

# O-CS8-0XXXXXXXX-X

## Ultra Low Phase Noise, Precision SC-cut HF OCXO in Tiny 14x21x7.5 mm SMD Package

Rev. L

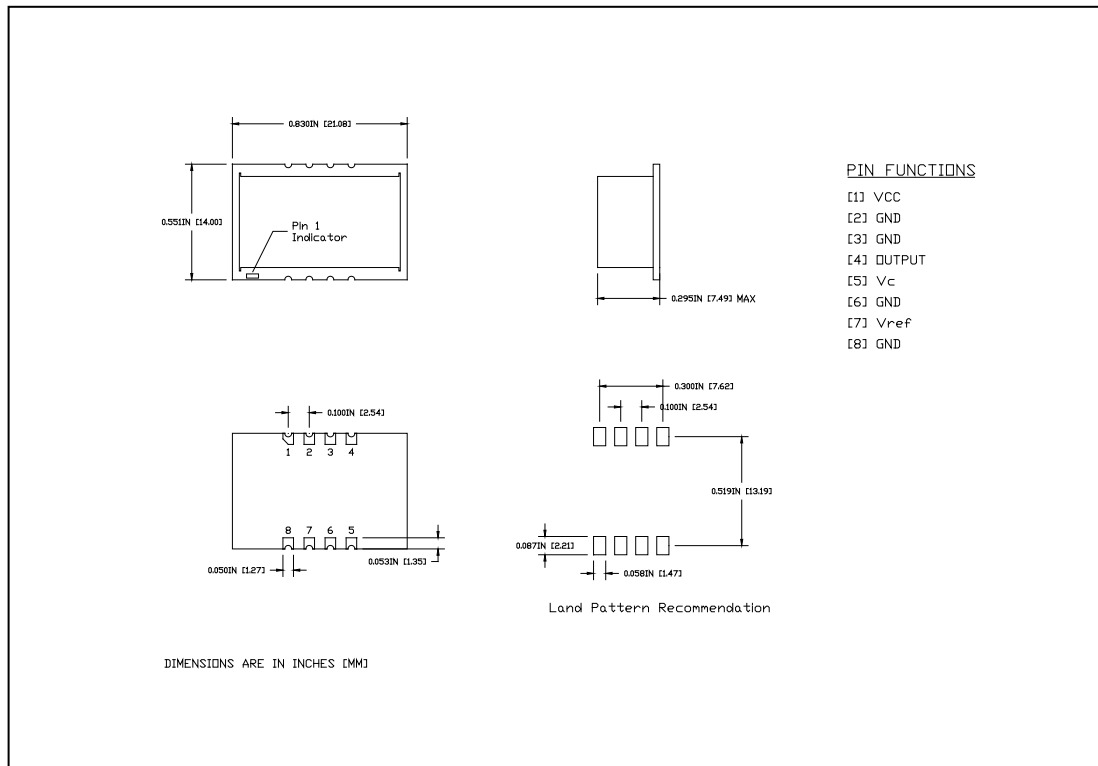
### Product Data Sheet

#### Features

- SC-cut crystal
- Ultra Low Phase Noise
- Sine Wave +15 dBm output
- Extremely Small, Slim Package

#### Applications

- Instrumentation
- Radar
- High End Synthesizers
- Telecommunication Systems
- Data Communications



# OVEN CONTROLLED CRYSTAL OSCILLATORS

Data Sheet 1319A

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Parameter	Symb	Condition	Min	Typ	Max	Unit	Note	
<b>Absolute Maximum Ratings</b>								
Input Break Down Voltage	V <sub>cc</sub>		-0.5		6.5	V	V <sub>cc</sub> option 0	
Storage temper.	T <sub>s</sub>		-55		85	°C		
Control Voltage	V <sub>c</sub>		-1		10.5	V		
<b>Electrical (1)</b>								
Frequency	F		80		120	MHz		
Frequency stability	ΔF/F	vs. Temp.		±50		ppb	See table below Note 2	
		vs. Supply			2	ppb/5% change		
		Vs. load			2	ppb/5% change		
Aging		per day		5E-9		ppm	After 30 days of continuous operation	
		per first year		5E-7				
		10 years			2.0			
Allan Deviation		.01s to 1s		5E-11				
SSB Phase Noise at 100.000 MHz	£(Δf)	10 Hz		-95		dBc/Hz	Grade "L"	
		100 Hz			-125			
		1 KHz			-158			
		10 KHz			-170			
		100 KHz			-178			
		10 Hz		-100			Grade "P"	
		100 Hz			-130			
		1 KHz			-160			
		10 KHz			-172			
		100 KHz			-178			
		10 Hz		-105			Grade "U", Available with slope option "L"	
		100 Hz			-135			
1 KHz			-162					
10 KHz			-175					
100 KHz			-180					
Retrace		After 30 minutes		±20		ppb		
G-sensitivity		worst direction			±0.5	ppb/G		
Supply Voltage		5V±5%	4.75	5.0	5.25	V	Option "0"	
Power consumption	P	steady state, 25°C		1.0	1.2	W	Still air	
		steady state, -40°C		2.5				
		start-up		3.0	3.5			
Spectral Purity		Output power	12	15		dBm dBc	Non-supply related	
		Subharmonics		none				
		Spurious			-80			
		Harmonics		-35	-30			
Load		50 Ohm (Internally AC-coupled)						
Warm-up time	τ	to 0.1ppm accuracy		3	5	minutes		
Output Waveform		Sine-wave						
Control voltage	V <sub>c</sub>		0		10.0	V	Slope option "L" Slope option "P"	
			0		4.5			
Input Impedance	Z <sub>in</sub>	At V <sub>c</sub> Pin	10			K ohm		
Pull range		from nominal F		±3.0		ppm		
Absolute pull range	APR		±0.5			ppm		
Deviation slope		Monotonic, posit		0.7		ppm/V	Slope option "L" Slope option "P"	
					1.3			
Linearity			±10%					
Reference Voltage	V <sub>ref</sub>			N/A		V	Slope option "L" Slope option "P"	
				4.5				
Setability	V <sub>c0</sub>	@25°C, F <sub>nom</sub> .	4.0	5.0	6.0	V	Slope option "L", no bias Slope option "P"	
			1.75	2.25	2.75			
Modulation Bandwidth	F <sub>m</sub>		DC		1	KHz		

All parameters for 100.000 MHz

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### Environmental and Mechanical

<b>Operating temp. range</b>	0 to 70°C Standard, Other options – see Chart below
<b>Mechanical Shock</b>	Per MIL-STD-202, 30G, 11ms
<b>Thermal Shock</b>	Per MIL-STD-883, Method 1011, Condition A
<b>Vibration</b>	Per MIL-STD-202, 5G to 2000 Hz
<b>Operational vibration</b>	Phase noise under vibration to be verified by the customer
<b>Seal</b>	Only crystal resonator is hermetically sealed
<b>Soldering Conditions</b>	See MAX reflow profile below; The device may be reflowed once. Reflowing upside down is not allowed. Hand soldering is highly encouraged. NO CLEAN assembly is recommended
<b>Moisture Sensitivity</b>	Class 1

### Electrical Connections

<b>Pin Out</b>	Pin #1-- Vcc; Pins ##2,3,6,8 – GND; Pin #4 – OUTPUT; Pin #5– Vc; Pin #7 - Vref
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## Creating a Part Number

**O - C S8 - 0 X X XX XX X - X** - Frequency, MHz  
OCXO  
 Conventional Power

### Package Code

S8 14x21x7.5 mm SMD

### Supply Voltage

Code	Specification
0	5.0V ±5%

### Control Voltage

Code	Specification
L	0 to 10 V
P	0 to 4.5 V

### Output

Code	Specification
S	Sinewave
T	CMOS/TTL

### Temperature Stability

Code	Specification
17	1x10 <sup>-7</sup>
58	5x10 <sup>-8</sup>
YZ	Yx10 <sup>-Z</sup>

### Environmental

Code	Specification
L	Contains a level of lead that is in excess of RoHS directive and is not designed for reflow
R	RoHS compliant

### Phase Noise Grade (see table)

Code	Specification
L	Standard
P	Premium
U	Ultimate

### Temperature Range

Code	In 5°C steps **
First letter	Lowest temperature from A = -40°C
Second letter	Highest temperature to Z = 85°C
Examples	
IS	0°C to 50°C
GU	-10°C to 60°C
EW	-20°C to 70°C

### \*\*Temperature Code Table

Letter	Temp °C	Letter	Temp °C	Letter	Temp °C	Letter	Temp °C	Letter	Temp °C	Letter	Temp °C
A	-40	F	-15	K	10	P	35	U	60	Z	85
B	-35	G	-10	L	15	Q	40	V	65		
C	-30	H	-5	M	20	R	45	W	70		
D	-25	I	0	N	25	S	50	X	75		
E	-20	J	5	O	30	T	55	Y	80		



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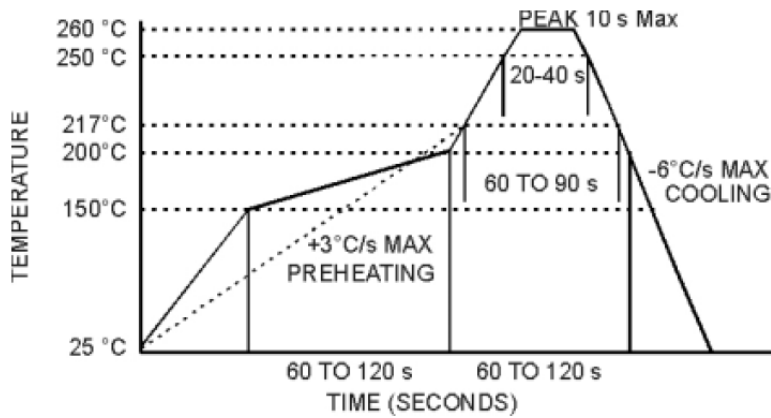
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Notes:

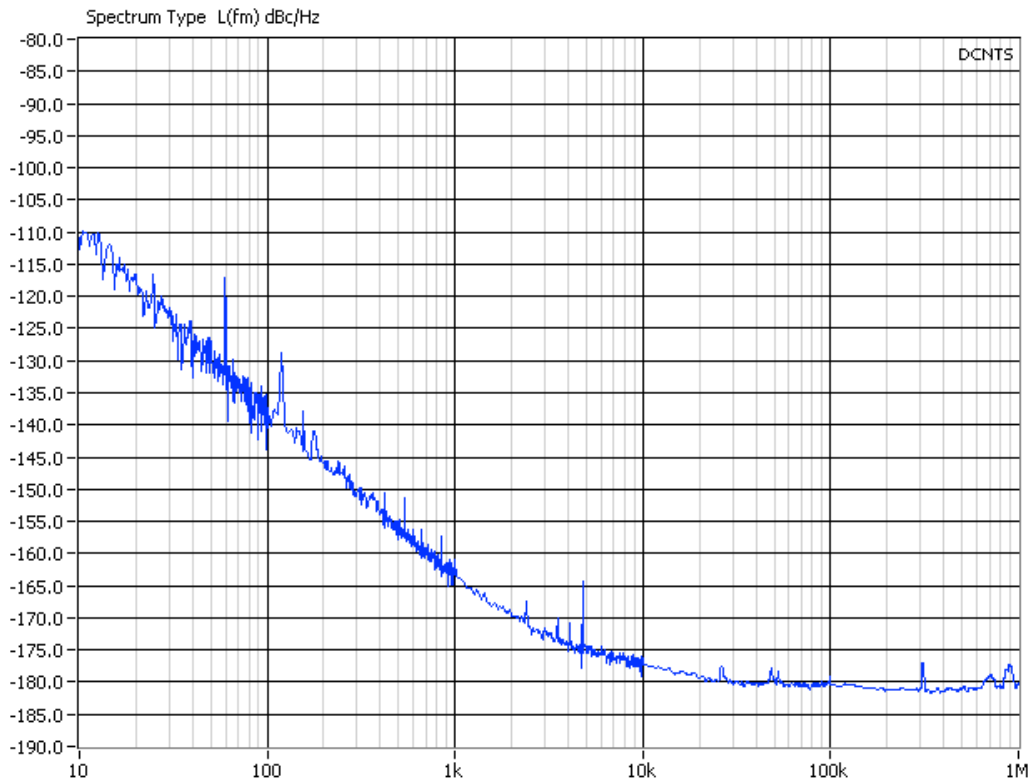
1. Not all combinations are available – consult factory
2. It's not recommended to over-specify stability over temperature performance: it significantly affects the cost.
3. Unless absolutely necessary do not specify highest operating temperature above 70°C
4. All parameters, unless otherwise specified, are at nominal conditions, ie: T=25°C, Nominal Vcc & Nominal Load.

## MAX Reflow Profile



## NOISE XT

Phase Noise Plot



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