

深圳市金逸晨电子有限公司

ShenZhen GoldenMorning Electronic Co.,Ltd

PRODUCT SPECIFICATION

Model No	LT225C7-C08-03
Product Name	2.25 TFT LCD Module
Version	V1.0
Date	2024-07-04

- ☐ Preliminary Specification
☒ Final Specification

PREPARED BY	CHECKED BY	APPROVED BY

Revision History

Version	Date	Page	Revise record	Remarks
1.0	2024.07.04	-	First issued	-

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1. General Parameter

NO.	Features	Details	Unit
1	LCD Size	2.25	Inch
2	Display Mode	Normally White	-
3	Resolution	76(H)RGB x284(V)	Pixels
4	Pixel pitch	0.1947(H) x 0.1947(V)	mm
5	Active area	14.7972(H) x 55.2948(V)	mm
6	Module size	17.9(H) x 62.5(V) x2.36 (D)	mm
7	Pixel arrangement	RGB Vertical stripe	-
8	Interface	4 Line SPI	-
9	Display Colors	262K	colors
10	Drive IC	ST7789P3	-
11	Luminance(cd/m2)	600 (TYP)	Cd/m2
12	Viewing Direction	12 O'clock	Best image
13	Backlight	4 White LED Parallel	-
14	Operating Temperature	-20℃~70℃	℃
15	Storage Temperature	-30℃~80℃	℃
16	Weight	5	g

Note 1 : Please refer to the mechanical drawing.

2. Physical drawing

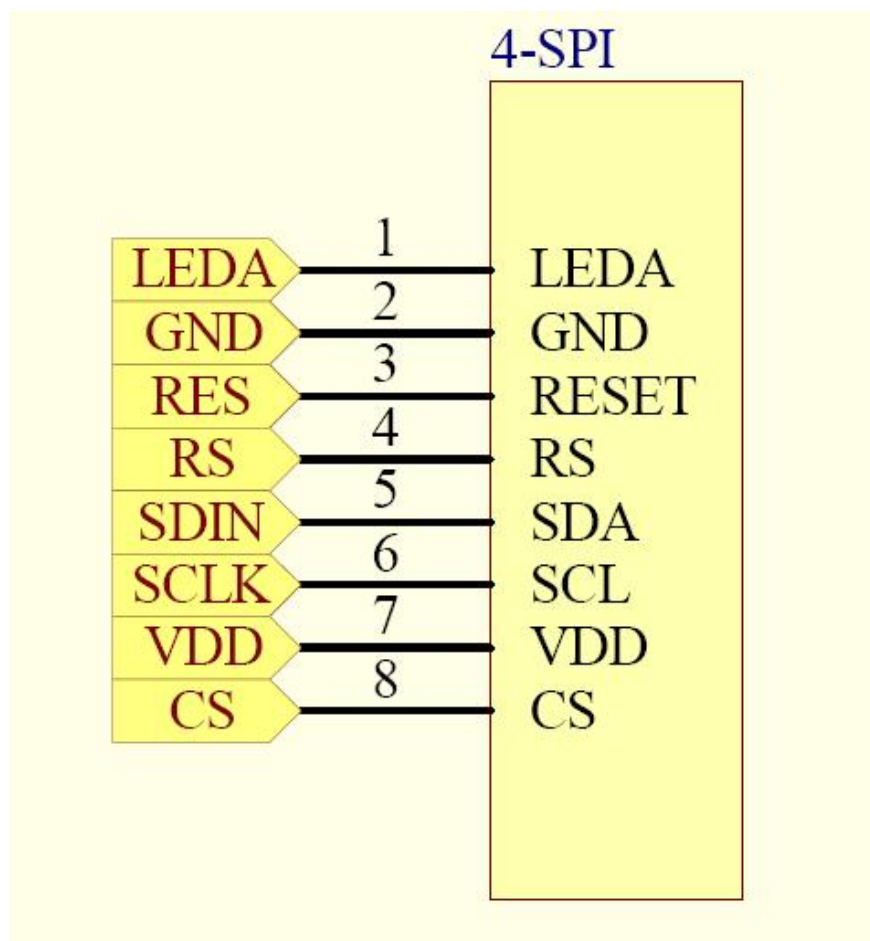


8		7	6	5	4	3	2	1

4. Pins Definitions

Pin.No	Symbol	Description
1	LEDA	LED Anode
2	GND	Power Ground.
3	RESET	This signal will reset the device ,Signal is active low.
4	RS	Display data/command selection pin in 4-line serial interface.
5	SDA	SPI interface input/output pin.
6	SCL	This pin is used to be serial interface clock.
7	VDD	Power Supply for Analog
8	CS	Chip selection pin ,Low enable ,High disable.

Note:



5. Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit	Notes
Supply Voltage (I/O)	VDD	-0.3	4.6	V	
Analog Supply Voltage	VDDIO	-0.3	4.6	V	
Logic Input Voltage	VIN	-0.3	VDDIO+0.5	V	
Operation Temperature	Top	-20	70	℃	
Storage Temperature	Tst	-30	80	℃	

6. Operating Conditions

Parameter	Symbol	Min	TYP	MAX	Unit	Notes
System Voltage	VDD	2.5	2.8	3.3	V	
Interface Operation Voltage	VDDIO	1.65	1.8	3.3	V	
Gate Driver High Voltage	VGH	12.2	-	14.97	V	
Gate Driver Low Voltage	VGL	-12.5	-	-7.16	V	
Operating Current for V _{DD}	I _{DD}	-	8	10	mA	
Sleep_In Mode VDD	I _{dd}	-	15	30	uA	
Sleep_In Mode VDDIO	I _{ddio}	-	5	10	uA	

7. Backlight Unit

Parameter	Symbol	Min	TYP	MAX	Unit	Notes
Voltage for LED backlight	VLED	2.8	3.0	3.2	V	
Current for LED backlight	ILED	-	80	120	mA	4 LED
Power Consumption	Pbl	-	240	384	mW	1
Brightness	L _{br}	550	600	-	cd/m ²	2
LED Life time	-	20000	-	-	hr	3

Note:

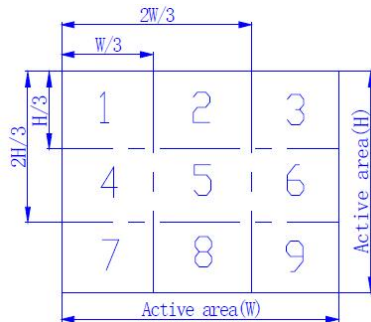
1. Where ILED =80mA , VLED=3.0V , Pbl= ILED x VLED

2. Uniform measure condition:

a:Measure 9 point ,Measure location is show below:

b:Uniform=(Min brightness/Max brightness)x100%

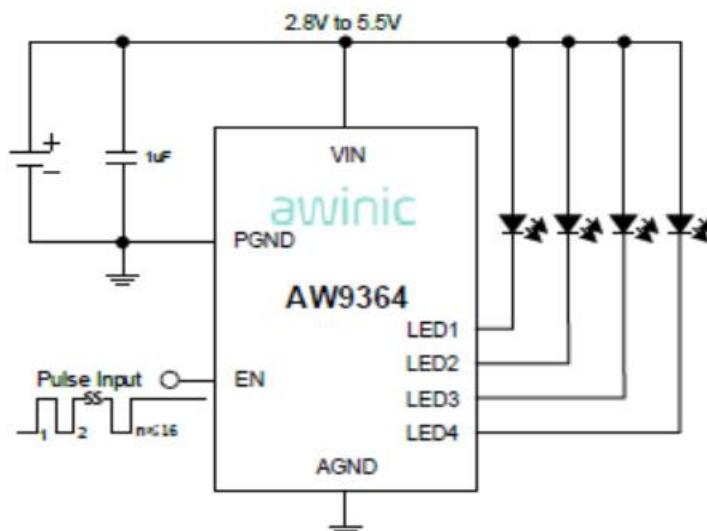
c:Best Contrast.



3. The environmental conducted under ambient air flow ,at Ta=25±2°C,60%RH±5%

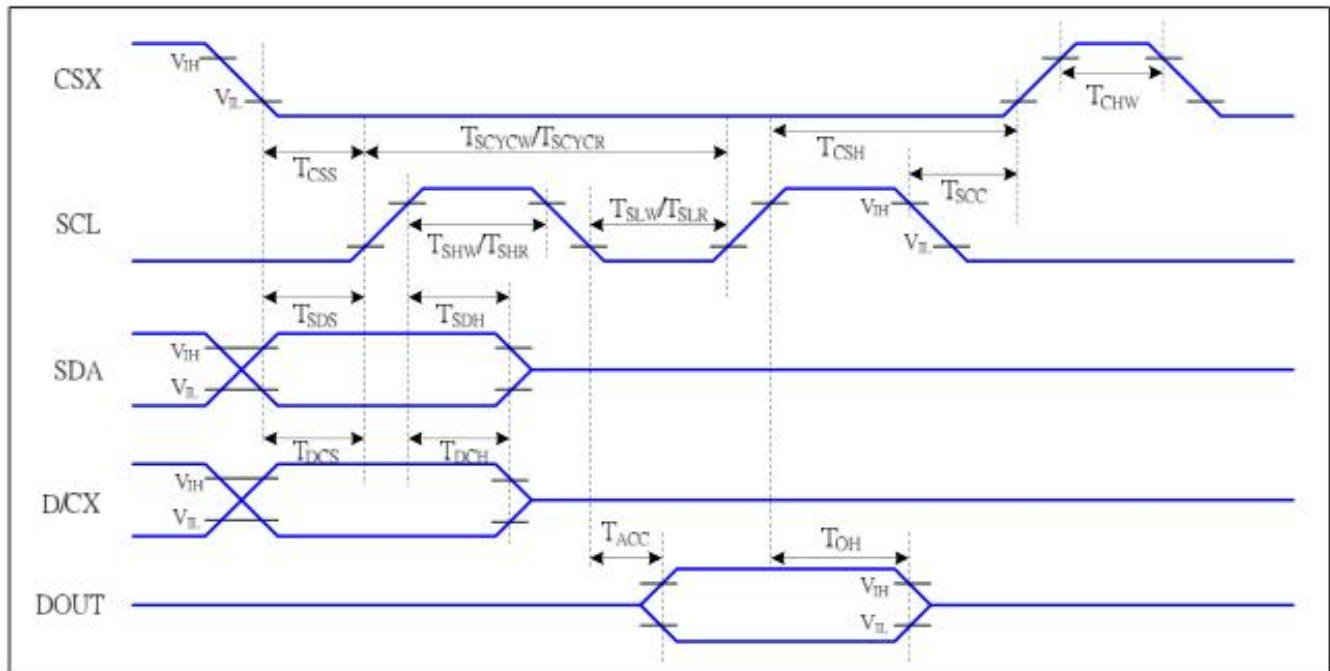
8. Backlight Recommended Circuit

Motherboard driver backlight is need constant current circuit , if threated voltage screen after light brightness difference . Current and power consumption of the machine are inconsistent , so recommend a backlight driving circuit is best rated current . It is recommended to use IC (AW9364) . The reference circuit is as follows:



9. Timing Characteristics.

Serial interface Characteristics(4-line serial):

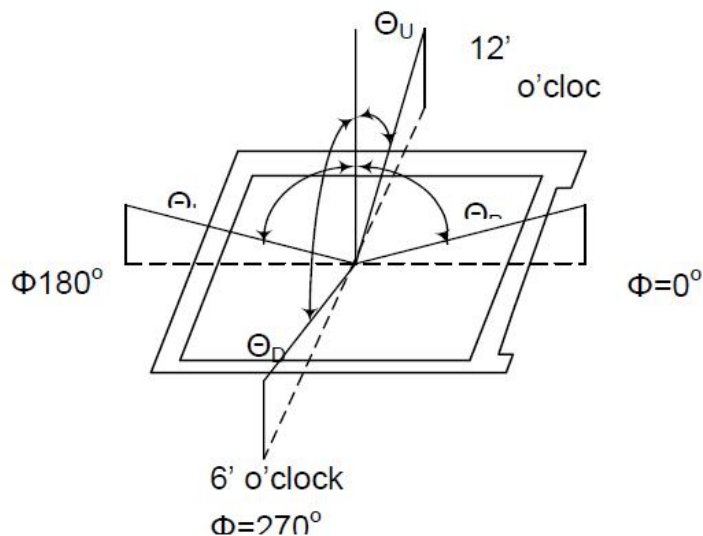


Signal	Symbol	Parameter	MIN	MAX	Unit	Description
CSX	T_{CSS}	Chip select setup time (write)	15		ns	
	T_{CSH}	Chip select hold time (write)	15		ns	
	T_{CSS}	Chip select setup time (read)	60		ns	
	T_{SCC}	Chip select hold time (read)	65		ns	
	T_{CHW}	Chip select "H" pulse width	40		ns	
SCL	T_{SCYCW}	Serial clock cycle (Write)	16		ns	-write command & data ram
	T_{SHW}	SCL "H" pulse width (Write)	7		ns	
	T_{SLW}	SCL "L" pulse width (Write)	7		ns	
	T_{SCYCR}	Serial clock cycle (Read)	150		ns	-read command & data ram
	T_{SHR}	SCL "H" pulse width (Read)	60		ns	
	T_{SLR}	SCL "L" pulse width (Read)	60		ns	
D/CX	T_{DCS}	D/CX setup time	10		ns	
	T_{DCH}	D/CX hold time	10		ns	
SDA (DIN)	T_{SDS}	Data setup time	7		ns	
	T_{SDH}	Data hold time	7		ns	
DOUT	T_{ACC}	Access time	10	50	ns	For maximum CL=30pF
	T_{OH}	Output disable time	15	50	ns	For minimum CL=8pF

10. Optical Characteristics.

Item	Symbol	Measuring Conditions		Min.	Typ.	Max.	Unit	Remark
Viewing Angle	θ	$\phi = 0^\circ$	25°C	60	70	-	Deg	Note1
		$\phi = 180^\circ$	25°C	60	70	-		
	θ	$\phi = 90^\circ$	25°C	50	60	-		
		$\phi = 270^\circ$	25°C	50	60	-		
Brightness	Lbr	-	-	550	600		Cd/m2	
Luminance Uniformity	ΔL	-	-	75		-		
Contrast Ratio	CR	-	25°C	600	800	-	-	Note2
Response Time	Tr+Tf	$\theta = 0^\circ$ $\phi = 0^\circ$	25°C	-	35	45	ms	Note3
Color of CIE Coordinate	White	X	25°C	-0.03	0.223	+0.03	-	BM-7A
		Y	25°C		0.295			
	Red	X	25°C		0.551			
		Y	25°C		0.365			
	Green	X	25°C		0.348			
		Y	25°C		0.588			
	Blue	X	25°C		0.165			
		Y	25°C		0.110			
Transmittance (with polarizer)	-	-	-	4.5	5.5	-	%	-

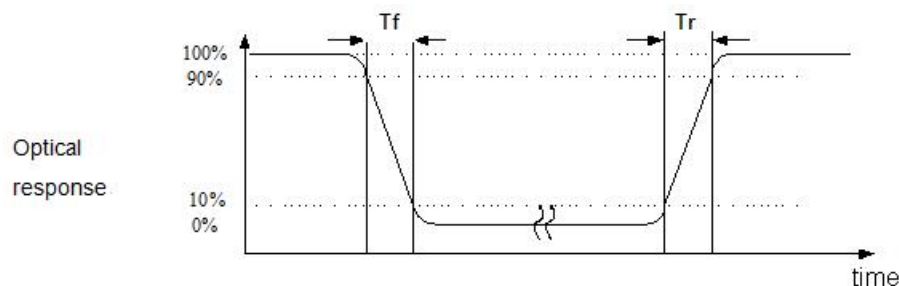
Note 1 Definition of Viewing Angle:



Note 2: Definition of Contrast Ratio (CR) :
measured at the center point of panel

$$CR = \frac{\text{Luminance with all pixels white}}{\text{Luminance with all pixels black}}$$

Note 3: Definition of Response Time : Sum of Tr and Tf :



11. Reliability

11.1. MTBF

The LCD module shall be designed to meet a minimum MTBF value of 50000 hours with normal.

11.2. Test Condition

No	Item	Condition	Criteria
1	High Temperature Operating	70℃*24Hrs	1. No Defect Of Operational Function In Room Temperature Are Allowable. 2. IDD of LCM in Pre-and Post-Test Should Follow Specification.
2	Low Temperature Operating	-20℃*24Hrs	
3	High Humidity Storage	50℃*90%RH*24Hrs	
4	High Temperature Storage	80℃*24Hrs	
5	Low Temperature Storage	-30℃*24Hrs	
6	Thermal Cycling Test Storage	-	
7	Packing vibration	-	
8	Electrical Static Discharge	-	
		-	
9	Drop Test (Packaged)	-	

Note 1 : The test samples should be applied to only one test item.

Note 2 : Sample size for each test item is 2pcs.

Note 3 : No defection function allowable.

12. Precautions

12.1. Storage Conditions

- 12.1.1. Store the panel or module in a dark place where the temperature is $23\pm5^{\circ}\text{C}$ and the humidity is below $45\pm20\%\text{RH}$.
- 12.1.2. Store in anti-static electricity container.
- 12.1.3. Store in clean environment, free from dust, active gas, and solvent.
- 12.1.4. Do not place the module near organics solvents or corrosive gases.
- 12.1.5. Do not crush, shake, or jolt the module.
- 12.1.6. Strong light exposure causes degradation of polarizer and color filter.

12.2. Handling Precautions

- 12.2.1. Avoid static electricity, which can damage the CMOS LSI.
- 12.2.2. The polarizing plate of the display is very fragile, please handle it very carefully.
- 12.2.3. Do not give external shock.
- 12.2.4. Do not apply excessive force on the surface.
- 12.2.5. Do not wipe the polarizer with dry cloth, as it might cause scratch. If the surface of the LCD needs to be cleaned, wipe it swiftly with cotton or other soft cloth soaked with petroleum IPA, do not use other chemicals.
- 12.2.6. Reverse and use within ratings in order to keep performance and prevent damage
- 12.2.7. Do not remove the panel or frame from the module.
- 12.2.8. Except for soldering the interface, do not make any alterations or modifications with a soldering iron; Ensure welding temperature at 320°C to 350°C , the welding time control within the 10 s, welding note don't stay too long in the same place to avoid scald FPC.

12.3. Limited Warranty

- 12.3.1. Our warranty liability is limited to repair and/or replacement. We will not be responsible for any consequential loss. (我们的保证责任仅限于修理和/或更换。我们将不負責任何相应的损失。)
- 12.3.2. If possible, we suggest customer to use up all modules in six months. If the module storage time over twelve months, we suggest that recheck it before the module be used. (如果可能, 我们建议客户在 6 个月内用完所有模块。如果模块存放时间超过 12 个月, 我们建议在使用模块前重新检查。)
- 12.3.3. The warranty period is twelve months from the date of delivery. Buyer shall complete the assembly of all processes within twelve months of validity. During the warranty period, if the product quality problems, our company will be responsible for repair and replacement. All products must be stored and handled in accordance with regulations. Under warranty. When the goods do not comply with the above terms, we do not provide warranty services. (保修期为交货之日起十二个月。买方应在 12 个月内完成所有流程的组装。在保修期内, 如果产品出现质量问题, 我公司将负责维修和更换。所有产品必须按照规定储存和处理。在保修期内。当货物不符合上述条款时, 我们不提供保修服务。)