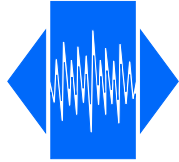


VTX 5SH

Ultra high precision, high reliable,
Temperature compensated (VC)TCXO

QuartzCom
the communications company

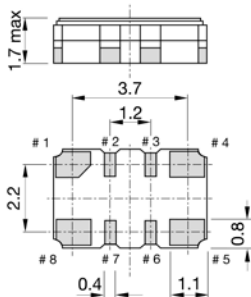
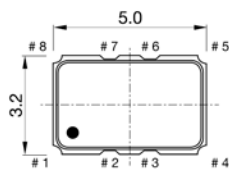


Preliminary specification

Frequency range	5.000 ~ 100.000 MHz		
Standard frequencies (fundamental)	5, 10, 12, 12.8, 13, 14.4, 16, 16.384, 19.2, 19.44, 20, 24, 25, 26, 32, 32.768, 38.88, 40, 50, 60, 70, 80 and 100 MHz		
Frequency stability:			
vs. temperature referenced to $(F_{MAX}+F_{MIN})/2$	$\leq \pm 0.20$ ppm	over -40 to +105 °C	(*)
vs. supply voltage changes referenced to frequency at nominal supply	$\leq \pm 0.1$ ppm	± 5 %	
vs. load changes referenced to frequency at nominal load	$\leq \pm 0.1$ ppm	± 5 %	
vs. aging @ +40 °C	$\leq \pm 1.0$ ppm	1st year	
G-sensitivity	2.0 ppb/g	per axis	
Frequency tolerance ex. factory @ +25 °C	0 ~ +1.0 ppm	@ +25 °C	
Supply voltage (nominal value ± 5 %)	+2.5 V, +2.8 V or +3.3 V		(*)
Output signal	Clipped sine wave	(LV)CMOS	(*)
Output level	> 0.8 Vp-p	$V_{OH} > 0.9 \cdot V_{CC}$ / $V_{OL} < 0.1 \cdot V_{CC}$	
Output load	10 k Ω // 10 pF	5 to 15 pF Max.	
Current consumption, depending on frequency	1.5 ~ 7 mA	2 ~ 10 mA	
Electronic Frequency Control (EFC)	$\Delta F = \pm 5$ to ± 10 ppm	positive slope	(*)
Control voltage (Vc)	+1.25 V ± 1.0 V for 2.5 V	+1.50 V ± 1.0 V for 3.3 V	(*)
EFC input impedance	> 100 k Ω		
Tri-state function	pin #6 \rightarrow high or open pin #6 \rightarrow low or GND	pin #5 \rightarrow oscillation pin #5 \rightarrow high impedance	
Phase noise (typical value for 40 MHz)	LN (Low phase noise)	Standard	Frequency offset
	-85 dBc/Hz -115 dBc/Hz -138 dBc/Hz -150 dBc/Hz -154 dBc/Hz	-83 dBc/Hz -110 dBc/Hz -135 dBc/Hz -148 dBc/Hz -152 dBc/Hz	@ 10 Hz @ 100 Hz @ 1 kHz @ 10 kHz @ 100 kHz
Operating temperature range	-40 ~ +105 °C		(*)
Storage temperature range	-55 ~ +110 °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

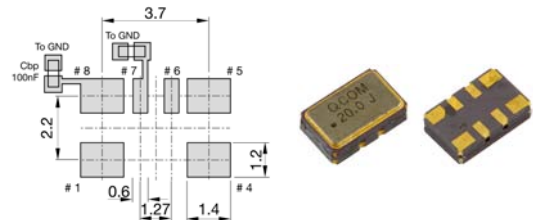
Note: Unless otherwise specified conditions are @+25 °C



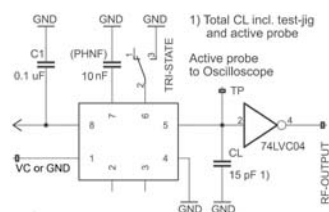
Pin function

- # 1 Vc (EFC) for VC-TCXO
GND or NC for TCXO
- # 2 NC or GND
- # 3 NC or GND
- # 4 GND
- # 5 OUTPUT
- # 6 Tri-state or do not connect
- # 7 LN: 10 nF to the GND
Standard: NC
- # 8 Vcc

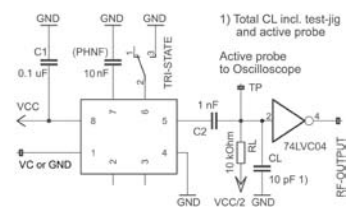
Soldering pattern



Test circuit for CMOS



Test circuit for Clipped Sine Wave



2011/65/EU RoHS compliant

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Preliminary specification

Ordering code

(0)5SH-(1)(2)-(3)(4)-(5)(7)-32.000MHz Example: **VT5SH-C27-NRu15-T05LN-32.000MHz**

(0) Oscillator type	(1) Output signal	(2) Supply voltage	(7) Phase noise option
TX = TCXO VT = VC-TCXO	H = (LV)CMOS C= Clipped sine wave	25 = 2.5 V 28 = 2.8 V 30 = 3.0 V 33 = 3.3 V	LN = Low phase noise (-) = Standard
(3) Operating temperature	(4) Frequency stability	(5) Pulling range (VT only)	
JK = -20 to +70 °C NN = -40 to +85 °C NP = -40 to +95 °C NR = -40 to +105 °C QN = -55 to +85 °C	u10 = ± 0.10 ppm u15 = ± 0.15 ppm u20 = ± 0.20 ppm u25 = ± 0.25 ppm u50 = ± 0.50 ppm 1u0 = ± 1.00 ppm	T05 = 1.25 ± 1.0 V ±5 ppm T10 = 1.25 ± 1.0 V ±8 ppm V05 = 1.5 ± 1.0 V ±5 ppm V10 = 1.5 ± 1.0 V ±10 ppm Z = special spec	

Frequency stability vs. temperature

ppm	≤± 0.05	≤± 0.10	≤± 0.20	≤± 0.25	≤± 0.50	≤± 1.00
-20 to +70 °C	Δ	O	O	O	O	O
-40 to +85 °C	Δ	O	O	O	O	O
-40 to +95 °C	X	X	Δ	Δ	Δ	O
-40 to +105 °C	X	Δ	Δ	Δ	Δ	Δ
-55 to +85 °C	X	X	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, 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

2011/65/EU RoHS compliant

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