

SPECIFICATION

Customer: _____

Item:	CRYSTAL UNIT
Type:	NX3215SA
Nominal Frequency:	32.768 kHz
Customer's Spec. No.:	
NDK Spec. No.:	STD-MUA-14

Receipt

Charge:

Sales	NDK ITALY SRL : Paola Bandera	Tel. 39-(0)2-9670292
Engineer	Engineering Dept.1 : Y.Hasuike	Tel. 81-(0)4-2900-6632

Approved H.Matsudo
Checked ---
Drawn Y.Hasuike

Revision Record				
Rev.	Rev. Date	Items	Contents	Remarks
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1. Customer specifications number :
2. NDK specification number : STD-MUA-14
3. Type : NX3215SA
4. Electrical characteristics
 - 4.1. Nominal Frequency (F_0) : 32.768 kHz
 - 4.2. Overtone Order : Fundamental
 - 4.3. Adjustment Tolerance : $\pm 20 \times 10^{-6}$ Max. (at + 25 °)
 - 4.4. Turning Point : + 25°C $\pm 5^\circ\text{C}$
 - 4.5. Temperature coefficient : $-0.04 \times 10^{-6} / \text{C}^2$ Max.
 - 4.6. Equivalent resistance (R_1) : 45 k Ω Max.
 - 4.7. Shunt capacitance (C_0) : 1.0 ± 0.5 pF
 - 4.8. Motional capacitance (C_1) : 4.6 ± 2.0 fF
 - 4.9. Motional Inductance (L_1) : 5080 ± 1000 H
 - 4.10. Quality Factor (Q) : 15 K to 40 K
 - 4.11. Pulling Sensitivity (PS) : 46.0 ppm/pF $\pm 10\%$ (at 6 pF)
 This value is calculated by following formula.

$$\text{Pullingsensitivity (PS) [ppm/pF]} = \frac{C_1 \times 1000}{2(C_0 + C_L)^2}$$

 Unit C_0 :pF C_1 :fF, C_L :pF
 - 4.12. Insulation resistance : Terminal to terminal insulation resistance
 also terminal to cover insulation resistance
 must be 500M Ω (min) when DC100V $\pm 15\text{V}$
 is applied.
5. Measurement circuit
 - 5.1. Frequency measurement
 - Measuring instrument : Network Analyzer (CNA-LF made in Transat corp.)
 - Load capacitance : 6.0 pF
 - Level of drive : 0.1 μW
 - 5.2. Equivalent resistance measurement
 - Measuring instrument : Network Analyzer (CNA-LF made in Transat corp.)
 - Load capacitance : Series
 - Level of drive : 0.1 μW
6. Other performances
 - 6.1. Operating temperature range : - 40 to + 85 °C
 - 6.2. Storage Temperature range : - 40 to + 85 °C
 - 6.3. Maximum Drive Level : 0.5 μW Max.
 - 6.4. Aging (at +25 °C) : $\pm 3 \times 10^{-6}$ Max. / 1 year
 $\pm 7 \times 10^{-6}$ Max. / 5 years
 $\pm 15 \times 10^{-6}$ Max. / 10 years

7. Examination results document

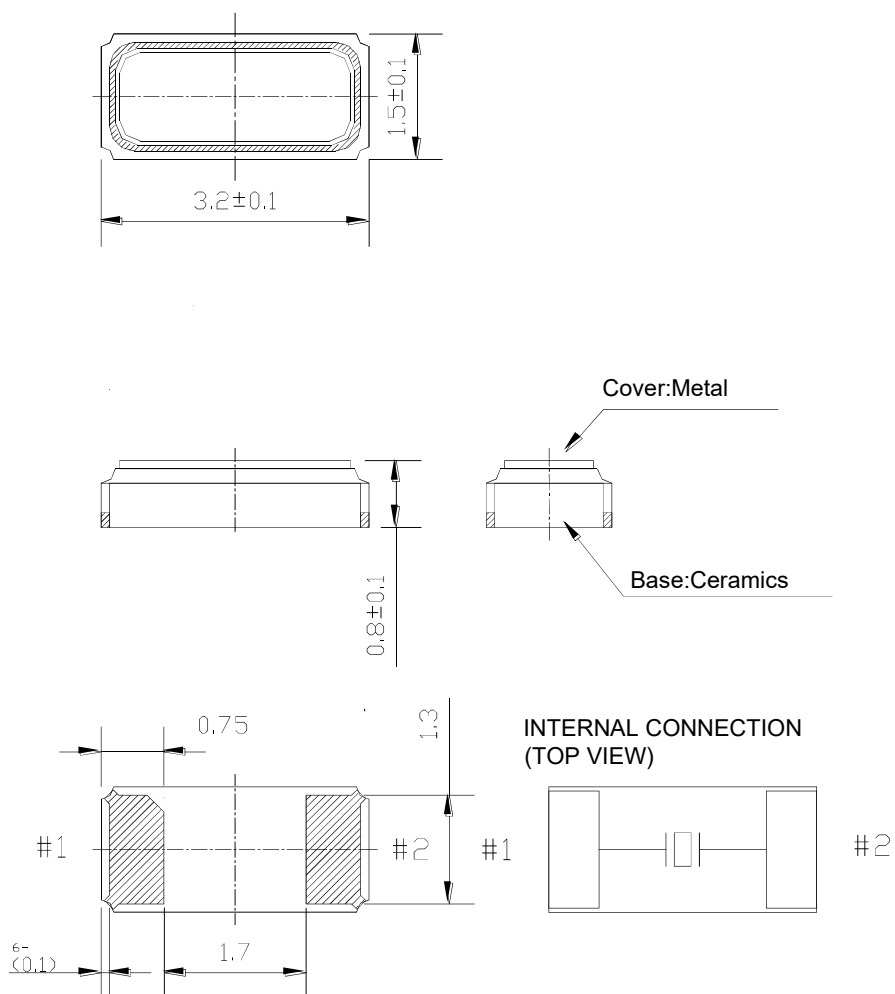
Since a performance is guaranteed, an examination results document does not submit.

8. Application drawing

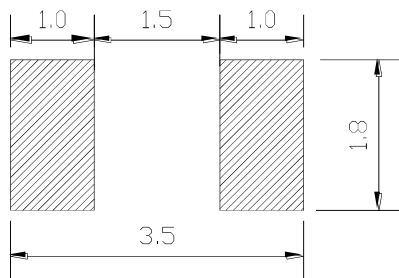
8.1. External dimension	: EXD14B-00462
8.2. Taping and reel figure	: EXK17B-00302
8.3. Packaging figure	: EXK17B-00130
8.4. Packing Level	: EXK17B-00213
8.5. Marking Drawing	: EXH11B-00422
8.6. Reliability assurance item	: EXS30B-00661

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.

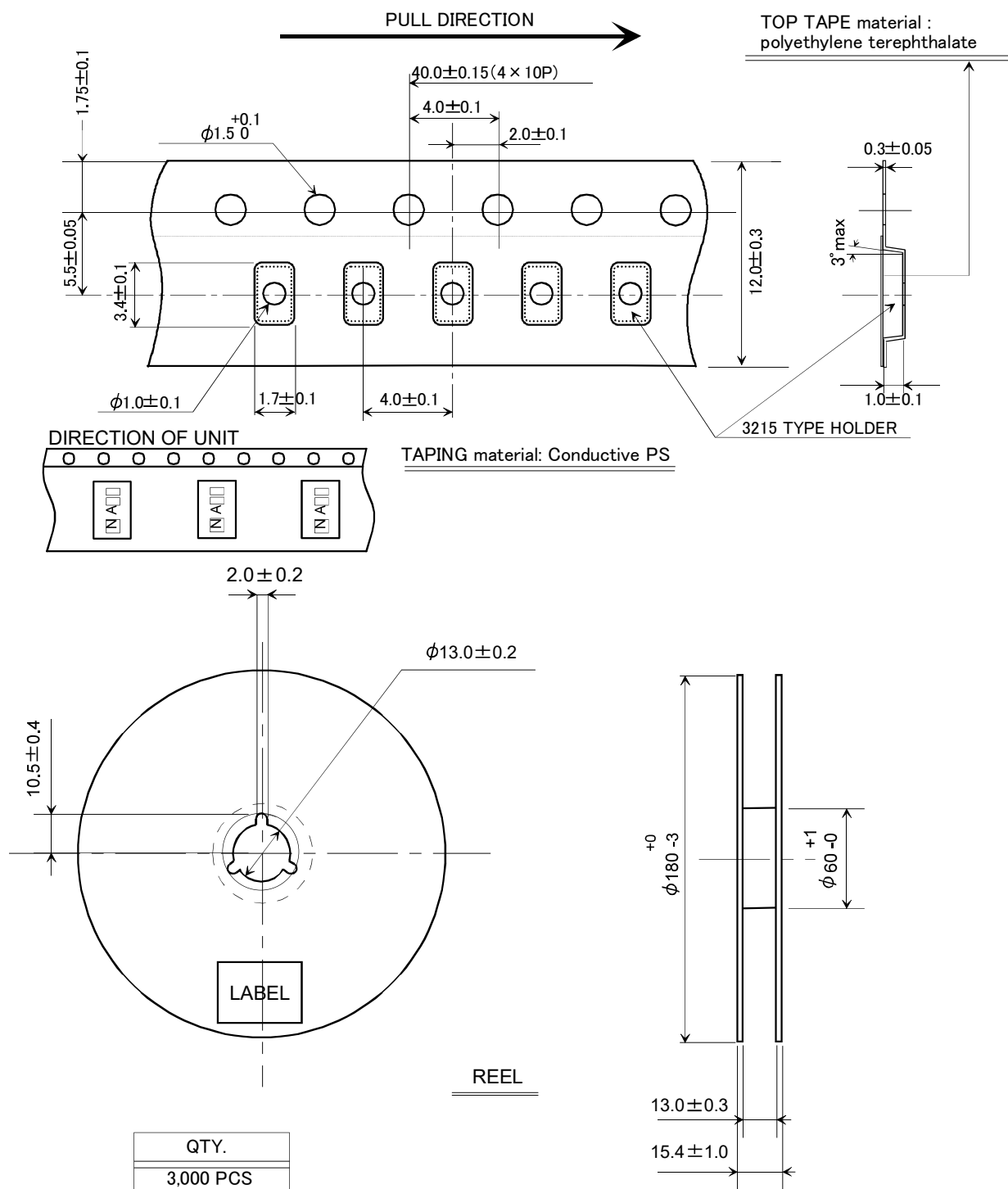


Recommended soldering pattern



	Date of Revise	Charge	Approved	Reason		
A	18.Dec.2009	Miyahara	K.Ueki	Add bilingual		
	Date	Name	Third Angle Projection	Tolerance	Scale	
Drawn	30.Aug.2009	Miyahara	単位:mm	± 0.2	10 / 1	
Designed	30.Aug.2009	Miyahara	Title NX3215SA External Dimension	Drawing No. EXD14B-00462	Rev.	
Checked	---	---			A	
Approved	30.Aug.2009	K. Ueki				

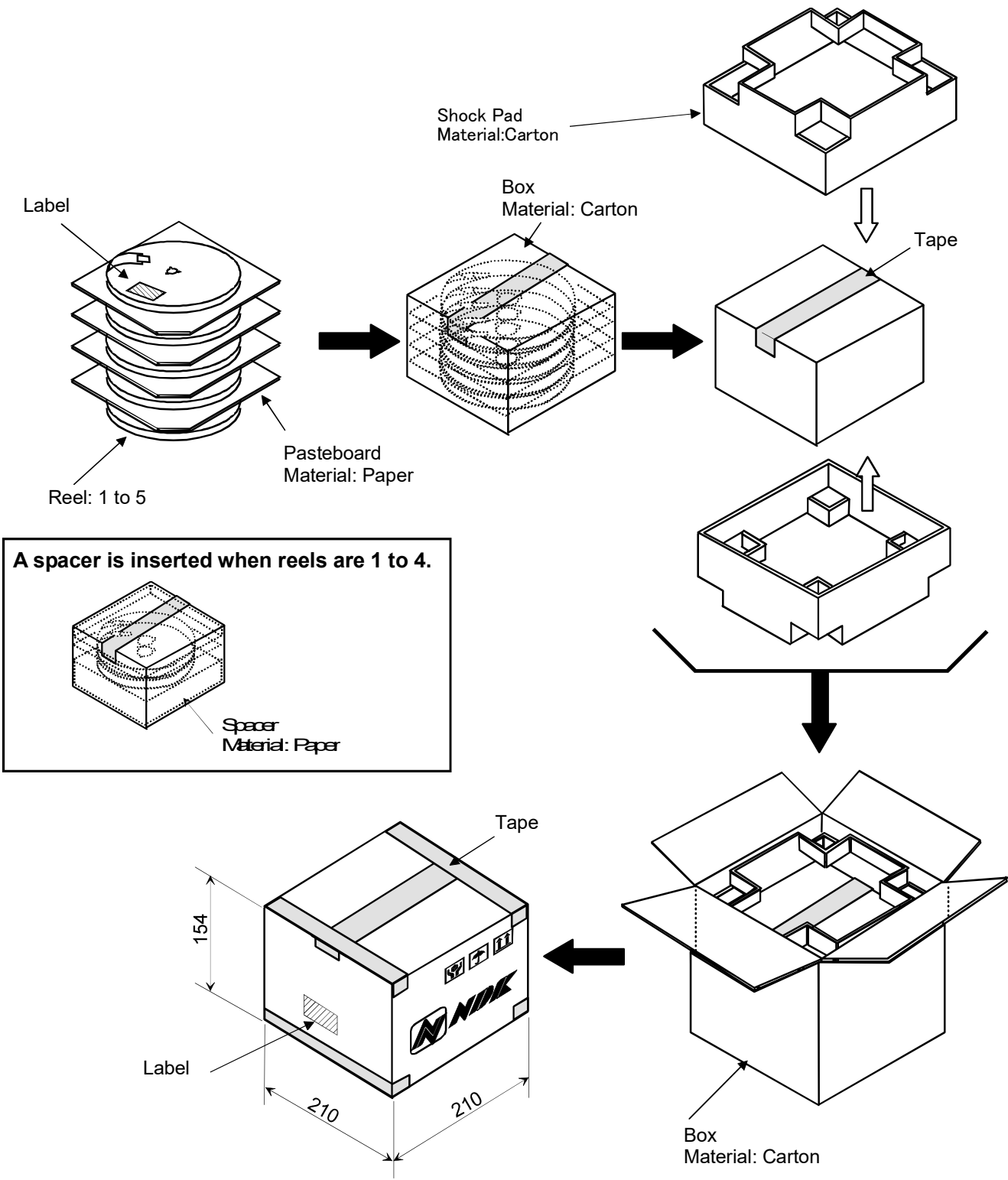
NIHON DEMPA KOGYO CO., LTD.



Date of Revise	Charge	Approved	Reason
Date	Name	Third Angle Projection	Tolerance
Drawn 23.Jun.2009	Miyahara	Dimension:mm	Scale /
Designed 23.Jun.2009	Miyahara	Title	Drawing No.
Checked ---	---	Tape and Reel Spec.	Rev.
Approved 23.Jun.2009	K. Ueki		EXK17B-00302

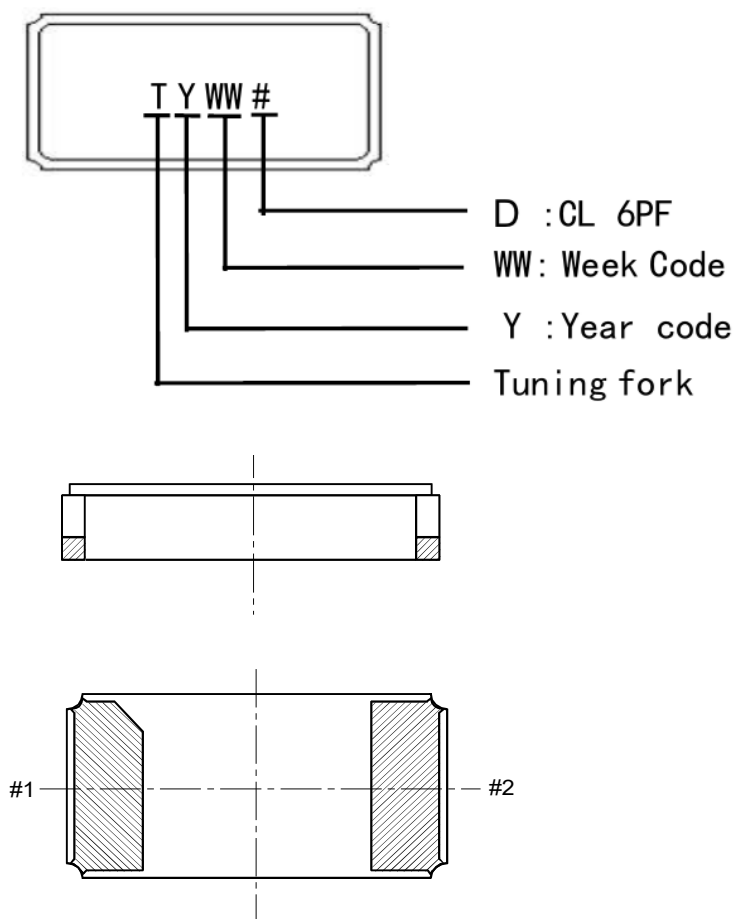
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For 8 and 12mm width carrier tape



	Date of Revise	Charge	Approved	Reason	
B	30 Jun. 2008	K. Oguri	K. Miyashita	The pasting method of shipping tape was corrected.	
	Date	Name	Third Angle Projection	Tolerance	Scale
Drawn	9.Aug.2002	K.Oguri	Dimension:mm		-----
Designed	9.Aug.2002	K.Oguri	Title 180mm reel Packing		Drawing No.
Checked	-----	-----			EXK17B-00130
Approved	9.Aug.2002	K.Miyashita			Rev. B

NIHON DEMPA KOGYO CO., LTD.



NOTE

1. Year Code

Year	1 2021	2 2022	3 2023	4 2024	5 2025	6 2026	7 2027	8 2028	9 2029	10 2030
Year Code	1	2	3	4	5	6	7	8	9	0

2. Week Code

It is stand for the production week

3. # - CL value

A→12. 5PF、B→9PF、C→7PF、D→6PF

	Date of Revise		Charge	Approved	Reason			
	Date	Name	Third Angle Projection		Tolerance		Scale	
Drawn	28.Oct.2020	Miyahara	Dimension:mm				/	
Designed	28.Oct.2020	Miyahara	Title NX3215SA Marking Drawing new plant Malaysia			Drawing No. EXH11B-00425		Rev.
Checked	--	--						
Approved	28.Oct.2020	Ueki						

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