

Product Specification Approval Sheet

Customer	
Customer P/N	
Customer Model	
ILITEK P/N	ILI2312PAIL000I00
Product Description	Capacitive Touch Panel Sensing Board
Firmware	Version:5000, Checksum:0x007E76
Application Level	<input checked="" type="checkbox"/> Preliminary Specification <input type="checkbox"/> Mass Production Specification
Spec. Version	1.02
Date	2016.05.02

*Please fill in Customer Name, Part Number (P/N), Model Name and return 1 copy for your confirmation.

ILI TECHNOLOGY CORP.

10F., No.1, Taiyuan 2nd St., Zhubei City, Hsinchu County 302, Taiwan (R.O.C.)

Tel.886-3-5600099; Fax.886-3-5600055

<http://www.ilitek.com>

ILI2312P

Capacitive Touch Panel Control Board

Specification

Preliminary

Version: V1.02

Date: 2016/5/2

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Revision History

Version	Date	Page	Description
V1.01	2016/2/22	All	First Draft, Preliminary Specification
V1.02	2016/5/2		1. Add PCBA Label and Package Information. 2. Modify Board Description.

1. General Description

The ILI2312P Capacitive Touch panel control board has 124 channels and supports up to 27" Capacitive Touch panel. Built-in an ILI2312 single chip Capacitive Touch panel controller, the ILI2312P has maximum SNR 200:1 and supports IEC 61000-4-6 (CS) maximum 10Vrms noise immunity test. With ILI2312 baseline calibration function, ILI2312P supports G/G, OGS, G1F, G/F/F, GF2, On-Cell Capacitive Touch panels and suits for All-In-One PC (AIO), Automated Teller Machine (ATM), Point of Sales (POS) and Public Display applications.

The ILI2312P maximum supports up to 21.5" Capacitive Touch panel with all Windows 8.1/10 requirements and best user touch experience. The ILI2312P also meets latest Restriction of Hazardous Substances (RoHS) and Electromagnetic Compatibility (EMC) Directives.

2. Features

- Built-in an ILI2312 single chip Capacitive Touch panel controller
- 46 high voltage driving channels (TX) and 78 sensing channels (RX)
- Support Windows XP/7/8/8.1/10, Android, Linux and Mac operating systems
- Support USB 2.0 interfaces
- Support G/G, OGS, G1F, G/F/F, GF2, On-Cell Touch panels
- Support mutual capacitance range: 1pF to 4pF
- Meet latest Restriction of Hazardous Substances (RoHS) directives
- Meet latest Electromagnetic Compatibility (EMC) directives

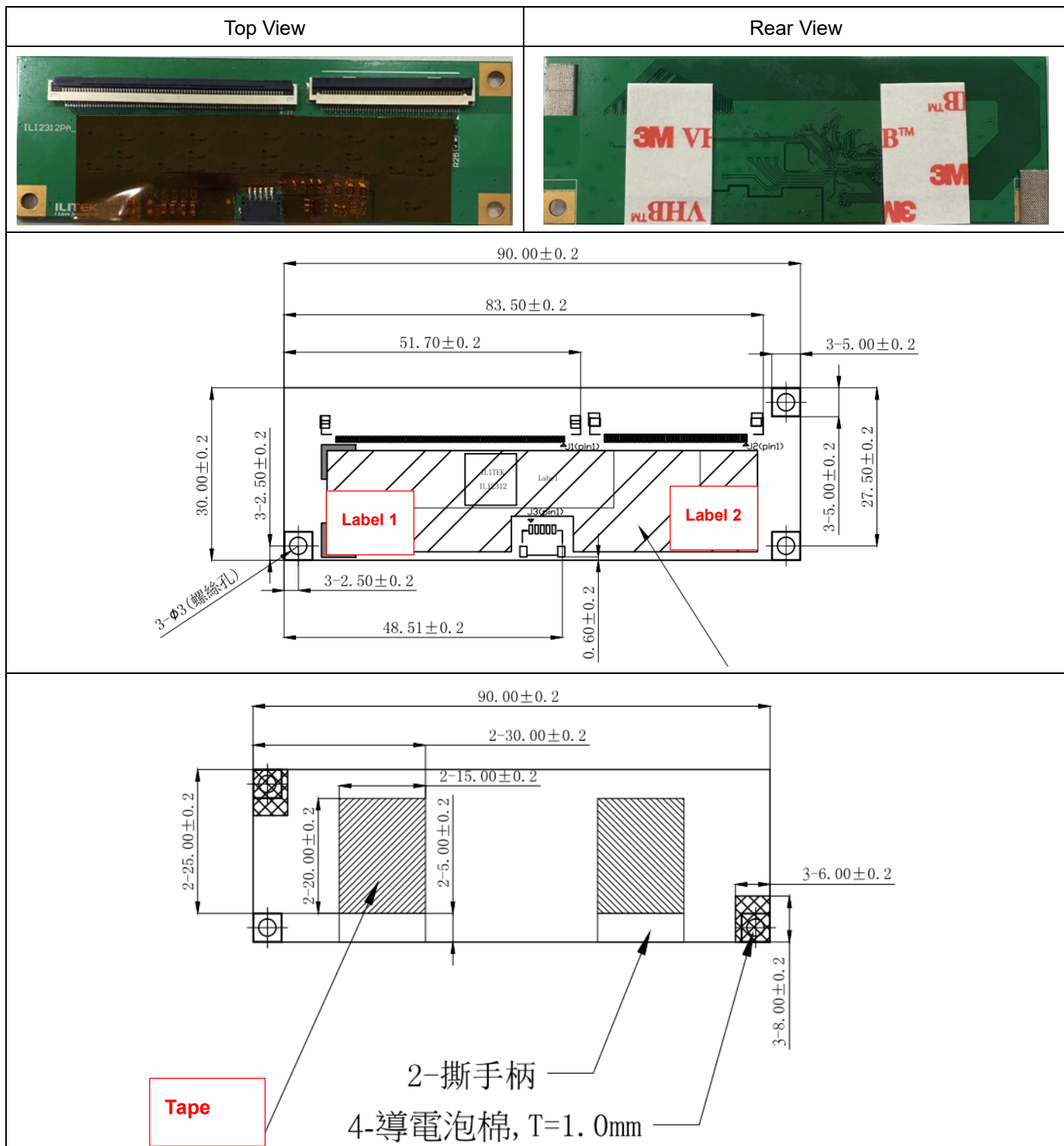
Test Item	Specification	Performance
EMI	CISPR 22, 30MHz~1GHz	Under -4dB
ESD	IEC 61000-4-2, Level 4 Air: +/- 15kV; Contact: +/- 8kV	Class B
RS	IEC 61000-4-3, Level 3: 10V/m	Class A
EFT	IEC 61000-4-4, Level 4 AC power line: 4kV; I/O port: 2kV	Class A
CS	IEC 61000-4-6, Level 3: 10Vrms	Class A

3. Control Board Description

3.1 General Information

ILI2312P Touch Panel Control Board	
Outline Dimension	W: 30mm, L: 90mm
Support Touch Panel Size	Suggestion: 15" ~ 27"
Driving Channels	46 channels
Sensing Channels	78 channels
Host Interface	USB: 2.0 Full Speed
Input Supply Voltage	USB: 4.4V ~ 5.5V, Typical:5V
Operating Temperature	-40 ~ 85°C
Storage Temperature	-40 ~ 150°C
Touch Coordinate Resolution	16384 X 9600
Power Consumption	Active Mode (10-Point Touch): Max.120mA @ USB5V with 27" Touch Panel Idle Mode: 90mA @ USB5V with 27" Touch Panel Sleep Mode: less than 1mA @ USB5V Power Off

3.2 Outline Dimension



3.3 Block Diagram

The ILI2312P Capacitive Touch panel control board consists of ILI2312, 3.3V low-drop regulator (LDO), 12MHz crystal and ESD protector. It supports Host interfaces including USB 2.0 and ICE debugger (option). It has 124 channels and supports single driving single sensing scheme for Touch panel.

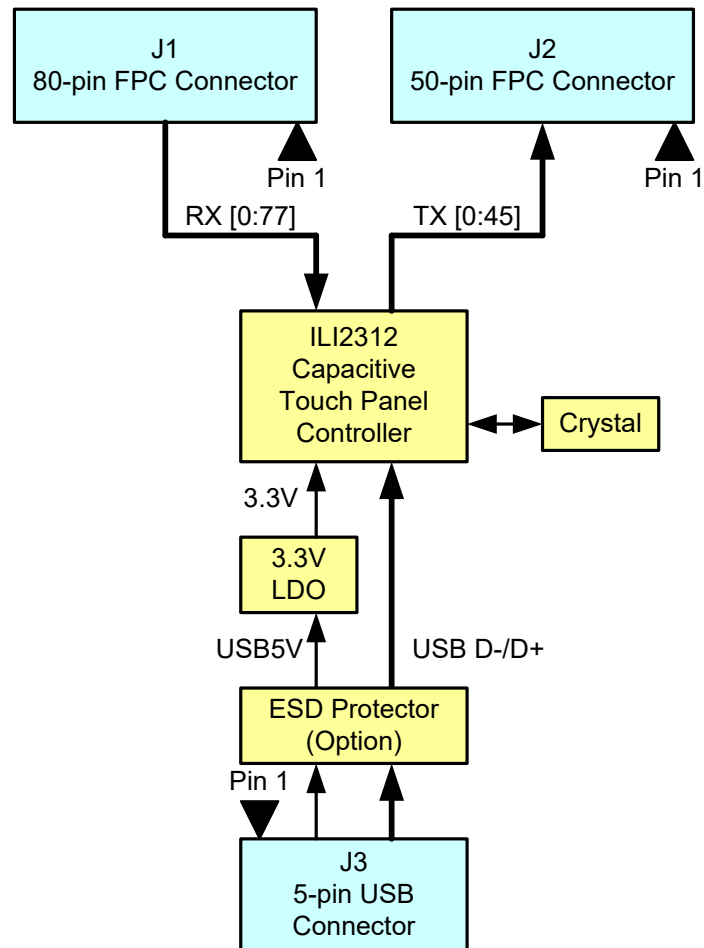


Figure 错误!文档中没有指定样式的文字。 -1: ILI2312P Block Diagram

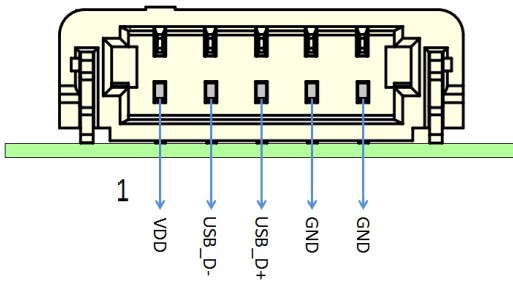
3.4 Connector Pin Definition

3.4.1 FPC Connector Pin Definition:

Connector J1, 80-Pin, Pin Pitch=0.5mm, Height=2mm																				
Pin	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Name	GND	RX77	RX76	RX75	RX74	RX73	RX72	RX71	RX70	RX69	RX68	RX67	RX66	RX65	RX64	RX63	RX62	RX61	RX60	RX59
Pin	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Name	RX58	RX57	RX56	RX55	RX54	RX53	RX52	RX51	RX50	RX49	RX48	RX47	RX46	RX45	RX44	RX43	RX42	RX41	RX40	RX39
Pin	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Name	RX38	RX37	RX36	RX35	RX34	RX33	RX32	RX31	RX30	RX29	RX28	RX27	RX26	RX25	RX24	RX23	RX22	RX21	RX20	RX19
Pin	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
Name	RX18	RX17	RX16	RX15	RX14	RX13	RX12	RX11	RX10	RX09	RX08	RX07	RX06	RX05	RX04	RX03	RX02	RX01	RX0	GND

Connector J2, 50-Pin, Pin Pitch=0.5mm, Height=2mm																				
Pin	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Name	GND	NA	NA	TX45	TX44	TX43	TX42	TX41	TX40	TX39	TX38	TX37	TX36	TX35	TX34	TX33	TX32	TX31	TX30	TX29
Pin	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Name	TX28	TX27	TX26	TX25	TX24	TX23	TX22	TX21	TX20	TX19	TX18	TX17	TX16	TX15	TX14	TX13	TX12	TX11	TX10	TX09
Pin	41	42	43	44	45	46	47	48	49	50										
Name	TX08	TX07	TX06	TX05	TX04	TX03	TX02	TX01	TX0	GND										

3.4.2 J3 USB Connector Pin Definition



3.4.3 Connector Part Number

Connector	1st Source	2nd Source	3rd Source
J1	Hirose, TF06L-80S-0.5SH(800)	Onward, 21-035-08023	N/A
J2	Hirose, TF31-50S-0.5SH(800)	Onward, 21-023-05003-5	Aces, 51619-050-001
J3	Aces, 50224-005-001	N/A	N/A

3.5 Connection with Touch Panel

3.5.1 Typical Connection to Touch Panel

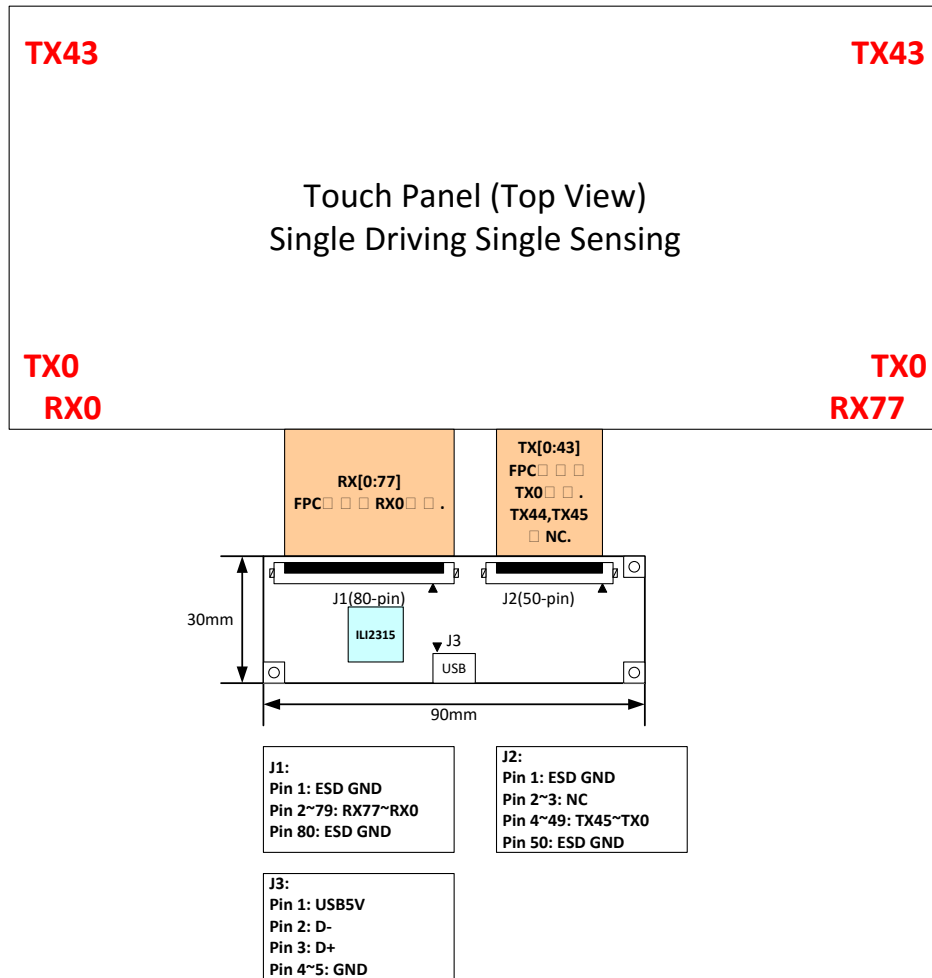


Figure 2: ILI2312P Typical Connection to Touch Panel

3.5.2 Precaution for Power On/Off Control Board with Touch Panel

- (1) Please make sure FPC or FFC cable is well connected and locked before power on control board.
- (2) Please make sure power off control board before release FPC or FFC cable.

4. Support OS and Driver List

4.1 Windows Series

OS	Interface	In-Box Driver	ILITEK Driver
Windows 7	USB	Yes	No
Windows 8/8.1	USB	Yes	No
	I2C	Yes	No
Windows 8.1 Embedded	USB	Yes	No
	I2C	Yes	No
Windows 10	USB	Yes	No
	I2C	Yes	No
Windows 2000	USB	No	Single-Touch (Mouse mode)
Windows XP	USB	No	Single-Touch (Mouse mode)
Windows Vista	USB	No	Single-Touch (Mouse mode)
Windows CE 5.0	USB	No	Single-Touch (Mouse mode)
Windows CE 6.0	USB	No	Single-Touch (Mouse mode)
	I2C	No	Support,WinCE6.0_I2C_To_Mouse_v1.0.1, Single-Touch (Mouse mode)
Windows CE 7.0	USB	No	Single-Touch (Mouse mode)
Windows XP Embedded	USB	No	Single-Touch (Mouse mode)

4.2 Linux and Android Series

OS	Interface	In-Box Driver	ILITEK Driver
Kernel 2.6.31 Downwards (x86, 32/64 bit)	USB	No	Single-Touch (Mouse mode)
Kernel 2.6.31 Downwards (ARM/MIPS, 32/64 bit)	USB	No	Single-Touch (Mouse mode)
Kernel 2.6.32 Upwards (x86, 32-bit) (Need X-Window)	USB	No	Support, ilitek_auv3_7, Multi-Touch
	I2C	No	Support, ilitek_aimv2_4, Multi-Touch
Kernel 2.6.32 Upwards (x86, 64-bit) (Need X-Window)	USB	No	Support, ilitek_auv3_7, Multi-Touch
	I2C	No	Support, ilitek_aimv2_4, Multi-Touch
Kernel 3.0.8 Upwards (x86, 32-bit) (Need X-Window)	USB	Yes	No
	I2C	No	Support, ilitek_aimv2_4, Multi-Touch
Kernel 3.0.8 Upwards (x86, 64-bit) (Need X-Window)	USB	Yes	No
	I2C	No	Support, ilitek_aimv2_4, Multi-Touch
Android 4.2.x Upwards (ARM, 32-bit)	USB	Yes	No
	I2C	No	Support, ilitek_aimv2_4, Multi-Touch

4.3 Mac Series

OS	Interface	In-Box Driver	ILITEK Driver
Mac OS 9.x	USB	No	Support, Multi-Touch
Mac OS X (Intel CPU)	USB	No	Support, Multi-Touch

5. Electrical Characteristics

5.1 Absolute Maximum Ratings

Stresses beyond those listed under “Absolute Maximum Ratings” may cause permanent damage to the device. These are for stress ratings. Functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may remain possibility to affect device reliability.

Table 1: Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit
USB 5V input power supply voltage	V_{BUS}	-0.3	6.0	V
V_{DD} to input power supply	V_{DD}	-0.3	3.4	V

5.2 Recommended Operating Conditions

Table 2: Recommended Operating Conditions

Parameter	Symbol	Min	Max	Unit
V_{BUS} to GND	V_{BUS}	4.4	5.5	V
V_{DD} to GND	V_{DD}	2.7	3.3	V

5.3 DC Characteristics

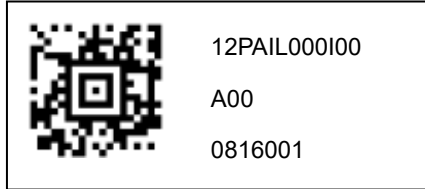
Table 3: USB DC Characteristics

Item	Symbol	Min	Typ.	Max	Unit	Condition
Input Low	V_{IL}			0.8	V	
Input High (driven)	V_{IH}	2.0			V	
Differential input sensitivity	V_{DI}	0.2			V	(D+) – (D-)
Differential common-mode range	V_{CM}	0.8		2.5	V	Includes V_{DI} range
Single-ended receiver threshold	V_{SE}	0.8		2.0	V	
Receiver hysteresis	V_{RH}		200		mV	
Output low (driven)	V_{OL}	0		0.3		
Output high (driven)	V_{OH}	2.8		3.6		
Output signal cross voltage	V_{CRS}	1.3		2.0		
Pull-up resistor	R_{PU}	1.425		1.575		
Pull-down resistor	R_{PD}	14.25		15.75		
Termination Voltage for upstream port pull up (RPU)	V_{TRM}	3.0		3.6		

6. PCBA Label Information

6.1 ILITEK PCBA Label

Example:



Label Size: 25.4*12.7 (mm)

Material: 白色特多龍 (White Tetoron)

Description:

<u>12PAIL000I00</u>	<u>A00</u>	<u>0816</u>	<u>001</u>
(1)	(2)	(3)	(4)

(1) PCBA 料號後 12 碼: 例如 PCBA 料號: ILI2312PAIL000I00, 設定內容: 12PAIL000I00.

(2) FW 版本後 2 碼加註前置固定碼 A: 例如 FW 版本 V5000, 設定內容: A00.

(3) 生產週年別: 例如生產週期第 8 週, 2016 年, 第 1 片, 設定內容: 0816001.

(4) 流水號: 001 ~ ZZZ.

(5) 全部 22 碼不加空白, 連碼編碼, 編碼方式: Maxi code.

(6) Label 貼附位置: 依據 PCBA 機構圖面中標示 Label 1 位置.

7. Package Information

Tray: 20pcs



Add 1 Empty Tray



Bag



Large Carton: 3 Bags



Large Carton Label



Fill-in Buffer Bags



Small Carton: 1 Bags



Small Carton Label



包裝說明:

- (1) 成品 Tray,每一盤滿盤數量 20pcs. PCBA 有絕緣保護膜, Label 1, Label 2, Label 3.
- (2) 成品 Tray 盤相疊 11 層*片+1 空 Tray, 並用靜電袋包裝, 滿包數量 220pcs.
- (3) 每一靜電袋, 將成品放入袋中,最上層放 1 包乾燥劑後封口, 同時貼上 ESD 警示標籤與出貨明細表.
- (4) 大箱包裝成品靜電袋 3 包, 滿箱數量 660pcs. 大箱尺寸: 560*390*320mm.
- (5) 小箱包裝成品靜電袋 1 包, 滿箱數量 220pcs. 小箱尺寸: 560*390*120mm.
- (6) 外箱標籤與警示貼紙, 黏貼於外箱左側邊.
- (7) 未滿箱塞滿放入緩衝氣泡袋, 避免運送過程晃動.