

NISIN

产品规格承认书

Product Specifications for Approval

客户： 型号：			日欣型号： 5.99 1080*2160		
批准 APPROVED	审核 CHECKED	拟制 DESIGNED	批准 APPROVED	审核 CHECKED	拟制 DESIGNED



R-R-020-A0

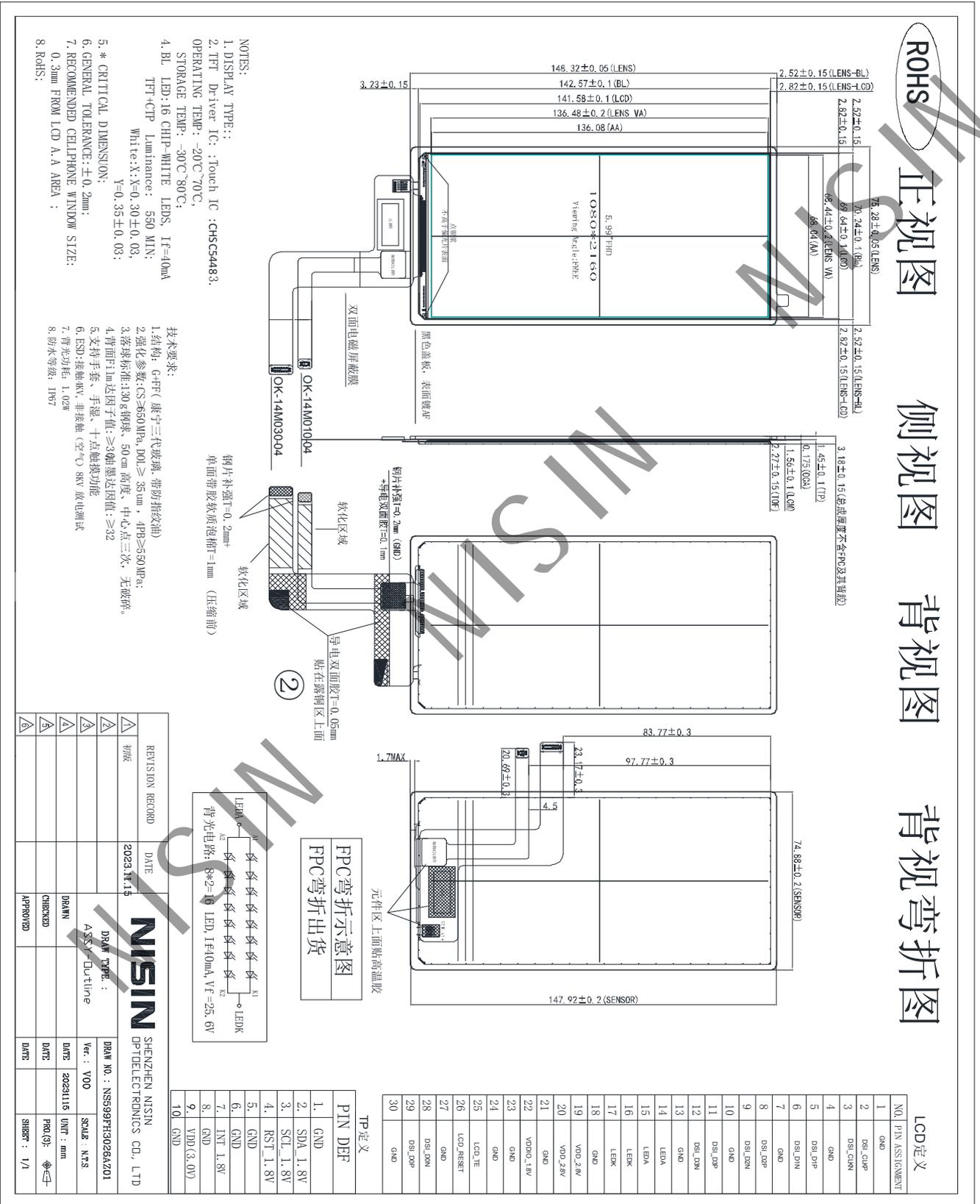
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1.产品规格 (Product Specifications)

面板类型 (Panel Type)	TFT LCD
面板尺寸 (Panel Size)	5.99 inch
显示类型 (Display Type)	Normal Black
分辨率 (Resolution)	1080 (RGB) x 2160 (dot)
显示点间距 (Dot Pitch)	57.3Um X 57.3Um
显示色彩 (color)	16.7M
视角 (View Angle)	U/D/L/R: 80/80/80/80
显示驱动 IC (Display Driver IC)	XM91080
接口类型 (Interface Type)	MIPI
触摸类型 (TP Type)	I2C
触摸 IC (TP IC)	CHSC5448
外形尺寸 (Dimensions)	75.28(H) X 148.32(V) X 3.18(T) (mm)
显示区尺寸 (Display area)	68.04 x 136.08 (mm)
模组亮度 (Module Brightness)	550cd/m ²
触摸点数 Touch points	10
触摸按键 Touch Key Number	0
触摸屏固件版本	Version:

2.产品图纸 (Product Drawings)



3. 接口定义 (The Interface Definition)

见 CAD 图纸

4. 电性特性 (Electrical Characteristics)

11.1 Absolute Maximum Ratings

Item	Symbol	Rating	Unit
Power Supply Voltage 1	VDDI-VSS	-0.3 ~ +1.95	V
Power Supply Voltage 2	VDDAM-VSS	-0.3 ~ +1.95	V
Power Supply Voltage 3	AVDD-VSS	-0.3 ~ +6.0	V
Power Supply Voltage 4	OTP_PWR-VSS	-0.3 ~ +8.25	V
Power Supply Voltage 5	VDD-VSS	-0.3 ~ +1.5	V
Power Supply Voltage 6	VSS-AVEE	-0.3 ~ +6.0	V
Power Supply Voltage 7	VGH-VGL	-0.3 ~ +32	V
Input Voltage	Vt	-0.3 ~ VDDI+0.3	V
Operating Temperature	Topr	-40 ~ +85	°C
Storage Temperature	Tstg	-55 ~ +110	°C
Humidity		5 ~ 95	%

NOTE:

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

11.2.2 DSI DC Characteristics

Parameter	Symbol	Conditions	Specification			Unit
			Min	Typ	Max	
Power supply voltage for MIPI RX	VDDAM		1.65	1.8	1.95	V
High speed / Low power mode operating voltage	VP_HSSI			1.2		V
MIPI Characteristics for High Speed Receiver						
Single-ended input low voltage	V_{ILHS}		-40			mV
Single-ended input high voltage	V_{IHHS}				460	mV
Common-mode voltage	V_{CMRXDC}		70		330	mV
Differential input impedance	ZID		80	100	125	ohm
HS transmit differential voltage (VOD=VDP-VDN)	$ V_{OD} $		140	200	250	mV
Different input high threshold	V_{IDTH}				70	mV
Different input low threshold	V_{IDTL}		-70			mV
Single-ended threshold for HS termination enable	$V_{TERM-EN}$				450	
MIPI Characteristics for Low Power Mode						
Pad signal voltage range	V_I		-50		1350	mV
Ground shift	V_{VSSSH}		-50		50	mV
Logic 0 input threshold	V_{IL}		0		550	mV
Logic 1 input threshold	V_{IH}		880		VDDAM	mV
Input hysteresis	V_{HYST}		25			mV
Output low level	V_{OL}		-50		50	mV
Output high level	V_{OH}		1.1	1.2	1.3	V
Output impedance of Low Power Transmitter	ZOLP		80	100	125	Ohm
Logic 0 contention threshold	$V_{IHCD,MAX}$		0		200	mV
Logic 1 contention threshold	$V_{ILCD,MIN}$		450		VDDAM	mV

11.3 AC Characteristics

11.3.1 MIPI Interface Characteristics

High Speed Data Transmission: Data-Clock Timing

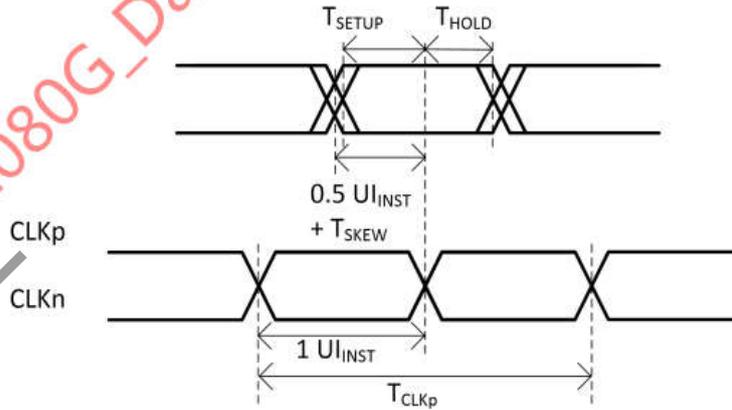


Figure 4. High Speed Data Transmission: Data-Clock Timing

		Min	Typ	Max		
UI instantaneous	UI_{INST}	1		12.5	ns	Note1,2
Data to Clock Skew [measured at transmitter]	$T_{SKEW}[TX]$	-0.15		0.15	UI_{INST}	
Data to Clock Setup Time [measured at receiver]	$T_{SETUP}[RX]$	-0.15		0.15	UI_{INST}	
Data to Clock Hold Time [measured at receiver]	$T_{HOLD}[RX]$	-0.15		0.15	UI_{INST}	
20% - 80% rise time and fall time	t_r/t_f	100			ps	Note3
				0.3	UI_{INST}	

Note:

1. This value corresponds to a minimum 300 MHz data rate
2. MIPI speed limitation: Per lane bandwidth is 1.2Gbps
3. Applicable for all HS bit rates. However, to avoid excessive radiation, bit rates ≤ 1.2 Gbps ($UI \geq 0.8334ns$), should not use values below 100 ps.

11.4 Reset Timing Characteristics

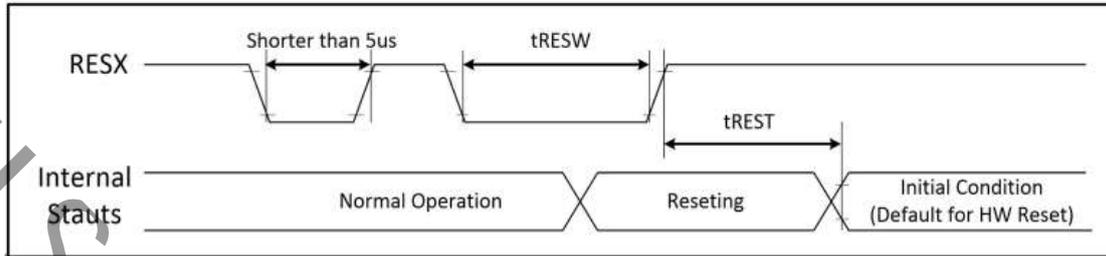


Figure 5. Reset Input Timing

Symbol	Parameter	Related Pins	Spec.			Unit	Note
			Min.	Typ.	Max.		
tRESW	Reset low pulse width	RESX	10	-	-	μs	-
tREST	Reset complete time	-	-	-	5	ms	During Sleep in mode
tREST	Reset complete time	-	-	-	120	ms	During Sleep out mode

Spike due to an electrostatic discharge on RESX line does not cause irregular system reset according to the table below.

RESX Pulse	Action
Shorter than 5μs	Reset low pulse width
Longer than 10μs	Reset complete time
Between 5μs and 10μs	Reset start (by voltage and temperature condition)

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) and then return to Default condition for H/W reset. During Reset Complete Time, ID1/ID2/ID3/ID4 and VCOM value in OTP will be latched to internal register during this period. This loading is done every time when there is H/W reset complete time (tREST) within 5ms after a rising edge of RESX. Spike Rejection also applies during a valid reset pulse as shown below:

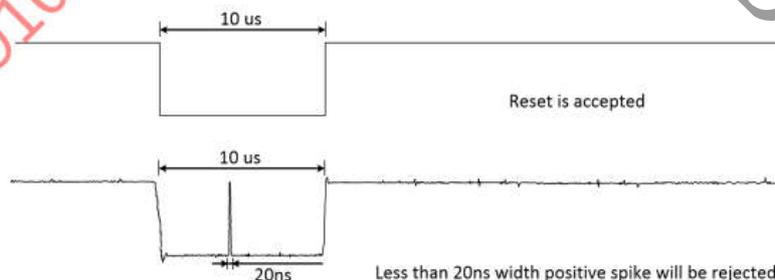
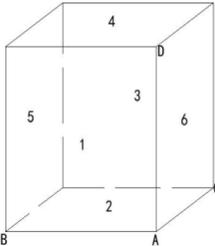


Figure 6. Reset Timing

5.可靠性实验测试(Reliability Test Conditions And Methods)

序号	试验项目	试验条件及方法	试验设备	检验项目	检验工具												
1	高温高湿(静、动态)试验	温度 $60^{\circ}\text{C} \pm 3^{\circ}\text{C}$, 湿度 $90\% \pm 3\%$, 要求选择时间分别为 96 小时, 静、动态(产品点亮)在室温下恢复 2 小时后进行外观, 显示功能检查。	恒温恒湿试验机	检验外观、功能、抗腐蚀性	目视/测试架/客户样机/显微镜												
2	高、低温冲击试验	静态 -30°C (30 分钟) $\rightarrow 80^{\circ}\text{C}$ (30 分钟) $\rightarrow -30^{\circ}\text{C}$ (30 分钟), 24 个循环, 在室温下恢复 2 小时后进行外观, 显示功能检查。	冷热冲击试验机	检验外观、功能													
3	高温贮存试验	常温 $70^{\circ}\text{C} + 3^{\circ}\text{C}$ 、宽温 $80^{\circ}\text{C} + / - 3^{\circ}\text{C}$ 、96 小时后在室温状态下恢复 1 小时在 2 小时内完成外观、显示功能检查。	烤箱	检验外观、功能	目视/测试架/客户样机												
4	低温贮存试验	常温 $-20^{\circ}\text{C} + / - 3^{\circ}\text{C}$ 、宽温 $-30^{\circ}\text{C} + / - 3^{\circ}\text{C}$ 、条件的试验箱内保存 96 小时后在室温状态下恢复 1 小时, 在 2 小时完成外观、显示功能检查, 特别注意检查是否有漏液、断线、腐蚀、偏光片不良现象。	低温冰箱	检验外观、功能													
5	低温贮存试验(动态)	常温 $-20^{\circ}\text{C} + / - 3^{\circ}\text{C}$ 、宽温 $-30^{\circ}\text{C} + / - 3^{\circ}\text{C}$ 条件的试验箱内点亮刷屏, 过程中每 1 小时观察一次, 检查显示功能, 如: 异常, 卡机, 花屏等。特别注意检查是否有漏液、断线、腐蚀、偏光片不良现象。	低温冰箱	检验外观、功能	目视/测试架/客户样机												
6	包装模组跌落试验	<p>1、跌落重量及自由落体高度: (图二)</p>  <p>2、自由落体角度如下:</p> <table border="1" data-bbox="284 1545 662 1904"> <thead> <tr> <th>总重量</th> <th>自由落体高度</th> </tr> </thead> <tbody> <tr> <td>0-9kg</td> <td>92cm</td> </tr> <tr> <td>9-25kg</td> <td>76cm</td> </tr> <tr> <td>25-45kg</td> <td>53cm</td> </tr> <tr> <td>45-68kg</td> <td>46cm</td> </tr> <tr> <td>大于 68kg</td> <td>41cm</td> </tr> </tbody> </table> <p>1) 一角: A 角 2) 三菱: A-B, A-D, A-C 3) 六面: 面 1, 面 2, 面 3, 面 4, 面 5, 面 6;</p>	总重量	自由落体高度	0-9kg	92cm	9-25kg	76cm	25-45kg	53cm	45-68kg	46cm	大于 68kg	41cm	包装模组跌落架	测试电性能无异常、外观检验无破损, 无脱离现象	目视/测试架/客户样机
总重量	自由落体高度																
0-9kg	92cm																
9-25kg	76cm																
25-45kg	53cm																
45-68kg	46cm																
大于 68kg	41cm																

7	盐雾试验	标准条件:中性盐雾试验(NSS试验):5%的氯化钠盐水溶液,溶液PH值中性(6.5~7.2),试验温度 $35\pm 2^{\circ}\text{C}$,盐雾的沉降率在 $1\sim 2\text{ml}/80\text{cm}^2.\text{h}$ 之间,时间24h。2.其它特殊要求条件:醋酸盐雾试验(ASS试验):5%氯化钠溶液中配入冰醋酸,溶液PH值为3左右,试验温度 $35\pm 2^{\circ}\text{C}$,盐雾的沉降率在 $1\sim 2\text{ml}/80\text{cm}^2.\text{h}$ 之间,时间24h。	盐雾试验设备	检验外观、功能,盐雾试验结果的判定方法,腐蚀物出现判定法:定性判定,试验后功能测试应OK,外观观察产品无腐蚀现象产生。	目视/测试架/客户样机/显微镜
8	ESD 抗静电试验	测试架测试状态下试验:接触4KV,非接触(空气)8KV放电测试	防静电枪 (尖头接触放电,圆头空气放电)	检验外观、功能	目视/测试架

6. 光电参数 (Optical Characteristics)

4.0 OPTICAL SPECIFICATION

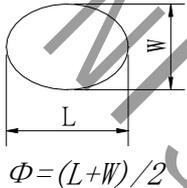
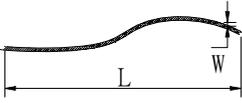
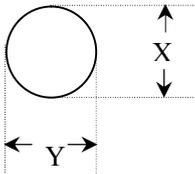
4.1 Overview

The test of Optical specifications shall be measured in a dark room (ambient luminance ≤ 1 lux and temperature = $25 \pm 2^\circ\text{C}$) with the equipment of Luminance meter system (Goniometer system and TOPCON BM-5) and test unit shall be located at an approximate distance 50cm from the LCD surface at a viewing angle of θ and Φ equal to 0° . We refer to $\theta = 0$ ($= \theta_3$) as the 3 o'clock direction (the "right"), $\theta = 90$ ($= \theta_{12}$) as the 12 o'clock direction ("upward"), $\theta = 180$ ($= \theta_9$) as the 9 o'clock direction ("left") and $\theta = 270$ ($= \theta_6$) as the 6 o'clock direction ("bottom"). While scanning θ and/or Φ , the center of the measuring spot on the Display surface shall stay fixed. Optimum viewing angle direction is 6 "clock.

4.2 Optical Specifications

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit	Remark
Luminance Contrast ratio	CR	$\theta = 0^\circ$	1000	1500	-		
Cell Transmittance	Tr		-	6.85%	-	%	@C Light Wi APF, Wo Haze & CG
White Chromaticity	x	CIE 1931	0.286	0.301	0.316		CF @ C Light
	y		0.315	0.330	0.345		
Red Chromaticity	x	CIE 1931	0.641	0.656	0.671		
	y		0.302	0.317	0.332		
Green Chromaticity	x	CIE 1931	0.248	0.263	0.278		
	y		0.552	0.567	0.582		
Blue Chromaticity	x	CIE 1931	0.122	0.137	0.152		
	y		0.068	0.083	0.098		
Color Gamut (C light)			-	70	-	%	C Light
Response Time (Rising + Falling)	T_{RT}	$T_a = 25^\circ\text{C}$ $\theta = 0^\circ$	-	25	-	ms	$T_r + T_f$

7.检验标准 (Inspection standard)

项目	不良定义	不良现象	判定标准		检验方法		
9.3.1	外观尺寸	与图纸尺寸不相符	NG		卡尺		
9.3.2	功能	显示少线	NG		目视		
		无显示	NG		目视		
		显示异常	NG		目视	主	
		TP 功能不良, 无触摸	NG		目视/用手触摸	主	
9.3.3	点亮产品可见及在 LCD 或 T/P 上有擦拭不掉的点状物	偏光片刺伤、脏点、圆形物、黑点 	LCM/总成 > 2.4 寸——6.0 寸		目视(用菲淋卡比对)	次	
			$\Phi \leq 0.10\text{mm}$	1、10mm 间距内只允许 3 个 2、显示区只允许 10 个点, 超过以上任意一项则 NG			
				$0.1\text{mm} < \Phi \leq 0.15\text{mm}$			4 (TP、屏各允许 2 个)
			$0.15\text{mm} < \Phi \leq 0.2\text{mm}$	2 (TP、屏各允许 1 个)			
			$\Phi > 0.2\text{mm}$	NG			
9.3.4	点亮产品可见及在 LCD 或 T/P 上有擦拭不掉的线状物/刮伤		LCM/总成 0.95 寸——6.0 寸		目视(用菲淋卡比对)	次	
			长(L)	宽(W)			允许个数
			$\leq 1\text{mm}$	$\leq 0.03\text{mm}$			2
			$\leq 2\text{mm}$	$0.03 < W \leq 0.05\text{mm}$			1
			$> 2\text{mm}$	$> 0.05\text{mm}$			NG
两条线毛之间必须距离 5mm 以上 (0.95 寸—3.0 寸). 两条线毛之间必须距离 10mm 以上 (3.1 寸—6.0 寸).							
9.3.5	偏光片气泡	$\Phi = (X+Y) / 2$ 	尺寸	允许个数	在日光台灯下撕起保护膜, 距待测物 30cm 目视	次	
			1、 $\Phi \leq 0.1\text{mm}$ 2、不超过边框 1/3	不计 (密集不可)			
			$0.10 < \Phi \leq 0.2\text{mm}$	1			

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			$\Phi > 0.2\text{mm}$	NG		
			0.95 寸-2.4 寸气泡间距大于 5mm 以上 >2.4 寸-6.0 寸气泡间距大于 10mm 以上			

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