



Serial No. : 2009-0719

DATE : 2009/06/08

ITEM :

CRYSTAL RESONATOR

DSX321G 26.000MHz

1N226000AA0D

1C226000AA0D

Please acknowledge receipt of this specification by signing and returning a copy to us.

RECEIPT	
DATE	
RECEIVED	(signature) (name)

General Manufacturer of Quartz Devices

DAISHINKU CORP.

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1. ELECTRICAL CHARACTERISTICS

(This test shall be performed under the conditions of temp.at $25 \pm 3^{\circ}\text{C}$, Relative Humidity 60% max.)

(1) NOMINAL FREQUENCY	26.000000 MHz		
(2) OVERTONE ORDER	Fundamental		
(3) LOAD CAPACITANCE(CL)	8.8 pF		
(4) FREQUENCY TOLERANCE	± 8 ppm max. (at $+25 \pm 3^{\circ}\text{C}$)		
(5) DRIVE LEVEL	100 ± 10 μW		
(6) SERIES RESISTANCE	34 Ω max. (at Series)		
(7) OPERATING TEMPERATURE RANGE	$-20 \sim +75^{\circ}\text{C}$		
(8) FREQUENCY CHARACTERISTICS OVER TEMPERATURE	± 10 ppm max. / $-20 \sim +75^{\circ}\text{C}$	(ref. to $+25^{\circ}\text{C}$)	
(9) SHUNT CAPACITANCE	2.0 pF max.		
(10) INSULATION RESISTANCE	500 M Ω min. / DC $100 \pm 15\text{V}$		
(11) STORAGE TEMPERATURE RANGE	$-40 \sim +85^{\circ}\text{C}$		

2. CONSTRUCTION

(1) DIMENSIONS AND MARKING	Refer to 4.
(2) INSIDE STRUCTURE	Refer to 9.

3. OTHER SPECIFICATIONS

(1) EMBOSS CARRIER TAPE & REEL	Refer to 5.
(2) PACKING	Refer to 6.
(3) REFLOW CONDITIONS (REFERENCE)	Refer to 7.
(4) LAND PATTERN (REFERENCE)	Refer to 8.
(5) RELIABILITY SPECIFICATION	Refer to 10.~12.
(6) OTHER HANDLING INSTRUCTIONS	Refer to 13.

USE OF FREON : This product is not used with any ODC CLASS 1.

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4. DIMENSIONS AND MARKING

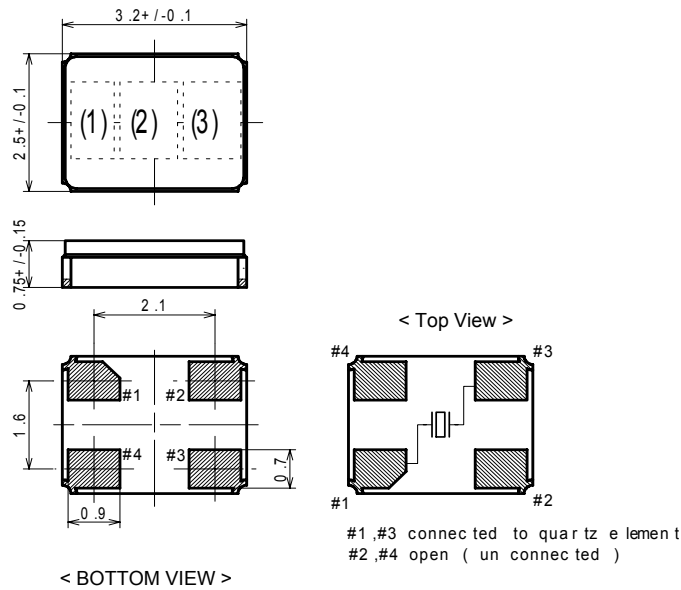


Figure-1

unit : mm
Tolerance : ±0.1

Logo(1) and Nominal Frequency (2) should be printed as follows by producing district

Made in THAILAND --> Spec. No.: 1N226000AA0D , Logo : D , Frequency: 26
 Made in INDONESIA --> Spec. No.: 1C226000AA0D , Logo : D , Frequency: 26

* Made in INDONESIA : Under Bar with D

Nominal Frequency (2) = Mark two digits from upper decimal point
 (ex. 26.000000 MHz ----> 26)

Manufacturing lot No.(3)
 (year) ex. 2009 shall be marked as ' 9 ' (The last digit of the year)
 (Month)ex. June shall be marked as ' F ' (As shown in Table-1.)

(Table-1.)

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

Plating material of a terminal. : Ni Plating + Au Plating.
 A clearance between the soldering terminal portion and a print circuit board side should be less than 0.1mm.

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5. EMBOSS CARRIER TAPE & REEL

(1) Dimensions of embossed carrier tape

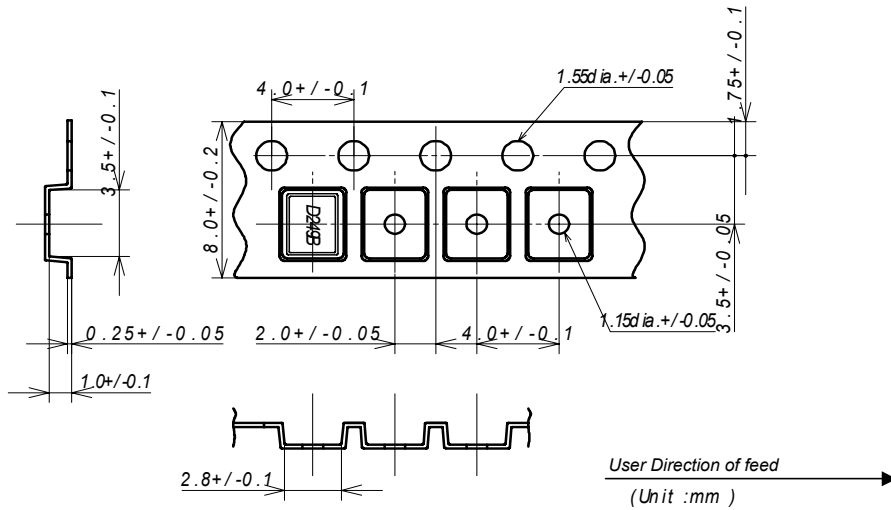


Figure-2

(2) Dimensions of tape reel

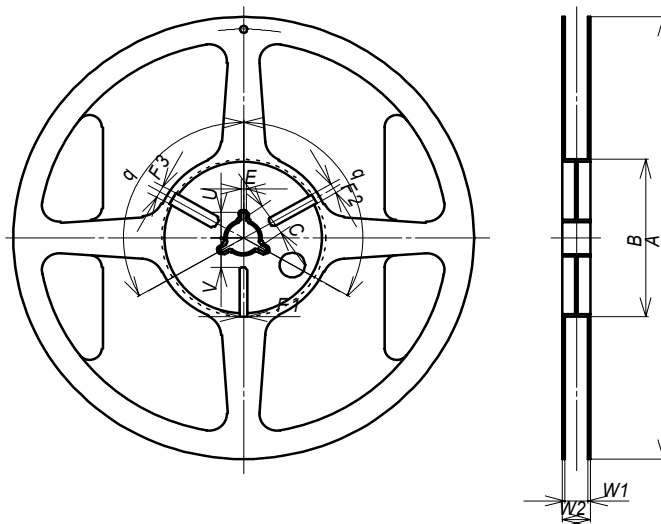


Figure-3

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(UNIT:mm)

Products			DSX321G
Item		Mark	Dimensions Angle
Flange	Diameter		A 180 Φ +0.0 / -3.0
	Inside of Frange		W1 9.0 \pm 0.3
	Outside of Frange		W2 11.4 \pm 1.0
	Inside Diameter		B Φ 60 +1.0-0
Center Core	Center Core Slit	Width	F1 3.0 \pm 0.2
			F2 4.0 \pm 0.2
			F3 5.0 \pm 0.2
		Length	V 11.9 +0.5 / -0.0
		Angle	q 120°
	Spindle Diameter		C 13 Φ \pm 0.2
	Key Seats	Width	E 2.0 \pm 0.5
		Length	U 10.5 \pm 0.4
Angle		q 120°	

(3) Storage condition

Temperature : +40 °C max.

Relative Humidity : 80% max.

(It is a guaranteed term because it obtains an excellent soldering: 6 months)

(4) Standard packing quantity

3,000 pcs/reel

(5) Material of the tape

Tape	Material
Carrier tape	Polystyrene+Carbon
Cover tape	Polyester

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(6) Label contents

- Type
- Our specification No.
- Your Part No.
- Lot No.
- Nominal Frequency
- Quantity
- Our Company Name
- Producing Country

Stick a label on the each reel.

(7) Taping dimension

Leader	Cover-tape	The length of cover-tape in the leader is more than 400mm including empty embossed area.
	Carrier-tape	After all products were packaged, must remain more than twenty pieces or 400mm 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 cover-tape must remain more than 40mm.

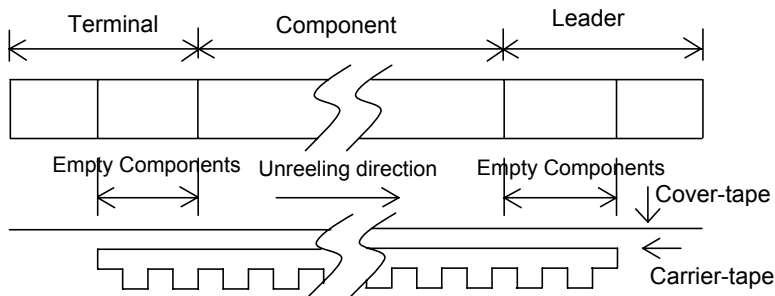


Figure-4

(8) Joint of tape

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

(9) Release strength of cover tape

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

- Pulling direction 165 ~ 180 °
- Speed 300mm/min.
- Otherwise unless specified.

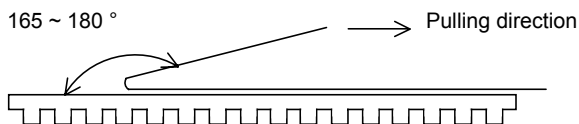


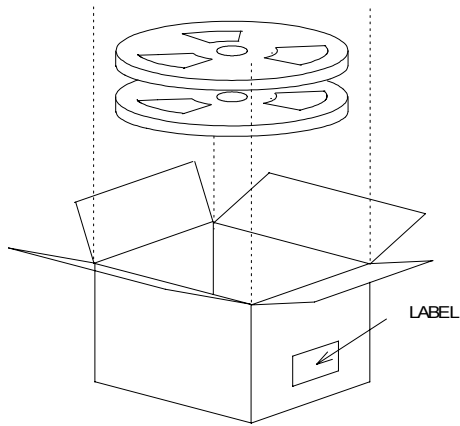
Figure-5

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

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6. PACKING

(1) STORAGE METHOD



Label contents

- The type of product
- Lot No.
- Specification
- Quantity
- Shipment Day
- Remark

Figure-6

(2) BOX SIZE

From lot size packingsize shall be changed.
 In the upper and lower part and the opening in box it shall be protected products using aircushion sheets.

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7. REFLOW CONDITIONS (REFERENCE)

During the solder reflow process, please complete within following temperature, period.
 Reflow soldering shall be allowed only 2 times.

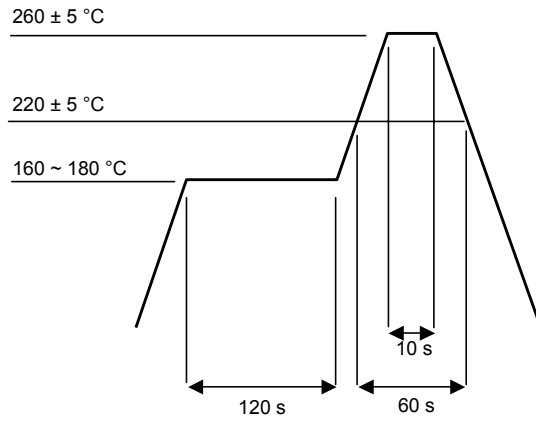


Figure-7

Total time : 240 s max.

HANDSOLDERING METHOD : $350 \pm 10 \text{ }^\circ\text{C}$, 3+1/-0s Each terminal once
 (Please take care so that a soldering iron should not touch a product directly.)

8. LAND PATTERN (REFERENCE)

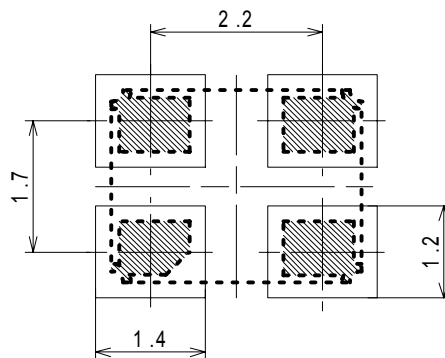


Figure-8

unit : mm

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9. INSIDE STRUCTURE

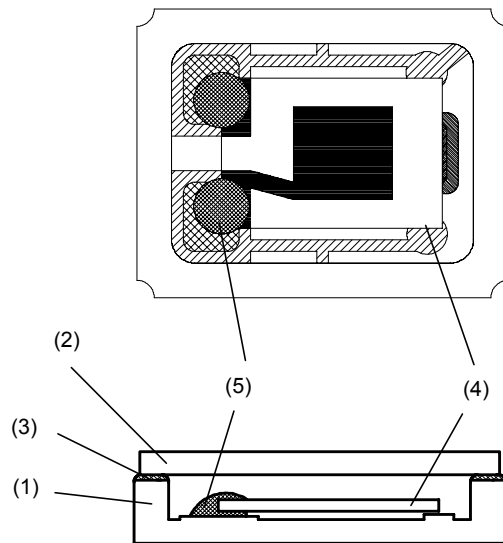


Figure-9

This is a sketch of inside construction, so the size of this drawing may not match with actual size.

9.1. COMPONENTS

- (1) Base
Alumina ceramics
W metalized
Ni Plating
Au Plating
- (2) Cap
Alumina ceramics
- (3) Seal glass
- (4) Crystal Blank
- (5) Conductuig Adhesive Agent

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10. MECHANICAL ENDURANCE

(1) SHOCK (ACCELERATION)

After the following test, parts shall conform specification 12.B.
 1000m/s² by 6ms X,Y,Z each axis (6 directions) , 3cycles

(2) SHOCK (MOUNTING DROP)

After the following test, parts shall conform specification 12.B.
 3cycles(18times) drop from 150 cm heights to concrete.
 Further, parts shall be soldered on substrate, fixed Aluminum materials(about 100g).
 Substrate materials : Glass Epoxy
 1 cycle : each 1 times of 6 directions

(3) VIBRATION

After the following test, parts shall conform specification 12.B.
 and no abnormal appearance shall be observed.
 Frequency of Vibration : 10 ~ 500 ~ 10 Hz
 Amplitude(p-p) : Sine waves of 1.5mm or 100m/s²
 Cycle : 11min
 Vibration axis : X.Y.Z
 Vibration period : 2 h for each axis

(4) SEAL

Less than 2.0×10⁻⁹ Pa m³/s. by Helium leak detector.
 Also, no serial bubble is observed by Fluorocarbon tests.

(5) SOLDERABILITY

After the following test, more than 95% of terminal shall be covered by new solder.
 3 ± 0.5 s dip in 245 ± 5 °C solder.
 (Solder composition : Sn-3Ag-0.5Cu) (Use rosin type flux for solder.)

(6) RESISTANCE TO SOLDERING HEAT (REFLOW)

48 h past at room temperature from following test, parts shall conform specification 12.B.
 perform the attached Reflow conditions to reference.

(7) RESISTANCE TO SOLDERING HEAT (HAND SOLDERING METHOD)

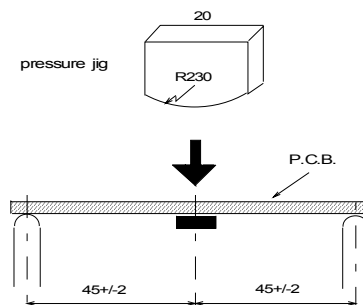
48 h past at room temperature from following test, parts shall conform specification 12.B.
 350 ± 10°C , 3+1/-0s Each terminal once.

(8) SUBSTRATE BENDING

After the following test, parts shall conform specification 12.B.
 and no abnormality shall be observed in external appearance and sealing
 tightness and others shall be based on ET-7403 of EIAJ.
 Mount the specimen on substrate.

Apply the following pressure

Direction : see right figure
 Speed : about 1.0 mm/s
 Hours : 5 ± 1 s
 Amount of substrate : 3 mm max.



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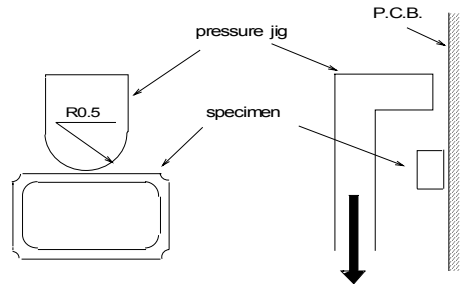
(9) SHEAR

After the following test, parts shall conform specification 12.B.
and no abnormality shall be observed in external appearance and sealing
tightness and others shall be based on ET-7403 of EIAJ.

Mount the specimen on substrate.

Apply the following pressure

- Weight : 10 N
- Hours : 10 ± 1 s
- Direction : see right figure



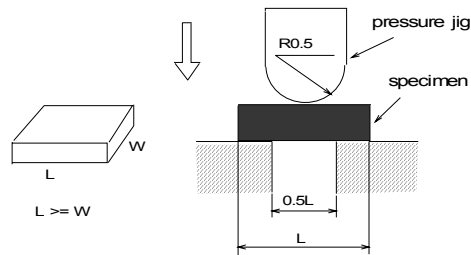
(10) BODY STRENGTH

After the following test, parts shall conform specification 12.B.
and no abnormality shall be observed in external appearance and sealing
tightness and others shall be based on ET-7403 of EIAJ.

Mount the specimen on substrate.

Apply the following pressure

- Weight : 10N
- Hours : 10 ± 1 s
- Direction : see right figure



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11. ENVIRONMENTAL ENDURANCE

(1) LOW TEMPERATURE

2 h past at room temperature after following test, parts shall conform specification 12.B.
 240 h , $-40 \pm 3 \text{ }^\circ\text{C}$.

(2) HUMIDITY

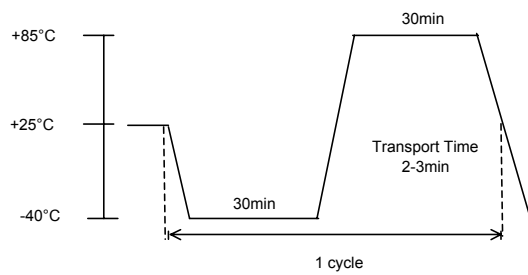
2 h past at room temperature after following test, parts shall conform specification 12.B.
 240 h $+85 \pm 2 \text{ }^\circ\text{C}$, relative humidity $85 \pm 5\%$.

(3) HIGH TEMPERATURE

2 h past at room temperature after following test, parts shall conform specification 12.B.
 240 h , $+85 \pm 2 \text{ }^\circ\text{C}$.

(4) TEMPERATURE CYCLE

2 h past at room temperature after 25 cycles of following test, parts shall conform specification 12.B.



12. SPECIFICATION

Frequency Variation and Equivalent Resistance shall be within Table below after the reliability test.

Spec.	Frequency Variation	Equivalent Resistance
A	$\pm 2\text{ppm}$	$\pm 15 \%$ or 2.0Ω max. (Use larger specification)
B	$\pm 5\text{ppm}$	$\pm 20 \%$ or 3.0Ω max. (Use larger specification)
C	$\pm 10\text{ppm}$	$\pm 20 \%$ or 3.0Ω max. (Use larger specification)
D	$\pm 20\text{ppm}$	$\pm 25 \%$ or 10.0Ω max. (Use larger specification)

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13. DSX321G TYPE QUARTZ CRYSTAL HANDLING INSTRUCTIONS

(1) SOLDERING

Please perform the attached Reflow conditions to reference within 2 times.

(2) MOUNT

Crystal products are designed to be compatible with automatic mounting.
Be sure to have a mounting test in advance by using the actual mounting machine and check that the characteristics of the products are not damaged by the automatic mounting.

In the process where the board is warped, such as board separation process, be careful that the warping does not influence the characteristics and soldering of crystal products.

Since mounting by Ultrasonic welding and processing have a possibility of an excessive vibration spreading inside a crystal resonator and becoming the cause of characteristic deterioration and not oscillating, it does not recommend.

(3) WASHING

About use of the washing liquid of a basin system, an alcoholic system, and a chlorofluorocarbon-replacing material system, it is checking that it is satisfactory. However please consult in advance about other washing liquid.

Although the check about ultrasonic washing is performed, since it is an examination with a simple substance, the check for the second time by the use state is recommended.

(4) THE CAUTIONS ON USE

The piece of crystal it is processed very smaller than the conventional thing inside DSX321G series crystal unit may be damaged, if excessive excitation electric power is applied.

Please use it below with the value specified on a catalog and specifications.

Please refrain from forming patterns under crystal resonators since there is a possibility to cause crack in base.

If the temperature is higher than 280 °C, there is a possibility for the sealing glass to remelt. Avoid using the product at temperature higher than specified.

(5) HANDLING OF A PRODUCT

DSX321G series has sufficient intensity to fall and vibration.

However when too much shock is added according to a certain cause, the use after a characteristic check is recommended.

(6) STORAGE

Since the soldering nature of a terminal may be degraded, please avoid storage in high temperature and a humid place.

Please keep it in the place which direct rays do not hit and dew condensation does not generate.

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