

1. Customer specifications number :
 2. NDK specification number : EXS00A-CG6514
 3. Type : NX8045GB

4. Specifications

	Parameters	SYM.	Specifications				Notes
			min	typ	max	Units	
1	Nominal frequency	F_{nom}	10.240			MHz	
2	Overtone order		Fundamental				
3	Frequency tolerance		-25	-	+25	$\times 10^{-6}$	at +25 °C
4	Frequency versus temperature characteristics		-30	-	+30	$\times 10^{-6}$	The reference temperature shall be 25°C
5	Equivalent Series resistance	R_r	-	-	80	Ω	π -Network
6	Operating temperature range		-40	-	+85	°C	
7	Storage temperature range		-40	-	+85	°C	
8	Load capacitance	C_L	-	30	-	pF	π -Network
9	Drive level	D_L	-	50	500	μW	
10	Insulation resistance		500	-	-	$M\Omega$	Terminal to terminal when DC100V $\pm 15V$
11	Air-tightness		-	-	3×10^{-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-00066
 6.2 Taping and reel figure : EXK17B-00007
 6.3 Holder marking : EXH11B-00043
 6.4 Reliability assurance Item : EXS30B-00095
 6.5 Recommendation reflow profile : EXS30B-00344

7. Notice

- 7.1 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.
- 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 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.
- 7.4 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.
- 7.5 Where any change to the process condition is made due to the change(s) in the production line, inform personnel of the specifications.
- 7.6 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.
- 7.7 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.
- 7.8 In the company's production process whatever amount of ozone depleting substances (ODS) as specified in the Montreal protocol is not used.
- 7.9 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.
- 7.10. The appearance color has a different case by purchasing it more than 2 suppliers of the component, but characteristic and reliability are guaranteed.
- 7.11 In case of the product long time keep at high temperature and humidity, may affect product characteristic (solder ability) and a packing condition.
Please keep at storage condition of temperature +5°C ~+35°C, humidity ~85%RH.

8. 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

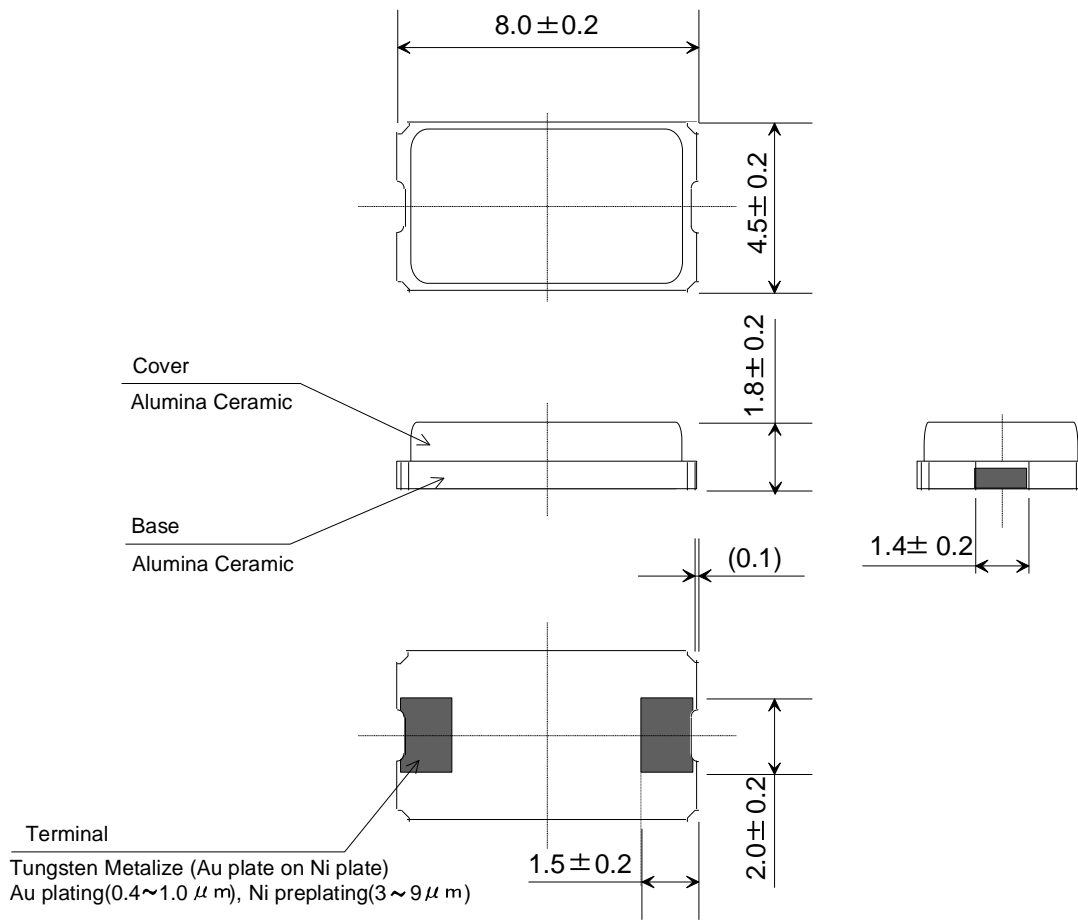
Preheating: 150°C to 180°C, 120 sec

Reflow passage times: twice

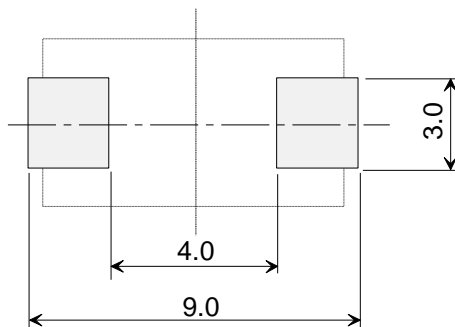
(2)Manual soldering heat resistance

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

When using a soldering iron, press its tip on the part below the sealed part, avoiding the glass-sealed part (otherwise, the glass will melt and air-tightness may be lost).

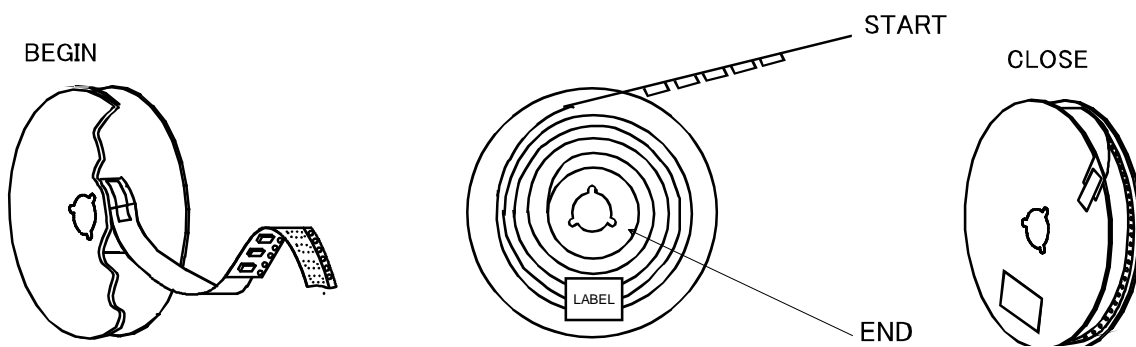
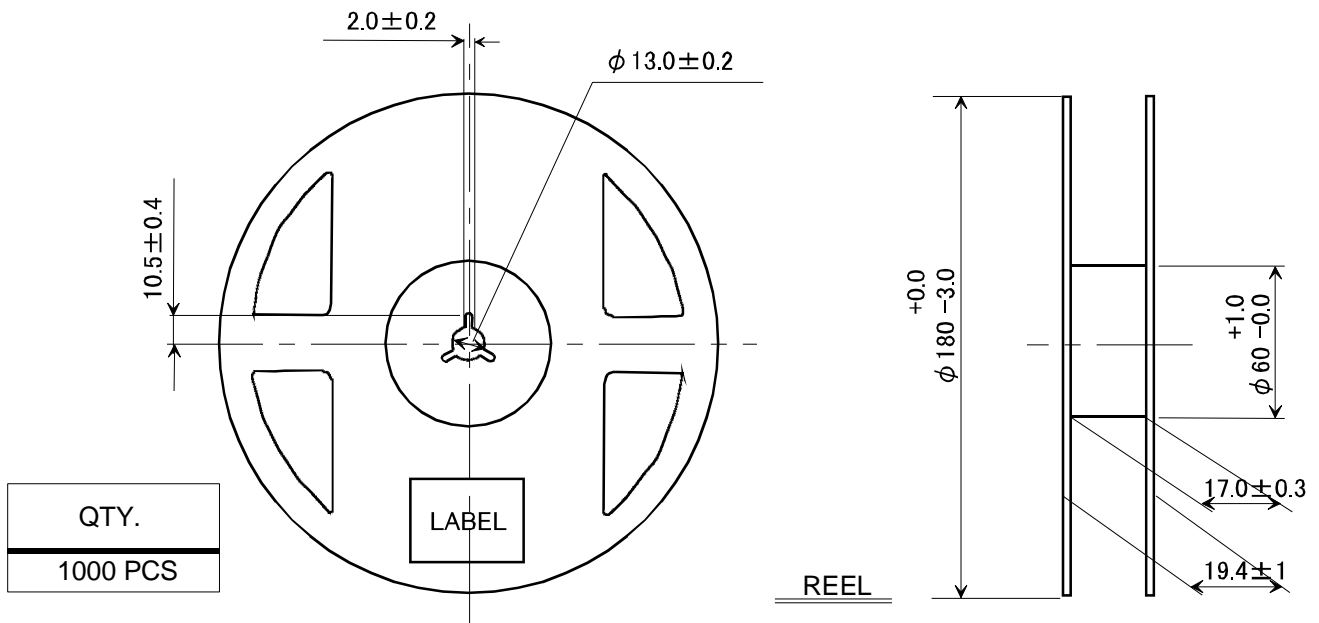
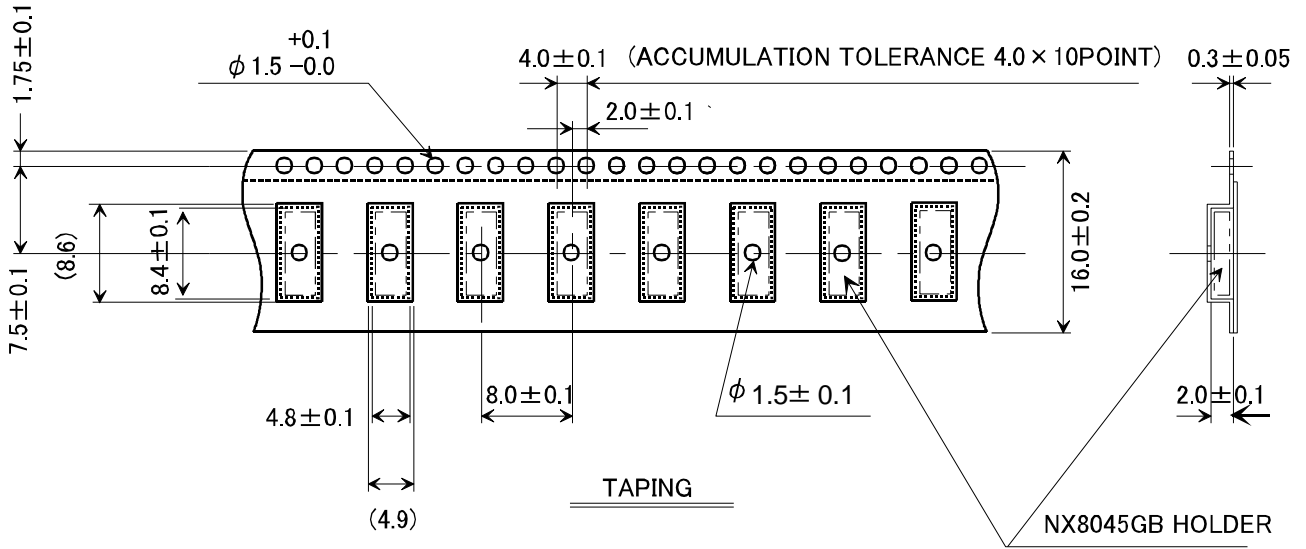


REFERENCE LAND PATTERN (TYPICAL)



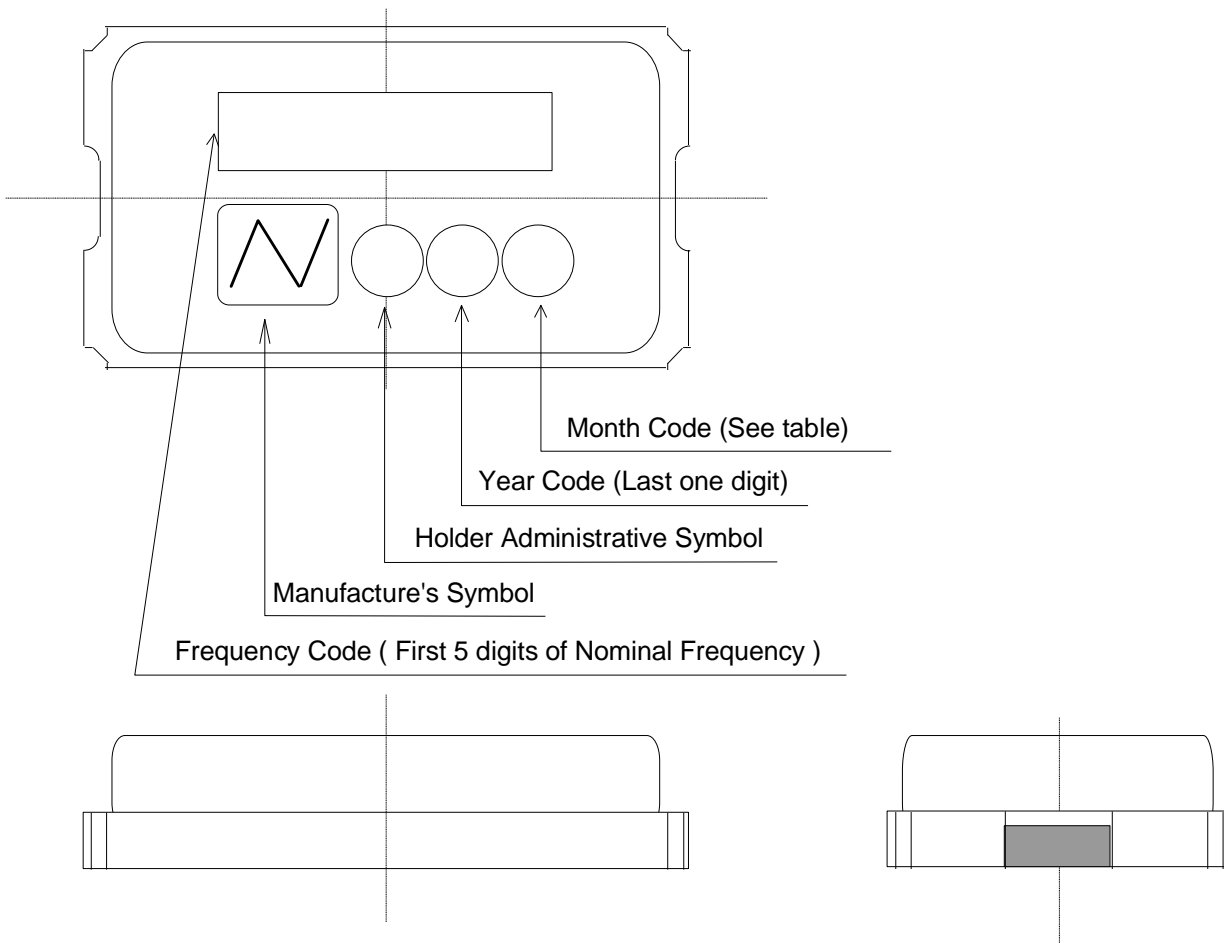
	Date of Revise	Charge	Approved	Reason	
B	1.Nov.2000	K.Nakashima	M.Miura	Change Form	
	Date	Name	Third Angle Projection	Tolerance	
Drawn	1.Oct.1999	K.Nakashima	Dimension:mm	Scale	
Designed	1.Oct.1999	K.Nakashima	Title NX8045GB Dimension of External	Drawing No. EXD14B-00066	
Checked	-----	-----			Rev.
Approved	1.Oct.1999	M.Okamoto			B

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	Date of Revise	Charge	Approved	Reason	
C	12.Apr.2002	K.Nakashima	M.Miura	Correct diameter of hole of pocket	
	Date	Name	Third Angle Projection	Tolerance	Scale
Drawn	26.Mar.1999	K.Nakashima	Dimension:mm		/
Designed	26.Mar.1999	K.Nakashima	Title NX8045GB(TPR72-R/ TPR88-R)	Drawing No.	Rev.
Checked	-	-	TAPING AND REEL SPEC.	EXK17B-00007	C
Approved	26.Mar.1999	M.Okamoto			

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1. Marking contents

Example

Frequency Code	14.318
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2. Marking contents

Month	1	2	3	4	5	6	7	8	9	10	11	12
Month Code	1	2	3	4	5	6	7	8	9	X	Y	Z

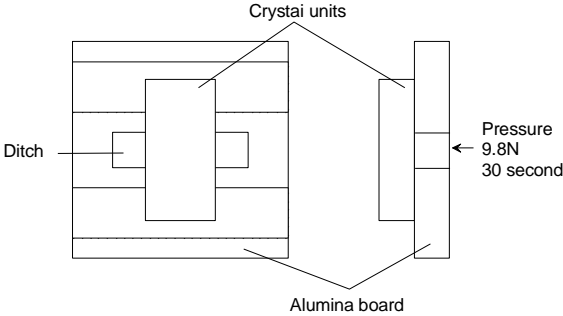
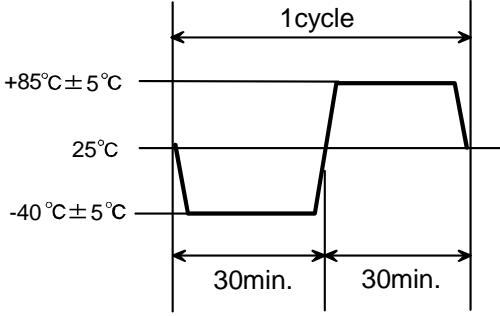
3. Marking contents

Administrative symbol	D
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* Marking digits are not include a decimal point and dot mark

	Date of Revise	Charge	Approved	Reason
A	1.Nov.2000	K.Nakashima	M.Miura	Change Form
	Date	Name	Third Angle Projection	Tolerance
Drawn	1.Oct.1999	K.Nakashima	Dimension:mm	Scale
Designed	1.Oct.1999	K.Nakashima	Title	Drawing No.
Checked	-----	-----		
Approved	1.Oct.1999	M.Okamoto		
			NX8045GB Marking	EXH11B-00043
				Rev.
				A

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No.	Test item	Test methods	Spec. code
1	Drop	Devices are dropped from the height 75cm onto wooden block. (more than 30mm thickness.) Execution 3 times random drops.	A
2	Shock	Devices are shocked to half sine wave 981 m/s ² (100G) three mutually perpendicular axis each 3 times.	A
3	Vibration	Frequency range : 10 to 55 Hz Amplitude : 1.5 mm Sweep time : 1 min. Test time : 2.0 hours	A
4	Electrode strength adherent	Reflow soldering shall be used for soldering on test fixture (Glass fiber epoxy laminate : Thickness 1.6mm+/-0.2mm) shown below. (220~240°C) Be careful to happen the heat shock. 	B
5	Solderability	Pre-heat temperature : 150°C Pre-heat Time : 60~120sec. Peek temperature : 240±5°C Solderind temperature : Over 215°C Test time : 10~30 sec.	C
6	Resistance to soldering heat	Pre-heat temperature : 150°C Pre-heat Time : 60~120sec. Test temperature : 260±5°C Test time : 10 sec. Max.	A,B
7	Resistance to cold	Leave at -40°C ±2°C for 500 hours.	A
8	Resistance to heat	Leave at +85°C ±2°C for 500 hours.	A
9	Humidity	Device are left in temperature at +60°C with relative humidity of 90~95% for 500 hours.	A,D
10	Thermal shock	Device are left into the following temperature cycle as shown in (Figure1) for 100 consecutive cycle. 	A,B

Spec. code	Specification
A	Frequency tolerance and series resistance should be cleared.
B	After testing unless cracking of materials view of eyes and unless break of seal.
C	The leads shall acquire a new solder coat cover at 90 % of immersed area.
D	Insulation resistance shall be greater than 500 MΩ.

Recommendation reflow condition

1.IR reflow condition

