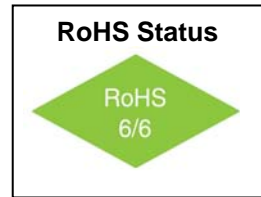


# VFOV400 Series OCXO - Ultra Miniature, Ultra Low Power HCMOS / SINEWAVE



## Features

- 5MHz to 250MHz Frequency Range
- Industry's smallest OCXO
- Fast Warm-up (30s typical)
- Eco-friendly < 120mW power consumption
- Sine Wave or HCMOS output
- Multiple package options
- Vibration resistant construction



## Applications

- PLL reference for Telecommunication Systems
- Portable ( battery operated ) devices
- Guidance Systems
- Instrumentation / Test and Measurement

Replaces Valpey Fisher Part Number(s): VFT14A, VFT14AS, VFT8S

## Electrical Specifications

Parameter	Symbol	Condition	Min	Typ	Max	Unit	Note
Frequency Range	F		5 5		250 50	MHz	VFOV404, VFOV406 VFOV405
Frequency Stability	$\Delta F/F$	Vs. Operating Temp. E: -30°C to +70°C		$\pm 50$		ppb	STD option shown. See "How to Order" Chart below
		Vs. Supply Voltage		$\pm 2$		ppb	Ref. Vcc typ.
		Vs. Aging / Day Vs. Aging / Year			0.5 $\pm 0.05$	ppb ppm	After 30 days. Enhanced option shown. See "How to Order" chart
Operating Temperature Range	T		-40°		+85°	°C	STD option shown. See "How to Order" chart
Allan Variance		1s		20e-12			
SSB Phase Noise		1Hz 10Hz 100Hz 1KHz 10KHz		-90 -125 -145 -155 -165		dBc/Hz	For 10MHz Oscillator  (For 100MHz see noise plot)
Retrace		After 30 min.			$\pm 20$	ppb	
G-sensitivity		worst direction			$\pm 1$	ppb/g	
Supply Voltage	Vcc		4.75 3.14	5.0 3.3	5.25 3.46	V	
Power Consumption	P	steady state, 25°C start-up		0.12 0.7	0.15 1.2	W	
Warm up time	$\tau$	to 0.1ppm accuracy from +25°C		30	60	sec	Note 1

\*Note 1: Warm up time is affected by input voltage, initial accuracy, frequency, aging and other conditions.



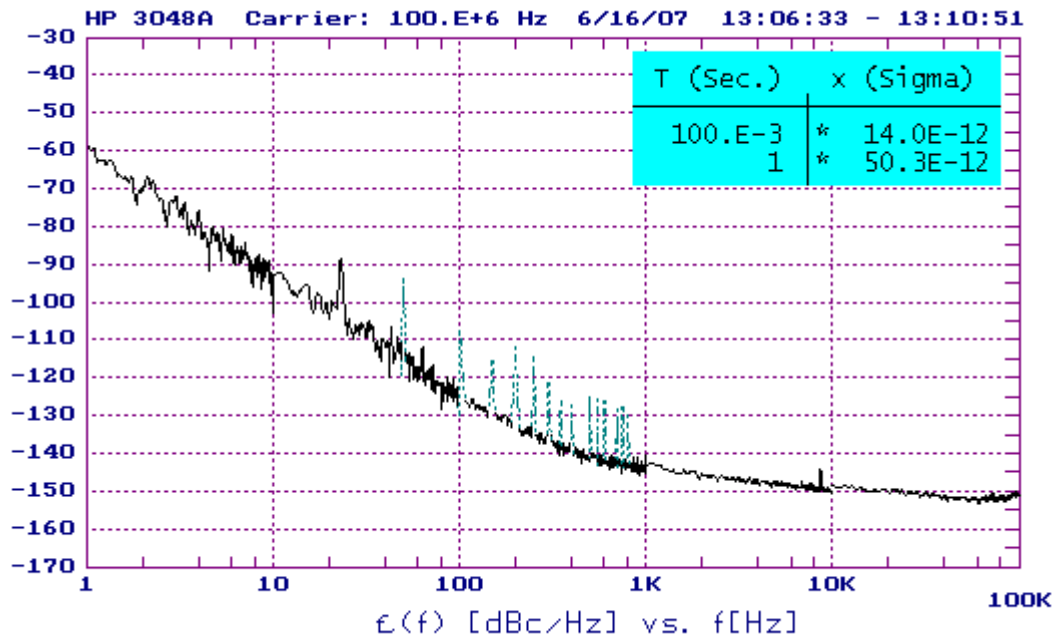
# VFOV400 Series OCXO - Ultra Miniature, Ultra Low Power HCMOS / SINEWAVE



## Electrical Specifications

Parameter	Symbol	Condition	Min	Typ	Max	Unit	Note
HCMOS / TTL Output Levels		HCMOS/TTL	10KOhm / 15pF				Order Code H
	V <sub>H</sub>	V <sub>cc</sub> = 5V V <sub>cc</sub> =3.3V	3.9 2.4			V	
	V <sub>L</sub>				0.4	V	
Rise / Fall time		At 10MHz			10	ns	
Duty Cycle			45		55	%	
Sine-Wave Output ( VFOV404 & VFOV406 only )		V <sub>cc</sub> =5V	+6	+8		dBm	Order Code S
		V <sub>cc</sub> =3.3V	+3	+5			
	RL			50		Ω	
Harmonics					-25	dBc	
Sub-Harmonics ( VFOV404 only )		Frequency >30MHz			-40	dBc	**Multiplied fundamental
Control Voltage	V <sub>c</sub>	V <sub>cc</sub> = 5 V <sub>cc</sub> =3.3V	0 0		4.3 2.8	V	
Pull Range		from nominal F	±0.5	±1		ppm	At 100MHz
Deviation slope		Monotonic, Positive		0.6 0.45		ppm/ V	V <sub>cc</sub> = 3.3V V <sub>cc</sub> = 5V
Reference output	V <sub>ref</sub>	V <sub>cc</sub> = 5 V <sub>cc</sub> =3.3V	4.05 2.70	4.20 2.80	4.35 2.90	V	

\*\* High frequency fundamental (up to 120MHz) available without sub-harmonics. Please refer to VFOV500.



# VFOV400 Series OCXO - Ultra Miniature, Ultra Low Power HCMOS / SINEWAVE



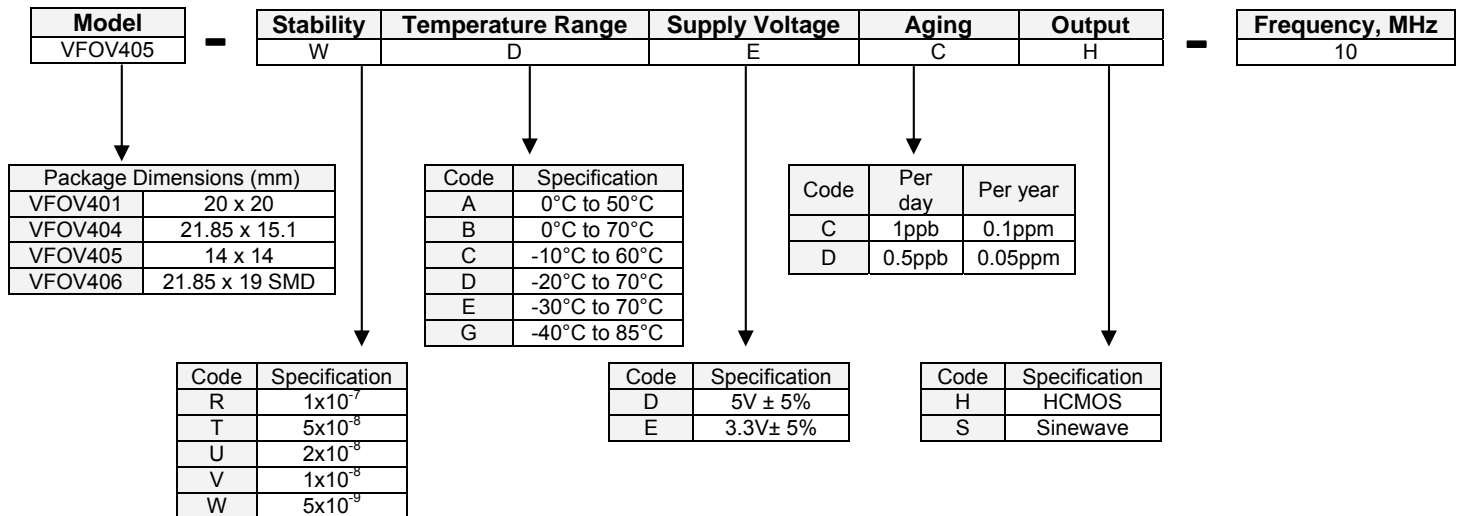
## Absolute Maximum Ratings

Parameter	Symbol	Condition	Min	Typ	Max	Unit	Note
Supply Break Down Voltage	Vcc		-0.5		Vcc+20%	V	
Control Voltage	Vc		-1		9	V	

## Environmental and Mechanical

Parameter	Specification
Storage Temperature	-60°C to +90°C
Humidity	Non-condensing, 95%
Mechanical Shock	Per MIL-STD-202, 30g, half sine, 11ms
Vibration	Per MIL-STD-202, 10g swept Sine to 2000Hz
Soldering Conditions	260°C for 10s

## How to Order



### Available Frequency Stabilities over Operating Temperature Ranges

Order Code	Temperature Range	Stability				
		1x10 <sup>-7</sup>	5x10 <sup>-8</sup>	2x10 <sup>-8</sup>	1x10 <sup>-8</sup>	5x10 <sup>-9</sup>
A	0°C to 50°C	*	*	*	*	◇
B	0°C to 70°C	*	*	*	◇	
C	-10°C to 60°C	*	*	*	*	◇
D	-20°C to 70°C	*	*	*		
E	-30°C to 70°C	*	*	*		
G	-40°C to 85°C	*	◇	◇		

◇ Only available below 30MHz




# VFOV400 Series OCXO - Ultra Miniature, Ultra Low Power HCMOS / SINEWAVE

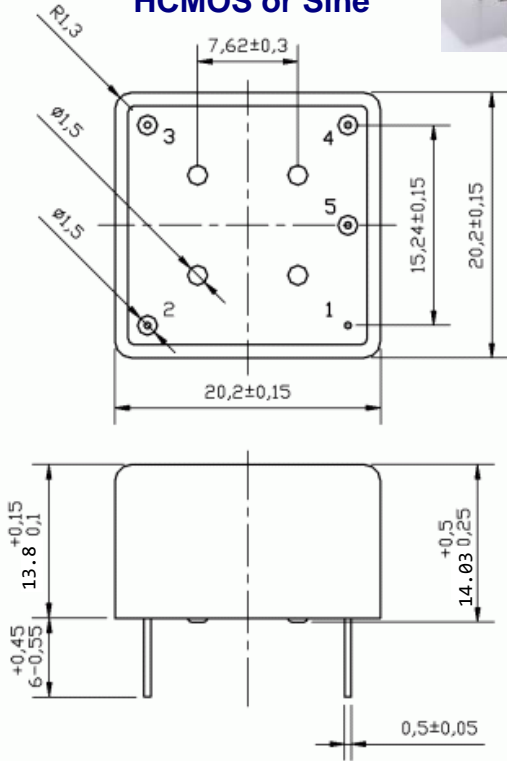


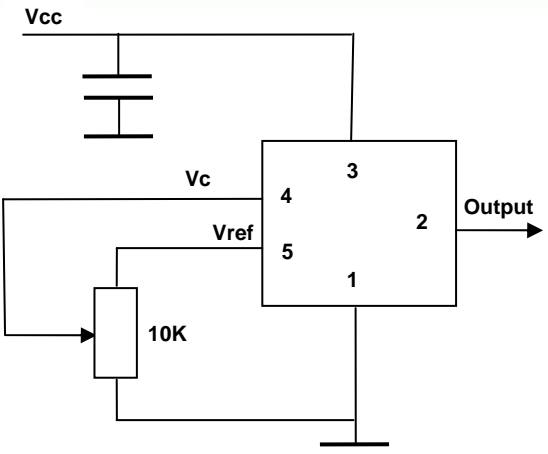
## Package Options

### VFOV401

Hermetically Sealed  
HCMOS or Sine






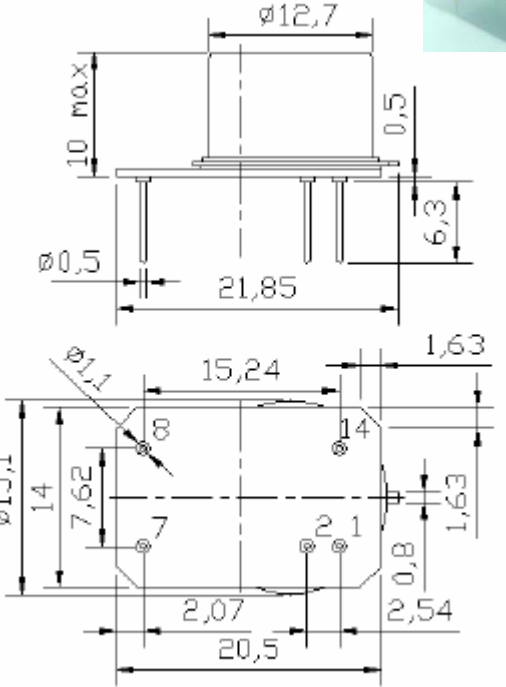


Pin #	Connection
1	Gnd, Case
2	Output
3	Vcc
4	Vc
5	Vref

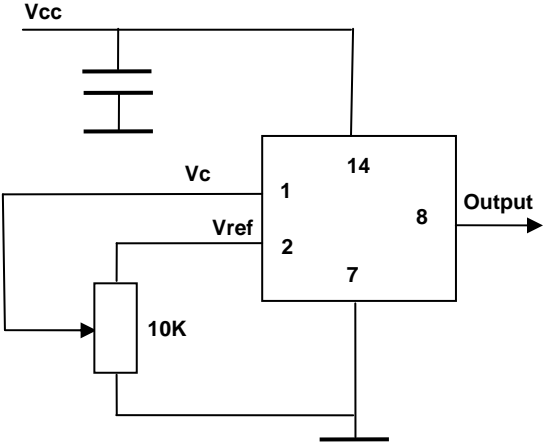
### VFOV404

HCMOS or Sine





All tolerances 0.1mm (0.004")



Pin	Connection
1	Vcontrol
2	Vref.
7	GND
8	Output
14	Vcc

# VFOV400 Series OCXO - Ultra Miniature, Ultra Low Power HCMOS / SINEWAVE



## Package Options

**VFOV405  
HCMOS only**

All tolerances 0.1mm (0.004")

Pin	Connection
1	Vcontrol
2	Vref.
4	GND
5	Output
8	Vcc

**VFOV406  
HCMOS or Sine**

All tolerances 0.1mm (0.004")

Pin	Connection
1	Vcontrol
2	Vref.
7	GND
8	Output
14	Vcc