

SPECIFICATIONS FOR APPROVAL



Customer Part No.: _____ HELE. Part No: **X5H008000FK1H-X**

Application For: _____ Products: **QUARTZ CRYSTAL**

Accepted Model: _____ Type & Freq.: **HSX530G/ 8.0000MHz**

Sample Order No: **EOS-BB0242-1** Date: **2011/11/16**

Approved By :

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HSX530G SPECIFICATION

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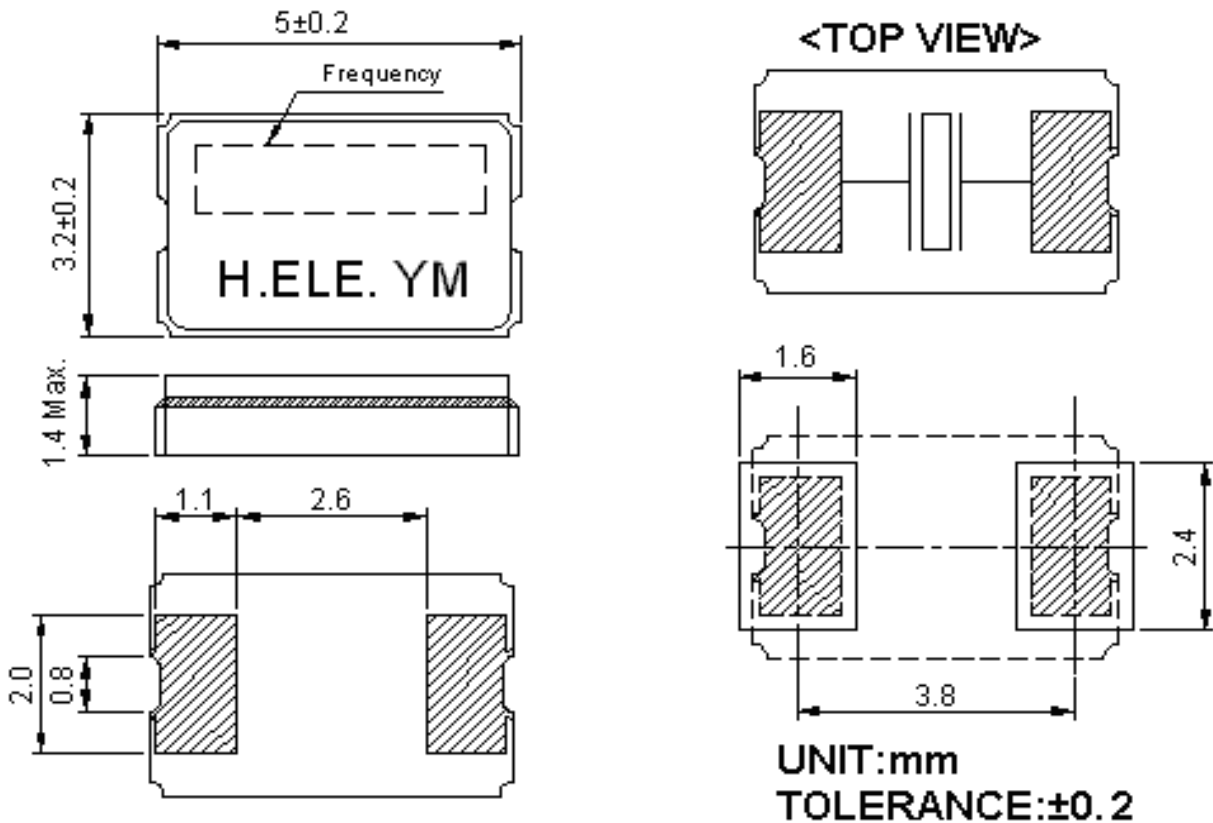
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1. QUARTZ CRYSTAL UNIT SPECIFICATION

- | | |
|--------------------------------|--|
| 1. Frequency: | 8.000000MHz |
| 2. Holder type : | HSX530G |
| 3. Frequency tolerance: | +/-30ppm at 25deg.C +/- 3deg.C |
| 4. Equivalent resistance: | 150 ohms Max. / SERIES |
| 5. Storage temperature range: | -40deg.C To +85deg.C |
| 6. Operable temperature range: | -40deg.C To +85deg.C |
| 7. Temperature drift: | +/-50ppm -40deg.C To +85deg.C |
| 8. Loading capacitance (CL) : | 20.0pF |
| 9. Drive level: | 10 uW (300uW Max) |
| 10. Shunt Capacitance: | 7.0 pF Max. |
| 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 50 cm height 3 times on firm wood |
| Variation : | Frequency less than +/- 5 ppm
Resistance less than +/- 15 % or 2ohms max. |
| 15. Aging: | Less than +/-5 ppm/Year |
| 16. Holder | HSX530G Ceramic Base |
| 17. Dimensions and marking | Refer to page.4 |
| 18 Emboss carrier tape & reel | Refer to page.6 and page.7 |
| 19 Note: | |

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2. HSX530G MARKING & DIMENSIONS



*Marking should be printed as following:

Nominal Frequency, Logo, Manufactured year & month

*Nominal frequency (m) = 3 number after decimal point MAX.
(ex. 12.000 MHz \rightarrow 12.000)

*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	2001	2002	2003	2004	2005	2006	2007	2008	2009
	2010	2011	2012	2013	2014	2015	2016	2017	2018	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

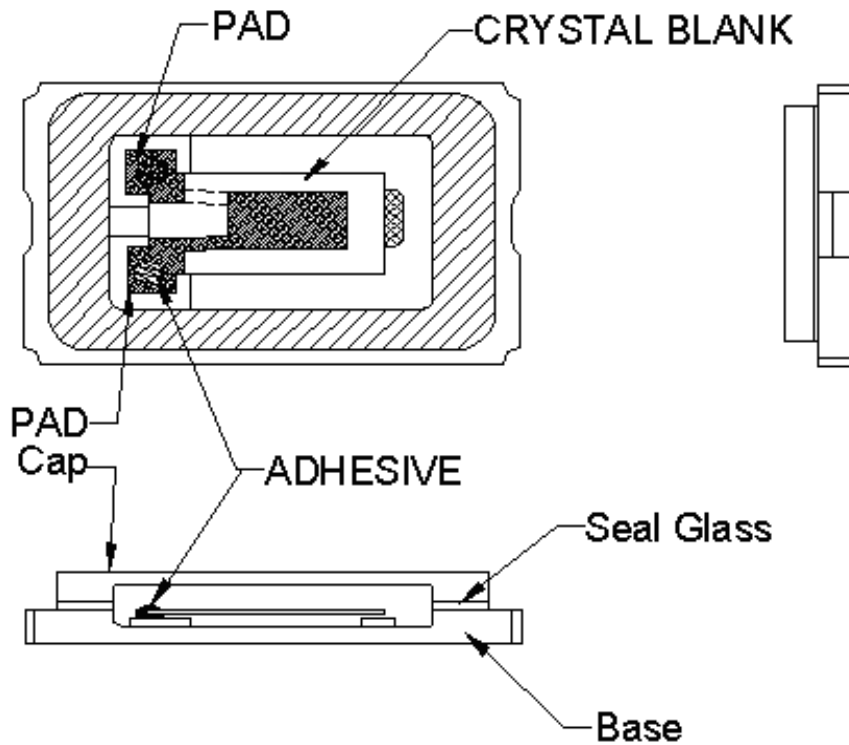
Title **HSX530G**
QUARTZ CRYSTAL SPECIFICATION

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3. INSIDE STRUCTURE



※Reference drawing

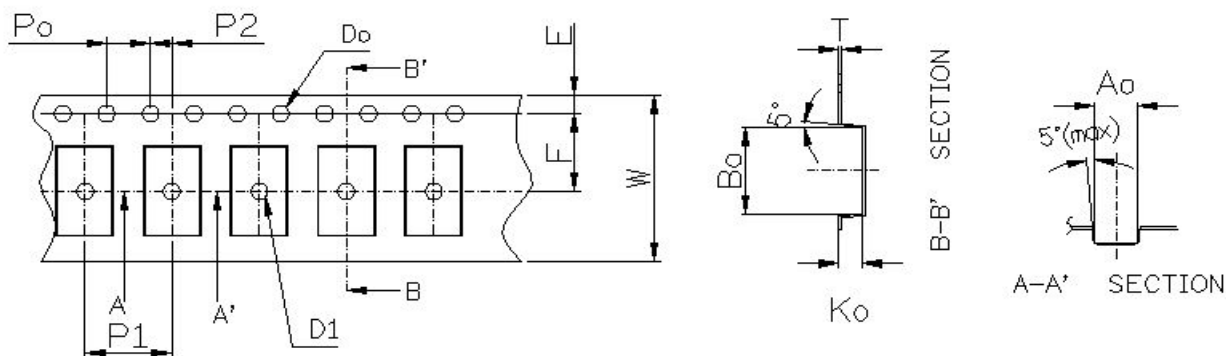
(1) Base: Alumina Ceramic (Al_2O_3) Metallized Pad: W Ni Plating Au Plating
(2) Cap: Alumina Ceramic (Al_2O_3)
(3) Crystal Enclosure Seal: Seal Glass
(4) Crystal Blank Rectangular At-Cut Quartz Crystal Blank
(5) Adhesive Silver Conductive Silicon Resin
(6) PAD Alumina Ceramic (W. Ni. Au)

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

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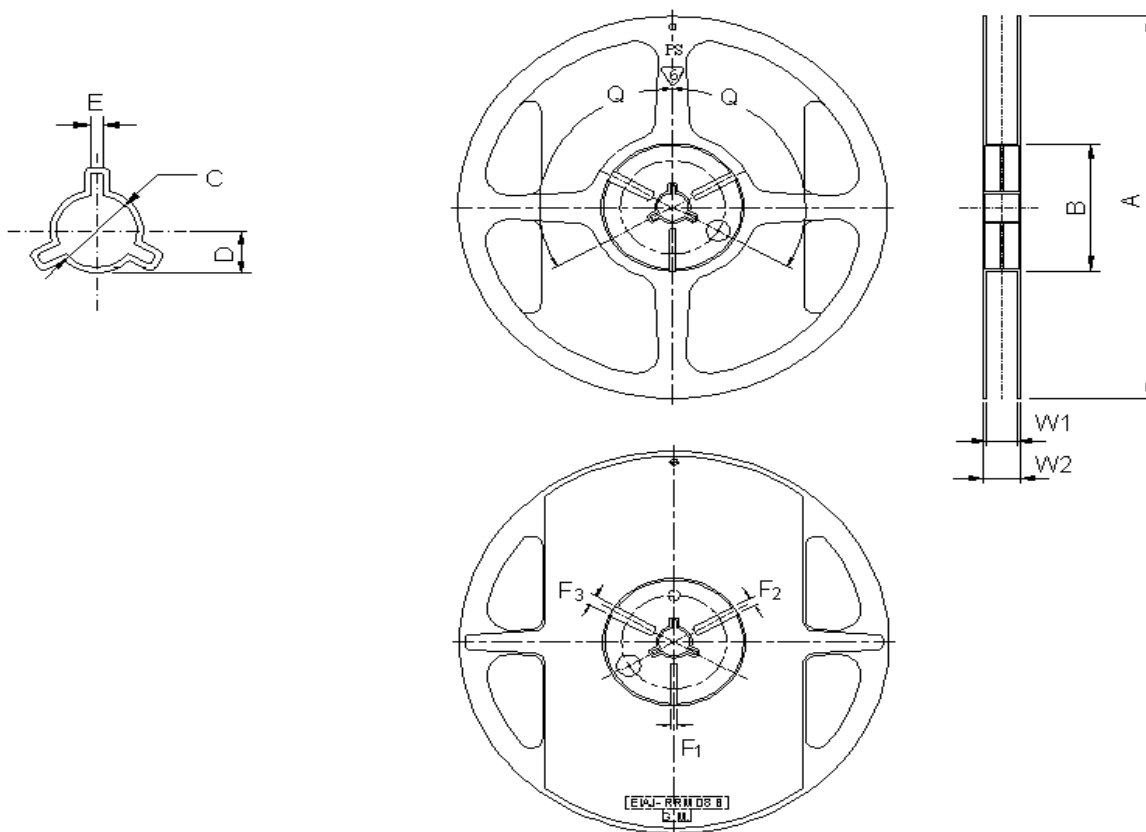
4. HSX530G EMOSS CARRIER TAPE & REEL

a.) Dimensions of Carrier Tape



Symbol	Ao	Bo	Ko	Po	P1	P2	T
Spec	3.60±0.1	5.40±0.1	1.40±0.1	4.0±0.1	8.0±0.1	2.0±0.05	0.30±0.05
Symbol	E	F	Do	D1	W	10Po	
Spec	1.75±0.1	5.50±0.05	1.55±0.05	1.50(min)	12.0±0.2	40.0±0.1	

b.) Dimensions of Reel



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(Table-2)

(UNIT: mm)

ITEM		MARK	DIMENSIONS · ANGLE	
FLANCE	Diameter	A	ϕ 180+0/-3	
	Inner Width	W1	12.8+/-0.3	
	Outer Width	W2	15.5+/-1.0	
HUB	Out Line diameter	B	ϕ 60.5+/-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	ϕ 13.2+/-0.5
Key Ditch	Width	E	3.0+/-0.2	

c.) Storage condition

Temperature: +40°C Max.

Relative Humidity: 80% Max.



d.) Standard packing quantity

1,000 PCS / REEL

e.) Material of the tape

Tape	Material
Carrier tape	PS
Top tape	PET

f.) Label contents

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

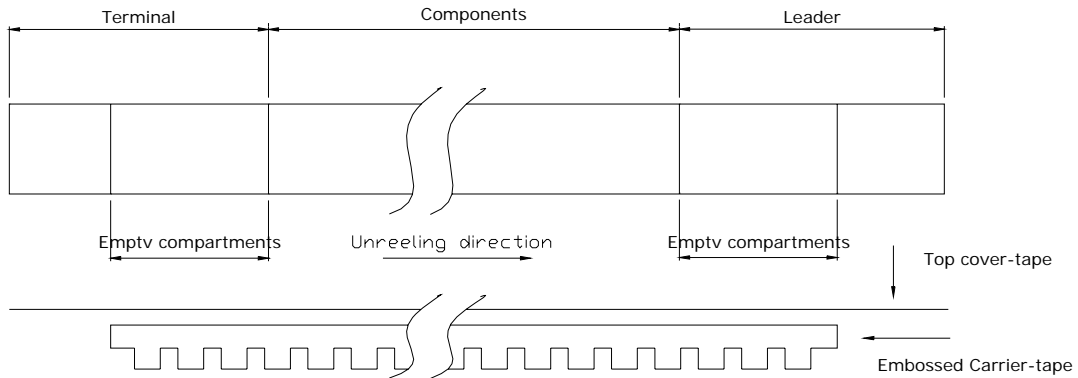
Sticks label for every reel.

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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.

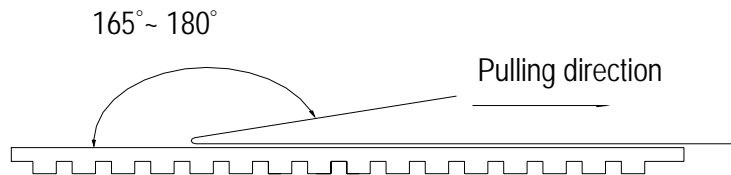
i.) Release strength of cover tape

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

Pulling direction 165° to 180°

Speed 300mm/min.

Otherwise unless specified.

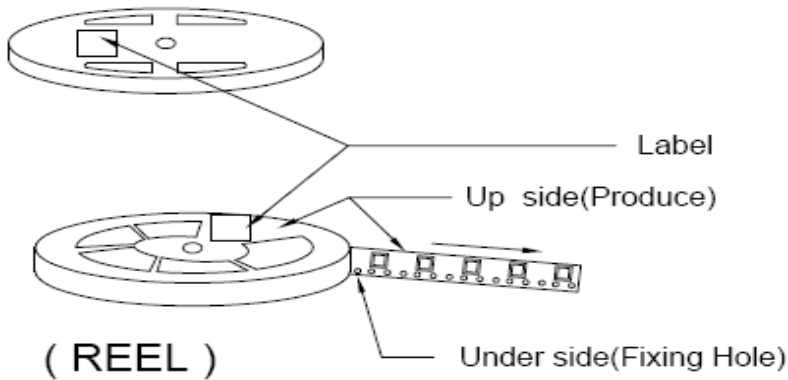


Other standards shall be based on JIS C 0806-1990.

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j.) Package

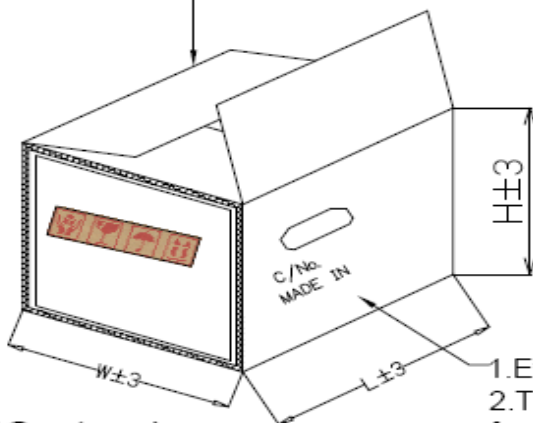
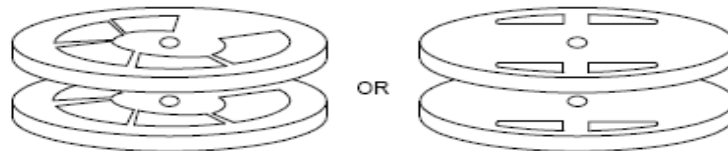
1. Reel : $\varnothing 180$



2. Carton

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	321/21	OTHER
Reel	15	15	15	1~7
L±3	200	200	200	195
W±3	200	200	200	195
H±3	230	230	230	150

(Carton)

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

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5. Mechanical Endurance: Provided that measurement shall be carried out after it alone in the room temperature for 1 hour.

Item	Test Methods	Specifications Code
1	Drop Should be satisfied after dropping three times from the height of 50 cm onto hard wooden board of thickness more than 30mm.	A
2	Vibration Should be satisfied after supplying following vibration. (1)Vibration Frequency: 10~55Hz (2)Cycle: 1 to 2 Min. (3)Amplitude: 0.8mm (4)Direction: X.Y.Z (5)Time: 2 Hours / Each Direction	A
3	Substrate Bending Mount the specimen on substrate. Apply the following pressure Direction: see Fig -1 Speed: 0.5 mm/sec Hours: 5 ± 1 sec Amount of substrate: 3 mm Max.	C
4	Adhesion Mount the specimen on substrate. Apply the following pressure Direction: see Fig -2 Weight: 5N Hours: 10 ± 1 sec	
5	Body strength Mount the specimen on substrate. Apply the following pressure Direction: see Fig -3 Weight: 10N Hours: 10 ± 1 sec	

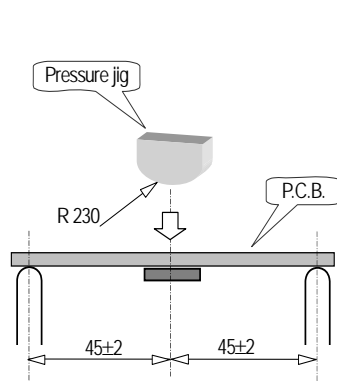


Fig-1

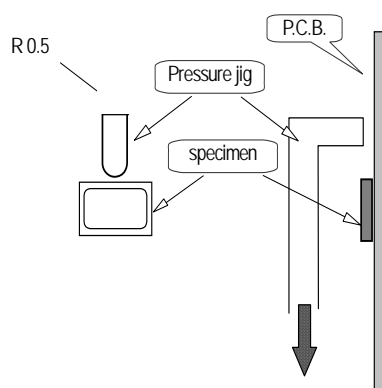


Fig-2

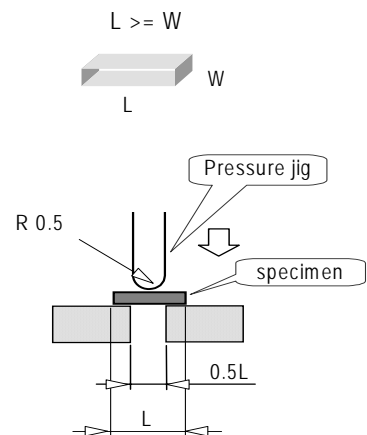
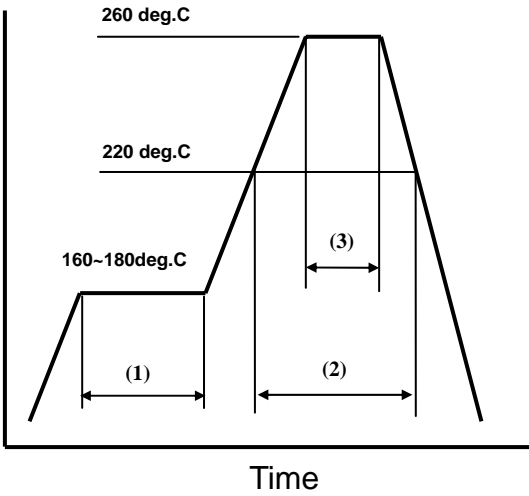


Fig-3

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6	Seal	Less than 1.0×10^{-8} Pa.m ³ /sec by Helium leak detector. Also, no serial bubble is observed by Fluorinate tests.	---												
7	Solder ability	3sec +/-0.5sec. Dip in 245deg.C +/-5deg.C solder. (Use ROSIN type flux for solder.)	B												
8	Resistance to Soldering Heat	<p>Run in reflow Reflow soldering shall be allowed Only two (2) time.</p> <p><i>Available for Lead Free Soldering</i></p>  <table border="1" data-bbox="534 1086 1093 1189"> <tr> <td>(1)</td> <td>Preheat</td> <td>160~180 deg.C</td> <td>120sec.</td> </tr> <tr> <td>(2)</td> <td>Primary heat</td> <td>220 deg.C</td> <td>60sec.</td> </tr> <tr> <td>(3)</td> <td>Peak</td> <td>260 deg.C</td> <td>10sec. Max.</td> </tr> </table>	(1)	Preheat	160~180 deg.C	120sec.	(2)	Primary heat	220 deg.C	60sec.	(3)	Peak	260 deg.C	10sec. Max.	A
(1)	Preheat	160~180 deg.C	120sec.												
(2)	Primary heat	220 deg.C	60sec.												
(3)	Peak	260 deg.C	10sec. Max.												

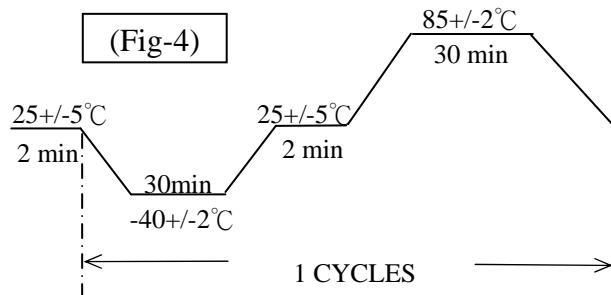
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6. Environmental Endurance: Provided that measurement shall be carried out after letting it alone in the room temperature for 1 hour.

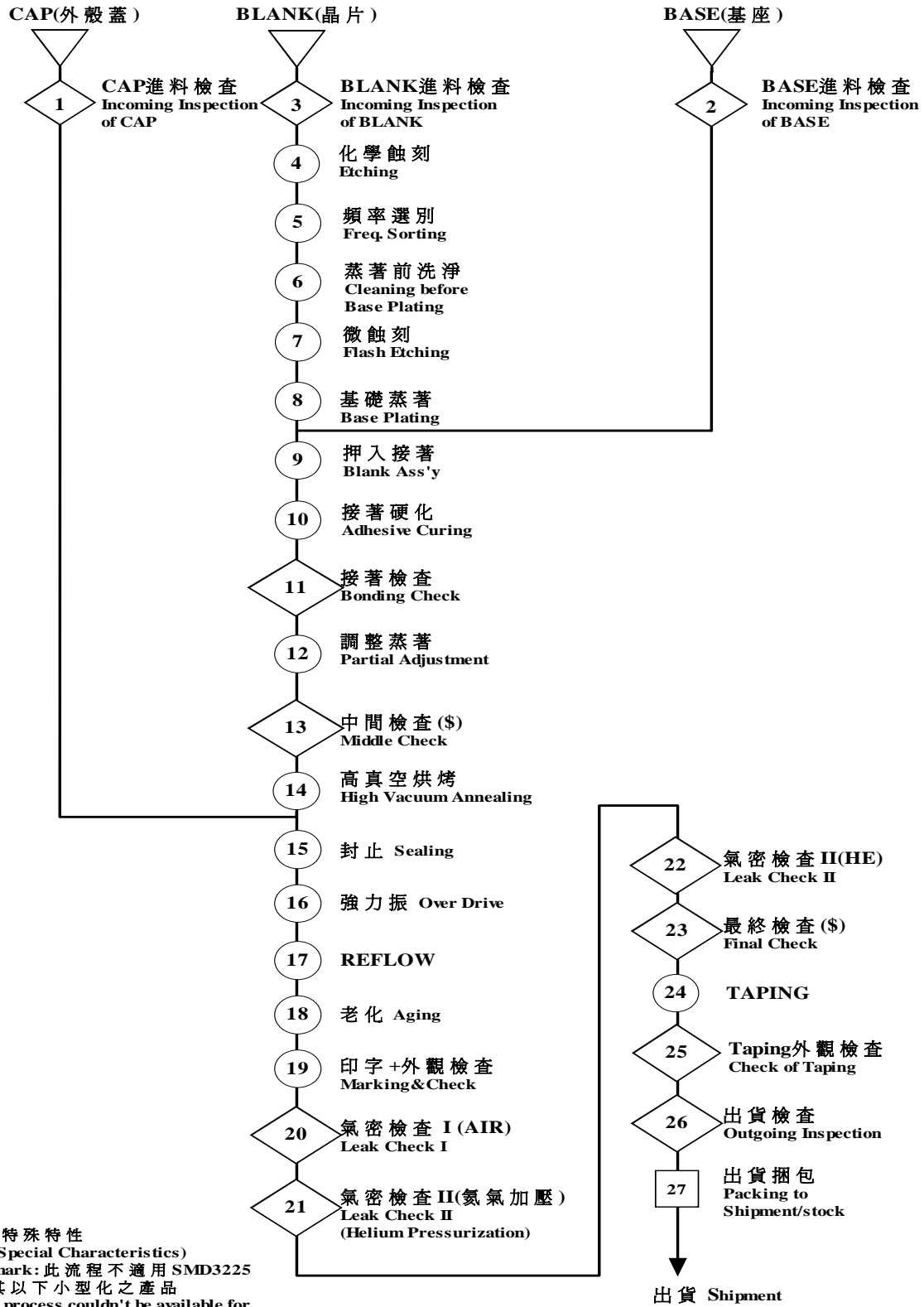
	Item	Test Methods	Specifications Code
1	Humidity	Should be satisfied after letting it alone at +60deg.C+/-2deg.C in humidity of 90% ~ 95% for 240 hours.	A
2	Storage in Low Temperature	Should be satisfied after letting it alone at -40deg.C+/-2deg.C for 240 hours.	A
3	Storage in High Temperature	Should be satisfied after letting it alone at +85deg.C+/-2deg.C for 240 hours.	A
4	Thermal Shock	Should be satisfied after supplying the following temperature cycle (25 cycles). (Refer to Fig-4). Temperature increasing or reducing time within 3 minutes.	A



Specifications code	Specifications
A	Frequency variation shall be within +/-5ppm and equivalent resistance shall be within the specification after the test
B	More than 90% of lead shall be covered by new solder.
C	Without mechanical damage such as breaks. Without electrode peeling. Electrical characteristics shall be satisfied.

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7. Flow Chart



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8. Environmental Workload Chemical Substance Components List

Environmental Workload Chemical Substance Components List		
TYPE PERCENTAGE Chemical Substance Components	H(D)SX530G	
	47(mg)	ppm
Silicon(Si)	0.21150	99.4050
Gold(Au)	0.06110	28.7170
Fluorinre(F)	0.98700	463.8900
Titanium(Ti)	0.22560	106.0320
Boron(B)	0.06110	28.7170
Cobalt and its compound(Co)	0.04042	18.9974
Lead(Pb)	3.40280	1599.3160
Bismuth(Bi)	0.23500	110.4500
Silver(Ag)	0.08930	41.9710
Chromium and its compound(Cr)	0.07520	35.3440
Zinc(Zn)	0.68620	322.5140
Aluminum(Al)	21.14530	9938.2910
Manganese and its compound(Mn)	0.22090	103.8230
Wolfram and its compound(W)	0.24910	117.0770
Nickel and its compound(Ni)	0.17390	81.7330
Iron(Fe)	1.82830	859.3010

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