

LCD MODULE
SPECIFICATION

Model:	UE101WX-RB40-L017
Version:	V1.0
Date:	20180624

- ☐ 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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请贵司在收到规格书的两周内,将签好字的规格书原件或者复印件寄回.如果没有返回,我司将会认为贵司已经默认接受产品规格书中的全部资料和规范.

VIEWE Confirmation 优奕确认

Prepared by	Reviewed by	Approved by

REVISION HISTORY

Revision 版本号	Date 日期	Contents of Revision Change 修改内容	Remark 备注
V1.0	2018.06.24	Preliminary release	

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1. GENERAL INFORMATION

1.1 Features

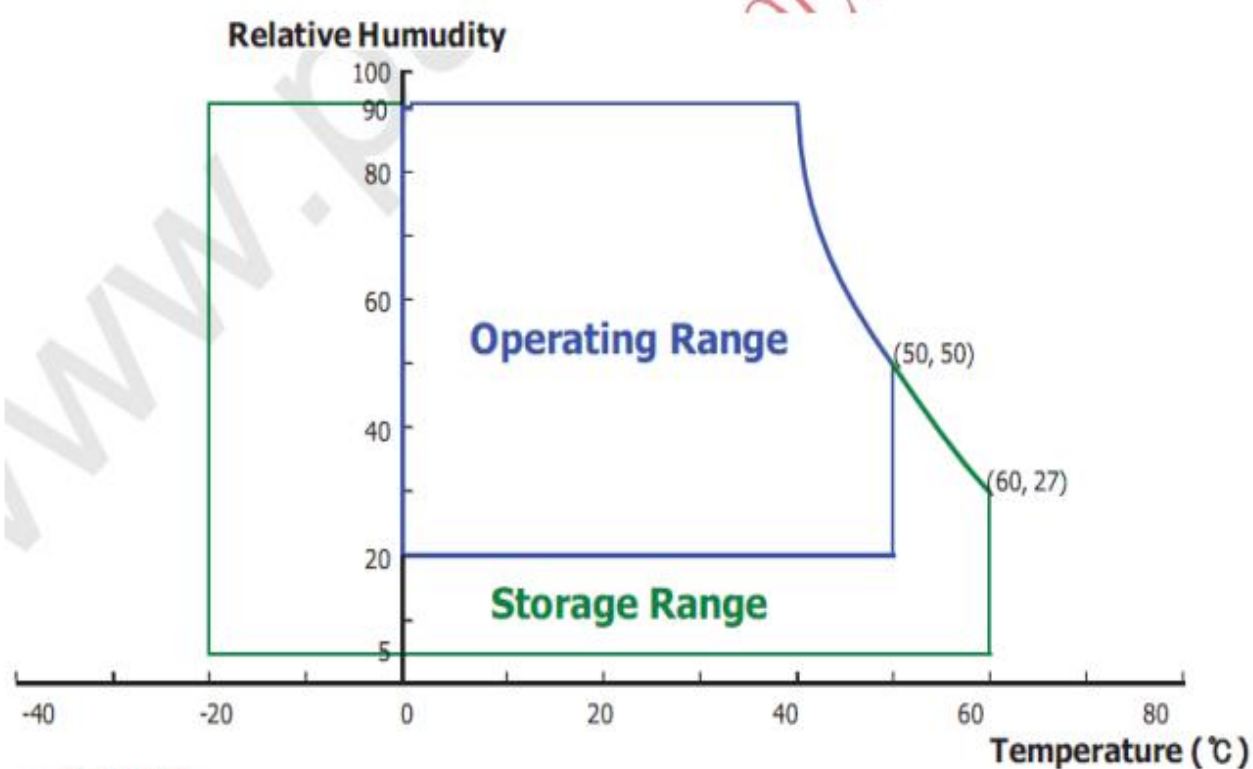
- 1) Pixel Arrangement: RGB Vertical Stripe
- 2) Interface Mode: LVDS
- 3) Driver IC: HX8245
- 4) Operation Temperature: -20~60℃
- 5) Storage Temperature: -30~70℃
- 6) Backlight Type: White LED
- 7) Display mode: Normally Black,
- 8) Pixel Density: 142 PPI
- 9) LED life time: 15,000 Hours

1.2 Mechanical Specification

Item 项目	Specification 规格	Unit 单位	Remark 备注
Pixel Driving element	IPS TFT	-	-
Screen Size	10.1	Inch	Diagonal
Resolution	1280(W)*3(RGB)*800(H)	Dots	40PIN
Interface	LVDS	-	8Bit
Module Power Consumption	LCD: 1.98W(TYP.) BLU: 8.7W(TYP)/9.55W(MAX)	Watt	Typ.
Active Area	216.96(W)*135.60(H)	mm	-
Pixel pitch (W*H)	0.1695(W)*0.1695(H)	mm	-
Module Size (W*H*D)	228.3(W)*149.05(H)*2.5(D)	mm	Tolerance: ±
Luminance	250	cd/m ²	Typ.
Viewing Direction	All	O'clock	-
Display Color	16.7M	Colors	(Real 8 bit)

2. ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Min.	Max.	Unit	Remarks
Power Supply Voltage (LCD Module)	V_{DD}	-0.3	4.2	V	
Back-light Power Supply Voltage	HV_{DDOUT}	-0.3	18	V	
Back-light LED Current	I_{HVDD}	-	96	mA	
Back-light LED Reverse Voltage	V_R	-	2	V	
Operating Temperature	T_{OP}	0	+50	℃	1)
Storage Temperature	T_{ST}	-20	+60	℃	



3. MECHANICAL DRAWING

[illegible]

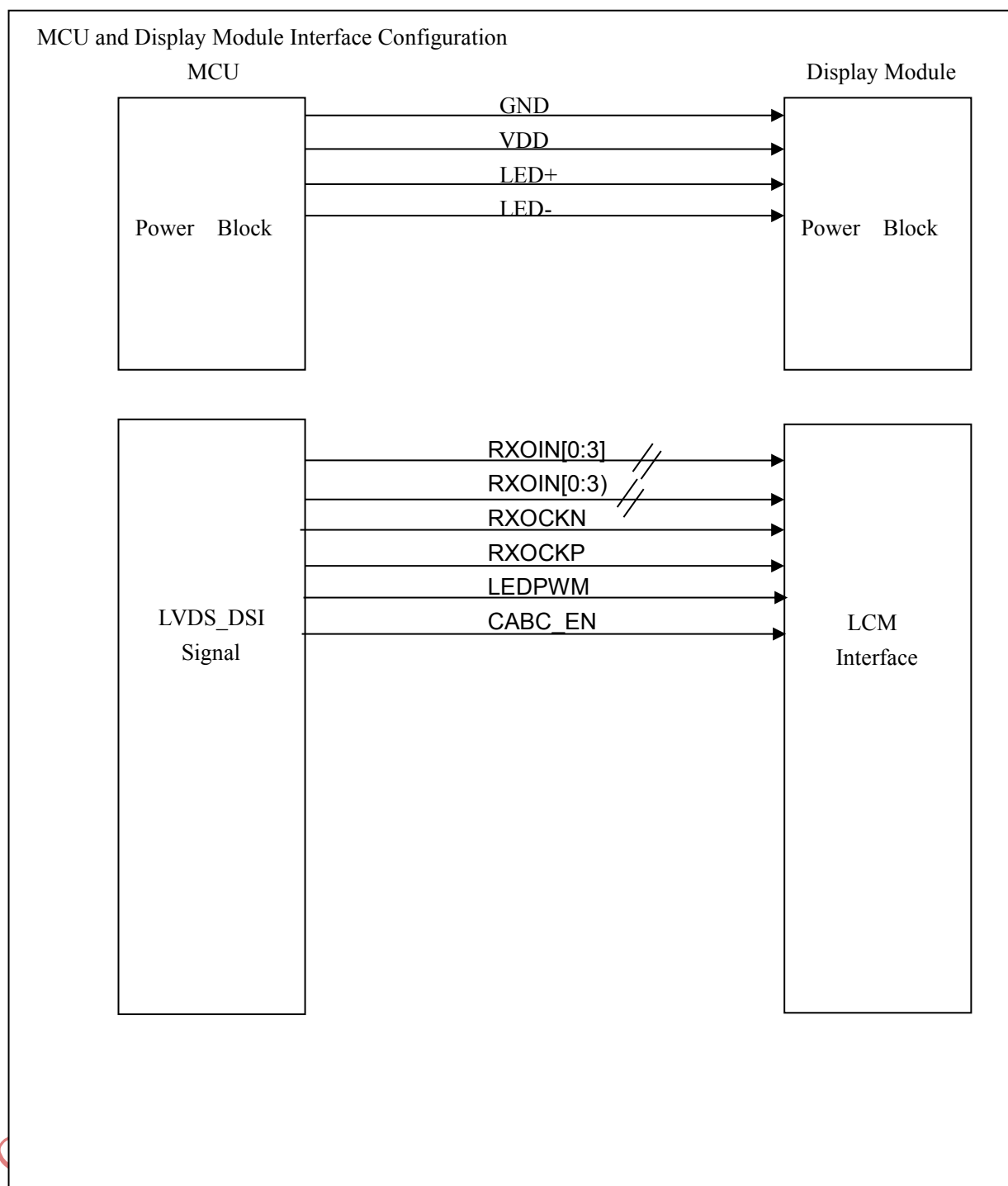
4. I/O CONNECTION & BLOCK DIAGRAM

4.1 I/O Connection

LCM	Symbol	I/O	Description
1	NC	-	NO Connection
2-3	VDDIN	P	Power supply VDDIN=3.3V(Typ)
4	VDC	P	Power supply VDC=3.3V(Typ)
5	NC	-	Power Ground
6	CLK EDID	I	CLK for EDID function use
7	Data EDID	IO	Data for EDID function use
8	Rin 0-	I	-LVDS differential data input
9	Rin 0+	I	+LVDS differential data input
10	GND	P	Power Ground
11	Rin 1-	I	-LVDS differential data input
12	Rin 1+	I	+LVDS differential data input
13	GND	P	Power Ground
14	Rin 2-	I	-LVDS differential data input
15	Rin 2+	I	+LVDS differential data input
16	GND	P	Power Ground
17	RxCLK-	I	-LVDS differential clock input
18	RxCLK+	I	+LVDS differential clock input
19	GND	P	Power Ground
20	Rin 3-	I	-LVDS differential clock input
21	Rin 3+	I	+LVDS differential clock input
22	CE-EN	I	Color engine enable
23-24	NC	-	No Connection
25	GND	P	Power Ground
26-27	NC	-	No Connection
28	GND	P	Power Ground
29-30	NC	-	No Connection
31-33	LED-GND	P	LED Ground
34	NC	-	No Connection
35	LED-PWM	I	LED driver PWM duty
36	LED-EN	I	LED driver enable
37	CABC_EN	I	CABC Enable Input
38-40	VLED	P	Power supply VLED=3~18V(Typ.)

I: Input; O: Output; P: Power

4.2 Block Diagram



5. ELECTRICAL CHARACTERISTICS

5.1 TFT-LCD Panel Driving Section

Parameter	Symbol	Values			Unit	Notes
		Min	Typ.	Max		
Power Supply Input Voltage	V_{DD}	3.0	3.3	3.6	V	Note 1
Power Supply Current	I_{DD}	-	303	-	mA	
LED Driver Power Supply Voltage	H_{VDD}	3	-	18	V	Note 2
LED Driver Power Supply Current	I_{HVDD}	-	568	-	mA	
LED Driver Efficiency	η	-	85	-	%	
Positive-going Input Threshold Voltage	V_{IT+}	-	-	+100	mV	$V_{com} = 1.2V$ typ.
Negative-going Input Threshold Voltage	V_{IT-}	-100	-	-	mV	
Differential input common mode voltage	V_{com}	-	1.2	-	V	$V_{IH}=100mV$, $V_{IL}=-100mV$
Power Consumption	P_D	-	1.0	-	W	Have Driver
	P_{BL}	-	2.4	-	W	
	P_{Total}	-	3.4	-	W	

Notes : 1. The supply voltage is measured and specified at the interface connector of LCM.
The current draw and power consumption specified is for 3.7V at 25 °C
Max value at White Pattern

2. Calculated value for reference ($V_{LED} \times I_{LED}$)

3. CTF of Power Supply Current: P_D / P_{BL}

5.2 Back Light Driving Section

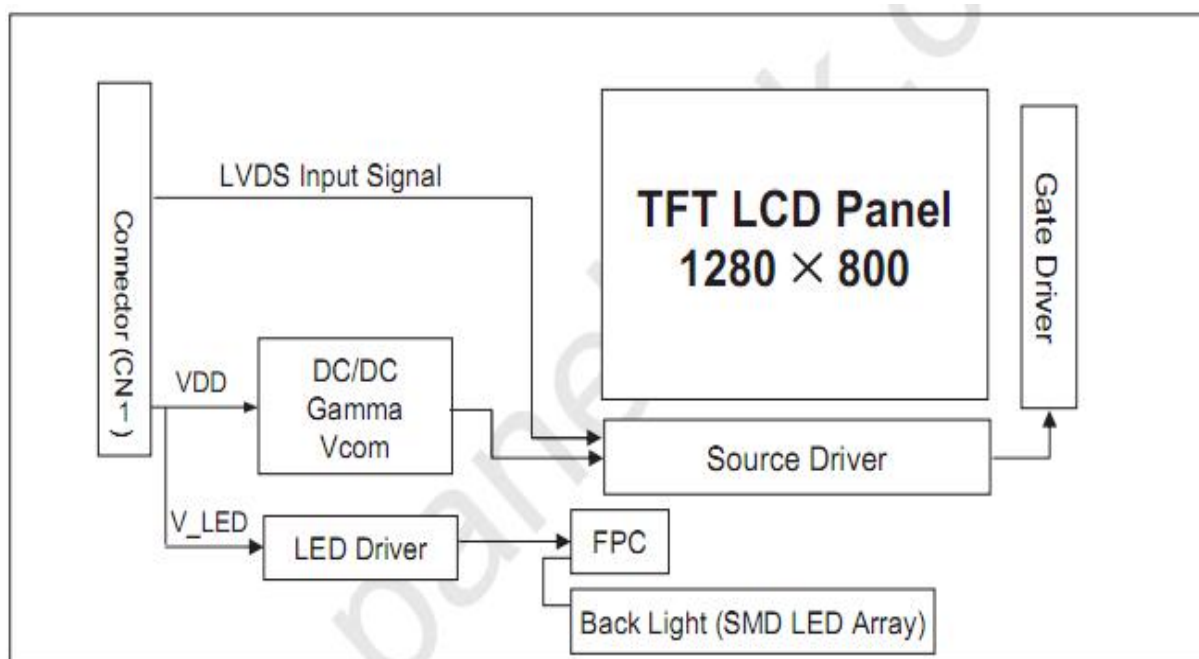
Parameter		Min.	Typ.	Max.	Unit	Remarks
LED Forward Voltage	V_F	-	2.8	3.0	V	-
LED Forward Current	I_F	-	20	21	mA	-
LED Power Consumption	P_{LED}	-	2	2.3	W	Note 1
LED Life-Time	N/A	15,000	-	-	Hour	$I_F = 20mA$ Note 2
Power supply voltage for Back light	V_{LED}	-	16.8	-	V	
Power supply Current for Back light	I_{LED}	-	120	-	mA	
EN Control Level	Backlight on	V_{ENH}	1.2	-	V	EN logic high voltage
	Backlight off	V_{ENL}	-	-	0.4	V EN logic low voltage
PWM Control Level	PWM High Level	V_{PML}	1.2	-	V	
	PWM Low Level	V_{PML}	-	-	0.4	V
PWM Control Frequency	F_{PWM}	5	-	20	KHz	
PWM duty Ratio		10%	-	-	%	

Notes : 1. Calculator Value for reference $I_{LED} \times V_{LED} = P_{LED}$

2. The LED Life-time define as the estimated time to 50% degradation of initial luminous.

5.3 Power Sequence

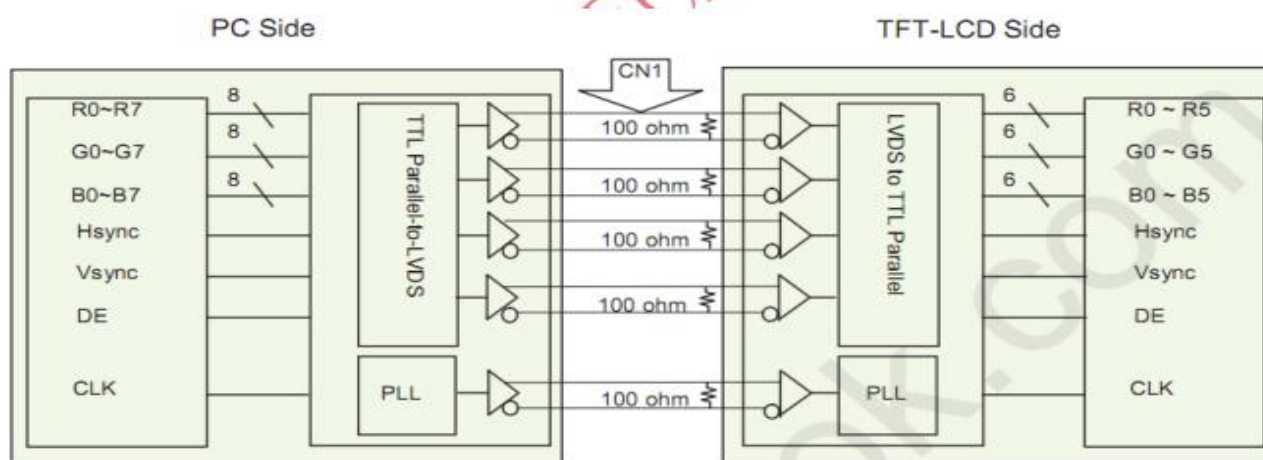
5.3.1 Power On/Off Sequence



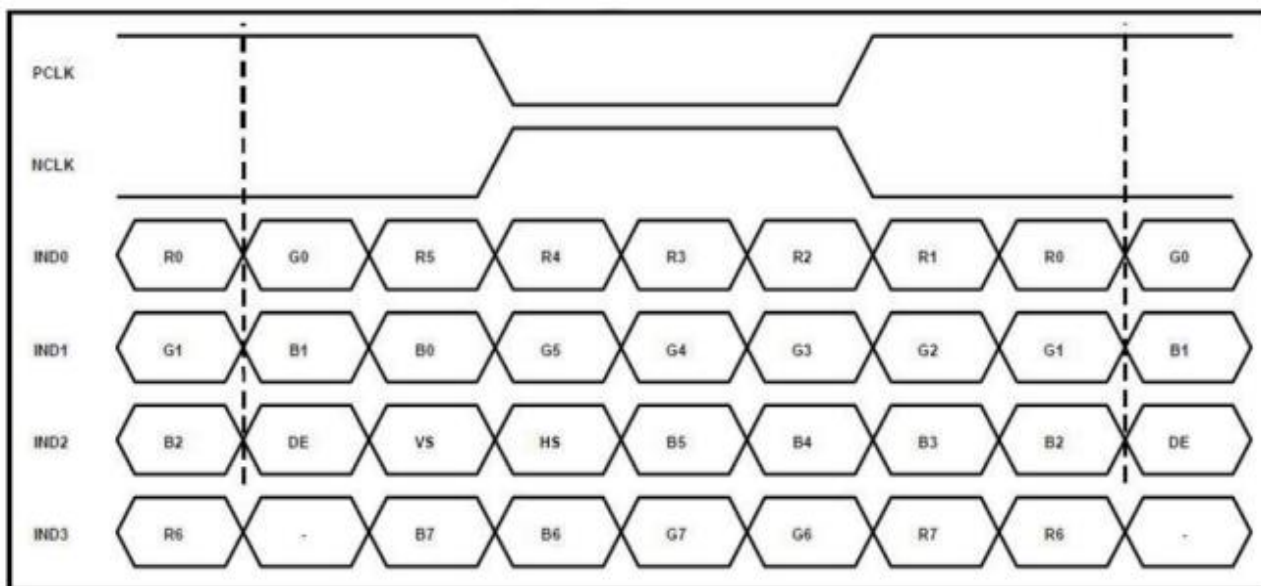
5.4 Timing Characteristics

5.4.1 AC Characteristics

LVDS interface

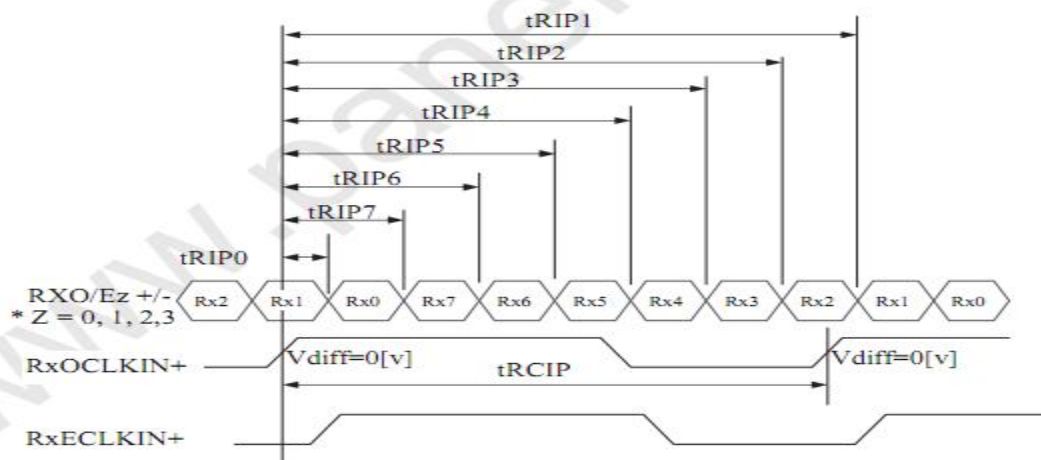


LVDS Input signal



LVDS Rx Interface Timing Parameter

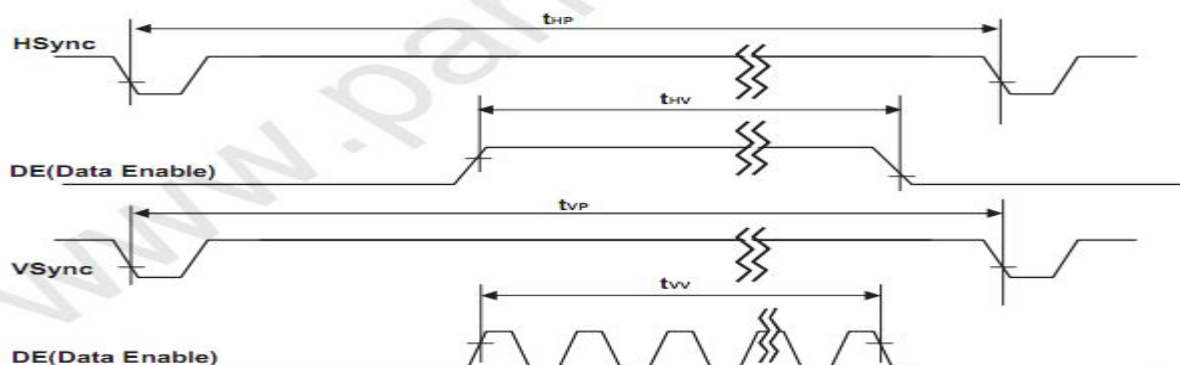
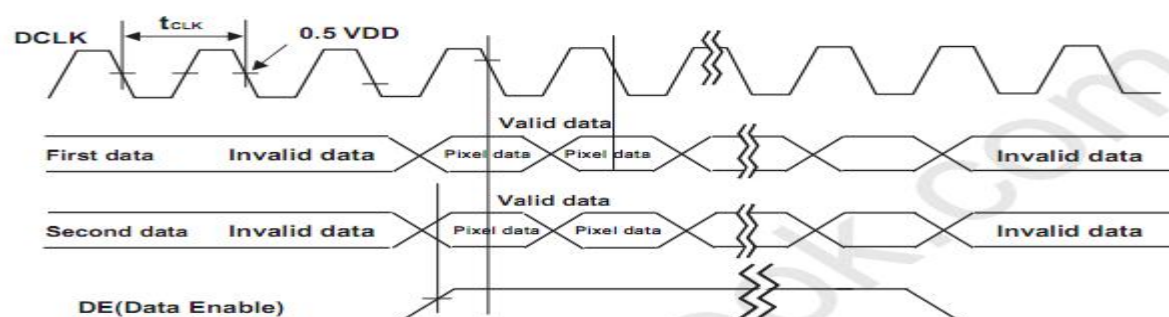
Item	Symbol	Min	Typ	Max	Unit	Remark
CLKIN Period	tRCIP	14.88	19.53	24.51	nsec	
Input Data 0	tRIP1	-0.4	0.0	+0.4	nsec	
Input Data 1	tRIP0	tRCIP/7-0.4	tRCIP/7	tRCIP/7+0.4	nsec	
Input Data 2	tRIP7	2 × tRCIP/7-0.4	2 × tRCIP/7	2 × tRCIP/7+0.4	nsec	
Input Data 3	tRIP6	3 × tRCIP/7-0.4	3 × tRCIP/7	3 × tRCIP/7+0.4	nsec	
Input Data 4	tRIP5	4 × tRCIP/7-0.4	4 × tRCIP/7	4 × tRCIP/7+0.4	nsec	
Input Data 5	tRIP4	5 × tRCIP/7-0.4	5 × tRCIP/7	5 × tRCIP/7+0.4	nsec	
Input Data 6	tRIP3	6 × tRCIP/7-0.4	6 × tRCIP/7	6 × tRCIP/7+0.4	nsec	
Input Data 7	tRIP2	7 × tRCIP/7-0.4	7 × tRCIP/7	7 × tRCIP/7+0.4	nsec	



* Vdiff = (RXO/Ez+)-(RXO/Ez-),..., (RXO/ECLK+)-(RXO/ECLK-)

5.5 Timing Diagram

5.5.1 Horizontal/Vertical Timings



5.5.3 Timing Parameters

Parameter		Symbol	Min.	Typ.	Max.	Unit
Clock	Frequency	1/Tc	60	65	80	MHz
	Cycle	Tc	16.66	15.38	12.5	ns
Data Enable	Horizontal Period	THd	1280	1280	1280	Tc
	Horizontal Cycle	TH	1310	1330	1560	TC
		TH_time	19.5	20.46	21.83	ns
	Vertical Period	TVd	800	800	800	TC
	Vertical Cycle	TV		812		TC

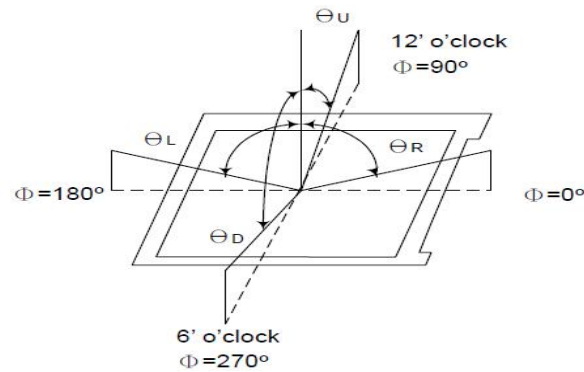
6. OPTICAL CHARACTERISTICS

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	$\theta = 0^\circ$	600	800	-	-	Note(4)
NTSC Ratio	S	$\theta = 0^\circ$	-	50	-	%	Note(7)
Luminance	L	$\theta = 0^\circ$	200	250	-	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	0.313	+0.03	NTSC (x,y)	Note(6)
	W _Y			0.329			
	R _X			0.600			
	R _Y			0.340			
	G _X			0.315			
	G _Y			0.565			
	B _X			0.150			
	B _Y			0.125			
Viewing Angle	θ_L	C/R>10	-	80	-	Degree	Note(1)
	θ_R		-	80	-		
	θ_U		-	80	-		
	θ_D		-	80	-		

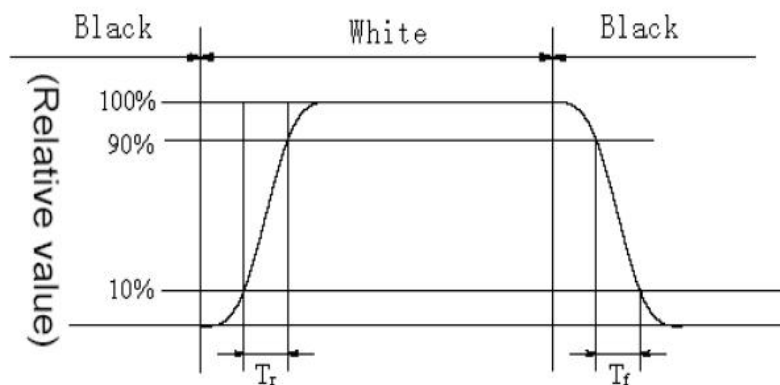
Test Conditions:

1. VDD=3.3V, I_F=80mA (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

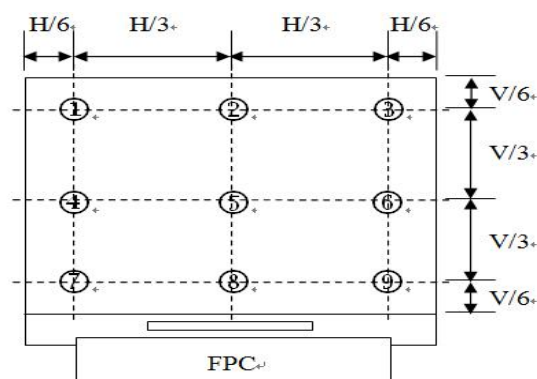


Note2: Definition of Response time: Sum of T_R and T_F



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

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

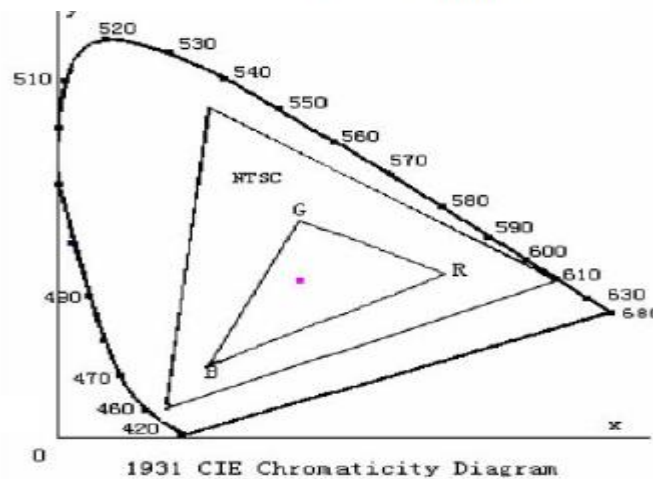
Note 5: Definition of Luminance: Center Luminance of white is defined as luminance values of 1 point average across the LCD surface.

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:

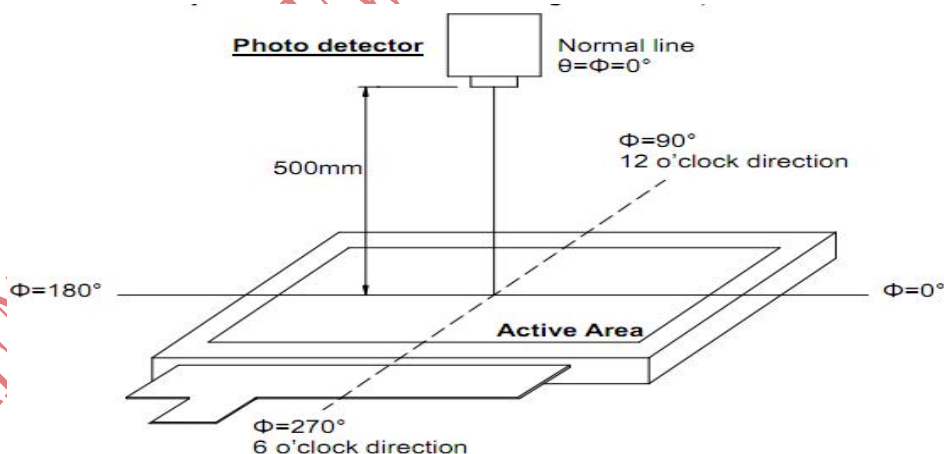
$$\text{NTSC ratio} = \frac{\text{Area of RGB triangle}}{\text{Area of NTSC triangle}}$$



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 =+70°C / 1000Hours	Note1,2,3
Low Temperature Storage	Ta =-30°C / 1000Hours	Note1,2,3
High Temperature Operating	Ta =+60°C / 1000Hours	Note1,2,3
Low Temperature Operating	Ta =-20°C / 1000Hours	Note1,2,3
Temperature Cycle storage Test	-30°C/30min ↔ +70°C /30min for 30cycles, Transfer time less than 5min	Note2,3
Thermal humidity storage Test	60°C x 90%RH / 1000Hours	Note2,3
Package Vibration Test	10~500Hz 49m/s2 (5G)8h × 3(±X, ±Y, ±Z), 1.3mm	Note2
Packing shock test	980m/s2 (100G)6msec ±XYZ, 3Times each	Note2
Image Sticking	25 °C ± 2 °C ; 2hrs	Note4
ESD (power off)	150pF, 150 Ω , ±*/kV air& contact test	

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.

Note 4: Condition of Image Sticking test : 25 °C ± 2 °C

Operation with test pattern sustained for 2 hrs, then change to gray pattern immediately.

After 5 mins, the mura must be disappeared completely .

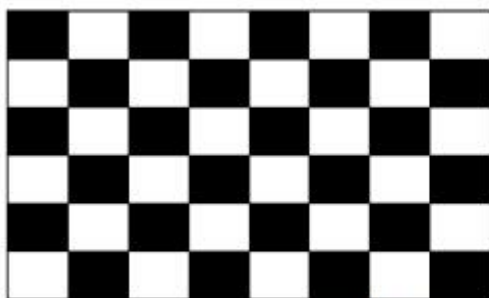


Image Sticking -pattern



Mid-Gray pattern

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:

