1. Device Name VC-TCXO
2. Model Name DSA221SJ
3. Nominal Frequency 19.200 MHz
4. Mass 0.02g max

5. Absolute Maximum Ratings

| | Item | Symbol | Rating | unit |
|---|---|---|---|---|
| 1 | Supply Voltage | $V_{CC}$ | -0.6~+6.0 | V |
| 2 | Storage Temperature Range | $T_{_STG}$ | -40~+85 | °C |

6. Recommended Operating Conditions

| | Item | Symbol | min. | typ. | max. | unit |
|---|---|---|---|---|---|---|
| 1 | Supply Voltage | $V_{CC}$ | +3.135 | +3.3 | +3.465 | V |
| 2 | Output Load | $L_{_CMOS}$ | - | 15 | - | pF |
| 3 | Control Voltage Range | $V_{CONT}$ | +0.5 | +1.5 | +2.5 | V |
| 4 | Operable Temperature Range | $T_{_OPR}$ | -30 | - | +85 | °C |

7. Electrical Characteristics

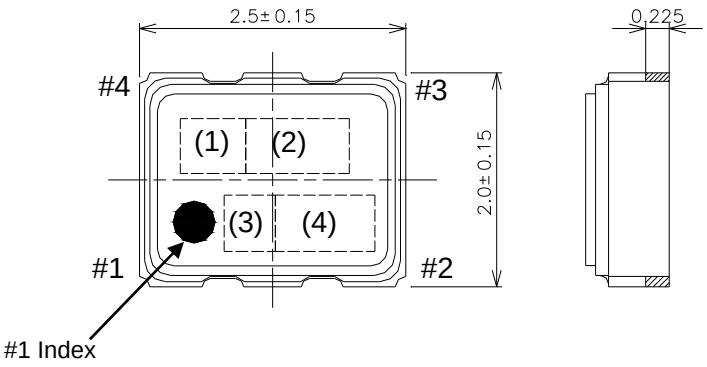
$T_A$=-30~+85°C, $V_{CC}$=+3.3V, $V_{CONT}$=+1.5V, $L_{_CMOS}$=15pF unless otherwise noted

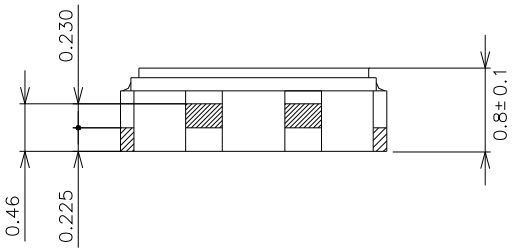
| | Item | Condition | Limits | | | unit | Notes |
|---|---|---|---|---|---|---|---|
| | | | min. | typ. | max. | | |
| 1 | Current Consumption | | - | - | 4.0 | mA | |
| 2 | Output Characteristics | | | | | | |
| | 1. Rise Time | $V_{CC}$x0.1~$V_{CC}$x0.9 | - | - | 10 | ns | |
| | 2. Fall Time | $V_{CC}$x0.1~$V_{CC}$x0.9 | - | - | 10 | ns | |
| | 3. 0 Level | | - | - | $V_{CC}$x0.1 | V | |
| | 4. 1 Level | | $V_{CC}$x0.9 | - | - | V | |
| | 5. Symmetry | $V_{CC}$x0.5 Level | 40 | 50 | 60 | % | |
| 3 | Frequency Stability | | | | | | |
| | 1. Tolerance | After 2 times reflow<br>Ref. to nominal frequency | - | - | ±1.5 | ppm | 1,2 |
| | 2. vs Temperature | $T_A$=-30~+85°C<br>Ref. to Frequency($T_A$=+25°C) | - | - | ±2.5 | ppm | |
| | 3. vs Supply Voltage | $V_{CC}$=+3.3V±5% | - | - | ±0.3 | ppm | |
| | 4. vs Load Variation | $L_{_CMOS}$=15pF±10% | - | - | ±0.2 | ppm | |
| | 5. vs Aging | $T_A$= Room ambient | - | - | ±1.0 | ppm/year | |
| 4 | Start Up Time | Within ±0.5ppm of final frequency | - | - | 2.0 | ms | |
| 5 | Frequency Control | | | | | | |
| | 1.Control Range | $V_{CONT}$=+1.5V±1.0V | ±9 | - | ±15 | ppm | 3 |
| | 2.Input Resistance | | 500 | - | - | kΩ | |
| 6 | SSB Phase Noise | Relative to F0 level offset 1kHz | - | - | -130 | dBc/Hz | |

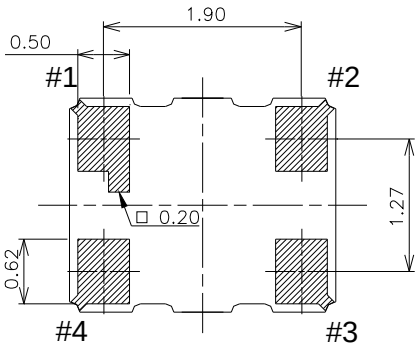
Notes
1. $T_A$=+25°C
2. Please leave after reflow in 2h or more at room ambient.
3. Positive slope (Frequency becomes high in proportion to frequency control voltage.)

## 8. Outline, Pin Connections

Outline




Pin Connections

| Pin No. | Connection |
|---|---|
| #1 | $V_{CONT}$ |
| #2 | GND |
| #3 | Output |
| #4 | $V_{CC}$ |

Marking

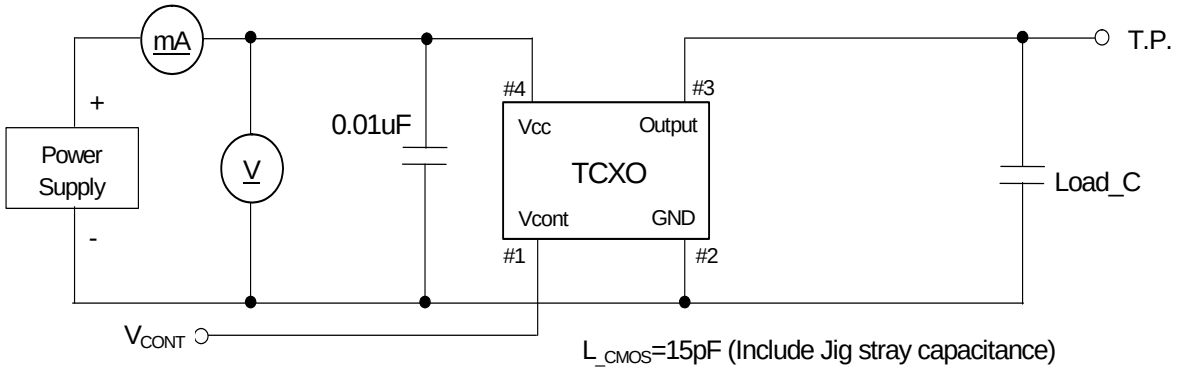
| | |
|---|---|
| (1) Model code | M |
| (2) Frequency | 19.2(MHz, 3digits) |
| (3) Logo | D |
| (4) Date code | Year(1digit)+Week(2digits) |
| | e.g. 2016/1/1 → 601 |

unit : mm

Dimensional Tolerance: ±0.15

(Unless otherwise noted)

## 9. Measurement Circuit




| TITLE | Remark | | |
|---|---|---|---|
| DSA221SJ TYPE SPECIFICATION | | | |
| Date | Spec. No. | Rev. | Page |
| 2016/11/10 | ZC11558 | - | 2/2 |