SPECIFICATIONS FOR APPROVAL

H.ELE.®

HF RoHS Compliance GP

Customer Part No.: ______________________

HELE. Part No: **X2C026000B91H-V**

Application For: ______________________

Products: **CRYSTAL**

Accepted Model: ______________________

Type & Freq.: **HSX211S / 26.000MHz**

Sample Order No: **EOS-E30359-1**

Date: **2014/03/26**

Approved By :

加高電子股份有限公司

HARMONY ELECTRONICS CORP.

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HSX211S SPECIFICATION

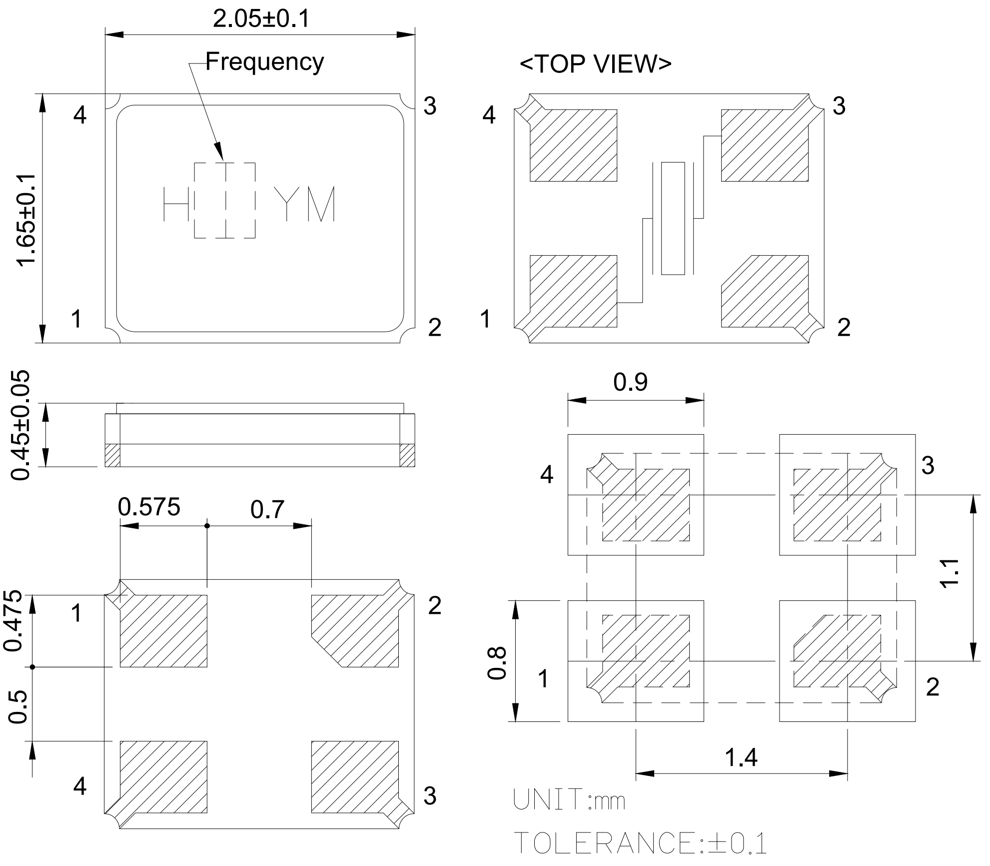
INDEX

1. QUARTZ CRYSTAL UNIT SPECIFICATION

1. Frequency:	26.000000MHz
2. Holder type :	***HSX211S***
3. Frequency tolerance:	+/-10 ppm at 25deg.C +/-3deg.C
4. Equivalent resistance:	100 ohms Max. / SERIES
5. Storage temperature range:	-40 deg.C To +85 deg.C
6. Operable temperature range:	-20 deg.C To +70 deg.C
7. Temperature drift:	+/-15 ppm -20 deg.C To +70 deg.C
8. Loading capacitance (CL) :	9.0 pF
9. Drive level:	10μW (100uW Max)
10. Shunt Capacitance:	2.0 pF
11. Insulation resistance :	More than 500M ohms at DC 100V
12. Mode of oscillation:	Fundamental
13. Circuit:	Measured in HP/E5100A,S&A 250B
14. Shocking :	Dropping from 120 cm height 3 times on Concrete floor
Variation :	Frequency less than +/-5 ppm Resistance less than +/- 15 ％ or 2ohms max.
15. Aging:	Less than +/- 3 ppm/Year
16. Holder	HSX211S Seam type
17. Dimensions and marking	Refer to page.4
18. Emboss carrier tape & reel	Refer to page.6 and page.7
19. Moisture Sensitivity Level	Level 1
20. Note：	

20000FC1Tittle HSX211S QUARTZ CRYSTAL SPECIFICATION				Country of origin	**TAIWAN FACTORY** **THAILAND FACTORY** **CHINA FACTORY**	
Date	Confirm	Check	Prepare	Spec. No.	Rev.	Page
2014/03/26	F. S. TSAI	Y. W. LEE	U. F. CHEN	**X2C026000B91H-V**	0	3

2. HSX211S MARKING & DIMENSIONS



Chamfer index mark depends on the ceramic base supplier.

*Marking should be printed as following:
Logo, Nominal Frequency, Manufactured year & month
*Nominal frequency = integer only
(ex. 14.31818 MHz → 14)
*Manufacturing Lot No.
(Y: year) ex. 2000 shall be marked as ‘ 0 ’ (As shown on the Table-1)
(M: month) ex. June shall be marked as ‘ F ‘ (As shown on the Table-2).
Marking : Laser marking.

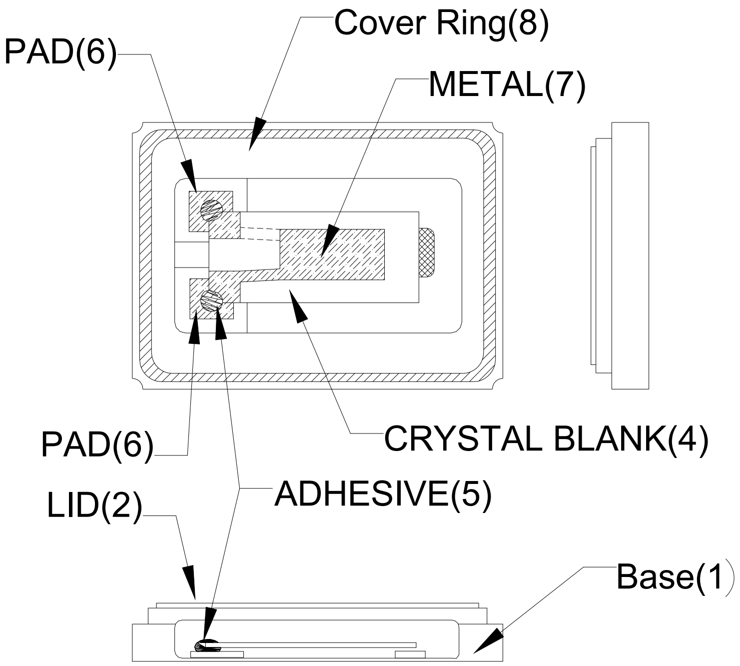
(Table-1)

Year	2000 2010	2001 2011	2002 2012	2003 2013	2004 2014	2005 2015	2006 2016	2007 2017	2008 2018	2009 2019
Code	0	1	2	3	4	5	6	7	8	9

(Table-2)

Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
A	B	C	D	E	F	G	H	J	K	L	M

3. INSIDE STRUCTURE



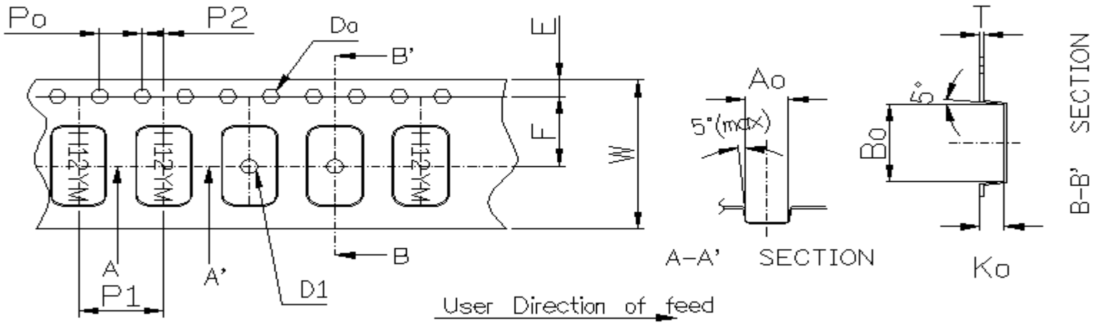
※Reference drawing

(1) Base: Alumina Ceramic (Al_2O_3) (6) Metallized Pad: Mo Ni Plating Au Plating
(2) LID: Fe- Ni -Co
(3) Crystal Enclosure Seal: Seal Seam
(4) Crystal Blank Rectangular At-Cut Quartz Crystal Blank
(5) Adhesive Silver Conductive Silicon Resin
(7) Metal
(8) Cover Ring： Fe-Ni-Co Alloy

The use prohibition chemistry substance of Table 1 of DHE-0204-1 (HE-QA-24) is not included in this item.

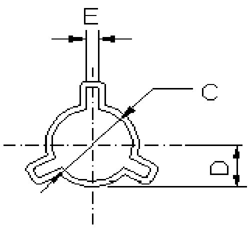
4. HSX211S EMBOSS CARRIER TAPE & REEL

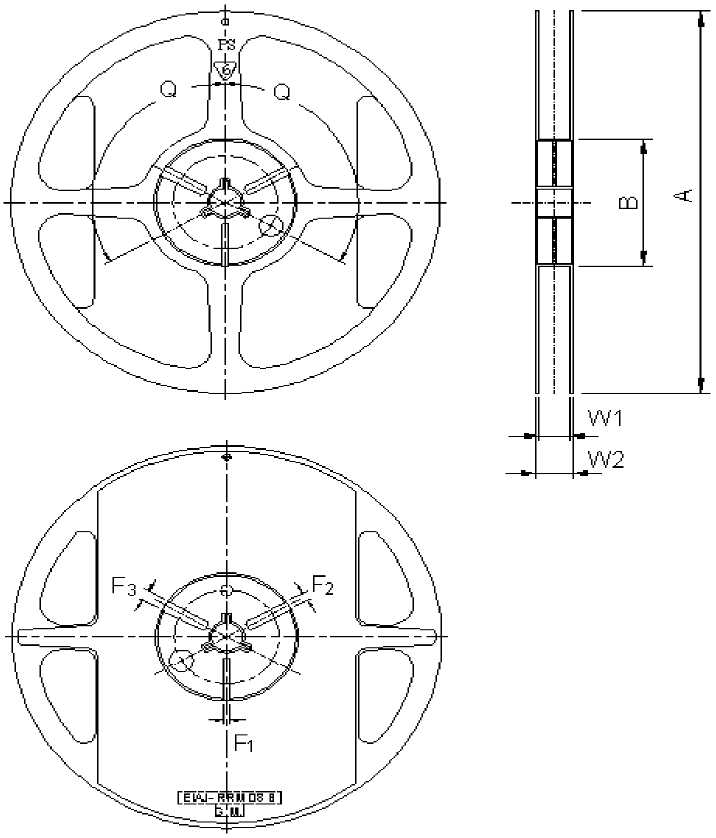
a.) Dimensions of Carrier Tape



Symbol	Ao	Bo	Ko	Po	P1	P2
Spec	1.9±0.10	2.3±0.10	0.65±0.10	4.0±0.1	4.0±0.1	2.0±0.05
Symbol	E	F	Do	D1	W	T
Spec	1.75±0.1	3.5±0.05	∅1.55±0.05	∅1.1±0.05	8.0±0.2	0.25±0.02

b.) Dimensions of Reel





20000FC1Tittle	HSX211S QUARTZ CRYSTAL SPECIFICATION			Country of origin	TAIWAN FACTORY THAILAND FACTORY CHINA FACTORY	
Date	Confirm	Check	Prepare	Spec. No.	Rev.	Page
2014/03/26	F. S. TSAI	Y. W. LEE	U. F. CHEN	**X2C026000B91H-V**	0	6

(Table-2) (UNIT: mm)

ITEM			MARK	DIMENSIONS・ANGLE
FLANCE	Diameter		A	φ180+0/-3
	Inner Width		W1	9.3+/-0.3
	Outer Width		W2	11.3+/-1.0
HUB	Out Line diameter		B	φ60.5+/-0.5
	Center Core slit	Width	F1	3.0+0.5/-0
			F2	4.0+0.5/-0
			F3	5.0+0.5/-0
		Position	Q	120deg
	Spindle diameter		C	φ13.2+/-0.5
	Key Ditch	Width	E	3.0+/-0.2

c.) Storage condition

Temperature: +40deg.C Max.

Relative Humidity: 80% Max.

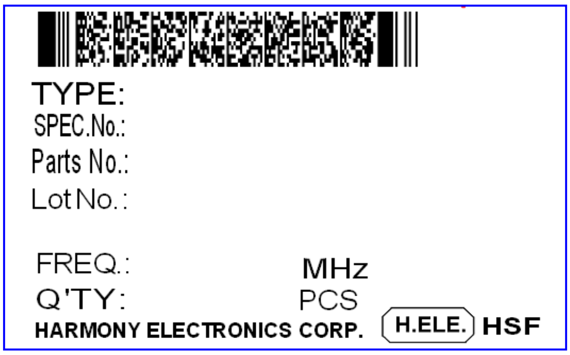
d.) Standard packing quantity

3,000PCS / REEL

e.) Material of the tape

Tape	Material
Carrier tape	PS Conductive
Top tape	Polyester

f.) Label contents



TYPE:
SPEC.No.:
Parts No.:
Lot No.:

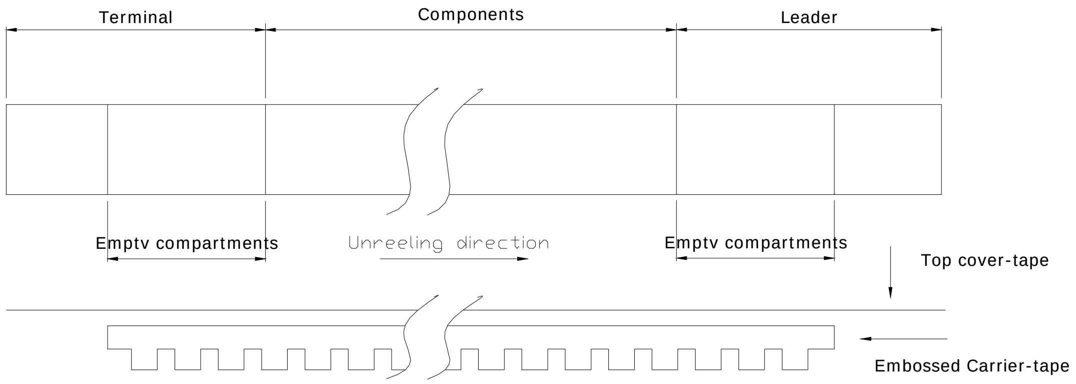
FREQ.: MHz
Q'TY: PCS
HARMONY ELECTRONICS CORP. H.ELE. HSF

Sticks label for every reel.

20000FC1Tittle	HSX211S QUARTZ CRYSTAL SPECIFICATION			Country of origin	TAIWAN FACTORY THAILAND FACTORY CHINA FACTORY	
Date 2014/03/26	Confirm F. S. TSAI	Check Y. W. LEE	Prepare U. F. CHEN	Spec. No. X2C026000B91H-V	Rev. 0	Page 7

g.) Taping dimension

Leader	Cover-tape	The length of cover-tape in the leader is more than 400 mm including empty embossed area.
	Carrier-tape	After all products were packaged, must remain more than twenty pieces or 400 mm empty area, which should be sealed by cover-tape.
Terminal	Cover-tape	The tip of cover-tape shall be fixed temporary by paper tape and roll around the core of reel one round.
	Carrier-tape	The empty embossed area which are sealed by top cover-tape must remain more the 40 mm.



h.) Joint of tape

The carrier-tape and top cover-tape should not be jointed.

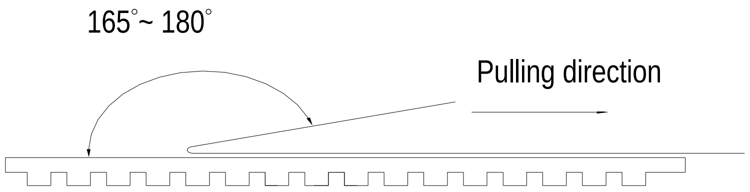
i.) Release strength of cover tape

It has to between 0.1N to 0.7N under following condition.

Pulling direction 165° to 180°

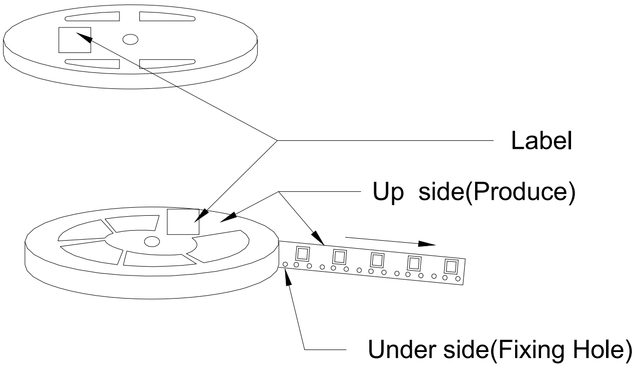
Speed 300mm/min.

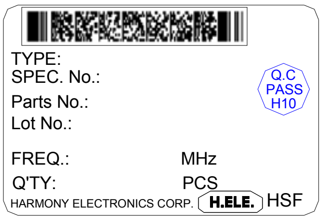
Otherwise unless specified.



Other standards shall be based on JIS C 0806-1990.

j.) Package

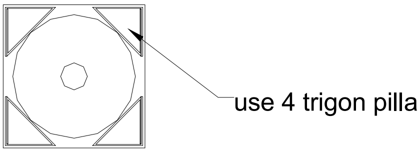


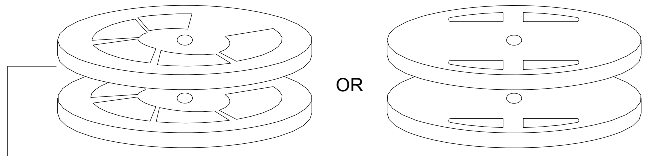


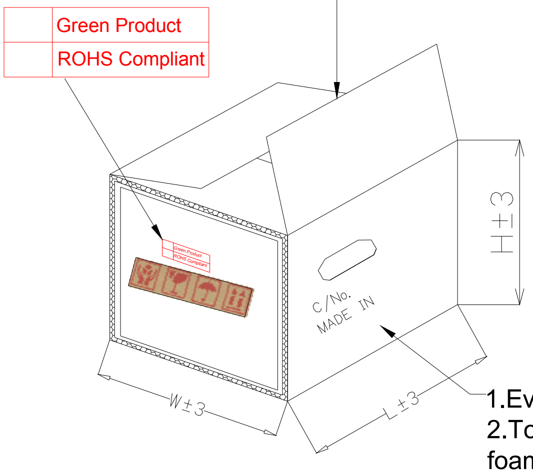
TYPE:
SPEC. No.:
Parts No.:
Lot No.:
FREQ.: MHz
Q'TY: PCS
HARMONY ELECTRONICS CORP. H.ELE. HSF

One reel quantity: [1000pcs]&[3000pcs]

① Top and bottom with 2.3cm thickness foam-rubber cushion for protection.
② Carton's Q'TY:1~15 pcs.
③ Carton Type=A,B,C use 4 trigon pillar to fasten the Reel.
④ Need to add 3 pages dry agent in each outer box.





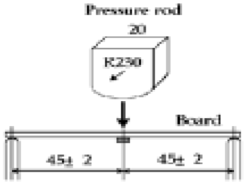
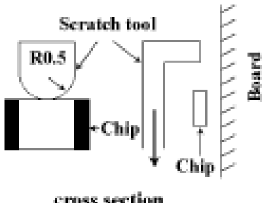
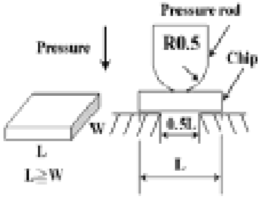


Carton Type	A	B	C	D
Produce Type	840/751	630/531/ 421	321/221 211/111	OTHER
Reel	15	15	15	1~7
L±3	200	200	200	195
W±3	200	200	200	195
H±3	230/260	230	230	150

1.Every Carton with 3 desiccant.
2.Top and bottom with 2.3cm thickness foam-rubber cushion for protection

20000FC1Tittle	HSX211S QUARTZ CRYSTAL SPECIFICATION			Country of origin	**TAIWAN FACTORY** **THAILAND FACTORY** **CHINA FACTORY**	
Date **2014/03/26**	Confirm F. S. TSAI	Check Y. W. LEE	Prepare U. F. CHEN	Spec. No. **X2C026000B91H-V**	Rev. 0	Page 9

5. Mechanical Performance

Item		**Test Methods**	**Specifications Code**
1	Natural Drop	Dropping from 120 cm height 3 times on Concrete floor	**A**
2	Vibration	Frequency 10-55Hz, Sine Wave full amplitude of 0.8mm to X, Y and Z 3 axes, Duration of 2 hours to each axis.	**A**
3	Sealing Tightness	Leak Rate 1.0×10^{-8} Pa-m^3/sec. Max. Measured by Helium leak detector.	**---**
4	Solderability	After applying ROSIN Flux, dipping in solder bath at 245deg.C+/-5deg.C for 3+/-0.5 sec.	**B**
5	Substrate Bending	Mount a sample on board. Apply Pressure to the center of board until it is bent to 3 mm and hold for 5 ±1 sec Pressure speed :0.5 mm / sec 	**A**
6	Adhesion	Mount a sample on the circuit board. Apply pressure vertically to the side of specimen attached to the circuit board with the pressure jig. Pressure : 5N for 10±1 sec 	**A**
7	Body strength	Apply pressure to the center of body with the R0.5 pressure jig. pressure :10N for 10±1sec 	**A**

6. Environment Performance

Item		Test Methods	Specifications Code
1	Humidity	Temperature 60℃+/-2℃,RH 90~95%, Duration of 240 hours. Back to room temperature first, then in 1~2 hours, the component shall be checked.	**A**
2	Storage in Low Temperature	-40deg.C +/-2deg.C, Duration of 240 hours. Back to the room temperature first, then in 1~2 hours, the component shall be checked.	**A**
3	Storage in High Temperature	+85deg.C +/-2deg.C, Duration of 240 hours. Back to the room temperature first, then in 1~2 hours, the component shall be checked.	**A**
4	Temperature cycles	-40deg.C +/-2deg.C (30min) ↔ +85deg.C +/-2deg.C (30min) 25 cycles. Back to the room temperature first, then in 1~2 hours, the component shall be checked.	**A**

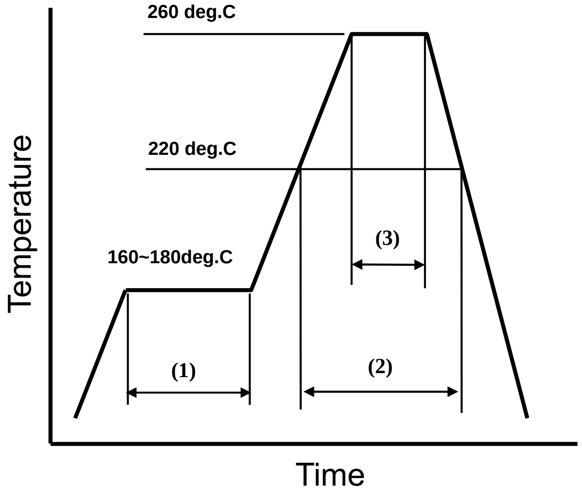
Specifications code	Specifications
A	Frequency variation shall be within +/-5ppm and equivalent resistance shall be within +/-15% or 2Ω
B	More than 90% of lead shall be covered by new solder.

7. Supplement

7.1.Soldering

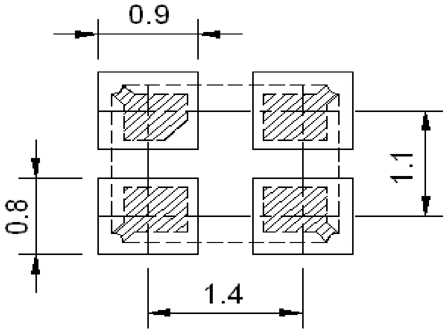
7.2.Please stay with our proposed reflow condition and do then soldering 2 times max.

Available for Lead Free Soldering



(1)	Preheat	160~180 deg.C	120sec.
(2)	Primary heat	220 deg.C	60sec.
(3)	Peak	260 deg.C	10sec. Max.

7.3.Land pattern layout(Example)



7.4.Solder iron (Example)

Bit temp.:350℃max.,Time:3sec max. ,Each terminal solder a 1 time max.

7.5.Mounting

This component is designed for automatic insertion.

However, you are requested to do the trial with your insertion machine in order to be sure of proper operation and no damage of component.

Please pay attention to board warp which may damage the component and cause Soldering Process.

Aviod mounting and processing by Ultrasonic welding because this method has a possibility of an excessive vibration spreading inside the crystal products and becoming the cause of characteristic deterioration and not oscillating.

7.6.Cleaning

Cleaning liquid which corrodes Nickel shall not be used

It may cause the problem on the surface, color, marking etc.

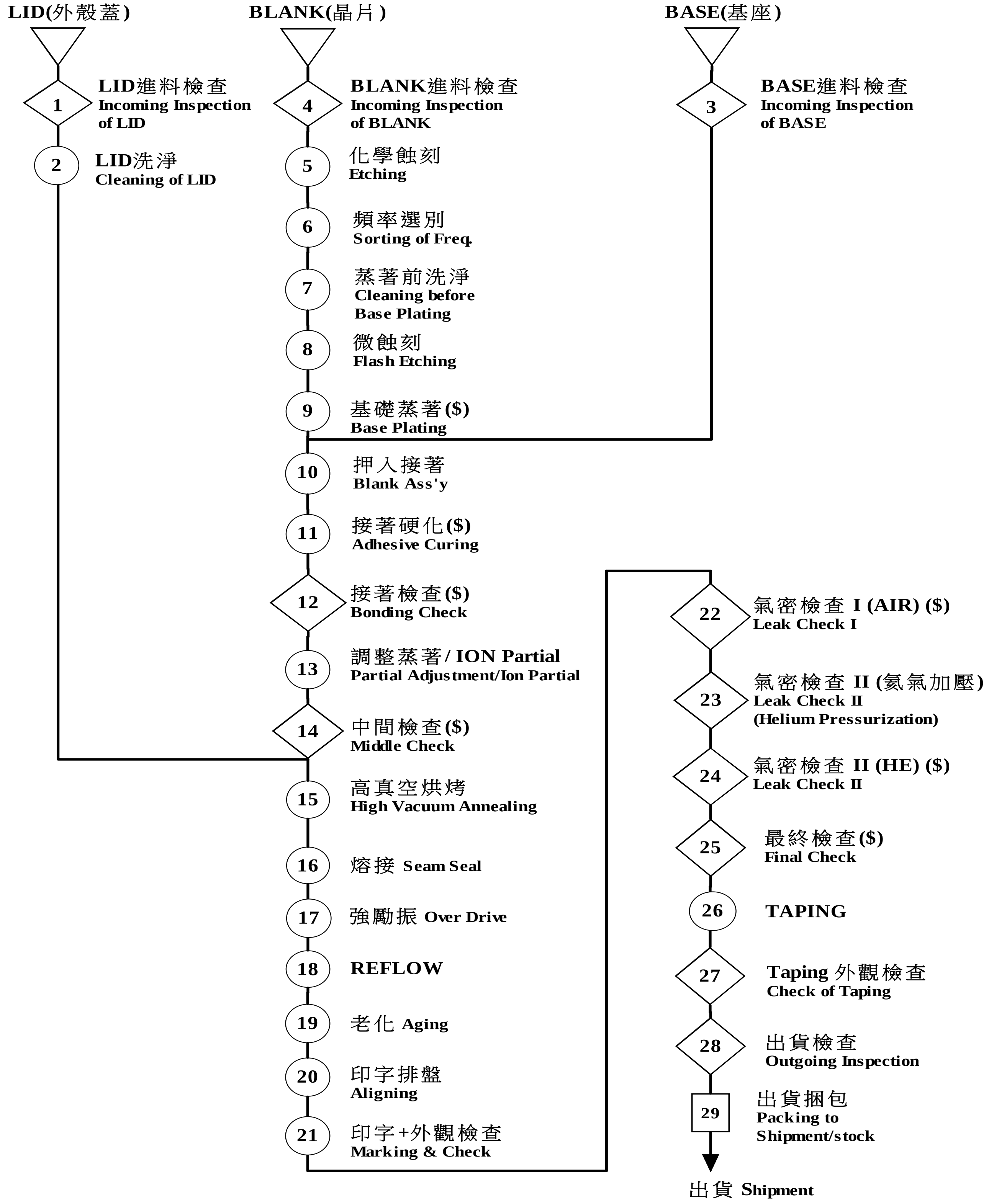
Ultra-sonic cleaning is possible, however, you are requested to check on your board.

Because we only checked as single unit.

7.7.Storage

Please keep away from high temperature and high humidity ,which may cause put solderbility. No direct Sunlight, No dew as well.

8. Flow Chart



($)：特殊特性
(For Special Characteristics)

20000FC1Tittle	HSX211S QUARTZ CRYSTAL SPECIFICATION			Country of origin	TAIWAN FACTORY THAILAND FACTORY CHINA FACTORY	
Date	Confirm	Check	Prepare	Spec. No.	Rev.	Page
2014/03/26	F. S. TSAI	Y. W. LEE	U. F. CHEN	X2C026000B91H-V	0	14

REV. No.	DATE	REASON	CONTENTS
0	2014/03/26	New	