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Project No. 项目编号	ET080WX11-TT
Customer 客户名称	
Module No. 客户型号	
Product type 产品内容	**Standard LCD Module** **TFT：800*RGBx1280Dots** **8.0”TFT LCD+CTP**

客户确认Customer Approval	
项目负责人Project Manager	
品质主管Director of Quality	
采购工程师Purchasing Engineer	

1. Introduction

1.1 Scope of application

This specification applies to the LCD module that is supplied by YOURITECH TECHNOLOGY CO., LTD. This LCD module should be designed for mobile phone use.
LCD specification: Dots 800xRGBx1280.
As to basic specification of the driver IC, refer to the IC (TBD) specification and data book.
All material & processing of the LCD module should be Lead Free.

1.2 TFT features:

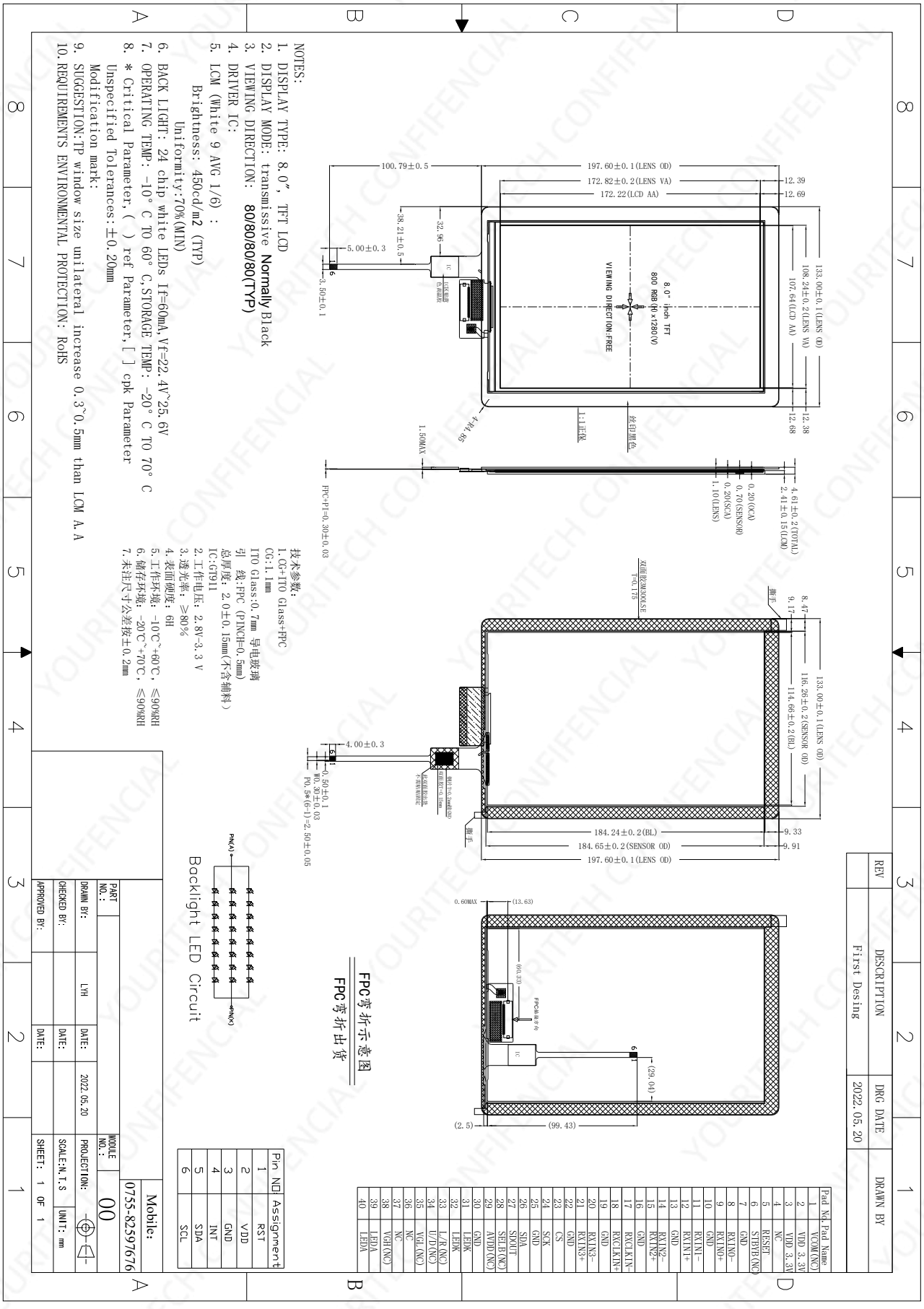
Structure: TFT PANNEL+IC +FPC+BL+CTP;
ALL O'CLOCK Type LCD
800 dot-segment and 1280 dot-common outputs;
16.7M Color can be selected by software;
White LED back light;
LVDS interface

1.3 Applications:

Motorcycle dashboard
Electric Animation Dashboard
Medical display
Engineering vehicle display
Outdoor highlight equipment

2. LCM General specification

ITEM	Sandard value	Unit
LCD Type	Normally Black	--
Drive element	TFT active matrix	--
Number of pixels	800*3RGB(H)X1280(V)	Dots
Pixel arrangement	RGB stripe	--
Pixel Pitch (W*H)	0.13455(W)x 0.13455(H)	mm
Active area	107.64(H) × 172.22 (V)	mm
Viewing direction	ALL O'CLOCK	
TFT Driver IC	TBD	-
TFT interface	LVDS Interface	-
Approx. Weight	TBD	g
LCM Size(W*H*T)	114.66(W) x184.24(H) x2.41(T)	mm
LCM+CTP Size(W*H*T)	133.00(W) x197.60(H) x4.61(T)	mm
Touch structure	G+G	
Touch Driver IC	GT911	-
Touch Interface	I2C	


NOTES:
1. DISPLAY TYPE: 8.0", TFT LCD
2. DISPLAY MODE: transmissive Normally Black
3. VIEWING DIRECTION: 80/80/80/80(TYP)
4. DRIVER IC:
5. LCM (White 9 AVG 1/6) :
Brightness: 450cd/m2 (TYP)
Uniformity:70%(MIN)
6. BACK LIGHT: 24 chip white LEDs If=60mA, Vf=22.4V~25.6V
7. OPERATING TEMP: -10° C TO 60° C,STORAGE TEMP: -20° C TO 70° C
8. * Critical Parameter,( ) ref Parameter,[ ] cpk Parameter
Unspecified Tolerances:±0.20mm
Modification mark:
9. SUGGESTION:TP window size unilateral increase 0.3~0.5mm than LCM A.A
10. REQUIREMENTS ENVIRONMENTAL PROTECTION: RoHS
技术参数:
1.CG+ITO Glass+FPC
CG:1.1mm
ITO Glass:0.7mm 导电玻璃
引 线:FPC (PINCH=0.5mm)
总厚度: 2.0±0.15mm(不含辅料)
IC:GT911
2.工作电压: 2.8V~3.3 V
3.透光率: ≥80%
4.表面硬度: 6H
5.工作环境: -10℃~+60℃, ≤90%RH
6.储存环境: -20℃~+70℃, ≤90%RH
7.未注尺寸公差按±0.2mm
FPC弯折示意图
FPC弯折出货
Backlight LED Circuit
REV
DESCRIPTION
First Desing
DRG DATE
2022.05.20
DRAWN BY
Pad No.
Pad Name
VCOM(NC)
VDD 3.3V
NC
RESET
STBYB(NC)
GND
RXIN0-
RXIN0+
GND
RXIN1-
RXIN1+
GND
RXIN2-
RXIN2+
GND
RXCLKIN-
RXCLKIN+
GND
RXIN3-
RXIN3+
GND
CS
SCK
SDA
SDOUT
SELB(NC)
AVDD(NC)
GND
LEDK
LEDK
L/R(NC)
U/D(NC)
VGL(NC)
NC
VGH(NC)
LEDA
LEDA
Pin NO
Assignment
RST
VDD
GND
INT
SDA
SCL
PART NO.:
MODULE NO.:
00
PROJECTION:
SCALE:N.T.S
UNIT: mm
SHEET: 1 OF 1
DRAWN BY:
LYH
DATE:
2022.05.20
CHECKED BY:
APPROVED BY:
Mobile:
0755-82597676

3.Absolute Maximum Rating

Characteristics	Symbol	Min.	Max.	Unit
LCM Operating Temperature	T_{OPR}	-10	+60	°C
LCM Storage Temperature	T_{STG}	-20	+70	°C
TP Operating Temperature & Humidity (20% ~ 90%RH)	T_{OPR}	-10	+60	°C
TP SStorage Temperature & Humidity (20% ~ 90%RH)	T_{STG}	-20	+70	°C
Humidity	RH	10	90	%

4.Electrical Characteristics

4.1 TFT DC Characteristics

Characteristics	Symbol	Min.	Typ.	Max.	Unit	Note
TFT OperationFrame rate	Hz	--	60	--	Hz	
Supply Voltage for(IO/IO)	IOVCC	1.65	1.8	3.3	V	
Supply Voltage for(DC/DC)	VDD	2.5	2.8	3.3	V	

4.2 Back-Light Unit Characeristics

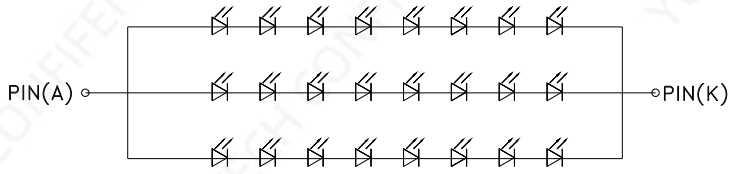
The back-light system is an edge-lighting type with 24 white LEDs. The characteristics of the back-light are shown in the following tables.

Characteristics	Symbol	Min.	Type	Max.	Unit	Notes
Forward Voltage	V_F	22.4	--	25.6	V	-
Forward current	I_F	--	60	--	mA	-
Luminance(With LCD)	Lv		450	--	cd/m^2	-
LED life time	N/A	--	30,000	--	Hr	Note 1

Note:

(1) The “LED life time” is defined as the module brightness decrease to 50% of original brightness at I_L=40mA/LED. The LED life time could be decreased if operating I_L is larger than 45mA/LED.

Backlight circuit diagram shown in below:



5. Module Function Description

LCM PIN Description:

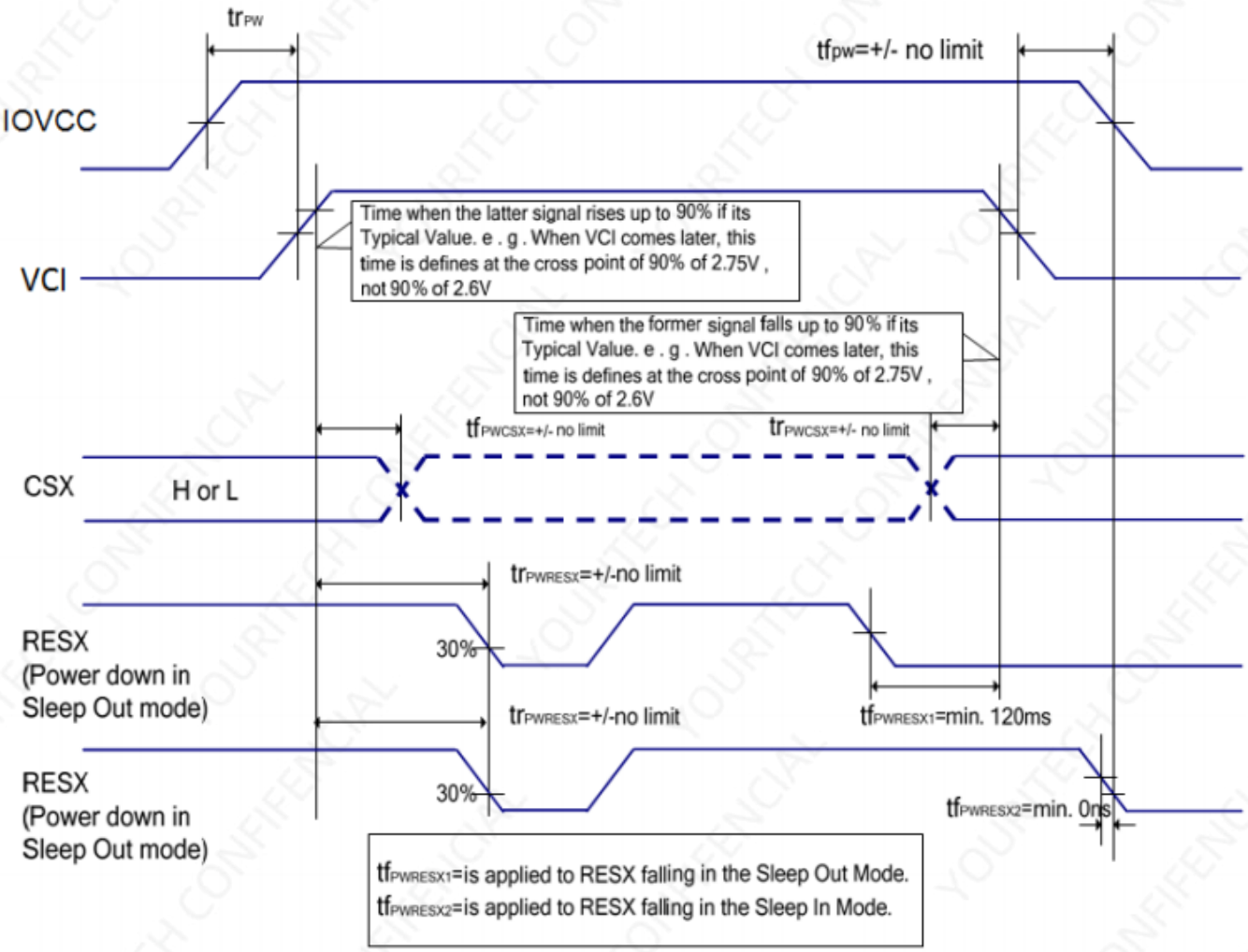
Pin No.	Symbol	Description
1	VCOM/NC	NC
2	VDD3.3V	Power Voltage for digital circuit.
3	VDD3.3V	Power Voltage for digital circuit.
4	NC	NC
5	RESET	RESET PIN
6	STBYB/NC	NC
7	GND	Ground
8	RXIN0-	Negative LVDS Differential Data Input
9	RXIN0+	Positive LVDS Differential Data Input
10	GND	Ground
11	RXIN1-	Negative LVDS Differential Data Input
12	RXIN1+	Positive LVDS Differential Data Input
13	GND	Ground
14	RXIN2-	Negative LVDS Differential Data Input
15	RXIN2+	Positive LVDS Differential Data Input
16	GND	Ground
17	RXCLKIN-	Negative LVDS Differential Clock Input
18	RXCLKIN+	Positive LVDS Differential Clock Input
19	GND	Ground
20	RXIN3-	Negative LVDS Differential Data Input
21	RXIN3+	Positive LVDS Differential Data Input
22	GND	Ground
23	CS	Chip selection signal.
24	SCK	Serial clock signal.
25	GND	Ground
26	SDA	Serial data input/output pin.
27	SDOUT	Serial data output pin.
28	SELB/NC	NC
29	AVDD(NC)	NC
30	GND	Ground
31-32	LEDK	Power supply for backlight cathode input terminal.
33	L/R(NC)	NC
34	U/D(NC)	NC
35	VGL(NC)	NC
36	NC	NC
37	NC	NC
38	VGH(NC)	NC
39-40	LEDA	Power Supply For LED Backlight Anode Input.

Pin No.	Symbol	CTP Functional	Notes
1	CTP_RST	Touch panel reset	
2	CTP_VCC	Touch panel Power supply 2.8~3.3V	
3	GND	Power Ground	
4	CTP_INT	Touch panel interrupt output	
5	CTP_SDA	Touch panel I2C data	
6	CTP_SCL	Touch panel I2C clock	

6. Timing Characteristics

Case 1 – RESX line is held high or unstable by host at power on

If RESX line is held High or unstable by the host during Power On, then a Hardware Reset must be applied after both VCI and IOVCC have been applied – otherwise correct functionality is not guaranteed. There is no timing restriction upon this hardware reset.



LVDS AC characteristic

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Clock Frequency	RxFCLK	-	30	-	TBD	MHz
Input data skew margin	TRSKM	|VID|=200mV RxVCM=1.2V RxFCLK=81MHz	500	-	-	ps
Clock High Time	TLVCH	-	-	4/(7*RxFCLK)	-	ns
Clock Low Time	TLVCL	-	-	3/(7*RxFCLK)	-	ns
PLL wake-up-time	TenPLL	-	-	-	150	us

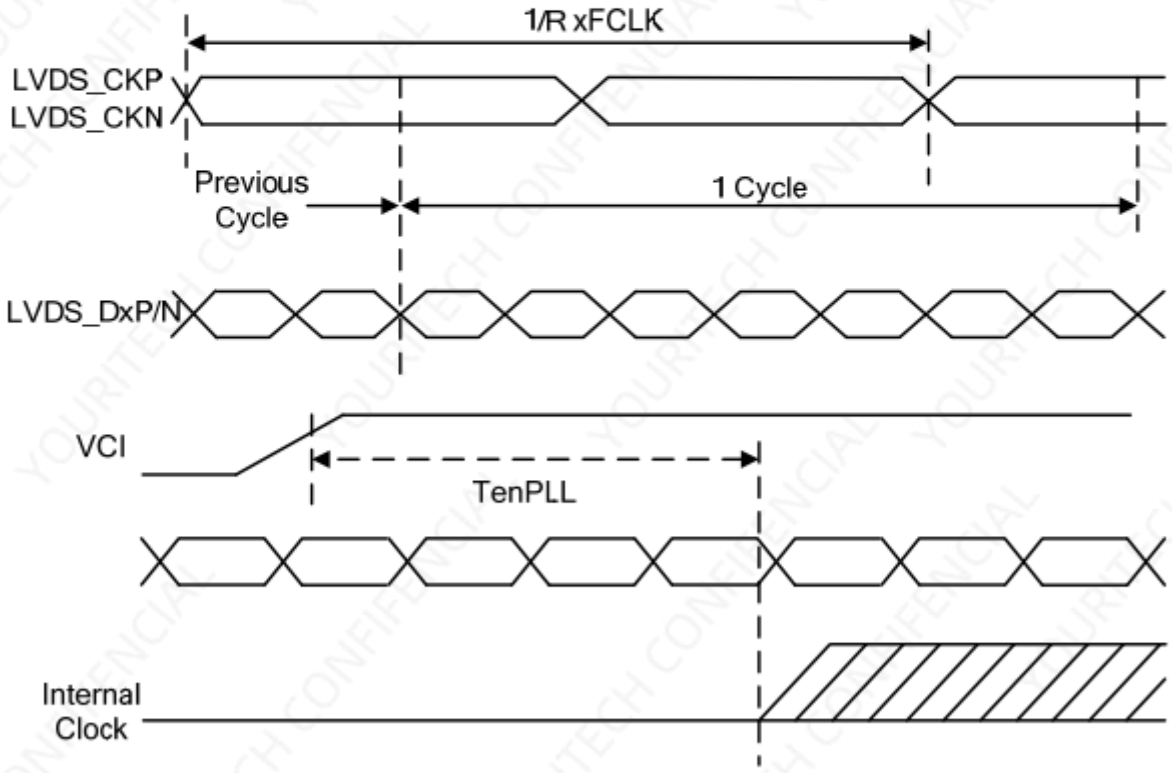
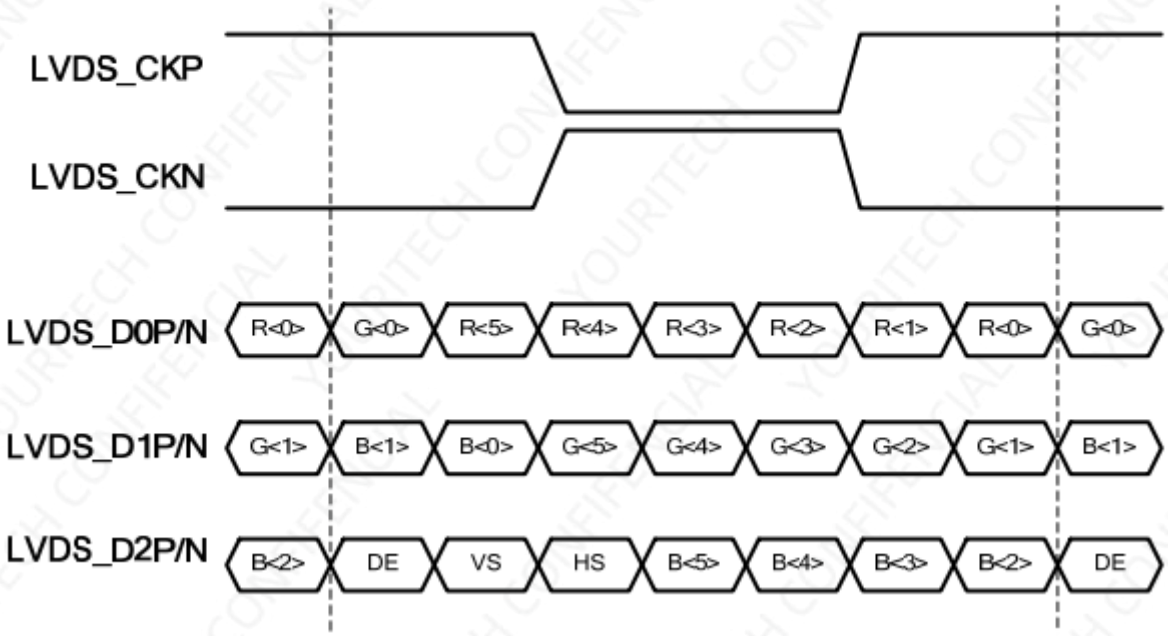


Figure LVDS figure

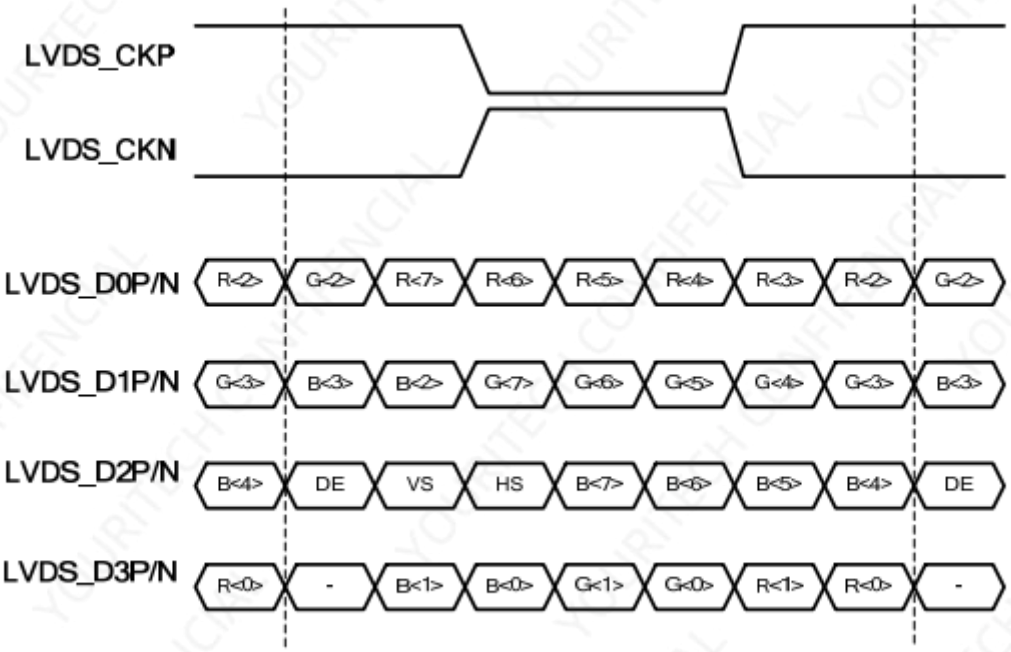
Parameter	Symbol	Min.	Typ.	Max.	Units	Condition
Modulation Frequency	SSCMF	23	-	93	KHz	
Modulation Rate	SSCMR	-	-	+3	%	

LVDS interface

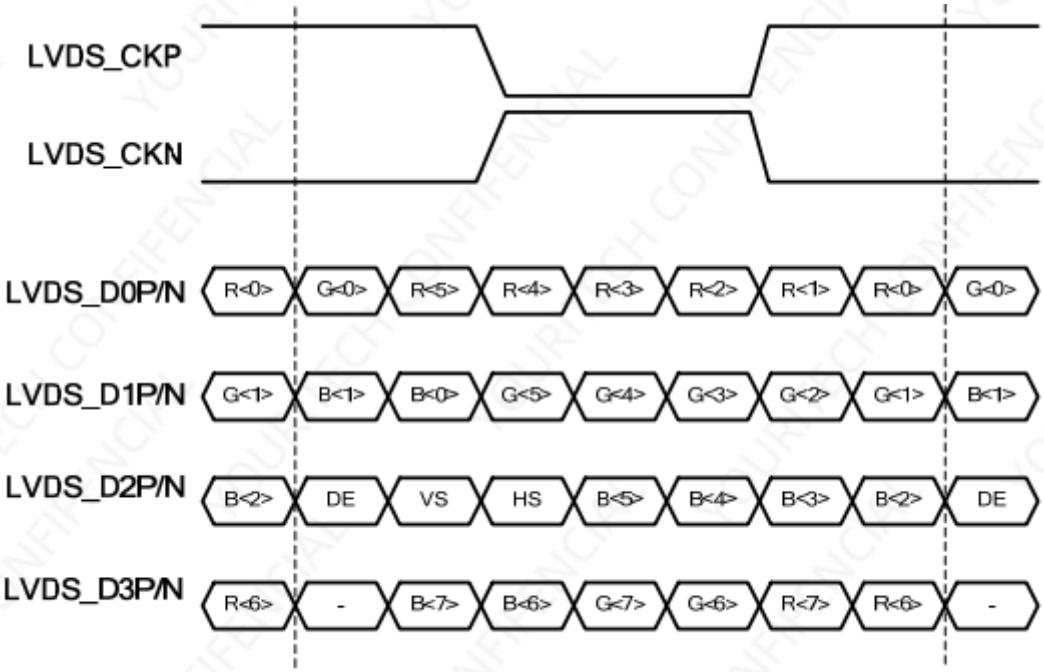
Data input format for LVDS



6-bit LVDS input (LVBIT=L, LVFMT=Don't care)

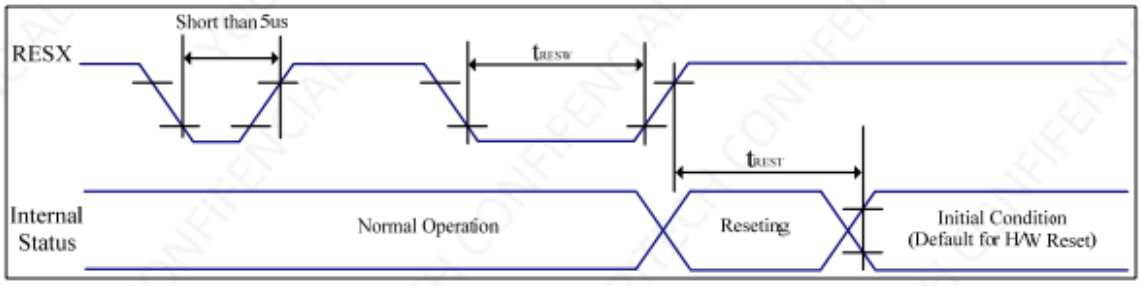


8-bit LVDS input (LVBIT=H, LVFMT=L)



8-bit LVDS input (LVBIT=H, LVFMT=H)

Reset timing characteristics



VSS=0V, IOVCC=1.65V to 3.6V, VCI=2.5V to 6.0V, Ta = -30℃ to 70℃

Symbol	Parameter	Related Pins	MIN	TYP	MAX	Note	Unit
T_{resw}	*1) Reset low pulse width	RESX	10	-	-	-	us
T_{rest}	*2) Reset complete time	-	-	-	5	When reset applied during Sleep in mode	ms
		-	-	-	120	When reset applied during Sleep out mode	ms

Table: Reset input timing

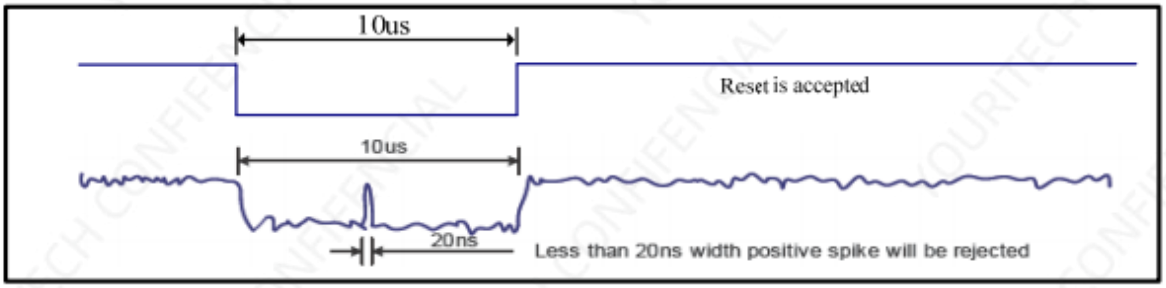
Note 1: Due to an electrostatic discharge on RESX line,spike does not cause irregular system reset according to the table below.

RESX Pulse	Action
Shorter than 5us	Reset Rejected
Longer than 10us	Reset
Between 5us and 10us	Reset starts (It depends on voltage and temperature condition.)

Note 2: During the resetting period, the display will be blanked (The display is entering blanking sequence, which maximum time is 120ms, when Reset Starts in Sleep Out mode. The display remains the blank state in Sleep In mode) , then return to default condition for H/W reset.

Note 3: During Reset Complete Time, ID1/ID2/ID3 and VCOM value in OTP will be latched to internal register. After a rising edge of RESX, there is a H/W reset complete time (Trest) which lasted 5ms.The loading operation will be done every time during this reset.

Note 4: Spike Rejection also applies during a valid reset pulse as shown below:



Note 5. It is necessary to wait 5msec after releasing RESX before sending commands. Also Sleep Out command cannot be sent for 120 msec.

7.Optical Characteristics

Optical Specifications

< Table 11. Optical Specifications>

Parameter		Symbol	Condition	Min.	Typ.	Max.	Unit	Remark
Viewing Angle range	Horizontal	Θ_3	CR > 10	-	80	-	Deg.	W-Pol Note 1
		Θ_9		-	80	-	Deg.	
	Vertical	Θ_{12}		-	80	-	Deg.	
		Θ_6		-	80	-	Deg.	
Luminance Contrast ratio		CR	Θ = 0°	900	1200	-		Note 2
Cell Transmittance		Tr		-	4.8	-	%	W/O APF
White Chromaticity		x_w		TYP. - 0.03	0.306	TYP. + 0.03		Note 3 Base on C Light
		y_w			0.360			
Reproduction of color (C light)	Red	R_x			0.646			
		R_y			0.339			
	Green	G_x			0.271			
		G_y			0.581			
	Blue	B_x			0.138			
		B_y			0.158			
Color Gamut (C light)				-	60%	-	%	NTSC
Response Time (Rising + Falling)		T_{RT}	Ta= 25° C Θ = 0°	-	-	35	ms	Note 4

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 .

2. Contrast measurements shall be made at viewing angle of Θ= 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 . 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 with Polarizer.

4. The color chromaticity coordinates specified in Table 6 shall be calculated from the spectral data measured with all pixels first in red, green, blue and white. Calculation is based on C light.

5. The electro-optical response time measurements shall be made as FIGURE 6 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.

8. Reliability Test Item

No.	Test Item	Test Condition	Notes
1	High Temp. Storage	+70°C / 96H	1. Functional test isOK. Missing Segment,short, unclear segment non-display,display abnormally and liquid crystal leakare un-allowed. 2. No low temperature bubbles,end seal loose andfall, frame rainbow.
2	Low Temp. Storage	-20°C / 96H	
3	High Tempe. Operating	+60°C / 96H	
4	Low Tempe. Operating	-10°C / 96H	
5	High Temperature /Humidity storage	50°C x 90%RH /96H	
6	Thermal and cold shock	Static state， -20℃（30min） ~60℃（30min），50 cycles	

9. Packing Method----TBD

- END -