



深圳市思坦德科技有限公司  
SHENZHEN STD TECHNOLOGY CO., LTD

# PRODUCT SPECIFICATION

## FOR LCD MODULE

**MODULE NO.**

***STD3. 5TFT320240-26***

**For Customer:**

**Approved by:**

**Signature:**

**Date:**

Prepared	Checked	Approved	Date
			2015-7-22



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SHENZHEN STD TECHNOLOGY CO., LTD  
**REVISION RECORD**

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### 1. Precautions In Use Of LCD Module

#### 1.1 Use Modules

1. When modules switch on or off, after accessing positive supply power with  $3\pm 0.5$  voltage, then input signal levels, if signal levels input before supply power becomes stable or switches off, IC circuits off, modules will be damaged, as a result, modules will be damaged.
2. Dot matrix modules are high path-number LCDs, they are largely related to the contrast, view angle, driving voltage when displaying, so you should adjust it to get best contrast and view angle, if it is too high, not only displays are affected, but also let life shorted.
3. When using under regulated working temperature below, the display responsiveness is too slow, when using under regulated temperature above, whole display surface turns dark, this is not damaged, when the temperature returns normal, all displays become normal

#### 1.2 Module storage

1. Storage temperature:  $-30\sim +80^{\circ}\text{C}$
2. Place in dark sites to avoid strong lights
3. Don't place other thing on their surfaces
4. Packaged in polyester materials (with anti-static electricity layers) and sealed

#### 1.3 Soldering

1. Iron head temperature:  $310\pm 10^{\circ}\text{C}$
2. Soldering time:  $< 3\text{S}$
3. Soldering material: eutectic nature, low melting point
4. Don't use acid solder
5. Soldering don't repeat above 3 times



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### 2. General Features & Mechanical Specifications

Item	STANDARD Value	Unit
LCD type	262K a-Si TFT-LCD TRANSMISSVIE	
Dot arrangement	320(R.G.B)*240	Dot
Module size(With RTP)	75.9(W)*62.9 (H)*2.6(T)	mm
Active area	70.08(W)*52.56(H)	mm
Pixel size	219(W)*219(H)	um
Diagonal length	3.5	inch
Viewing direction	12:00	-
Backlight	LED(white 6*LED)	-
Top & Tst	-20°C - +70°C & -30°C - +80°C	°C
Drive IC & Interface	NV3035C / RGB interface	-
LCM: All of LCM of material and process measure up to ROHS Europe		





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### 4. Absolute Maximum Ratings

Logic supply voltage, VCI	-0.5V to +5V
Analog supply voltage, VDDA	-0.5V to +7.5V
Supply voltage, VCIP	-0.5V to +5.5V
Supply voltage, V1~V6	-0.3~VDDA+0.3
VGH~VGL	-0.3~+25V
Storage temperature	-55℃ to +125℃
Operating temperature	-20℃ to +85℃

Stress above those listed under “Absolute Maximum Ratings” may cause permanent damage to the device. These are stress ratings only. Functional operation of this device at these or under any other conditions above those indicated in the operational sections of this specification are not implied and exposure to absolute maximum rating conditions for extended periods may affect device reliability.

### 5. DC Electrical Characteristics

(Test Condition: VCI=VCIP=3.3V, VDDA=5.0V, VSS=GNDA=VSSP=0V, TA=25℃)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Power Supply Voltage	VCI	3.0	3.3	3.6	V	
I/O power supply	VDDIO	VDD	3.3	3.6	V	
Pump circuits supply	VCIP	3.0	3.3	3.6	V	
Low power supply	VDD	1.6	1.8	2.0	V	
Low Level Input Voltage	Vil	VSS	-	0.2xVDDIO	V	Digital input pins TA=25℃
High Level Input Voltage	Vih	0.8xVDDIO	-	VDDIO	V	Digital input pins TA=25℃
Input Leakage Current	Ii	-	-	±1	μA	Digital input pins
High Level Output Voltage	Voh	VDDIO-0.4	-	VDDIO	V	Digital output pins: Ioh=400μA
Low Level Output Voltage	Vol	VSS	-	VSS+0.4	V	Digital output pins: Iol=-400μA
2xVCI pump output level	VINT1	5.2	5.5	5.8	V	VCIP=3.3V, w/o panel loading
Analog power voltage	VDDA	4.5	5.0	VINT1-0.3	V	Analog circuit power from Power Block
VCOMAC output level	VCOMA C	4.6	-	VINT1-0.3	V	By VCSL[2:0] setting VCOMAC=V(VCSL[3:0])±100mV
VCOMDC output level	VCOMD C	1.0	-	2.26	V	By VCDL[5:0] setting VCOMDC=V(VCDL[5:0])±50mV
Positive power supply	VGH	14.5	15	15.5	V	Gate driver load + procard load
Negative power supply	VGL	-8	-7	-6	V	Gate driver load + procard load
Base drive current	IDRV	-	-	10	mA	VCIP=3.3V, DRV=0.7V
DRV output voltage	VDRV	VSS+0.1	-	VCI-0.1	V	
Feed back voltage	VFB	0.55	0.6	0.65	V	DC/DC operating, VBL current=20mA
Voltage Deviation of Outputs	Vvd	-	±20	±35	mV	Vo=0.1V~0.5V & VDDA-0.5V~VDDA-0.1V
			±15	±25	mV	Vo=0.5V~VDDA-0.5V
Low-Level Output Current of VCOMOUT	IOLF	-	-10	-	mA	Force VCOMAC=6.0V VCOMOUT output=0V V.S 0.9V
High-Level Output Current of VCOMOUT	IOHF	-	10	-	mA	Force VCOMAC=6.0V VCOMOUT output=6.0V V.S 5.1V
Source Low-Level Output Current	IOLs	-	-30	-	μA	Son=Vo V.S. (Vo+0.9)
Source High-Level Output Current	IOHs	-	30	-	μA	Son=Vo V.S. (Vo-0.9)
Gate Low-Level Output Current	IOLG	-	-250	-	μA	GOn; Vo=VGL V.S. (VGL+0.5)
Gate High-Level Output Current	IOHG	-	250	-	μA	GOn; Vo=VGL V.S. (VGH-0.5)
Chip Stand-by Current	Idds	-	15	50	μA	STBYB="0", all function are shutdown, CLKIN/VSD/HSD halted
Chip Operating Current	Idda	-	10	-	mA	No load, CLKIN=27MHz, Fld=15KHz



## 6. Optical Characteristics

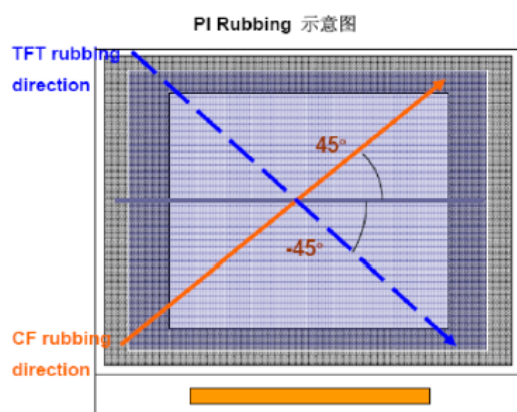
EWV Polarizer; Ta=25°C

Item		Symbol	Condition	Min	Typ	Max	Unit	Remark
View Angles		θT	CR≧10	50	60	-	Degree	Note 2
		θB		60	70	-		
		θL		60	70	-		
		θR		60	70	-		
Contrast Ratio		CR	θ=0°	400	500	-	-	Note1 Note3
Response Time		T <sub>ON</sub>	25℃	-	20	30	ms	Note1 Note4
		T <sub>OFF</sub>						
Chromaticity	White	x	C-Light	0.250	0.300	0.350	-	Note5 Note1
		y		0.306	0.356	0.406		
	Red	x		0.568	0.618	0.668		
		y		0.267	0.317	0.367		
	Green	x		0.250	0.300	0.350		
		y		0.514	0.564	0.614		
	Blue	x		0.088	0.138	0.188		
		y		0.109	0.159	0.209		
NTSC		-	-	45	50	-	%	Note 5
Transmittance		T	-	6.5	6.8	-	%	Note1

Test Conditions:

1. The ambient temperature is 25°C.
2. The test systems refer to Note 1 and Note 2.

### 6.2 Rubbing Direction





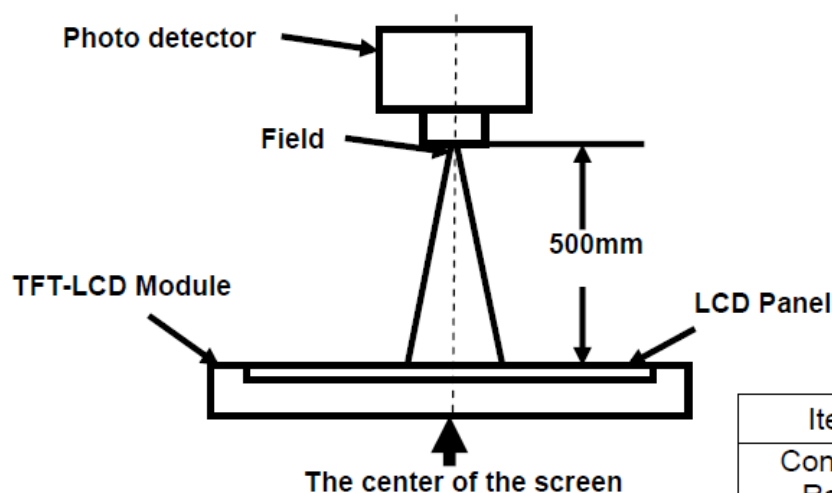


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Note 1: Definition of optical measurement system.

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. All input terminals LCD panel must be ground when measuring the center area of the panel.



Item	Photo detector	Field
Contrast Ratio	SR-3A	1°
Chromaticity		
Response Time	BM-7A	2°

Note 2: Definition of viewing angle range and measurement system.

viewing angle is measured at the center point of the LCD by CONOSCOPE(ergo-80)。

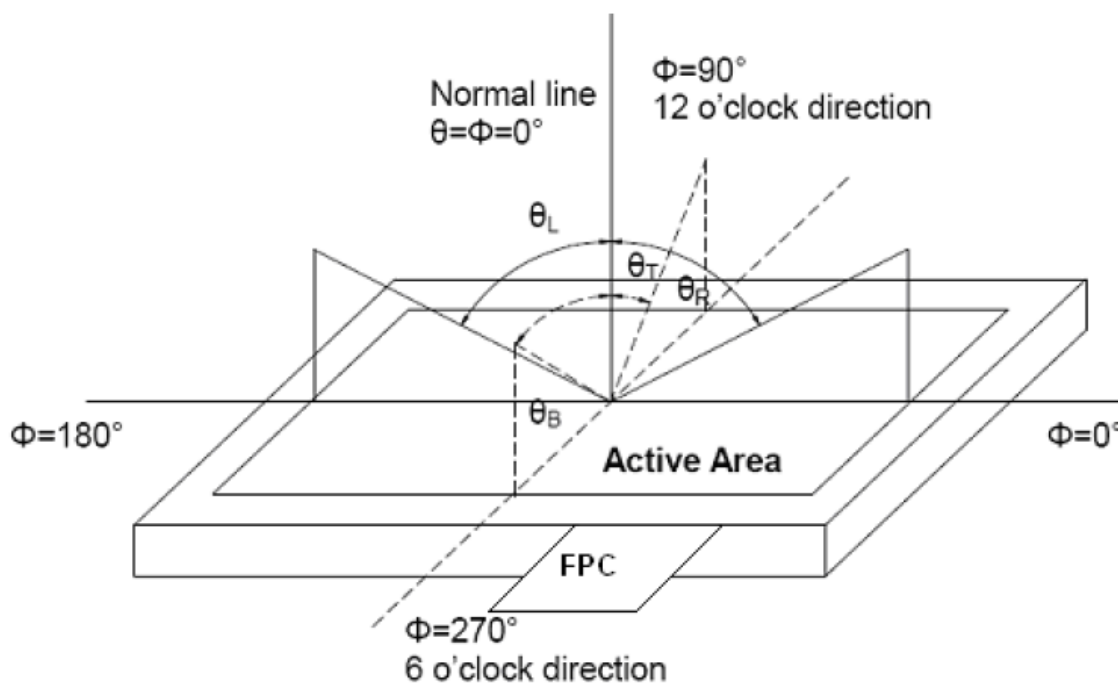


Fig. 1 Definition of viewing angle



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Note 3: Definition of contrast ratio

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

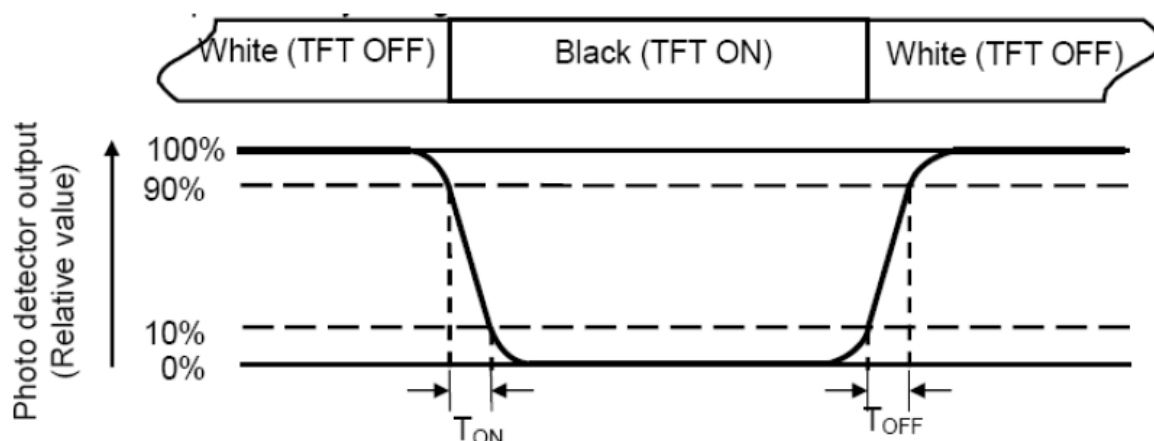
“White state”: The state is that the LCD should driven by  $V_{\text{white}}$ .

“Black state”: The state is that the LCD should driven by  $V_{\text{black}}$ .

$V_{\text{white}}$ : To be determined     $V_{\text{black}}$ : To be determined.

Note 4: Definition of Response time

The response time is defined as the LCD optical switching time interval between “White” state and “Black” state. Rise time ( $T_{\text{ON}}$ ) is the time between photo detector output intensity changed from 90% to 10%. And fall time ( $T_{\text{OFF}}$ ) is the time between photo detector output intensity changed from 10% to 90%.



Note 5: Definition of color chromaticity (CIE1931)

Color coordinates measured at center point of LCD.



## 7. Backlight Specification

COLOR : WHITE

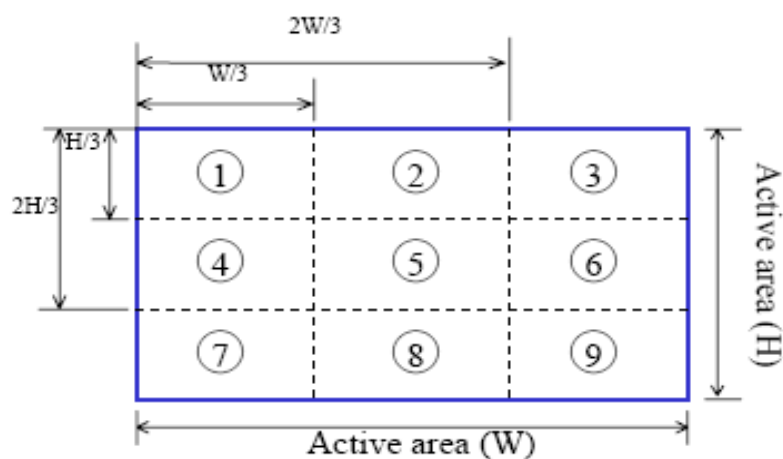
Item	Symbol	Min.	Typ..	Max..	Unit.
Forward voltage	V <sub>f</sub>	17.4	18.6	19.8	V
Backlight current	I <sub>led</sub>	-	20	-	MA
BL Luminance	L <sub>v</sub>	5000	-	-	cd/m <sup>2</sup>
LCM Luminance	L <sub>v</sub>	260	300	-	cd/m <sup>2</sup>
Backlight uniformity	No less than eighty percent				-
Number of LED	-	6			Piece
Connection mode	S/P	In Series			-

★1 Test condition is :

- (a) Center point on active area
- (b) Best Contrast

★2 Uniform measure condition :

- (1) Measure 9 point. Measure location is show below :
- (2) Uniform = (Min. brightness / Max. brightness) × 100%
- (3) Best Contrast.





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## 8. When use LENS

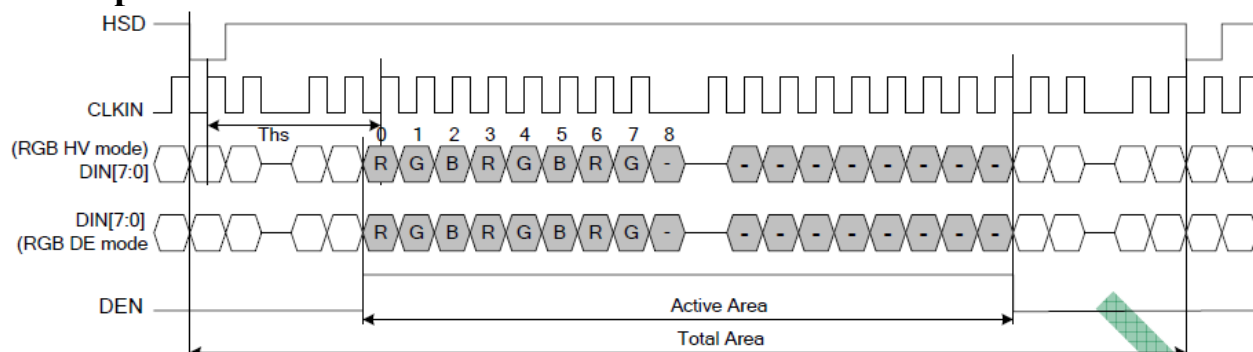
you must be do the following things





## 9. Timing Characteristics

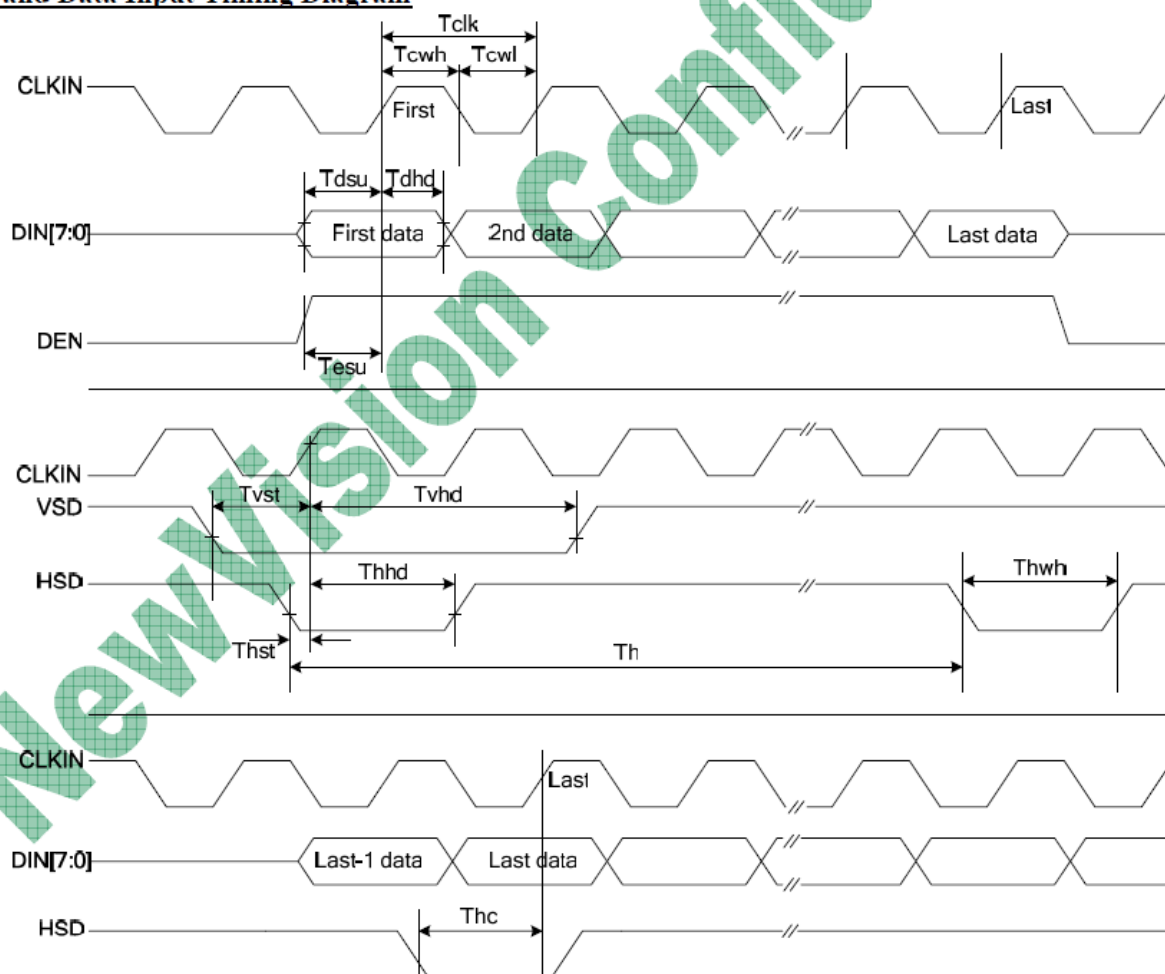
### 9.1 Input Data Format



Input Format	Format Standard	CLKIN(MHz)	HSD(CLKIN)	Total Area (CLKIN)	Active Area (CLKIN)	Note
8bit RGB	8bit RGB	27	1	1716	960	960×240
24bit RGB	24bit RGB	6.4	1	408	320	

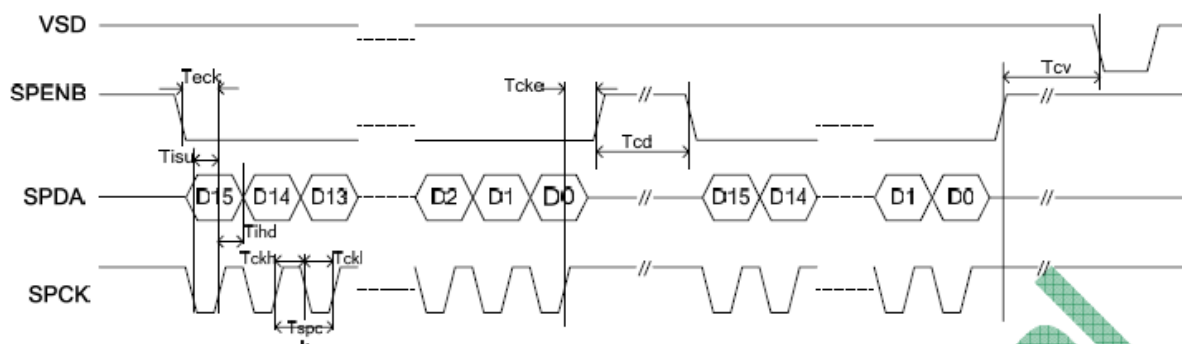
### 9.2 Time Diagram

#### Clock and Data Input Timing Diagram

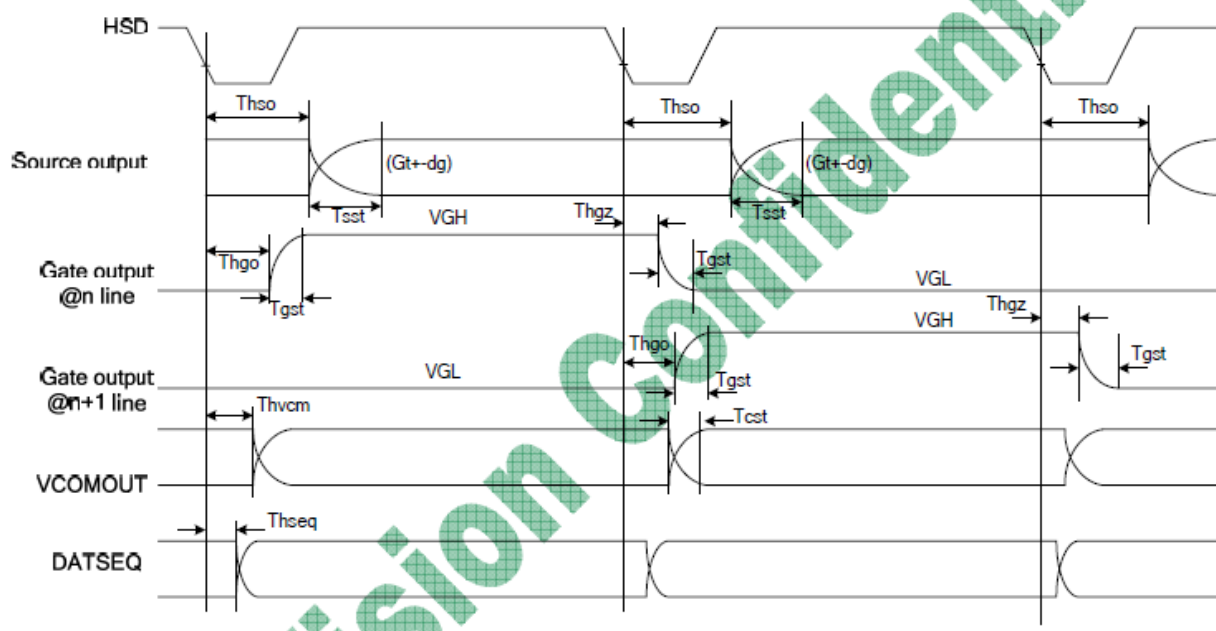




### 3-wire Timing Diagram

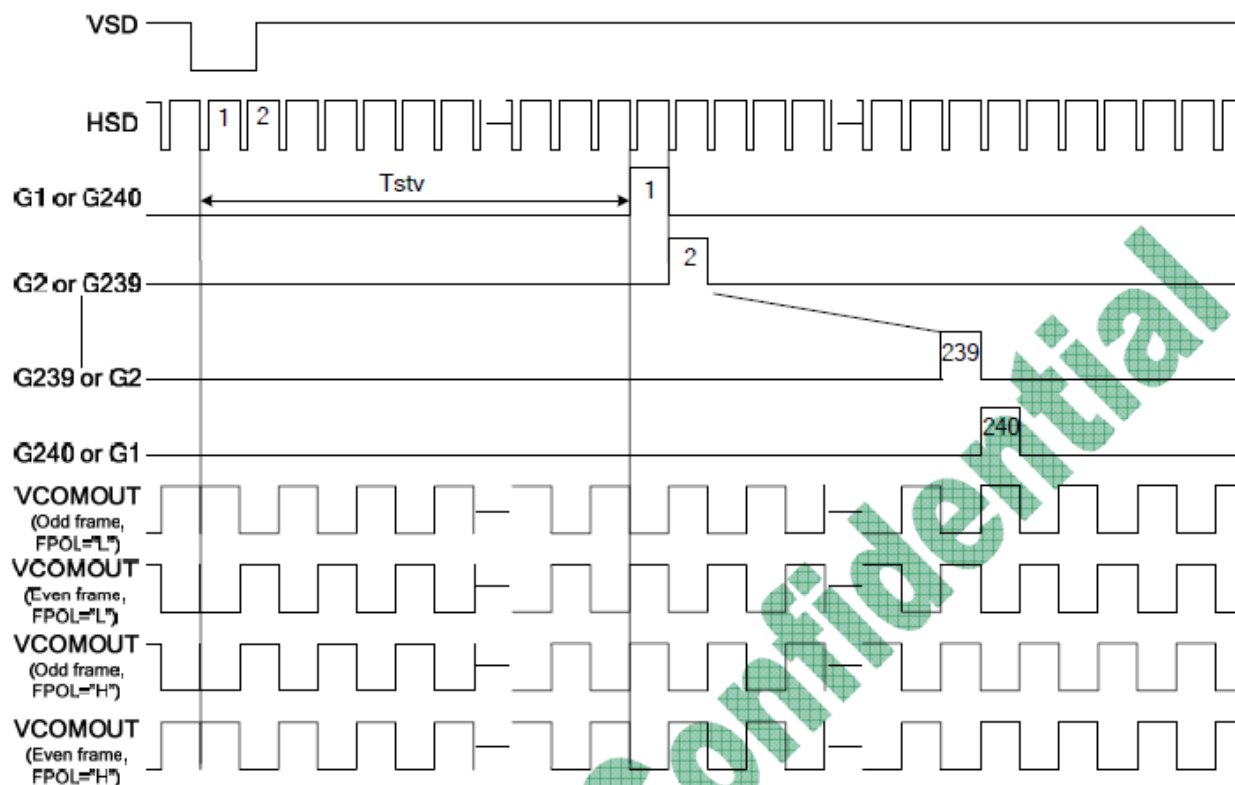


### Source Driver Output Timing Diagram

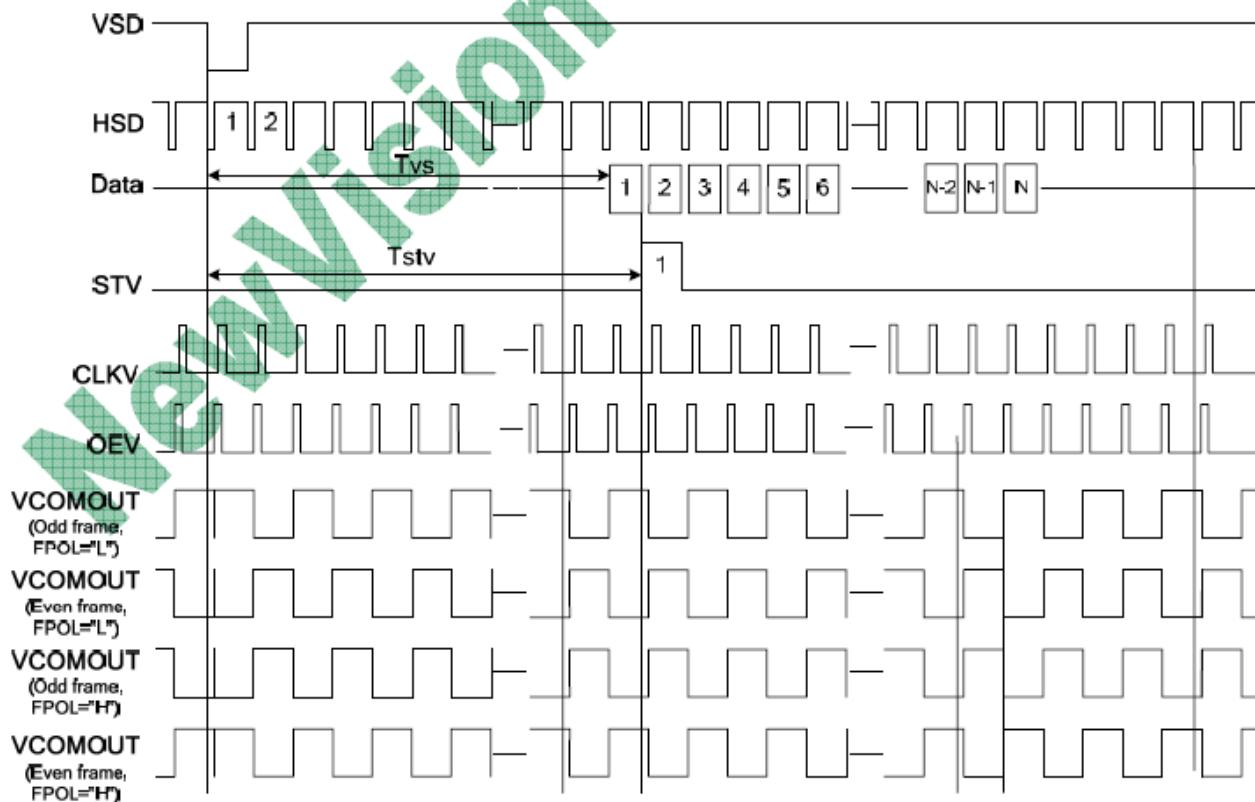




Gate Driver Output Timing Diagram



Vertical Timing Diagram (HV Mode)

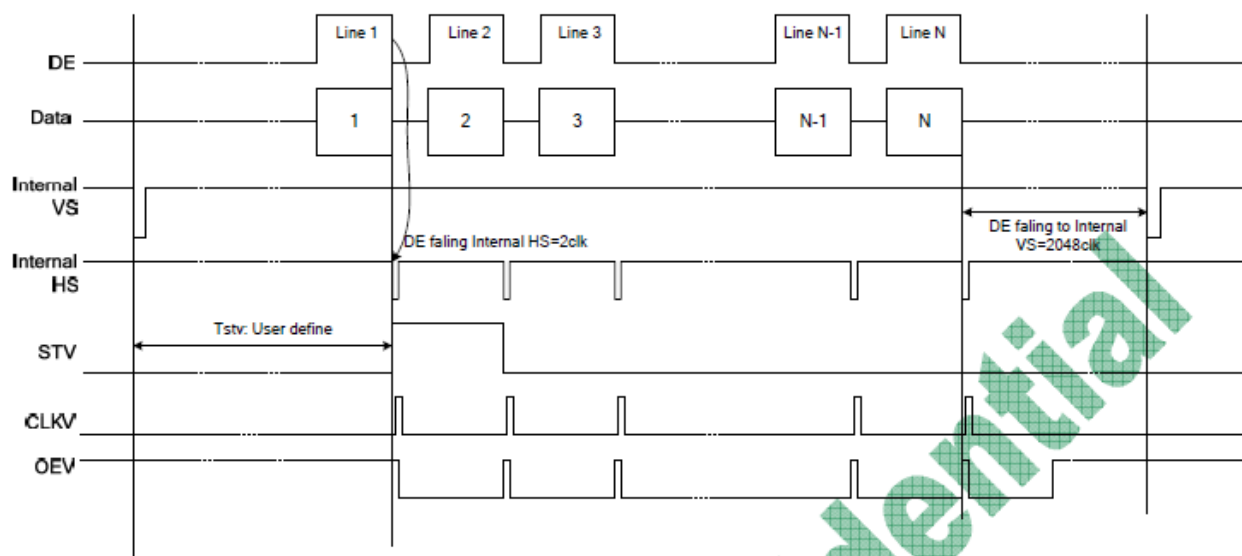




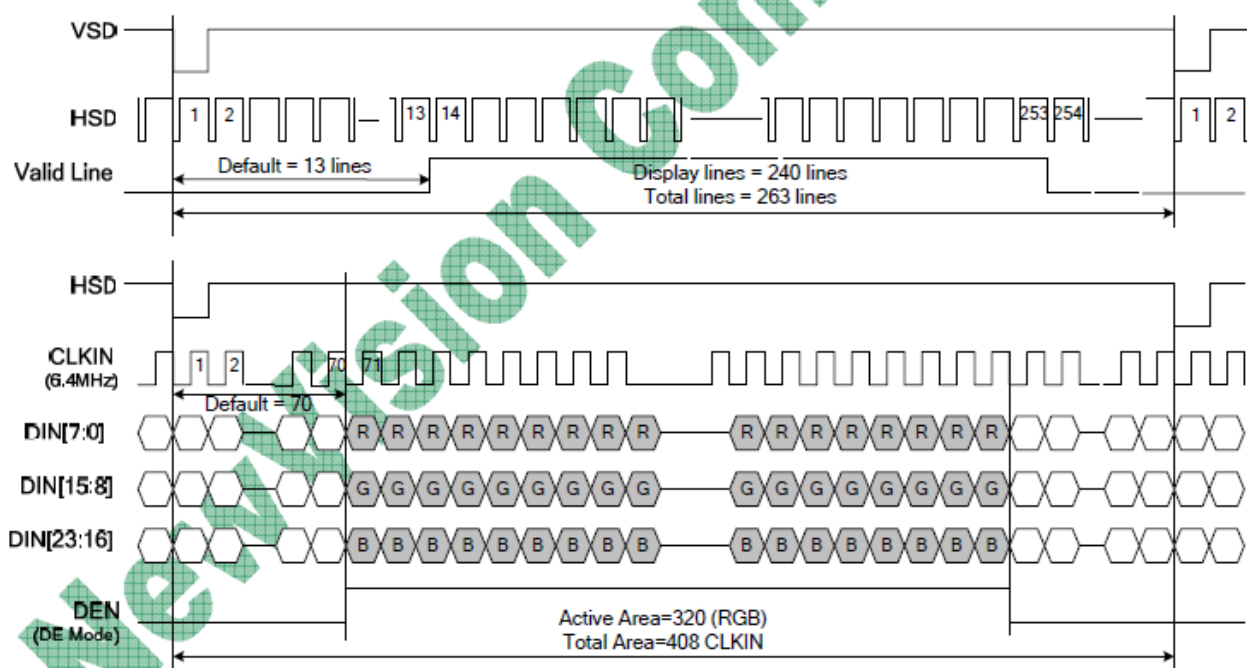
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### Vertical Timing Diagram (DE Mode)



### Input Data Timing (24 bit RGB mode for 960×240 @ SEL[3:0]=1100b)







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### 9.3 Specifications

Test Condition: (VCI=VCIP=3.3V,VDDA=5.0V,VSS=GND=VSSP=0V,TA=25°C)

#### 8 Bit RGB 960 CH Mode

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
CLKIN frequency	Fclk	-	27	30	MHz	VDD=3.0~3.6V
CLKIN cycle time	Tclk	-	37		ns	
CLKIN pulse duty	Tcwh	40	50	60	%	Tclk
Time that HSD to 1 <sup>st</sup> data input(NTSC)	Ths	35	70	255	CLKIN	DDLY=70,Offset=0(fixed)

#### 24 Bit RGB Mode (@ SEL[3:0]=1100 or 1101)

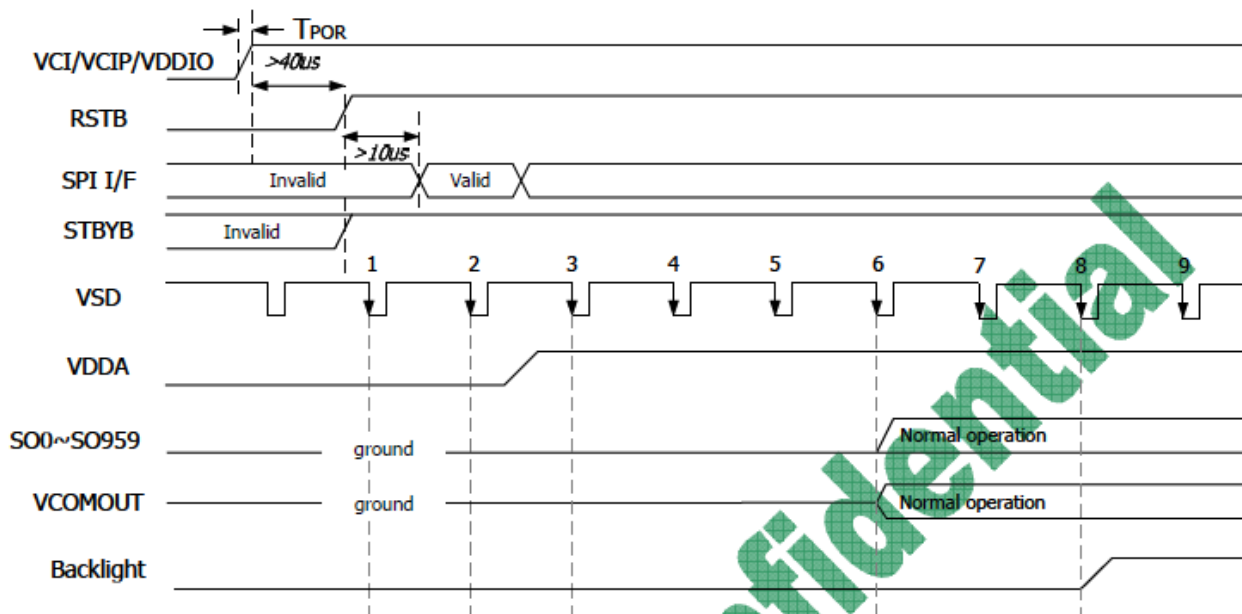
Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
CLKIN frequency	Fclk	6.1	6.4	8.0	MHz	VDD=3.0~3.6V
CLKIN cycle time	Tclk	125	156	164	ns	
CLKIN pulse duty	Tcwh	40	50	60	%	Tclk
Time that HSD to 1 <sup>st</sup> data input(NTSC)	Ths	40	70	255	CLKIN	DDLY=70,Offset=0(fixed)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
<b>System Operation Timing</b>						
VDD power source slew time	T <sub>POR</sub>			1000	us	From 0V to 90% VDD
RSTB active pulse width	T <sub>RSTB</sub>	40			us	VDD=3.3V
<b>Input Output Timing</b>						
CLKIN clock time	Tclk	-		35.7	ns	Please refer to timing table(P25)
HSD to CLKIN	Thc	-	-	1	CLKIN	
HSD width	Thwh	1	-	-	CLKIN	
VSD width	Tvwh	1	-	-	Th	
HSD period time	Th	60	63.56	67	us	
VSD setup time	Tvst	12	-	-	ns	
VSD hold time	Tvhd	12	-	-	ns	
HSD setup time	Thst	12	-	-	ns	
HSD hold time	Thhd	12	-	-	ns	
Data set-up time	Tdsu	12	-	-	ns	DIN[23:0] to CLKIN
Data hold time	Tdhd	12	-	-	ns	DIN[23:0] to CLKIN
DEN setup time	Tesd	12	-		ns	DEN to CLKIN
Time that VSD to 1 <sup>st</sup> line data input	Tvs	2	13	127	Th	@CIR601/8bit RGB HV mode Control by HDLY[6:0] setting Tvs=HDLY[6:0]
Time that CCIR_V to 1 <sup>st</sup> line data input	Tvs	12	20	28	Th	@CCIR656 NTSC mode Control by HDLY[6:0] setting Tvs=HDLY[6:0]
Time that CCIR_V to 1 <sup>st</sup> line data input	Tvs	17	25	33	Th	@CCIR656 PAL mode Control by HDLY[6:0] setting Tvs=HDLY[6:0]
Time that VSD to 1 <sup>st</sup> line data input	Tvs	2	13	127	Th	@24bit RGB HV mode Control by HDLY[6:0] setting Tvs=HDLY[6:0]
Source output stable time 1	Tst		25	30	us	96% final, CL=30pF, RL=2K
Gate output stable time	Tgst		500	1000	ns	96% final, CL=40pF
VCOMOUT output stable time	Tcst		4	8	us	96% final, CL=33nF, RL=100ohm
<b>3-wire serial communication AC timing</b>						
Serial clock	Tspck	320	-	-	ns	
SPCK pulse duty	Tscdut	40	50	60	%	Tckh/Tspck
Serial data setup time	Tisu	120	-	-	ns	
Serial data hold time	Tihd	120	-	-	ns	
Serial clock high/low	Tssw	120	-	-	ns	
Chip select distinguish	Tcd	1	-	-	us	
SPENA to VSD	Tcv	1	-	-	us	
SPENB input setup time	Teck	150	-	-	Ns	
SPENB input hold time	Tcke	150	-	-	ns	

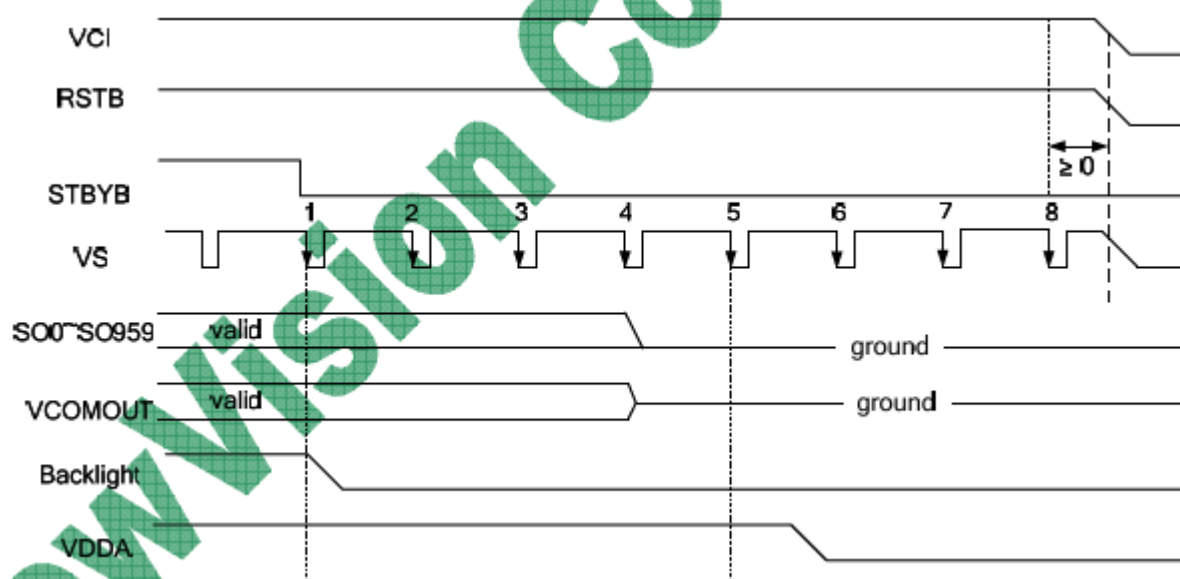


## 10. Power On/Off Sequence

### 10.1 Power-On Timing Sequence



### 10.2 Power-Off Timing Sequence





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### 11. Interface Description

Pin No	Symbol	Description
1	GLED	Backlight cathode
2	GLED	Backlight cathode
3	VLED	Backlight anode
4	VLED	Backlight anode
5	GND	Ground
6-9	NC	Not Connect
10	GND	Ground
11	S0_IN	Connect to S0_OUT
12	S1_IN	Connect to S1_OUT
13	S0_OUT	Connect to S0_IN
14	RESET	Reset signal pin
15	CS	Chip select pin
16	SCL	3-Wire Communication Clock input. Rising edge latch
17	SDI	3-Wire Communication Data input/output
18-25	D16-D23	Data bus for Red[0:7]
26-33	D08-D15	Data bus for Green[0:7]
34-41	D00-D07	Data bus for Blue[0:7]
42	HSYNC	Horizontal Sync input. Default Negative polarity, can be change by HSDPOL register
43	VSYNC	Vertical Sync input. Default Negative polarity, can be change by VSDPOL register
44	DOTCLK	Clock for Input Data. Data latched at rising/falling edge of this signal. Default positive
45-46	VDD	Power supply to analog circuit(2.8-3.3V)
47	ENABLE	Data Input Enable. Active High to enable the data input Bus under "DE Mode". Normally pull low
48	S1_OUT	Connect to S1_IN
49-50	GND	Ground



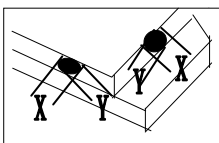
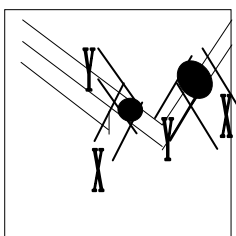
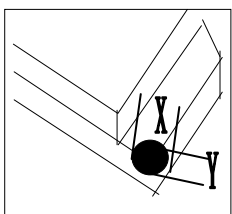
## 12. Inspection standard (检查标准)

### 12.1 电性检验判定标准

序号	检查项目	判 定 标 准			缺陷程度	判定方法	
1	显示状态	不显、显示乱码、多划、少画面、视角错、闪烁等均不允许			重缺	目视	
		无法用文字描述的现象，必要时制定限度样板进行参考。如显示不均、显示浓淡、斜纹等；					
		显示的颜色效果参照开发、工程样品或限度样板判定					
2	电流/电压	电流 Idd 和电压 Vop 范围参照相关工程开发资料，特殊要求按客我双方商定的要求。			重缺	目视	
3	背光	LED 灯不亮不允许；			重缺	目视	
		背光电流超出规格范围，不允许；					
		亮眼、漏光进入 LCD 的 A、B 区不允许；必要时按限度样板做判定；			轻缺		
		背光颜色根据样品、规格书判定；			轻缺		
		亮度与发光均匀度参照开发、工程或限度样板判定			轻缺		
4	亮点、黑点、白点、针孔（通电状态下）		尺寸(mm)	允许个数		轻缺	目视 目测 镜 菲林卡
			A B				
		$\Phi \leq 0.1$	不计				
		$0.1 < \Phi \leq 0.15$	2				
		$0.15 < \Phi \leq 0.25$	1				
		$\Phi > 0.25$	0				
		注：1. 可视区域出现的 2 个点的间距必须在 10mm 以上。 2. 对于黑白点很明显时，在必要的情况下以限度样品来控制。					
5	黑线、白线（通电状态下）	尺寸		允收数量		轻缺	目视 目测 镜 菲林卡
		L	W	A B	C		
		不计	$W < 0.02$	不计	不计		
		$L \leq 2$	$0.02 \leq W \leq 0.03$	2			
			$W > 0.03$	0			
		注：1. L 为线距长，W 为线宽；2. 对于线状缺陷很明显时，在必要的情况下以限度样品来控制。					




## 12.2 外观检验判定标准

序号	检查项目	判定标准	缺陷程度	判定方法
1	崩 缺	A. 一般崩边	轻缺	目视 目测 镜 菲林 卡
		图示		
				
		X		
		Y		
		崩边不允许触及边框胶不能影响贴片(气泡\片翘)		
		所有崩裂都必须小于 1/3 黑框		
		注: T 表示单面玻璃的厚度; L 表示缺陷处方向玻璃的宽度; X 表示长度; Y 表示宽度; Z 表示深度;		
		B. 引脚背面	轻缺	目视 目测 镜 菲林 卡
		部位		
				
		引脚背面		
		引脚面 (引线位)		
		(引位)		
		C. 崩角部份	轻缺	目视 目测 镜 菲林 卡
				
		X		
		Y		
		Z		
		1. 不允许触及框胶; 2. 引线脚边的银点不允许外露; 3. 不能影响贴片(气泡\片翘)		



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2	裂痕	D. 裂痕 	任何区域不能有任何带延伸性的裂痕，裂痕需修理成崩缺判定	重缺	目视																							
3	切割不良		1. 突沿长度不计 2. $B \leq 0.30$ 3. 突沿导致外形超出尺寸规格不允许；备注：B 表示宽度 X、Y 破损导致框胶 1/3 以上外露不允许	轻缺	卡尺 目测 镜 菲林 卡																							
4	LCD 盒内气泡	拒收		重缺	目视																							
5	LCD 漏液	拒收		重缺	目视																							
6	外形尺寸	符合制造图纸指定外形尺寸的公差内		重缺	游标卡尺																							
7	LCD/偏光片/背光（黑点、色点、异物、偏光片气泡、擦伤、刮伤等点状）（不在通电状态下）	  $\Phi = (X+Y) / 2$	<table><tr><th rowspan="2">区域 尺寸</th><th colspan="3">允许个数</th></tr><tr><th>A</th><th>B</th><th>C</th></tr><tr><td><math>\Phi \leq 0.1</math></td><td colspan="3">不计</td></tr><tr><td><math>0.1 &lt; \Phi \leq 0.15</math></td><td colspan="3">2</td></tr><tr><td><math>0.15 &lt; \Phi \leq 0.2</math></td><td colspan="3">1</td></tr><tr><td><math>\Phi &gt; 0.2</math></td><td>0</td><td colspan="2">2</td></tr></table>	区域 尺寸	允许个数			A	B	C	$\Phi \leq 0.1$	不计			$0.1 < \Phi \leq 0.15$	2			$0.15 < \Phi \leq 0.2$	1			$\Phi > 0.2$	0	2		轻缺	目视 目测 镜 菲林 卡
区域 尺寸	允许个数																											
	A	B	C																									
$\Phi \leq 0.1$	不计																											
$0.1 < \Phi \leq 0.15$	2																											
$0.15 < \Phi \leq 0.2$	1																											
$\Phi > 0.2$	0	2																										
8	LCD/偏光片/背光	 纤维 线状物  1. 包括：刮伤、擦伤、黑线、细毛、纤维等 2. 背光伪彩膜划伤以通电点亮背光时看不见为 OK	<table><tr><td>长度</td><td>宽度</td><td>允收</td></tr><tr><td>不计</td><td><math>W \leq 0.02</math></td><td>不计</td></tr><tr><td colspan="3"><math>L \leq 2.0, 0.02 &lt; W \leq 0.03, 1</math></td></tr><tr><td><math>W &gt; 0.03</math></td><td colspan="2">以点规格判定</td></tr></table>	长度	宽度	允收	不计	$W \leq 0.02$	不计	$L \leq 2.0, 0.02 < W \leq 0.03, 1$			$W > 0.03$	以点规格判定		轻缺	目视 目测 镜 菲林 卡											
长度	宽度	允收																										
不计	$W \leq 0.02$	不计																										
$L \leq 2.0, 0.02 < W \leq 0.03, 1$																												
$W > 0.03$	以点规格判定																											
9	偏光片贴附		烫伤、边缘翘 $\leq 0.15$ 不限	轻缺	目视																							



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	不良	 <p>1. 贴附位置符合制造图纸要求的公差 2. 偏光片须覆盖环氧胶框 3. 偏光片内部翘起按偏光片气泡判定。</p>		
10	彩虹 (LCD 压伤)	没有明显的压伤 (彩虹)，必要时定限度样板	轻缺	目视
11	保护膜	<p>1. 保护膜翘起不能进入可视区</p> <p>2. 保护膜翘起不能使偏光片有指印，胶状物或擦不掉等明显脏污</p> <p>3. 保护膜难撕开判定 NG</p> <p>4. 保护膜气泡 <math>\Phi \leq 5\text{mm}</math> 忽略不计，<math>\Phi &gt; 5\text{mm}</math> 拒收</p>	轻缺	目视
12	底 色	与样品一致，不能有明显色差（必要时可制定限度样板或色卡）	轻缺	目视
13	IC 崩角	 <p>1. IC 崩角 <math>\Phi \leq 0.5\text{mm}</math>，高度 <math>\leq 1/3</math> 厚度，且不能进入 A 区域并只允许崩一个角。</p>  <p>2. 保证电性 OK</p> <p>3. 崩角按标准判 OK 时必须保证崩角处无延伸性的裂痕。</p> <p><math>\Phi = (X+Y) / 2</math></p>	轻缺	显微镜
14	FPC 不良	<p>1. 顶伤、划伤未伤及基材参照点状和线状标准判断</p> <p>2. FPC 不允许任何的顶伤、刮破、折断、定位孔破不允许</p> <p>3. 外观尺寸符合规格图纸要求，否则不允许</p> <p>4. FPC 金手指不能有氧化、脏物，必要时以限度样板来控制</p> <p>5. 模组 FPC 翻折到背光背面出现背光/触摸屏 FPC 绷紧、模组 FPC 上的元器件无法正常卡入背光凹槽、或者翻折后模组 FPC 歪斜不允许</p>	轻缺	目视
15	贴胶纸	<p>1. 胶纸粘性良好，不能有翘起、歪斜、皱折、撕裂</p> <p>2. 颜色、尺寸、贴附位置应满足图纸规格要求</p> <p>3. 易撕贴纸贴附位置符合图纸或工艺要求，不得歪斜，且能把保护膜撕起。</p>	轻缺	目视
16	铁框	<p>1. 不允许有尺寸不符，开口位置不符、破裂、变形</p> <p>2. 涂漆/镀层颜色需参照样板。</p>	重缺	目视





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		3. 刮伤导致涂漆/镀层脱落, 长 $\leq 5\text{mm}$ , 宽 $\leq 0.2\text{mm}$ 时允许 1 处	轻缺	目视
17	焊点	1. 引脚与焊接处的上锡面积 $< 75\%$ 不允许且需要留 1/4 以上避空位。 2. 焊点不光滑、表面有白色或黑色的残留物不允许 3. 触摸屏/背光 FPC 金手指与模组 FPC 焊盘的焊接重合长度 $\leq 1.0\text{mm}$ 不允许	轻缺	目视
18	组装	1. 模组组装方式与组装文件要求/样板不符不允许 2. 组装部件间连接不牢固(如: 正常取放会导致玻璃与背光源脱离)不允许 3. LCM 组装倾斜或偏位超出背光边缘 0.2MM 以上不允许	轻缺	目视
19	易撕贴	1. 粘附力不够撕起保护膜不允许 2. 贴附位置不符合规格要求不允许 3. 易撕贴与玻璃边缘角度偏离垂直方向大于 5 度不允许	轻缺	目视
20	喷码	1. 喷码内容不符合文件要求不允许 2. 喷码字体不清晰无法辨识不允许	轻缺	目视
21	视角偏差	依据限度样板进行判断	轻缺	目视
22	触摸屏与 LCD 之间的组装脏点及纤维	1. 脏点 $\Phi \leq 0.1$ , 不计 $0.1 < \Phi \leq 0.15$ , 允许 2 个 (距离 10MM 以上) 比例不能超过 1%。 2. 纤维: 不允许有。 备注: 如果点纤维未进可视区, 且不可移动则为良品	轻缺	目视 目测 镜 菲林 卡
23	触摸屏表面折痕	表面折痕/压痕不允许	重缺	目视
24	触摸屏	划写触摸屏测试画面, 无反应不允许	重缺	棉签
25	牛顿环/干涉线	 $\leq 5\text{MM}$ 允许 1 个	轻缺	迎光 目视
		 $\leq 1/6$ 触摸屏面积允收 1 个		
		注: 1. 不论牛顿环/干涉线面积大小, 点亮背光后, 造成文字失真或直线变形, 均不允许 2. 以 200gf 的手写笔在触摸屏表面触击, 不允许出现水波纹(检验时人手不要给手写笔施加力量)		





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26	触摸屏鼓	<div><div>FILM</div><div>LCD</div><div></div><div>膜鼓起在 0.3MM 以下允许</div></div>	轻缺	目镜 塞规										
27	Film 表面: 鱼眼\气泡	<table><tr><th>直径</th><th>规格</th><th>备注</th></tr><tr><td><math>\Phi \leq 0.15</math></td><td>不计</td><td rowspan="3">两个气泡之间的 距离<math>\geq 10\text{MM}</math></td></tr><tr><td><math>0.15 &lt; \Phi \leq 0.25</math></td><td>允收<math>\leq 2</math> 个</td></tr><tr><td><math>0.25 &lt; \Phi</math></td><td>拒收</td></tr></table>	直径	规格	备注	$\Phi \leq 0.15$	不计	两个气泡之间的 距离 $\geq 10\text{MM}$	$0.15 < \Phi \leq 0.25$	允收 $\leq 2$ 个	$0.25 < \Phi$	拒收	轻缺	目视 目测 镜 菲林 卡
直径	规格	备注												
$\Phi \leq 0.15$	不计	两个气泡之间的 距离 $\geq 10\text{MM}$												
$0.15 < \Phi \leq 0.25$	允收 $\leq 2$ 个													
$0.25 < \Phi$	拒收													

### 12.3 焊锡、包装的检验判定标准

序号	检查项目	判定标准	缺陷程度	判定方法
1	锡珠、锡渣	1. $\Phi < 0.1$ 忽略不计 3. $\Phi \geq 0.3\text{mm}$ 作为严重缺陷不可接受 注: 必须保证最小电气间隙 $> 0.2\text{mm}$ , 保证功能正常, 粘附不可移动, 且不会产生潜在的功能缺陷。 5. 当锡渣厚度超过 $0.1\text{m}$ 时必须用烙铁刮平 (不允许出现狗牙现象)	轻缺	目视
2	贴片元件	1. 元件装配上下、左右偏位 $\leq 1/3$ 元件焊盘宽度 2. 翘起, 墓碑现象不允许 3. 上锡面高度大于 $2/3$ 元件高度且小于整体元件高度 4. 焊锡点必须光滑湿润	轻缺	目视
		5. 不允许元件受损、破裂、少件、多件、元件装配反向、漏焊、虚焊	重缺	目视
3	背光与 T/P 的 FPC 焊接	1. FPC 焊接不可有连锡、虚焊、松香 2. 焊接悬空 $\leq 0.2\text{mm}$ 3. 上下、左右偏位 $\leq 1/3$ 焊盘宽度 4. 焊点必须光滑无锡尖	轻缺	目视
4	包装	1. 包装材料的使用需严格按照 BOM 清单的使用。	轻缺	目视
		2. 包装方式需按照包装图纸进行包装 3. 包装材料等不得有破损和涂画。	重缺	目视



### 13. Dependable Test

实验项目	手机产品	判定标准
高温存放	70℃，96 小时	功能测试正常，不允许有漏笔，串笔，不显示，显示异常等功能性问题出现 2.测试前后 IDD 电流变化值小于或等于+/-20% 3.外观检查无低温气泡，无封口松脱落，无边框彩虹，无 ACP 气泡
低温存放	-20℃，96 小时	
高温操作	60℃，48 小时	
低温操作	-10℃，48 小时	
高温高湿存储	50℃，90%RH，120 小时	
冷热冲击	-20℃-80℃，30min-30min,10 个循环	1.功能测试正常。 2.没有玻璃破碎、崩缺、封口松脱、环氧框裂口等缺陷。 3.无结构松动脱落
振荡试验	频率：10-55Hz,振幅：1.5mm,x\y\Z 各 1 小时	
跌落试验	放入包装箱，一米高度，6 面 3 菱各一次	
静电测试	150Uf，330 欧，8KV 空气放电，10 次	试验后，功能测试正常。电流 Idd 不能大于初时值的一倍

### 14. FINAL REMARKS

1. The above specifications are the binding criteria for STD Technology's outgoing quality inspection.
2. The customer is kindly requested to inform STD Technology as soon as possible on any questions, remarks, and disagreements regarding these specifications.
3. STD is not responsible for damage to its products due to neglect of the precautions as described in the previous chapter.

About the limited warranty unless special agreement between STD and customer STD will replace or repair any of its products that are found to be functionally defective when inspected in accordance with STD acceptance standards for a period of one year from data of shipments.