



RoHS Compliant
Directive 2011/65/EU

REFERENCE SPECIFICATION

Customer: _____

Item: _____ Crystal Unit

Type: _____ NX3225SA

Nominal Frequency: _____ 16.000 MHz

Customer's Spec. No.: _____ ---

NDK Spec. No.: _____ EXS00A-CS10477

Automotive Electronic Component

For your reference we submit this specification.
Please study and keep in your related document file.

Revision Record

Rev.	Rev. Date	Items	Contents	Approved	Checked	Drawn
-----	7.Jan.2017	Issue	---	I.Miyahara	---	K.Tsukumo
A	26.May.2017	Fast page 4. Electrical Characteristics	Add: Automotive Electronic Component Add: Frequency versus Temperature characteristics	M.Sato	---	R.Omomo

1. Customer Specifications Number : ---
2. NDK Specification Number : EXS00A-CS10477
3. Type : NX3225SA

4. Electrical Characteristics

	Parameters	SYM.	Electrical Spec.				Notes
			min	typ	max	Units	
1	Nominal frequency	f_{nom}	16.000			MHz	
2	Overtone order	-	Fundamental			-	
3	Frequency tolerance	-	-10	-	+10	ppm	at +25°C
4	Frequency versus Temperature characteristics	-	-11	-	+11	ppm	at -20 to +85°C The reference temperature shall be 25°C
			-50	-	+50	ppm	at -40 to -125°C The reference temperature shall be 25°C
5	Equivalent resistance	-	-	-	80	Ω	IEC π -Network Series
6	Load capacitance	C_L	-	8	-	pF	IEC π -Network
7	Level of drive	-	-	10	200	μ W	
8	Insulation resistance	-	500	-	-	M Ω	When terminal to terminal and terminal to cover were applied at DC100V \pm 15V.
9	Operating temperature range	-	-40	-	+125	°C	
10	Storage temperature range	-	-40	-	+125	°C	
11	Air-tightness	-	-	-	1.1×10^{-9}	Pa m ³ /s	Helium leak detector

5. Examination results document

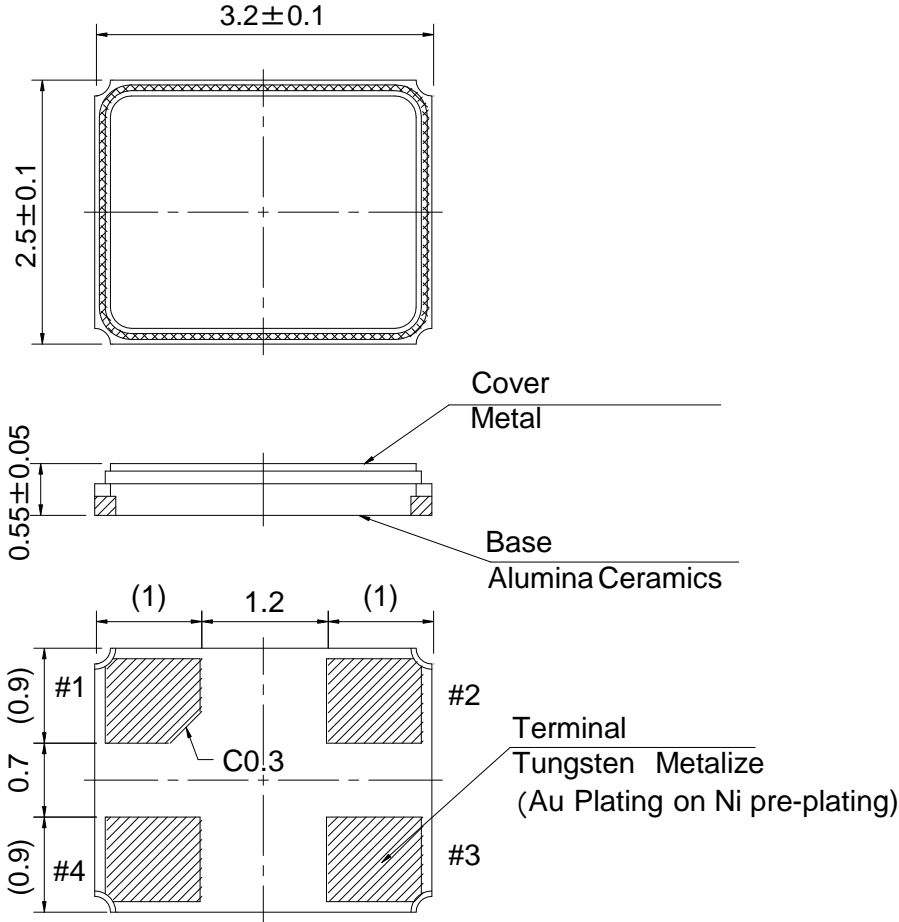
Since a performance is guaranteed, an examination results document does not submit.

6. Application drawing

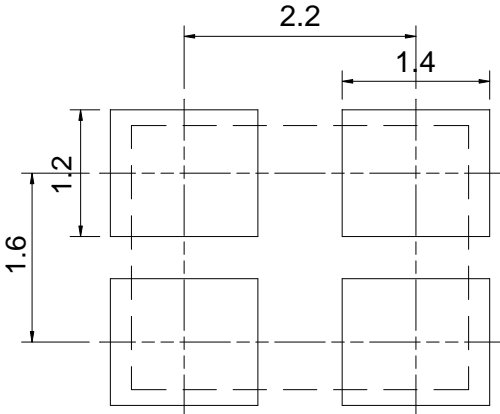
- 6.1 External dimension : EXD14B-00370
- 6.2 Taping and reel figure : EXK17B-00098
- 6.3 Holder marking : EXH11B-00317
- 6.4 Reliability assurance Item : EXS30B-00249

7. Notice

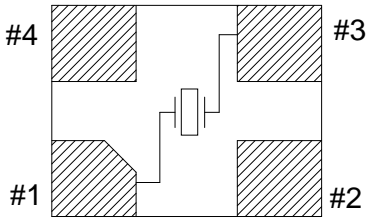
- 7.1 Order items are manufactured according to specification. As to conditions, which are not indicated in the specification and unpredictable such as applied condition and oscillation margin, please check them beforehand.
- 7.2 Crystal units will be damaged by ultrasonic welding process due to resonance of crystal wafer itself. NDK does not recommend using ultrasonic welding. If Ultra Sonic welding used, NDK strongly recommend verifying crystal unit damage by ultrasonic weld.
- 7.3 The appearance color has a different case by purchasing it more than 2 suppliers of the component, but characteristic and reliability are guaranteed.



LAND PATTERN (TYPICAL)

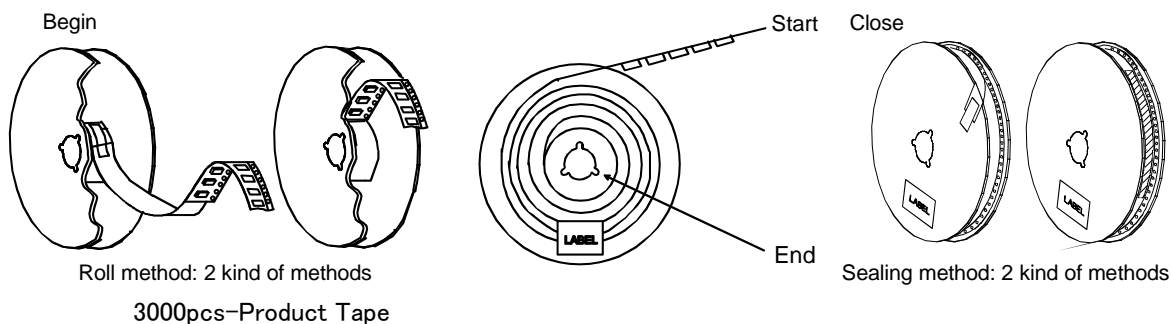
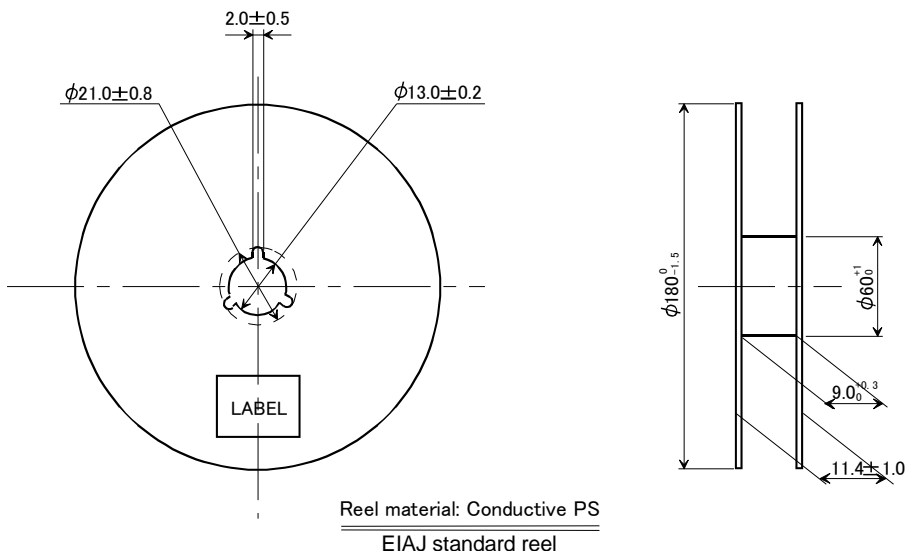
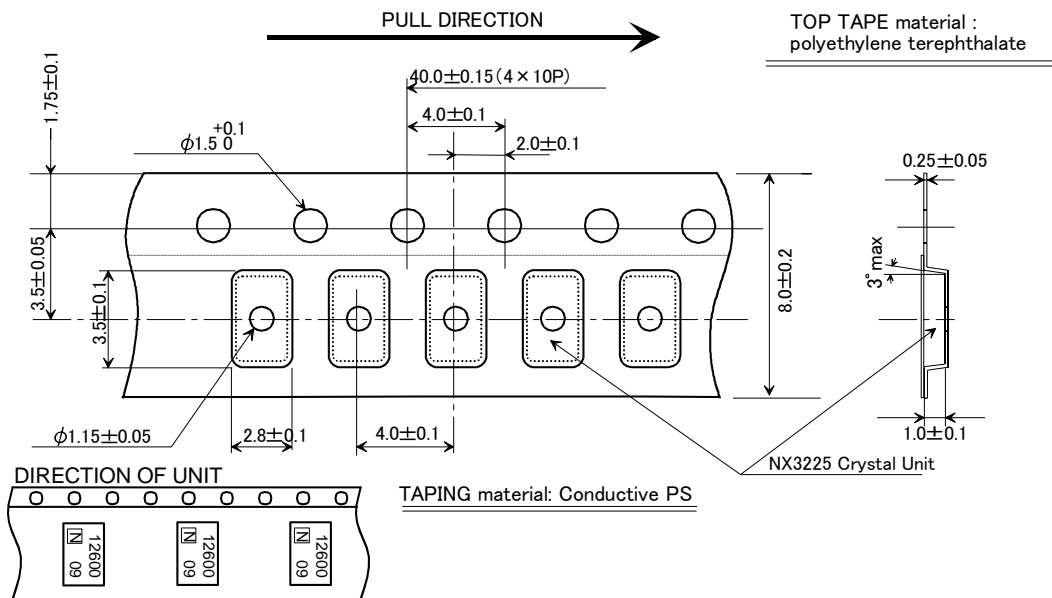


PIN CONNECTION (TOP VIEW)

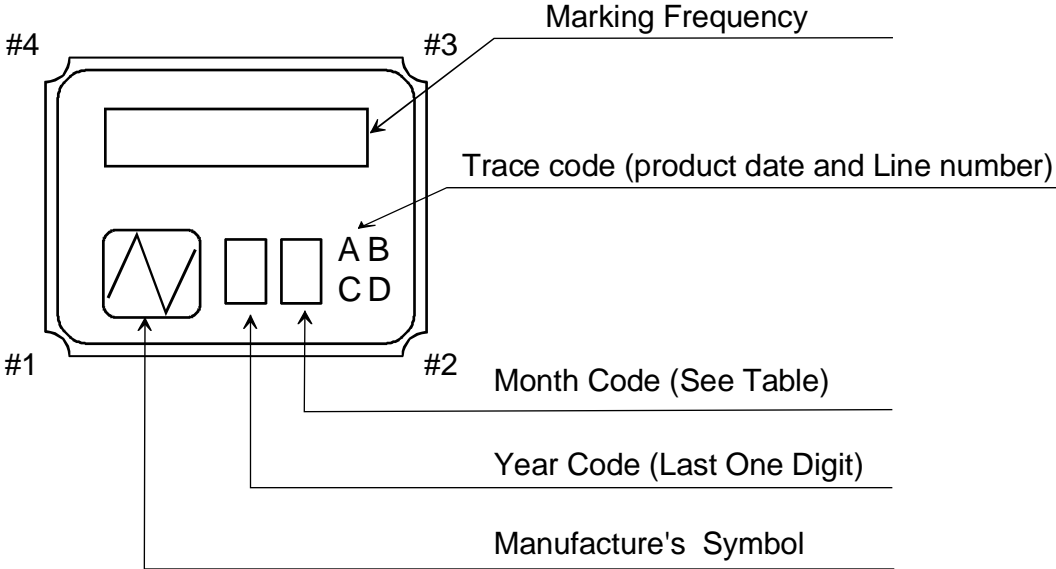


※ #1,#3 : Xtal
 #2,#4 : GND (CONNECTION COVER)

	Date of Revise	Charge	Approved	Reason
A	4.Sep.2007	R.Shariman	K.Kubota	Add Tolerance.
	Date	Name	Third Angle Projection	Tolerance
Drawn	25.Oct.2005	S.Mizusawa	Dimension:mm	±0.1
Designed	25.Oct.2005	S.Mizusawa	Title	Drawing No.
Checked				
Approved	25.Oct.2005	S.Mizusawa	NX3225SA Dimension Drawing	EXD14B-00370
				Rev. A



	Date of Revise	Charge	Approved	Reason		
I	22 Aug. 2012	T. Shimizu	K. Oguri	Top cover tape leader line was deleted.		
	Date	Name	Third Angle Projection	Tolerance		
Drawn	3.Sep.2001	K.Oguri	Dimension:mm	Scale		
Designed	3.Sep.2001	K.Oguri	Title	Drawing No.		
Checked					EXK17B-0098	Rev.
Approved	3.Sep.2001	K.Miyashita				I
			NX3225 Series Taping and Reel Spec.			



NOTE

1. Frequency Code

Marking Frequency is consist of five digits, first five digits of Nominal Frequency

Example

Nominal Frequency	28.636363 MHz
Frequency Code	28.636

2. Month Code Table

Month	1 Jan.	2 Feb.	3 Mar.	4 Apr.	5 May.	6 Jun.	7 Jul.	8 Aug.	9 Sep.	10 Oct.	11 Nov.	12 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		
D	10. Dec 2014	Y.Sakurai	H.Kobayashi	Added terminal number information.		
	Date	Name	Third Angle Projection	Tolerance	Scale	
Drawn	16.Jan.2006	I.Miyahara	Dimension:mm		/	
Designed	16.Jan.2006	I.Miyahara	Title		Drawing No.	Rev.
Checked	16.Jan.2006	---	Crystal Holder Marking		EXH11B-00317	D
Approved	16.Jan.2006	K.Okamoto				

Reliability assurance item

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No.	Test Item	Test Methods	Specification Code
1	High Temperature Storage *1	+125±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 *1	-40±3°C / +125±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 ²) 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. Peak temperature 240±5°C Material: Pb-free (Sn-3.0Ag-0.5Cu) 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 Heat time : 30s±10s Peak temperature : +260±5°C Peak time : less than 10s	A

***1. High Temperature Storage and Temperature Cycling**

In case of customer spec on High temperature exceed +85°C, Low temperature exceed -40°C, above test according to customer spec high or low temperature will be perform and guarantee.

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