

PRODUCT SPECIFICATION

FOR TOUCH DISPLAY MODULE

MODULE NO: (模组型号) 98-110A3-7030ACUSTOMER: (客户) NA

APPROVED BY CUSTOMER 客户签署栏	
Approved by 审核	Remark 备注

APPROVED BY DJN 帝晶签署栏			
Prepared by 制作	Checked by 检查		Approved by 审核
	电 子	结 构	
李东风	李东风	叶财禄	刘永峰

Office add: Bao'an District, Shenzhen City, Fuhai Street, No. 93-7, Xintang Road, No. 93-7, 201, 301 办公地址: 深圳市宝安区福海街道稔田社区新塘 路 93-7 号 201、301 TEL: +86-755-61148777 FAX: +86-755-61148577 POST: 518103	Factory add: The intersection of Huangshan Avenue and Qinji Road in Yuhui District, Bengbu City, Anhui Province 工厂地址: 安徽省蚌埠市禹会区黄山大道与秦集路 交叉口 TEL: +86-755-61148777 FAX: +86-755-61148577 POST: 233000
--	---

REVISION RECORD

REV NO. 版本	CONTENTS 内容	REV DATE 修改日期	REMARKS 注释
A0	First version	2023-8-14	

CONTENTS
目录

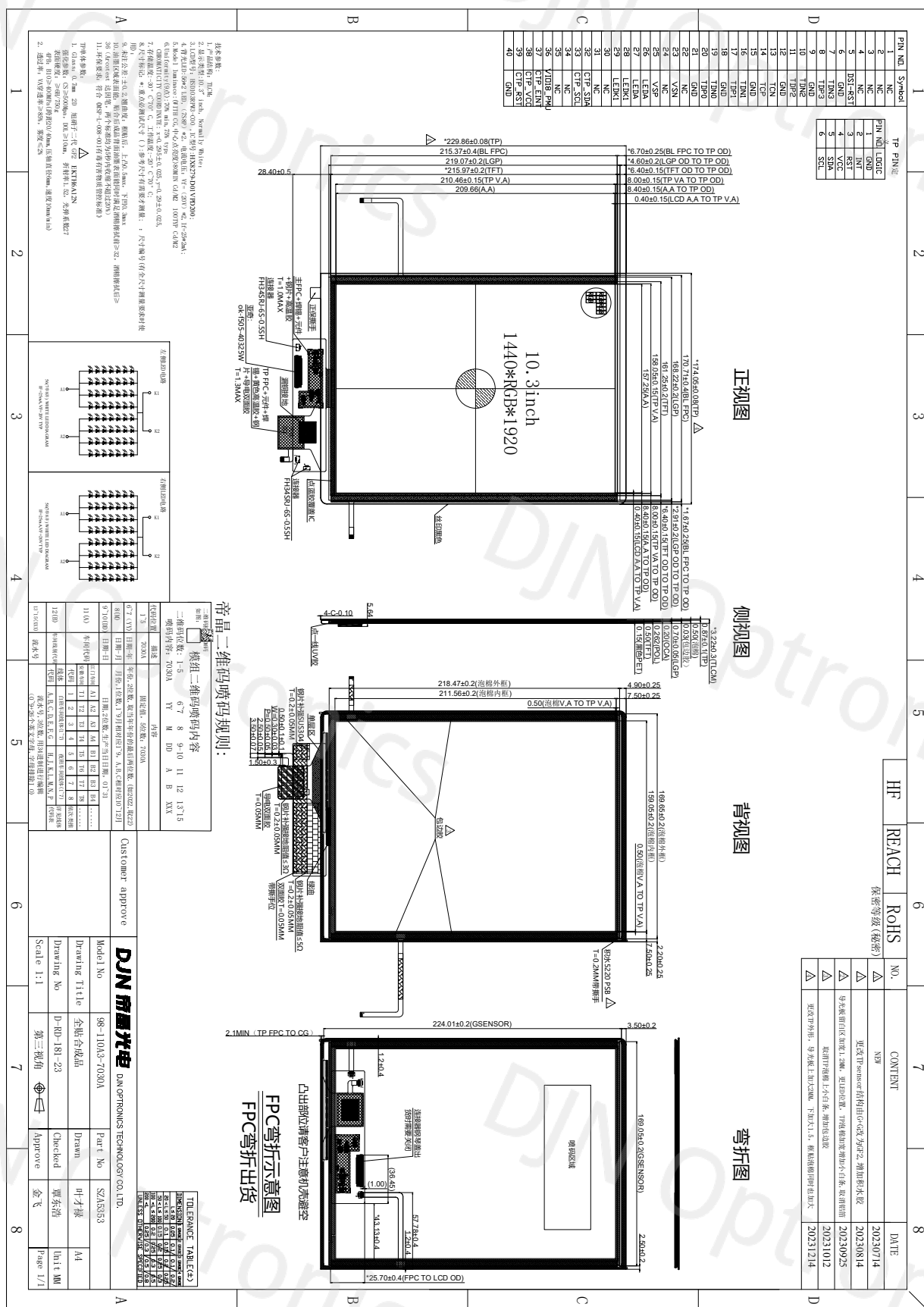
1.GENERAL INFORMATION -- -- -- -- --	4
基本描述	
2 .MODULE OUTLINE DRAWING-- -- -- -- --	5
产品外形图	
3.INTERFACE DESCRIPTION -- -- -- -- --	6
接口定义	
4.BACKLIGHT CHARACTERISTICS-- -- -- -- --	7
背光电气特性	
5.ABSOLUTE MAXIMUM RATINGS-- -- -- -- --	7
极限参数 (IC)	
6.ELECTRICAL CHARACTERISTICS-- -- -- -- --	8
模块电气特性	
7.OPTICAL CHARACTERISTICS-- -- -- -- --	8
光学特性	
8.READ/WRITE TIMING -- -- -- -- --	11
读/写时序	
9.RESET INPUT TIMING -- -- -- -- --	13
复位时序	
10.PRODUCTION PROCESS CONTROL -- -- -- -- --	14
生产过程控制管理	
11.INSPECTION SPECIFICATIONS-- -- -- -- --	15
品质检验标准	
12.RELIABILITY TEST CONDITIONS -- -- -- -- --	17
可靠性测试条件	
13.ROHS TEST REPORT-- -- -- -- --	18
ROHS 测试标准	
14.PRECAUTIONS FOR USING LCD MODULES-- -- -- -- --	19
模组使用注意事项	
15.PACKING SPCIFICATION-- -- -- -- --	21
包装规格	
16.SPECIAL REMAKS-- -- -- -- --	22
注意事项	

1. GENERAL INFORMATION

基本描述

Item 项目	Contents 内容	Unit 单位
LCD Type LCD 类型	TFT-LCD /REFLECTIVE	-
TP Structure TP 结构	/	-
Number of Dots 点阵	1440(H)*(R.G.B)*1920(V)	Dot
Outline dimensions 外形尺寸	176.65 (W)*236.26(H)* 3.25(T)	mm ³
Active area 有效区域	157.25(W)* 209.66(H)	mm ²
TP Viewing area (宽×高) TP 可视区 (W×H)	158.05 (W)*210.46(H)	mm ²
Pixel pitch 像素	0.1092(H)*0.1092(V)	mm
Module size 模组尺寸	10.3	inch
Viewing direction 视角方向	60/60/60/60	O'clock
Backlight type 背光类型	White LED(56*2LED)	-
LCD Driver IC LCD 驱动 IC	HX8279-D01VPD200	-
Interface type 接口类型	MIPI (4 lane)	-
LCM Input voltage 模组输入电压	IOVCC=1.8V, VSP=5.8V, VSN=-5.8V	V
All material of MODULE and process measure up to ROHS Europe		

2. MODULE OUTLINE DRAWING 产品外形图



3. INTERFACE DESCRIPTION

接口定义

LCM interface description

Pin No	Pin Name	Description
1	NC	Left Open (NC)
2	NC	Left Open (NC)
3	NC	Left Open (NC)
4	NC	Left Open (NC)
5	DSI-RST	Reset Pin 1.8V
6	GND	Ground
7	TDN3	MIPI Differential Data Input
8	TDP3	MIPI Differential Data Input
9	GND	Ground
10	TDN2	MIPI Differential Data Input
11	TDP2	MIPI Differential Data Input
12	GND	Ground
13	TCN	MIPI Differential Clock Input
14	TCP	MIPI Differential Clock Input
15	GND	Ground
16	TDN1	MIPI Differential Data Input
17	TDP1	MIPI Differential Data Input
18	GND	Ground
19	TDN0	MIPI Differential Data Input
20	TDP0	MIPI Differential Data Input
21	GND	Ground
22	NC	Left Open (NC)
23	VSN	Power Supply -5.8~-6V
24	NC	Left Open (NC)
25	VSP	Power Supply 5.8~6V
26	LEDA	Anode
27	LEDA	Anode
28	LEDK1	Cathode
29	LEDK1	Cathode
30	NC	Left Open (NC)
31	NC	Left Open (NC)
32	CTP_SDA	I2C SDA,TYP. 1.8V
33	CTP_SCL	I2C CLK,TYP. 1.8V
34	NC	Left Open (NC)
35	NC	Left Open (NC)
36	VI018_PMU	IOVCC (TYP. 1.8V)
37	CTP_EINT	Interrupt Pin 1.8V (AP)
38	CTP_VCC	
39	CTP_RST	Reset Pin 1.8V
40	GND	Ground

4. BACKLIGHT CHARACTERISTICS 背光电气特性

Item 项目	Symbol 符号	Min 最小值	Typ 中间值	Max 最大值	Unit 单位	Condition 条件
Forward voltage 正向电压		19	20	21.7	v	If=25Ma*2 ,Ta=25°C
Number of LED LED 灯数		(7 串*8 并) *2			PCS	
Connection mode 连接类型		Connector/插接				

5. ABSOLUTE MAXIMUM RATINGS 极限参数(IC)

Parameter 参数	Symbol 符号	Min 最小值	Max 最大值	Unit 单位
Supply voltage for logic 逻辑电压 I/O	IOVCC	-0.3	+2.1	V
Input voltage for analog 电路 输入模拟电压	VSP	-0.3	+6.6	V
	VSN	-6.6	0.3	V
Operating temperature 操作温度	TOP	-20	70	°C
Storage temperature 存储温度	TST	-30	80	°C

6. ELECTRICAL CHARACTERISTICS 模块电气特性

Parameter 参数	Symbol 符号	Min 最小指	Typ 典型值	Max 最大值	Unit 单位
Supply voltage for logic 逻辑电压 I/O	IOVCC	1.7	1.8	2.0	V
Supply voltage for analog 模拟电压	VSP	+4.5	+5.8	+6.0	V
	VSN	-6.0	-5.8	-4.5	V
Input voltage “H”level 输入高电平	V _{IH}	0.8 IOVCC	-	IOVCC	V
Input voltage “L”level 输入低电平	V _{IL}	GND	-	0.2 IOVCC	V
Output voltage “H”level 输出高电平	V _{OH}	0.8IOVCC	-	IOVCC	V
Output voltage “L”level 输出低电平	V _{OL}	GND	-	0.2 IOVCC	V

7. OPTICAL CHAYACTERISTICS 光学特性

Item 项目	Symbol 符号	Condition 条件	Min 最小值	Typ 典型值	Max 最大值	Unit 单位	Remark 注释	Note 备注
Response time 响应时间	Tr+Tf	$\Theta=0^\circ$ $\varnothing=0^\circ$ $T_a=25^\circ\text{C}$	-	-	-	ms	FIG1	1
Contrast ratio 对比度	Cr		-	15	-	-	FIG2	2
White Reflectance 白色反射率	Rw(%)		-	43.06	-	%	-	-
Viewing angle range 视角范围	Θ_{x+}	$CR \geq 10$ $T_a=25^\circ\text{C}$	-	60	-	deg	FIG3	4
	Θ_{x-}		-	60	-	deg	FIG3	
	Θ_{y+}		-	60	-	deg	FIG3	
	Θ_{y-}		-	60	-	deg	FIG3	
LCM+TP Luminance LCM 中心点亮度	Lv	$\Theta=0^\circ$ $\varnothing=0^\circ$ $T_a=25^\circ\text{C}$	80	100	-	Cd/ m ²	FIG2	5
CIE (X,Y) Chromaticity 色度坐标	White(X)		0.275	0.3	0.325	-	FIG2	6
	White(Y)		0.295	0.32	0.345	-		

Note1.Response time is the time required for the display to transition from White to black(Rise Time,Tr)and from black to white(Decay Time,Tf).For additional information see FIG1...

备注 1. 响应时间是 Tr(上升时间) 与 Tf(下降时间) 的和, Tr 指显示黑色画面转为显示白色画面需要时间, Tf 指显示白色画面转为显示黑色画面需要时间, 详见 FIG1.。

Note2.contrast Ratio(CR) is defined mathematically by the following formula ,For more information see FIG2.

Contrast Ratio(CR)=Average Surface Luminance with all white pixels/ Average Surface Luminance with all black pixels

备注 2. 对比度是由以下公式计算所得。详见 FIG2.

对比度=显示白色画面时平均表面亮度 (P1, P2, ……)/显示黑色画面时平均表面亮度 (P1, P2, ……)

Note3.The uniformity in surface luminance(WHITE) is determined by measuring luminance at each test position,and then dividing the maximum luminance of all white pixels by minimum luminance of all white pixels,For more information seeFIG2.

WHITE=Minimum Surface Luminance with all white pixels(P1,P2,……)/Maximum Surface Luminance with all white pixels(P1,P2,……)

备注 3. 均匀度是在显示白色画面时,测试P1到P9的亮度,然后再用9个点亮度的最小值除以最大值。详见FIG2.。
均匀度=白色画面下表面亮度最小值 (P1, P2, ……)/白色画面下表面亮度最大值 (P1, P2, ……)

Note4.Viewing angle is the angel at which contrast ratio is greater than a specific value.For TET module,the specific value of contrast ratio is 10.For monochrome and color stn module,the specific value of contrast ratio is2.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.For more information see FIG3

备注 4. 视角指对比度大于等于一个特定值时的可视范围, 对 TFT 屏, 对比对特定值为 10, 对黑白屏 CSTN 屏, 对

比度特定值为 2，视角由横轴（X 轴），竖轴（Y 轴）同 Z 轴（垂直与 LCD 表面）之间的夹角来定义，详见 FIG3.。

Note5. Surface luminance is the LCD surface luminance with all white pixels,For more information see FIG2.

LV=Average Surface Luminance with all white pixels(P1,P2,.....)

备注 5. 表面亮度是在显示白色画面时，测试的亮度值，详见 FIG2.

Lv=平均的表面亮度（P1，P2，……）

Note6.CIE(X,Y)chromaticity is the Center point value.For more information see FIG2.

备注 6. 选择中心点，分别测试 X，Y 值，详见 FIG2.。

Note7.For Viewing angle and response time testing,the testing date is base on Autronic-Melchers' s ConScope.Series instruments.For contrast ratio,Surface Luminance,Luminance uniformity and CIE,the testing date is base on CS-2000 photo detector.

备注 7. 视角和响应时间，测试数据基于 Autronil Melchers' s Conoscope 系列，而对比度，表面亮度，均匀度 CIE 坐标，测试数据基于 CS-2000 photo detector。

Note8.For TN type TFT transmissive module,Gray scale reverse occurs in the direction of panel viewing angle

备注 8. TN 型 TFT 全透产品，在视角方向会发生灰度反转。

FIG1. The definition of Response time

响应时间定义

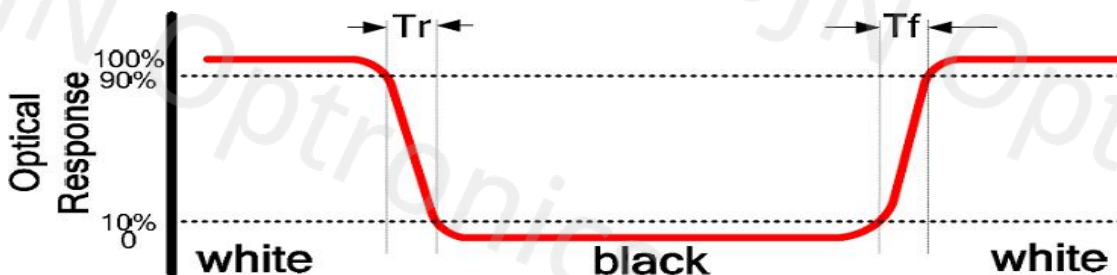


FIG2. Measuring method for Contrast ratio,surface luminance,Luminance uniformity,CIE(X,Y)chromaticity.

对比度，表面亮度，均匀度，CIE 坐标测试方法

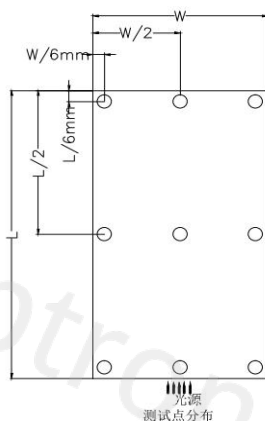
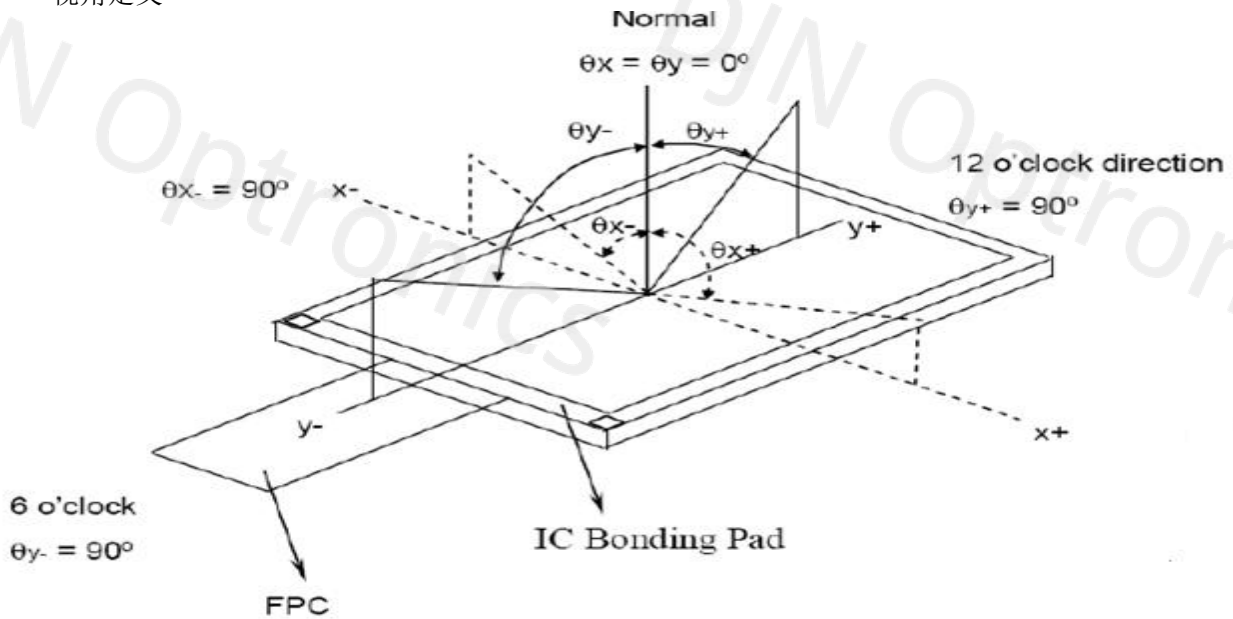


FIG3 The definition of viewing angle

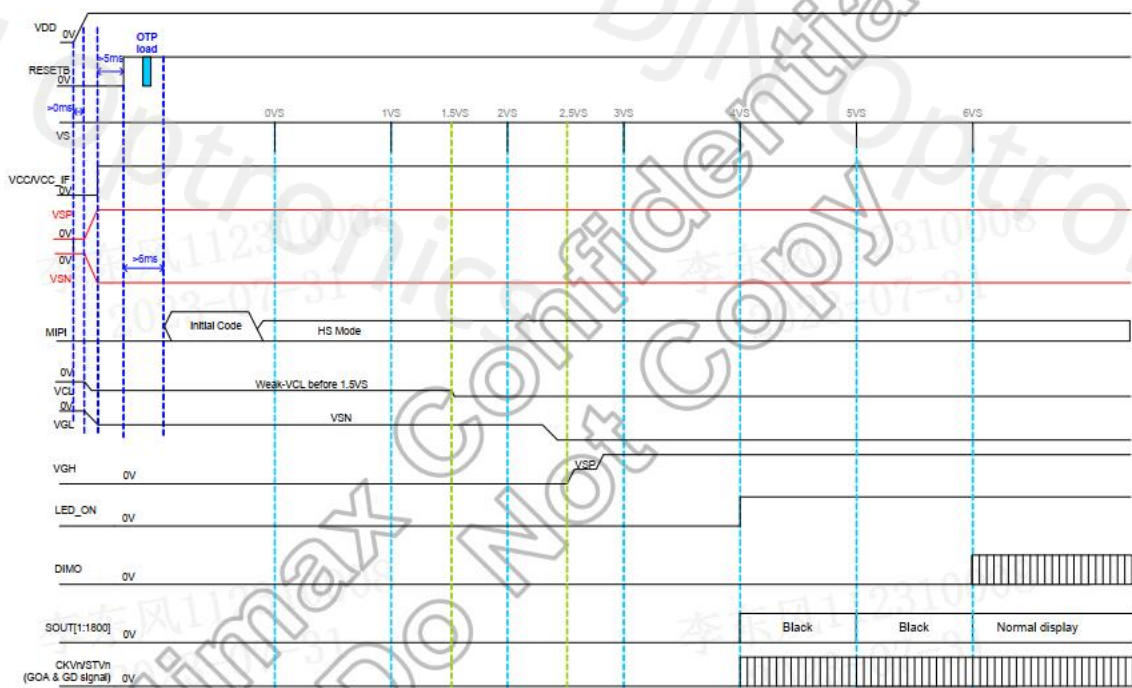
视角定义



8. TIMING

时序

8.1 Power On/Off Sequence



Note: (1) Finish to write the GOA MUX (page1 registers) and GOA timing setting (page3 registers) within 50ms after reset pulls to high.

Figure 5.5: Power on sequence with PWRMD=0 and repair OP disable

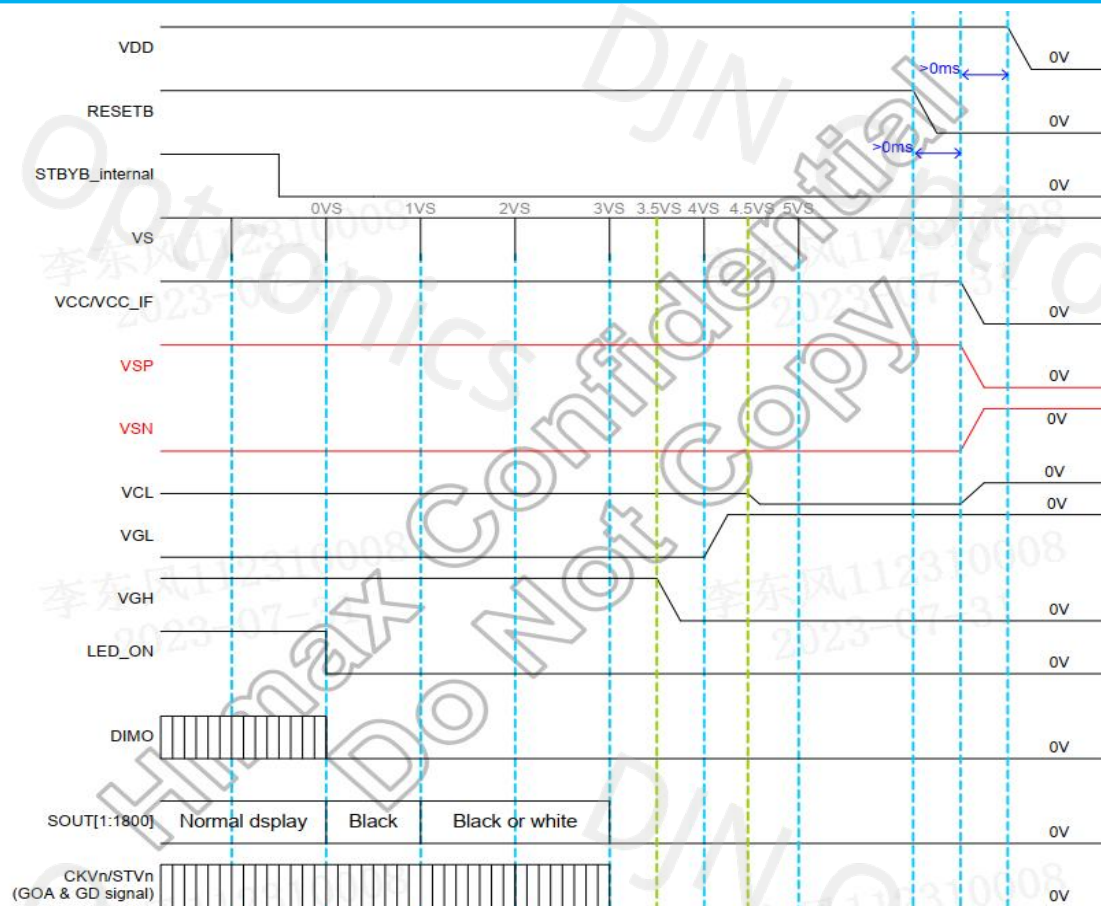


Figure 5.6: Power off sequence with PWRMD=0

9. RESET INPUT TIMING 复位时序

When RESETB of the reset pin equals to Low, it will be in the condition of reset. When it is in the condition of reset, it will make the device recover the initial set.

However, in order to avoid the reset noise cause reset, there is a mechanism to judge about whether the reset is needed or not.

The closed interval of low can be shown as the following.

(VDD=1.7V~2.0V, VSS=0V, T_A=-20℃~+85℃)

Parameter	Symbol	Conditions	Spec.			Unit
			Min.	Typ.	Max.	
Reset low pulse width	Trst	-	20	-	-	μs

Table 13.5: Reset timing



Figure 13.6: Reset timing

NOTE: This section is only for reference, Details please refer to the IC specification.

备注：本节仅供参考, 详细信息请参阅 IC 规格书

10.RELIABILITY TEST CONDITIONS 可靠性试验条件

NO. 序号	Test Item 实验项目	Test Condition 实验条件	Inspection after test 实验后检查
1	High Temperature Storage 高温存储测试	60°C±2°C/48 hours	Inspection after 2~4 hours storage at room temperature ,the sample shall be free from defects:实 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 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.Sealleak;封口松脱 3.Non-display;不显示 4.missing segments;漏笔
2	Low Temperature Storage 低温存储测试	-20°C±2°C/48 hours	
3	High Temperature Operating 高温操作测试	50°C±2°C/48 hours	
4	Low Temperature Operating 低温操作测试	-10°C±2°C/48 hours	
5	Temperature Cycle 温度变化试验	25°C~65°C±2°C/RH90%~25°C~20°C ±2°C~25°C*12cycles, 极限 42 cycles (60min.)~(20min.)~(60min.)~(20min)	

6	Damp Proof Test 恒温恒湿实验	50°C±5°C*90%RH/24 hours	5.Glass crack;玻璃破碎 6.Current IDD is twice higher than initial value. 电流 IDD 大于初始值的两倍。
7	ESD Test 抗静电性测试	1) 参考 GB/T 17626.2-2006/IEC61000-4-2: 2001 (电磁兼容试验、测量技术和静电放电抗扰度试验); 2) 温度 25±5°C, RH: 45±15%; 放电方式: 空气放电和接触放电。放电电压: 空气放电±10KV (有问题按照降级 2KV, ±8KV 电压确认); 接触放电±8KV 确认 (有问题按照降级 2KV, ±6KV 电压确认);	1) 性能要求: 不允许出现等级 a 类 (功能无法运行, 硬件或固件损坏)、等级 b 类 (功能无法运行, 需要人工操作恢复) 故障, 等级 c (功能无法运行, 10s 之内可自动恢复) 类 (可接受), 其它正常状况判定为测试 PASS; 2) 外观测试: 喷涂、印刷、镀层无明显脱落, 及其它测试前后外观不一致的现象。

11. PRECAUTIONS FOR USING LCD MODULES

模组使用注意事项

1. Handling precautions 使用注意事项

1.1 The display panel is made of glass and polarizer.As glass is fragile.It tends to become or chipped during handing especially on the edges.Please avoid dropping or jarring.Do not subject it to a mechanical shock by dropping it or impact.

显示屏由玻璃和偏光片组成, 由于玻璃是脆的, 使用过程中要特别注意边缘区, 请防止跌落或震动, 不能机械碰撞。

1.2 Do not apply excessive force to the display surface or the adjoining areas since this may cause the color tone to vary.Do not touch the display with bare hands,This will stain the display area and degraded insulation between terminals(some cosmetics are determined to the polarizer)

请勿施加过大的压力与显示屏或连接部位, 否则会引起色调变化, 不要用手接触显示屏, 这将弄脏显示区和降低端子之间的绝缘能力, (一些外观是由偏光片决定的)

1.3 The polarizer covering the display surface of the LCD module is soft and easily scratched. Handle this polarizer carefully.Do not touch,push or rub the exposed polarizers with anything harder than an HB pencil lead(glass,tweezers,etc)Do not put or attach anything on The display area to avoid leaving marks on it.Condensation on the surface and contact with terminals due to cold will damage,stain or dirty the polarizer.After products are tested at low temperature they must be warmed up in container before coming in to contact with room temperature air.

覆盖液晶显示模块显示平面的偏光片是软性且易被擦伤, 请小心轻拿, 请勿用任何硬度大于 HB 铅笔芯的物品 (玻璃, 镊子等) 接触、撞压或摩擦裸露偏光片, 不要放置或粘附物体在显示区域上以免留下痕迹, 冷凝在表面和端子将会损坏或弄脏偏光片, 产品在低温下测试之后, 与室温空气接触之前必须在容器内升温。

1.4 Tools required for assembling,such as soldering irons,must be properly grounded.Make certain the AC power source for the soldering iron does not leak.When using an electric screwdriver to attach LCM,the screwdriver should be of ground potentiality to minimize as much as possible any transmission

of electromagnetic waves produced sparks coming from the commutator of the motor.

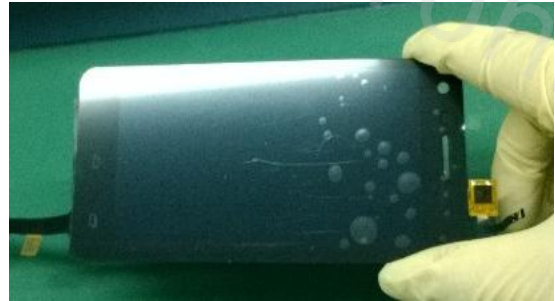
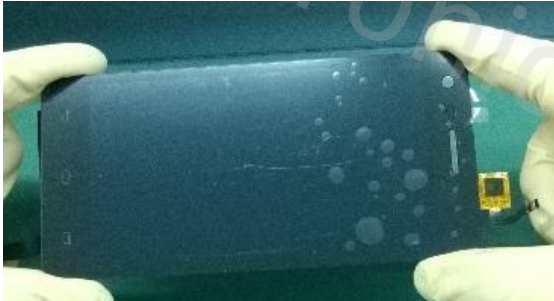
使用工具如电烙铁，要可靠接地，并确保烙铁使用交流电，不要漏电，用电批固定模块时，电批应接地，尽可能降低电动换向器火花产生的电磁波。

2. Handling precaution for LCM 模块操作规范

2.1 LCM is easy to be damaged. Please note below and be careful for handling.

液晶显示模块很容易被损坏，请注意以下并小心操作

2.2 Correct handling; 正确操作



As above picture, Please handle with anti-static gloves around LCM edges.

像上面的图片，请戴防静电手套，并拿模块边缘。

2.3 Incorrect handling 错误操作



Please don't stack LCM

不要把模块叠在一起



Please don't operate with sharp stick such as pens

请不要用尖锐的物体来操作，例如用笔尖

2.4 Input logic voltage before apply analog high voltage such as LCD driving voltage when power on. Remove analog high voltage before logic when power off the module. Input each signal after the positive/negative voltage becomes stable.

开机时，先开逻辑电压，再接通模拟电压，如显示屏驱动电压。关机时，先断开模拟电压，再关逻辑电压，正负电源都稳定后再送控制信号。

2.5 If the LCD modules have been operating for a long time showing the same display patterns, the display patterns may remain on the screen as ghost images and a slight contrast irregularity may also appear. A normal operating status can be regained by suspending use for some time. It should be noted that this phenomenon does not adversely affect performance reliability.

如果液晶显示模块长时间工作于同一个显示图案，换屏时会出现鬼影，也会出现轻微的对比度不均，停止使用一段时间后可恢复到正常状态，此现象不会严重影响性能可靠性。

2.6 Please keep the temperature within the specified range for use and storage. Polarization degradation, bubble generation or polarizer peel-off may occur with high temperature and high humidity.

模块在操作和存储规范范围内使用，高温高湿可能会引起偏振退化，气泡，偏光片脱落等问题。

3. Storage Precautions 存储注意事项

3.1 When storing the LCD modules, the following precaution are necessary.

液晶显示模块的存储依照以下几点:

3.2 Store them in sealed polyethylene bag.If properly sealed,there is no need for the desiccant
使用聚乙烯密袋封, 如果密封得当, 不需要干燥剂。

3.3 Store them in a dark place.Do not expose to sunlight or fluorescent light,keep the temperature between 0~35°C,and keep the relative humidity between 40%RH and 40%RH.

避光保存, 避免直接暴晒在太阳光或黄光灯下, 保持温度在 0~35°C 之间, 保持相对湿度在 40%RH 和 60%RH 之间。

3.4 The polarizer surface should not come in contact with any other objects(We advise you store them in the anti-static electricity container in which they were shipped)

偏光片表面避免接触其他物质 (建议存放在货运防静电包装中)

4 Transportation Precautions 运输注意事项

4.1 During shipment,please handle with care.The packaging bag can not be broken,step on trap.Packing Carton layer height can not be over two meters .

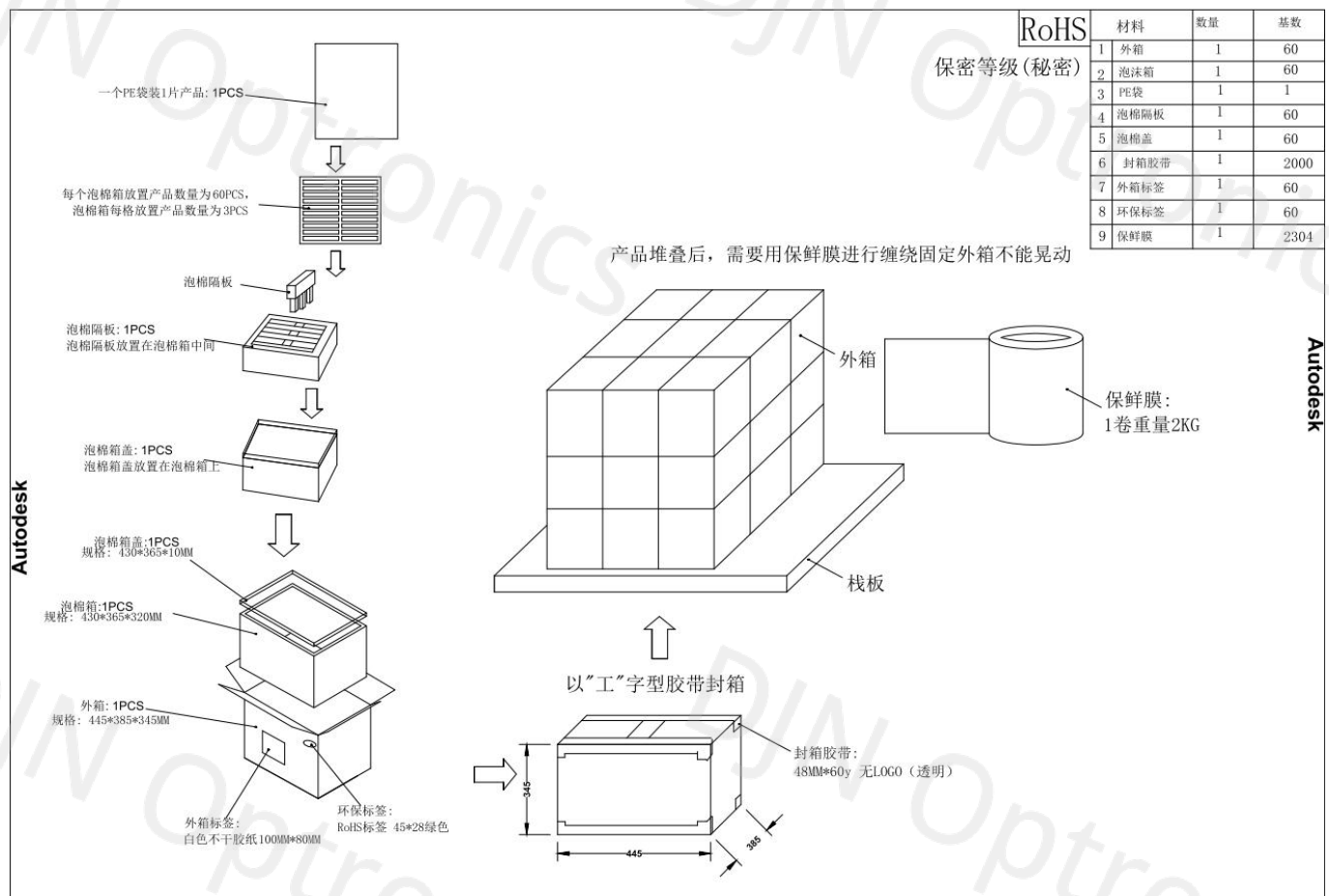
装运过程要轻拿轻放, 不能出现包装袋破损, 塌陷, 卡通箱叠层高度不能超过两米。

4.2 The transportation process should pay attention to the waterproof and moisture-proof measures.Product can not be watering.Ethylene sealed bags can not be unsealed.

运输过程要注意有防水和防潮措施, 产品不能淋水, 产品乙烯密封袋不可拆封。

15. PACKING SPECIFICATION

包装规格



16. SPECIAL REMAKS

注意事项

1. The above specifications are the binding criteria for DJN Technology's outgoing quality inspection.
以上规格描述为帝晶的品质出货标准
2. The customer is kindly requested to inform DJN Technology as soon as possible on any questions, remarks, and disagreements regarding these specifications.
对于规格中的任何问题或存在疑问，客户可随时向帝晶公司进行咨询。
3. DJN is not responsible for damage to its products due to neglect of the precautions as described in the previous chapter.
如果不按照规格书要求进行操作而损坏产品的，帝晶不承担责任。
4. About the limited warranty unless special agreement between DJN and customer DJN will replace or repair any of its products that are found to be functionally defective when inspected in accordance with DJN acceptance standards for a period of one year from data of shipments.

除帝晶跟客户签定协议外，对确认为属于产品本身功能性缺陷的，在帝晶可接受范围内可进行退换或维修，帝晶保质期为从出货日期起一年内有效。