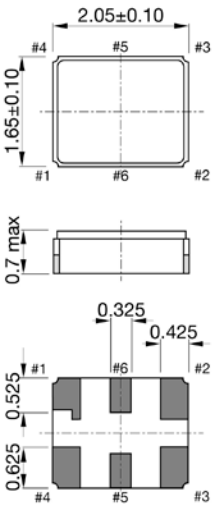
VTX20

Miniature size, high reliable
analogue temperature compensated CSW (VC)TCXO

Frequency range	**10.000 ~ 52.000 MHz**		
Standard frequencies	16.369 19.2, 20, 26 and 38.4 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	< 1.8 ppb/g	per axis	
Frequency tolerance ex. factory	≤ ±1.0 ppm	@ +25 °C	
Supply voltage	+1.8 V, +2.5V to +3.3 V		(*)
Current consumption, depending on frequency	1.5 ~ 4 mA		
Output signal	Clipped sine wave		
Output level	> 0.8 Vp-p		
Output load	10 kΩ // 10 pF		
Electronic Frequency Control (EFC)	ΔF ≥ ±5 ppm	positive slope	(*)
Control voltage (Vc)	+0.9 ±0.6 V for 1.8 V +1.5 ±1.0 V for 3.3 V	+1.4 ±1.0 V for 2.5 V	(*)
EFC input impedance	> 100 kΩ		
Phase noise (typical value for 19.2 MHz)	-115 dBc/Hz -135 dBc/Hz -148 dBc/Hz -152 dBc/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)		

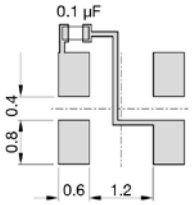
(*) See available options on page #2 **Note: Unless otherwise specified conditions are @+25 °C**



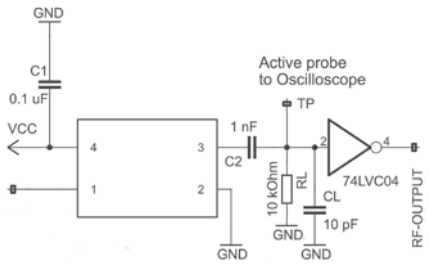
Pin function

# 1	Vc (EFC) for VC-TCXO GND for TCXO
# 2	GND
# 3	Output
# 4	+ Vcc
# 5	Do not connect
# 6	Do not connect

Soldering pattern



Test circuit



2011/65/EU RoHS compliant

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Designed in Switzerland

VTX20

Miniature size, high reliable
analogue temperature compensated CSW (VC)TCXO

Ordering code

(0)20-C(2)-(3)(4)-(5)-20.000MHz *Example:* ***TX20-33-LN1u0-20.000MHz***

(0) Oscillator type

TX = TCXO
VT = VC-TCXO

(2) Supply voltage

18 = 1.8 V
25 = 2.5 V
28 = 2.8 V
30 = 3.0 V
33 = 3.3 V

(3) Operating temperature

JK = -20 to +70 °C
LN = -30 to +85 °C
NN = -40 to +85 °C

(4) Frequency stability

u50 = ± 0.50 ppm
1u0 = ± 1.00 ppm
1u5 = ± 1.50 ppm
2u0 = ± 2.00 ppm
2u5 = ± 2.50 ppm

(5) Pulling range
(VT only)

Vcc = 1.8 V
S05 = 0.9 ± 0.6 V ±5 ppm
S08 = 0.9 ± 0.6 V ±8 ppm

Vcc = 2.5 V
U05 = 1.4 ± 1.0 V ±5 ppm
U08 = 1.4 ± 1.0 V ±8 ppm

Vcc = 2.8, 3.0, 3.3 V
V05 = 1.5 ± 1.0 V ±5 ppm
V08 = 1.5 ± 1.0 V ±8 ppm

Z = special spec

Frequency stability vs. temperature

ppm	≤± 0.50	≤± 1.00	≤± 1.50	≤± 2.00	≤± 2.50
-20 to +70 °C	O	O	O	O	O
-30 to +85 °C	Δ	O	O	O	O
-40 to +85 °C	Δ	Δ	O	O	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
Solder ability 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	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	201A 204D	516.4-4	3.6.38.1 3.6.38.2	Test Fc, 30 min per axis, 1 oct/min 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

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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

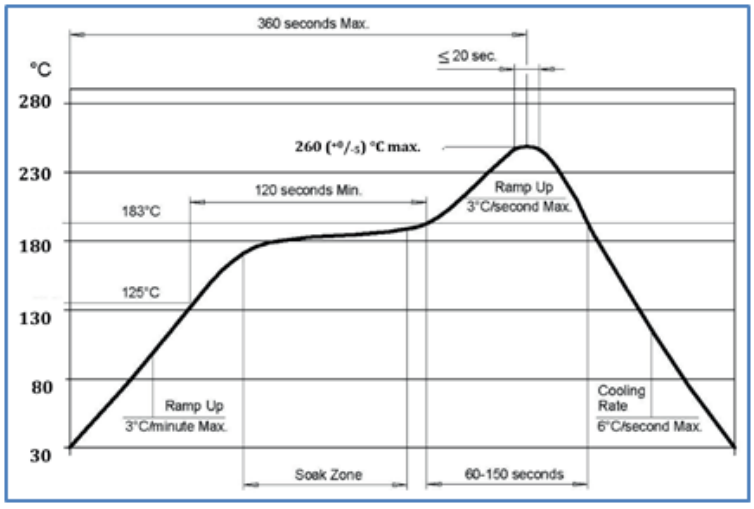
Excessive mechanical shocks and or vibrations during handling as well as manual and automatic assembly must be avoided.
If accidently, the component was dropped or subject to strong shock, component should be verified that the electrical function is still within the specification and still hermetically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