

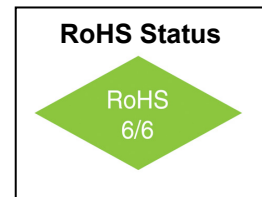
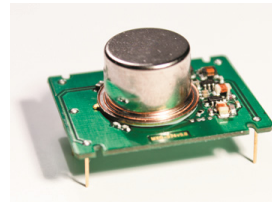
VFOV410

Ultra Low Power OCXO

Eurocase (CO-08)

Features

- Eurocase (CO-08) Industry Standard footprint
- 10MHz to 100MHz frequency range
- Fast Warm-up (60s typical)
- Eco-friendly < 120mW power consumption
- Sine Wave or HCMOS output
- Vibration resistant construction



Applications

- PLL reference for Telecommunication Systems
- Guidance Systems
- Instrumentation / Test and Measurement

Electrical Specifications

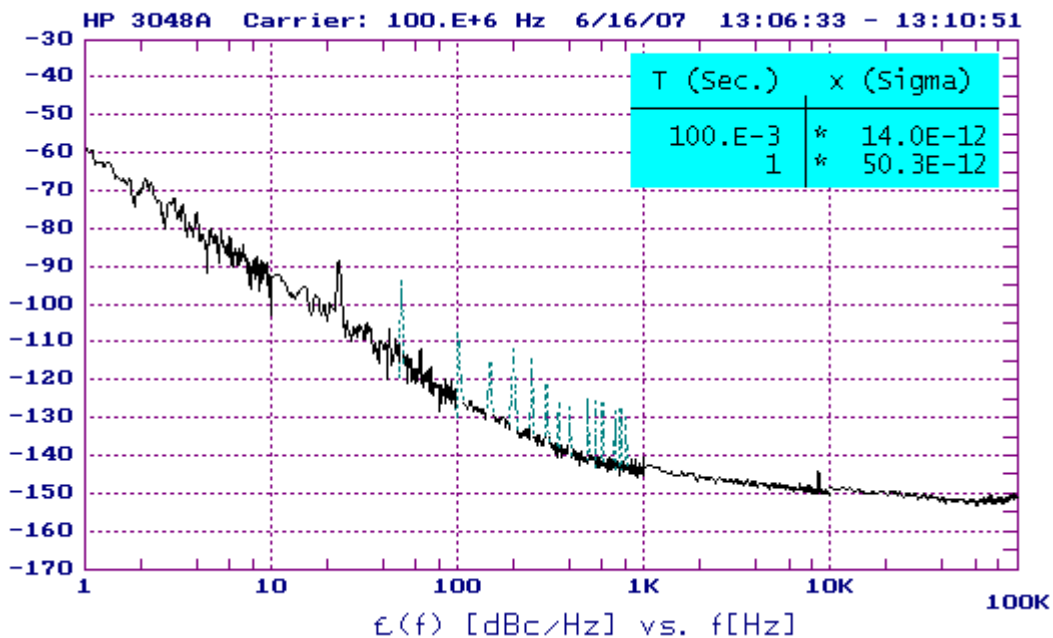
Parameter	Symbol	Condition	Min	Typ	Max	Unit	Note
Frequency Range	F		10		100	MHz	
Frequency Stability	$\Delta F/F$	Vs. Operating Temp. E: -30°C to +70°C		± 50		ppb	STD option shown. See "How to Order" chart below
		Vs. Supply Voltage		± 2		ppb	Ref. V_{CC} typ.
		Vs. Aging / Day Vs. Aging / Year			0.5 ± 0.05	ppb ppm	After 30 days. Enhanced option shown. See "How to Order" chart below
Operating Temperature Range	T		-40°		+85°	°C	STD option shown. See "How to Order" chart below
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 below)
Retrace		After 30 min.			± 20	ppb	
G-sensitivity		worst direction			± 1	ppb/g	
Supply Voltage	V_{CC}		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	τ	to 0.1ppm accuracy from +25°C		60		sec	Note 1

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

Electrical Specifications

Parameter	Symbol	Condition	Min	Typ	Max	Unit	Note
HCMOS / TTL Output Levels		HCMOS/TTL	10kOhms / 15pF				Order Code H
	V _H	V _{CC} = 5.0V V _{CC} = 3.3V	3.8 2.4			V	
	V _L				0.4	V	
Rise / Fall time		At 10MHz			10	ns	
Duty Cycle			45		55	%	
Sine-Wave Output		V _{CC} = 5.0V	+6	+8		dBm	Order Code S
		V _{CC} = 3.3V	+3	+5			
	RL			50		Ω	
Harmonics					-25	dBc	
Sub-Harmonics		Frequency >30MHz			-40	dBc	Multiplied fundamental
Control Voltage	V _C	V _{CC} = 5.0V V _{CC} = 3.3V	0 0		4.2 2.8	V	
Pull Range		from nominal F	±0.5	±1		ppm	
Deviation slope		V _{CC} = 5.0V V _{CC} = 3.3V		0.45 0.6		ppm/V	Monotonic, Positive
Reference output	V _{REF}	V _{CC} = 5.0V V _{CC} = 3.3V	4.05 2.70	4.20 2.80	4.35 2.90	V	

Phase Noise with 100 MHz Output



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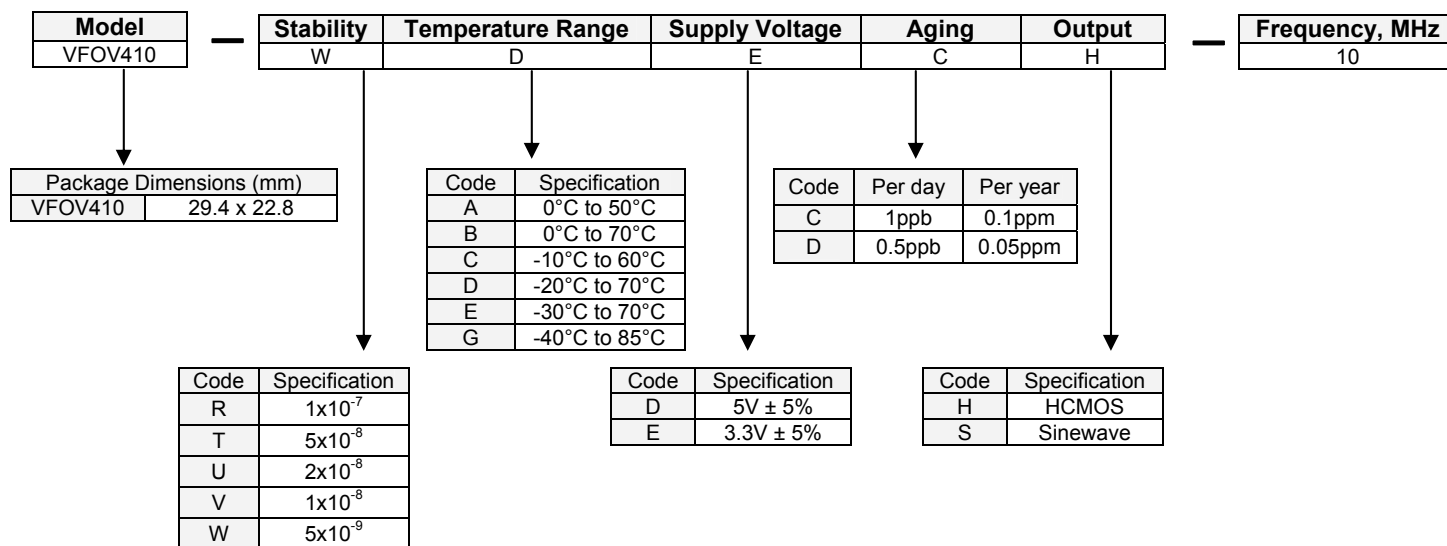
Absolute Maximum Ratings

Parameter	Symbol	Condition	Min	Typ	Max	Unit	Note
Supply Break Down Voltage	V _{CC}		-0.5		V _{CC} +20%	V	
Control Voltage	V _C		-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, 5g swept Sine to 2000Hz
Soldering Conditions	260°C for 10s

How to Order



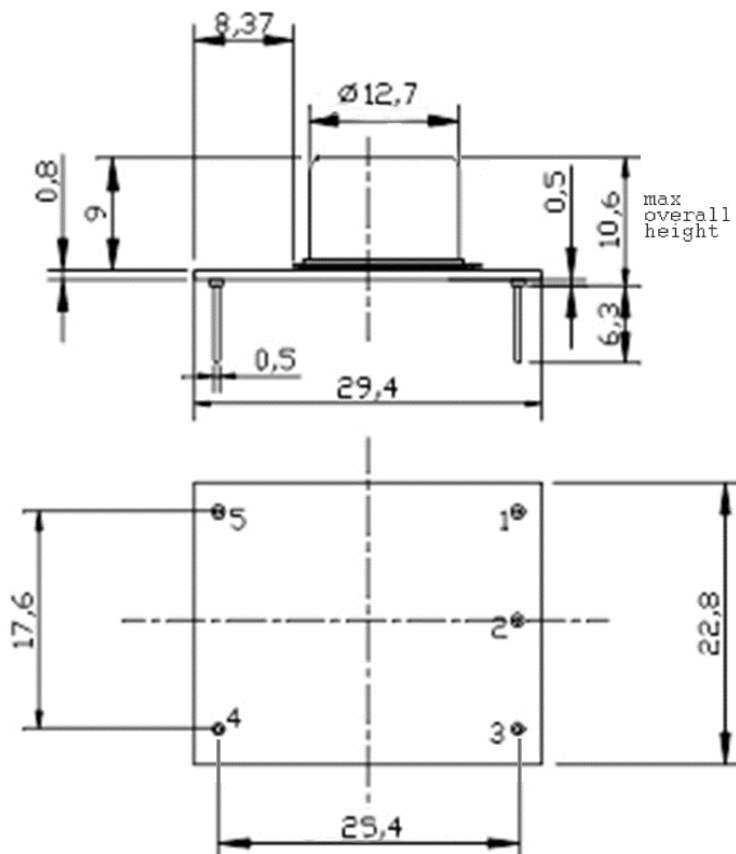
Available Frequency Stabilities over Operating Temperature Ranges

Order Code	Temperature Range	Stability				
		1x10 ⁻⁷	5x10 ⁻⁸	2x10 ⁻⁸	1x10 ⁻⁸	5x10 ⁻⁹
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	*	◇	◇		

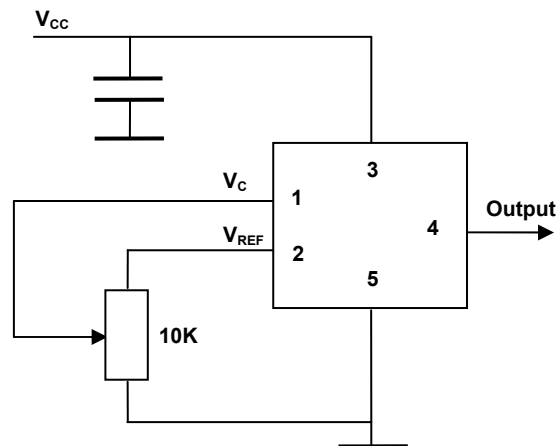
◇ Only available below 30MHz

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Package



All Dimensions in mm
 All tolerances 0.1mm (0.004")



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