

PRODUCT SPECIFICATION **FOR LCD MODULE**

Revision: 1.0

Model No: LS0269I02-L-V1

Module Type: COG+FPC

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	12
9. Records Of Version	13

1. General Description

LS0269I02-L-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 2.69 inch and the resolution is 1280(RGB)*720, the panel can display up to 16.7M colors.

2. Physical Features

Display Mode	TFT-LCD Module
	Active matrix TFT, Transmissive type
Display Format	Graphic 1280(RGB)×720 Dot-matrix
Input Data	LVDS
Viewing Direction (Grayscale Inversion)	Free (IPS)
Drive	SC5014CBN

3. Mechanical Specification

Item	Specification	Unit
Module size (H×V×D)	63×39.06×1.3	mm
Number of dots	1280(RGB)×720	pixel
Active area (H×V)	59.52×33.48	mm

5. Absolute Maximum Ratings

Parameter	Symbol	Conditions	Unit
I/O Power Supply Voltage	VDDI	-0.3 ~ 6.0	V
Interface Power supply voltage	VDDR _X	-0.3 ~ 6.0	V
Analog Power supply voltage	VDDP	-0.3 ~ 6.0	V
Analog Power supply voltage	VDD_PFM	-0.3 ~ 6.0	V
MTP Power supply voltage	VDD_MTP	-0.3 ~ 12.0	V
LCD Power supply voltage	VGMPHI, VGMPMI, VGMPLI	7.5	V
	VGMNHI, VGMNMI, VGMNLI, VCOM	-7.5	V
	VGH – VGL	32	V
SPI and I2C Interface Input Voltage	VIN	-0.3 ~ VDDI +0.3	V

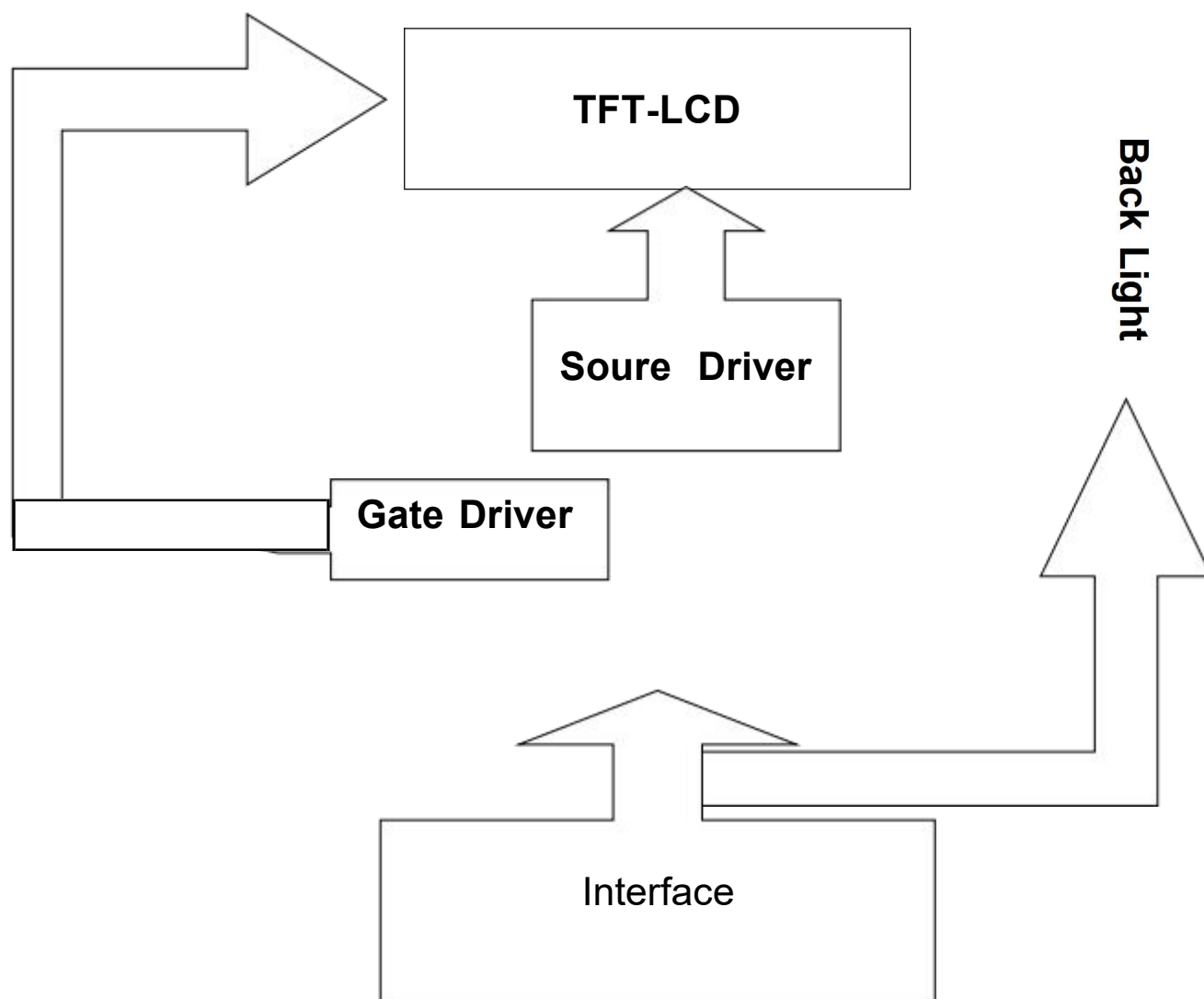
Item	Storage		Operating		Note
	MIN.	MAX.	MIN.	MAX.	
Ambient Temperature	-30℃	80℃	-20℃	80℃	1,2,4
Humidity	-	-	-	-	3

6. Electrical Characteristics

Parameter		Symbol	Condition	Min	Typ	Max	Unit	Note
Power supply		VCC	Ta=25℃	3.0	3.3	3.6	V	
I/O Power supply		RESET	Ta=25℃	2.85	3.3	3.6	V	
		STBYB	Ta=25℃	2.85	3.3	3.6	V	
Input voltage	'H'	VIH	VCC=3.3V	0.8VCC	-	VCC	V	
	'L'	VIL	VCC=3.3V	0	-	0.2VCC	V	
Current Consumption		ICC1	Normal	-	-	-	mA	2

7. Module Function Description

7-1. Block Diagram Of LCM



PIN No.	PIN Name	PIN Description	PIN No.	PIN Name	PIN Description
1	GND	Ground	--	--	--
2	NC	No connect	--	--	--
3	NC	No connect	--	--	--
4	NC	No connect	--	--	--
5	NC	No connect	--	--	--
6	VCC	External Supply Power (+3.3V)	--	--	--
7	NC	No connect	--	--	--
8	NC	No connect	--	--	--
9	STBYB	Standby mode	--	--	--
10	SDA	Serial data input for SPI interface	--	--	--
11	SCL	Clock signal for SPI interface	--	--	--
12	CS	Chip select signal for SPI interface	--	--	--
13	GND	Ground	--	--	--
14	D3N	-LVDS differential data3	--	--	--
15	D3P	+LVDS differential data3	--	--	--
16	GND	Ground	--	--	--
17	CLKN	-LVDS differential lock	--	--	--
18	CLKP	+LVDS differential lock	--	--	--
19	GND	Ground	--	--	--
20	D2N	-LVDS differential data2	--	--	--
21	D2P	+LVDS differential data2	--	--	--
22	GND	Ground	--	--	--
23	D1N	-LVDS differential data1	--	--	--
24	D1P	+LVDS differential data1	--	--	--
25	GND	Ground	--	--	--
26	D0N	-LVDS differential data0	--	--	--
27	D0P	+LVDS differential data0	--	--	--
28	GND	Ground	--	--	--
29	UPDN	Scan Up Down	--	--	--
30	DIR	Scan Left Right	--	--	--

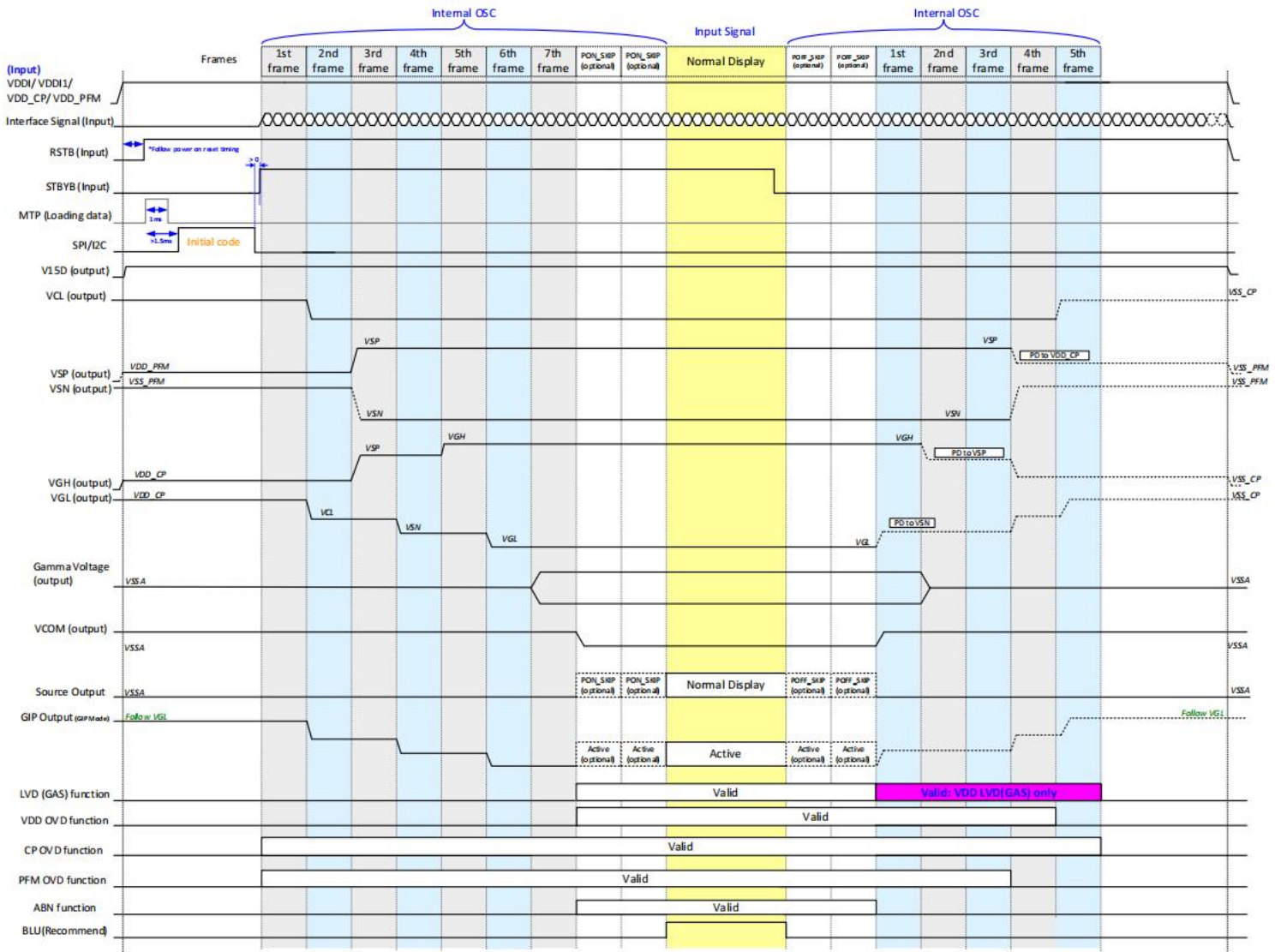
Note 1:UPDN:‘H’: Scan Up to Down (Default) ‘L’: Scan Down to Up

Note 2:DIR:‘H’: Scan Left to Right (Default) ‘L’: Scan Right to Left

7-3 Timing Characteristics

7.1.3 One Power Mode (2)

EXT_PWR	r_int_pfm	VDDI, VDDI1 VDD_CP, VDD_PFM	VSP	VSN	VGH	VGL
L	H	Input	1L-PFM		PUMP	PUMP



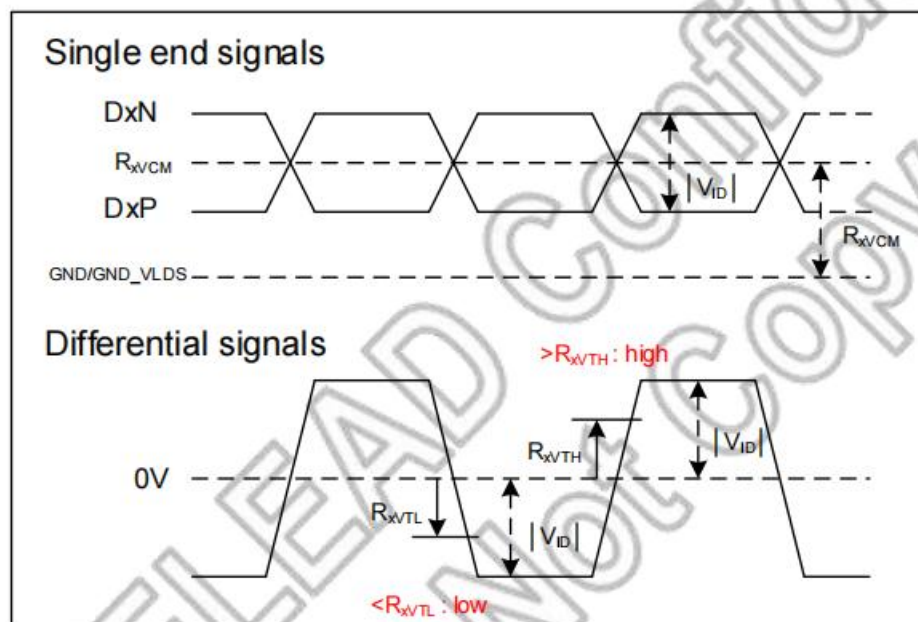
Recommend input power slew rate (10% to 90%)	Min.	Typ.	Max.
VDDI	1 ms	--	3 ms

8.3.2 LVDS DC Characteristics

(V15D=1.5V, VDDI=VDDI1=VDD_PFM=VDD_CP =3.0 to 3.6V, VSP=5.3 to 6.8V, VSN=-5.3 to -6.8V, VSSI=VSS_CP=VSS_PFM

=VSSA=VSSA1=0V)

Parameter	Symbol	Min	Typ.	Max.	Unit	Conditions
Differential input high threshold voltage	R_{xVTH}			0.1	V	$R_{xVCM} = 1.2V$
Differential input low threshold voltage	R_{xVTL}	-0.1			V	
Input voltage range (singled-end)	R_{xVIN}	0		VDD-1.2	V	
Differential input common mode voltage	R_{xVCM}	0.8	1.2	1.4	V	
Differential input voltage	$ V_{ID} $	$>R_{xVT}$	0.4	0.6	V	Note. $R_{xVT}= R_{xVTH} $ or $ R_{xVTL} $
Differential input leakage current	$R_{V_{xIIZ}}$	-10	-	10	uA	
LVDS Digital Operating Current	I_{VDD_LVDS}	-	TBD	-	mA	TBD
LVDS Digital Stand-by Current	I_{STBD_LVDS}	-	-	TBD	uA	STBYB=0, Clock & all functions are stopped.



8.3.3 TTL DC Characteristics

(V15D=1.5V, VDDI=VDDI1=VDD_PFM=VDD_CP =3.0 to 3.6V, VSP=5.3 to 6.8V, VSN=-5.3 to -6.8V, VSSI=VSS_CP=VSS_PFM

=VSSA=VSSA1=0V)

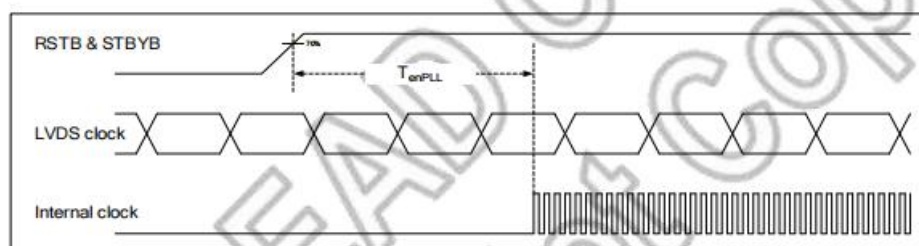
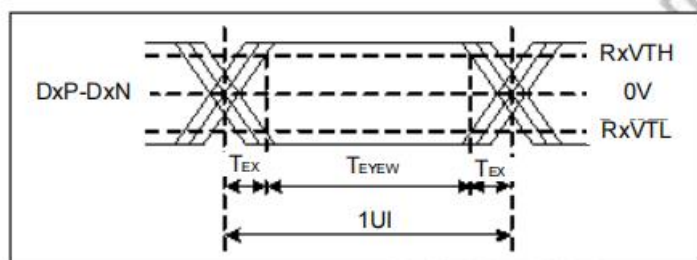
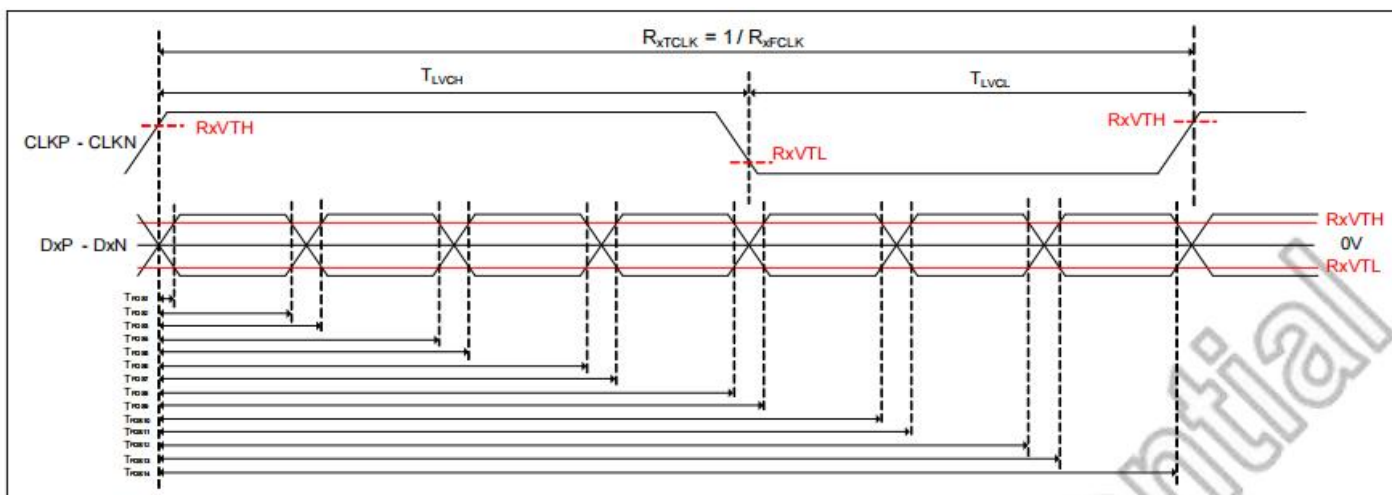
Parameter	Symbol	Min	Typ.	Max.	Unit	Conditions
High Level Input Voltage	V_{IH}	$0.7 \times VDDI$	-	VDDI	V	
Low Level Input Voltage	V_{IL}	VSSI	-	$0.3 \times VDDI$	V	
High Level Output Voltage	V_{OH}	VDDI-0.4	-	VDDI	V	
Low Level Output Voltage	V_{OL}	VSSI	-	VSSI+0.4	V	
Input Leakage Current	I_{LEAK}	-1.0	-	1.0	uA	Digital input pin
Pull-High/Low Impedance	$R_{IH/L}$	200K	350K	500K	ohm	

8.4.1 LVDS AC Characteristics

(V15D=1.5V, VDDI=VDDI1=VDD_PFM=VDD_CP =3.0 to 3.6V, VSP=5.3 to 6.8V, VSN=-5.3 to -6.8V, VSSI=VSS_CP=VSS_PFM

=VSSA=VSSA1=0V)

Parameter	Symbol	Min	Typ.	Max.	Unit	Conditions
Clock Frequency	R _{xFCLK}	5	-	65	MHz	Max. Frequency for single port LVDS
Clock Period	R _{xTCLK}	15	-	200	ns	
1 data bit time	UI	-	1/7	-	R _{xTCLK}	
Clock high time	T _{LVCH}	-	4	-	UI	
Clock low time	T _{LVCL}	-	3	-	UI	
Position 1	T _{POS1}	-0.25	0	0.25	UI	
Position 2	T _{POS2}	0.75	-	1.25	UI	
Position 3	T _{POS3}	0.75	1	1.25	UI	
Position 4	T _{POS4}	1.75	-	2.25	UI	
Position 5	T _{POS5}	1.75	2	2.25	UI	
Position 6	T _{POS6}	2.75	-	3.25	UI	
Position 7	T _{POS7}	2.75	3	3.25	UI	
Position 8	T _{POS8}	3.75	-	4.25	UI	
Position 9	T _{POS9}	3.75	4	4.25	UI	
Position 10	T _{POS10}	4.75	-	5.25	UI	
Position 11	T _{POS11}	4.75	5	5.25	UI	
Position 12	T _{POS12}	5.75	-	6.25	UI	
Position 13	T _{POS13}	5.75	6	6.25	UI	
Position 14	T _{POS14}	6.75	-	7.25	UI	
Input eye width	T _{EYEW}	0.5	-	-	UI	
Input eye border	T _{EX}	-	-	0.25	UI	
PLL wake-up time	Ten PLL			150	us	



8. Electro-Optical Characteristics

Item		Symbol	Condition	Min.	Typ.	Max.	Unit	Remark
Response time		Tr +Tf	$\theta_x = \theta_y = 0$	---	---	35	ms	Note 1
Transmittance		T%		--	7	---	%	
Color Chromaticity (CIE1931)	White	W x	$\theta_x = \theta_y = 0$	---	0.308	---	---	
		W y		---	0.331	---	---	
Viewing angle	θ_T		CR > 10	---	80	---	Deg.	Note 3
	θ_B			---	80	---		
	θ_L			---	80	---		
	θ_R			---	80	---		

Note :

1. Viewing angle is the angle at which the contrast ratio is greater than 10. The viewing angles are determined for the horizontal or 3, 9 o'clock direction and the vertical or 6, 12 o'clock direction with respect to the optical axis which is normal to the LCD surface (see FIGURE 1).
2. Contrast measurements shall be made at viewing angle of $\Theta = 0$ and at the center of the LCD surface. Luminance shall be measured with all pixels in the view field set first to white, then to the dark (black) state. (see FIGURE 1) Luminance Contrast Ratio (CR) is defined mathematically.

$$CR = \frac{\text{Luminance when displaying a white raster}}{\text{Luminance when displaying a black raster}}$$

3. Transmittance is the Value without APF Polarizer
4. The color chromaticity coordinates specified in Table 5 shall be calculated from the spectral data measured with all pixels first in red, green, blue and white. Measurements shall be made at the center of the panel.
5. The electro-optical response time measurements shall be made as FIGURE 3 by switching the "data" input signal ON and OFF. The times needed for the luminance to change from 10% to 90% is Tr., and 90% to 10% is Td.

9.Records Of Version

Version	Revise Date	Page	Content
00	2025.12.18	ALL	New released