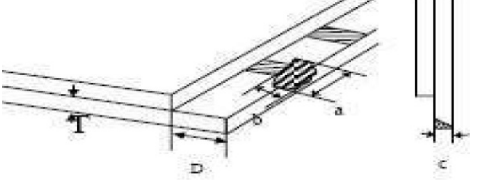
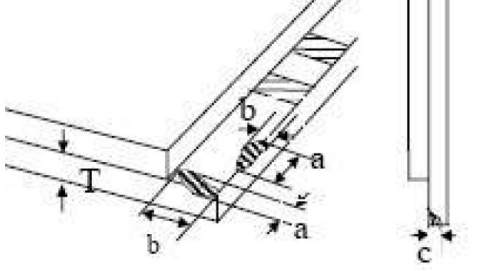
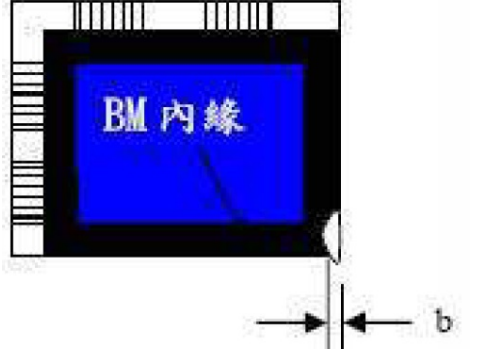
Reliability Trial

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	Thermal Shock Test	-20 °C (30Min) Q 70 °C (30Min) *10CYCLES	

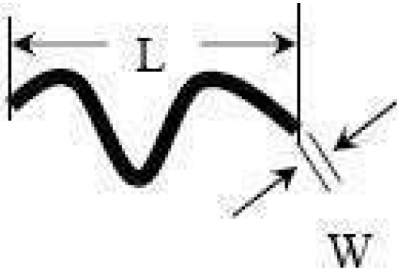
Inspection standards

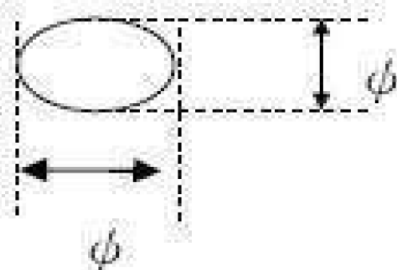
Glass defect

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 $\leq 0.5\text{mm}$ Accept	A: Length, b: Width

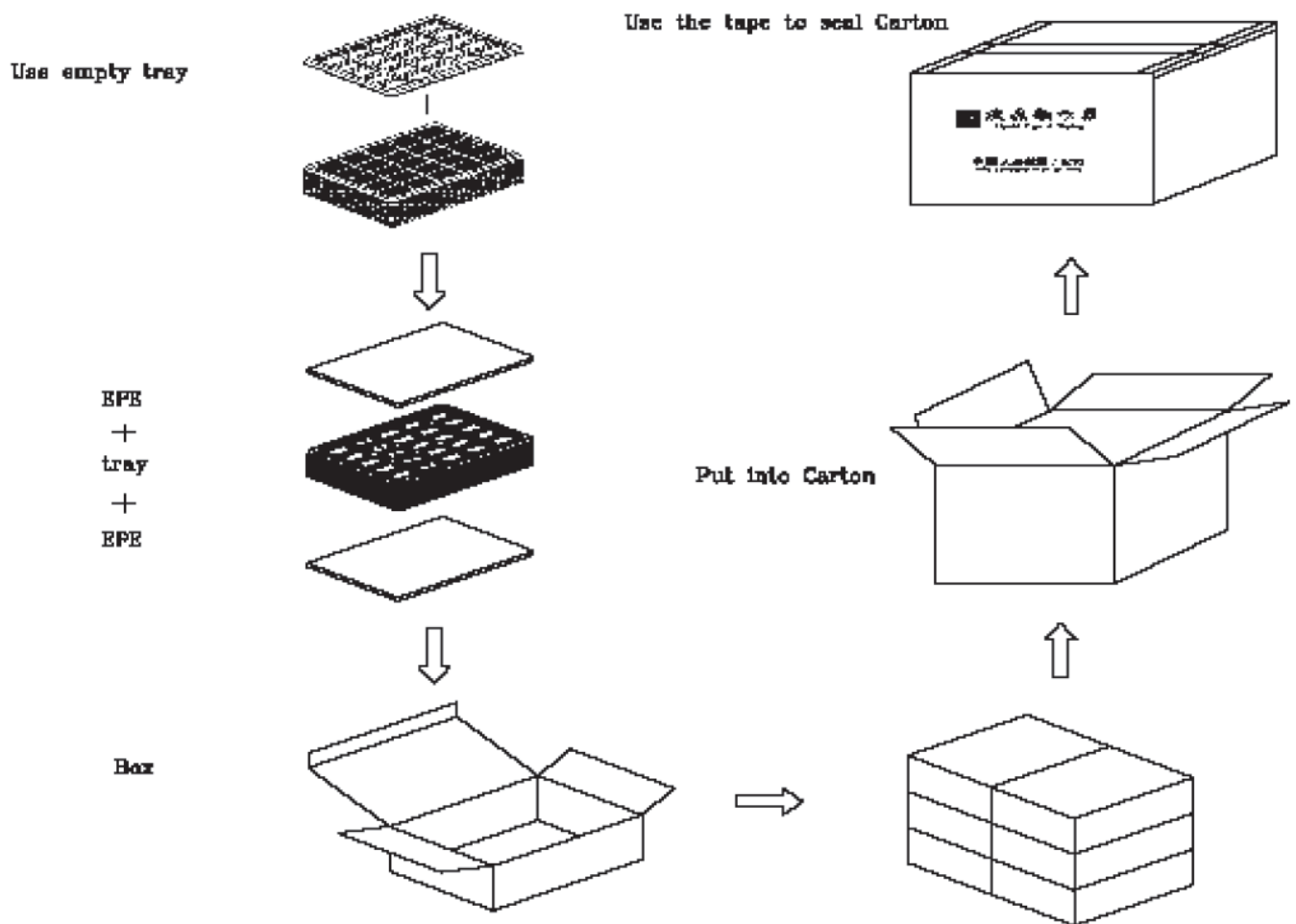
4	Pin-side ,conductive area damaged (minor defect)	(a c: disregards) $b \leq 1/3$ of effective length for bonding electrode Accept	a: length, b: Width, c: Thickness 
5	Pin-side,non-conductive area damaged (minor defect)	1) Damage area don't touch the ITO (Including contraposition mark, except scribing 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 

LCD appearance defect(View area)

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

	impurities eye winker (minor defect)	$0.15\text{mm} < \phi \leq 0.25\text{mm}$	2	
		$0.25\text{mm} < \phi \leq 0.3\text{mm}$	1	
		$0.3\text{mm} < \phi$	0	
4	Polarizer prick (minor defect)	$\phi \leq 0.1\text{mm}$	disregard	note1: $\phi = (L+W)/2$, L=Length, W=Width note2:the distance between two dots > 5mm
		$0.1\text{mm} < \phi \leq 0.25\text{mm}$	3	
		$\phi > 0.25\text{mm}$	0	

Package Method



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Documents / Resources

	Surenoo ST7789V TFT LCD Panel [pdf] User Manual ST7789V TFT LCD Panel, ST7789V, TFT LCD Panel, LCD Panel, Panel
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References

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