

Helping Customers Innovate, Improve & Grow



OX-204

The OX-204 is an Ultra Low Phase Noise Ovenized Crystal Oscillator with a noise floor as low as -175 dBc/Hz. Designed for applications that demand extremely low noise sources, including the reference oscillator for a phase-locked loop in the microwave spectrum. Custom frequencies available upon request.

Features

- -135 dBc/ Hz at 10 Hz offset
- -175 dBc/Hz at 10 kHz offset
- 10 MHz standard, other frequencies available

Applications

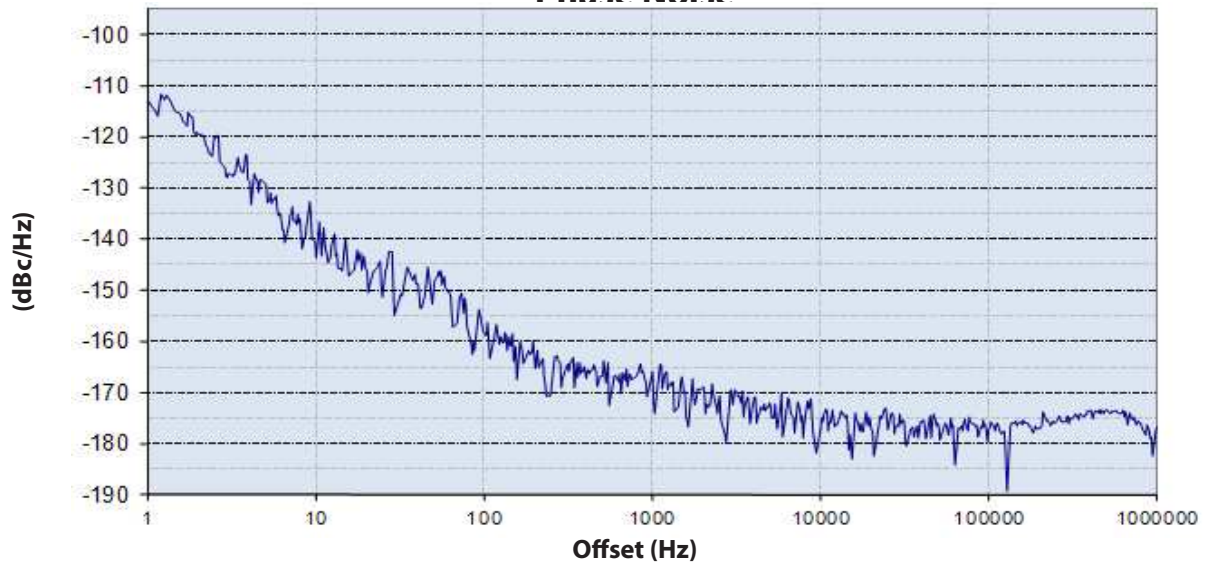
- Military Radar
- Instrumentation and Test Equipment
- Synthesizers
- Military Communication Equipment
- DRO reference
- Satellite Communications

Performance Specifications

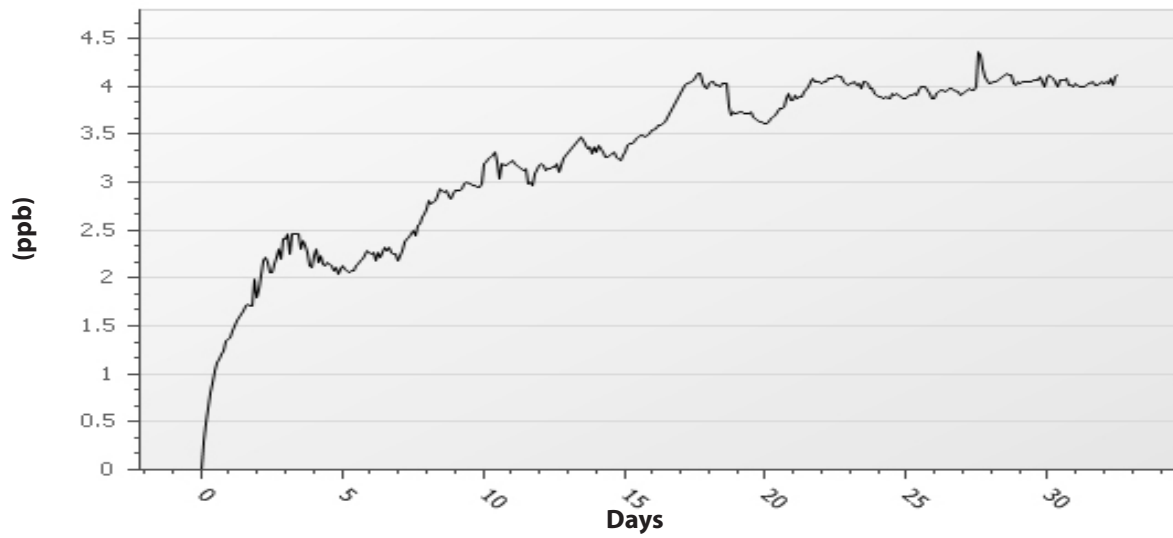
Phase Noise Ordering Codes at 10 MHz					
Frequency Offset (Hz)	A	B	C	Unit	Condition
1	-95	-100	-105	dBc/Hz	Maximum values All EFC settings
10	-125	-130	-135	dBc/Hz	
100	-150	-155	-157	dBc/Hz	
1000	-160	-165	-167	dBc/Hz	
10,000	-170	-170	-175	dBc/Hz	
100,000	-170	-170	-175	dBc/Hz	
Frequency Stabilities at 10 MHz					
Parameter	Min	Typical	Max	Unit	Condition
vs. operating temperature range	-10		+10	ppb	-20 to +70°C (referenced to +25°C)
	-20		+20	ppb	-40 to +85°C (referenced to +25°C)
vs. Initial Tolerance	-100		+100	ppb	at time of shipment and 5V efc
Allan Deviation			5	E-12	0.1 to 1 second tau
vs. supply voltage change	-2		+2	ppb	±5% change
vs. load change	-2		+2	ppb	5% change in load
vs. aging / 1 day	-0.5		+0.5	ppb	after 7 days of operation
vs. aging / 1 st year	-100		+100	ppb	after 7 days of operation
vs. aging / year	-30		+30	ppb	after first year of operation
Warm up time			5	minutes	to ±10 ppb of 2-hour frequency @+25°C

Product Performance Data

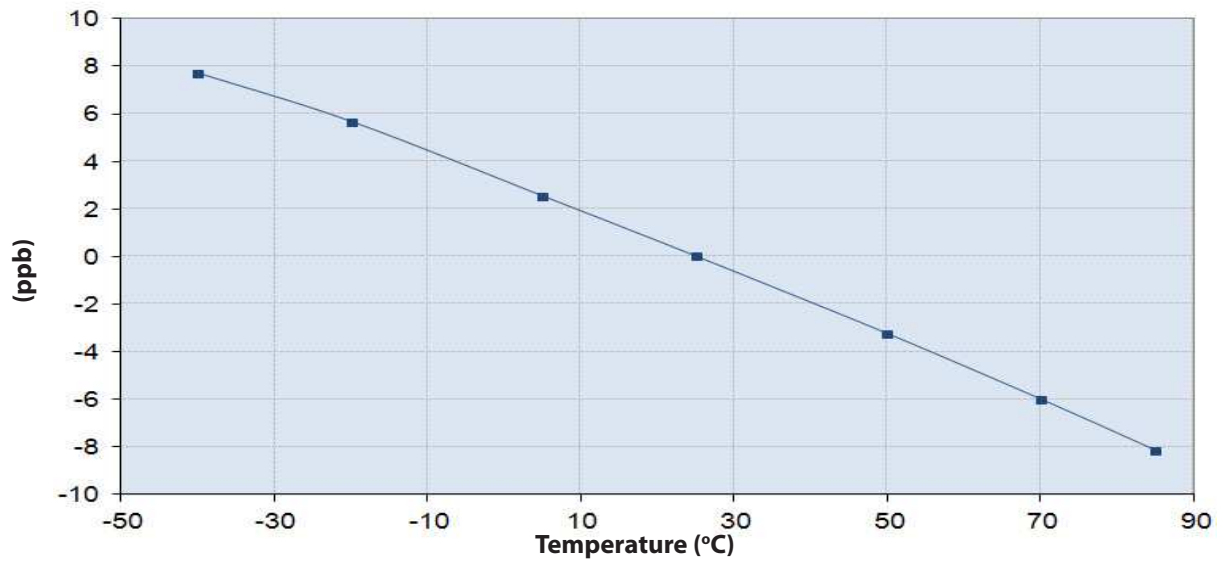
Phase Noise



Aging



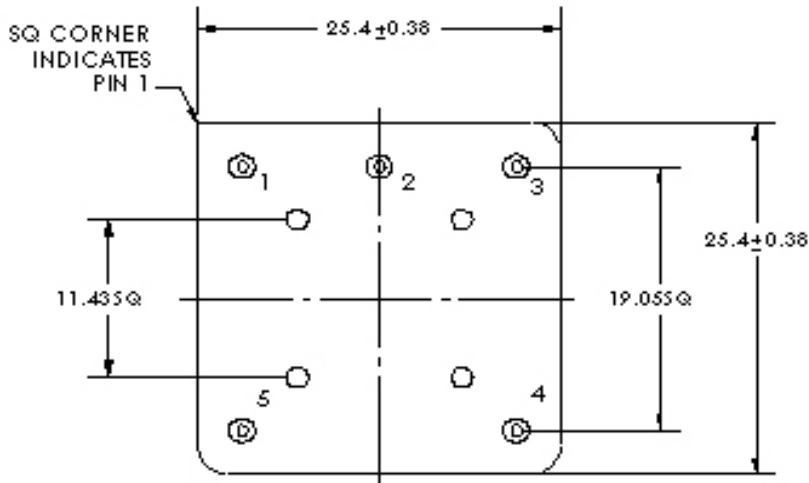
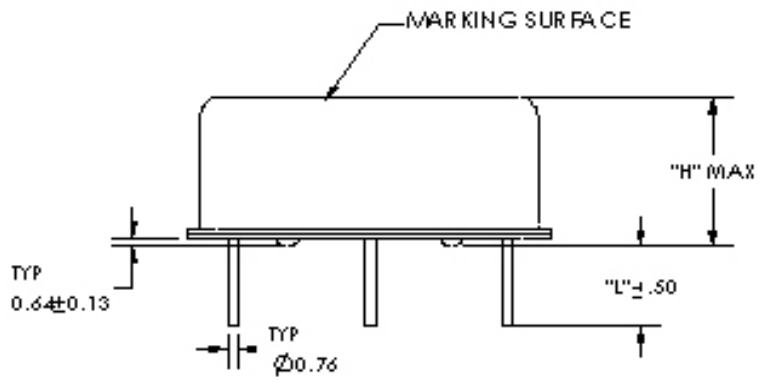
Frequency vs. Temperature



Performance Specifications

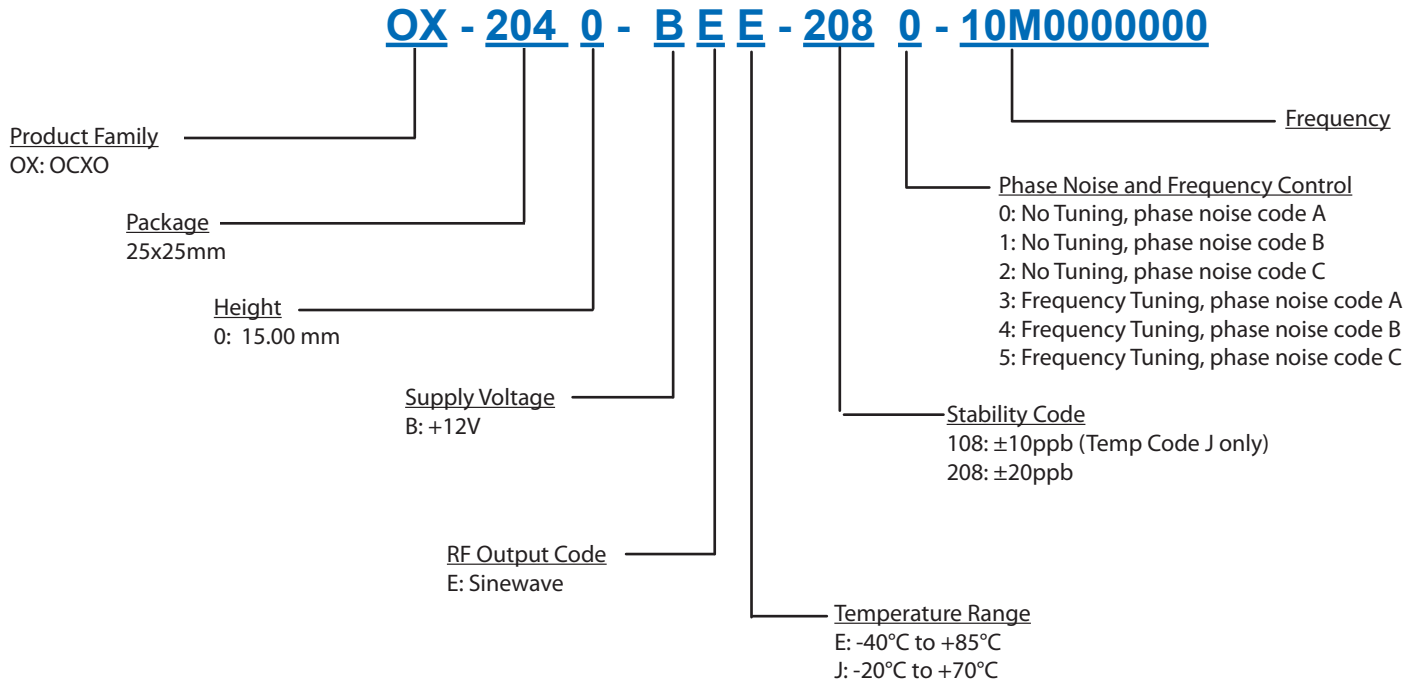
Supply Voltage (Vs)					
Parameter	Min	Typical	Max	Unit	Condition
Supply Voltage	11.4	12.0	12.6	VDC	
Power Consumption			4.0 1.5	Watts Watts	during warm-up steady state @ +25°C
Reference Voltage		10		VDC	
RF Output					
Signal	Sinewave				
Load		50		Ohms	
Output Power	+7.0		+13.0	dBm	50 Ohm load
Harmonics			-30	dBc	50 Ohm load
Spurious			-80	dBc	50 Ohm load
Frequency Tuning (EFC)					
Tuning Range	±400		±800	ppb	enough for aging over 15 year lifetime
Linearity			15	%	
Tuning Slope	Positive				
Control Voltage Range	0		10	VDC	
Input Impedance		100		kOhm	
Modulation Bandwidth	150			Hz	
Additional Parameters					
g-sensitivity			1.5	ppb/g	
Weight			20	grams	
Absolute Maximum Ratings					
Parameter	Min	Typical	Max	Unit	Condition
Supply Voltage (Vs)			15	V	
Output Load			25	Ohms	
Operable Temperature Range	-55		+95	°C	Device will not sustain damage when operated at temperatures between the operating range and the operable range, but will not be specification compliant
Environmental and Product Classification					
Shock (Endurance)	MIL-STD-202, Method 213, Condition J, 30g 11 ms				
Sine Vibration (Endurance)	MIL-STD-202, Method 201 and 204, Condition A, except 5g to 500 Hz, 1 sweep each axis				
Random Vibration (Endurance)	MIL-STD-202, Method 214, Condition I-D				
Humidity	MIL-STD-202, Method 103, Condition B, 100% rh				
Seal	MIL-STD-202, Method 112, Condition D				
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 11, Condition C (5 bends at 45°, 2 lbs)				
Moisture Sensitive Level	1				
RoHS	6 (fully compliant) - no pure tin options available upon request, the device will be assigned a customer part number, not orderable through ordering codes				
Storage Temperature Range	-55		+125	°C	

Outline Drawing



Code	Height "H"	Pin Length "L" Min
0	15.0	6.2
Pin Connections		
1	RF Output	
2	Ground (Case)	
3	Electronic Frequency Control Input (EFC)/ No Connect	
4	Reference Voltage	
5	Supply Voltage Input (VS)	

Ordering Information



Notes:

1. Contact factory for improved stabilities or additional product options including no pure tin options.
2. Certain codes available for sampling and short lead time requests. Please review website for codes.
3. Unless otherwise stated all values are valid after warm-up time and refer to typical conditions for supply voltage, frequency control voltage, load, temperature (25°C).
4. Contact factory for other frequencies. Phase noise degrades for frequencies greater than 10 MHz.
5. Subject to technical modification.
6. Contact factory for availability.

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