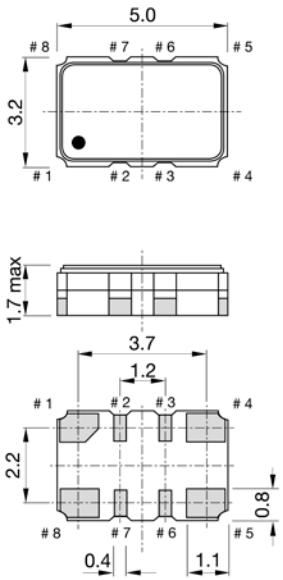
VTX5E

High reliable, wide temperature range -55 to +125°C
analogue temperature compensated (VC)TCXO

Generic specification

Frequency range	**8.000 ~ 52.000 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	< 1.8 ppb/g	per axis	
Frequency tolerance ex. factory	≤ ±1.0 ppm	@ +25 °C	
Supply voltage	+2.8 V, +3.0 V or +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	1.5 ~ 7 mA	2 ~ 10 mA	
Electronic Frequency Control (EFC)	ΔF = ±5 to ±8 ppm	positive slope	(∗)
Control voltage (Vc)	+1.50 V ±1.0 V		(∗)
EFC input impedance	> 100 kΩ		
Start-up time	< 2 ms		
Phase noise (typical value for 40 MHz)	-85 dBc/Hz @ 10 Hz -112 dBc/Hz @ 100 Hz -134 dBc/Hz @ 1 kHz -145 dBc/Hz @ 10 kHz -149 dBc/Hz @ 100 kHz -149 dBc/Hz @ 1 MHz		
Operating temperature range	-55 ~ +125 °C		(∗)
Storage temperature range	-55 ~ +125 °C		
Reflow Profiles as per IPC/JEDEC J-STD-020C	≤ 260 °C over 10 sec. Max.		
Moisture sensitivity	Level 1 (unlimited)		

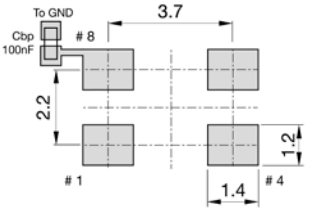
(∗) See available options on page #2 **Note: Unless otherwise specified conditions are @+25 °C**

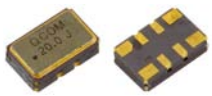


Pin function

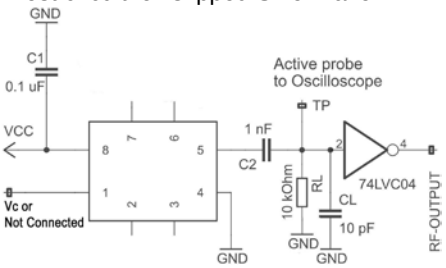
# 1	Vc (EFC) for VC-TCXO **Do not connect for TCXO**
# 2	Do not connect
# 3	Do not connect
# 4	GND
# 5	OUTPUT
# 6	Do not connect
# 7	Do not connect
# 8	Vcc

Soldering pattern

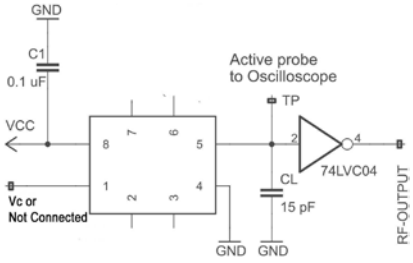




Test circuit for Clipped Sine Wave



Test circuit for CMOS



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From design to production
in Switzerland

VTX5E

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Generic specification

Ordering code

(0)5E-(1)(2)-(3)(4)-(5)(7)-40.000MHz *Example:* ***VT5E-C33-NNu50-V05-40.000MHz***

(0) Oscillator type	**(1) Output signal**	**(2) Supply voltage**	**(3) Operating temperature**
TX = TCXO VT = VC-TCXO	H = CMOS C= Clipped sine wave	28 = 2.8 V 30 = 3.0 V 33 = 3.3 V	JK = -20 to +70 °C NN = -40 to +85 °C QN = -55 to +85 °C NR = -40 to +105 °C QV = -55 to +125 °C
(4) Frequency stability	**(5) Pulling range** (VT only)		
u25 = ± 0.25 ppm u50 = ± 0.50 ppm 1u0 = ± 1.00 ppm 1u5 = ± 1.50 ppm	V05 = 1.5 ± 1.0 V ±5 ppm V08 = 1.5 ± 1.0 V ±8 ppm Z = special spec		

Frequency stability vs. temperature

ppm	≤± 0.25	≤± 0.28	≤± 0.50	≤± 1.00	≤± 1.50
-20 to +70 °C	Δ	O	O	O	O
-40 to +85 °C	Δ	Δ	O	O	O
-40 to +95 °C	X	Δ	Δ	Δ	O
-40 to +105 °C	X	Δ	Δ	Δ	O
-55 to +85 °C	X	X	Δ	Δ	O
-60 to +125 °C	X	X	Δ	Δ	O

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

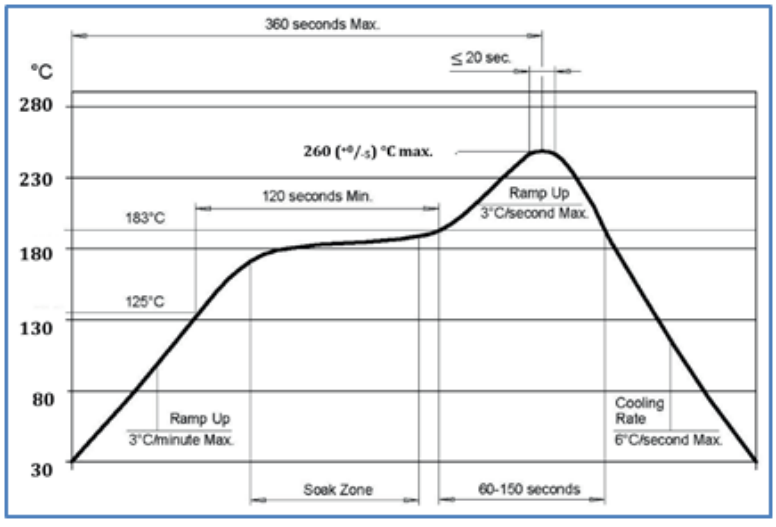
Excessive mechanical shocks and or vibrations during handling as well as manual and automatic assembly must be avoided.
If accidently, the component was dropped or subject to strong shock, component should be verified that the electrical function is still within the specification and still hermetically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