

**RoHS Compliant**  
Directive 2002/95/EC

## SPECIFICATION

Customer: General Spec

Item:	CRYSTAL UNIT
Type:	NX3225SA
Nominal Frequency:	114.285 MHz
Customer's Spec. No.:	
NDK Spec. No.:	EXS00A-CS00871

Receipt

Charge:

Sales	Sales.Dept.1 Y.Shinohara	Tel. 81-(0)3-5453-6737	Approved	K. Kubota
Engineer	Engineering Dept.1 H.Ouchi	Tel. 81-(0)4-2900-6631	Checked	---
			Drawn	H.Ouchi

Revision Record				
Rev.	Rev. Date	Items	Contents	Remarks
---	21.Jun.2007	Issue	---	---
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				---
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1. Customer specifications number :  
 2. NDK specification number : EXS00A-CS00871  
 3. Type : NX3225SA
4. Electrical characteristics
- 4.1 Nominal frequency : 114.285 MHz
  - 4.2 Overtone order : 3<sup>rd</sup> overtone
  - 4.3 Adjustment tolerance :  $\pm 100 \times 10^{-6}$  max. (+25 °C)
  - 4.4 Tolerance over the temperature range :  $\pm 100 \times 10^{-6}$  max. (-40 ~ +85 °C)/  
The reference temperature shall be 25°C
  - 4.5 Equivalent resistance ( $R_1$ ) : 80Ω max.
  - 4.6 Shunt Capacitance ( $C_0$ ) : 1.1pF  $\pm$  30% (Not grounded)
  - 4.7 Insulation resistance : Terminal to terminal insulation resistance also  
terminal to cover insulation resistance must be  
500MΩ (min) when DC100V  $\pm$  15V is applied.
  - 4.8 Aging :  $\pm 3 \times 10^{-6}$  max. / year (at +25 $\pm$ 3°C)
  - 4.9 Maximum drive level : 200μW
5. Measurement circuit
- 5.1 Frequency measurement
    - Measuring instrument : IEC  $\pi$ -Network
    - Load capacitance ( $C_L$ ) : 18pF
    - Level of drive : 100μW
  - 5.2 Equivalent resistance measurement
    - Measuring instrument : IEC  $\pi$ -Network
    - Load capacitance ( $C_L$ ) : Series
    - Level of drive : 100μW
6. Other performances
- 6.1 Storage temperature range : -55 ~ +125°C
  - 6.2 Air-tightness : Less than  $1.1 \times 10^{-9}$  Pa m<sup>3</sup>/s (Helium leak detector)
7. Examination results document  
 Since a performance is guaranteed, an examination results document does not submit.
8. Application drawing
- 8.1 External dimension : EXD14B-00370
  - 8.2 Taping and reel figure : EXK17B-00098
  - 8.3 Reel Packing : EXK17B-00130
  - 8.4 Holder marking : EXH11B-00378
  - 8.5 Reliability assurance Item : EXS30B-00249

9. Notice

- 9.1 Order items are manufactured according to specification. As to conditions, which are not indicated in this specification and unpredictable such as applied condition and oscillation margin, please check them beforehand.
- 9.2 Unless we receive request for modification within 3 weeks from the issue date of this NDK specification sheet, we will supply products according to this specification. Also, if you'd like to modify specification of order, which has been placed with delivery request within 3 weeks from the issue data of this specification sheet, we would like to discuss with you separately.
- 9.3 In no event shall the company be liable for any product failure resulting from an inappropriate handling or operation of the product beyond the scope of its guarantee.
- 9.4 Where any change to the process condition is made due to the change(s) in the production line, inform personnel of the specifications.
- 9.5 Should this specification data give rise to any disputes relating to any intellectual property rights or any other rights of a third person, the company shall not indemnify anyone for any damage. Their disclosure must not be construed as the grant of a license to use any of the intellectual property rights owned by the company.
- 9.6 If you intend to use products listed on this specification for applications that may result in loss of life or assets (controls relating to safety, medical equipment, aeronautical equipment, space equipment, etc.), please do not fail to advise us of your intention beforehand.
- 9.7 In the company's production process whatever amount of ozone depleting substances (ODS) as specified in the Montreal protocol is not used.
- 9.8 Information contained in this specification must not be quoted, reproduced or used for other purposes including processing either in part or in full without obtaining prior approval from the company.

10. Prohibited items

Be sure to use the product under the following conditions. Otherwise, the characteristics deterioration or destruction of the product may result.

(1) Reflow soldering heat resistance

Peak temperature: 265°C, 10 sec

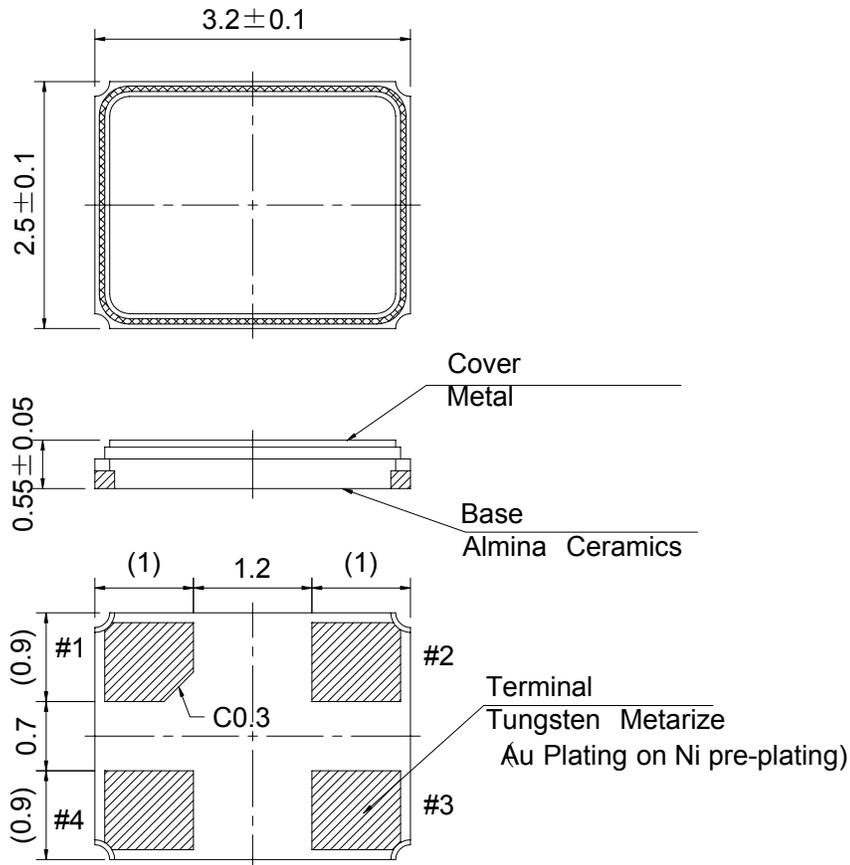
Heating: 230°C or higher, 40 sec

Preheating: 150°C to 180°C, 120 sec

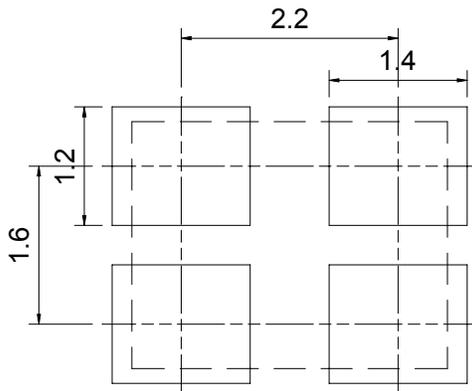
Reflow passage times: Twice

(2) Manual soldering heat resistance

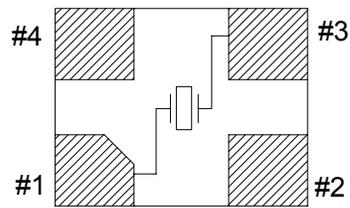
Pressing a soldering iron of 400°C on the terminal electrode for four seconds (twice).



LAND PATTERN (TYPICAL)



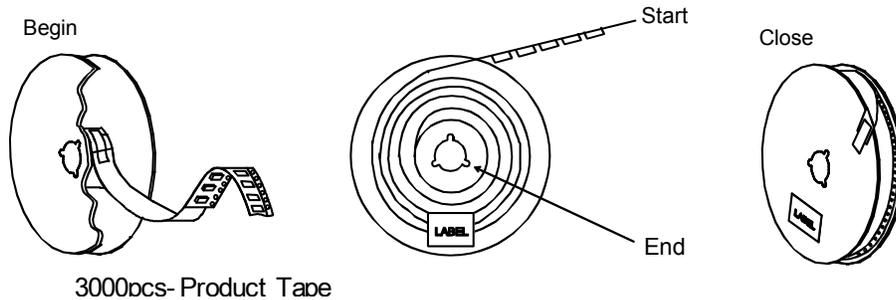
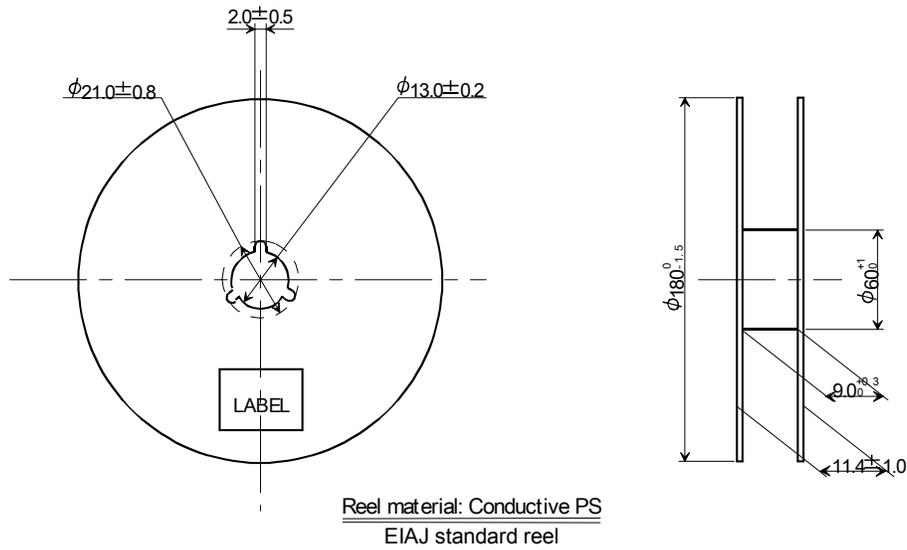
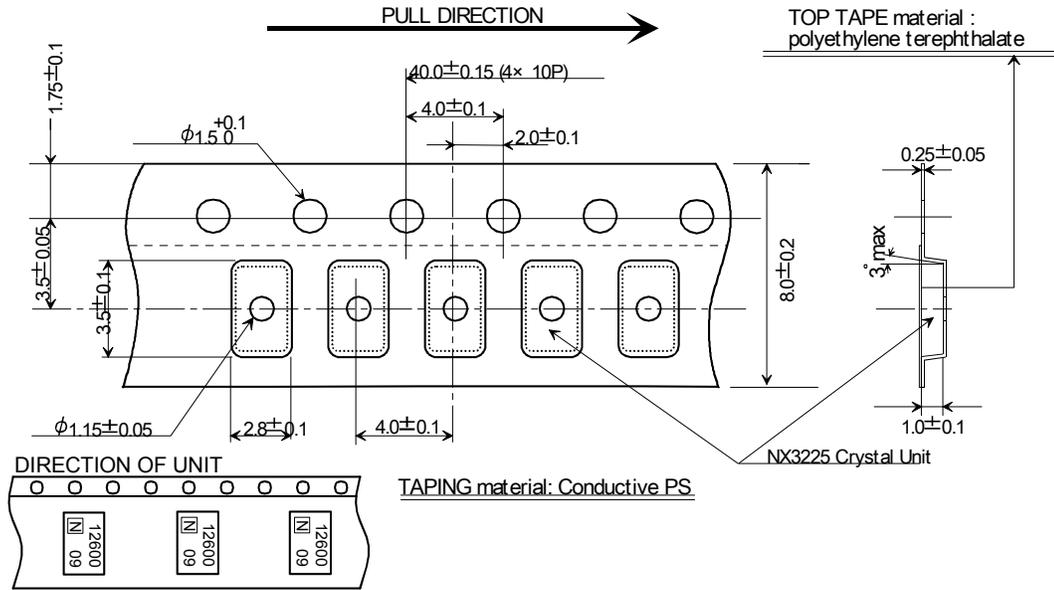
PIN CONNECTION (TOP VIEW)



※ #1,#3 : Xtal  
 #2,#4 : GND (CONNECTION COVER)

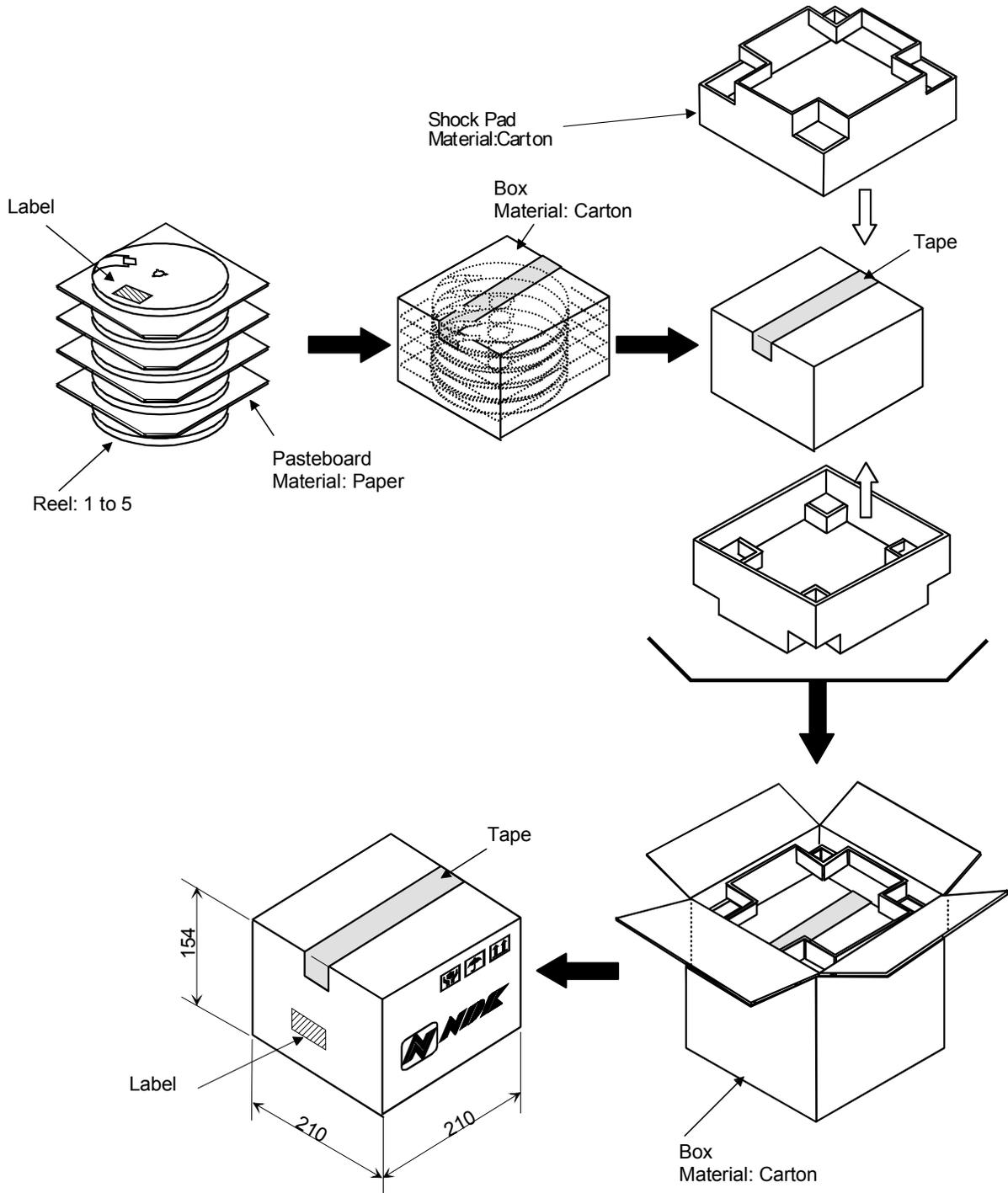
Date of Revise		Charge	Approved	Reason	
Drawn	25.Oct.2005	S.Mizusawa	Third Angle Projection	Tolerance	Scale
Designed	25.Oct.2005	S.Mizusawa	Dimension:mm	---	- / -
Checked			Title	Drawing No.	Rev.
Approved	25.Oct.2005	S.Mizusawa			
			<b>Dimension Drawing</b>		

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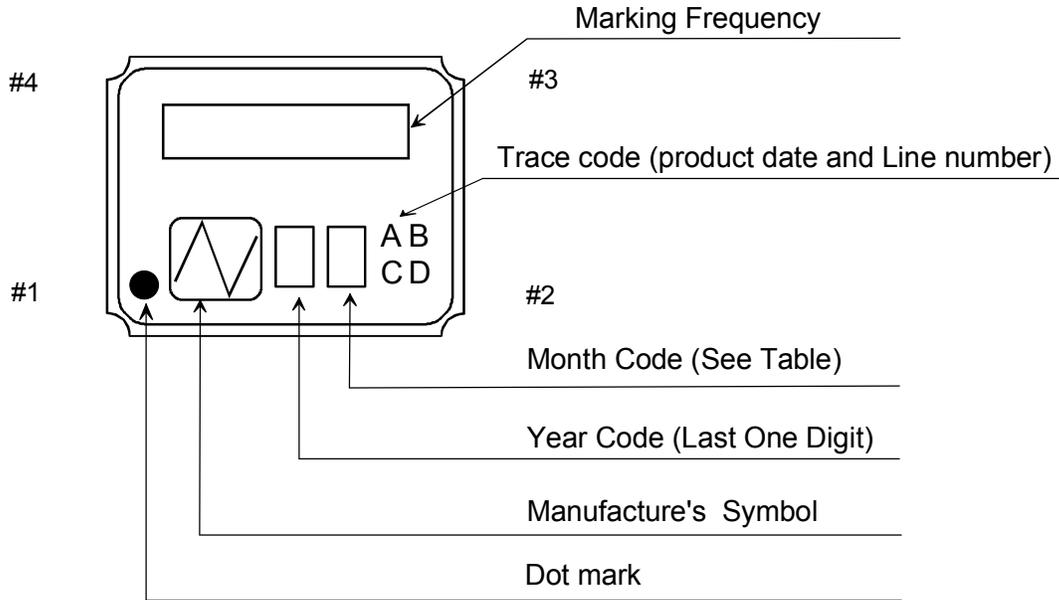
	Date of Revise	Charge	Approved	Reason
F	30.Jun.2006	H.Yagishita	K.Kubota	Change Document Title.
	Date	Name	Third Angle Projection	Tolerance
Drawn	3.Sep.2001	K.Oguri	Dimension:mm	/
Designed	3.Sep.2001	K.Oguri	Title	Drawing No.
Checked				
Approved	3.Sep.2001	K.Miyashita	NX3225 Series Taping and Reel Spec.	
			EXK17B-00098	
			Rev.	F

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	Date of Revise	Charge	Approved	Reason
A	28 Aug. 2002	T. Shimizu	K. Miyashita	The change to more detailed drawing
	Date	Name	Third Angle Projection	Tolerance
Drawn	9.Aug.2002	K.Oguri	Dimension:mm	Scale
Designed	9.Aug.2002	K.Oguri	Title	Drawing No.
Checked	-----	-----		
Approved	9.Aug.2002	K.Miyashita	Rev.	A

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NOTE

1. Frequency code  
Marking Frequency is consist of five digits, first five digits of Nominal Frequency.

Example

Nominal Frequency	28.63636MHz
Frequency Code	28.636

2. Dot mark  
Dot mark is 0.30~0.35mm circle. The inside of a circle is smeared away.

3. Month Code Table

Month	1	2	3	4	5	6	7	8	9	10	11	12
	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
Month Code	1	2	3	4	5	6	7	8	9	X	Y	Z

\*Marking digits are not include a decimal point and dot mark.

	Date of Revise	Charge	Approved	Reason	
	Date	Name	Third Angle Projection	Tolerance	Scale
Drawn	27.Dec.2007	H.Ouchi	Dimension:mm		/
Designed	27.Dec.2007	H.Ouchi	Title  Crystal Holder Marking	Drawing No.  <b>EXH11B-00378</b>	Rev.
Checked	---	---			
Approved	27.Dec.2007	K.Kubota			

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**Reliability assurance item**

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No.	Test Item	Test Methods	Specification Code
1	High Temperature Storage	+85±3°C 720h	A
2	Low Temperature Storage	-40±3°C 500h	A
3	Temperature Humidity	+60±3°C 90~95%RH 500h	A
4	Temperature Cycling	-40±3°C / +85±3°C It is 500 cycles using 30 minutes each as 1 cycle.	A
5	Vibration	Frequency Range : 10~55Hz Amplitude : 1.52mm 1 cycle : 1 minutes Test time : Three mutually perpendicular axes each 2 hours.	A
6	Shock	Devices are shocked to half sine wave (981m/s <sup>2</sup> ) three mutually perpendicular axis each 3 times.	A
7	Drop	Devices are dropped from the height 75cm onto wooden block. ( more than 30mm thickness.) Execution 3 times random drops	A
8	Solderability	Pre-heat temperature : +150±10°C Pre-heat time : 60~120s When the temperature of the specimen is reached at +215±3°C, it shall be left for 30±1sec. Material: H63A (Silver 2~3%) Flux : Rosin resin methyl alcohol solvent ( 1 : 4 )	B
9	Reflow resistance	Pre-heat temperature : +150~180°C Pre-heat time : 90±30s Heat temperature : more than +230°C Pre-heat time : less than 30s Peak temperature : +260±5°C Peak time : less than 10s	A

Specification code	Specification
A	$\Delta f/f \leq \pm 5$ ppm $\Delta C/C \leq \pm 15$ % or 5 $\Omega$ make use larger value
B	The electrodes should be covered by a new solder at least 90% of immersed area.