Osptek Display

TFT LCD SPECIFICATION

Model No:

YDP313B002-V1

Revision Record 修改记录

Rev No.版本号	Date 时间	Description 内容
V.0	2022-02-28	首次发行

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Revision Record

Contents

1.General Specifications 基本规格

No.	Item 项目	Specification 规格	Unit 单位	Remark
1	LCD Size 液晶面板尺寸	3.13	inch	-
2	Panel Type 面板类型	IPS	-	-
3	Resolution 分辨率	376 x RGB x 960	Pixel	-
4	Display Mode 显示模式	Normally Black		-
5	Number of Colors 颜色数量	16.7M	-	-
6	Viewing Direction 使用视角	All	-	Note1
7	NTSC 色彩饱和度	60%	-	Typ.
8	Contrast Ratio 对比度	1200	-	
9	Luminance 亮度	300	cd/m2	Typ.
10	Module Size 模组尺寸	31.10(H)x81.10(V)x2.37(D)	mm	Note1
11	Panel Active Area 可视区域	28.99x74.02	mm	Note1
12	Pixel Pitch 像素尺寸	25.7(H) x3X 77.1(V)	mm	-
13	Pixel Arrangement 像素排列	RGB-stripe		-
14	Weight 重量	TBD	g	-
15	Driver IC 驱动芯片	GC9503CV	-	-
16	Driver IC RAM Size 记忆体		bit	-
17	Light Source 背光源	6 white LEDs	-	-
18	Interface 接口方式	RGB	-	-
19	Operating Temperature 工作温度	-30~+85	℃	-
20	Storage Temperature 存储温度	-30~+85	℃	-

Note 1: Please refer to the mechanical drawing；

注 1：请参照模组图；

2.Pin Assignments 接口定义

Pin No. Pin 序号	Symbol 符号	Function 功能描述
1	LEDA	Backlight anode
2	LEDK	Backlight cathode
3	GND	Ground
4	RESET	Chip reset signal
5	VSYNC	Vertical sync. Signal in RGB I/F
6	HSYNC	Horizontal sync. Signal in RGB I/F
7	CLK	Pixel locks ignal in RGB I/F
8	DEN	Data enable signal in RGB I/F DE mode
9	GND	Ground
10-14	R4-R0	Data bus
15-20	G5-G0	Data bus
21-25	B4-B0	Data bus
26	IOVCC	I/O Circuit Power Supply
27	SDI	Serial data input pin used for the SPI Interface.
28	SCL	Serial input CLK
29	CS	Chip selection signal
30	VCI	Analog Power Supply for LCM

3. Electrical Specification 电气特性

3.1Absolute Maximum Ratings 极限参数

Item	Symbol	Unit	Value
Supply voltage(Analog)	VDD ~ AGND	V	-0.3 ~ +4.6
Supply voltage (I/O)	VDDI ~ DGND	V	-0.3 ~ +4.6
OTP Supply voltage	VPP ~ AGND	V	-0.3 ~ +10
Supply voltage	AVDD ~ AGND	V	-0.3 ~ +8
Supply voltage	AVEE ~ AGND	V	0.3 ~ -8
Supply voltage	BVDD ~ AGND	V	-0.3 ~ +8
Supply voltage	BVEE ~ AGND	V	0.3 ~ -8
Supply voltage	VGH ~ AGND	V	-0.3 ~ +15
Supply voltage	VGL ~ AGND	V	0.3 ~ -16
Driver supply voltage	AVDD – AVEE	V	≦14V
Driver supply voltage	VGH – VGL	V	≦30V
Input voltage	VIN	V	-0.3 ~ VDDI + 0.3
HS Input voltage	VHSI	V	-0.3 ~ + 2
Operating temperature	Topr	℃	-40 ~ +85
Storage temperature	Tstg	℃	-55 ~ +110

Note:

Even if the one of the above parameters is exceeded momentarily, the quality of the product may be degraded. Absolute maximum ratings, therefore, specify the exceeding values which the product may be physically damaged. Be sure to use the product within the range of the absolute maximum

3.2 Typical Operation Conditions 典型工作条件

Item	Symbol	Condition	Min.	Typ.	Max.	Unit	Note
Operating voltage	VDDR VDDA VDDB	-	2.5	2.8	3.3	V	
Operating voltage	VDDI	-	1.65	1.8	3.3	V	Note1,2
OTP Supply voltage	VPP	-		8.0		V	Note1
Logic High level input voltage	VIH	-	0.7*VDDI		VDDI	V	Note1
Logic Low level input voltage	VIL	-	-0.3		0.3*VDDI	V	Note1
Logic High level output voltage TE, SDO (SDA) , LEDPWM	VOH	-	0.8*VDDI		VDDI	V	Note1
Logic Low level output voltage TE, SDO (SDA) , LEDPWM	VOL	-	0		0.2*VDDI	V	Note1
Gate Driver High Voltage	VGH	-	9.0	-	15	V	
Gate Driver Low Voltage	VGL	-	-10	-	-8.0	V	
Driver Supply Voltage	-	|VGH-VGL|	17	-	25	V	
DC VCOM Amplitude Voltage	VCOM	FIX GND	0	0-	0	V	Note3
Source Output Range	VSOUT	-	VGMN +0.1	-	VGMP -0.1	V	Note4
Positive Gamma Reference Voltage	VGMP	-	4.5	-	6.5	V	Note5
Negative Gamma Reference Voltage	VGMN	-	-4.5	-	-2.5	V	Note5
Positive Gamma Reference Voltage	VGSP	-	0.7	-	1.8	V	Note5
Negative Gamma Reference Voltage	VGSN	-	0.7	-	1.8	V	Note5

Note:

1. Ta = -30 to 70 °C (to 85 °C no damage), VDDI=1.65V to 3.3V, VDDR VDDA VDDB=2.5V to 3.3V.
2. Supply digital VDDI voltage equal or less than analog VDDR VDDA VDDB voltage.
3. Source channel loading = 10pF/channel
4. The Max. Value is between with Note 3 measure point and Gamma setting value

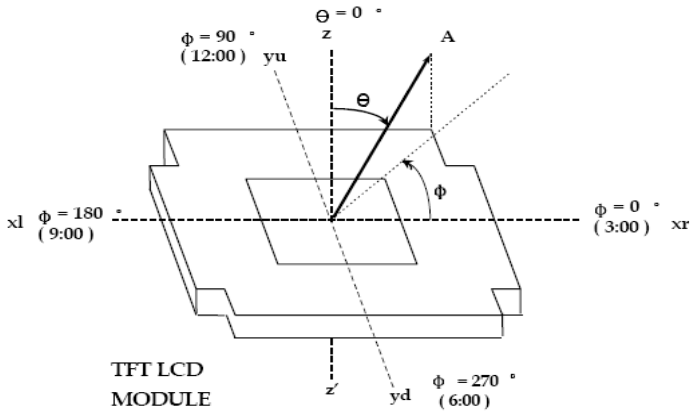
4.Optical Specification 光学参数

4.1 LCM Optical Characteristics 液晶模组光学特性

Item		Symbol	Condition	Min.	Typ.	Max.	Unit
Viewing Angle Range 视角	Left	θ_L	CR≧10	-	80	-	degree
	Right	θ_R		-	85	-	
	Top	θ_T		-	85	-	
	Bottom	θ_B		-	85	-	
Response Time 响应时间		Ton+Toff	θ=Φ=0°	-	30	-	ms
Contrast Ratio 对比度		CR	θ=Φ=0°	1000	1200	-	-
Luminance 亮度		L	θ=Φ=0°	-	300	-	cd/m^2
Color Chromaticity (CIE1931) 色坐标	White	W_x	Normal θ=Φ=0°	-0.02	0.318	+0.02	-
		W_y			0.341		
	Red	R_x			0.637		
		R_y			0.338		
	Green	G_x			0.297		
		G_y			0.572		
	Blue	B_x			0.137		
		B_y			0.126		
Color Gamu 饱和度		U_L	θ=Φ=0°	60	-	-	%
Flicker 闪烁		-	-	No Visible			-

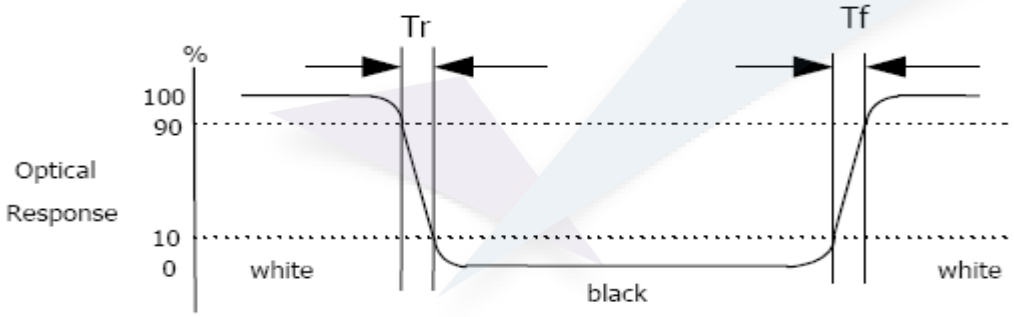
4.2 Measurement system 测量系统

4.2.1 LCM Viewing Angle



Viewing angle is the angle at which the contrast ratio is greater than 10.The angles are determined for the horizontal or x axis and the vertical or y axis with respect to the z axis which is normal to the LCD surface.

4.2.2 Response time



Response time is the time required for the display to transition from white to black (Rising time, Tr) and from black to white (Falling time, Tf) for additional information.

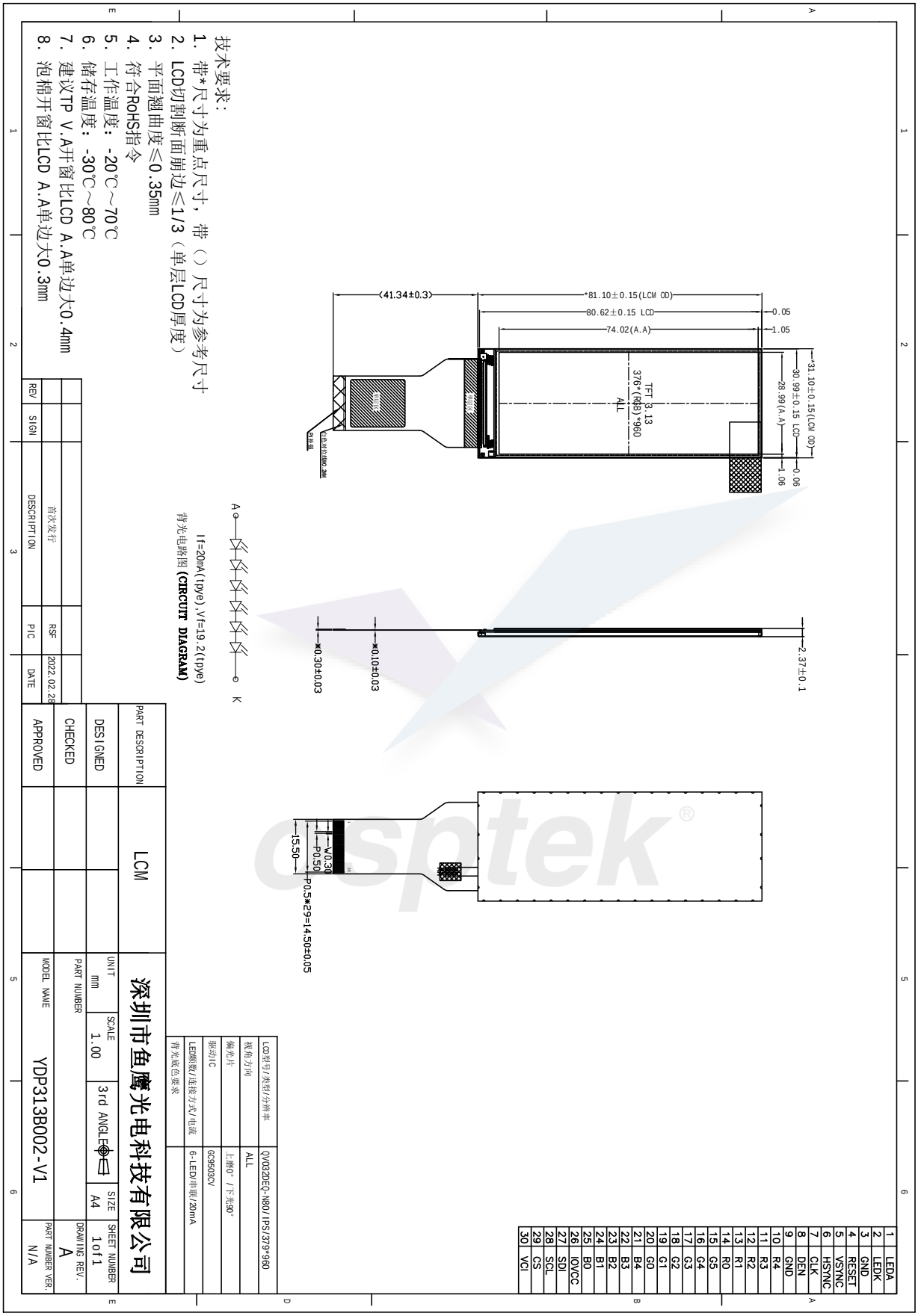
4.2.3 Contrast Ratio (CR)

Contrast Ratio (CR) is defined mathematically as:

$$\text{Contrast Ratio} = \frac{\text{Surface Luminance with all white pixels}}{\text{Surface Luminance with all black pixels}}$$

Surface luminance is the center point across the LCD surface 500mm from the surface with all pixels displaying white.

5. Mechanical Drawing 模组图



6. Reliability Test Items 可靠性测试项目

Test Item 测试项目	Test Condition 测试条件	Test result determinant gist 实验结果判定
High temperature storage 高温存储	85℃，24H；	Inspection after 2~4hours storage at room temperature, the sample shall be free from defects: 试验结束后,已测试的LCD样品必须在室内正常温湿度环境下放置2~4个小时以上才能进行功能和外观检查，样品不允许有以下缺陷： 1.Air bubble in the LCD; 模块中有气泡； 2.Non-display; 不显示； 3.Glass crack; 玻璃破碎； 4. The electrical characteristics requirements shall be satisfied. 需要满足模块电气性能。
Low temperature storage 低温存储	-30℃，24H；	
High temperature operation 高温运行测试	85℃，24H；	
Low temperature operation 低温运行测试	-30，24H；	
High temperature /humidity 高温高湿	60℃±3℃,90%±3%RH，24H；	
Thermal Shock 冷热冲击	-30℃/0.5h~+85℃/0.5h for a total 24 cycles；	
Vibration Test 振动测试	Frequency 10Hz~55Hz~10Hz Amplitude：1.5mm, X，Y，Z direction for total 1H；(Packing condition)	
ESD test 静电测试	±2KV, Human Body Mode, 150pF/330Ω；±8KV, Air Mode, 150pF/330Ω；	

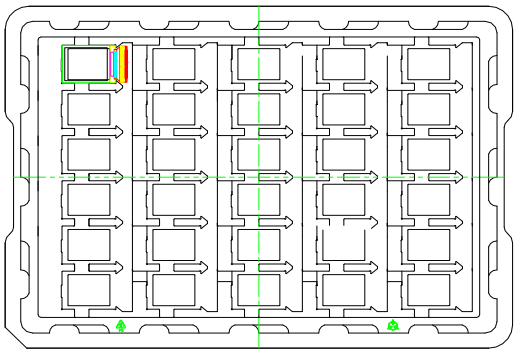
Remark: 注意：

1. The test samples should be applied to only one test item.
   每个被测试的模块只能用于其中的一个测试项目。
2. Sample size for each test item is 2pcs.
   每个测试项目的样品数量为2片。
3. Failure Judgment Criterion: Basic Specification, Electrical Characteristic, Mechanical Characteristic, Optical Characteristic.
   故障判断标准:基本规格,电气特性,机械特性,光电特性。

7. Packing and Storage Specification(Reference Only) 包装存储

7.1 Packing Method 包装方法

(1)



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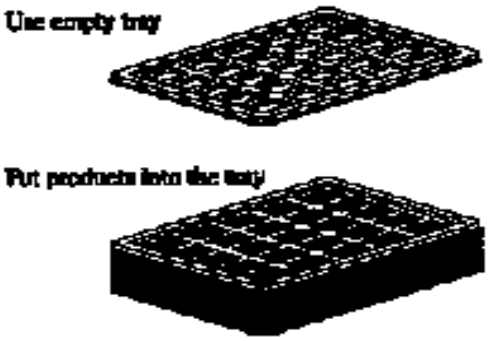

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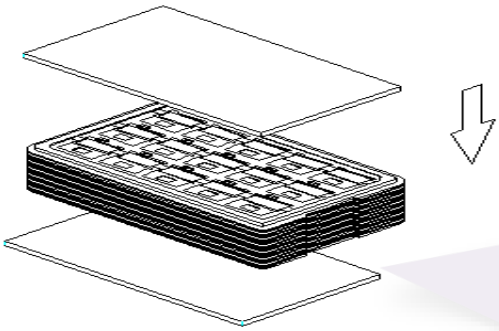

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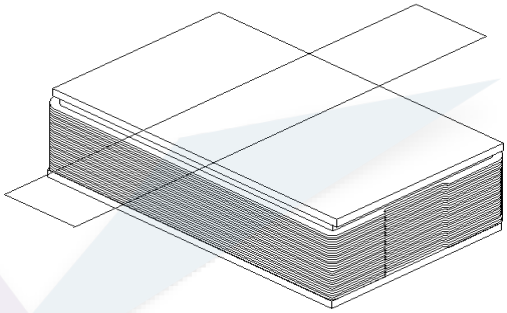

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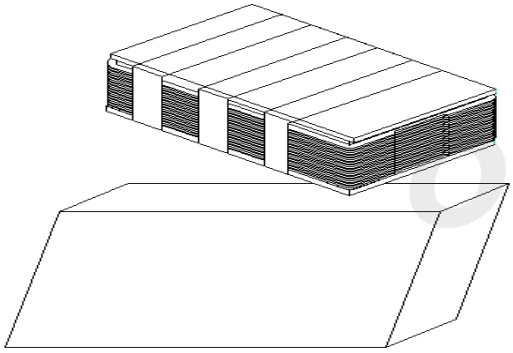
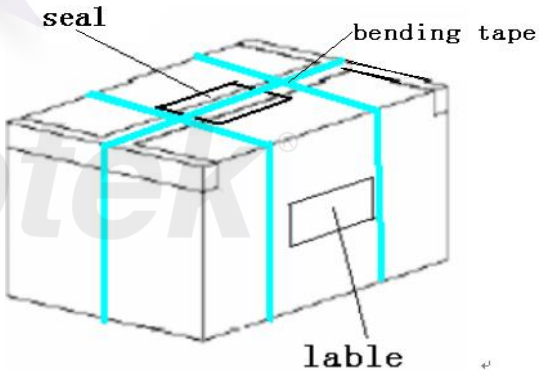


(6)



1. Put module into tray cavity. 把模块放进托盘.
2. Tray stacking. 托盘叠装.
3. Put 1 foam under the tray stack and 1 foam above. 在托盘上下放卡板.
4. Fix the cardboard to the tray stack with adhesive tape. 绑胶带.
5. Put the tray stack into carton. 把邦好的托盘放进纸箱.
6. Carton sealing with adhesive tape. 封纸箱.

7.2 Storage Method 存储方法

1. Store in an ambient temperature of 23°C±5°C, and in a relative humidity of 55%±15%. Don't exceed 12 months and expose to sunlight or fluorescent light.
   存储环境温度为 23±5°C，相对湿度为 55%±15%，存储不能超过 12 个月，不要长时间暴晒。
2. Store in a clean environment, free from dust, active gas, and solvent.
   存储在一个干净的环境，不受灰尘，活性气体和溶剂污染。
3. Store in antistatic container.
   存储在防静电环境。

8. Announcements 注意事项

1. Do not attempt to disassemble or process the LCD module.
   请勿拆卸液晶显示模块。
2. Do not make extra holes on the printed circuit board, modify its shape or change the positions of components to be attached。
   不要在印制电路板上钻额外的孔，修改形状或更改印制线路板上元件的位置。
3. Except for soldering the interface, do not make any alterations or modifications with a soldering iron; Ensure welding temperature at 320 ° C to 350 ° C, the welding time control within the 10 s, welding note don't stay too long in the same place to avoid scald FPC.
   除焊接接口外，不要用烙铁做任何更改；焊接温度保证在 320°C-350°C，焊接时间控制在 10S 以内，焊接时注意不要在同一处停留时间太久以免烫伤 FPC。
4. Other matters in not clear before use, please contact our staff to guide.
   其他事项在不清楚使用之前，请联系我司人员指导进行。