

PRODUCT SPECIFICATION **FOR LCD MODULE**

Revision: 1.0

Model No: LSL0165I04-S-V1

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

APPROVED SIGNATURE

- Approved Product Specification only
- Approved Product Specification and Samples

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1. General Description

LSL0165I04-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 1.65 inch and the resolution is 142(RGB)*428, the panel can display up to 262k colors.

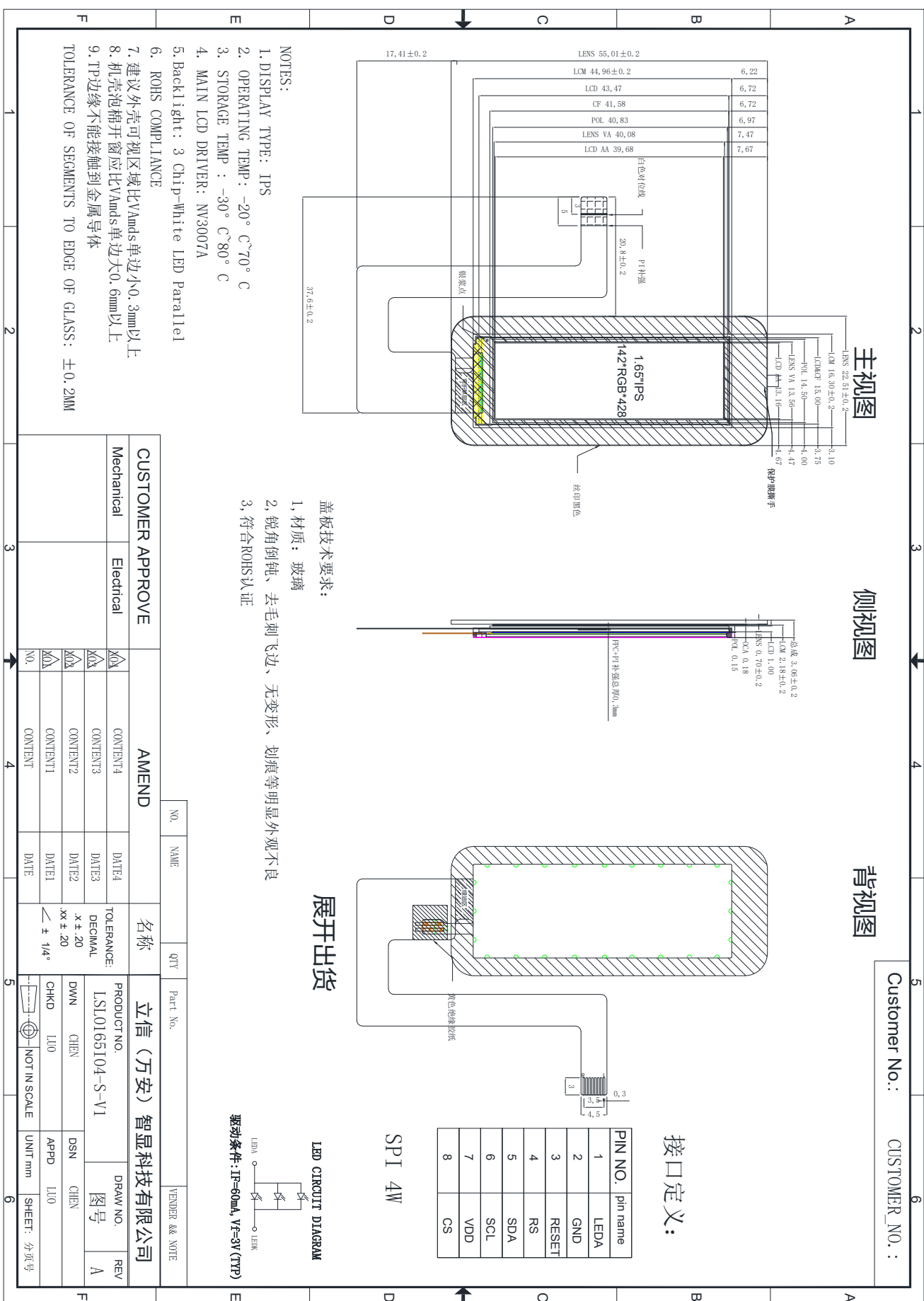
2. Physical Features

Display Mode	TFT-LCD Module
	Active matrix TFT, Transmissive type
Display Format	Graphic 142(RGB)×428 Dot-matrix
Input Data	SPI
Viewing Direction (Grayscale Inversion)	Free (IPS)
Drive	NV3007A

3. Mechanical Specification

Item	Specification	Unit
Module size (H×V×D)	22.51 ×55.01×3.06	mm
Number of dots	142(RGB) ×428	pixel
Active area (H×V)	13.16×39.68	mm

4. Outline Dimension



5. Absolute Maximum Ratings

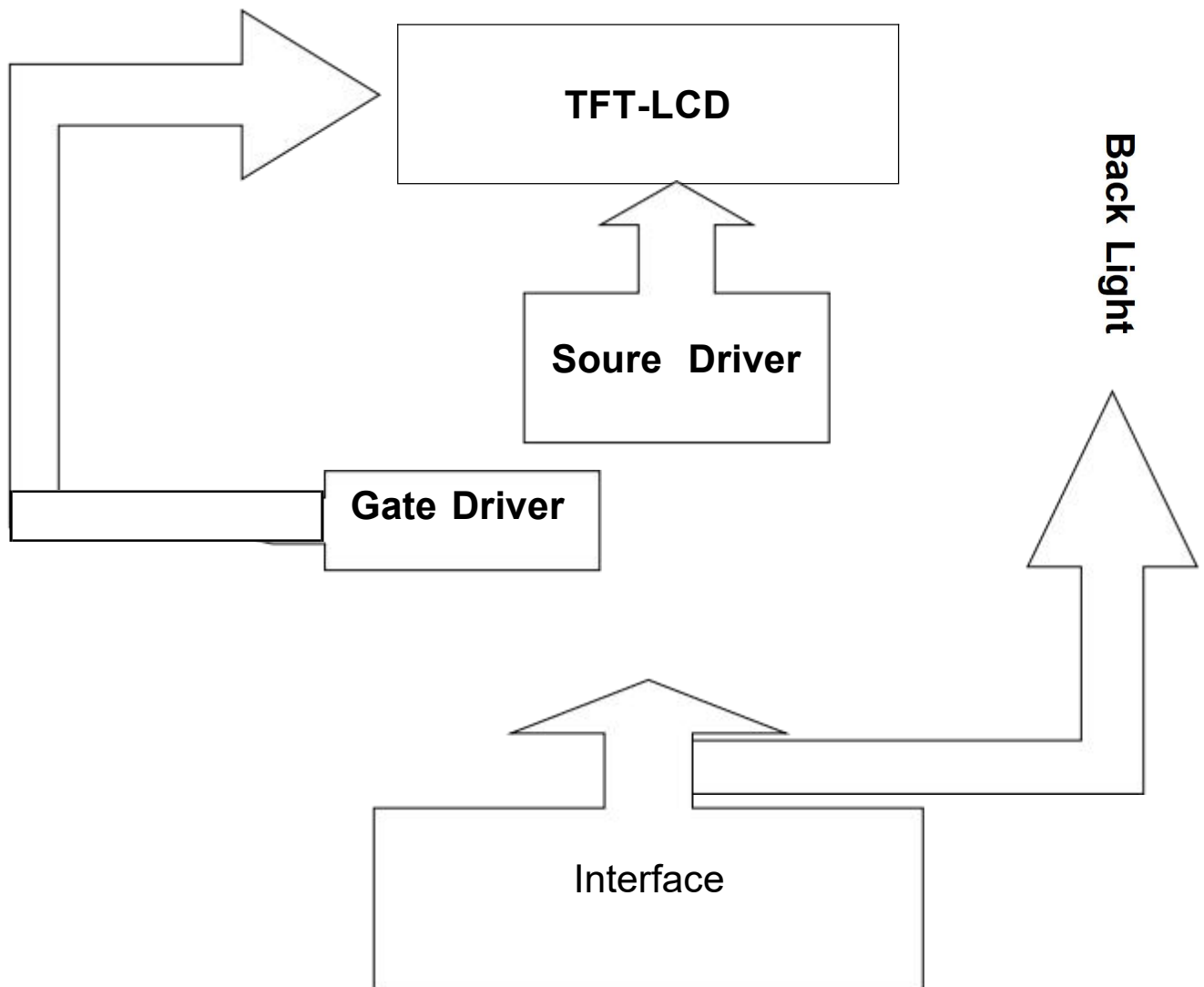
Item	Symbol	Min	Max	Unit	Remark
Supply voltage	VCC	-0.3	4.6	V	Note1 Note2
Operating temperature	TOPR	-20	70	°C	
Storage temperature	TSTR	-30	80	°C	

6. Electrical Characteristics

Item		Symbol	Rating			Unit	Remark
			Min	Typ	Max		
Supply voltage		VCC	2.8	3.3	3.6	V	Note1
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

PIN NO.	Symbol	I/O	Description
1	LEDA	P	Power for LED backlight anode
2	GND	P	Ground
3	RESET	I	This signal will reset the device and must be applied to properly initialize the chip.
4	RS	I	This pin is used to select "Data or Command" in 4-wire serial interface
5	SDA	I/O	Serial input signal in 4-wire quad serial data interface.
6	SCL	I	This pin is used serial interface clock in serial data interface.
7	VDD	P	power supply
8	CS	I	Chip select input pin("Low" enable).

7-3 Timing Characteristics

Display Serial Interface Timing Characteristics (4-line SPI system)

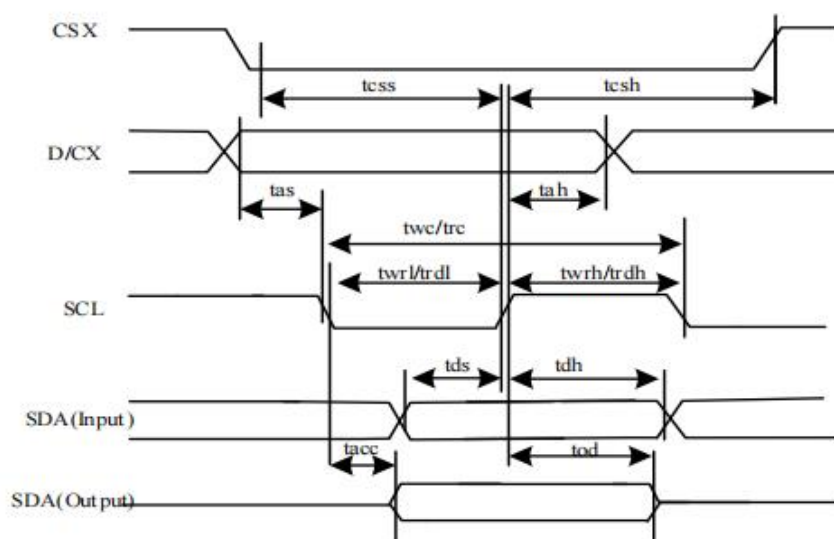


Figure 8-3-2 4-line serial Interface Timing Characteristics

Signal	Symbol	Parameter	min	max	Unit
CSX	t_{css}	Chip select time (Write)	15	-	ns
	t_{csh}	Chip select hold time (Read)	15	-	ns
SCL	t_{wc}	Serial Clock Cycle (Write)	10	-	ns
	t_{wrh}	SCL "H" Pulse Width (Write)	5	-	ns
	t_{wrl}	SCL "L" Pulse Width (Write)	5	-	ns
	t_{rc}	Serial Clock Cycle (Read)	150	-	ns
	t_{rdh}	SCL "H" Pulse Width (Read)	60	-	ns
	t_{rdl}	SCL "L" Pulse Width (Read)	60	-	ns
D/CX	t_{as}	D/CX setup time	5	-	ns
	t_{ah}	D/CX hold time (Write/Read)	5	-	ns
SDA (Input)	t_{ds}	Data setup time (Write)	10	-	ns
	t_{dh}	Data hold time (Write)	10	-	ns
SDA (Output)	t_{acc}	Access time (Read)	10	50	ns

Note: $T_a = 25^\circ\text{C}$, $IOVCC = 3.3V$, $VCI = 3.3V$, $GND = IGND = 0V$

Table 8-3-2 4-line serial Interface Characteristics

8. Electro-Optical Characteristics

Item		Symbol	Condition	Min.	Typ.	Max.	Unit	Remark
Response time		Tr +Tf	$\theta_x = \theta_y = 0$	---	35	40	ms	Note 1
Contrast Ratio		CR		800	1000	---	---	Note 2
Transmittance		T%		--	3.5	---	%	
Color Chromaticity (CIE1931)	White	W x	$\theta_x = \theta_y = 0$	---	0.303	---	---	
		W y		---	0.337	---	---	
Viewing angle	θ_T		CR > 10	80	---	---	Deg.	Note 3
	θ_B			80	---	---		
	θ_L			80	---	---		
	θ_R			80	---	---		

Note1. Measuring Condition

- (1) Measuring surrounding: dark room
- (2) Ambient temperature: Ta=25℃
- (3) 15min. warm-up time

Note2. Response time is the time required for the display to transition from Black to White (Rise Time, Tr) and from White to Black (Decay Time, Tf). The measurement instrument is DMS-803. For more information, please refer to FIG 1 and FIG 2.

Note3. Contrast Ratio (CR) is defined mathematically as below. Measured at the center point of panel by DMS-803, please refer to FIG 1

$$\text{Contrast Ratio} = \frac{\text{Surface Luminance with all white pixels}}{\text{Surface Luminance with all black pixels}}$$

Note4. Viewing angle is the angle at which the contrast ratio is greater than 10(CR≥10:1). The measurement instrument is DMS-803. For more information, please refer to FIG 1 and FIG 3.

Note5. CIE (x, y) chromaticity for CF only, measured with Olympus MHL-450 under C light.

FIG. 1 DMS-803 Measurement Set-Up

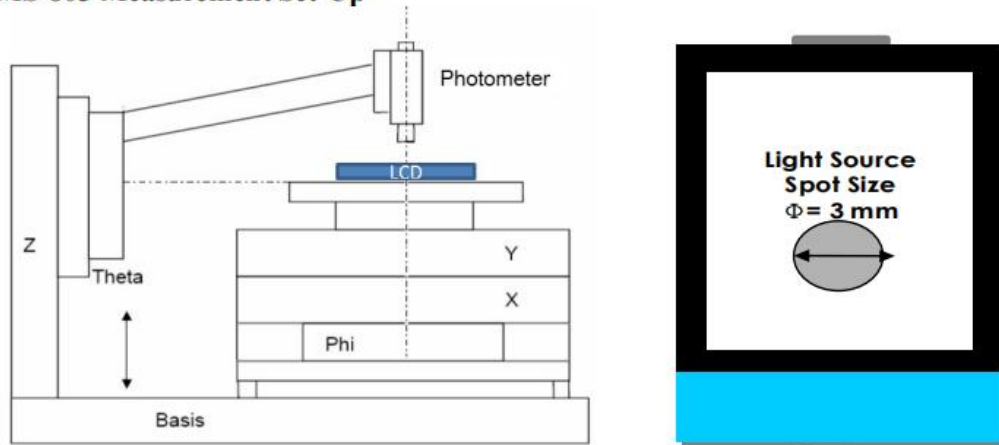


FIG. 2 The definition of Response Time

The response time is defined as the following figure and shall be measured by switching the input signal for “black” and “white”. This definition is valid for a normally black display. For a normally white display the opposite definition applies.

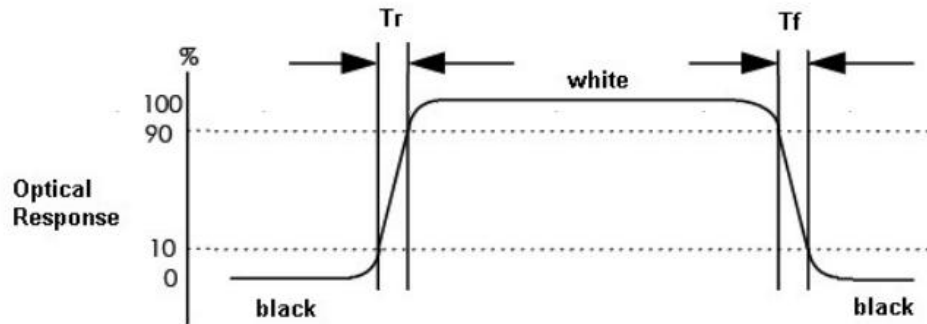
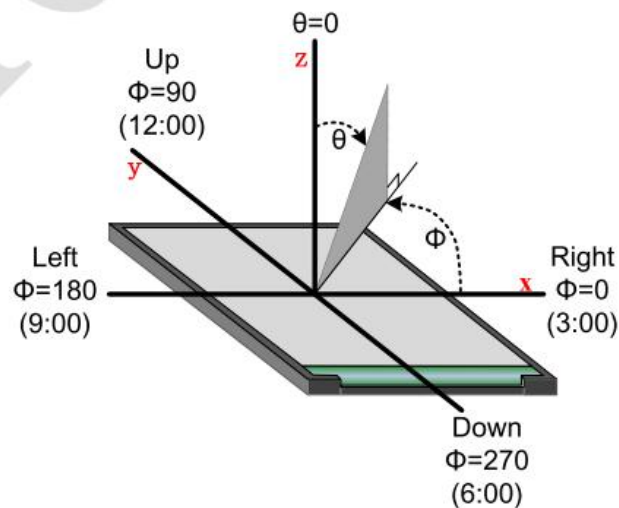
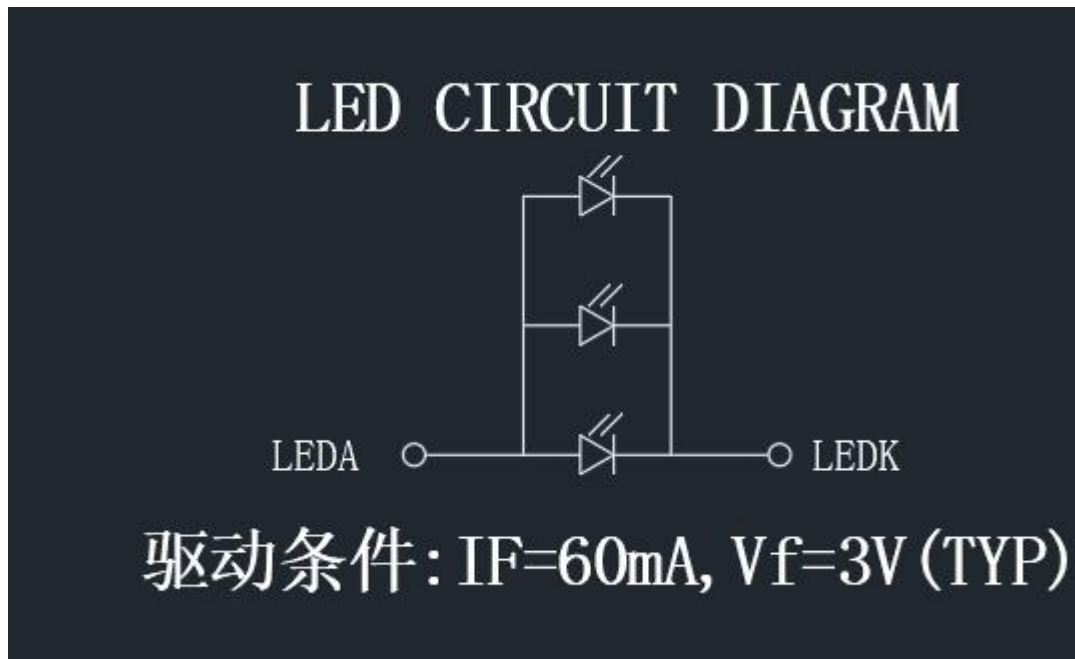


FIG. 3 The definition of viewing angle



Backlight circuit



9.Records Of Version

Version	Revise Date	Page	Content
00	2026-7-8	ALL	New released