

LCD MODULE

SPECIFICATION

Model:	UE080WU-RN39-A005-C
Version:	V2.0
Date:	2018-07-02

☐ Preliminary Specification 样品规格书

☒ Final Specification 量产规格书

Customer Confirmation 客户确认

Approved by	Notes

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VIEWE Confirmation 优奕确认

Prepared by	Reviewed by	Approved by



REVISION HISTORY

[illegible]

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1. GENERAL INFORMATION

1.1 Features

- 1) Pixel Arrangement: RGB Vertical Stripe
- 2) Interface Mode: MIPI
- 3) Driver IC: NT51021*2
- 4) Operation Temperature: -20℃~70℃
- 5) Storage Temperature: -30℃~80℃
- 6) Backlight Type: White LED
- 7) Display mode: Normally Black
- 8) Pixel Density: 283 PPI
- 9) LED life time: 30,000 Hours

1.2 Mechanical Specification

Item 项目	Specification 规格	Unit 单位	Remark 备注
Pixel Driving element	A-si TFT	-	-
Screen Size	8.0	Inch	Diagonal
Resolution	1200(W)*3(RGB)*1920(H)	Dots	39PIN
Interface	MIPI	-	4lane
Module Power Consumption	2.412	Watt	Typ.
Active Area	108.24(W)*172.82(H)	mm	-
Pixel pitch (W*H)	0.299(W)*0.897(H)	mm	-
Module Size (W*H*D)	204.93(W)*128.84(H)*3.815(D)	mm	
Luminance	450	cd/m ²	Typ.
Viewing Direction	All	O'clock	-
Display Color	16.7M	Colors	24bits

2. ABSOLUTE MAXIMUM RATINGS

Item 项目	Symbol 符号	Min. 最小值	Max. 最大值	Unit 单位	Remark 备注
Power supply1 voltage	VDD	-0.3	5.5	V	Note1
Power supply2 voltage	IOVCC	-0.3	3.6	V	-
LED forward current	I _F	-0.001	30	mA	For each led,Note1
LED Reverse Voltage	V _R	-	5	V	For each led,Note1
Operating temperature	T _{op}	-20	70	°C	Note1,2
Storage temperature	T _{st}	-30	80	°C	Note1,2
Humidity	H _{st}	10	80	%RH	Note1,3

(Ta=+25°C,GND=0V)

Note1: If the module exceeds the absolute maximum ratings, it may be damaged permanently. Also if the module operates with the absolute maximum ratings for a long time, the reliability may drop.

Note2: In case of temperature below 0°C, the response time of liquid crystal (LC) becomes slower and the color of panel darker than normal one.

Note3: Temp. ≤ 50°C , 80% RH MAX.

Temp. > 50°C , Absolute humidity shall be less than 80% RH .

3. MECHANICAL DRAWING

基本规格:

DISPLAY TYPE:	8.0 IPS TFT
NORMALLY WHITE	
TRANSMISSIVE	
RESOLUTION:	1280 (RGB) *1920
Driver IC:	S-NT31021 *2
Viewing Angle(θ/H/L/R):	80/80/80/80 Typ
LCM TP BRIGNESS:	400cd/mh, 450 cd/m2 Typ
Contrastivity(≡ TP):	
Contrast:	700 Typ
NTSC:	
Uniformity	73% MIN
Gamma	
Tc:	
CROSS STAKE:	27pcs, 9横, 3纵, 70um (23.3um/L/ED)
Br. (CL) Light:	S-NT31021 *2
Interface:	-20° C ~ 70° C
OPERATING TEMP:	-20° C ~ 80° C
STORAGE TEMP:	-30° C ~ 80° C
电压:	
平面度:	0.35MM MAX
寄存器地址:	

品 规 格

1. VIEWING DIRECTION: HTS

2. 本产品符合RoHS要求

3. GENERAL TOLERANCE: ±0.2 (") *reference dimension

*为重点尺寸

4. 客户终端使用连接板型号: FPN26-39S-0.35MM

5. 产品兼容SLED驱动, 可以硬件无供电

6. 建议配合的TP开孔尺寸比COA左右宽度尺寸单边加2.5.

7. ISD(螺机): 接触+/4Kv, 空气+/-8Kv

背光电路图 (CIRCUIT DIAGRAM)

BACKLIGHT CIRCUIT DIAGRAM 23.3um/L/ED (27LEB)

LED VF: 28.8V(TYP)

背光电路图

NOTE:

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4. I/O CONNECTION & BLOCK DIAGRAM

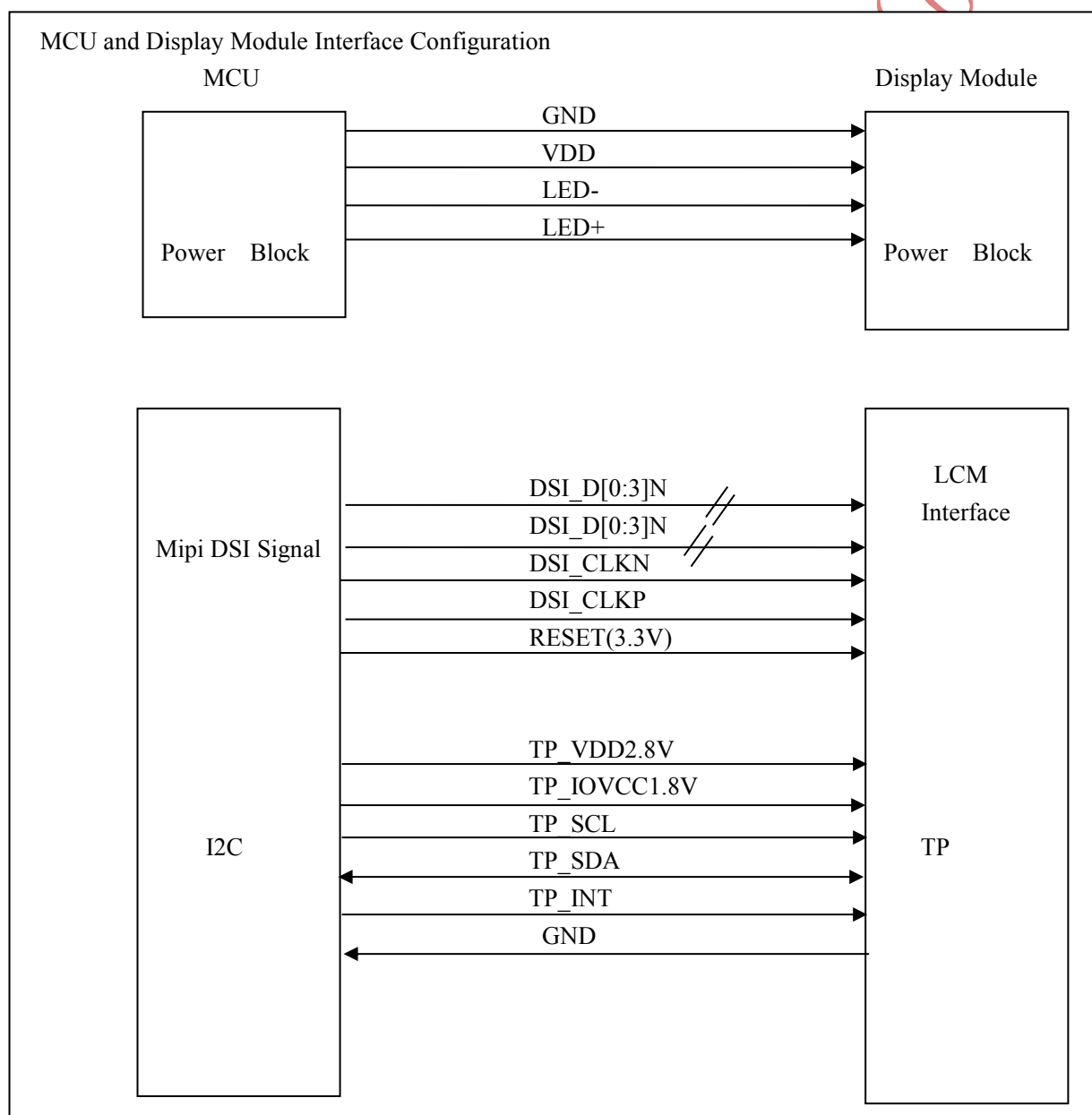
4.1 I/O Connection

Pin No. 序号	Symbol 符号	I/O	Description 描述
1-3	VDD	P	power supply for digital circuits
4-6	GND	P	Power Ground
7-8	NC	-	Dummy
9	LCD_ID	P	ID
10	GND	P	Power Ground
11	NC	-	Dummy
12-13	GND	P	Power Ground
14	DSI_D3N	I	MIPI Negative data signal
15	DSI_D3P	I	MIPI Positive data signal
16	GND	P	Power Ground
17	DSI_D0N	I/O	MIPI Negative data signal
18	DSI_D0P	I/O	MIPI Positive data signal
19	GND	P	Power Ground
20	DSI_CLKN	I	MIPI Negative data signal
21	DSI_CLKP	I	MIPI Positive data signal
22	GND	P	Power Ground
23	DSI_D1N	I	MIPI Negative data signal
24	DSI_D1P	I	MIPI Positive data signal
25	GND	P	Power Ground
26	DSI_D2N	I	MIPI Negative data signal
27	DSI_D2P	I	MIPI Positive data signal
28-31	GND	P	Power Ground
32-35	LED-	P	Power supply for cathode
36	RESET(3.3V)	I	Chip reset signal, active is low
37-39	LED+	P	Power supply for anode

I: Input; O: Output; P: Power

TP PIN	Symbol	I/O	Description
1	GND	P	Ground.
2	TP-VDD2.8V	P	TP_VDD(2.8V) Power Supply for TP
3	TP_IOVCC1.8V	P	TP_IOVCC(1.8V) Power Supply for TP
4	SDA	I/O	I2C data signals for TP
5	SCL	I	I2C clock signals for TP
6	RESET	I	The signal will reset the TP, Signal is active low
7	INT	O	Interrupt signals for TP
8	GND	P	Ground.

4.2 Block Diagram



5. ELECTRICAL CHARACTERISTICS

5.1 TFT-LCD Panel Driving Section

Item 项目	Symbol 符号	Min. 最小值	Typ. 典型值	Max. 最大值	Unit 单位	Remark 备注
Power Supply1 Voltage	VDD	3.0	3.3	3.6	V	-
Power Supply2 Voltage	IOVCC	1.6	1.8	3.3	V	-
Power Supply Current	I _{VDD}	-	120	-	mA	Note1
Logic Input High Voltage	V _{IH}	0.7VDD	-	VDD	V	-
Logic Input Low Voltage	V _{IL}	0	-	0.3VDD	V	-
Panel Power Consumption	P _{VDD}	-	0.396	-	Watt	Note1
Module Power Consumption	P _{LCM}	-	2.412	-	Watt	Note1,2

(Ta=+25°C,GND=0V)

Note1:Measurement Conditions (Video Mode): Full Screen Red Pattern,VDD=3.3V,60Hz Refresh.

Note2: P_{LCM}= P_{VDD}+ P_{B/L}, About P_{B/L} information, inference to 5.2 Back Light Driving Section.

5.2 Back Light Driving Section

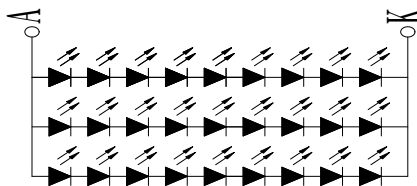
Item 项目	Symbol 符号	Min. 最小值	Typ. 典型值	Max. 最大值	Unit 单位	Remark 备注
Forward Voltage	V _F	-	28.8	-	V	Note1
Forward Current	I _F	-	70	-	mA	Note1
Backlight Power consumption	P _{B/L}	-	2.016	-	Watt	Note1
LED life time	-	30000	-	-	Hours	Note2
LED Quantity		27			PCS	

(Ta=+25°C,GND=0V)

Note1: The LED driving condition is defined for each LED module (9 LED Serial, 3 LED Parallel)。

For each LED : I_F=23.3mA,V_F=3.2V(Typ.),Ta=25°C。

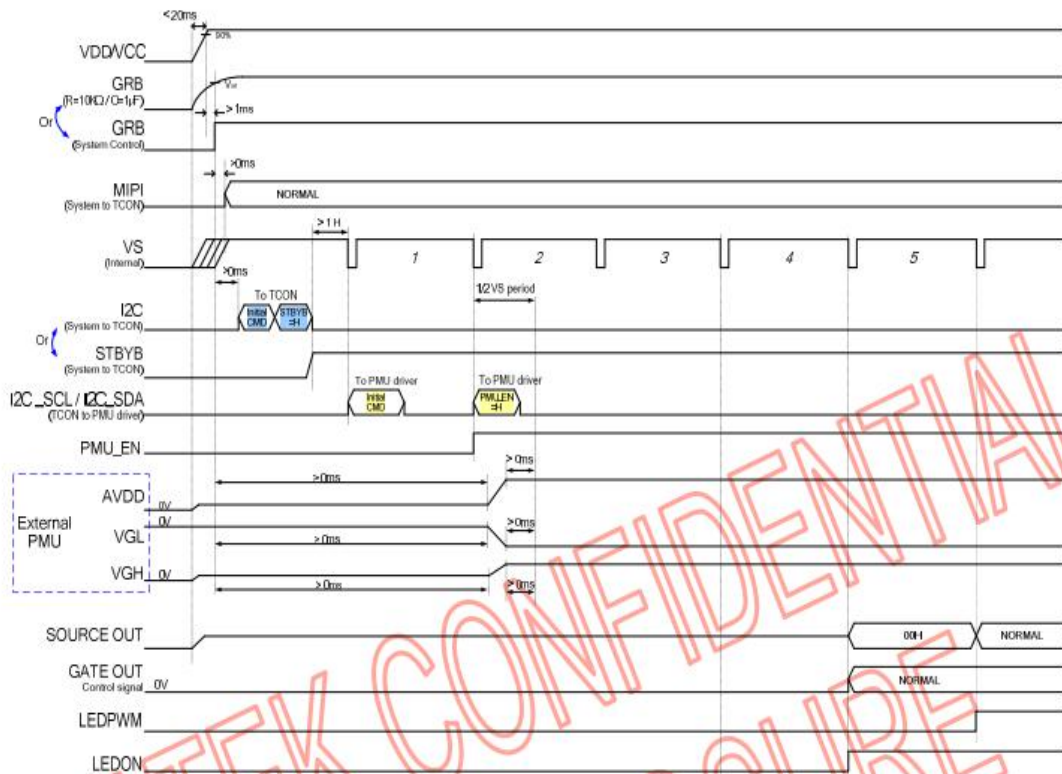
Note2:The “LED life time” is defined as the module brightness decrease to 50% of original brightness at I_{LED}=20mA(Per Led). The LED life time could be decreased if operating I_{LED} is larger than 20mA.



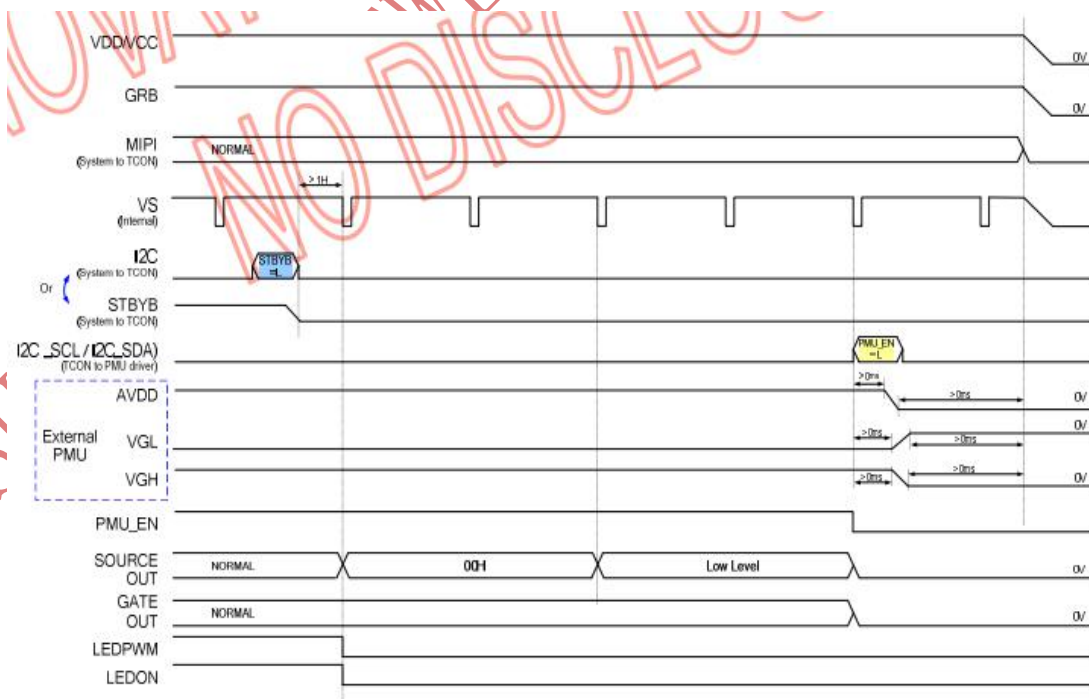
BACKLIGHT CIRCUIT DIAGRAM 23.3mA/LED (27LED)
LED V_f: 28.8V (TYP)

5.3 Power On/Off Sequence

5.3.1 Power On Sequence

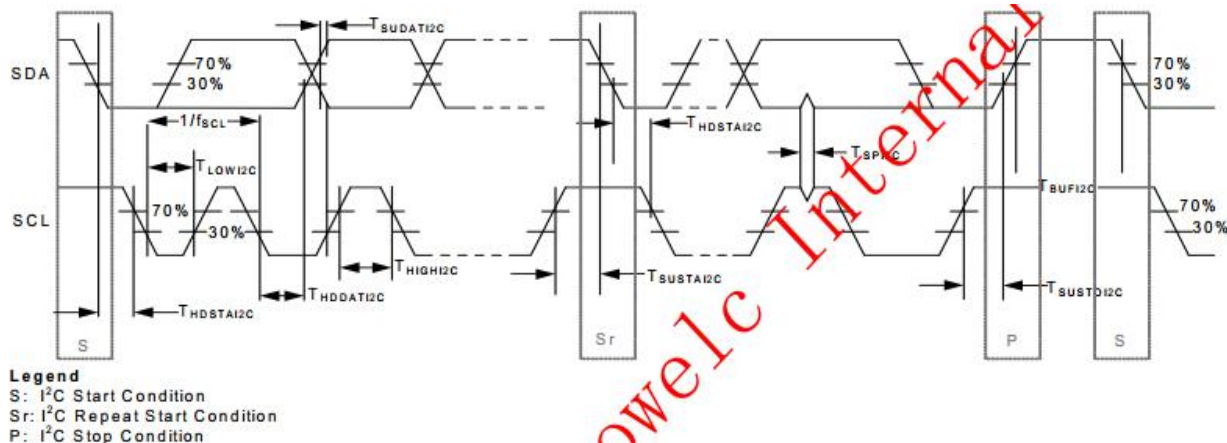


5.3.2 Power Off Sequence



5.4 Timing Characteristics

5.4.0 I2C interface timings



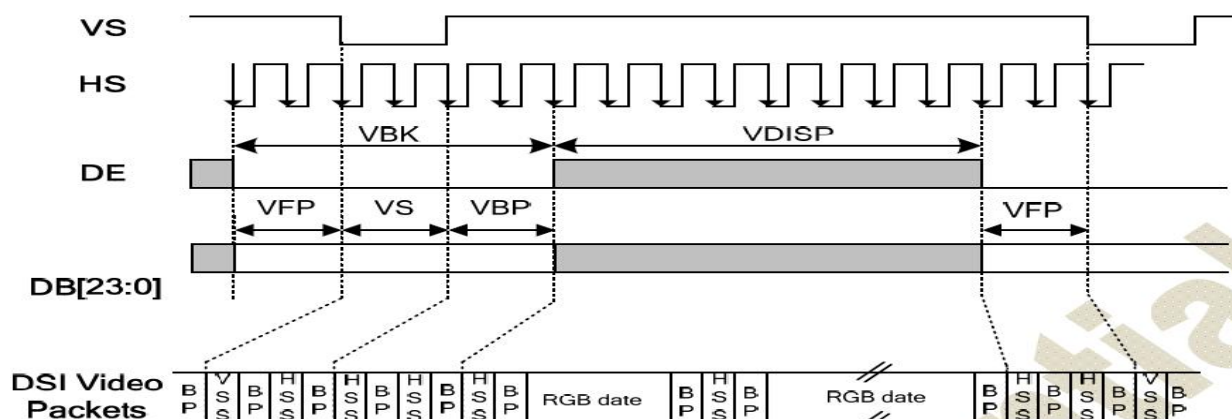
Symbol	Description	Standard Mode		Fast Mode		Fast Mode Plus		High-Speed Mode		Units
		Min	Max	Min	Max	Min	Max	Min	Max	
f_{SCL2C}	SCL clock frequency	0	100	0	400	0	1000	0	3400	kHz
$T_{HDSTA2C}$	Hold time (repeated) start condition. After this period, the first clock pulse is generated.	4	—	0.6	—	0.26	—	0.16	—	μs
T_{LOW2C}	LOW period of SCL clock	4.7	—	1.3	—	0.5	—	0.16	—	μs
T_{HIGH2C}	HIGH period of SCL clock	4	—	0.6	—	0.26	—	0.06	—	μs
$T_{SUSTA2C}$	Setup time for repeated start condition	4.7	—	0.6	—	0.26	—	0.16	—	μs
$T_{HDDAT2C}$	Data hold time	0	—	0	—	0	—	0	—	μs
$T_{SUDAT2C}$	Data setup time	250	—	100	—	50	—	10	—	ns
$T_{SUSTOI2C}$	Setup time for stop condition	4	—	0.60	—	0.26	—	0.16	—	μs
V_{HH}	Input hysteresis high voltage, $V_{DD} > 2V$	$0.05 \times V_{DD}$	—	$0.05 \times V_{DD}$	—	$0.05 \times V_{DD}$	—	$0.05 \times V_{DD}^{[27]}$	—	V
V_{HL}	Input hysteresis low voltage, $V_{DD} \leq 2V$	$0.1 \times V_{DD}$	—	$0.1 \times V_{DD}$	—	$0.1 \times V_{DD}$	—	$0.1 \times V_{DD}$	—	V
T_{BUE2C}	Bus free time between a stop and start condition	4.7	—	1.3	—	0.5	—	—	—	μs
T_{SP2C}	Pulse width of spikes that are suppressed by input filter	—	—	0	50	0	50	0	10	ns
C_{BUS}	Capacitance load for SDA or SCL	—	400	—	400	—	550	—	100	pF

5.4.1 AC Characteristics

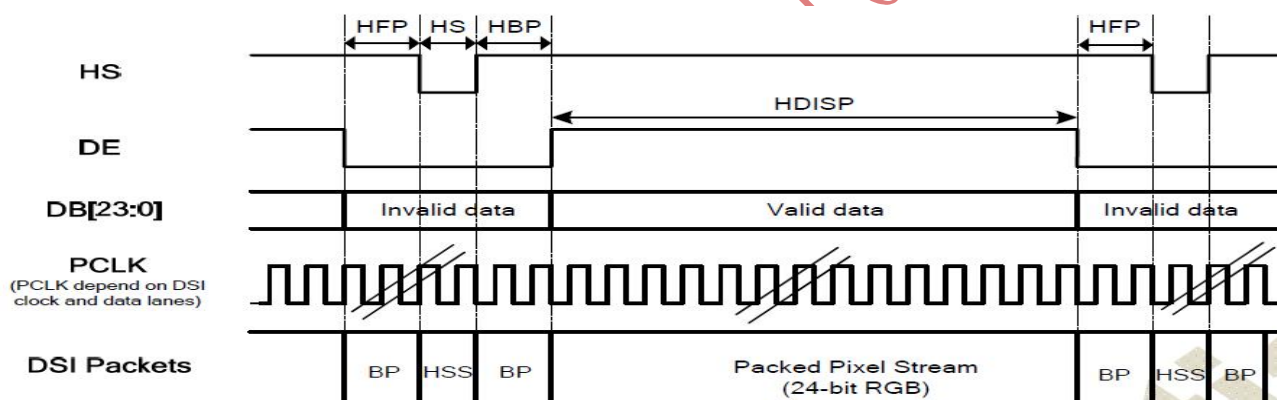
Parameter	Symbol	Min	Typ	Max	Units
UI instantaneous	U_{INST}	2	—	12.5	ns
Data to Clock Skew(measured at transmitter)	$T_{SKEW(TX)}$	-0.15	—	0.15	U_{INST}
Data to Clock Setup time(measured at receiver)	$T_{SETUP(RX)}$	0.15	—	—	U_{INST}
Data to Clock Hold time(measured at receiver)	$T_{HOLD(RX)}$	0.15	—	—	U_{INST}
20%~80% rise time and fall time	T_R, T_F	150	—	—	ps
		—	—	0.3	U_{INST}

5.5 Timing Diagram

5.5.1 Horizontal Timings



5.5.2 Vertical Timings



5.5.3 Timing Parameters

Parameter	Symbol	Value			Unit
		Min.	Typ.	MAX.	
Bit rate per lane	BRPHY	150	-	300	Mbps
Active pixel per line	HACT	-	1200	-	Pixels
Horizontal back porch	t _{HBP}	32	80	-	DCLK
Horizontal sync active	t _{HSA}	1	1	-	DCLK
Horizontal front porch	t _{HFP}	34	80	-	DCLK
Active pixel per frame	VACT	-	1920	-	H
Vertical back porch	t _{VBP}	-	25	-	H
Vertical sync active	t _{VSA}	1	1	-	H
Vertical front porch	t _{VFP}	-	35	-	H

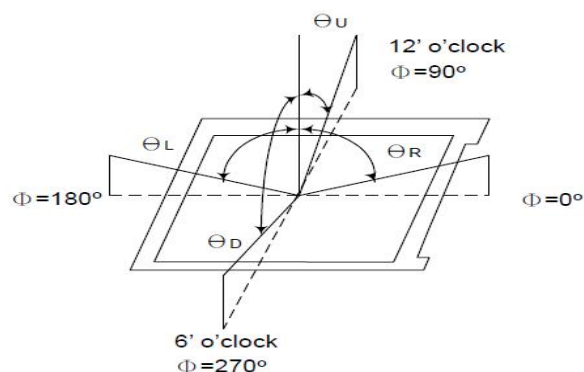
6. OPTICAL CHARACTERISTICS

Parameter 参数	Symbol 符号	Condition 条件	Min. 最小值	Typ. 典型值	Max. 最大值	Unit 单位	Remark 备注
Contrast Ratio	C/R	$\theta = 0^\circ$	700	900	-	-	Note(4)
NTSC Ratio	S	$\theta = 0^\circ$	50	55	-	%	Note(7)
Luminance	L	$\theta = 0^\circ$	-	450	-	cd/m ²	Note(5)
Luminance uniformity	U _W	$\theta = 0^\circ$	75	80	-	%	Note(3)
Response Time	T _R + T _F	25 °C	-	25	35	ms	Note(2)
Color Coordination	W _X	$\theta = 0^\circ$ (Center) Normal viewing angle B/L On	-0.03	0.317	+0.03	NTSC (x,y)	Note(6)
	W _Y			0.327			
	R _X			0.627			
	R _Y			0.338			
	G _X			0.307			
	G _Y			0.540			
	B _X			0.140			
	B _Y			0.093			
Viewing Angle	θ_L	C/R>10	-	80	-	Degree	Note(1)
	θ_R		-	80	-		
	θ_U		-	80	-		
	θ_D		-	80	-		

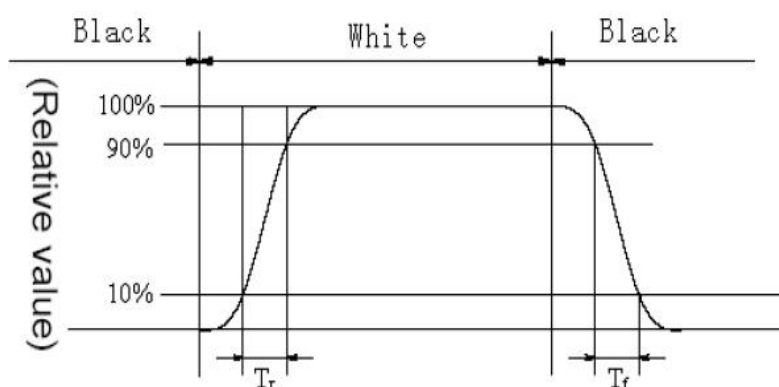
Test Conditions:

1. VDD=3.3V, I_F=70mA (Backlight current), the ambient temperature is +25°C.
2. The test systems refer to Note 8.

Note1: Definition of Viewing Angle: The viewing angle range that the CR>10

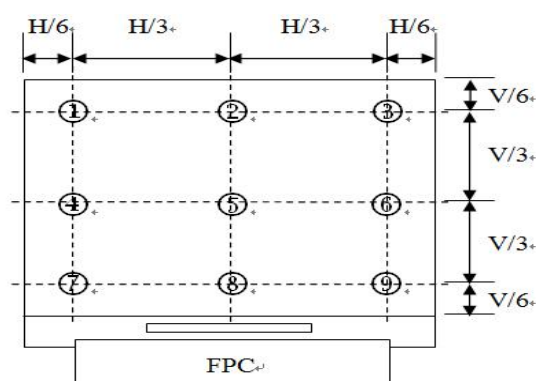


Note2: Definition of Response time: Sum of T_R and T_F



Note 3: Definition of Luminance Uniformity: Active area is divided into 9 measuring areas, every measuring point is placed at the center of each measuring area.

$$\text{Luminance Uniformity} = \frac{\text{Min Luminance of white among 9-points}}{\text{Max Luminance of white among 9-points}} \times 100\%$$



Note4: Definition of Contrast Ratio (CR): measured at the center point of panel

$$\text{Contrast ratio (CR)} = \frac{\text{Luminance measured when LCD on the "White" state}}{\text{Luminance measured when LCD on the "Black" state}}$$

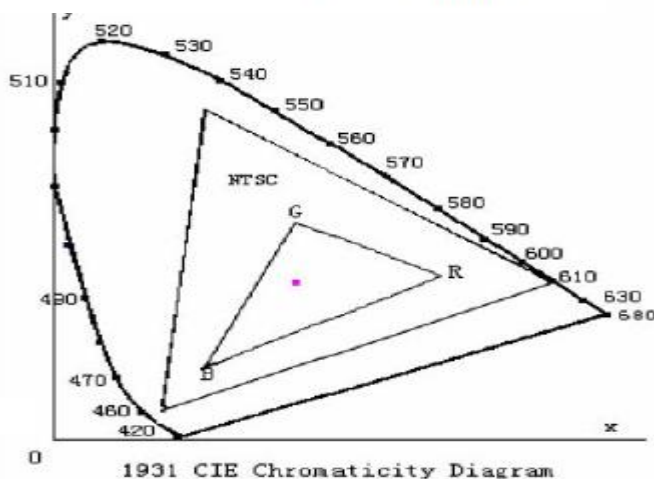
Note 5: Definition of Luminance: Center Luminance of white is defined as luminance values of 1 point average across the LCD surface.

Note 6: Definition of Color Chromaticity (CIE 1931)

Color coordinates of white & red, green, blue measured at center point of LCD.

Note 7: Definition of NTSC ratio:

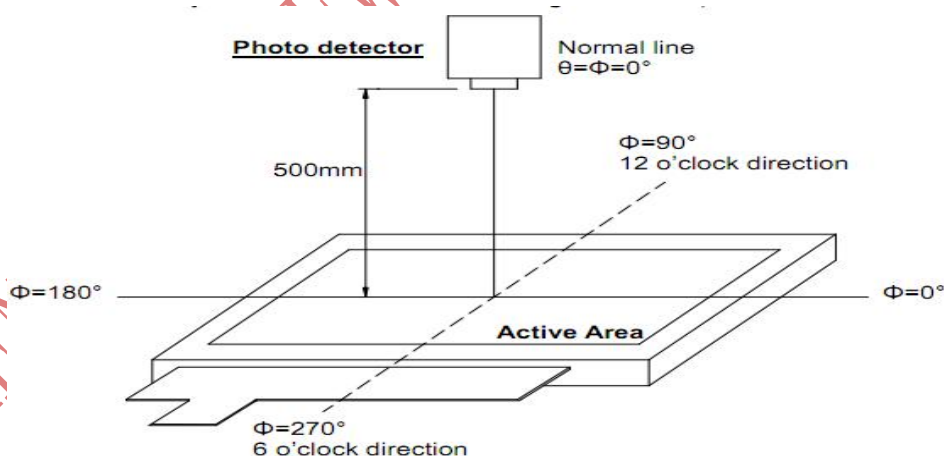
$$\text{NTSC ratio} = \frac{\text{Area of RGB triangle}}{\text{Area of NTSC triangle}}$$



Note 8: Definition of measurement system.

optical

The optical characteristics should be measured in dark room. After 5 minutes operation, the optical properties are measured at the center point of the LCD screen. (Response time is measured by Photo detector TOPCON BM-7, Field of view: 1°/Height: 500mm.)



7. RELIABILITY

Item 项目	Test Condition 测试条件	Remark 备注
High Temperature Storage	Ta =+80°C / 96Hours	Note1,2,3
Low Temperature Storage	Ta =-30°C / 96Hours	Note1,2,3
High Temperature Operating	Ta =+70°C / 96Hours	Note1,2,3
Low Temperature Operating	Ta =-20°C / 96Hours	Note1,2,3
Temperature Cycle storage Test	-30°C/30min ↔+80°C /30min for 30cycles, Transfer time less than 5min	Note2,3
Thermal humidity storage Test	50°C x 80%RH / 96Hours	Note2,3
Package Vibration Test	Frequency: 10Hz~55Hz, Amplitude: 1.5mm, 1 hrs for each direction of X, Y, Z	Note2
Packing shock test	Drop to the ground from 60cm height, 1 corner, 3 edges, 6 surfaces.	Note2

Inspection after Test:

Note1: Ta is the ambient temperature of samples.

Note 2: In the standard condition, there shall be no practical problem that may affect the display function. After the reliability test, the product only guarantees operation, but doesn't guarantee all the cosmetic specification.

Note 3: Before cosmetic and function tests, the product must have enough recovery time, at least 2 hours at room temperature.

8. PACKAGE DRAWING

LCM产品(刀卡类)包装流程图

1. 0包装材料清单:

见受控BOM

2. 0包装方法说明:

