

SPECIFICATION

Customer: _____

| | |
|-----------------------|--------------------|
| Item: | CRYSTAL OSCILLATOR |
| Type: | NT3225SA |
| Nominal frequency: | 41.89 MHz |
| Customer's Spec. No.: | ----- |
| NDK Spec. No.: | END4832A |

| |
|---------|
| Receipt |
|---------|

Charge:

| | | |
|----------|-----------------------------------|--|
| Sales | NDK-I Paola Bandera | Tel. +39-02-96702920 e-Mail: bandera@it.ndk.com |
| Engineer | Engineering Dept. 3 M.Fukunaga | Tel. +81-4-2900-6634 e-Mail: mfukunag@ndk.com |

Revision Record

| Rev. | Date | Items | Contents | Approved | Checked | Drawn |
|-------|---------------|-------|----------|----------|------------|------------|
| ----- | Dec. 23. 2014 | Issue | --- | K.Moriya | M.Fukunaga | M.Fukunaga |
| | | | | | | |
| | | | | | | |
| | | | | | | |

1. Type NT3225SA

2. Maximum Rating

| | Item | Rating | unit |
|---|---------------------|------------|------|
| 1 | Storage temp. range | -40 to +85 | °C |

3. Electrical specification

| | Parameters | Electrical Spec. | | | | Notes |
|---|---|------------------|-------|------|-------|--|
| | | Min. | Typ. | Max. | Units | |
| 1 | Nominal frequency | | 41.89 | | MHz | |
| 2 | Supply voltage (Vcc) | +1.8 | +2.8 | +3.0 | V | (-Earth) |
| 3 | Current consumption | | | 2.0 | mA | |
| 4 | Output voltage | 0.8 | | | Vp-p | Clipped sine wave (DC-Coupling) |
| 5 | Operating temp. range | -20 | | +70 | °C | |
| 6 | Load impedance (resistance part) | 9 | 10 | 11 | kΩ | |
| 7 | Load impedance (parallel capacitance) | 9 | 10 | 11 | pF | |
| 8 | DC-cut capacitor | | | | | DC-cut capacitor of output is not put in TCXO. Please add DC-cut capacitor (1000 pF) in output line. |
| 9 | Frequency stability | | | | | |
| | 1. Frequency /Temperature characteristics | -0.5 | | +0.5 | ppm | -20 to +70 °C Based on frequency at +25+/-2 °C |
| | 2. Frequency/Voltage coefficient | -0.2 | | +0.2 | ppm | Vcc +/-5 % |
| | 3. Frequency/Load coefficient | -0.2 | | +0.2 | ppm | (10 kΩ//10 pF) +/-10 % |
| | 4. Frequency tolerance | -1.5 | | +1.5 | ppm | +25+/-2 °C, before reflow soldering, based on nominal frequency |
| | 5. Long-term frequency stability | -1.0 | | +1.0 | ppm | year |

4. Reflow soldering

After the reflow soldering, frequency deviation shall meet within max +/-1.0 ppm.

Based on frequency before the reflow soldering.

Conditions of temperature profile (Refer to Fig.1)

Soldering peak temp. +260 °C

5. Marking

(1) Abbreviation of manufacturer (N mark)

(2) Lot No.

(3) Nominal frequency (MHz)

(4) Trace code

6. Inspection parameters

Para 3.1, 3.3, 3.4, 3.9.1, 5, 9.2 are inspected.

The other parameters are guaranteed to be within specified characteristics by NDK design.

Inspection data is not submitted for mass production lot. But only if requested, a copy of first lot production data will be submitted.

7. Precaution in the storage

Please keep the oscillator under below condition.

| | |
|-------------|-----------------|
| Temperature | +5 °C to +45 °C |
| Humidity | 10 % to 75 % RH |
| Period | 1year max |

(table)

8. Frequency establishment condition

When output frequency is set, we suppose to have the ground pattern under the oscillator.

9. Application drawing

9.1 Reliability assurance item

ETS30B-00399

9.2 Dimension of External

ETD14B-01098D

9.3 Packing

ETK17B-00299A

9.4 Land pattern

ETD15B-00010A

9.5 Marking

ETH11B-00445A

10. Notice

10.1 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.

10.2 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.

10.3 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.

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

10.5 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.

10.6 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.

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

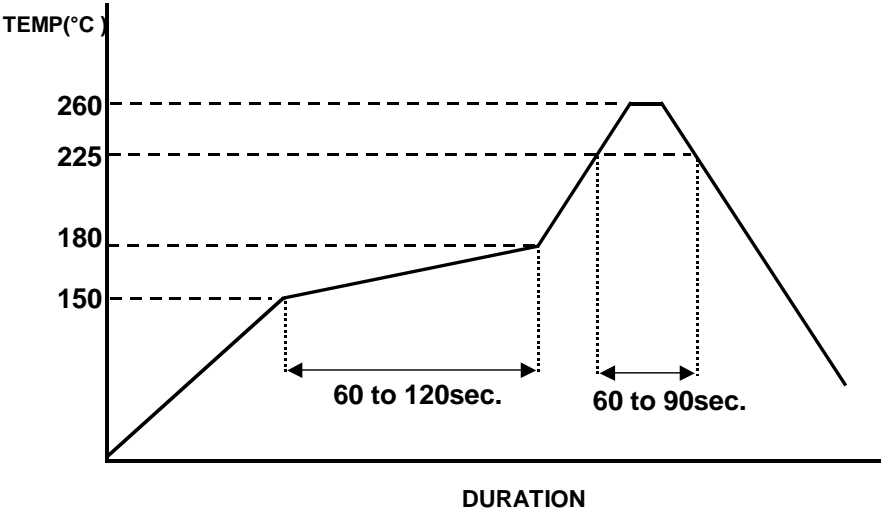
10.8 Information contained in this specification must not be quoted, reproduced or used for other purposes including processing either in part or in full without obtaining prior approval from the company.

10.9 The appearance color and so on have a different case by purchasing it more than 2 suppliers of the component, but characteristic and reliability are guaranteed.

11. 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
 - Heating: +225 °C or higher, 90 sec
- (2) Manual soldering heat resistance
 - Pressing a soldering iron of +410 °C on the terminal electrode for five seconds.



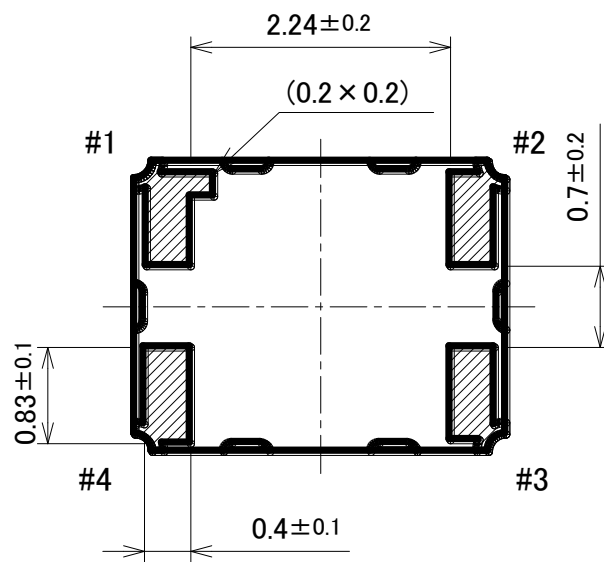
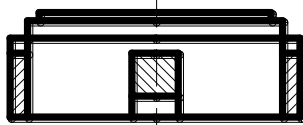
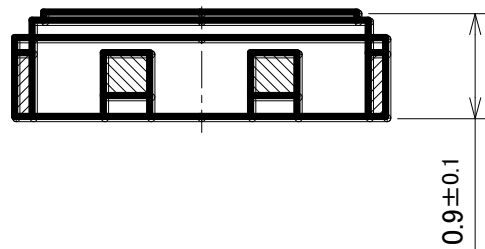
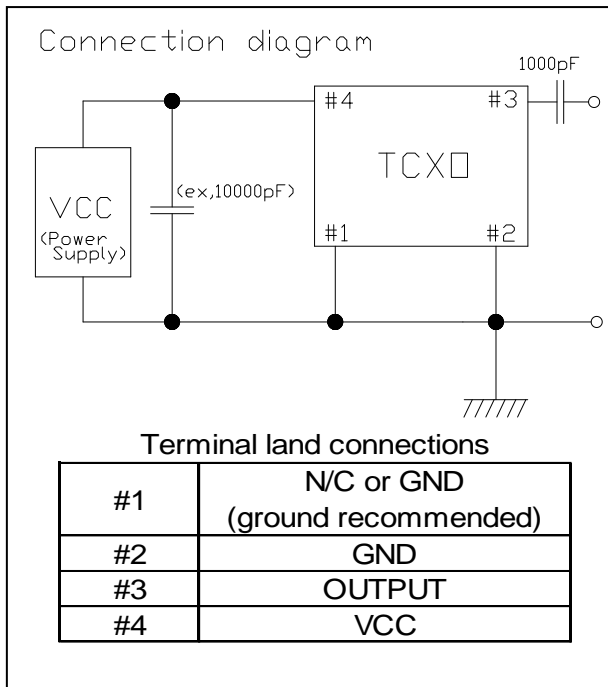
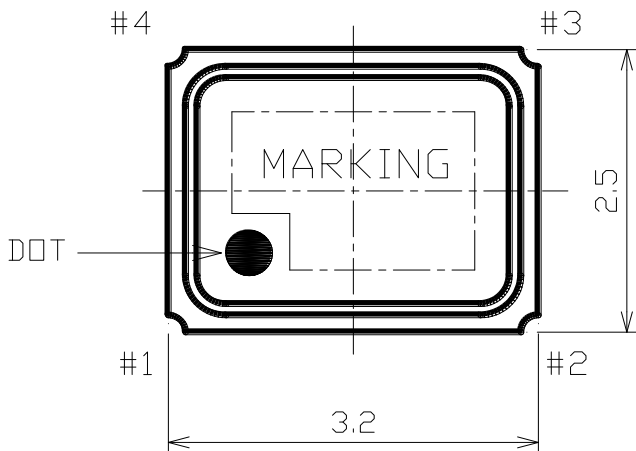
(Fig.1)

Reliability assurance item

(page: 1/1)

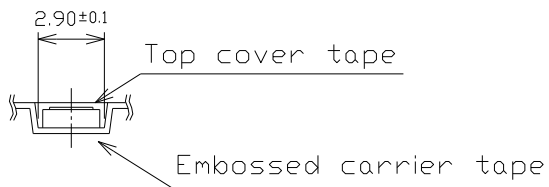
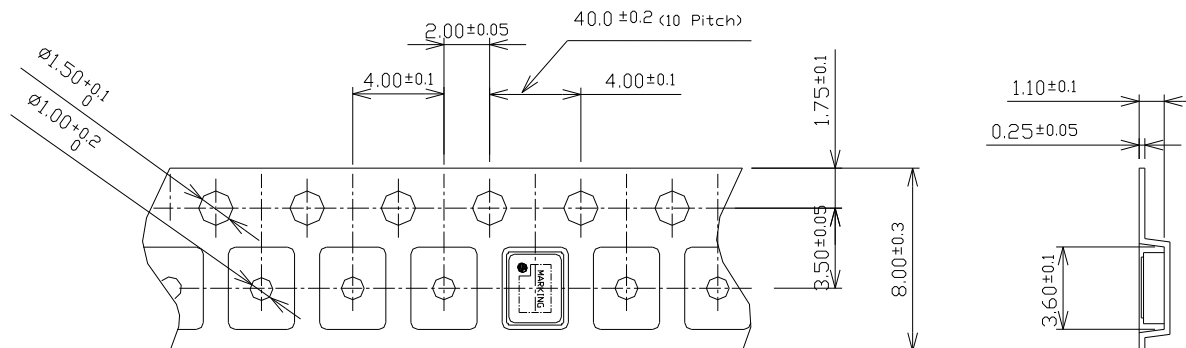
| No. | Test Item | Test Methods | Specification Code |
|-----|-----------|---|--------------------|
| 1 | Vibration | 5 to 26Hz: 1.52mm (total amplitude) 26 to 500Hz: 19.6m/s ² 20 minutes per 1 cycle. 2 hours for each 3 planes. | A |
| 2 | Shock | Half sine wave 6ms, 980 m/s ² . 3 times for each 3 planes. | A |
| 3 | Drop Test | Drop freely on the concrete from the height of 150cm With jig(150g). 3time for each 6 planes. | A |
| 4 | Humidity | +60°C, 95% RH for 48H. And normal temperature, with normal humidity for 24H. | A |
| | | | |
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| | | | |
| | | | |

| Specification code | Specification |
|--------------------|--|
| A | After the test, shall meet electrical specification. |
| | |
| | |
| | |
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|----------|----------------|-------------|------------------------------|---------------------------|----------|
| | Date of Revise | Charge | Approved | Reason | |
| D | 2.Jul.2013 | E.Hoshi | K.Moriya | Figure Display correction | |
| | Date | Name | Third Angle Projection | Tolerance | Scale |
| Drawn | 3.Mar.2008 | K.Yamaki | Dimension:mm | +/-0.2 | 15/1 |
| Designed | 3.Mar.2008 | K.Yamaki | Title | Drawing No. | Rev. |
| Checked | 3.Mar.2008 | K. Moriya | | | |
| Approved | 3.Mar.2008 | T. Yamakawa | | | |
| | | | Dimension of External | ETD14B-01098 | D |

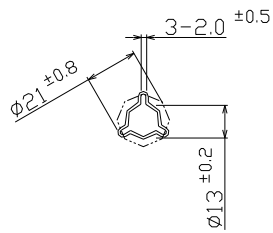
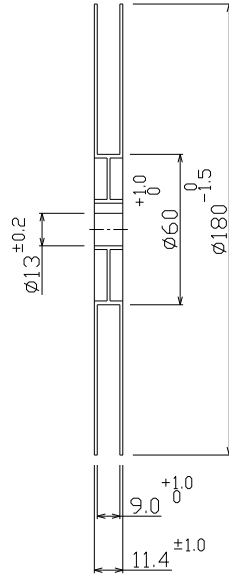
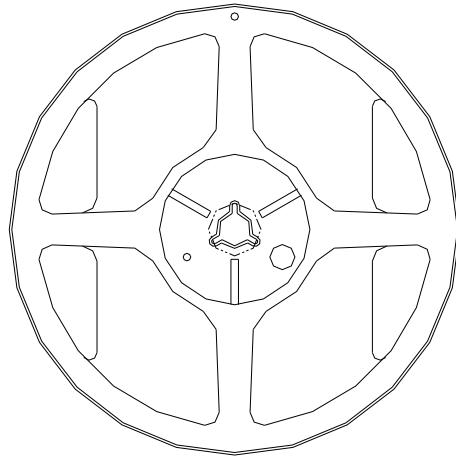
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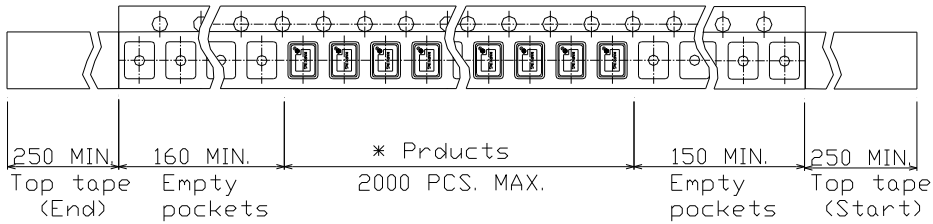
| | | |
|-------------|-----------------------|---------------------------|
| | Embossed carrier tape | Top cover tape |
| Materials | PS | PET + PE + Adhesive layer |
| Disposition | Antistatic | Antistatic |

| | | | | | |
|----------|----------------|---------------|------------------------|---------------------------|----------|
| | Date of Revise | Charge | Approved | Reason | |
| A | 18.Nov.2010 | R.Yoshizaki | K.Moriya | Amount addition | |
| | Date | Name | Third Angle Projection | Tolerance | Scale |
| Drawn | 19.May.2010 | M.Kashiwamura | Dimension:mm | ----- | 3/1 |
| Designed | 19.May.2010 | M.Kashiwamura | Title | Drawing No. | Rev. |
| Checked | 19.May.2010 | K. Moriya | | | |
| Approved | 19.May.2010 | K. Moriya | | | |
| | | | Packing | ETK17B-00299 (1/3) | A |

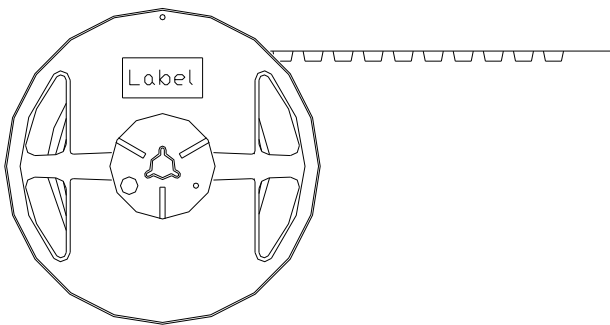
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Materials : PS
Disposition : Antistatic



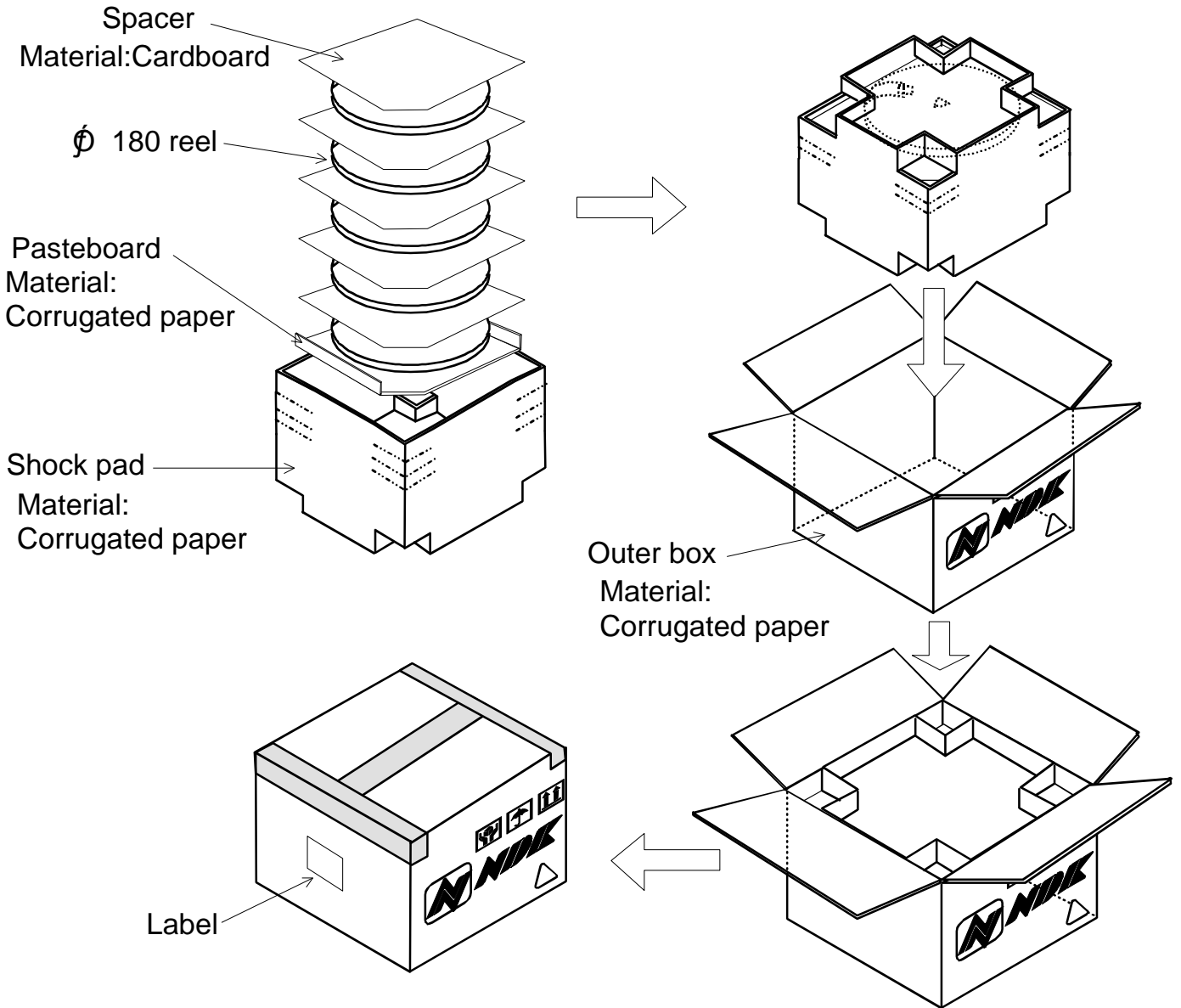
* There are no vacant pockets for this area.



| | | | | | |
|----------------|----------------|---------------|---------------------------|-------------|----------|
| | Date of Revise | Charge | Approved | Reason | |
| A | | | | | |
| | Date | Name | Third Angle Projection | Tolerance | Scale |
| Drawn | 19.May.2010 | M.Kashiwamura | Dimension:mm | ----- | ----- |
| Designed | 19.May.2010 | M.Kashiwamura | Title | Drawing No. | Rev. |
| Checked | 19.May.2010 | K. Moriya | | | |
| Approved | 19.May.2010 | K. Moriya | | | |
| Packing | | | ETK17B-00299 (2/3) | | A |

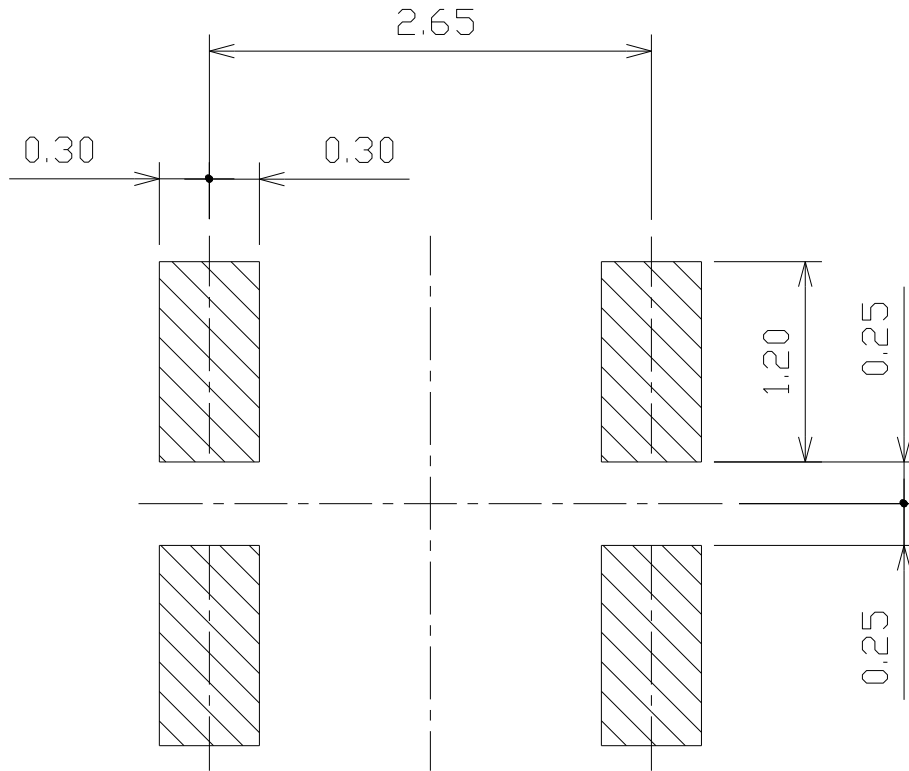
NIHON DEMPA KOGYO CO., LTD.

-2000pcs.Max./Reel
 -5 Reels Max./Carton



| | | | | | |
|----------------|----------------|---------------|---------------------------|-------------|----------|
| | Date of Revise | Charge | Approved | Reason | |
| A | | | | | |
| | Date | Name | Third Angle Projection | Tolerance | Scale |
| Drawn | 19.May.2010 | M.Kashiwamura | Dimension:mm | ---- | ---- |
| Designed | 19.May.2010 | M.Kashiwamura | Title | Drawing No. | Rev. |
| Checked | 19.May.2010 | K. Moriya | | | |
| Approved | 19.May.2010 | K. Moriya | | | |
| Packing | | | ETK17B-00299 (3/3) | | A |

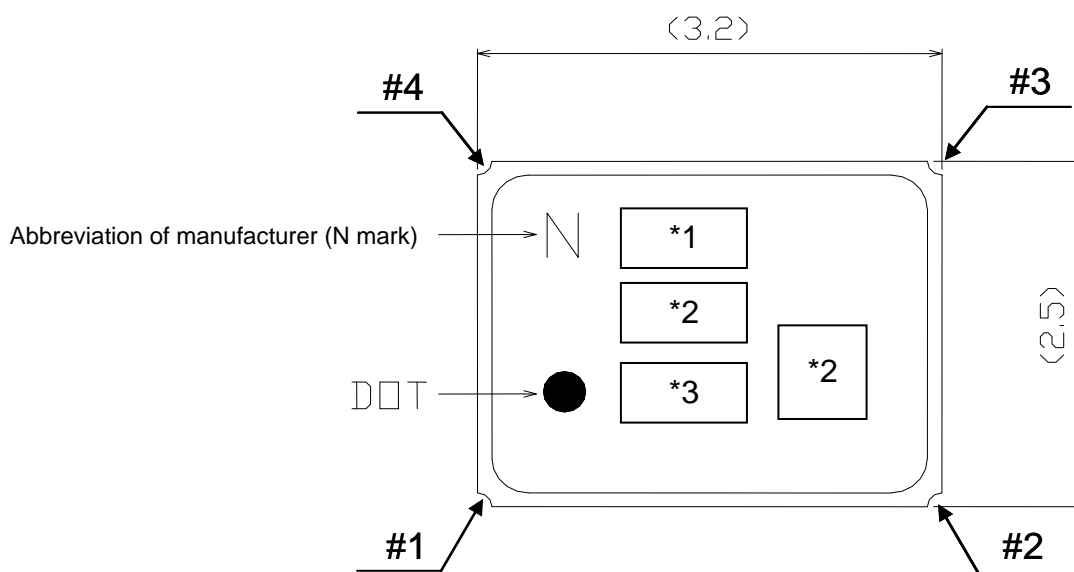
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Note) Please reserve a large ground pattern on the PCB where the oscillator is installed.

| | | | | | |
|----------|----------------|-------------|------------------------|---------------------|----------|
| | Date of Revise | Charge | Approved | Reason | |
| A | 17. Nov. 2011 | A.Fujii | K.Moriya | Note change | |
| | Date | Name | Third Angle Projection | Tolerance | Scale |
| Drawn | 4.Sep.2002 | M. Fukunaga | Dimension:mm | ----- | ----- |
| Designed | ----- | ----- | Title | Drawing No. | Rev. |
| Checked | 4.Sep.2002 | K.Moriya | | | |
| Approved | 4.Sep.2002 | H.Mizumura | | | |
| | | | Land pattern | ETD15B-00010 | A |

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Terminal land connections: Please refer to "Dimension of External".

(Marking Contents)

*1 Lot No.



Year Code (Last one digit)

Month Code (see table)

| | | | | | | | | | | | | |
|------------|---|---|---|---|---|---|---|---|---|----|----|----|
| Month | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Month Code | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | O | N | D |

Following No.

Production Factory

<Example>

56A Sayama Factory

56A[•] Hakodate NDK

*2 Trace code

Trace code indicate production date and production line number.

*3 Nominal Frequency

- A unit (MHz) is not written.

- A decimal point omits.

(Example : (2digits) 26MHz → 26 , (3digits) 19.2MHz → 192, (4more digits) 16.368MHz → 163)

Marking Method : Laser Trimming

| | | | | | |
|----------|----------------|---------------|-------------------------|-------------------------------------|----------|
| | Date of Revise | Charge | Approved | Reason | |
| A | 06. Mar. 2014 | E.Hoshi | A.Konda | Frequency display instruction added | |
| | Date | Name | Third Angle Projection | Tolerance | Scale |
| Drawn | 17. Apr. 2013 | R.Yoshizaki | Dimension:mm | --- | --- |
| Designed | 17. Apr. 2013 | R.Yoshizaki | Title Marking | Drawing No. ETH11B-00445 | Rev. |
| Checked | 17. Apr. 2013 | M.Kashiwamura | | | A |
| Approved | 17. Apr. 2013 | K. Moriya | | | |

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