VFTX1413C

VCTCXO Low Noise, SMD, LVCMOS

Features

- Output Frequency 10 to 160 MHz
- Ultra low jitter and phase noise
- Excellent frequency stability, <0.280ppm
- Meets Wander generation TDEV/MTIE for ITU-T G.8262 EEC options 1 & 2

Dimensions: 14 x 13 x 3.2 mm

Applications

- SONET / SDH / ATM
- 10 Gigabit Ethernet
- Digital Wireless Reference

Description

The VFTX1413C is a low noise TCXO which provides an LVCMOS output frequency up to 160 MHz. The TCXO offers temperature stability of less than ±0.280 ppm over the industrial range, -40°C to +85°C. The VFTX1413C is available in a 14 mm x 13 mm surface mount package.

Ordering Options Table

Model	Stability	Frequency
VFTX1413C —	X —	XX.XXXMHz

Code	Stability
Blank	0.28 ppm
A	0.5 ppm
B	1.0 ppm

Standard Frequencies
38.400MHz
49.152MHz
98.304MHz
100.000MHz
125.000MHz
156.250MHz

* Custom frequencies are available. Consult factory.

Part Number Examples:

VFTX1413C-A-125.000MHz

VFTX1413C-98.304MHz

Electrical Specifications

Parameter	Symbol	Conditions & Remarks	Min	Typical	Max	Units
Frequency	F_{OUT}		10	-	160	MHz
Initial Accuracy		@25°C, V_C = +1.5V	-	-	±1	ppm
Frequency Stability	ΔF/F	-40 to +85°C, V_C = +1.5V ±1V, (F_{max} - F_{min})/2	-	-	±0.280	ppm
		Vs. Supply voltage	-	±0.1	-	ppm/V
		Vs. Aging (first year)	-	±1.0	-	ppm
		Vs. Aging (10 years)	-	±3.0	-	ppm
Operating Temp Range	T_A		-40	-	+85	°C
Supply Voltage	V_{CC}		3.15	3.3	3.45	V
Input Current	I_{CC}		-	-	50	mA

Output Characteristics

Output waveform				LVCMOS		
Output Logic Levels	V_{OH} V_{OL}	Load = 10KΩ // 8pf	0.9 V_{CC} 0	- -	V_{CC} 0.4	V
Duty Cycle			45	-	55	%
Phase Jitter		12kHz to 20MHz (100.000 MHz)	-	30	-	fs
SSB Phase Noise (@ 100.000 MHz)		10Hz	-	-87	-	dBc/Hz
		100Hz	-	-118	-	
		1kHz	-	-141	-	
		10kHz	-	-160	-	
		100kHz	-	-171	-	
		1Mhz	-	-176	-	
Start-up time			-	2	3	sec

Electronic Frequency Control (EFC)

Control Voltage (V_C)	Total range	0	-	3.3	V
	Range to specified stability	0.5	1.5	2.5	V
APR		±5	-	-	ppm
Deviation slope	Positive, monotonic				
Linearity		-	-	10	%
Input Impedance	Z_{IN}	10	-	-	KΩ
Modulation BW	3 dB bandwidth	-	6	-	Hz

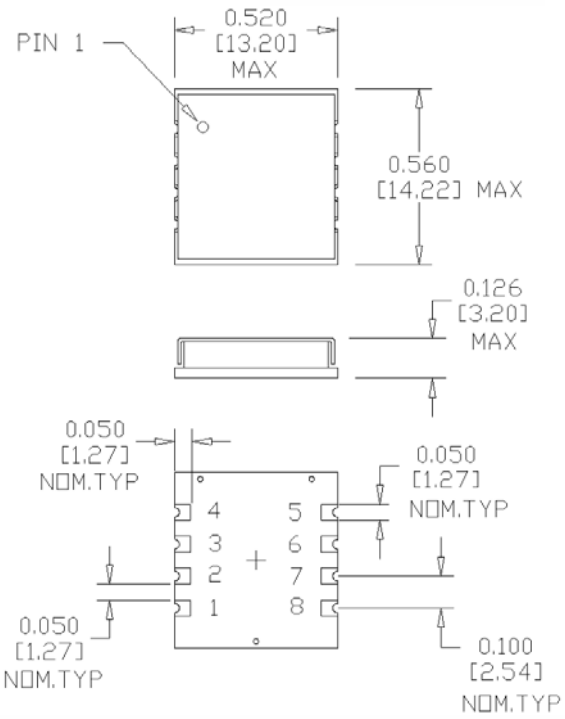
Absolute Maximum Ratings

Parameter	Symbol	Conditions & Remarks	Min	Typical	Max	Unit
Supply Breakdown Voltage	Vcc		-0.5	-	+4.6	V
Storage Temperature	Ts		-45	-	+90	°C
Control Voltage	V_C		-0.5	-	+4.0	V

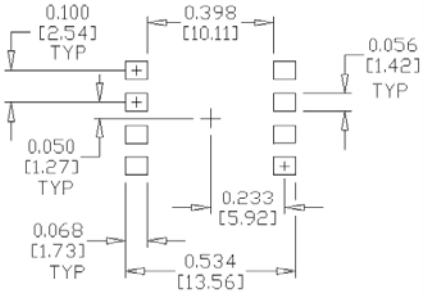
Mechanical and Environmental

Mechanical Shock	Per MIL-STD-202, Method 213, Condition E
Thermal Shock	Per MIL-STD-883, Method 1011, Condition A
Vibration	Per MIL-STD-883, Method 2007, Condition A
Soldering Conditions	260°C for 10s max
Hermetic Seal	Leak rate less than $5x10^{-8}$ atm.cc/s of helium (crystal only)
Termination	Gold flash
Marking	Laser engraved or epoxy ink

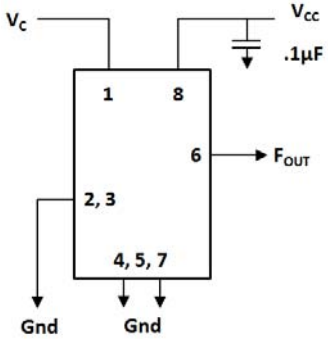
Mechanical Specifications



Recommended Land Pattern (Top view)



Connection Diagram



Pin Assignments

Pin #	Connection
1	V_C
2	Ground
3	Ground
4	Ground
5	Ground
6	F_{OUT}
7	Ground
8	V_{CC}

Product Marking

●

CTS
VFTX1413C-x
xxx.xxxMHz
(Date code)

This product is specified for use only in standard commercial applications. Supplier disclaims all express and implied warranties and liability in connection with any use of this product in any non-commercial applications or in any application that may expose the product to conditions that are outside of the tolerances provided in its specification.