PRODUCT SPECIFICATION FOR LCD MODULE

Revision: 1.0

Model No: LSR043T06-R-V1

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

APPROVED SIGNATURE

■ Approved Product Specification only

□ Approved Product Specification and Samples

Prepared By	Checked By	Approved By

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1. General Description

LSR043T06-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 16.7M colors.

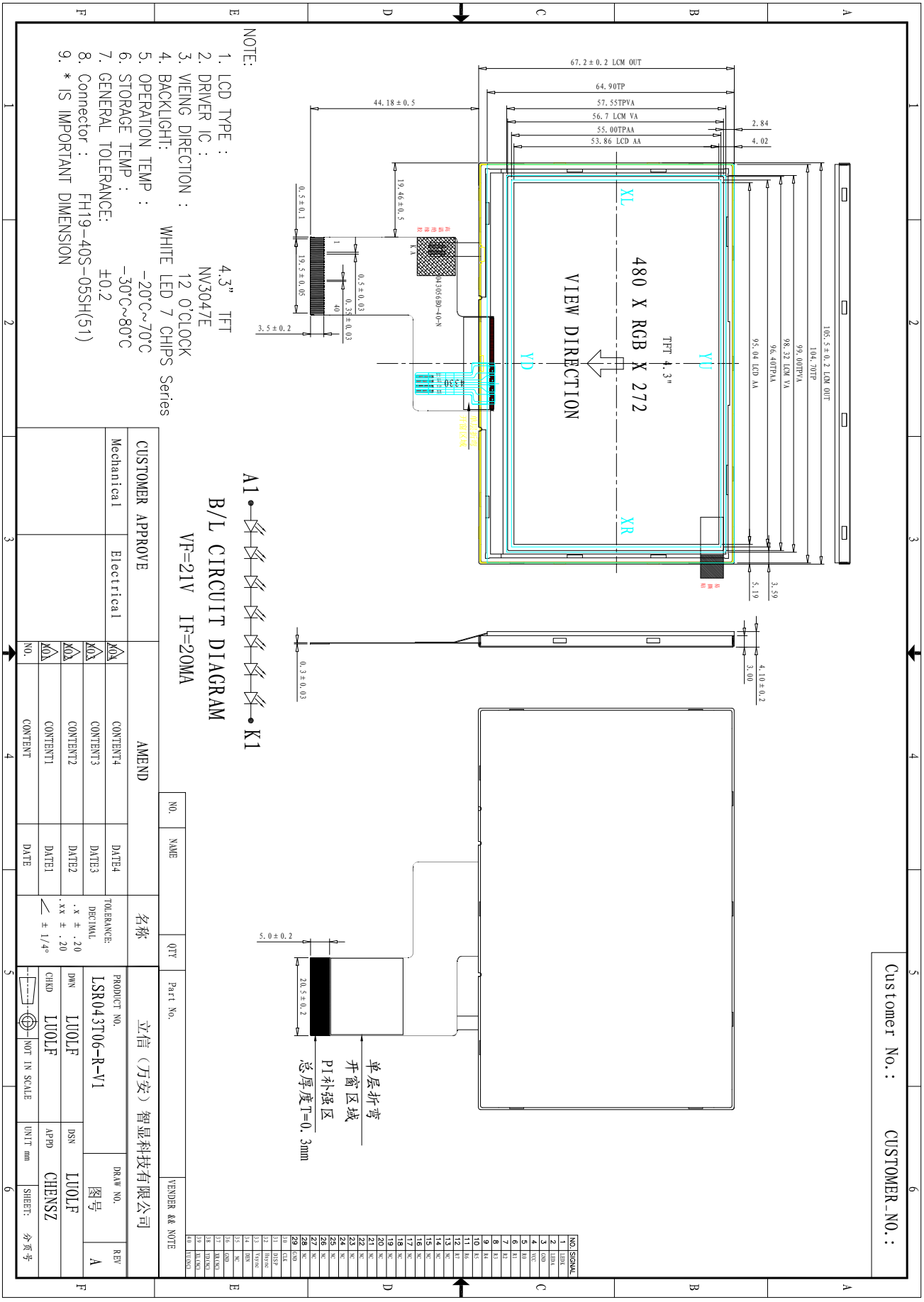
2. Physical Features

Display Mode	TFT-LCD Module
	Active matrix TFT, Transmissive type
Display Format	Graphic 480(RGB)×272 Dot-matrix
Input Data	8 bit RGB
Viewing Direction （Grayscale Inversion）	TN
Drive	NV3047E

3. Mechanical Specification

Parameter	Specification	Unit	Remarks
Active area	95.04(H) × 53.856(V)	mm	
CF size	100.16(H) × 58.556(V)	mm	
Number of pixels	480 (H) × 272(V)	pixels	
Pixel pitch	0.066(H) × 0.198(V)	mm	
Pixel arrangement	RGB Vertical stripe	-	
Display colors	16.7M	colors	
Color Gamut	50	%	
Display mode	Normally White	-	
Panel Size	100.16 (H) x 61.856(V)	mm	

4. Outline Dimension



5. Absolute Maximum Ratings

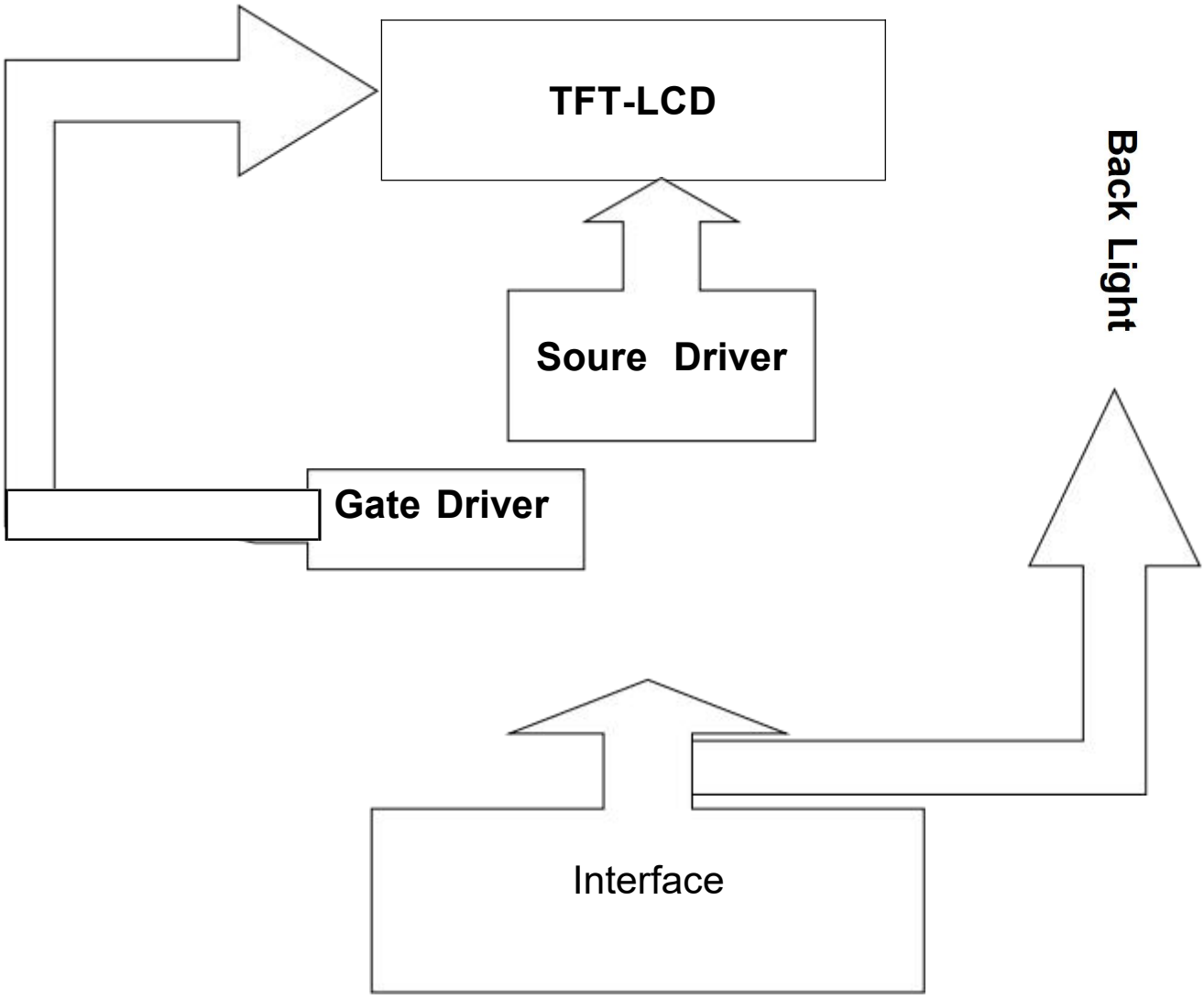
Item	Symbol	Min	Max	Unit	Remark
Supply voltage	VCC	-0.3	4.6	V	Note1 Note2
Supply voltage	IOVCC	-0.3	4.6	V	
Operating temperature	TOPR	-20	70	℃	
Storage temperature	TSTR	-30	80	℃	

6. Electrical Characteristics

Item		Symbol	Rating			Unit	Remark
			Min	Typ	Max		
Supply voltage		VCC	3	3.3	3.6	V	Note1
Supply voltage		IOVCC	1.65	---	VCC	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

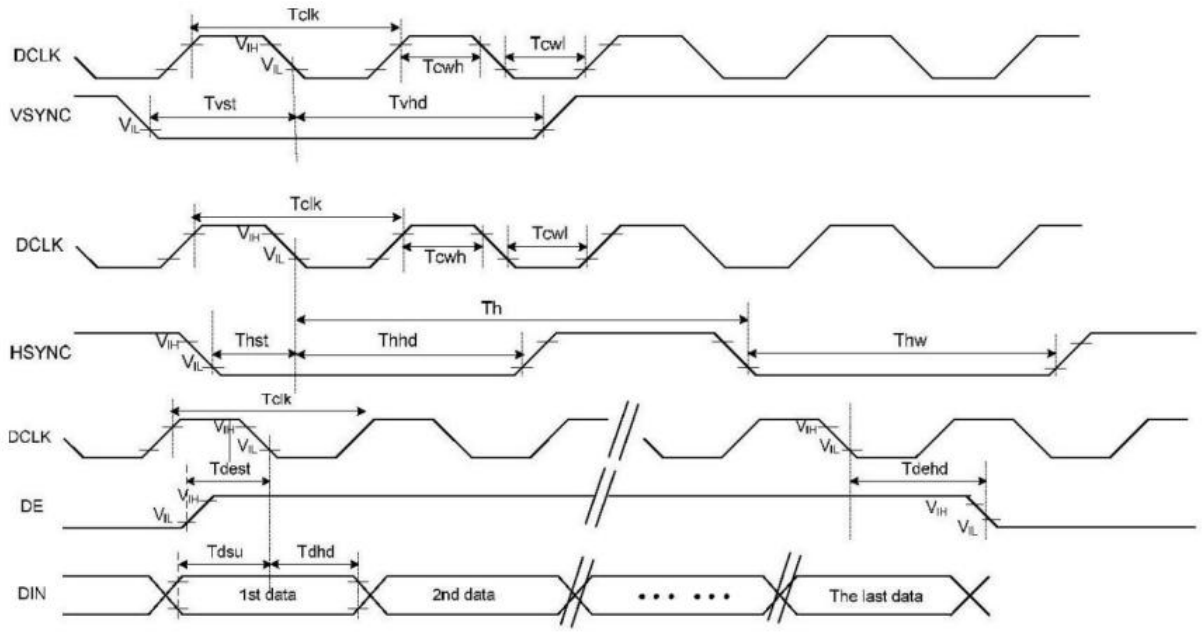


7-2. Pin Description

PIN NO.	Symbol	I/O	Description
1	LEDK	P	back light power supply negative
2	LEDA	P	back light power supply positive
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	NC		NC
14	NC		NC
15	NC		NC
16	NC		NC
17	NC		NC
18	NC		NC
19	NC		NC
20	NC		NC
21	NC		NC
22	NC		NC
23	NC		NC
24	NC		NC
25	NC		NC
26	NC		NC
27	NC		NC
28	NC		NC
29	GND	P	Ground
30	CLK	I	Colock signal
31	DISP	I	Display on/off
32	HS	I	Horizontal sync input in RGB mode(short to GND if not used)
33	VS	I	Vertical sync input in RGB mode(short to GND if not used)
34	DE	I	Data enable

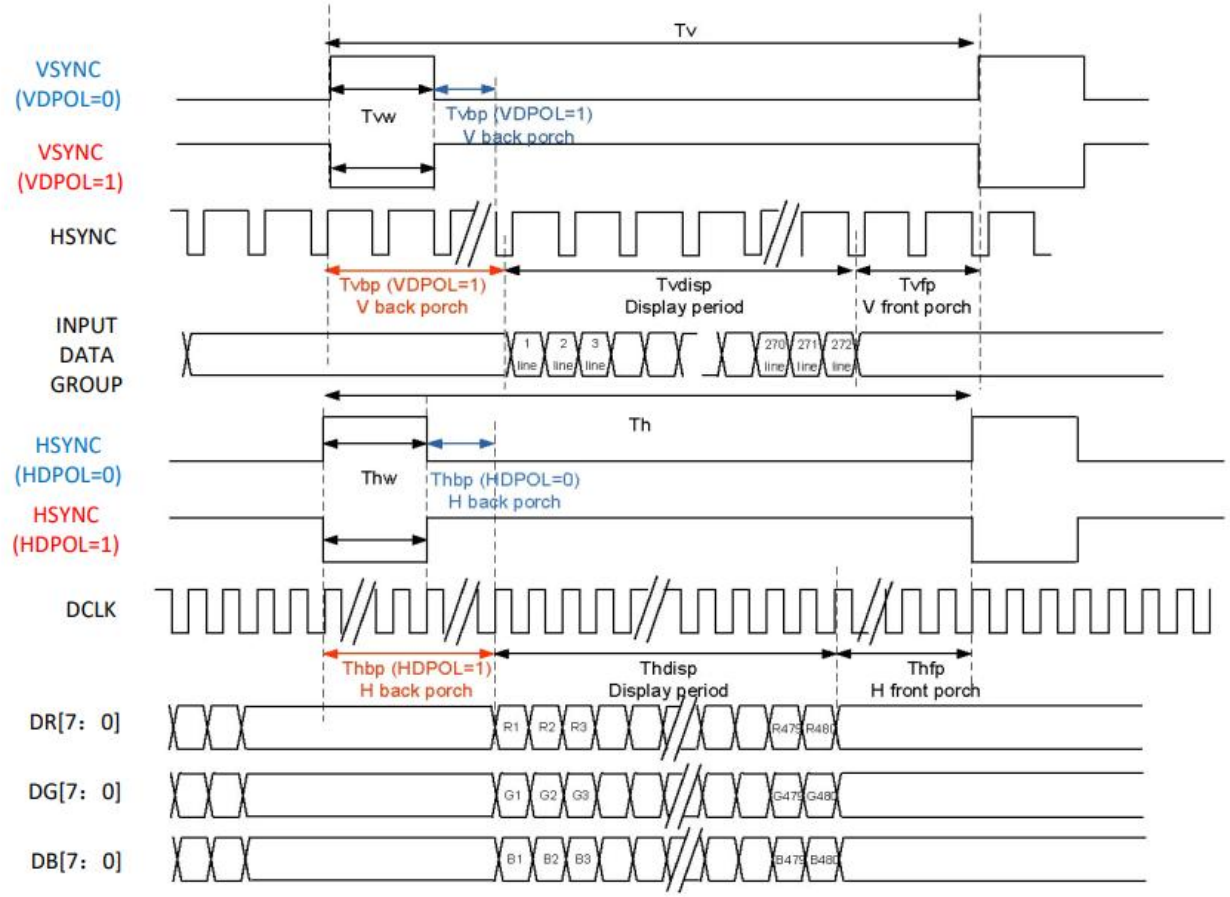
35	NC		No Connection
36	GND	P	Ground
37	XR	I	touch panel X-right
38	YD	I	touch panel Y-bottom
39	XL	I	touch panel X-left
40	YU	I	touch panel Y-upl

7-3 Timing Characteristic



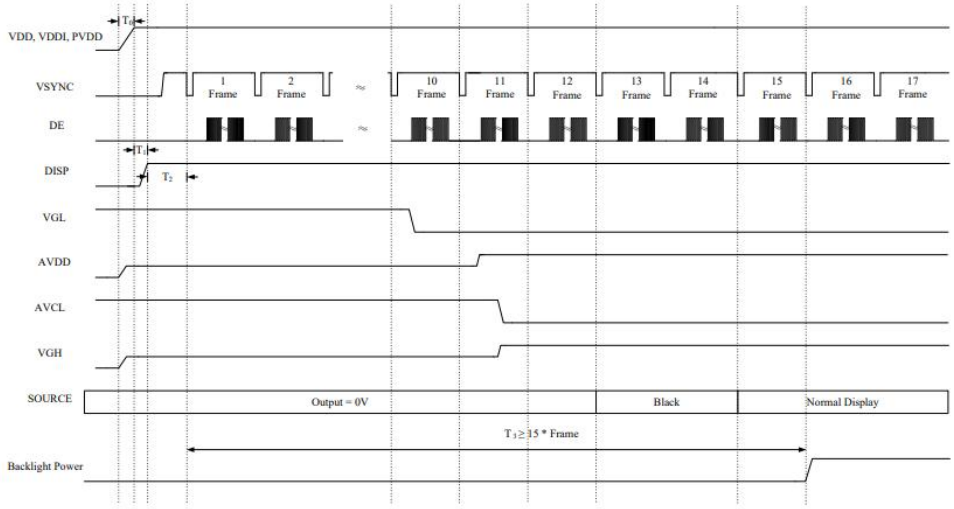
Item		Symbol	Min.	Typ.	Max.	Unit	Remark
DCLK Frequency		Fclk	24	27	30	MHz	
DCLK Period		Tclk	33	37	42	ns	
Frame Pate		FR			75	Hz	
Line period		Lp	24			us	
HSYNC	Period Time	Th		1491		DCLK	
	Display Period	Thdisp		1440		DCLK	
	Back Porch	Thbp		43		DCLK	By H_Blanking setting
	Front Porch	Thfp		8		DCLK	
	Pulse Width	Thw		4		DCLK	
VSYNC	Period Time	Tv		292		H	
	Display Period	Tvdisp		272		H	
	Back Porch	Tvbp		12		H	By V_Blanking setting
	Front Porch	Tvfp		8		H	
	Pulse Width	Tvw		4		H	

Note:
1. It is necessary to keep Tvbp =12, Tvfp = 8 , Tvw = 4 and Thbp = 43, Thfp = 8 Thw = 4 in sync mode.
2. The Max Value and Min Value of porch must satisfy the range of Frame Pate and Line Period
3. It is necessary to keep Thbp>10, Tvbp+Tvfp<128


Tv
VSYNC
(VDPOL=0)
Tvw
Tvbp (VDPOL=1)
V back porch
VSYNC
(VDPOL=1)
HSYNC
Tvbp (VDPOL=1)
V back porch
Tvdisp
Display period
Tvfp
V front porch
INPUT
DATA
GROUP
1 line
2 line
3 line
270 line
271 line
272 line
Th
HSYNC
(HDPOL=0)
Thw
Thbp (HDPOL=0)
H back porch
HSYNC
(HDPOL=1)
DCLK
Thbp (HDPOL=1)
H back porch
Thdisp
Display period
Thfp
H front porch
DR[7：0]
R1
R2
R3
R479
R480
DG[7：0]
G1
G2
G3
G479
G480
DB[7：0]
B1
B2
B3
B479
B480

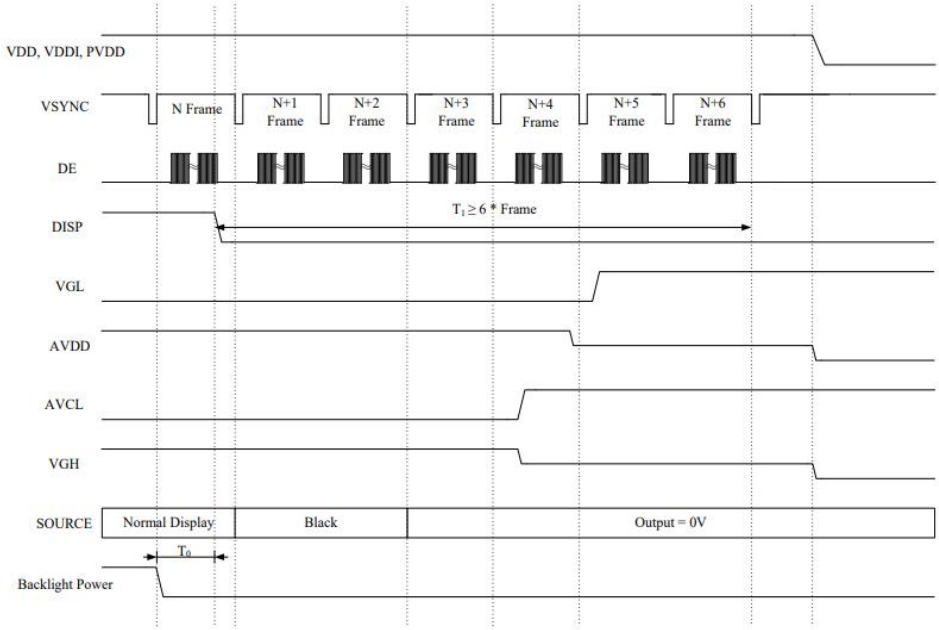
7-4 Power on/off sequence

7.4.1 Power On Sequence



Symbol	Description	Min. Time	Unit
T_0	Determined by the external power	0	ms
T_1	Time from stable VDD, VDDI, PVDD set-up to DISP	0	ms
T_2	Time from DISP="High" to the first VSYNC	0	ms
T_3	Display Signal output to Backlight Power on	15 * Frame	ms

7.4.2 Power Off Sequence



Symbol	Description	Min. Time	Unit
T_0	Backlight power off to DISP="Low"	5	ms
T_1	DISP="Low" to IC internal voltage discharge complete	6 * Frame	ms

8. Electro-Optical Characteristics

Item		Symbol	Condition	Min.	Typ.	Max.	Unit	Remark
Response time		Tr +Tf	θx = θy =0	---	20	30	ms	Note 1
Contrast Ratio		CR		500	700	---	---	Note 2
Transmittance		T%		---	6.85	---	%	
Color Chromaticity (CIE1931)	White	W x	θx = θy =0	---	0.301	---	---	
		W y		---	0.337	---	---	
Viewing angle	θ_T		CR > 10	---	80	---	Deg.	Note 3
	θ_B			---	80	---		
	θ_L			---	60	---		
	θ_R			---	70	---		
Luminance (I_F = 40mA)		L			TBD	---	cd/m2	Note4

Note :

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

Figure 4. The Definition of Vth & Vsat

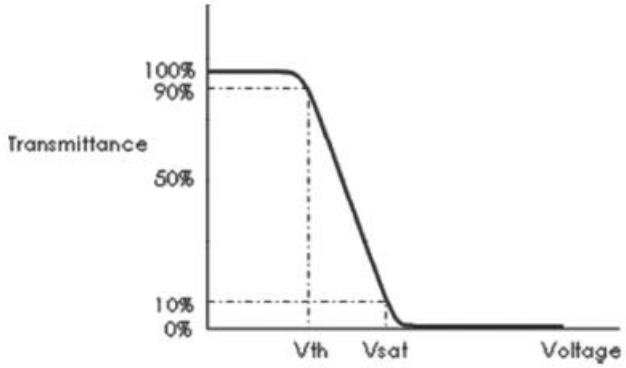


Figure 5. Measurement Set Up

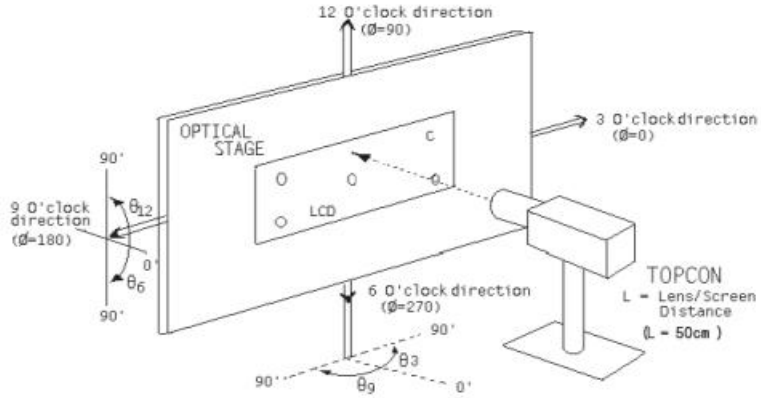
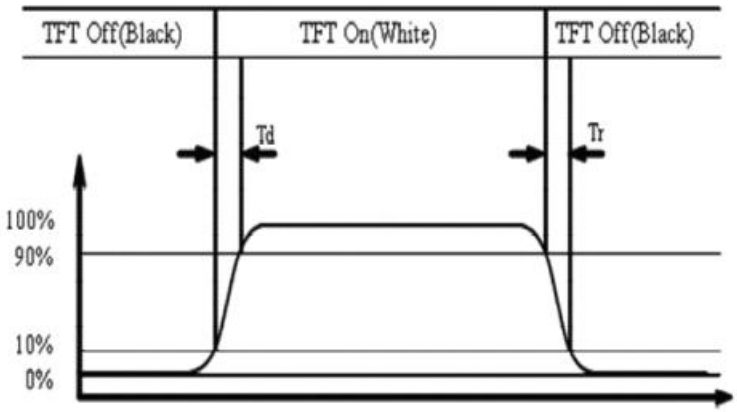
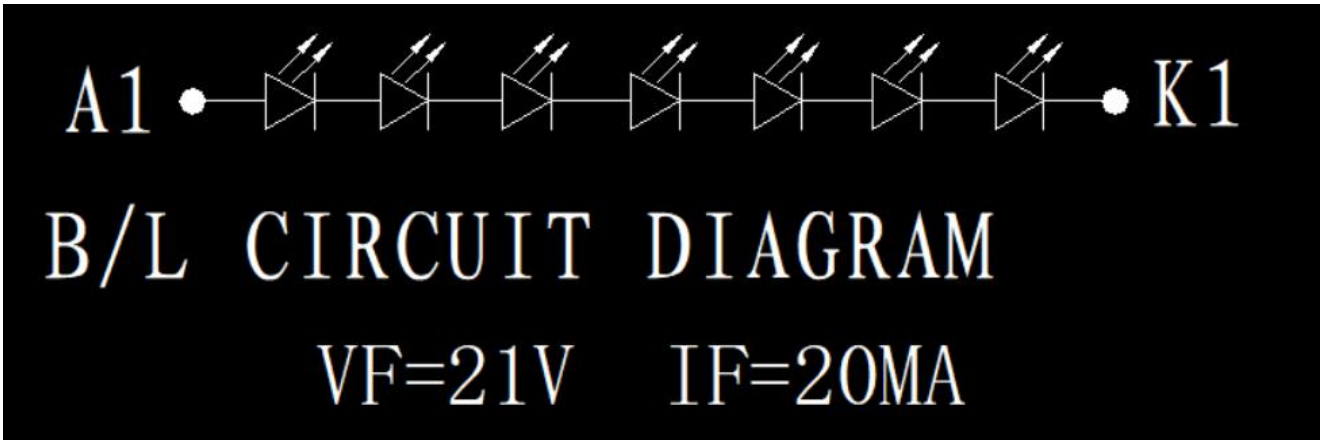


Figure 6. Response Time Testing



Note(4) Backlight circuit



9.Records Of Version

Version	Revise Date	Page	Content
1.0		ALL	New released