

# VFOV514

## Low Power OCXO

### Features

- 8MHz to 150MHz frequency range
- Fast warm-up
- Very low power consumption
- Sinewave or HCMOS output
- Vibration resistant construction



Dimensions: 21.6 x 15.3 x 9.5 mm

### Description

The VFOV514 is a high stability, low power OCXO that utilizes Internal Heating Resonator (IHR) technology. The entire oven control system along with the SC resonator are housed inside of the TO-8 vacuum enclosure to reduce OCXO size, power consumption and warm-up time. Applications for this product include PLL reference for telecom systems, Portable equipment, Instrumentation/Test and Measurement, and Microwave communications.

Table 1 - Ordering Information

Model	Stability	Temp Range	Supply Voltage	Aging	Output	Voltage control	Package Type	Mech Shock	Frequency
VFOV514	28	D	E	C	H	N	I		xxxMxxx

Code	Stability
17	±1x10 <sup>-7</sup>
58	±5x10 <sup>-8</sup>
38	±3x10 <sup>-8</sup>
28	±2x10 <sup>-8</sup>
18	±1x10 <sup>-8</sup>
59	±5x10 <sup>-9</sup>
39	±3x10 <sup>-9</sup>
19	±1x10 <sup>-9</sup>

Code	Supply
D	5V ± 5%
E	3.3V ± 5%

Code	Temp Range
A	0 to 50°C
B	0 to 70°C
C	-10 to 60°C
D	-20 to 70°C
E	-30 to 70°C
G	-40 to 85°C

Code	Output
H	HCMOS
S	Sinewave

Code	Per day	Per year	Frequency
A	5ppb	0.5ppm	≤150MHz
F	3ppb	0.3ppm	≤120MHz
B	2ppb	0.2ppm	≤120MHz
I	1.5ppb	0.15ppm	≤50MHz
C	1ppb	0.1ppm	≤40MHz
D	0.5ppb	0.05ppm	≤20MHz
L	0.3ppb	0.03ppm	≤10MHz
G	0.2ppb	0.02ppm	≤10MHz

Code	Spec.
blank	EFC (std)
N	No EFC

Code	Pkg
T	Thru hole
S	SMD

Code	Shock Level
blank	30G (std)
5	500G

Table 2 - Available Frequency Stabilities vs. Operating Temperature

Code	Temperature Range	Stability							
		17	58	38	28	18	59	39	19
		±1x10 <sup>-7</sup>	±5x10 <sup>-8</sup>	±3x10 <sup>-8</sup>	±2x10 <sup>-8</sup>	±1x10 <sup>-8</sup>	±5x10 <sup>-9</sup>	±3x10 <sup>-9</sup>	±1x10 <sup>-9</sup>
A	0 to 50°C	*	*	*	*	D	C	C	B
B	0 to 70°C	*	*	*	*	C	B	B	A
C	-10 to 60°C	*	*	*	*	C	B	B	A
D	-20 to 70°C	*	*	D	D	C	A	B	
E	-30 to 70°C	*	*	D	D	C	A	B	
G	-40 to 85°C	*	*	D	D	B	A	A	

### Stability Legend

- \* = Available for all frequencies
- A = ≤10 MHz
- B = ≤30 MHz
- C = ≤50 MHz
- D = ≤100 MHz

Deviations of parameters from those indicated are available to meet specific customer requirements. Consult factory.

Part Number Example: **VFOV514-28DECHNT-10M000**

## Electrical Specifications

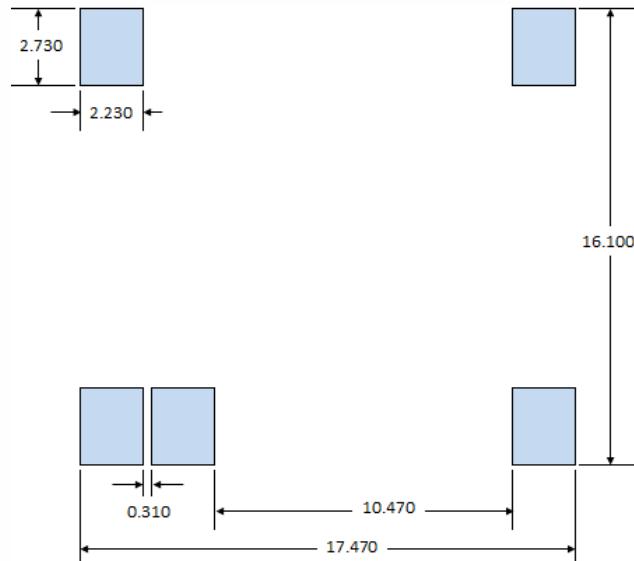
Parameter	Conditions & Remarks	Min	Typical	Max	Unit	
<b>Operating Conditions</b>						
Operating Temperature Range	See Table 1	-40	-	+85	°C	
Supply Voltage	V <sub>CC</sub>	4.75 3.15	5 3.3	5.25 3.45	Vdc	
Power Consumption	During warm up Steady state @ 25°C	- -	- 150	1200 -	mW	
<b>Frequency Stability</b>						
Frequency Range	F <sub>NOM</sub>	8	-	150	MHz	
Frequency Calibration	Voltage Control option 'N' only	-	±200	-	ppb	
Temperature Stability	See Table 2 for options	-	±5	-	ppb	
Voltage Stability	V <sub>CC</sub> ±5%	-	±2	-	ppb	
Aging (After 30 days)	See Table 1 for options	Per day Per year	- -	±0.5 ±0.05	ppb ppm	
Allan Deviation	1s	-	0.02	-	ppb	
Retrace	After 30 minutes	-	-	±20	ppb	
G-Sensitivity (Note 1)	Worst axis (0 ~ 1kHz)	-	1*	-	ppb/g	
Warmup-Up Time	T <sub>A</sub> =25°C; to within 0.1 ppm accuracy of freq. @ 15 min	-	60	-	seconds	
<b>Output Parameters</b>						
HCMOS/TTL (order code H)	Load	≤50 MHz	10kOhms / 15 pF			
		≤80 MHz	10kOhms / 10 pF			
		≤150 MHz	10kOhms / 5 pF			
	V <sub>H</sub>	V <sub>CC</sub> = 5.0V V <sub>CC</sub> = 3.3V	3.8 2.4	- -	- -	V
V <sub>L</sub>		-	-	0.4	V	
Rise / Fall Times	@ 10MHz/100MHz	-	-	10/3	ns	
Duty Cycle		45		55	%	
Sinewave Output (order code S)		V <sub>CC</sub> = 5.0V V <sub>CC</sub> = 3.3V	+7 +4	- -	- -	dBm
	R <sub>L</sub>		-	50	-	Ω
Harmonics		-	-	-25	dBc	
Sub-harmonics			None			
Phase Noise (Note 2)	Offset		10 MHz (typ)	100 MHz (typ)		
	1 Hz		-90	-		
	10 Hz		-120	-90		
	100 Hz		-145	-120	dBc/Hz	
	1 kHz		-155	-145		
	10 kHz		-165	-165		
100 kHz		-165	-165			

Note 1. Lower G-sensitivity performance is available. Consult factory.

Note 2. For additional phase noise options, consult factory.



### Recommended SMD Solder Pad Geometry



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.