

Helping Customers Innovate, Improve & Grow


OH-172

The OH-172 is an Ultra Low Phase Noise ovenized crystal oscillator in a 28 x 38 mm package with a phase noise floor as low as -175 dbc/Hz. The OH-172 achieves a temperature stability of +/-100ppb over the wide temperature of -55C to +90C and an aging rate of +/-5ppb/day. The OH-172 is designed to operate in harsh environment applications.

Features

- Temperature Stability to 100 ppb
- Standard Frequency:100 MHz
- CMOS and Sinewave Options
- Ultra Low Phase Noise
- Excellent Shock and Vibration Performance

Applications

- Military Radar
- Instrumentation and Test Equipment
- Synthesizers
- Military Communication Equipment
- DRO references
- Satellite Communications

Performance Specifications

Phase Noise Ordering Codes at 100 MHz , Sinewave Output

Frequency Offset (Hz)	A (12V only)	B (5V only)	Unit	Condition
10	-105	-102	dBc/Hz	All EFC Settings
100	-135	-132	dBc/Hz	
1000	-159	-157	dBc/Hz	
10,000	-170	-170	dBc/Hz	
100,000	-175	-172	dBc/Hz	

Frequency Stabilities¹ at 100MHz

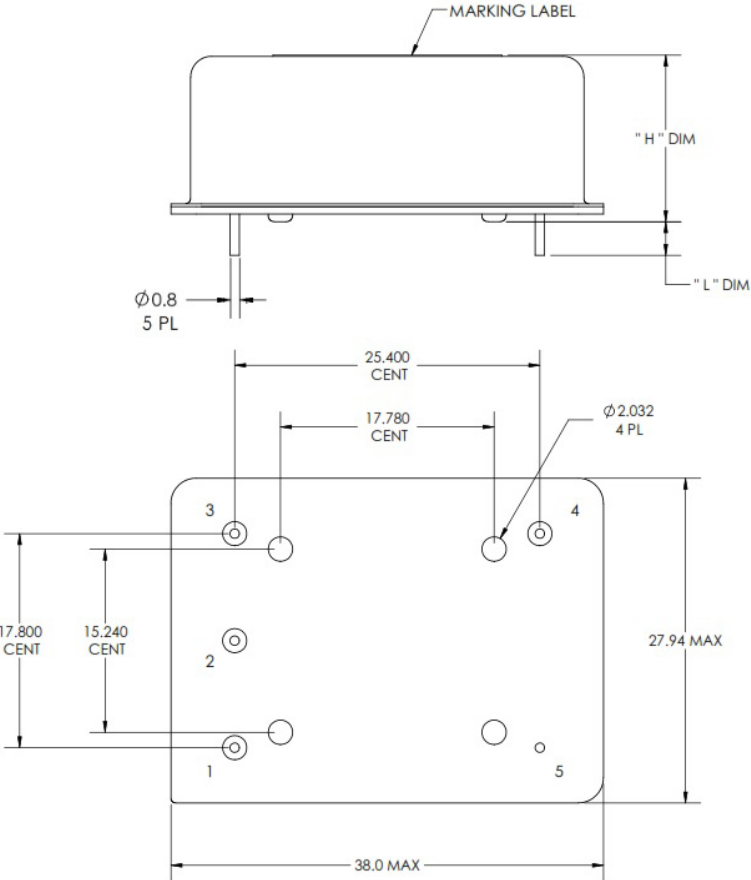
Parameter	Min	Typical	Max	Units	Condition
vs. Operating Temperature Range (referenced to +25°C)	-100		-100	ppb	-55 to +90°C
Initial Tolerance	-500		+500	ppb	at time of shipment, nominal EFC V _s ±5% Load ±5% after 7 days operation after 7 days operation
vs. Supply Voltage Change	-10		+10	ppb	
vs. Load Change	-10		+10	ppb	
vs. Aging / Day	-5		+5	ppb	
vs. Aging / 1st Year	-200		+200	ppb	
vs. Aging / 10 Year	-1.5		+1.5	ppm	
Retrace ²	-50		+50	ppb	
Warm-up Time			5	minutes	to ±100ppb of final frequency (1 hour reading) @ +25°C

Performance Specifications

Parameter	Min	Typical	Max	Units	Condition
Allan Deviation		1		E-11	1 s tau @ 100MHz
Supply Voltage (Vs)					
Parameter	Min	Typical	Max	Units	Condition
Supply Voltage (Vs)	4.75	5.0	5.25	VDC	ordering option D
	11.4	12.0	12.6	VDC	ordering option B
Power Consumption			5.0	Watts	during warm-up, all temperatures
			2.0	Watts	steady state @ +25°C
		4.0		Watts	steady state @ -55°C
		0.5		Watts	steady state @ +90°C
RF Output					
Start Time		2		s	time required to achieve 90% of amplitude
Signal	Sine Wave				
Load		50		Ω	
Output Power	+9	+8	+13	dBm	Vs=12VDC
	+5	+5	+9	dBm	Vs=5VDC
Harmonics			-30	dBc	
Spurious			-80	dBc	
Frequency Tuning (EFC)					
Parameter	Min	Typical	Max	Units	Condition
Tuning range	±1.5		±3	ppm	(fixed frequency option available)
Linearity		20		%	
Tuning Slope	Positive				
Input Impedance		20		kOhm	
Control Voltage Range	0.0		4.4	VDC	with Vs=5.0 VDC
	0.0		10	VDC	with Vs=12.0 VDC
Additional Parameters					
Parameter	Min	Typical	Max	Units	Condition
g-sensitivity			0.5 0.8	ppb/g ppb/g	10Hz to 1kHz 1kHz to 2kHz (linear slope 1kHz to 2kHz)
Weight			25	g	

Absolute Maximum Ratings					
Supply Voltage (Vs)			7	VDC	with Vs= 5.0 VDC
			15.0	VDC	with Vs= 12 VDC
Output Load	25		open	Ω	Sinewave
Operable Temperature Range	-55		+90	$^{\circ}\text{C}$	Operable temperature range implies the device will continue to operate with no long-term damage to unit; however, it will not be specification compliant outside the operating temperature range.
Environmental and Product Classification					
Shock (Endurance)	MIL-STD-202, Method 213, Condition C, 100g 6 ms				
Sine Vibration (Endurance)	MIL-STD-202, Method 201 and 204, Condition D				
Random Vibration (Endurance)	MIL-STD-202, Method 214, Condition I-F				
Humidity	MIL-STD-202, Method 103, Condition B, 100% rh				
Seal	MIL-STD-202, Method 112, Condition D, hermetic, washable				
Altitude	MIL-STD-202, Method 105, sea level to space				
Resistance to Soldering Heat	MIL-STD-202, Method 210, Condition A,B,C				
Terminal Strength	MIL-STD-202, Method 211, Condition C (5 bends at 45°, 2 lbs)				
Moisture Sensitive Level	1				
RoHS	6 Compliant				
Storage Temperature Range	-55		+125	$^{\circ}\text{C}$	

Outline Drawing / Enclosure

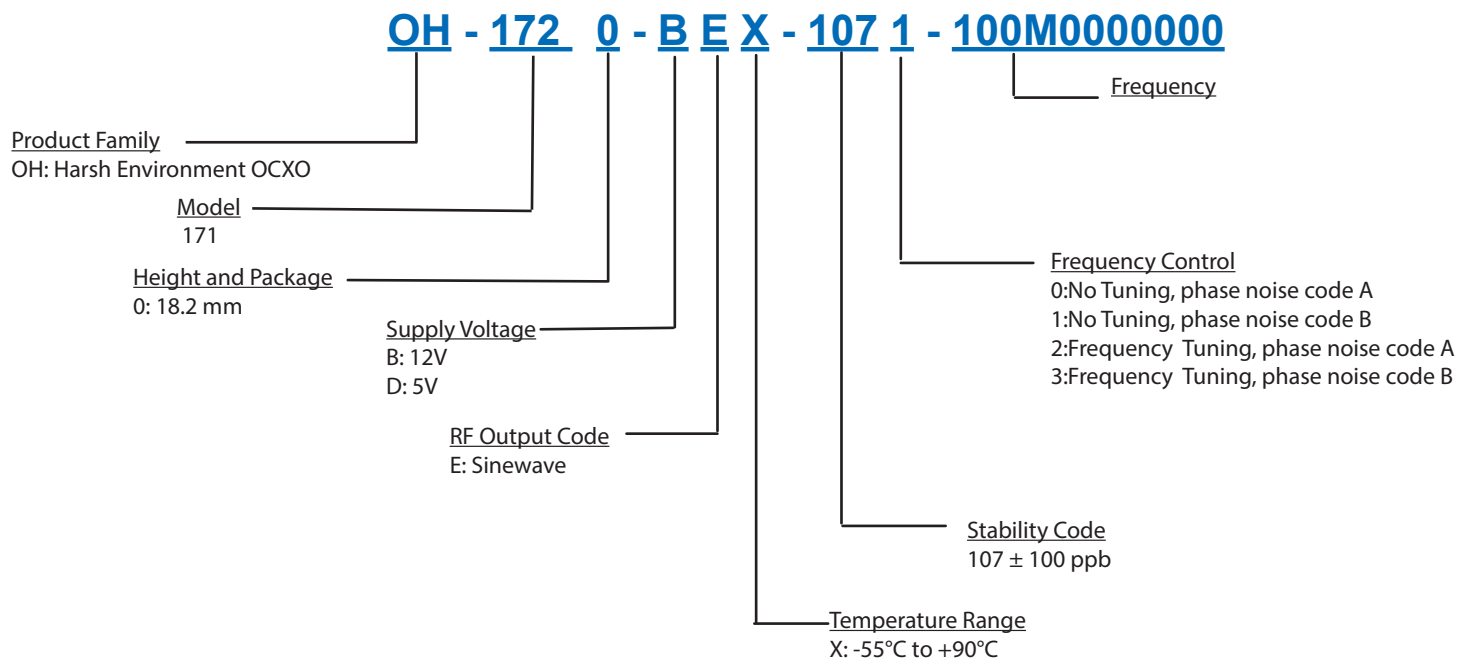


Dimensions in mm

Through hole Package configuration A		
	Height "H"	Pin Length "L"
0	18.2 max	4.5 mm min

Pin Connections	
1	Electronic Frequency Control Input (EFC) No Connect for Fixed frequency Oscillators
2	No Connect
3	Supply Voltage Input (Vs)
4	RF Output
5	Ground (Case)

Ordering Information³



Notes:

1. Unless otherwise stated, all values are valid after warm-up time and refer to typical conditions for supply voltage, frequency control voltage, load, and temperature (25°C).
2. Retrace is defined as the frequency difference between the end of two 24 hour on power periods with a 24 hour off period in between while at a constant temperature.
3. Not all options and codes available at all frequencies.

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