VTX 5SH

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

QuartzCom
the communications company

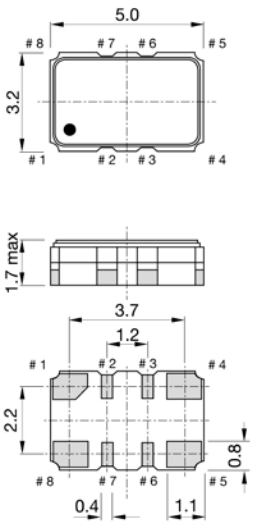
Preliminary specification

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	≤ ±0.20 ppm	over -40 to +105 °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 @ +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∗Vcc / V_{OL} < 0.1∗Vcc	
Output load	10 kΩ // 10 pF	5 to 15 pF Max.	
Current consumption, depending on frequency	1.5 ~ 7 mA	2 ~ 10 mA	
Electronic Frequency Control (EFC)	ΔF = ±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 kΩ		
Tri-state function	pin #6 ➔ high or open pin #6 ➔ low or GND	pin #5 ➔ oscillation pin #5 ➔ high impedance	

Phase noise (typical value for 40 MHz)	LN (Low phase noise)	Standard	Frequency offset
	-85 dBc/Hz	-83 dBc/Hz	@ 10 Hz
	-115 dBc/Hz	-110 dBc/Hz	@ 100 Hz
	-138 dBc/Hz	-135 dBc/Hz	@ 1 kHz
	-150 dBc/Hz	-148 dBc/Hz	@ 10 kHz
	-154 dBc/Hz	-152 dBc/Hz	@ 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)

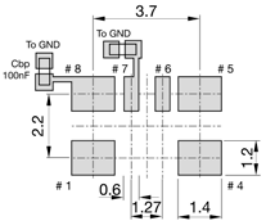
(∗) See available options on page #2 **Note: Unless otherwise specified conditions are @+25 °C**

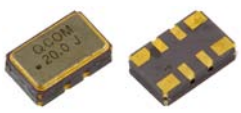


Pin function

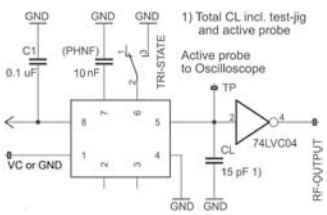
# 1	Vc (EFC) for VC-TCXO GND or NC for TCXO
# 2	NC or GND
# 3	NC or GND
# 4	GND
# 5	OUTPUT
# 6	Tri-state or do not connect
# 7	LN: 10 nF to the GND Standard: NC
# 8	Vcc

Soldering pattern

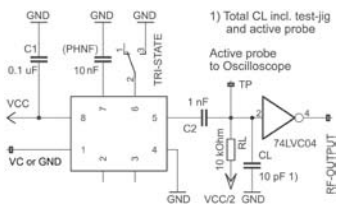




Test circuit for CMOS



Test circuit for Clipped Sine Wave



2011/65/EU RoHS compliant

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From design to production in Switzerland

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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	U05 = ± 0.05 ppm 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_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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From design to production in Switzerland