VTX7S

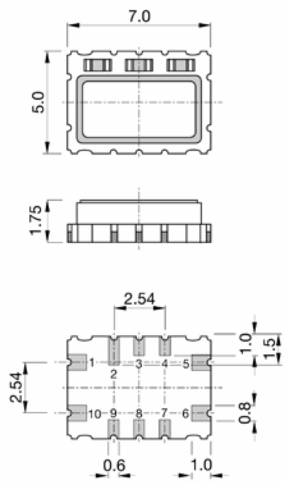
High reliable, accurate,
analogue temperature compensated (VC)TCXO

Generic specification

Frequency range	5.000 ~ 70.000 MHz		
Standard frequencies (fundamental)	5, 10, 12, 12.8, 13, 15.36, 16, 16.384, 19.2, 19.44, 20 25, 26, 30.72, 32, 40, 50 and 70 MHz		
Frequency stability:			
vs. temperature referenced to (FMAX+FMIN)/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	2.0 ppb/g	per axis	
Frequency tolerance ex. factory	0 ~ +1.0 ppm	@ +25 °C	
Supply voltage (nominal value ±5 %)	+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)	ΔF = ±5 to ±10 ppm	positive slope	(∗)
Control voltage (Vc)	+1.50 V ±1.0 V		(∗)
EFC input impedance	> 100 kΩ		
Tri-state function	pin #9 → high or open pin #9 → low or GND	pin #6 → oscillation pin #6 → high impedance	
Phase noise (typical value for 40 MHz)	-90 dBc/Hz -118 dBc/Hz -140 dBc/Hz -151 dBc/Hz -156 dBc/Hz	@ 10 Hz @ 100 Hz @ 1 kHz @ 10 kHz @ 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

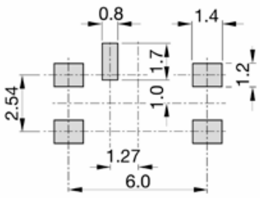


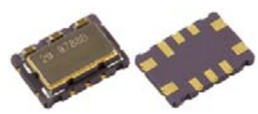
Pin function

# 1	Vc (EFC) for VC-TCXO GND or NC for TCXO
# 5	GND
# 6	Output
# 9	E/D or NC
# 10	Vcc

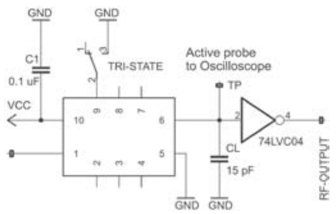
Do not contact #2, #3, #4, #7 & #8

Soldering pattern

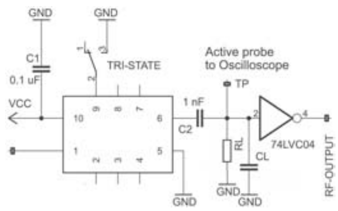




Test circuit for CMOS



Test circuit for Clipped Sine Wave



2011/65/EU RoHS compliant

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From design to production
in Switzerland

VTX7S

High reliable, accurate,
analogue temperature compensated (VC)TCXO

Generic specification

Ordering code

(0)7S-(1)(2)-(3)(4)-(5)-40.000MHz *Example:* ***VT7S-C33-NNu50-V10-40.000MHz***

(0) Oscillator type

TX = TCXO
VT = VC-TCXO

(1) Output signal

H = CMOS
C= Clipped sine wave

(2) Supply voltage

25 = 2.5 V
30 = 3.0 V
33 = 3.3 V

(5) Pulling range
(VT only)

V05 = 1.5 ± 1.0 V ±5 ppm
V10 = 1.5 ± 1.0 V ±10 ppm

W05 = 1.65 ± 1.0 V ±5 ppm
W10 = 1.65 ± 1.0 V ±10 ppm

Z = special spec

(3) Operating temperature

JK = -20 to +70 °C
LN = -30 to +85 °C
NN = -40 to +85 °C
NP = -40 to +95 °C
NR = -40 to +105 °C
QN = -55 to +85 °C

(4) Frequency stability

u25 = ± 0.25 ppm
u50 = ± 0.50 ppm
1u0 = ± 1.00 ppm
1u5 = ± 1.50 ppm

Frequency stability vs. temperature

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

Δ	Ask factory
O	Available
X	Not available

Environmental conditions

Test	**IEC 60068 Part…**	**IEC 60679-1 Clause**	**MIL-STD-202G Method**	**MIL-STD-810F Method**	**MIL-PRF-55310D Clause**	**Test conditions (IEC)**
Sealing tests (if applicable)	2-17	5.6.2	112E		3.6.1.2	Gross leak: Test Qc, Fine leak: Test Qk
Solderability Resistance to soldering heat	2-20 2-58	5.6.3	208H 210F		3.6.52 3.6.48	Test Ta method 1, Test Td_1 method 2, Test Td_2 method 2
Shock *	2-27	5.6.8	213B Cond C	516.4	3.6.40	Test Ea, 3 x per axis 100 g, 6 ms half-sine pulse
Vibration, sinusoidal*	2-6	5.6.7.1	204D Cond A	516.4-4	3.6.38.1 3.6.38.2	Test Fc, 30 min per axis, 10 Hz – 55 Hz 0,75 mm; 55 Hz – 2 kHz, 10 g
Vibration, random*	2-64	5.6.7.3	214A	514.5	3.6.38.3 3.6.38.4	Test Fdb
Endurance tests - ageing - extended ageing		 5.7.1 5.7.2	108A		 4.8.35	 30 days @ 85 °C 1000 h, 2000 h, 8000 h @ 85 °C

Other environmental conditions on request 28 Dec. 20

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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

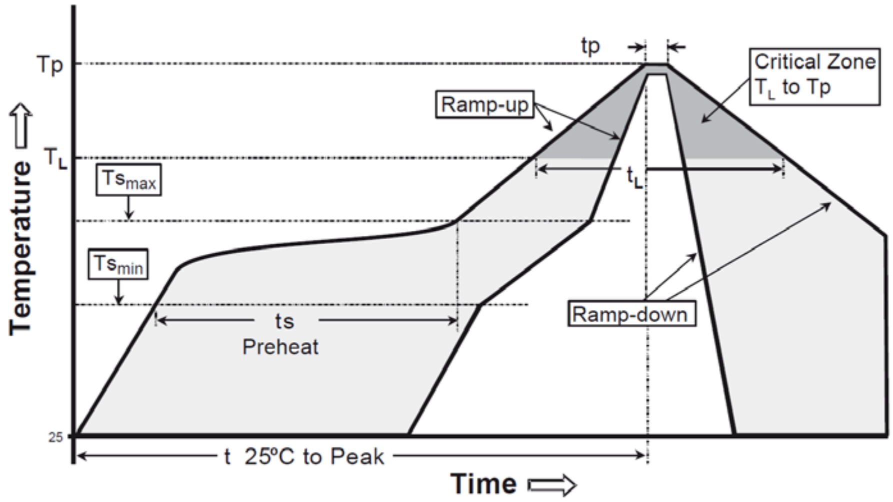
Excessive mechanical shocks and or vibrations during handling as well as manual and automatic assembly must be avoided.
If accidently, the component was dropped or subject to strong shock, component should be verified that the electrical function is still within the specification and still hermetically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

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