

PRODUCT SPECIFICATION **FOR LCD MODULE**

Revision: 1.0

Model No: LSC0201I10-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

LSC0201I10-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 2.01 inch and the resolution is 240(RGB)*296, the panel can display up to 262k colors.

2. Physical Features

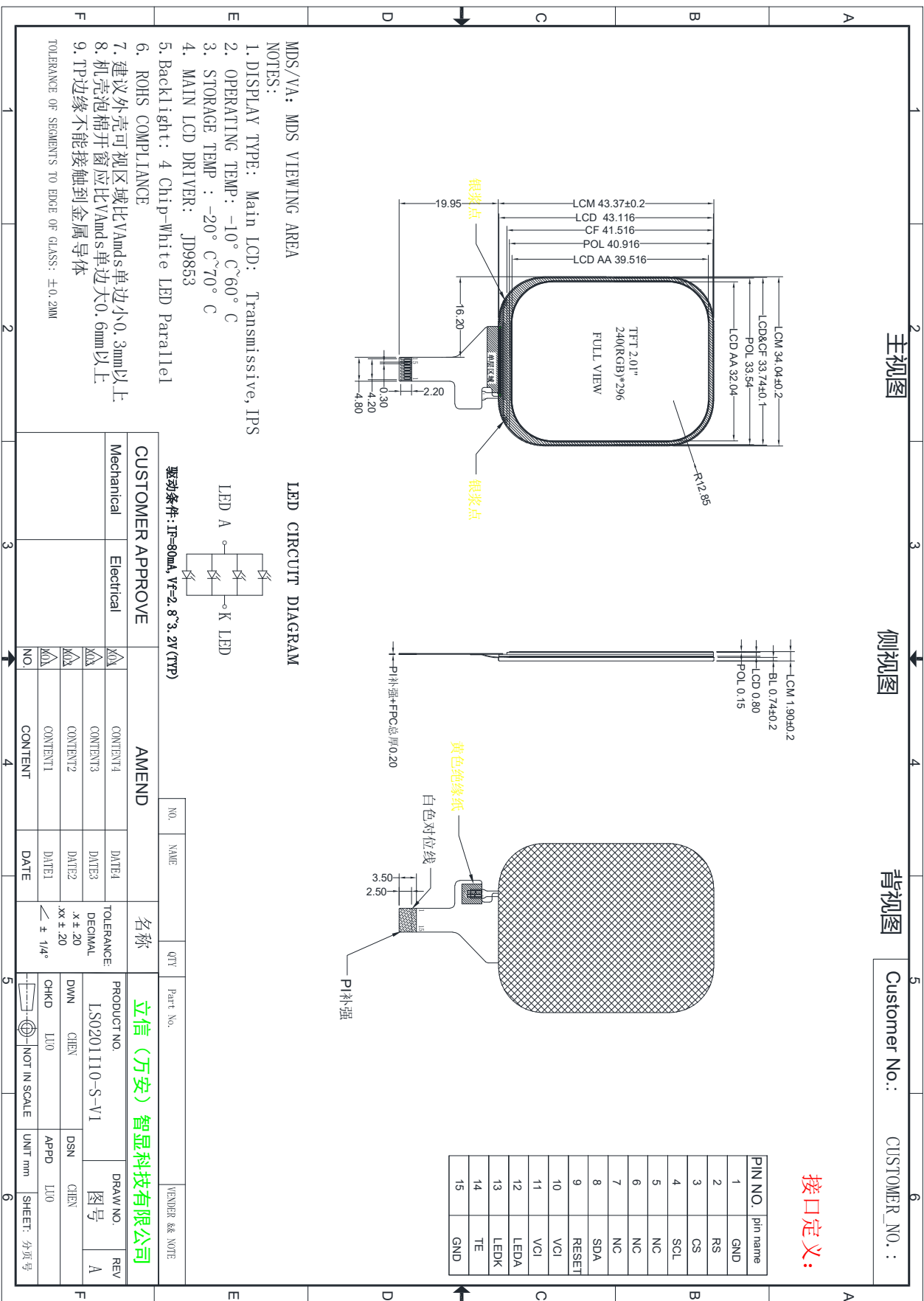
Display Mode	TFT-LCD Module
	Active matrix TFT, Transmissive type
Display Format	Graphic 240(RGB)×296 Dot-matrix
Input Data	SPI
Viewing Direction (Grayscale Inversion)	IPS
Drive	JD9853

3. Mechanical Specification

Item	Specification	Unit
Module size (H×V×D)	35.73 ×43.37 ×3.68	mm
Number of dots	240(RGB) ×296	pixel
Active area (H×V)	32.04×39.516	mm

4. Outline Dimension

LCM



CUSTOMER APPROVE		AMEND		名称		立信（万安）智显科技有限公司				
Mechanical	Electrical	NO.1	CONTENT4	DATE4	TOLERANCE: DECIMAL	PRODUCT NO.		DRAW NO.		RE
		NO.2	CONTENT3	DATE3	.x ± .20	LSC0201110-S-V2		图号		A
		NO.3	CONTENT2	DATE2	.xx ± .20	DWN		CHEN		
		NO.4	CONTENT1	DATE1	— ± 1/4°	CHKD		L10		
			CONTENT	DATE		UNIT mm		SHEET: 分页号		
								NOT IN SCALE		

5. Absolute Maximum Ratings

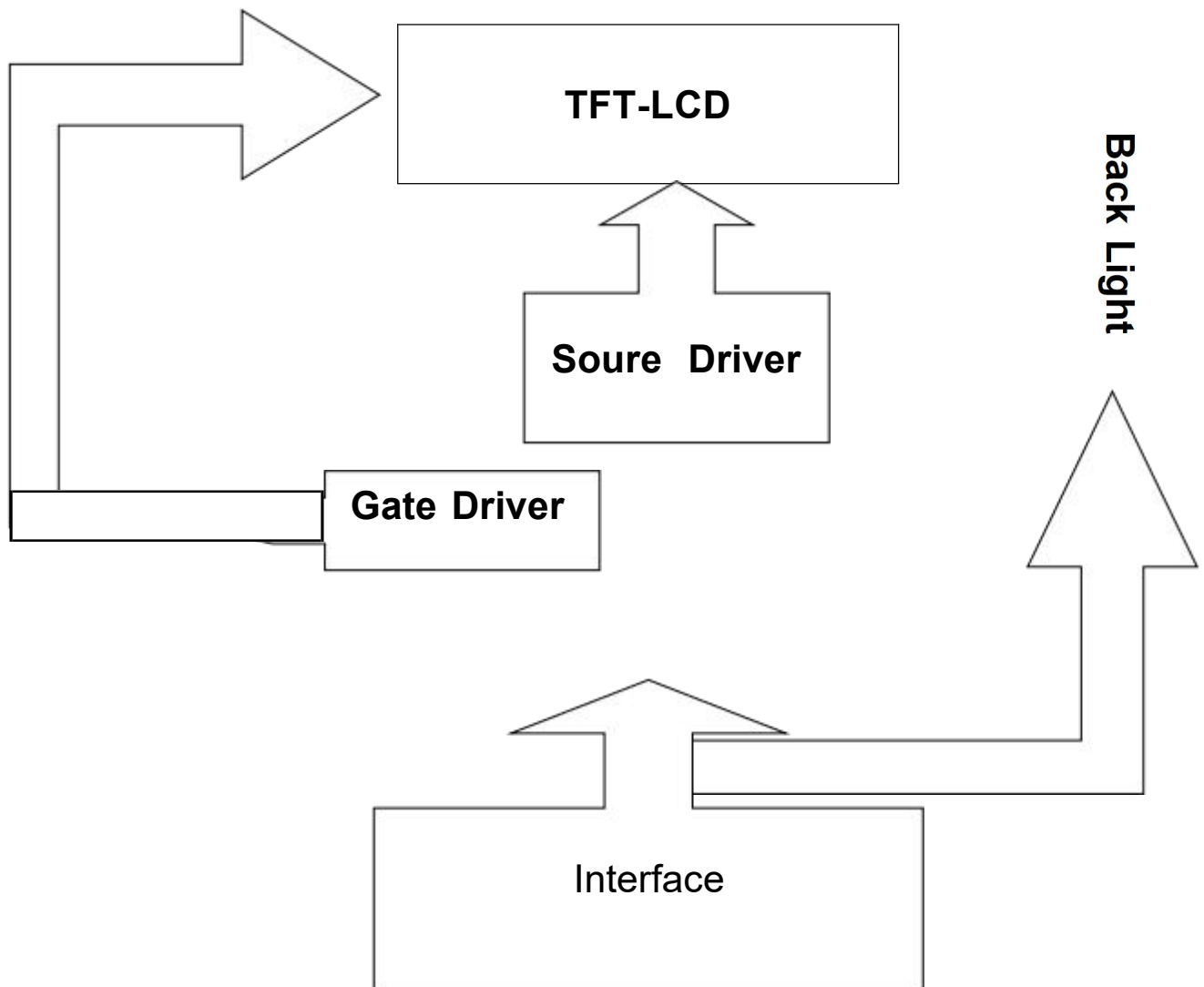
Item	Symbol	Min	Max	Unit	Remark
Supply voltage	VCC	-0.3	3.6	V	Note1 Note2
Supply voltage	IOVCC	-0.3	3.6	V	
Operating temperature	TOPR	-10	60	°C	
Storage temperature	TSTR	-20	70	°C	

6. Electrical Characteristics

Item		Symbol	Rating			Unit	Remark
			Min	Typ	Max		
Supply voltage		VCC	2.6	2.8	3.3	V	Note1
Supply voltage		IOVCC	1.65	2.8	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	GND	P	Ground
2	RS	I	Data/command selection pin in 4-line serial interface
3	CS	I	Chip select input pin
4	SCL	I	This pin is used to be serial interface clock.
5	NC		
6	NC		
7	NC		
8	SDA	I/O	Serial in/out signal in SPI interface.
9	RESET	I	This signal will reset the device and must be applied to properly initialize the chip.
10	VCI	P	Power supply
11	VCI	P	Power supply
12	LEDA	P	Power for LED backlight anode
13	LEDK	P	Power for LED backlight cathode
14	TE	O	-Tearing effect output pin to synchronize MPU to frame writing.
15	GND	P	Ground

TP

1	GND
2	S12
3	S11
4	S10
5	S9
6	S8
7	NC
8	NC
9	S5
10	S4
11	S3
12	S2
13	GND
14	S1
15	GND

7-3 Timing Characteristics

10.3.3. Serial Interface Timing Characteristics (4-line SPI)

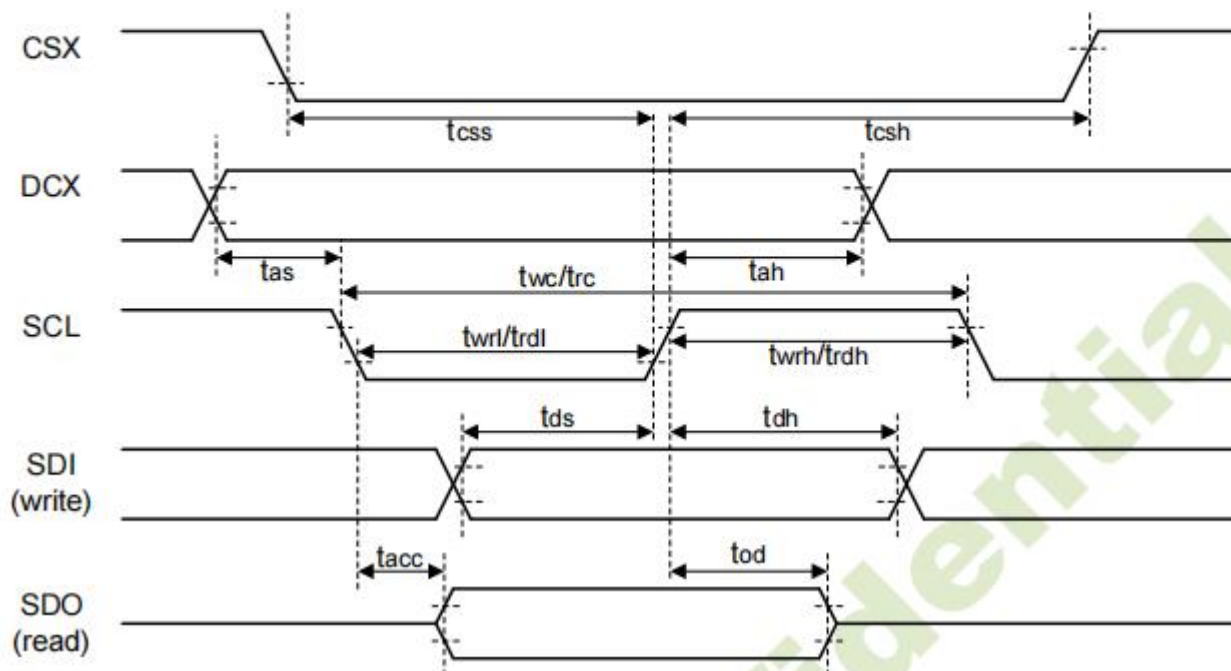


Figure. 10.4 4-line Serial Interface Timing Characteristics

Signal	Symbol	Parameter	Min.	Max.	Unit	Description
CSX	t_{css}	Chip select setup time (Write)	15		ns	
	t_{csh}	Chip select setup time (Write)	15		ns	
	t_{css}	Chip select hold time (Read)	60		ns	
	t_{csh}	Chip select hold time (Read)	65		ns	
DCX	t_{as}	Address setup time	10		ns	
	t_{ah}	Address hold time (Write/Read)	10		ns	
SCL (write)	t_{wc}	Write cycle	16		ns	
	t_{wrh}	Control pulse "H" duration	7		ns	
	t_{wrl}	Control pulse "L" duration	7		ns	
SCL (read)	t_{rc}	Read cycle	150		ns	
	t_{rdh}	Control pulse "H" duration	60		ns	
	t_{rdl}	Control pulse "L" duration	60		ns	
SDI/SDO (write)	t_{ds}	Data setup time	7		ns	
	t_{dt}	Data hold time	7		ns	
SDI/SDO (read)	t_{acc}	Read access time	20		ns	
	t_{od}	Output disable time	25		ns	

10.3.6. Reset Input Timing

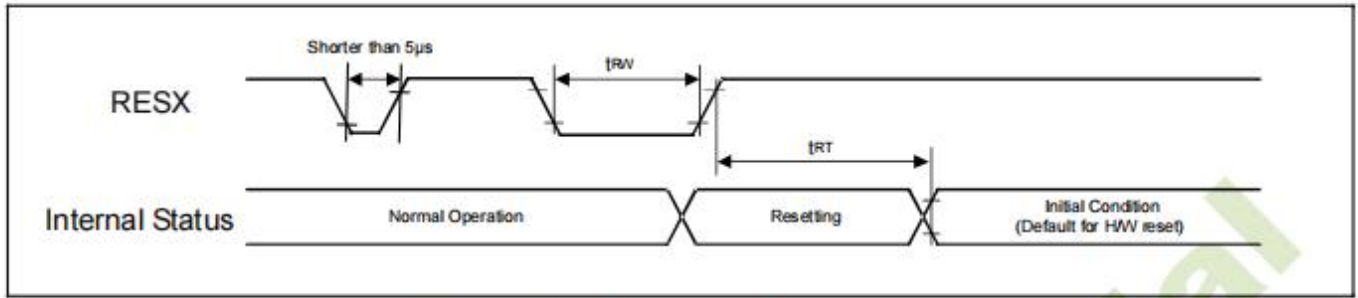


Figure. 10.7 Reset input timings

Symbol	Parameter	Related pins	Min.	Max.	Unit
t_{RW}	Reset pulse width ⁽²⁾	RESX	10	-	μs
t_{RT}	Reset complete time ⁽³⁾	-	-	5 (Note 5)	ms
		-	-	120 (Note 6, 7)	ms

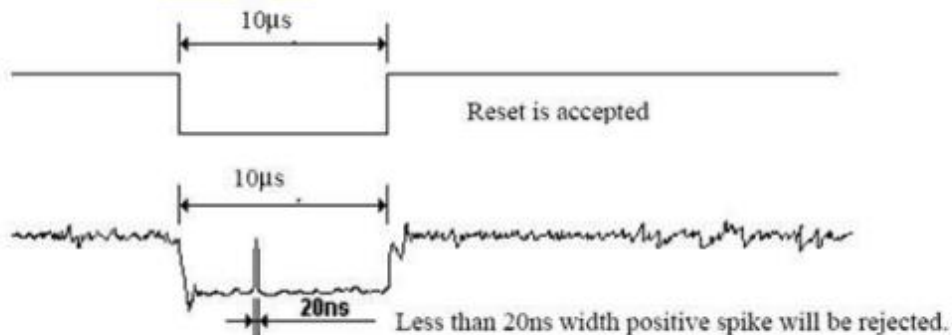
Note: (1) The reset complete time also required time for loading ID bytes from OTP to registers. This loading is done every time when there is HW reset cancel time (t_{RT}) within 5 ms after a rising edge of RESX.

(2) Spike due to an electrostatic discharge on RESX line does not cause irregular system reset according to the table below.

RESX Pulse	Action
Shorter than 5 μs	Reset Rejected
Longer than 10 μs	Reset
Between 5 μs and 10 μs	Reset Start

(3) During the resetting period, the display will be blanked (The display is entering blanking sequence, which maximum time is 120 ms, when Reset Starts in Sleep Out –mode. The display remains the blank state in Sleep In –mode) and then returns to Default condition for H/W reset.

(4) Spike Rejection also applies during a valid reset pulse as shown below:



(5) When Reset is applied during Sleep In Mode.

(6) When Reset is applied during Sleep Out Mode.

(7) It is necessary to wait 5msec after releasing RESX before sending commands. Also Sleep Out command cannot be sent for 120msec.

8. Electro-Optical Characteristics

Item		Symbol	Condition	Min.	Typ.	Max.	Unit	Remark
Response time		Tr +Tf	$\theta_x = \theta_y = 0$	---	30	35	ms	Note 1
Contrast Ratio		CR		800	1200	---	---	Note 2
Transmittance		T%		4.8	5.33	---	%	
Color Chromaticity (CIE1931)	White	W x	$\theta_x = \theta_y = 0$	---	0.311	---	---	
		W y		---	0.334	---	---	
Viewing angle	θ_T		CR > 10	80	85	---	Deg.	Note 3
	θ_B			80	85	---		
	θ_L			80	85	---		
	θ_R			80	85	---		

4.2 Measuring Condition

- Measuring surrounding : dark room
- Ambient temperature : 25±2°C
- 15min. warm-up time.

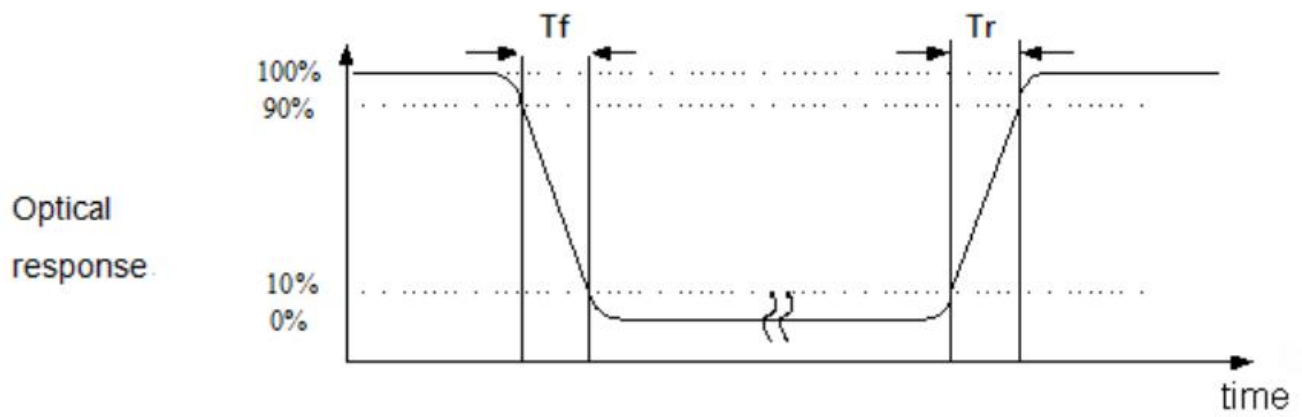
4.3 Measuring Equipment

- FPM520 of Westar Display technologies, INC., which utilized SR-3 for Chromaticity and BM-5A for other optical characteristics.

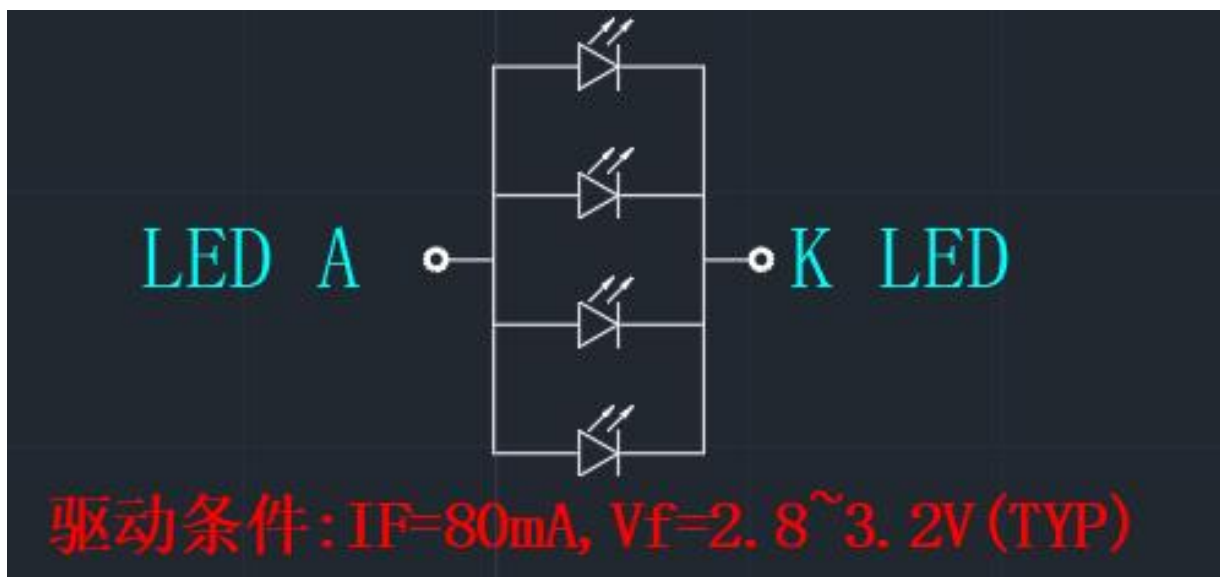
Note (2) Definition of Contrast Ratio (CR) :
measured at the center point of panel

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

Note (3) Definition of Response Time : Sum of T_R and T_F



Backlight circuit



9.Records Of Version

Version	Revise Date	Page	Content
00	2025-8-5	ALL	New released