Continental Automotive Systems Corporation

TEL: (+82)-31-696-0719

FAX: (+82)-31-8023-9087

Date: March 4, 2022

Office of Engineering Technology
Federal Communications Commission
7435 Oakland Mills Road
Columbia, MD 21046

RE: Applicant Declaration

Please review the attached exhibits supporting our request for applying two types of the following 3 models of Smart Car Key.

FCC ID	Model name	Product Description
SY5IGRGE03	SVI-IGRGE03	Remote Keyless Entry System (Transmitter)
SY5SKRGE03	SVI-SKRGE03	Remote Keyless Entry System (Transmitter)
SY5SKRGE04	SVI-SKRGE04	Remote Keyless Entry System (Transmitter)

We, Continental declares that the model stated above is applying two types of X-tal optionally.
Both of X-tal is identical except model name and external shape.
It is purpose to prepare if shortage of supply for X-tal.

Before	As is	
A2C00060541	A2C00060541	AAA2239740000

Should you have any questions, please contact us.

Sincerely,

Sung-Min Jang
/Representative
/Continental Automotive Systems Corporation

기존 크리스탈
(As is X-tal)
A2C00060541 data sheet

Continental Component Specification

Component part number	A2C00060541
Component family	Quartz Crystal
Component description	13.08148 MHz, ± 10 ppm, 12 pF
Package outline	SMD, 3.2 x 2.5 mm
Operating temperature range	-40°C … +85°C
Terminal plating	Pb-free
Shipment	Tape and Reel acc. to IEC60286-3

Family specific information

SUPPLIER's FIELD: MANDATORY FOR THE SUPPLIER TO FILL OUT (in printed letters)

Specification and Vendor Addendum accepted

○ **with** deviation(s) ○ **without** deviation(s)

Supplier name		
Signature(s) by supplier		
Date / Name		
Ordering code		
Supplier component name		
Is a PCN planned/running		
list PCN numbers and date		
Manufacturing Plant(s)	(frontend)	
	(local DUNS)	
	(backend)	
	(local DUNS)	
	(final test)	
	(local DUNS)	
Manufacturing Technology		
MSL (≤ 3 acc. to IPC/JEDEC J- STD-020D)		

Version history

Current Version	Previous Version	Date	Author	Change description
A		2010-04-20	Michael Link	Initial version of specification

1. General Requirements

The content of this document shall prevail over any deviating content in the supplier's document. This component is destined for use in an automotive application.

Even without explicit contradiction no generic disclaimer shall apply to the field of application or limitation with regard to the specified functional range.

This component specification in conjunction with the following documents is the Continental Corporation specification.
The agreed Vendor Addendum is a part of the specification.

General	A2C00053611AAA	General Quality Agreement
	A2C00052907AAA	Qualification Requirements for Continental Automotive Manufacturing Processes
	A2C00052908AAAA	Quality Process Requirements (EMC)
	A2C00052905AAAA	Quality Process Requirements (PCN)
Family specific CQRs	A2C00052910AAAA	Category Quality Requirements (CQR) for Passive Components

2. Specific Requirements

Crystal can be used only for **non safety** applications

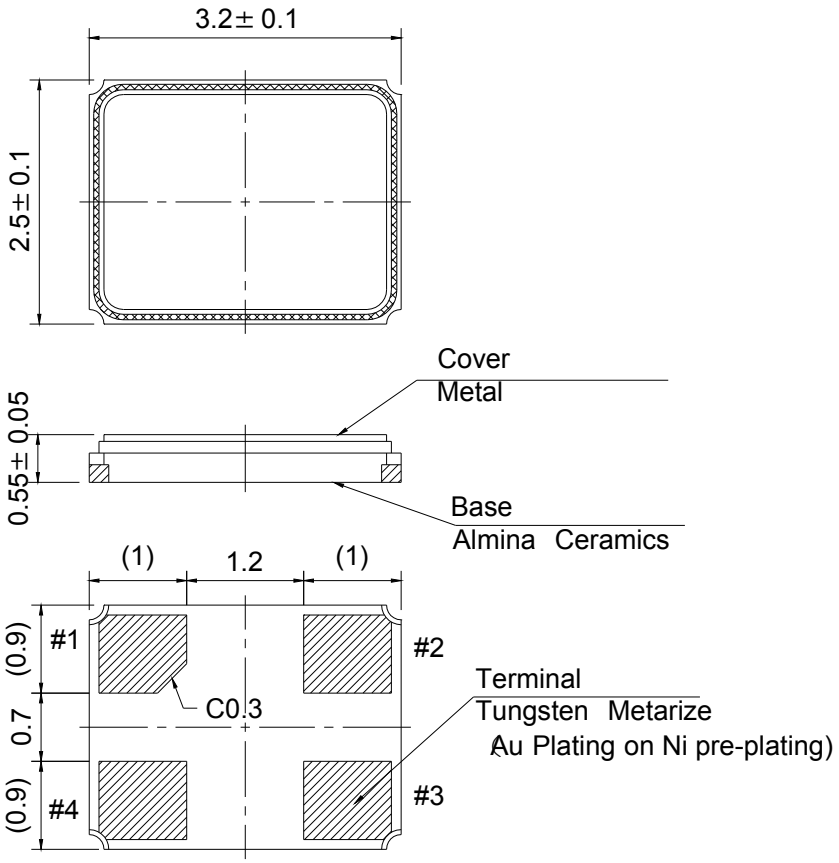
3. Electrical characteristics and parameters (at +25°C ± 3°C ambient temperature if not specified otherwise)

Nominal oscillating frequency (f_0):	13.08148 MHz
Oscillation mode:	fundamental
Operating temperature range:	-40 ... +85°C
Storage temperature range:	-40 ... +85°C
Initial frequency tolerance ($\Delta f/ f_0$):	≤ ± 10 ppm
Frequency stability vs. operating temperature range ($\Delta f/ f_0$):	≤ ± 30 ppm
Ageing tolerance $\Delta f/f_0$ after 10 years:	≤ ± 5 ppm
Operating drive level (P_d):	≤ 100 µW
Insulation resistance @ 100 ± 15V DC (Ri):	≥ 500 MΩ
Series resonance during hysteresis DLD test (ΔR) (50nW ... 100µW)	≤ 5 Ω

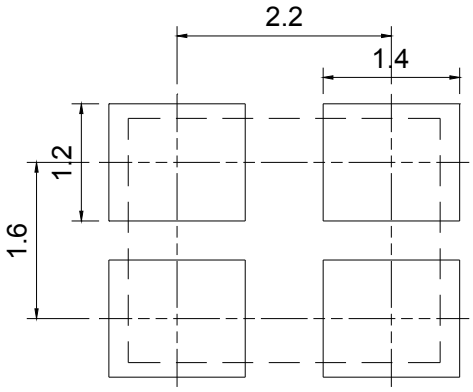
Equivalent parameters:

Load capacitance (C_L):	12 pF
Shunt capacitance (C_0):	0.175…1.15 pF
Motional capacitance (C_1):	0.98…2.53 fF
Series resonance resistance (ESR):	≤ 100 Ω

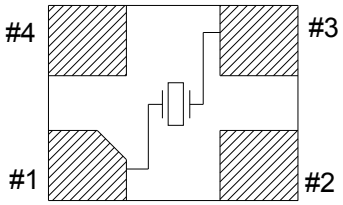
4. Dimensions [mm]



LAND PATTERN (TYPICAL)



PIN CONNECTION (TOP VIEW)



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

5. Technology Information

Further technology information is mandatory, corresponding pages from AEC Q xxx / CDCQ should be delivered or if not available below questionnaire should be used and completed by the supplier.

General

supplier _____

Terminals

package outline _____

lead frame material _____

intermediate layer _____ thickness: _____

_____ thickness: _____

lead finish _____

weight _____

Quartz

cut of quartz _____

crystal geometry _____

crystal holder system _____

_____

Case

case material _____

housing material _____

sealing technique _____

_____

추가 크리스탈
(Adding X-tal)
AAA2239740000 data sheet

Crystal Bridge to the Future

RoHS Compliant
Directive 2011/65/EU

SPECIFICATION

Customer:

Item:	Crystal Unit
Type:	NX3225GA
Nominal Frequency:	13.08148 MHz
Customer's Spec. No.:	Proposal (1)
NDK Spec. No.:	EXS00A-CG*****

Receipt

Charge:

Revision Record

1. Customer's Spec. No. :

2. NDK Spec. No. : EXS00A-CG*****

3. Type : NX3225GA

4. Electrical Specifications

	Parameters	SYM.	Electrical Spec.				Notes
			min	typ	max	Units	
1	Nominal frequency	f_{nom}		13.08148		MHz	
2	Overtone order	-		Fundamental		-	
3	Frequency tolerance	-	-50	-	+50	ppm	at -40~+85°C * Include in 15 years aging
4	Equivalent resistance	-	-	-	100	Ω	IEC π-Network Series
5	Load capacitance	C_L	-	10	-	pF	IEC π-Network
6	Level of drive	-		10	200	μW	
7	Insulation resistance	-	500	-	-	MΩ	When terminal to terminal and terminal to cover were applied at DC100V ±15V.
8	Operating temperature range	T_{opr}	-40	-	+85	°C	
9	Storage temperature range	T_{str}	-40	-	+85	°C	
10	Air-tightness	-	-	-	3.0×10^{-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-00388
6.2 Taping and reel figure : EXK17B-00247
6.3 Holder marking : EXH11B-00027
6.4 Reliability assurance Item : EXS30B-00827
6.5 Recommendation reflow profile : EXS30B-01025

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 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.

7.3 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.

7.4 Where any change to the process condition is made due to the change(s) in the production line, inform personnel of the specifications.

7.5 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.

7.6 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.

7.7 In the company's production process whatever amount of ozone depleting substances (ODS) as specified in the Montreal protocol is not used.

7.8 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.

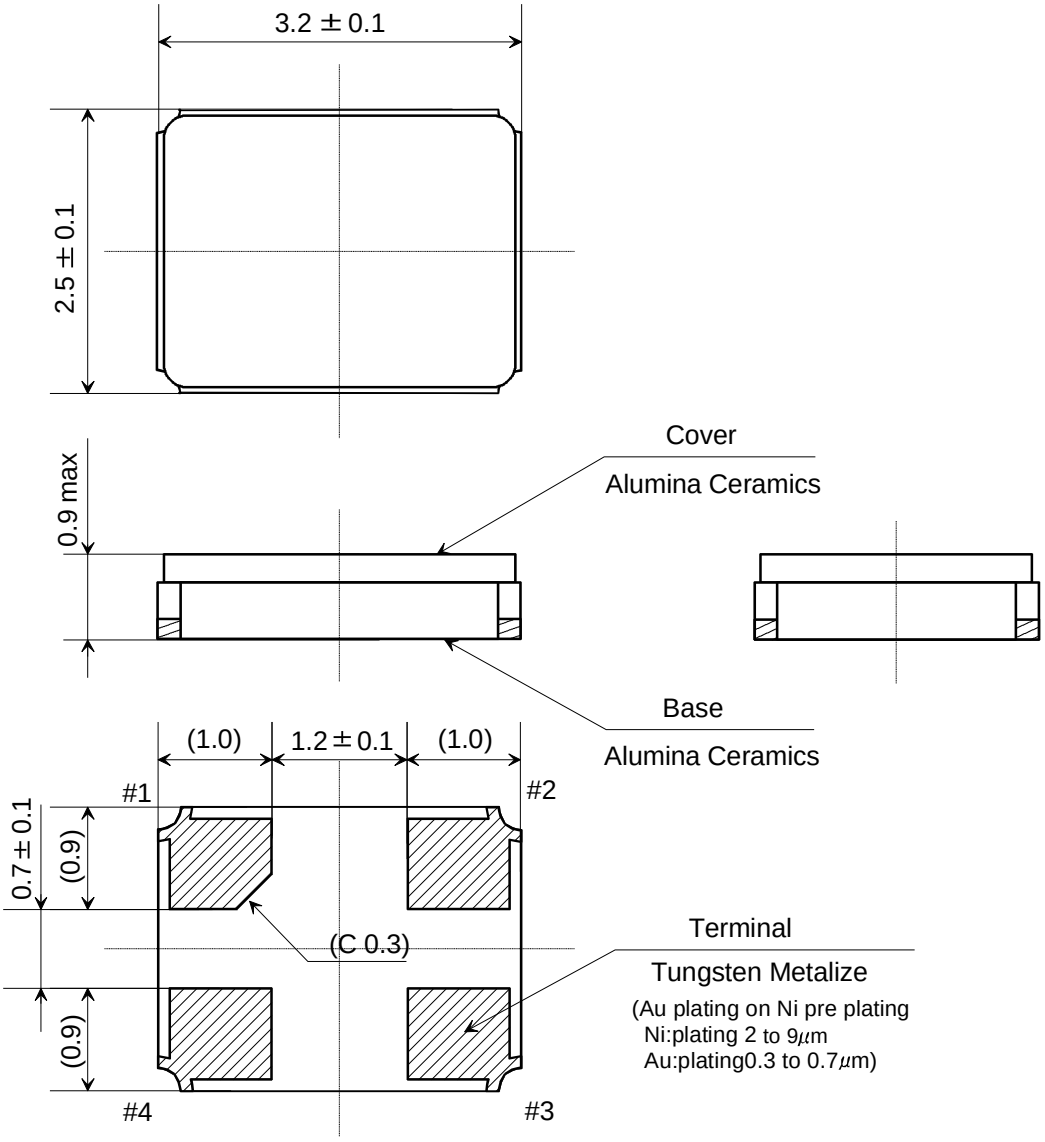
7.9 Crystal units will be damaged by ultrasonic welding process due to resonance of crystal wafer itself. NDK does not recommend using ultrasonic welding. If Ultra Sonic welding used, NDK strongly recommend verifying crystal unit damage by ultrasonic weld.

8. Prohibited items

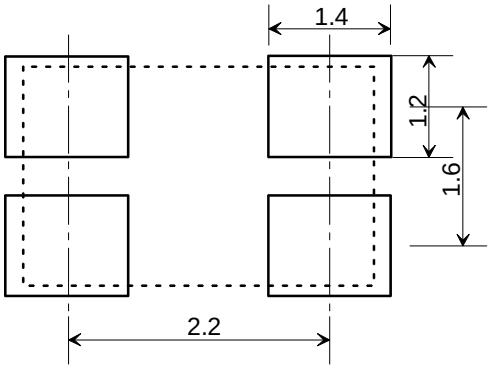
Be sure to use the product under the following conditions. Otherwise, the characteristics deterioration or destruction of the product may result.

(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

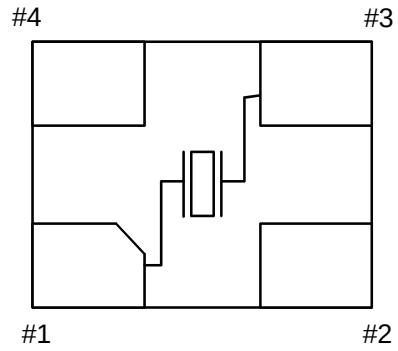
(2) Manual soldering heat resistance
Pressing a soldering iron of 400°C on the terminal electrode for four seconds (twice).
When using a soldering iron, press its tip on the part below the sealed part, avoiding the glass-sealed part (otherwise, the glass will melt and air-tightness may be lost)



LAND PATTERN (TYPICAL)



TOP VIEW
PIN CONNECTION



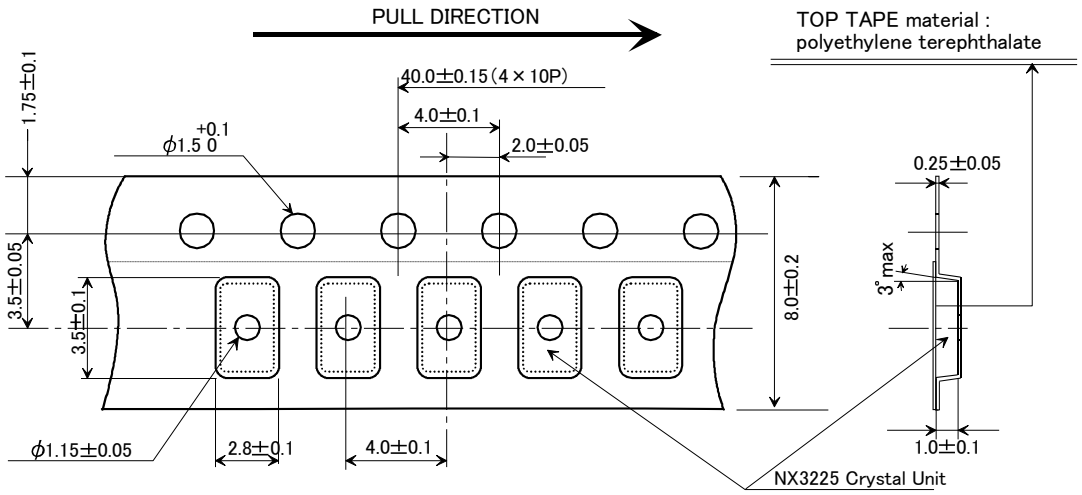
TERMINAL
#1,#3:X'tal
#2,#4:No Connection

	Date of Revise	Charge	Approved	Reason
A	19.Jan.2018	M.Harada	H.Kobayashi	Add standard tolerance and change terminal C dimension to reference.

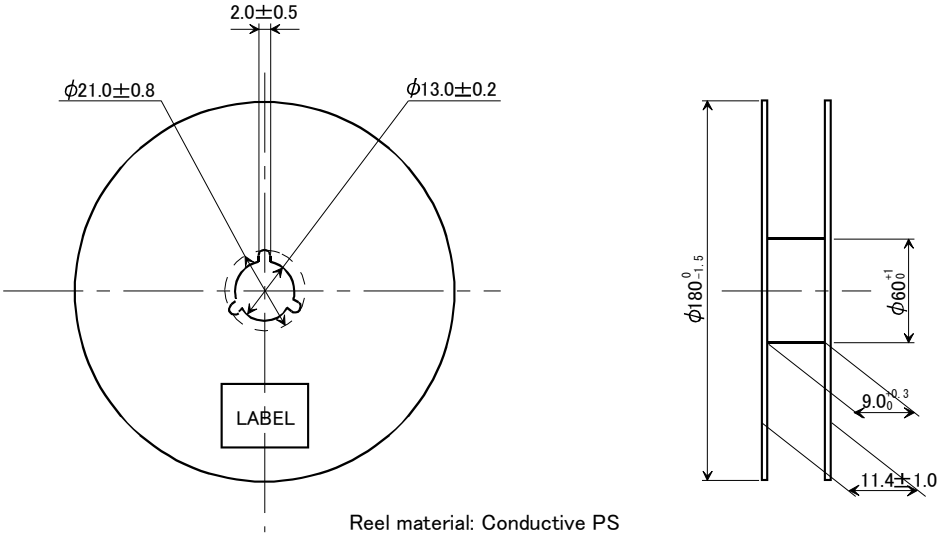
	Date	Name	Third Angle Projection	Tolerance	Scale
Drawn	30.Jun.2006	H.Yagishita	Dimension:mm	±0.1	- / -
Designed	30.Jun.2006	H.Yagishita	Title	Drawing No.	Rev.
Checked	30.Jun.2006	K.Kubota	**NX3225GA Dimension Drawing**	**EXD14B-00388**	A
Approved	30.Jun.2006	T.Ishii			

NIHON DEMPA KOGYO CO., LTD.

Form M-1

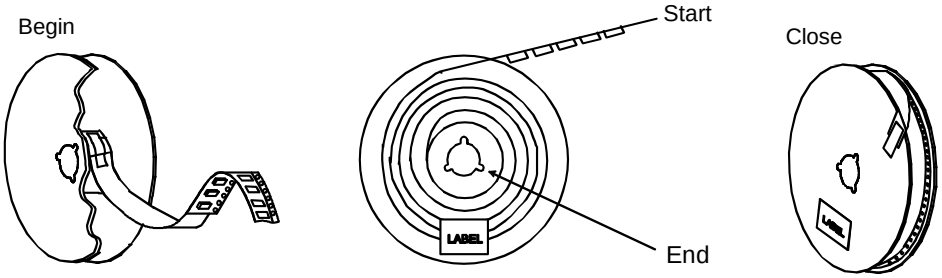


TAPING material: Conductive PS



Reel material: Conductive PS

EIAJ standard reel



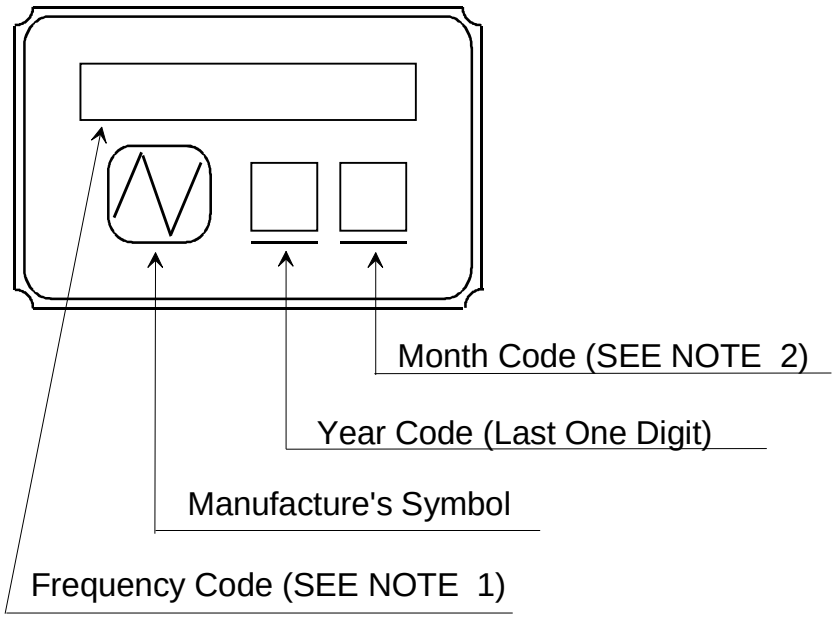
3000pcs-Product Tape

	Date of Revise	Charge	Approved	Reason
A	26 Mar. 2013	T. Shimizu	K. Oguri	The appearance of a drawing was corrected.

	Date	Name	Third Angle Projection	Tolerance	Scale
Drawn	30.Jun.2006	H.Yagishita	Dimension:mm	---	- / -
Designed	30.Jun.2006	H.Yagishita	Title	Drawing No.	Rev.
Checked	30.Jun.2006	K.Kubota	**NX3225 Series Taping and Reel Spec.**	**EXK17B-00247**	B
Approved	30.Jun.2006	T.Ishii			

NIHON DEMPA KOGYO CO., LTD.

Form M-1



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.

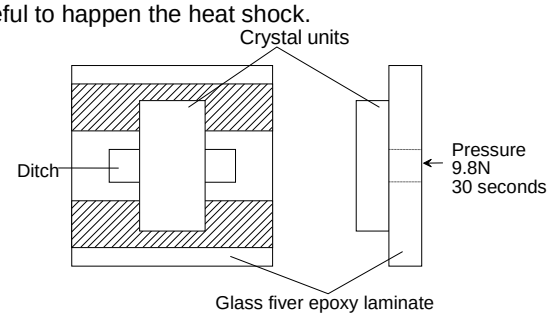
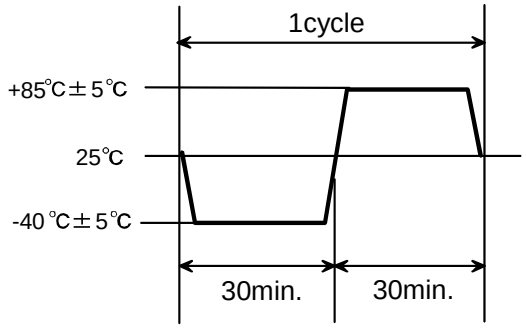
	Date of Revise	Charge	Approved	Reason
B	9.Nov.2000	H.Yagishita	T.Ishii	Change Form

	Date	Name	Third Angle Projection	Tolerance	Scale
Drawn	3.Aug.1999	Y.Morizumi	Dimension:mm		/
Designed	3.Aug.1999	Y.Morizumi	Title	Drawing No.	Rev.
Checked	----------	----------	**Crystal Holder Marking**	**EXH11B-00027**	B
Approved	3.Aug.1999	T.Ishii			

NIHON DEMPA KOGYO CO., LTD.

Form M-1

Reliability assurance item

No.	Test Item	Test Methods	Specification 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 (981m/s^2) three mutually perpendicular axis each 3 times.	A
3	Vibration	Frequency Range : 10 to 55 Hz Amplitude : 1.5mm Sweep time : 1 min. Test time : 2.0 hours	A
4	Electrode adherent strength	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. *1	A
9	Humidity	Devices are left in temperature at +60°C with relative humidity of 90~95% for 500 hours.	A, D
10	Thermal shock	Devices are left into the following temperature cycle as shown in (Figure 1) for 100 consecutive cycles. *1 	A, B

*1. Resistance to heat and Thermal shock

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

Specification code	Specification
A	$\Delta f/f \leq \pm$ 10 ppm $\Delta CI/CI \leq \pm$ 15 % or 5 Ω make use larger value
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 500MΩ