深圳市东兴强科技有限公司

产品规格书

修　订　记　录				
№	版本	修订摘要	修订人	日　期
1	V0	初始版	WLJ	2020-1-13

编　制	审　核	批　准	日　期
WLJ			**2020-1-13**

深圳市东兴强科技有限公司

Project No. 项目编号	ZX608HG5250738
Customer 客户名称	
Module No. 客户型号	
Product type 产品内容	Standard LCD Module TFT：1620*2560Dots 6.08"TFT LCD

Signature by customer:

客户确认签章：

编　　制	电子审核	结构审核	品质审核	批　　准

样品背面请签上结构 OK 郊果颜色 OK

CONTENTS 内容

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1. Document revision history 文件修订历史：

| DOCUMENT REVISION 文件修订	DATE 日期	DESCRIPTION 描述	PREPARED BY 编制	APPROVED BY 批准
A	2020-1-13	First Release.	WLJ	

2.0 General Description 总则：

2.1 6.08" (diagonal), 1620*2560 dots, 16.7M colors, Transmissive, TFT LCD module.

2.2 Viewing Direction:Normally Black.

2.3 Driving IC:HX8252-A

2.4 MIPI interface.

2.5 Logic voltage: 2.8V (typ.).

2.6 Without touch panel.

3.0 Mechanical Specifications 机械参数：

The mechanical detail is shown in Fig. 1 and summarized in Table 1 below.

Table 表1

Parameter		Specifications	Unit
主屏 Color TFT 1620*2560	Outline dimensions	87.2(W)x138.56(L)x1.3(T)	mm
	TP view area	TBD	mm
	TP active area	TBD	mm
	LCD active area	82.62(W)x130.56(L)	mm
	Color configuration	MIPI	–
	TP Driver	TBD	–
Weight		TBD	grams
Viewing Angle		IPS	Deg

4.0 Interface signals Figure 接口信号图
Outline drawing 外形图
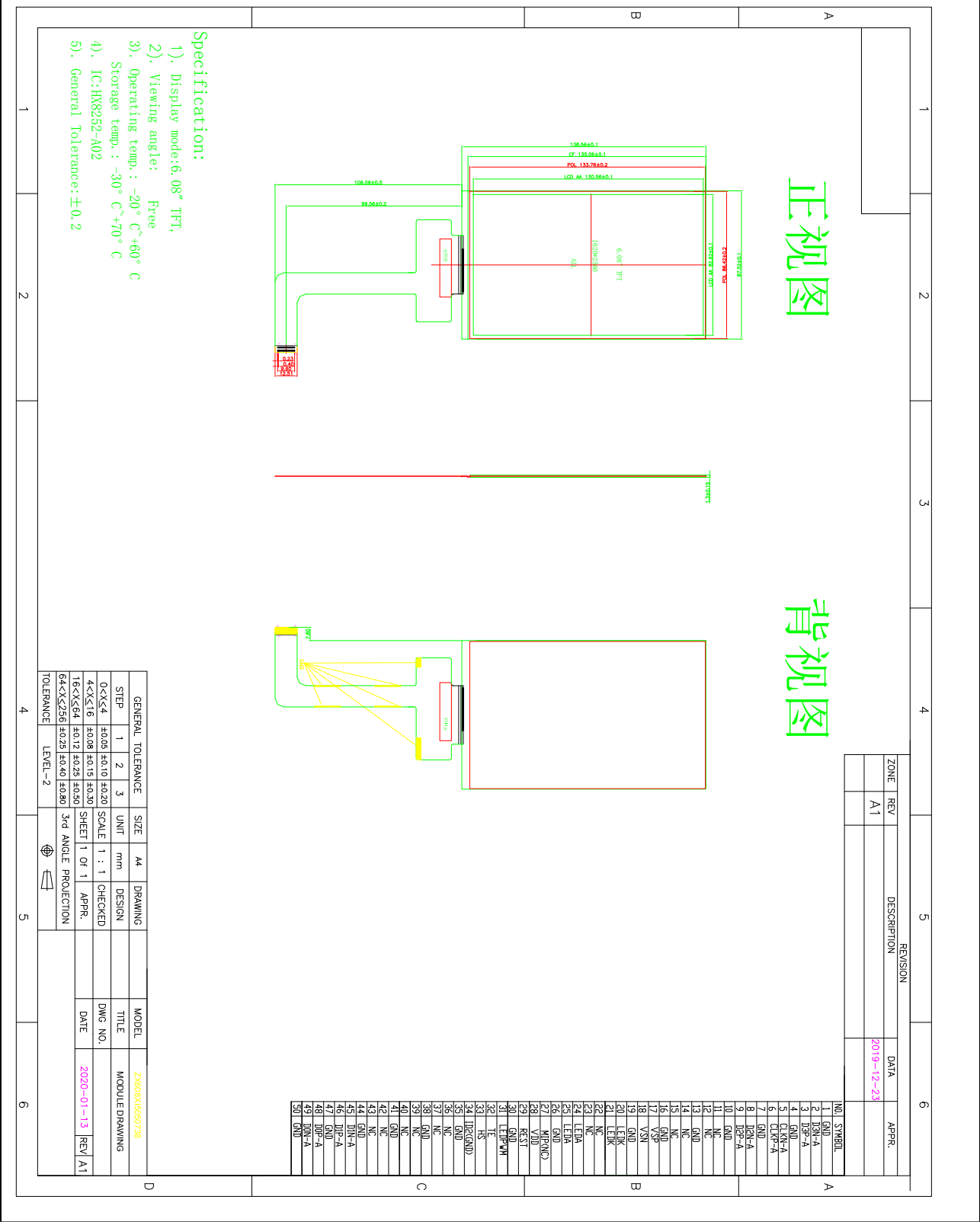
Table 2: Pin assignment 引脚分配

1	GND	Ground
2	D3N	MIPI-DSI Data differential signal input pins.
3	D3P	MIPI-DSI Data differential signal input pins.
4	GND	Ground
5	CLKN	MIPI-DSI CLOCK differential signal input pins
6	CLKP	MIPI-DSI CLOCK differential signal input pins
7	GND	Ground
8	D2N	MIPI-DSI Data differential signal input pins.
9	D2P	MIPI-DSI Data differential signal input pins.
10	GND	Ground
11,12	NC	OPEN
13	GND	Ground
14,15	NC	OPEN
16	GND	Ground
17	VSP	Power supply for analog(-5.75V)
18	VSN	Power supply for analog(+5.75V)
19	GND	Ground
20,21	LEDK1	Power supply - for backlight cathode
22,23	NC	OPEN
24,25	LEDA	Power supply + for backlight cathode
26	GND	Ground
27	NC	OPEN
28	VDD(2.8V)	Power Supply(2.8V)
29	RESET	Reset pin
30	GND	Ground
31	LEDPWM	Backlight LED driver PWM
32	TE	MPU 到幀
33	HS	Horizontal Synchronizing signal
34	ID1	(connect to VDDI in FPC)
35	GND	Ground
36~37	NC	OPEN
38	GND	Ground
39~40	NC	OPEN
41	GND	Ground
42~43	NC	OPEN
44	GND	Ground
45	D1N	MIPI-DSI Data differential signal input pins.
46	D1P	MIPI-DSI Data differential signal input pins.
47	GND	Ground
48	D0P	MIPI-DSI Data differential signal input pins.
49	D0N	MIPI-DSI Data differential signal input pins.
50	GND	Ground

5.0 Absolute Maximum Ratings 绝对最大额定参数

5.1 Electrical Maximum Ratings - for IC Only 电性最大额定参数-仅 IC 用

Table 3: Electrical Maximum Ratings - for IC

Parameter	Symbol	Min.	Max.	Unit	Note
Power supply voltage (VCI)	VCI	−0.3	+4.0	V	1
Power supply voltage (IOVCC)	IOVCC	−0.3	+3.6	V	1

Note:

1. IOVCC, VCI, GND must be maintained.
2. The modules may be destroyed if they are used beyond the absolute maximum ratin

5.2 Environmental Condition 环境条件

Table 4

Item	Operating temperature (Topr)		Storage temperature (Tstg) (Note 1)		Remark
	Min.	Max.	Min.	Max.	
Ambient temperature	−20℃	+70℃	−30℃	+70℃	Dry
Humidity (Note 1)	80% max. RH for Ta 　 40℃ < 50% RH for 40°C < TaMaximum operating temperature				No condensation

Note 1: Product cannot sustain at extreme storage conditions for long time.

6.0 Electrical Specifications 电性指标

Typical Electrical Characteristics

At Ta = 25 °C, VCI = 2.6V to 3.3V, IOVCC= 1.65V to 3.3V GND=0V.

Table 5

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Supply voltage (analog)	VCI−GND		2.6	2.8	3.3	V
Supply voltage (logic)	IOVDD−GND		1.65	1.8	3.3	V
Supply current (Logic & LCD)	ICC	VCI=2.8V	–	–	–	mA
Supply voltage of white LED backlight	VLED =V(BL+)− V(BL−)	–	–	–	–	V
Luminance (on the module surface)			–	–	–	cd/m^2

7.0 Optical Characteristics 光学特性

Table 7: Optical specifications

Items		Symbol	Condition	Specifications			Unit	
				Min.	Typ.	Max.		
Contrast Ratio		CR		-	1000	-	-	
Response Time		T_R+T_F		-	35	-	ms	
Chromaticity	Red	X_R		-	-	-	-	Note
		Y_R		-	-	-	-	
	Green	X_G		-	-	-	-	
		Y_G		-	-	-	-	
	Blue	X_B		-	-	-	-	
		Y_B		-	-	-	-	
	White	X_W		-	-	--	-	
		Y_W		---	-	-	-	
Viewing angle	Hor.	$CR \geqq 10$	Center CR≥10	-	80	-	deg.	
		$CR \geqq 10$		-	80	-		
	Ver.	$CR \geqq 10$		-	80	-		
		$CR \geqq 10$		-	80	-		
NTSC ratio					-		%	
Transmittance(with Polarizer)					7		%	

Note 1: Definition of Contrast Ratio (CR):

The contrast ratio can be calculated by the following expression.

Contrast Ratio (CR) = L63 / L0

L63: Luminance of gray level 63

L0: Luminance of gray level 0

CR = CR (10)

CR (X) is corresponding to the Contrast Ratio of the point X at Figure in Note 5.
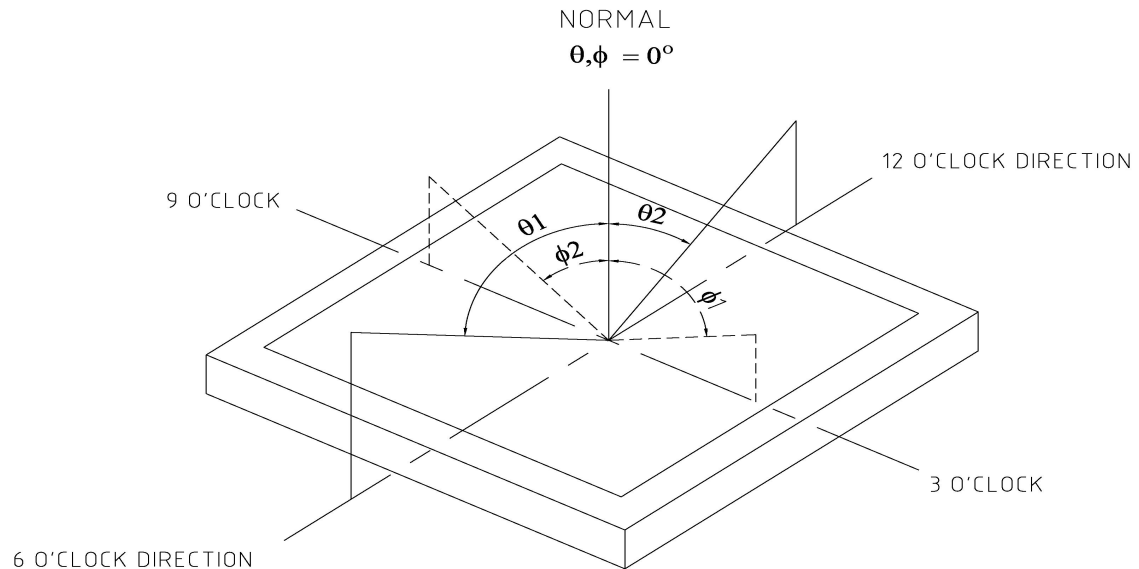
Note 2: Definition of Response Time (TR, TF):
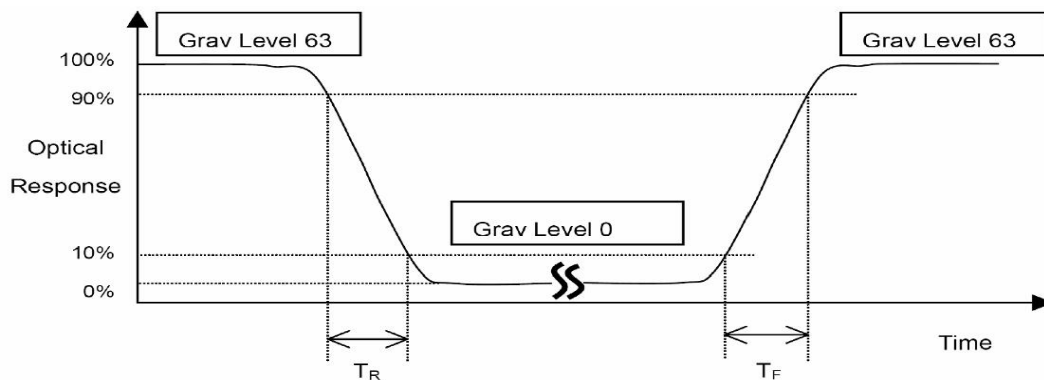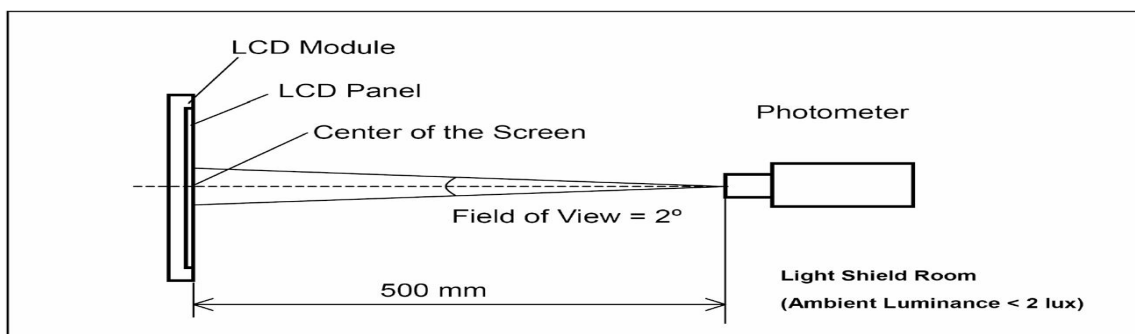
Figure 3

Note 3: Viewing Angle

The above "Viewing Angle" is the measuring position with Largest Contrast Ratio; not for good image quality. View Direction for good image quality is 6 O' clock. Module maker can increase the "Viewing Angle" by applying Wide View Film.

Note 4: Measurement Set-Up:

The LCD module should be stabilized at a given temperature for 20 minutes to avoid abrupt temperature change during measuring. In order to stabilize the luminance, the measurement should be executed after lighting Backlight
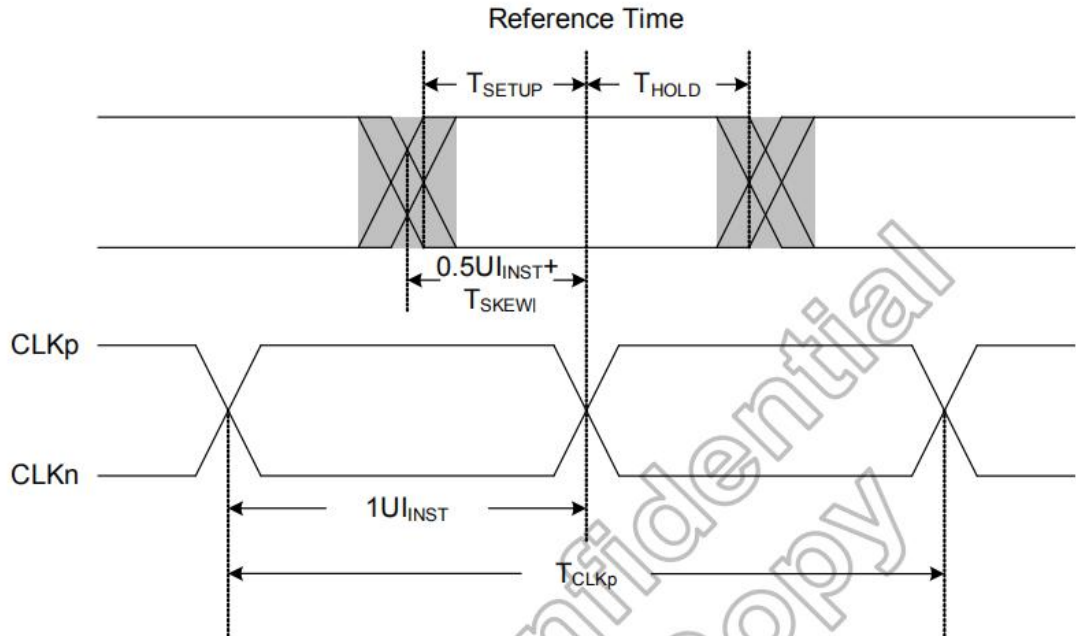
for 20 minutes in a windless room.

8.0 DRIVER ELECTRICAL CHARACTERISTICS

MIPI data-clock timing specification

Parameter	Symbol	Min.	Typ.	Max.	Unit
UI instantaneous	UI_{INST}	1.0	-	12.5[1]	ns
Data to clock setup time	T_{SETUP}	0.3	-	-	UI_{INST}
Data to clock hold time	T_{HOLD}	0.3	-	-	UI_{INST}

8.3 Rest Timing
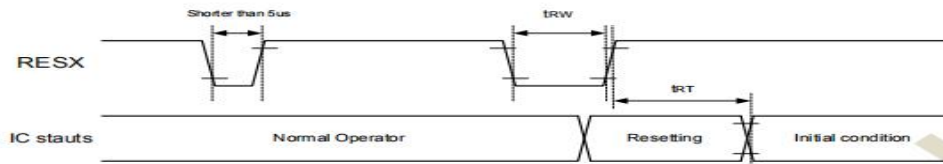
Figure 11.1: Reset input timings

Symbol	Parameter	Related pins	Min.	Max.	Unit
t_{RW}	Reset pulse width[2]	RESX	10	-	μs
t_{RT}	Reset complete time[3]	-	-	5 (Note 5)	ms
		-	-	120 (Note 6, 7)	ms

Note: (1) The reset complete time also required time for loading ID bytes from OTP to registers. This loading is done every time when there is HW reset cancel time (tRT) within 5 ms after a rising edge of RESX.
(2) Spike due to an electrostatic discharge on RESX line does not cause irregular system reset according to the table below.

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9.0 Reliability Test Item 可靠性测试项目

9.1　TFT&触摸屏可靠性测试标准如下表：

项目	条件	标准
高低温工作	高温+55℃ 24 小时 低温 - 25℃ 24 小时	1　不可出现丝印剥落，破裂，变形等其它不明显变化； 2　LCM 功能测试正常；
盐雾实验	实验样机关机插卡状态，使用浓度为 5%，PH 值为 6.5-7.2 的 NaCl 溶液，连续喷雾 24H，实验过程中不得取出整机，实验完成后，取出样机用棉布清洁，放置 48H 进行干燥后对 LCM 进行全面的外观和功能检测。	1　LCM 应无腐蚀，缺画，水印等现象； 2　LCM 功能测试正常；
恒温恒湿	55℃ 90%RH　24HRS，实验完成后常温 2 小时恢复	外观无缺陷，功能测试正常
冷热冲击	-30℃(30mins) ←5℃(5mins)→+70℃(30mins) 10 cycles	外观无缺陷，功能正常

NOTE: 以上测试后须在室温放置 2 小时检查样品，实验样品均为整机。

9.2 ESD 静电测试

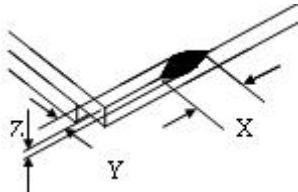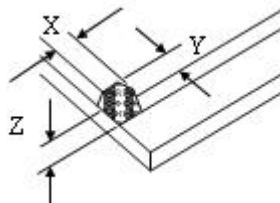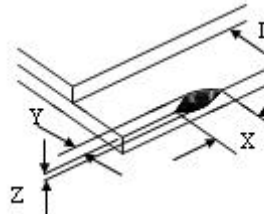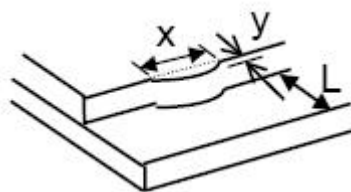| 项目	测试区域及条件	标准
ESD 静电测试	测试区域： 1　打 LCD 四边；　2　打屏幕的 6 个点； 测试要求： 接触放电±4KV,空气放电±6KV。每次实验后检查手机功能是否 OK	接触放电±4KV，不允许出现音乐、视频中断，黑屏白屏、定屏、关机、重启或功能失灵等现象； 　空气放电±6KV，不允许出现器件被打坏等功能失灵现象。允许出现音乐、视频中断，黑屏、白屏、定屏、关机、重启等重新开机后可恢复的现象。实验完毕后整机播放，充电等功能正常；内存应无丢失，外观应无损坏。
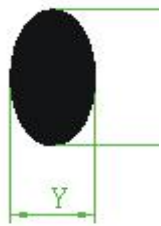
NOTE: 实验样品为整机

9.3 TFT&触摸屏检查标准如下表：

（1）外观检验项目及标准（非工作状态）

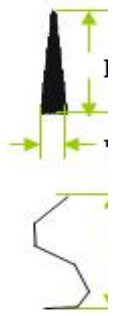| 次序	项目	判断标准				AQL
1	尺寸状况	尺寸超出产品规格				1
2	缺口	1、一般缺口				2.50
			X	Y	Z	
			≥ K/8	不进入 A 区	≤T	

2、角缺

X	Y	Z
≥ K/8	不进入 A 区	不计

3、引脚部位缺口

X	Y	Z
≥ K/8	≥ L/3	不计

4、边缘突起

X	Y
≥ K/8	≥ L/3

K：LCD 长度　　　L：端子长度

序号	项目	图示	D	允许缺陷数		2.50
				A/B 区	C 区	
3	点状缺陷		D＜0.2	不限	不限	
			0.2≤D＜0.3	2		
			0.3≤D≤0.5	1		
			D＞0.5	0		

X:长径
Y:短径
D:平均直径 D=(X+Y)/2

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4	线状缺陷	长度 / 宽度 表格		2.50

			长度	宽度	允许缺陷数	
					A/B 区	C 区
4	线状缺陷		不计	W≤0.02	不计	不限
			L≤3	W≤0.05	2	
			L≤2.5	W≤0.05	2	
				W＞0.05	按点状缺陷判定	

L:长度　　W:宽度
对偏光片（刮伤、污点、压痕）有限度样本则以限度样本判断

5	偏光片 气泡/水纹/ 皱纹	D	允许缺陷数		2.50
			A/B 区	C 区	
		D≤0.2	不限	不限	
		0.2≤D≤0.5	3 个		
		0.5≤D≤1.0	2 个		
		D＞1.0	0 个		

6	外丝印	● 丝印变形、针孔：按照字符变形针孔规格判断。 ● 丝印宽度：丝印宽度≥1/2 标准宽度，可判 OK。	2.50
7	打胶（硅胶）	打胶面积必须盖住 ITO 引线	2.50
8	FPC 板不良	1、FPC 板烧焦、版本不符、线路剥离、裂痕、导电过孔堵不允许 2、FPC 板金手指不可有氧化、腐蚀、胶状物、断裂现象	2.50
9	贴片元件	1、元件装配上下、左右偏位≤1/3 元件本体宽度 2、焊锡点尽可能光滑圆润 3、元件受损、破裂、少件、多件、元件装配反向、漏焊不允许	2.50
10	铁框	破裂、变形不允许 外形尺寸参照产品规格书	2.50

（2）显示功能检验项目及标准（工作状态）

1	电性能缺陷	断路	不允许	1.0
		短路/大电流	不允许	
		视角错误	不允许	

2	字划 凸起/缺口	1、针孔缺口		2.50

1、针孔缺口

宽度	接收规格
W＜0.4	D≤0.2 & D≤1/2W
W≥0.4	D≤0.25 & D≤1/3W

* D=(A+B)/2　　D≤0.1 则忽略不计

3	字划/图案 粗细	<table><tr><td>宽度</td><td>接收规格</td></tr><tr><td>W＜0.4</td><td>C、D、G≤1/2W</td></tr><tr><td>W≥0.4</td><td>C、D、G≤0.2</td></tr></table> W：图案设计尺寸　　C、D：差异尺寸　　G=|E-F|	1.0

4	点状缺陷	<table><tr><td rowspan="2">D</td><td colspan="2">允许缺陷数</td></tr><tr><td>A/B 区</td><td>C 区</td></tr><tr><td>D＜0.1</td><td>不限</td><td rowspan="4">不限</td></tr><tr><td>0.1≤D＜0.2</td><td>2</td></tr><tr><td>0.2≤D≤0.25</td><td>1</td></tr><tr><td>D＞0.25</td><td>0</td></tr></table> X:长径　　Y:短径 D:平均直径 D=(X+Y)/2 如黑点、污迹在字段区，按"笔段缺陷"判定	2.50

5	线状缺陷	<table><tr><td rowspan="2">长度</td><td rowspan="2">宽度</td><td colspan="2">允许缺陷数</td></tr><tr><td>A/B 区</td><td>C 区</td></tr><tr><td>不计</td><td>W≤0.02</td><td>不计</td><td rowspan="4">不限</td></tr><tr><td>L≤3</td><td>W≤0.03</td><td>2</td></tr><tr><td rowspan="2">L≤2.5</td><td>0.03＜W≤0.05</td><td>2</td></tr><tr><td>W＞0.05</td><td>按点状缺陷判定</td></tr></table> L:长度　W:宽度	2.50

10.0 Suggestions for using LCD modules 建议使用 LCD 模块

10.1 Handling of LCM

10.1.1 The LCD screen is made of glass. Don't give excessive external shock, or drop from a high place.

10.1.2 If the LCD screen is damaged and the liquid crystal leaks out, do not lick and swallow. When the liquid is attach to your hand, skin, cloth etc, wash it off by using soap and water thoroughly and immediately.

10.1.3 Don't apply excessive force on the surface of the LCM.

10.1.4 If the surface is contaminated ,clean it with soft cloth. If the LCM is severely contaminated , use Isopropyl alcohol/Ethyl alcohol to clean. Other solvents may damage the polarizer . The following solvents is especially prohibited: water , ketone Aromatic solvents etc.

10.1.5 Exercise care to minimize corrosion of the electrode. Corrosion of the electrodes is accelerated by water droplets, moisture condensation or a current flow in a high-humidity environment.

10.1.6 Install the LCD Module by using the mounting holes. When mounting the LCD module make sure it is free of twisting, warping and distortion. In particular, do not forcibly pull or bend the I/O cable or the backlight cable.

10.1.7 Don't disassemble the LCM.

10.1.8 To prevent destruction of the elements by static electricity, be careful to maintain an optimum work environment.

✧ Be sure to ground the body when handling the LCD modules.

✧ Tools required for assembling, such as soldering irons, must be properly grounded.

✧ To reduce the amount of static electricity generated, do not conduct assembling and other work under dry conditions.

✧ The LCD module is coated with a film to protect the display surface. Exercise care when peeling off this protective film since static electricity may be generated.

10.1.9 Do not alter, modify or change the the shape of the tab on the metal frame.

10.1.10 Do not make extra holes on the printed circuit board, modify its shape or change the positions of components to be attached.

10.1.11 Do not damage or modify the pattern writing on the printed circuit board.

10.1.12 Absolutely do not modify the zebra rubber strip (conductive rubber) or heat seal connector.

10.1.13 Except for soldering the interface, do not make any alterations or modifications with a soldering iron.
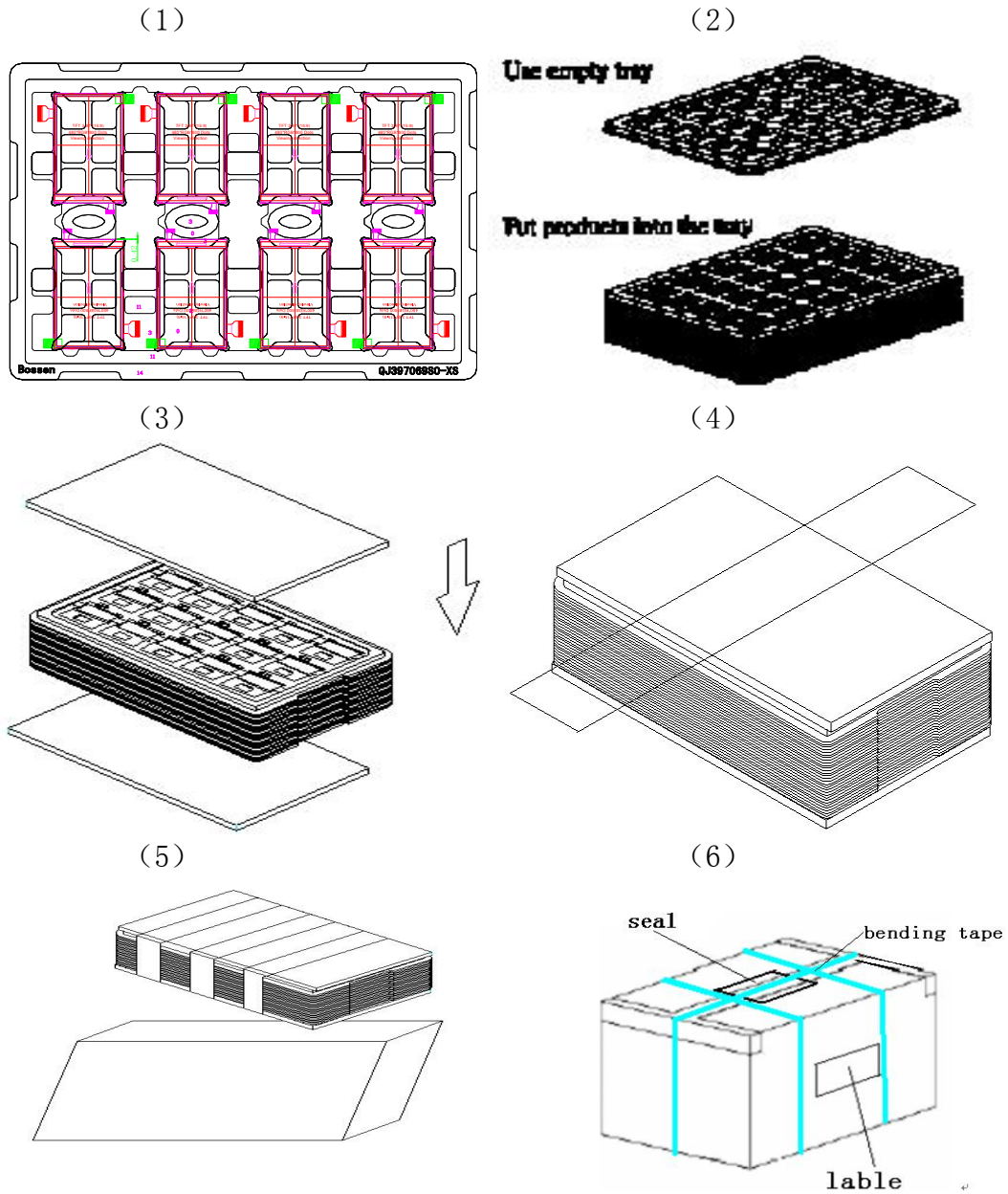
10.1.14 Do not drop, bend or twist LCM.

10.2 Storage

10.2.1 Store in an ambient temperature of 5 to 45℃, and in a relative humidity of 40% to 60%. Don't expose to sunlight or fluorescent light.

10.2.2 Storage in a clean environment, free from dust, active gas, and solvent.

10.2.3 Store in antistatic container.

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11.0 Packing (Reference only)包装（仅供参考）

Packing Method 包装方法

（1）

（2）

Use empty tray

Put products into the tray

（3）

（4）

（5）

（6）

seal

bending tape

lable

11.1 Put module into tray cavity :

11.2 Tray stacking ;

11.3 Put 1 cardboard under the tray stack and 1 cardboard above:

11.4 Fix the cardboard to the tray stack with adhesive tape:

11.5 Put the tray stack into carton.

11.6 Carton sealing with adhesive tape.

- END -