

PRODUCT SPECIFICATION **FOR LCD MODULE**

Revision: 1.0

Model No: LSC0154I01-S-V1

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

APPROVED SIGNATURE

- ☒ Approved Product Specification only
- ☐ Approved Product Specification and Samples

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

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1. General Description

LSC0154I01-S-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 1.54 inch and the resolution is 240(RGB)*240, the panel can display up to 262k colors.

2. Physical Features

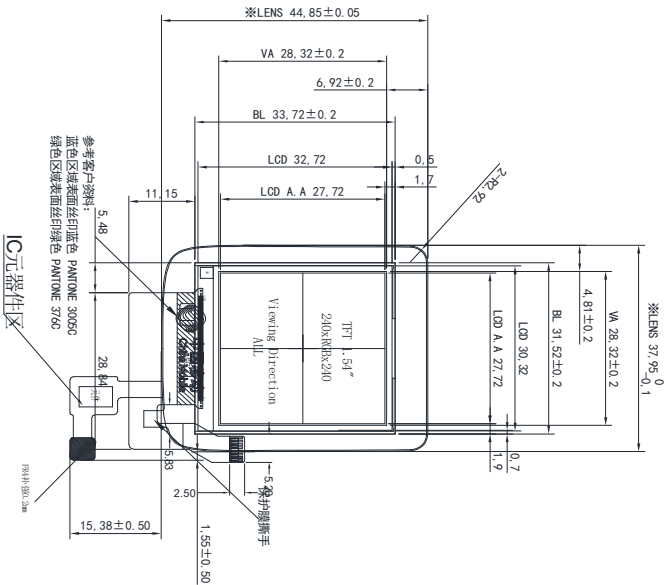
Display Mode	TFT-LCD Module
	Active matrix TFT, Transmissive type
Display Format	Graphic 240(RGB)×240 Dot-matrix
Input Data	SPI
Viewing Direction (Grayscale Inversion)	IPS
Drive	ST7789T3

3. Mechanical Specification

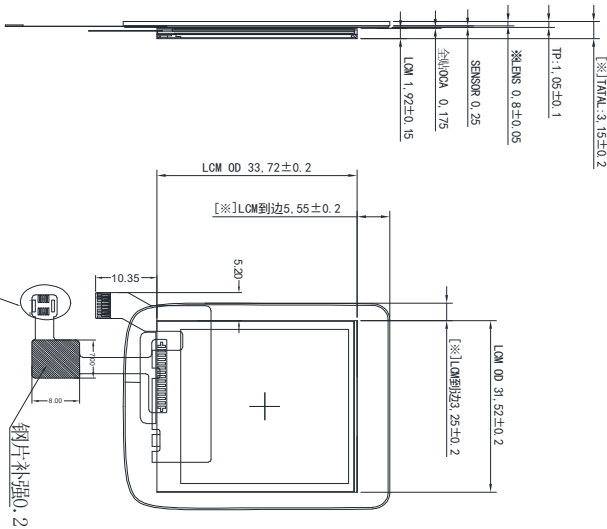
Item	Specification	Unit
Module size (H×V×D)	37.95 ×44.85 ×3.15	mm
Number of dots	240(RGB) ×240	pixel
Active area (H×V)	27.72×27.72	mm

LCM+CTP

正视图



侧视图



FPC弯折示意图
FPC弯折出货

Customer No.:

CUSTOMER_NO.:

PIN脚定义

1	VCC
2	SCL
3	SDA
4	INT
5	RST
6	GND
7	GND
8	NC
9	GND
10	GND

技术参数:

1. IC型号 CST816D
2. TP结构: GF;
3. 表面硬度: >6H;
4. 透光率: ≥85% (550nm) ;
5. 工作环境: -20℃~+70℃, ≤90%RH
6. 储存环境: -30℃~+80℃, ≤90%RH
7. 未注尺寸公差按±0.15mm;
8. 产品符合RoHS指令;

CUSTOMER APPROVE

Mechanical	Electrical
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AMEND

NO.	NAME	QTY	Part No.	VENDOR & NOTE
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名称

DATE4	DATE3	DATE2	DATE1
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立信（万安）智显科技有限公司

PRODUCT NO.	图号	REV
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LSC0154101-S-V1	图号	A
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DWN	CHEN	DSN	CHEN
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CHKD	L10	APPD	L10
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NOT IN SCALE	UNIT mm	SHEET: 分页号
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5. Absolute Maximum Ratings

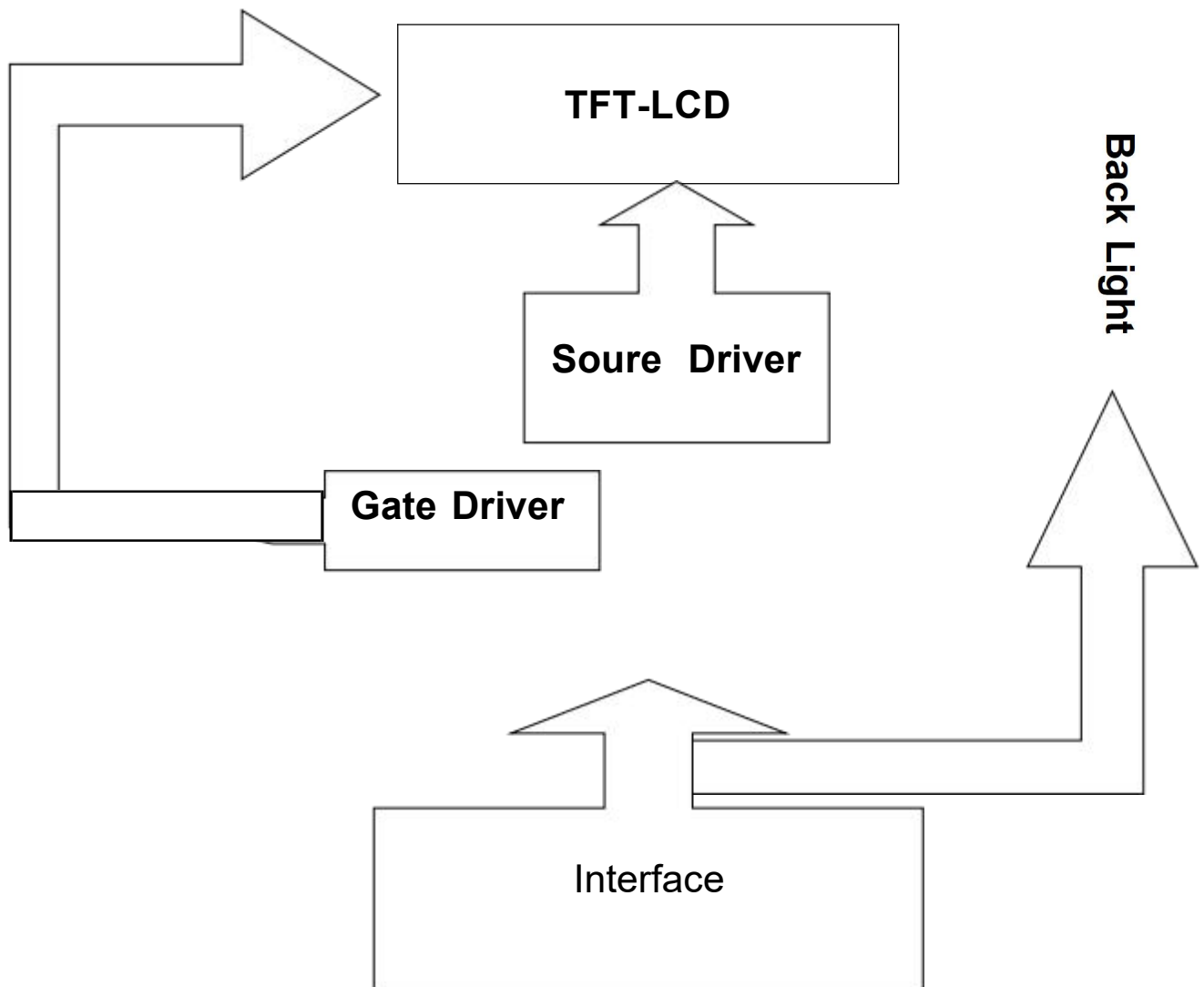
Item	Symbol	Min	Max	Unit	Remark
Supply voltage	VCC	-0.3	4.6	V	Note1 Note2
Supply voltage	IOVCC	-0.3	4.6	V	
Operating temperature	TOPR	-20	70	°C	
Storage temperature	TSTR	-30	80	°C	

6. Electrical Characteristics

Item		Symbol	Rating			Unit	Remark
			Min	Typ	Max		
Supply voltage		VCC	2.4	2.75	3.3	V	Note1
Supply voltage		IOVCC	1.65	1.8	3.3	V	
Input Voltage	L level	VIL	0	---	0.3*IOVCC	V	
	H level	VIH	0.7*IOVCC	---	IOVCC	V	

7. Module Function Description

7- 1. Block Diagram Of LCM



7-2. Pin Description

LCM

PIN NO.	Symbol	I/O	Description
1	LEDK	P	Power for LED backlight cathode
2	GND	P	Ground
3	TE	O	Tearing effect signal is used to synchronize MCU to frame memory
4	SDA	I	SPI interface input pin.
5	SDO	O	SPI interface output pin.
6	SCL	I	Serial clock pin
7	CS	I	Chip selection pin
8	RESET	I	This signal will reset the device and it must be applied to properly initialize the chip.
9	IOVCC	P	power supply
10	VCC	P	power supply
11	VCC	P	power supply
12	GND	P	Ground
13	GND	P	Ground
14	LEDA	P	Power for LED backlight anode
15	LEDA	P	Power for LED backlight anode

TP PIN

PIN NO.	Symbol	I/O	Description
1	VCC	P	Power voltage
2	SCL	I	SCL pin for TP
3	SDA	I/O	SDA pin for TP
4	INT	I	Interrupt signal for TP
5	RST	I	Reset Pin for TP
6	GND	P	Ground
7	GND	P	Ground
8	NC		
9	GND	P	Ground
10	GND	P	Ground

7-3 Timing Characteristics

7.4.2 Serial Interface Characteristics (3-line serial):

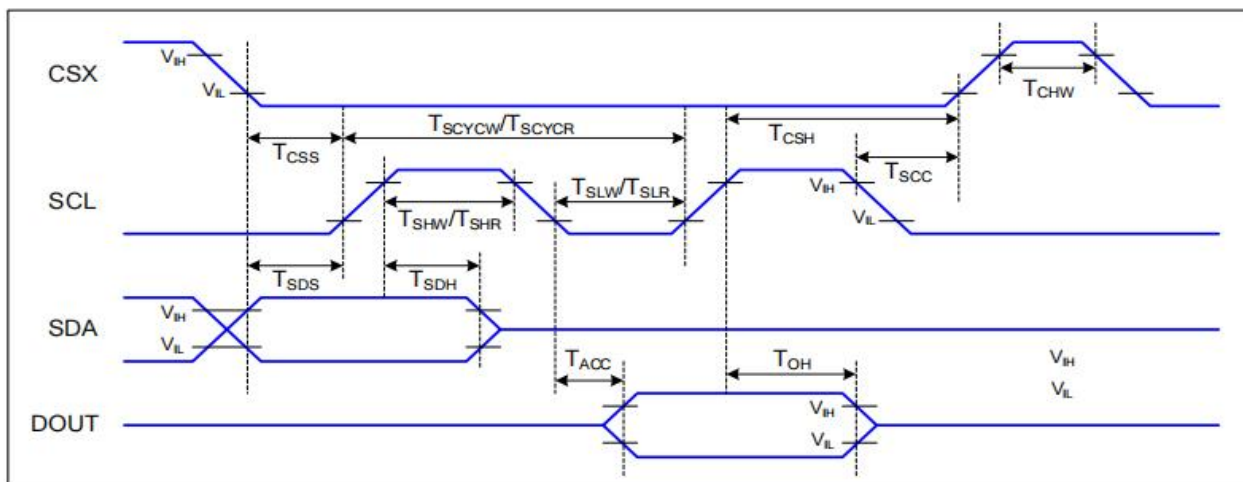


Figure 4 3-line serial Interface Timing Characteristics

$V_{DDI}=1.65$ to $3.3V$, $V_{DD}=2.4$ to $3.3V$, $AGND=DGND=0V$, $T_a=25^{\circ}C$

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	
	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	
	T_{SHR}	SCL "H" pulse width (Read)	60		ns	
	T_{SLR}	SCL "L" pulse width (Read)	60		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 $CL=8pF$

Table 5 3-line serial Interface Characteristics

Note1 : The rising time and falling time (T_r , T_f) of input signal are specified at 15 ns or less. Logic high and low levels are specified as 30% and 70% of V_{DDI} for Input signals

Note2: In the read sequence of serial interface, the 500nsec delay time is needed between read command and first read clock..

8. Electro-Optical Characteristics

Item		Symbol	Condition	Min.	Typ.	Max.	Unit	Remark
Response time		Tr +Tf	$\theta_x = \theta_y = 0$	---	30	---	ms	Note 1
Contrast Ratio		CR		---	250	---	---	Note 2
Transmittance		T%		4.5	5	---	%	
Color Chromaticity (CIE1931)	White	W x	$\theta_x = \theta_y = 0$	---	0.308	---	---	
		W y		---	0.325	---	---	
Viewing angle	θ_T		CR > 10	---	45	---	Deg.	Note 3
	θ_B			---	20	---		
	θ_L			---	45	---		
	θ_R			---	45	---		
Luminance ($I_F = 60mA$)		L			TBD	---	cd/m2	Note4

Note 1: Ambient temperature = 25°C.

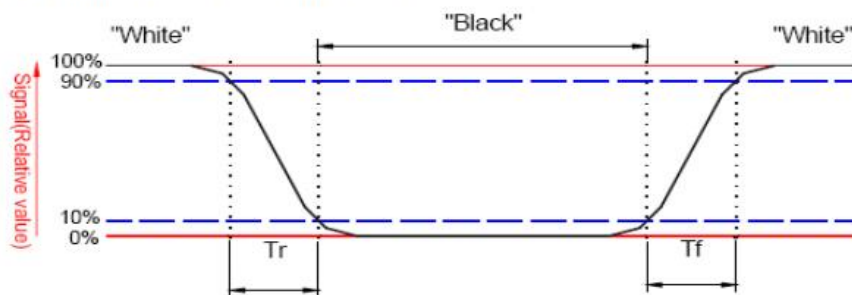
Note 2: To be measured with a viewing cone of 2° by Topcon luminance meter BM-5A.

Note 3: To be measured with Otsuta chromaticity meter LCF-2100M, CF only measure under C light simulation.

Note 4: CTC shipping status is cell without polarizer. Transmittance of Specification is cell with polarizer

Note 5: Definition of response time:

The output signals of TRD-100 are measured when the input signals are changed to "White" (falling time) and from "White" to "Black" (rising time), respectively. The interval is between the 10% and 90% of amplitudes. Refer to figure as below.

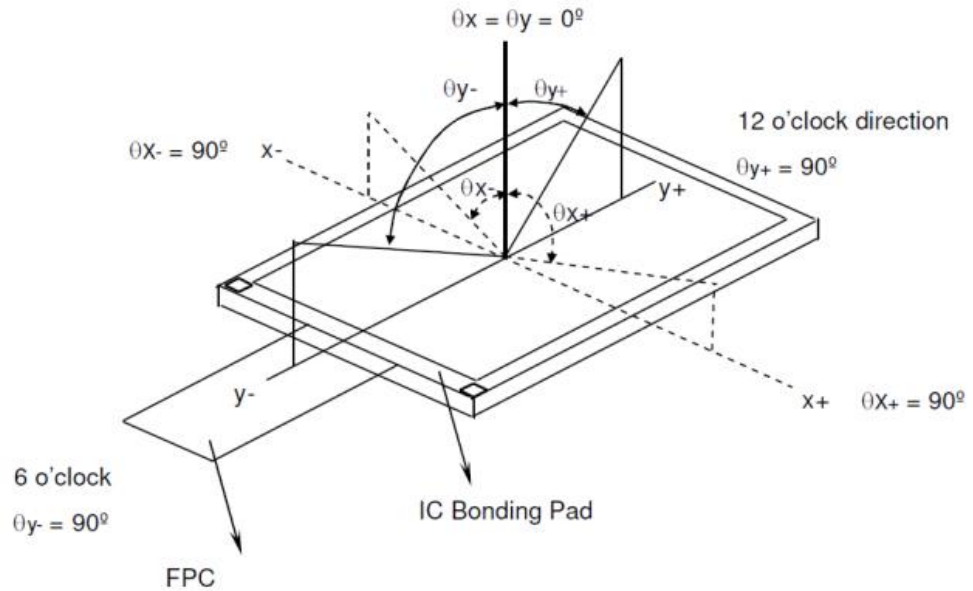


Note 6: Definition of contrast ratio:

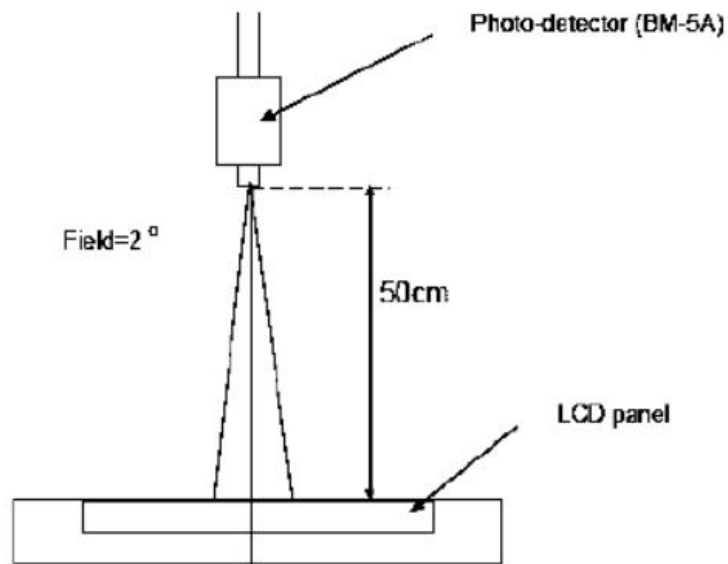
Contrast ratio is calculated by the following formula.

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

Note 7: Definition of viewing angle



Note 8: Optical characteristic measurement setup.



Note(4) Backlight circuit



驱动条件: $I_F=60\text{mA}$, $V_f=3\text{V}$ (TYP)

9.Records Of Version

Version	Revise Date	Page	Content
00	2025-6-25	ALL	New released