

PRODUCT SPECIFICATION **FOR LCD MODULE**

Revision: 1.0

Model No: LSR043T09-R-V1

Module Type: COG+FPC+B/L+RTP

APPROVED SIGNATURE

- Approved Product Specification only
- Approved Product Specification and Samples

<u>Prepared By</u>	<u>Checked By</u>	<u>Approved By</u>

Contents

目录

1. General Description	3
2. Physical Features	3
3. Mechanical Specification	3
4. Outline Dimension	4
5. Absolute Maximum Ratings	5
6. Electrical Characteristics	5
7. Module Function Description	6
8. Electro-Optical Characteristics	10
9. Records Of Version	12

1. General Description

LSR043T09-R-V1 is a transmissive type a-Si TFT-LCD (amorphous silicon thin film transistor liquid crystal display) module, which is composed of a TFT-LCD panel, a driver circuit and a backlight unit. The panel size is 4.3 inch and the resolution is 480(RGB)*272, the panel can display up to 262k colors.

2. Physical Features

Display Mode	TFT-LCD Module
	Active matrix TFT, Transmissive type
Display Format	Graphic 480(RGB)×272 Dot-matrix
Input Data	RGB
Viewing Direction (Grayscale Inversion)	Free (IPS)
Drive	ST7282A

3. Mechanical Specification

Item	Specification	Unit
Module size (H×V×D)	105.5 ×67.2 ×4.40	mm
Number of dots	480(RGB) ×272	pixel
Active area (H×V)	95.04×53.856	mm



5. Absolute Maximum Ratings

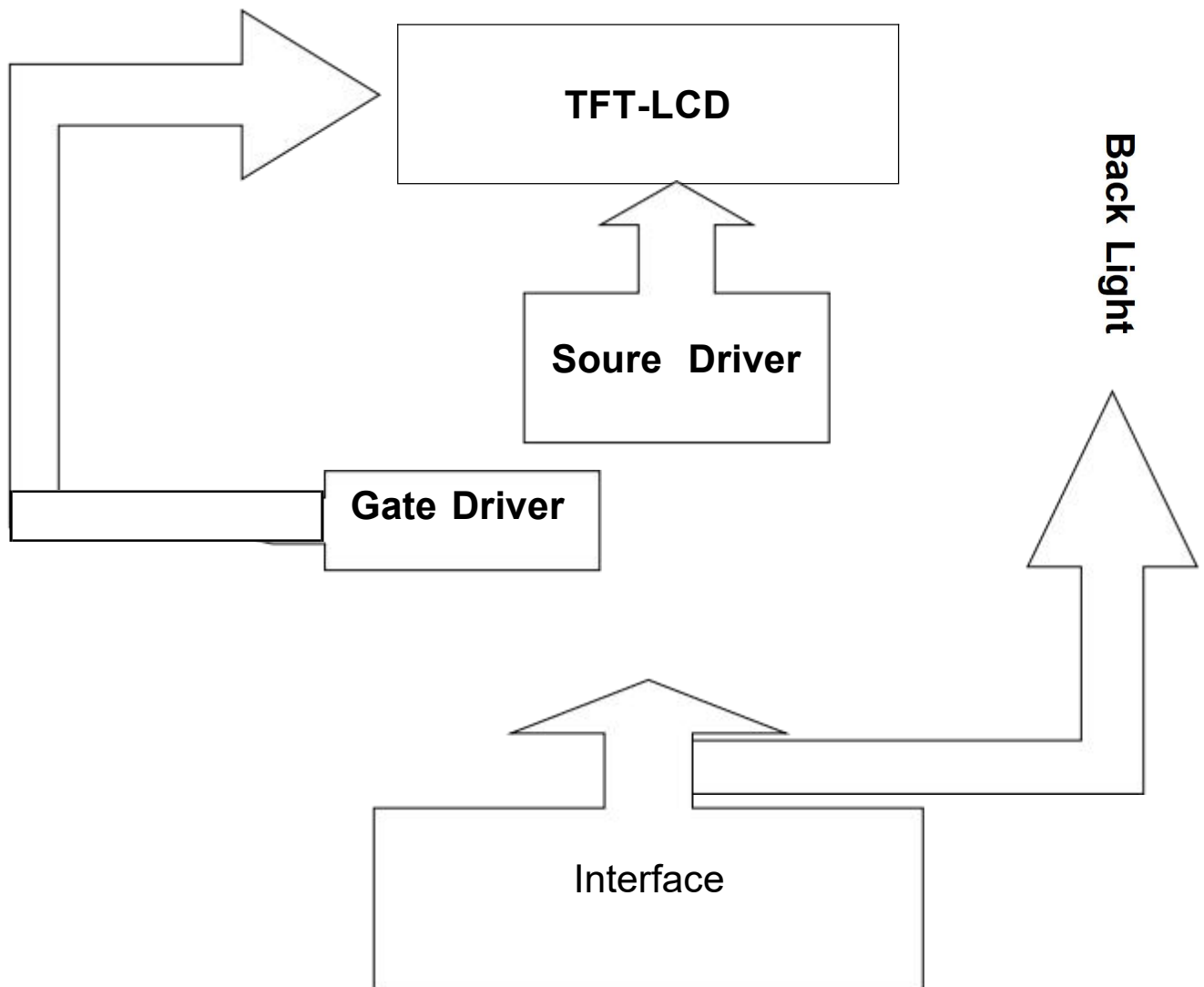
Item	Symbol	Min	Max	Unit	Remark
Supply voltage	VCC	-0.3	3.3	V	Note1 Note2
Supply voltage	IOVCC	-0.3	3.3	V	
Operating temperature	TOPR	-20	70	°C	
Storage temperature	TSTR	-30	80	°C	
Storage Humidity	HSTR	10	90	%RH	
Operating Ambient Humidity	HOPR	10	90	%RH	

6. Electrical Characteristics

Item		Symbol	Rating			Unit	Remark
			Min	Typ	Max		
Supply voltage		VCC	---	3.3	---	V	Note1
Supply voltage		IOVCC	---	3.3	---	V	
LED Forward Voltage		VF	---	21	---	V	
LED Forward Current		IR	---	20	---	MA	
LCD Luminance		BP	---	200	---	cd/m ²	
Input Voltage	L level	VIL	0	---	0.2*IOVCC	V	
	H level	VIH	0.8*VCC	---	IOVCC	V	

7. Module Function Description

7- 1. Block Diagram Of LCM



7-2. Pin Description

PIN NO.	Symbol	I/O	Description
1	LED-K	P	LED BACKLIGHT(CATHODE)
2	LED-A	P	LED BACKLIGHT(ANODE)
3	GND	P	GROUND
4	VCC	P	POWER SUPPLY
5	R0	I	RED DATA
6	R1	I	RED DATA
7	R2	I	RED DATA
8	R3	I	RED DATA
9	R4	I	RED DATA
10	R5	I	RED DATA
11	R6	I	RED DATA
12	R7	I	RED DATA
13	G0	I	GREEN DATA
14	G1	I	GREEN DATA
15	G2	I	GREEN DATA
16	G3	I	GREEN DATA
17	G4	I	GREEN DATA
18	G5	I	GREEN DATA
19	G6	I	GREEN DATA
20	G7	I	GREEN DATA
21	B0	I	BLUE DATA
22	B1	I	BLUE DATA
23	B2	I	BLUE DATA
24	B3	I	BLUE DATA
25	B4	I	BLUE DATA
26	B5	I	BLUE DATA
27	B6	I	BLUE DATA

28	B7	I	BLUE DATA
29	GND	P	GROUND
30	CLK	I	CLOCK SIGNAL
31	DISP(NC)	I	DISPLAY ON/OFF（NC）内部已接高，开启显示模式
32	HS	I	HORIZONTAL SYNC INPUT IN RGB MODE
33	VS	I	VERTICAL SYNC INPUT IN RGB MODE
34	DE	I	DATA ENABLE
35	NC		NC
36	GND	P	GROUND
37	XR	I	TOUCH PLANE PIN
38	YD	I	TOUCH PLANE PIN
39	XL	I	TOUCH PLANE PIN
40	YU	I	TOUCH PLANE PIN

7-3 Timing Characteristics

480RGB X 272 Resolution Timing Table							
Item		Symbol	Min.	Typ.	Max.	Unit	Remark
DCLK Frequency		Fclk	8	9	12	MHz	
DCLK Period		Tclk	125	111	83	ns	
HSYNC	Period Time	Th	487	531	598	DCLK	
	Display Period	Thdisp	-	480	-	DCLK	
	Back Porch	Thbp	3	43	43	DCLK	By H_Blanking setting
	Front Porch	Thfp	4	8	75	DCLK	
	Pulse Width	Thw	2	4	75	DCLK	
VSYNC	Period Time	Tv	276	292	321	H	
	Display Period	Tvdisp	-	272	-	H	
	Back Porch	Tvbp	2	12	12	H	By V_Blanking setting
	Front Porch	Tvfp	2	8	37	H	
	Pulse Width	Tvw	2	4	37	H	

Note: 1.It is necessary to keep Tvbp =12 and Thbp =43 in sync mode. DE mode is unnecessary to keep it.

2.Thbp+Thfp >=7

8. Electro-Optical Characteristics

Item		Symbol	Condition	Min.	Typ.	Max.	Unit	Note
Color Chromaticity (CIE1931)	Red	Rx	$\theta_x=0^\circ, \theta_y=0^\circ$ Viewing Angle at Normal Direction at center point of panel with HKC backlight	Typ.-0.03	0.651	Typ.+0.03		(1)
		Ry			0.322			
	Green	Gx			0.265			
		Gy			0.589			
	Blue	Bx			0.138			
		By			0.105			
	White	Wx			0.292			
		Wy			0.339			
Color Gamut		NTSC			TBD		%	(2)
Transmittance		T%		3.2	3.5		%	(3)
Crosstalk(2D)		CT	$\theta_x=0^\circ, \theta_y=0^\circ$		TBD		%	(4)
Contrast Ratio		CR		2000	3000			(5)
Response Time		Tr+Tf			TBD		ms	(6)
Viewing Angle	Horizontal	θ_{x+}	CR $\geq$ 10 (With VA POL.)		80	-	Deg.	(7)
		θ_{x-}			80			
	Vertical	θ_{y+}			80			
		θ_{y-}			80			

9. Reliability and Inspection Standard

No.	Test Item		Test Conditions	Remark
1	High Temperature	Storage	80℃, 120Hr	
		Operation	70℃, 120Hr	
2	Low Temperature	Storage	-30℃, 120Hr	
		Operation	-20℃, 120Hr	
3	High Temperature and High Humidity		70℃, 90%RH, 120Hr	
4	Temperature Cycle	Storage	-10℃(1Hr)→25℃(5min)→60℃(1Hr) 32 Cycles	
		Operation	-20℃(1Hr)→25℃(5min)→60℃(1Hr) 25 Cycles	
5	Peeling Off (Storage)		≥ 500gf/cm	
6	FPC Bending Test		≥ 6,000 times, 2/sec	
7	Vibration Test(Storage)		50HZ, 30min, Amplitude: 2 cm, X/Y/Z directions	
8	Drop Test		60cm/ 3Corner/ 8Face, 1Cycle	
9	ESD test		±4KV, Human Body Mode, 150pF/330Ω; ±8KV, Air Mode, 150pF/330Ω;	

9.Records Of Version

Version	Revise Date	Page	Content
00		ALL	New released