

# VFOV302

## OCXO – Stratum 2 Compliant

### Features

- Standard frequencies to 100MHz
- To  $\pm 0.1$  ppb frequency stability vs. temperature
- Low jitter and phase noise
- Sinewave or HCMOS output



Dimensions: 35.4 x 26.7 x 16.25

### Description

The VFOV302 is a high stability oven controlled crystal oscillator in a 35 x 27 mm industry standard package. This oscillator offers temperature stabilities to 0.1 ppb and aging rates down to 0.2 ppb/day. Applications for this product include Reference for telecom systems, Rubidium standard replacement, and Stratum 2 clocking.

### Ordering Information

Model	Stability	Temp Range	Supply Voltage	Voltage Control (EFC)	Aging	Output	Frequency
VFOV302	-	1	B	D	V	C	H - 10.000MHz

Code	Specification
3	$\pm 3 \times 10^{-10}$
2	$\pm 1 \times 10^{-10}$
1	$\pm 2 \times 10^{-10}$
Z	$\pm 5 \times 10^{-10}$
Y	$\pm 1 \times 10^{-9}$

Code	Specification
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	Spec.
V	VCXO
T	No tuning

Code	Spec.
H	HCMOS
S	Sinewave

Code	Specification
D	5V $\pm$ 5%
E	12V $\pm$ 5%

Code	Per day	Per year
C	1ppb	0.1ppm
D	0.5ppb	50ppb
G	0.2ppb	30ppb

### Available Frequency Stabilities over Operating Temperature Ranges

Code	Temperature Range	Stability				
		Y	Z	3	1	2
		$\pm 1 \times 10^{-9}$	$\pm 5 \times 10^{-10}$	$\pm 3 \times 10^{-10}$	$\pm 2 \times 10^{-10}$	$\pm 1 \times 10^{-10}$
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	*	*	*	*	*

### Part Number Example:

VFOV302-1BDVCH-10.000MHz



## Electrical Specifications

Parameter	Conditions & Remarks	Min	Typical	Max	Unit
<b>Operating Conditions</b>					
Operating Temperature Range	See "Ordering Information" table	-40	-	+85	°C
Supply Voltage	$V_{CC}$	4.75 11.4	5.0 12.0	5.25 11.6	Vdc
Power Consumption	Steady state @ 25°C	-	1.25	1.6	W
	Steady state @ -30°C	-	2.0	2.4	
	Start-up @ -30°C	-	3.5	6.0	
<b>Frequency Stability</b>					
Frequency Range	$F_{NOM}$	8.0	10.0	100	MHz
Temperature Stability	Option A : 0°C to +50°C. See "Ordering Information" table.	-	-	±0.1	ppb
Voltage Stability	$V_{CC} \pm 5\%$	-	±0.2	-	ppb
Aging (After 30 days, 8-10MHz)	Per day	-	-	±0.2	ppb/day
	Per year	-	±0.3	±30	ppb/year
	20 years	-	-	±0.35	ppm
Retrace	After 30 minutes	-	-	±1.0	ppb
G-Sensitivity	Worst axis	-	-	1	ppb/g
Warmup-Up Time	$T_A=25^\circ\text{C}$ ; to within 0.01 ppm accuracy	-	3	5	minutes
Phase Noise (10MHz)	10Hz	-	-	-95	dBc/Hz
	100Hz	-	-	-120	
	1KHz	-	-	-140	
	10KHz	-	-	-155	
	100KHz	-	-	-165	
<b>Output Parameters</b>					
HCMOS (order code H)					
Levels	$V_H$	3.8	-	-	V
	$V_L$	-	-	0.4	V
Load (HCMOS)	10kΩ / 15pF				
Duty Cycle	45		55		%
Sinewave Output (order code S)					
Level	+6		+8	+10	dBm
Load (Sinewave)	$R_L$	-	50	-	Ω
Sub-harmonics	<30 MHz	-	None	-	dBc
	>30 MHz	-	-	-40	

## Electrical Specifications continued

### Electronic Frequency Control (option)

Control Voltage	$V_C$	0	-	4.2	V	
Pull Range		$\pm 0.35$	$\pm 0.4$	-	ppm	
Deviation Slope	Monotonic, positive	-	0.2	-	ppm/V	
Reference output	$V_{REF}$	@25°C, $F_{NOM}$	4.0	4.2	4.4	V

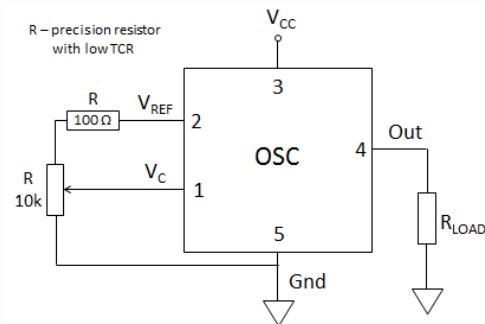
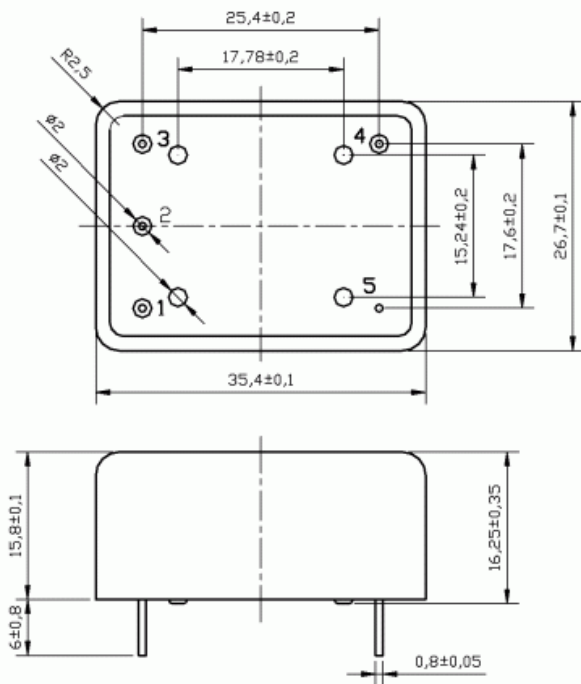
### Absolute Maximum Ratings

Supply Breakdown Voltage	$V_{CC}$	5V Model 12V Model	-0.5 -0.5	- -	+6.0 +15.0	V
Control Voltage	$V_C$		-1	-	6	V

### Mechanical and Environmental

Mechanical Shock	Per MIL-STD-202, 30g, half sine, 11 ms
Vibration	Per MIL-STD-202, 5g, swept sine 10 to 500Hz
Soldering Conditions	260°C for 10s
Storage Temperature	-60°C to +90°C
Marking	Epoxy ink or laser engraved

### Mechanical Specifications



Pin	Connection
1	$V_C$
2	$V_{REF}$
3	$V_{CC}$
4	Output
5	Ground

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.