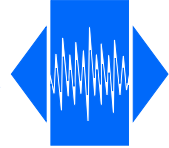


# VTX 14F-LG

Low G-sensitivity, vibration and shock resistant  
Ultra-low noise floor, low jitter (VC)TCXO

**QuartzCom**  
the communications company

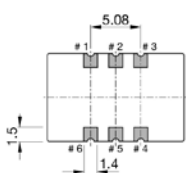
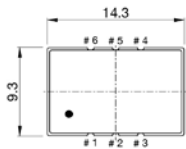


**Application: 5G Repeaters, Link and micro cells, Low noise microwave**

<b>Frequency range</b>	<b>10.000 to 160.000 MHz</b>		
<b>Standard frequencies (fundamental)</b>	<b>10, 20, 25, 27, 40, 50, 70, 80, 100, 155.52 MHz</b>		
Frequency stability:			
vs. temperature referenced to $(F_{MAX}+F_{MIN})/2$	$\leq \pm 1.00$ ppm	over -40 to +85 °C	(*)
vs. supply voltage changes referenced to frequency at nominal supply	$\leq \pm 0.05$ ppm	$\pm 5$ %	
vs. load changes referenced to frequency at nominal load	$\leq \pm 0.05$ ppm	$\pm 10$ %	
vs. aging @ +40 °C	$\leq \pm 1.0$ ppm	1 <sup>st</sup> year	
G-sensitivity	0.25 ppb/g	per axis	(*)
Short term stability ADEV	$< 1 \cdot 10^{-10}$	$\tau = 1.0$ s	
Frequency tolerance ex factory	0 ~ +1.0 ppm	@ +25 °C	
Supply voltage	+3.3 V or 5.0 V		(*)
Current consumption	< 25 mA		
Output signal	Sine wave	(LV)HCMOS (45/55%)	(*)
Output level	+3 to +6 dBm	$V_{OH} > 0.9 \cdot V_{CC}$ / $V_{OL} < 0.1 \cdot V_{CC}$	
Output load	50 $\Omega$	15 pF max.	
Electronic Frequency Control (EFC)	$\Delta F = \pm 5$ to $\pm 10$ ppm	positive slope	(*)
Control voltage (Vc)	+1.50 V $\pm 1.0$ V for 3.3 V	+2.50 V $\pm 2.0$ V for 5.0 V	(*)
EFC input impedance	> 100 k $\Omega$		
Phase noise (typical value for 100 MHz )	< -75 dBc/Hz < -100 dBc/Hz < -125 dBc/Hz < -155 dBc/Hz < -170 dBc/Hz	@ 10 Hz @ 100 Hz @ 1 kHz @ 10 kHz @ 100 kHz	
RMS phase jitter	20 fs (typ.)	12 kHz ~ 20 MHz	
Sub-harmonics	No		
Operating temperature range	-40 ~ +85 °C		(*)
Reflow profiles as per IPC/JEDEC J-STD-020C	$\leq 245$ °C over 10 s max.		

(\*) See available options on page #2

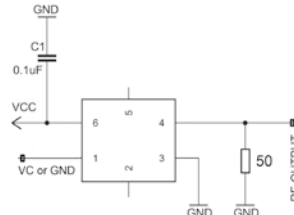
Note: Unless otherwise specified conditions are @+25 °C



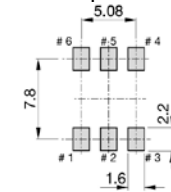
### Pin function

- # 1 Vc (EFC) for VC-TCXO  
GND or NC for TCXO
- # 2 NC or GND
- # 3 GND
- # 4 RF output
- # 5 NC or GND
- # 6 Vcc

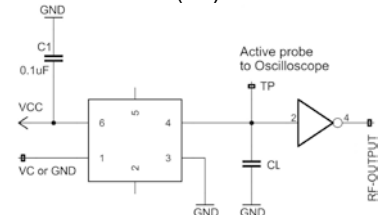
### Test circuit for Sine wave



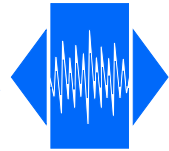
### Solder pattern



### Test circuit for (LV)HCMOS



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**Application:** 5G Repeaters, Link and micro cells, Low noise microwave

## Ordering code

**(0)14F-(1)(2)-(3)(4)-(5)(6)-100.000MHz** Example: **VT14F-S33-NNu50-GC-100.000MHz**

<b>(0) Oscillator type</b> TX = TCXO VT = VC-TCXO	<b>(1) Output signal</b> H = (LV)HCMOS S = Sine wave	<b>(2) Supply voltage</b> 33 = 3.3 V 50 = 5.0 V	<b>(5) Pulling range</b> (VT only) V05 = 1.5 ± 1.0 V ±5 ppm V10 = 1.5 ± 1.0 V ±10 ppm
<b>(3) Operating temperature</b> 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	<b>(4) Frequency stability</b> u25 = ± 0.25 ppm u50 = ± 0.50 ppm 1u0 = ± 1.00 ppm 1u5 = ± 1.50 ppm 2u0 = ± 2.00 ppm	<b>(6) G-sensitivity per axis</b> GA = 0.10 ppb/g GB = 0.25 ppb/g GC = 0.50 ppb/g GZ = special spec	X05 = 2.5 ± 2.0 V ±5 ppm X10 = 2.5 ± 2.0 V ±10 ppm  Z = special spec

### Frequency stability vs. temperature

ppm	≤± 0.25	≤± 0.50	≤± 1.00	≤± 1.50	≤± 2.00
-20 to +70 °C	O	O	O	O	O
-40 to +85 °C	O	O	O	O	O
-40 to +95 °C	Δ	Δ	Δ	Δ	O
-40 to +105 °C	Δ	Δ	Δ	Δ	Δ
-55 to +85 °C	X	X	Δ	Δ	Δ

Δ Ask factory
O Available
X Not available

### Absolute max. ratings

Supply voltage (Vcc)	6.0 V
Storage temperature range	-55 ~ +105 °C
Control voltage (Vc)	0 / Vcc

## G-Sensitivity performance

Noise shape vibration from 20-2'000 Hz  
with 0.1 g<sup>2</sup>/Hz (G<sub>RMS</sub> = 14.11g) for the axis

The table shows the averaged values of the G-Sensitivity in the range 20 Hz to 1000 Hz.  
At 1500 Hz appear resonances, which are caused by the mounting structure on the shaker.

TX14F-S33-NNu50-C-100 MHz				
Osc-#	X-axis	Y-axis	Z-axis	Gamma Γ
	[ppb/g]	[ppb/g]	[ppb/g]	[ppb/g]
#1	0.06	0.07	0.17	0.19
#2	0.06	0.05	0.08	0.12
#3	0.04	0.05	0.26	0.27
#4	0.05	0.08	0.08	0.12

### Definitions of vibration axes

