



2.8" TFT LCD with Touch Screen

深圳市东大显控科技有限公司

2.8寸TFT液晶规格书

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1.Mechanical Specification:

Item	Standard Value	Unit
Display size	2.8	inch
Module Dimension	H/W/D 69.2×50 ×4.2	mm
Active Area	W/H 43.2×57.6	mm
Number of Dots	W/RGB/H 240×3×320	Dot
Pixel size	W/H 0.18×0.18	mm
LCD Type	TFT/ Transmissive / Negative	-
Driving IC	SPFD5408/ili9320/ili9325/ili9328	
Approx. Weight	TBD	g
Various color	65K	
Display	262K	
Backlight Color	White	
Brightness(cd/m^2)	220(typ.)/210(Min.)	

Application Product

- Embedded Electronics Product
- Advertising Display Product
- Mobile phone
- MP4,PDA
- AV Product

2.Absolute Maximum Ratings:

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Item	Symbol	Min.	Тур.	Max.	Unit	Remark
Supply Voltage for Logic	VCC	-0.3	-	+4.6	V	-
Input voltage	Vin	-0.5	-	VDD+0.5	V	-
Operating Temperature	Тор	-20	-	+60	°C	-
Storage Temperature	Тѕт	-30	-	+70	°C	-

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3.Electrical Characteristics:

Item	Symbol	Condition	Min.	Тур.	Max.	Unit
Supply Voltage for Logic	Vdd	Ta=25℃	2.5	2.8	3.3	V
Power input voltage	Vci	-	2.5	-	3.3	V
High-level input voltage	VIHC	VDD=2.8V	0.8VDD	-	VDD	V
Low-level input voltage	VILC	VDD=2.8V	0	-	0.2VDD	V
TFT gate on voltage	VGH	VDD=2.8V	-	15	-	V
TFT gate off voltage	VGL	VDD=2.8V	-	-10	-	V
TFT common electrode	VcomH	-	2.5	-	4	V
voltage	VcomL	-	-1.5	-	0	V
Consumption		Electric VR	-	2.5	4	
current of VDD	IDD	Value=TBD				mA
Power Supply Current	T				7	4
for VDD	IDD	VDD=2.8V	-	-	/	mA

4. Optical Characteristics:

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Item	Symbol	Condition	Min.	Тур.	Max.	Unit
View Angle (V)	θ	Center	-10	-	35	Deg.
View Angle (H)	φ	CR>10	-45	-	45	Deg.
Contrast Ratio	CR	Ta=25°C	150	300	-	-
Response Time(Rise)	Tr	-	-	10	-	ms
Response Time(Fall)	Tf	-	-	15	-	ms

Color of CIE Coordinate

Item		Symbol	Condition	Min	Тур	Max	Note
	Red	x		0.635	0.655	0.675	
		У	$\theta = 0^{\circ}C$,	0.309	0.329	0.349	
	Green	x	$\phi = 0$ °C	0.292	0.312	0.332	Color
Color of CIE		У	Ta=25℃	0.555	0.575	0.595	01 CIF
Coordinate	Blue	x		0.114	0.134	0.154	Coor
		У		0.115	0.135	0.155-	dinate
	White	x		0.290	0.310	0.330	
	White	у		0.321	0.341	0.361	









1. Contrast Ratio(CR) is defined mathematically as :

Surface Luminance with all white pixels

Surface Luminance with all black pixels

2. Surface luminance is the center point across the LCD surface 500mm from the surface with all pixels displaying white. For more information see FIG 1.

3. Response time is the time required for the display to transition from to black(Rise Time, TrR) and from black to white(Decay Time, TrD). For additional information see FIG 3.

4. Viewing angle is the angle at which the contrast ratio is greater than 10. The angles are determined for the horizontal or x axis and the vertical or y axis with respect to the z axis which is normal to the LCD surface. For more information see FIG 5.

5. Optimum contrast is obtained by adjusting the LCD Threshold voltage(Vth & Vsat)

FIG. 1 Optical Characteristic Measurement Equipment and Method









FIG. 3 The definition of Response Time

The response time is defined as the following figure and shall be measured by switching the input signal for "black" and "white".







FIG. 4 The definition of viewing angle

<dimension of viewing angel range>







5. Interface

	Symbol		Function					
1	DB0	Data Bus	ata Bus Bit 0 Contact to Drive IC Data Bus Bit 0					
2	DB1	Data Bus	ata Bus Bit 1 Contact to Drive IC Data Bus Bit 1					
3	DB2	Data Bus	s Bit 2 Contact to Drive IC Data B	us Bit 2				
4	DB3	Data Bu	s Bit 3 Contact to Drive IC Data B	us Bit 3				
5	GND	System	Ground.(0V)					
6	VCC	A Power	supply for the internal logic circu	it. (+2.8V)				
7	/CS	Chip sel	ect signal. Active "L".					
8	RS	Comma 0 : Com	Command / Display data selection					
9	/WR	I80 syste M68 sys	180 system : Serves as a write signal and writes data at the rising edge. M68 system: 0: Write 1: Read					
10	/RD	180 syste M68 sys	em : Serves as a read signal and stem: 0: Read/Write disable, 1:Re	reads data at the low level. ad/Write enable				
		IMO	Data Bus Width	LCM DB Pin				
44	IMO	0	16bit parallel interface	DB0~DB7 AND DB10~DB17				
11	INIO	1	8-bit parallel interface	DB0~DB7				
		Unused	pin must fixed either VCC2 or G	ND1 level.				
12	X+	Touch F	Panel output pin. (Touch screen X	coordinate right)				
13	Y+	Touch F	Panel output pin. (Touch screen Y	coordinate down)				
14	X-	Touch F	Panel output pin. (Touch screen X	coordinate left)				
15	Y-	Touch F	Touch Panel output pin. (Touch screen Y coordinate up)					
16	LEDA	Backlig	ht LED Anode input pin (A)					
17	LEDK1	Backlig	Backlight LED anode input pin.(K1)					
18	LEDK2	Backlig	ht LED anode input pin.(K2)					



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	Symbol	Function
19	LEDK3	Backlight LED cathode input pin (K3)
20	LEDK4	Backlight LED cathode input pin (K4)
21	IМЗ	0 : Format for I80 series MPU, 1 : Format for M68 series MPU
22	DB4	Data Bus Bit 04 Contact to Drive IC Data Bus Bit 4
23	DB10	Data Bus Bit 10 Contact to Drive IC Data Bus Bit 8
24	DB11	Data Bus Bit 11 Contact to Drive IC Data Bus Bit 9
25	DB12	Data Bus Bit 12 Contact to Drive IC Data Bus Bit 10
26	DB13	Data Bus Bit 13 Contact to Drive IC Data Bus Bit 11
27	DB14	Data Bus Bit 14 Contact to Drive IC Data Bus Bit 12
28	DB15	Data Bus Bit 15 Contact to Drive IC Data Bus Bit 13
29	DB16	Data Bus Bit 16 Contact to Drive IC Data Bus Bit 14
30	DB17	Data Bus Bit 17 Contact to Drive IC Data Bus Bit 15
31	/RESET	Reset input pin for TFT LCD. When /RESET is "L", initialization is executed.
32	VCI	A Power supply for step-up circuit and power supply circuit. (+2.8V)
33	VCC2	Power supply for I/O circuit. (+2.8V)
34	GND	System Ground.(0V)
35	DB5	Data Bus Bit 5 Contact to Drive IC Data Bus Bit 5
36	DB6	Data Bus Bit 6 Contact to Drive IC Data Bus Bit 6
37	DB7	Data Bus Bit 7 Contact to Drive IC Data Bus Bit 7

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7.Backlight:

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Item	Symbol	Conditions	Min.	Тур.	Max.	Unit
Forward Voltage	VF	Ta =25°C	-	3.5	-	V
Forward Current	IF	Ta =25°C	-	80	-	mA
LED chips	-	-	-	4	-	PCS



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9.Timing Control:

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9.1 Parallel 8080 Timing Charecteristics

Normal Write Mode (IOVCC = 1.65~3.3V, VCC=2.4~3.3V)

	Symbol	Unit	Min.	Тур.	Max.	Test Condition	
Rue evale time	Write	tcycw	ns	100	(-)) -)	-
Bus cycle time	Read	t _{CYCR}	ns	300);-)	-	-
Write low-level pu	lse width	PWLW	ns	50	-	500	-
Write high-level p	ulse width	PW _{HW}	ns	50	-	-	1
Read low-level pu	lse width	PWLR	ns	150	-	-	-
Read high-level p	PW _{HR}	ns	150	(-)	-		
Write / Read rise / fall time		t _{wRr} /t _{wRf}	ns	-		25	
Satur time	Write (RS to nCS, E/nWR)	t _{AS}	ns	10	-	-	
Setup time	Read (RS to nCS, RW/nRD)			5		_	
Address hold time)	tан	ns	5	(i - i	- 1	
Write data set up	t _{DSW}	ns	10	() – (
Write data hold tir	tн	ns	15	-	-		
Read data delay ti	t _{DDR}	ns	-	121	100		
Read data hold tin	ne	t _{DHR}	ns	5	(i-i)	(i -)	









10. General Precautions

10.1. Safety

Liquid crystal is poisonous. Do not put it in your mouth. If liquid crystal touches your skin or clothes, wash it off immediately by using soap and water.

10.2. Handling

1. The LCD panel is plate glass. Do not subject the panel to mechanical shock or to excessive force on its surface.

2. The polarizer attached to the display is easily damaged. Please handle it carefully to avoid scratch or other damages.

3. To avoid contamination on the display surface, do not touch the module surface with bare hands.

4. Keep a space so that the LCD panels do not touch other components.

5. Put cover board such as acrylic board on the surface of LCD panel to protect panel from damages.

6. Transparent electrodes may be disconnected if you use the LCD panel under environmental conditions where the condensation of dew occurs.

7. Do not leave module in direct sunlight to avoid malfunction of the ICs.

10.3. Static Electricity

1. Be sure to ground module before turning on power or operating module.

2. Do not apply voltage which exceeds the absolute maximum rating value.

10.4. Storage

1. Store the module in a dark room where must keep at 25 }10 and 65%RH or less.

2. Do not store the module in surroundings containing organic solvent or corrosive gas.

3. Store the module in an anti-electrostatic container or bag.

10.5. Cleaning

1. Do not wipe the polarizer with dry cloth. It might cause scratch.

2. Only use a soft sloth with IPA to wipe the polarizer, other chemicals might permanent damage to the polarizer.