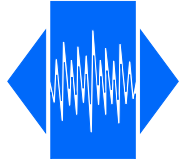# VTX7Q-LG

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

QuartzCom
the communications company

Generic specification

Frequency range	5.000 ~ 50.000 MHz		
Standard frequencies	10, 12, 13, 15.36, 16.368, 20, 25, 27, 30, 33.6, 38.88, and 40 MHz		
Frequency stability:			
vs. temperature referenced to $(F_{MAX}+F_{MIN})/2$	≤ ±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	+2.5 V ~ +3.3 V		(∗)
Output signal	**Clipped sine wave**	**CMOS**	**(∗)**
Output level	> 0.8 Vp-p	$V_{OH} > 0.9*Vcc$ / $V_{OL} < 0.1*Vcc$	
Output load	10 kΩ // 10 pF	15 pF Max.	
Current consumption, depending on frequency	5 < mA	< 8 mA	
Electronic Frequency Control (EFC) range	±5 ~ ±10 ppm	positive slope	(∗)
Control voltage (Vc)	+1.50 V ±1.0 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)		

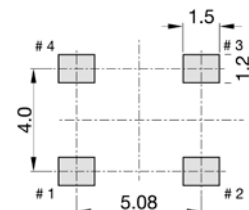**(∗) See available options on page #2**   **Note: Unless otherwise specified conditions are @+25 °C**
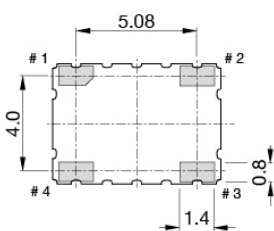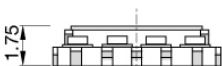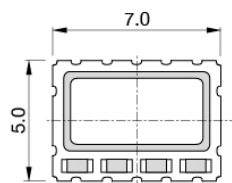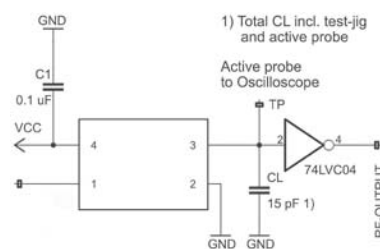
Pin function

\# 1   Vc (EFC) for VC-TCXO
       GND or NC for TCXO
\# 2   GND
\# 3   Output
\# 4   Vcc

Soldering pattern

Test circuit for CMOS

1) Total CL incl. test-jig
   and active probe

Test circuit for Clipped Sine Wave
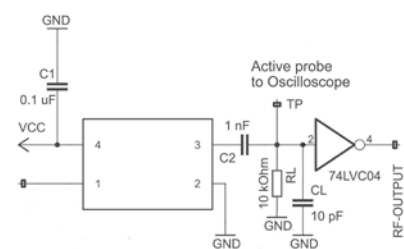
From design to production
in Switzerland

QuartzCom AG
Bruehlstrasse 15
CH 2540 Grenchen
Switzerland

Fax   +41 32 644 24 05
Tel   +41 32 644 24 00
E-Mail   sales@quartzcom.com
www.quartzcom.com

VTX7Q-LG

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

QuartzCom
the communications company

Generic specification
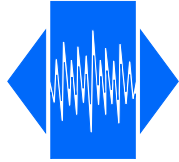
Ordering code

(0)7Q-(1)(2)-(3)(4)-(5)(6)-40.000MHz		*Example:* **VT7Q-C33-NNu50- V05GC-20.000MHz**	
Oscillator type	**(1) Output signal**	**(2) Supply voltage**	**(6) G-sensitivity per axis**
TX = TCXO	H = CMOS	25 = 2.5 V	GA = 0.10 ppb/g (Δ)
VT = VC-TCXO	C = Clipped sine wave	30 = 3.0 V	GB = 0.25 ppb/g
		33 = 3.3 V	GC = 0.50 ppb/g
			GD = 1.00 ppb/g
(3) Operating temperature	**(4) Frequency stability**	**(5) Pulling range** (VT only)	GE = 1.50 ppb/g
JK = -20 to +70 °C	u50 = ± 0.50 ppm		GZ = special spec
NN = -40 to +85 °C	1u0 = ± 1.00 ppm	V05 = 1.5 ± 1.0 V ±5 ppm	
NP = -40 to +95 °C	1u5 = ± 1.50 ppm	V10 = 1.5 ± 1.0 V ±10 ppm	(Δ) Ask factory
QN = -55 to +85 °C	2u0 = ± 2.00 ppm		
		Z = special spec	

Frequency stability vs. temperature

ppm	≤± 0.50	≤± 1.00	≤± 1.50	≤± 2.00
-20 to +70 °C	O	O	O	O
-40 to +85 °C	Δ	O	O	O
-40 to +95 °C	Δ	Δ	O	O
-55 to +85 °C	X	X	X	Δ

Δ	Ask factory
O	Available
X	Not available

G-Sensitivity performance

Noise shape vibration from 20-2'000 Hz
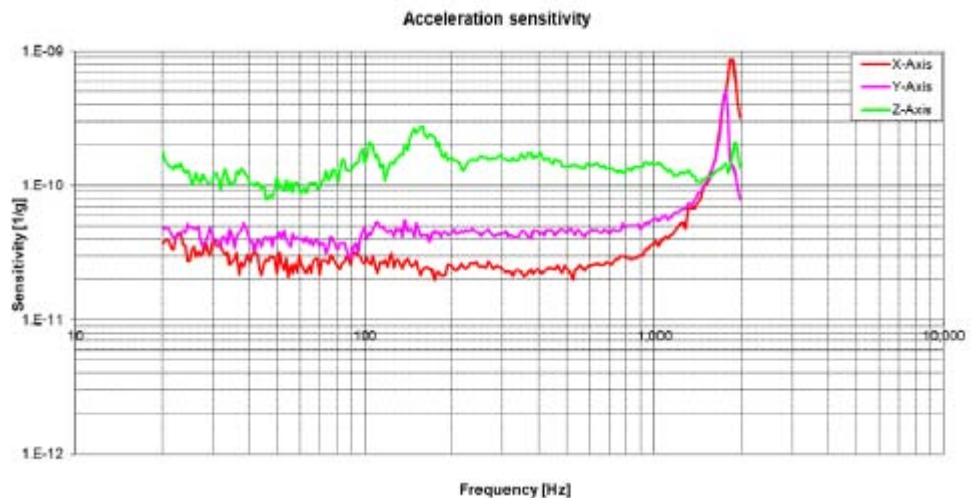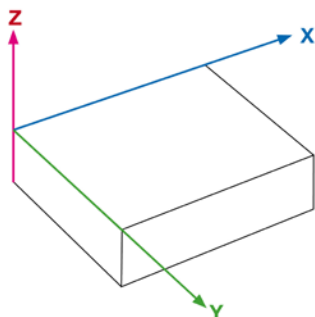with 0.1 g²/Hz (G_{RMS} = 14.11g) for the axis

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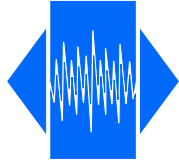in the range 20 Hz to 1000Hz.
At 1500 Hz appear resonances, which are caused
by the mounting structure on the shaker.

VT7R-20MHz

Osc-#	X-axis [1/g]	Y-axis [1/g]	Z-axis [1/g]	Gamma Γ [1/g]
A01	0.035	0.023	0.197	0.201
A02	0.028	0.019	0.139	0.144
A03	0.027	0.044	0.142	0.151
A04	0.030	0.027	0.200	0.204

Definitions of vibration axes

Acceleration sensitivity

VTX7Q-LG

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

QuartzCom
the communications company

Generic specification

Handling Recommendation for
SMD Crystal & Crystal Oscillator

1. ESD Handling

Crystal oscillators are electrostatic sensitive device. Therefore, direct touching of the terminals with fingers and without ESD precautions must be avoid.
Proper handling must be made according to the established ESD handling rules
IEC 61340-5-1 and EN 100015-1 to avoid degradations of the oscillator performance due to damages of the internal circuitry by electrostatic discharge.

2. Shocks & Vibrations

Excessive mechanical shocks and or vibrations during handling as well as manual and automatic assembly must be avoided.
If accidently, the component was dropped or subject to strong shock, component should be verified that the electrical function is still within the specification and still hermetically sealed.
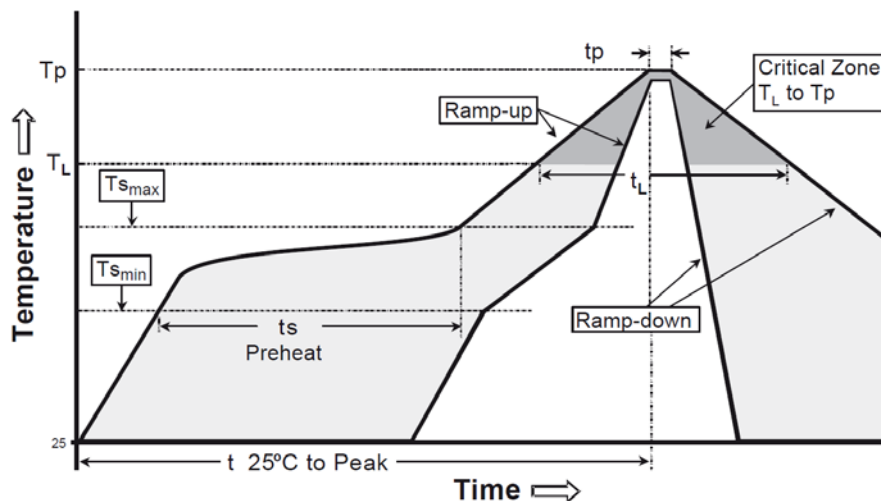
3. Thermal Shocks

Avoid steep temperature gradients. It might lead to breakage of the crystal blank
Infrared reflow processes in general are safe.

4. Soldering & Cleaning

Maximum Reflow Condition in accordance with JEDEC STD-020C

Avoid washing or welding processes using Ultrasonic energy. These processes can damage the crystal due to mechanical resonance of the crystal blanks.

5. Coating

Using resin may have an impact on the oscillator characteristics.
If resin is used, please contact QuartzCom or our representative for more information.
In situations where resin would be used without contacting us in advance,
QuartzCom will not be responsible for any damages caused to the components or and injuries caused to people.