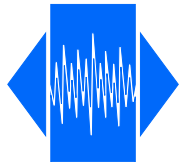


# VTX 7T-LG

Low G-sensitive, vibration and shock resistant  
Temperature compensated (VC)TCXO

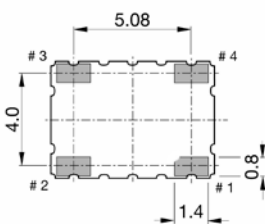
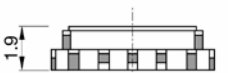
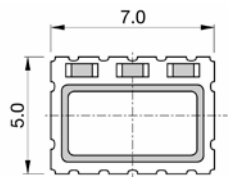
**QuartzCom**  
the communications company



|                                                                       |                                                                 |                                                                               |     |
|-----------------------------------------------------------------------|-----------------------------------------------------------------|-------------------------------------------------------------------------------|-----|
| <b>Frequency range</b>                                                | <b>5.000 ~ 52.000 MHz</b>                                       |                                                                               |     |
| Standard frequencies (fundamental)                                    | <b>10, 12, 13, 15.36, 16.368, 20, 25, 27, 30, 40 and 50 MHz</b> |                                                                               |     |
| Frequency stability:                                                  |                                                                 |                                                                               |     |
| vs. temperature referenced to (F <sub>MAX</sub> +F <sub>MIN</sub> )/2 | ≤ ±0.50 ppm                                                     | over -40 to +85 °C                                                            | (*) |
| vs. supply voltage changes referenced to frequency at nominal supply  | ≤ ±0.1 ppm                                                      | ±5 %                                                                          |     |
| vs. load changes referenced to frequency at nominal load              | ≤ ±0.1 ppm                                                      | ±5 %                                                                          |     |
| vs. aging @ +40 °C                                                    | ≤ ±1.0 ppm                                                      | 1st year                                                                      |     |
| G-sensitivity                                                         | 0.25 ppb/g                                                      | per axis                                                                      |     |
| Frequency tolerance ex. factory @ +25 °C                              | 0 ~ +1.0 ppm                                                    | @ +25 °C                                                                      |     |
| Supply voltage (nominal value ±5 %)                                   | +2.8 V, +3.3 V or +5.0 V                                        |                                                                               | (*) |
| Output signal                                                         | Clipped sine wave                                               | (LV)CMOS                                                                      | (*) |
| Output level                                                          | > 0.8 V <sub>p-p</sub>                                          | V <sub>OH</sub> > 0.9*V <sub>CC</sub> / V <sub>OL</sub> < 0.1*V <sub>CC</sub> |     |
| Output load                                                           | 10 kΩ // 10 pF                                                  | 15 pF Max.                                                                    |     |
| Current consumption, depending on frequency                           | 1.5 ~ 7 mA                                                      | 2 ~ 10 mA                                                                     |     |
| Electronic Frequency Control (EFC)                                    | ΔF = ±5 to ±10 ppm                                              | positive slope                                                                | (*) |
| Control voltage (V <sub>c</sub> )                                     | +1.50 V ±1.0 V for 3.3 V                                        | +2.50 V ±2.0 V for 5.0 V                                                      | (*) |
| EFC input impedance                                                   | > 100 kΩ                                                        |                                                                               |     |
| Phase noise (typical value for 40 MHz)                                | -90 dBc/Hz                                                      | @ 10 Hz                                                                       |     |
|                                                                       | -118 dBc/Hz                                                     | @ 100 Hz                                                                      |     |
|                                                                       | -140 dBc/Hz                                                     | @ 1 kHz                                                                       |     |
|                                                                       | -151 dBc/Hz                                                     | @ 10 kHz                                                                      |     |
|                                                                       | -156 dBc/Hz                                                     | @ 100 kHz                                                                     |     |
| Operating temperature range                                           | -40 ~ +85 °C                                                    |                                                                               | (*) |
| Storage temperature range                                             | -55 ~ +105 °C                                                   |                                                                               |     |
| Reflow Profiles as per IPC/JEDEC J-STD-020C                           | ≤ 260 °C over 10 sec. Max.                                      |                                                                               |     |
| Moisture sensitivity                                                  | Level 1 (unlimited)                                             |                                                                               |     |

(\*) See available options on page #2

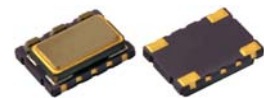
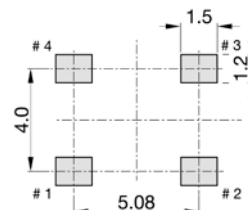
Note: Unless otherwise specified conditions are @+25 °C



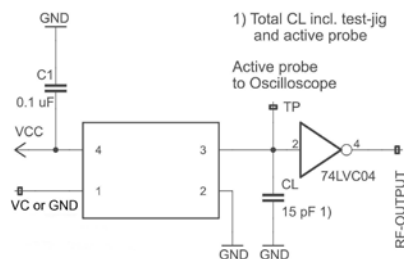
### Pin function

- # 1 V<sub>c</sub> (EFC) for VC-TCXO  
GND or NC for TCXO
- # 2 GND
- # 3 Output
- # 4 V<sub>CC</sub>

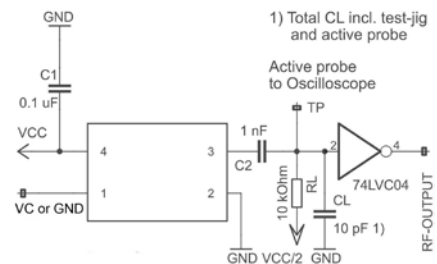
### Soldering pattern



### Test circuit for CMOS



### Test circuit for Clipped Sine Wave



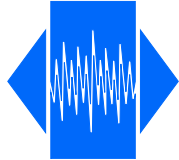
2011/65/EU RoHS compliant

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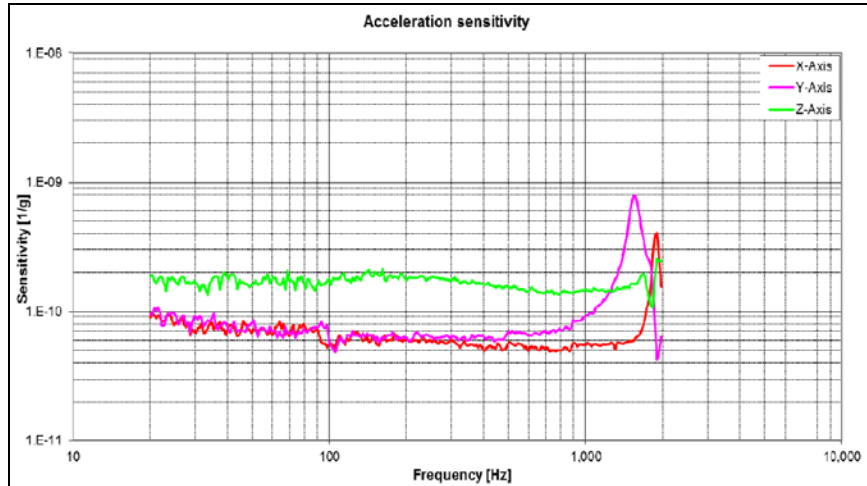
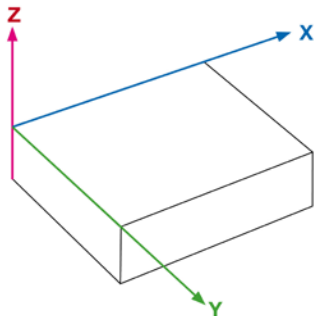
## G-Sensitivity performance

Noise shape vibration from 20-2'000 Hz  
with 0.1 g<sup>2</sup>/Hz (G<sub>RMS</sub> = 14.11g) for the axis

The table shows the averaged values of the G-Sensitivity in the range 20 Hz to 1000 Hz.  
At 1500 Hz appear resonances, which are caused by the mounting structure on the shaker.

| TX7-S3-NNu50-C-100 MHz |                   |                   |                   |       |
|------------------------|-------------------|-------------------|-------------------|-------|
| Osc-#                  | X-axis<br>[ppb/g] | Y-axis<br>[ppb/g] | Z-axis<br>[ppb/g] | Gamma |
| #1                     | 0.06              | 0.07              | 0.17              | 0.19  |
| #2                     | 0.06              | 0.05              | 0.08              | 0.12  |
| #3                     | 0.04              | 0.05              | 0.26              | 0.27  |
| #4                     | 0.05              | 0.08              | 0.08              | 0.12  |

### Definitions of vibration axes



## Ordering code

**(0)7T-(1)(2)-(3)(4)-(5)(6)-40.000MHz** Example: **VT7T-C33-NNu50- V05GC-40.000MHz**

| Oscillator type                                                                                             | (1) Output signal                                                            | (2) Supply voltage                                                                                               | (5) Pulling range<br>(VT only)                        |
|-------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|
| TX = TCXO<br>VT = VC-TCXO                                                                                   | H = (LV)CMOS<br>C = Clipped sine wave                                        | 28 = 2.8 V<br>30 = 3.0 V<br>33 = 3.3 V<br>50 = 5.0 V                                                             | V05 = 1.5 ± 1.0 V ±5 ppm<br>V10 = 1.5 ± 1.0 V ±10 ppm |
| (3) Operating temperature                                                                                   | (4) Frequency stability                                                      | (6) G-sensitivity per axis                                                                                       | X05 = 2.5 ± 2.0 V ±5 ppm<br>X10 = 2.5 ± 2.0 V ±10 ppm |
| JK = -20 to +70 °C<br>NN = -40 to +85 °C<br>NP = -40 to +95 °C<br>NR = -40 to +105 °C<br>QN = -55 to +85 °C | u25 = ± 0.25 ppm<br>u50 = ± 0.50 ppm<br>1u0 = ± 1.00 ppm<br>1u5 = ± 1.50 ppm | GA = 0.10 ppb/g<br>GB = 0.25 ppb/g<br>GC = 0.50 ppb/g<br>GD = 1.00 ppb/g<br>GE = 1.50 ppb/g<br>GZ = special spec | Z = special spec                                      |

### Frequency stability vs. temperature

| ppm            | ≤± 0.25 | ≤± 0.50 | ≤± 1.00 | ≤± 1.50 |
|----------------|---------|---------|---------|---------|
| -20 to +70 °C  | Δ       | O       | O       | O       |
| -40 to +85 °C  | Δ       | O       | O       | O       |
| -40 to +95 °C  | Δ       | Δ       | Δ       | O       |
| -40 to +105 °C | Δ       | Δ       | Δ       | Δ       |
| -55 to +85 °C  | X       | Δ       | Δ       | Δ       |

|                 |
|-----------------|
| Δ Ask factory   |
| O Available     |
| X Not available |

