

## Specification of Temperature Compensated Crystal Oscillators

1. NDK Part Number NT3225SA-19.2M-DJA3002B

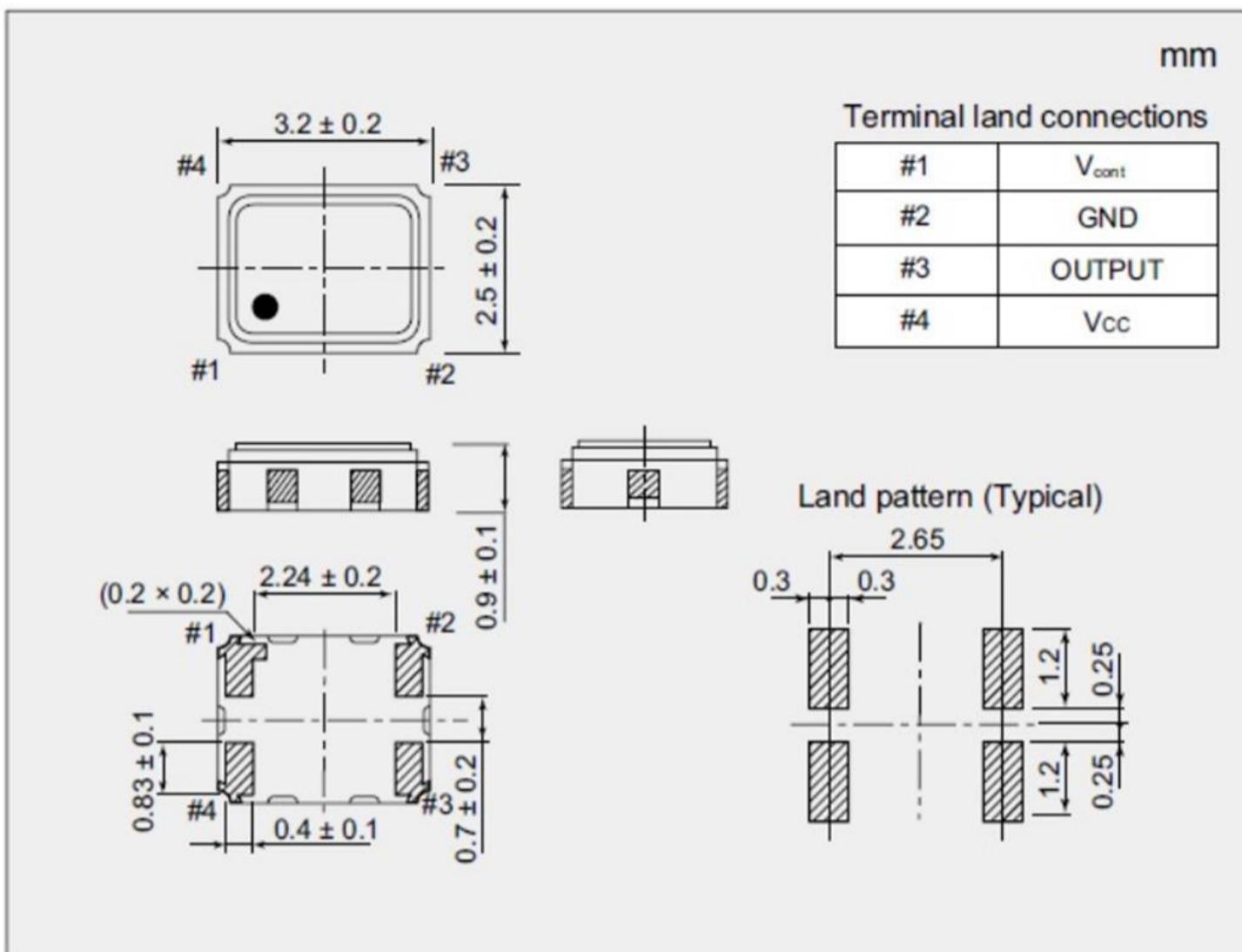
2. NDK Specification Number DJA3002B

3. Type NT3225SA

## 4. Electrical Specification

|    | Parameters                                | SYM.              | Electrical Spec. |      |       |                  | Notes   |
|----|---|-------------------|------------------|------|-------|------------------|---|
|    |   |                   | Min.             | Typ. | Max.  | Units            |   |
| 1  | Nominal frequency                         | f <sub>nom</sub>  | 19.200           |      |       | MHz              | -   |
| 2  | Supply voltage                            | V <sub>cc</sub>   | -                | +2.8 | -     | V                | -   |
| 3  | Current consumption                       | -                 | -                | -    | 1.5   | mA               | -   |
| 4  | Output voltage                            | -                 | 0.8              | -    | -     | V <sub>p-p</sub> | Clipped sine wave<br>(DC-Coupling)  |
| 5  | Operating temp. rage                      | -                 | -30              | -    | +75   | °C               | -   |
| 6  | Storage temp. rage                        | -                 | -40              | -    | +85   | °C               | -   |
| 7  | Load impedance<br>(resistance part)       | -                 | 9                | 10   | 11    | kΩ               | -   |
| 8  | Load impedance<br>(parallel capacitance)  | -                 | 9                | 10   | 11    | pF               | -   |
| 9  | DC-cut capacitor                          | -                 | -                | -    | -     | -                | DC-cut capacitor of output<br>is not put in TCXO. Please add DC-cut<br>capacitor(1,000pF)in output line.  |
| 10 | Frequency/<br>temperature characteristics | -                 | -2.5             | -    | +2.5  | ppm              | -30to+75°C(Based on frequency at +25+/-<br>2°C)at control voltage (V <sub>cont</sub> )=+1.2VDC  |
| 11 | Frequency/<br>Voltage coefficient         | -                 | -0.3             | -    | +0.3  | ppm              | +2.8V+/-0.1V  |
| 12 | Frequency/<br>Load coefficient            | -                 | -0.2             | -    | +0.2  | ppm              | (10kΩ//10pF)+/-10%  |
| 13 | Frequency tolerance                       | -                 | -1.5             | -    | +1.5  | ppm              | +/-25°C+/-2°C, Before reflow<br>soldering, based on nominal frequency at<br>control voltage (V <sub>cont</sub> )=+1.2VDC.   |
| 14 | Long-term frequency stability             | -                 | -1.0             | -    | +1.0  | ppm              | year(at +25°C)  |
| 15 | Control voltage                           | V <sub>cont</sub> | +0.2             | +1.2 | +2.2  | V                | -   |
| 16 | Frequency control range                   | -                 | -15.0            | -    | -9.0  | ppm              | V <sub>cont</sub> =<br>+0.2V  |
|    |   | -                 | +9.0             | -    | +15.0 | ppm              | V <sub>cont</sub> =<br>+2.2V  |
| 17 | Frequency change polarity                 | -                 | -                | -    | -     | -                | Positive  |
| 18 | Stabilization time                        | -                 | -                | -    | 4.0   | ms               | +/-0.1 ppm of final frequency final<br>frequency is the frequency after 10 s from<br>the point when supply voltage is reached<br>at+2.8 V. Measurement is done while the<br>control voltage is kept at its typical value at |
| 19 | Symmetry                                  | -                 | 40               | -    | 60    | %                | Based on GND after DC removal.  |
| 20 | Phase noise                               | -                 | -                | -    | -130  | dBc/Hz           | @1 kHz offset   |

## 5. Dimension



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