

Very Low Phase Noise Precision SC-cut HF OCXO in 1"x1" Through Hole Package



ESD Sensitive

25.4 x 25.4 x 12.7 mm

Datasheet #1029D

Features

- SC-cut crystal
- Ultra Low Phase Noise
- Sine Wave +17 dBm output
- Compact package

Applications

- Radar
- Instrumentation and Test Equipment
- Synthesizers
- References

Absolute Maximum Ratings

Parameters	Symbol	Condition	Min	Typ	Max	Unit	Notes
Input Break Down Voltage	Vcc		-0.5 -0.5		13.0 6.5	V	Vcc option F Vcc option 0
Storage temper.	Ts		-55		85	°C	
Control Voltage	Vc		-1		10	V	

Electrical

Parameters	Symbol	Condition	Min	Typ	Max	Unit	Notes
Frequency	F		80		128	MHz	
Frequency stability	$\Delta F/F$	vs. Temp.		± 50		ppb	See table below
		vs. Supply			2	ppb/5% change	
		Vs. load			2	ppb/5% change	
Aging		per day per first year 10 years		5E-9 5E-7	2.0	ppm	After 30 days of continuous operation
Allan Deviation		.01s to 1s		5E-11			
SSB Phase Noise	$f(\Delta f)$	10 Hz			-95	dBc/Hz	Grade "L"
		100 Hz			-125		
		1 KHz			-158		
		10 KHz			-170		
		≥ 100 KHz			-178		
		10 Hz			-100	dBc/Hz	Grade "P"
		100 Hz			-130		
		1 KHz			-160		
		10 KHz			-172		
		≥ 100 KHz			-178		
		10 Hz		-105		dBc/Hz	Grade "U", Available with slope Option "L"
		100 Hz		-135			
		1 KHz		-162			
		10 KHz		-175			
		≥ 100 KHz		-178			
		10 Hz		-135	-105	dBc/Hz	Grade "E" Available with slope Option "L", Vcc Option "0" (5V) only
100 Hz		-166	-164				
1 KHz		-182	-180				
10 KHz		-187	-185				
≥ 100 KHz		-187	-185				
Retrace		After 30 minutes		± 20	ppb		
G-sensitivity		worst direction		± 0.5	ppb/G		

All parameters for 100,000 MHz

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Electrical (cont.)

Parameters	Symbol	Condition	Min	Typ	Max	Unit	Notes
Input Voltage	V _{cc}	12V±5%	11.4	12.0	12.6	V	Option "F"
		5V±5%	4.75	5.0	5.25	V	Option "0"
Power consumption	P	steady state, 25°C		1.2	1.5	W	Still air
		steady state, -40°C		2.5			
		start-up		3.0	3.5		
Spectral Purity		Output power	13	17		dBm dBc	Non-supply related
		Subharmonics		none			
		Spurious			-80		
		Harmonics		-35	-30		
Load	50 Ohm (Internally AC-coupled)						
Warm-up time	τ	to 0.1 ppm accuracy		3	5	minutes	
Output Waveform	Sine-wave						
Control voltage	V _c		0		10.0	V	Slope option "L" Slope option "P"
			0		4.5		
Pull range		from nominal F		±3.0		ppm	
Modulation Bandwidth	MBW	V _c port input LPF 3 dB cut-off freq.	DC		1	KHz	3*
Absolute pull range	APR	Over all conditions	±0.5			ppm	
Deviation slope		Monotonic, positive		0.7		ppm/V	Slope option "L" Slope option "P"
				1.3			
Linearity			±10%				
Reference Voltage	V _{ref}			N/A		V	Slope option "L" Slope option "P"
				4.5			
Setability	V _{c0}	@25°C, F _{nom} .	4.0	5.0	6.0	V	Slope option "L", no bias Slope option "P"
			1.75	2.25	2.75		

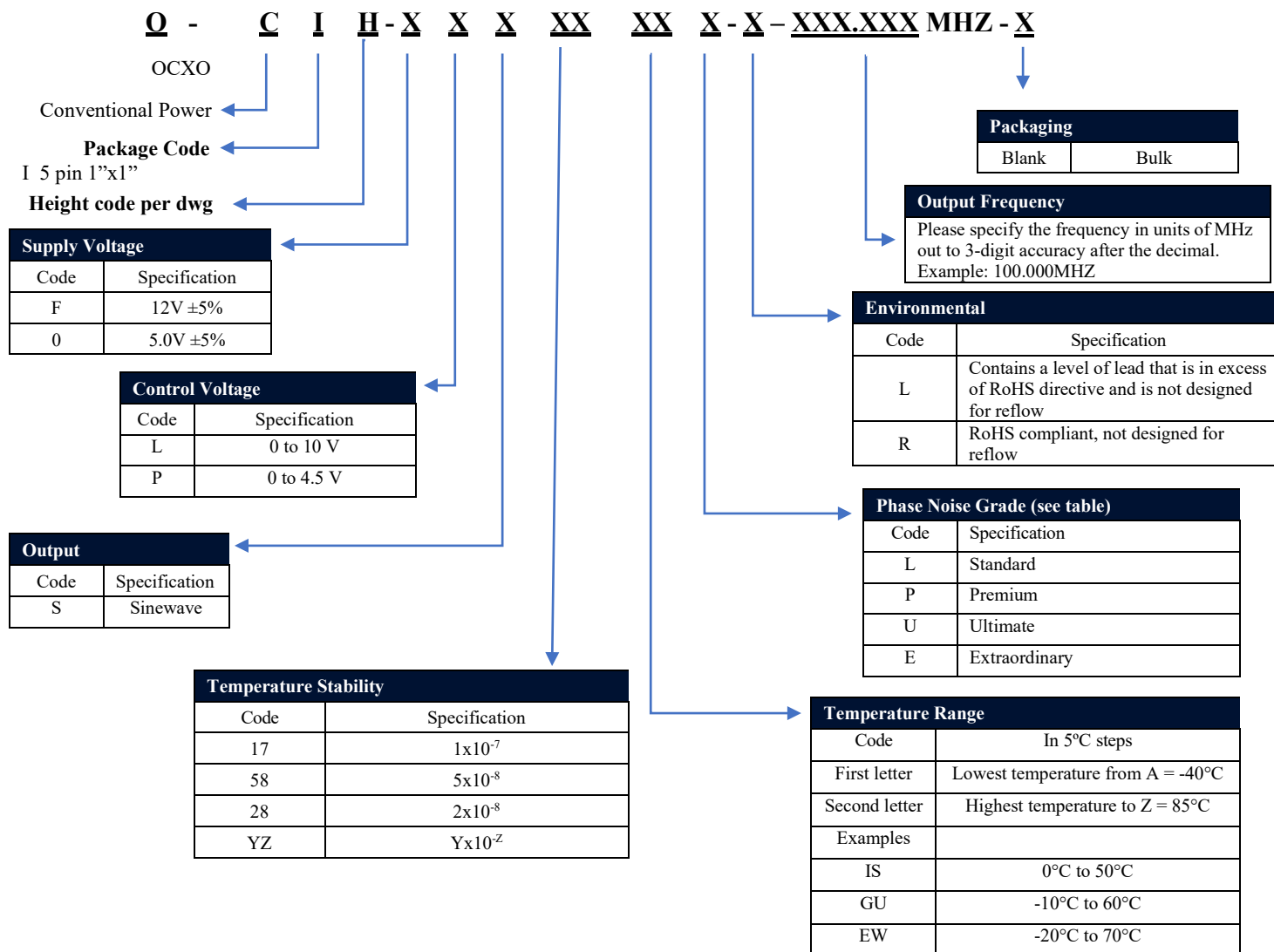
Environmental and Mechanical

Parameter	Description
Operating temp. range	0 to 70°C Standard, Other options-see Chart below**
Mechanical Shock	Per MIL-STD-202, 30G, 11ms
Thermal Shock	Per MIL-STD_883, Method 1011, Condition A
Vibration	Per MIL-STD-202, 5G to 2000 Hz
Operational vibration	Phase noise under vibration to be verified by the customer
Seal	Per MIL-STD_883, Method 1014, Cond A and Cond C
Soldering Conditions	260°C for 10s Max leads only

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Creating a Part Number



Not all combinations are available. Consult Factory.

Temperature Code Table (2*)

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		

Notes:

- 1) All parameters, unless otherwise specified, are at nominal conditions, ie: T=25°C, Nominal Vcc & Nominal Load.
- 2* The units will be functional down to -55°C with expected deterioration of frequency stability by up to 2ppm.
- 3* Older and stock units may have MBW of 150 Hz Max.

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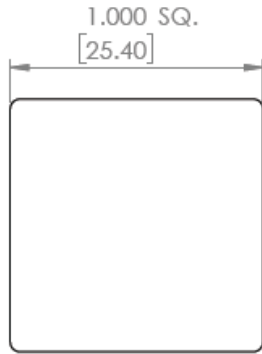


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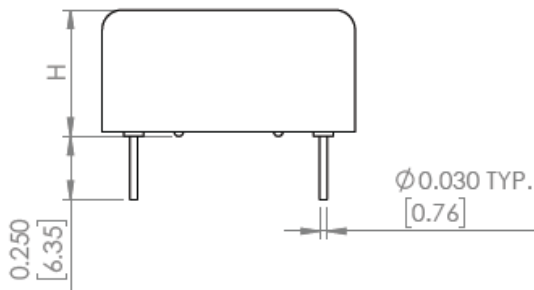
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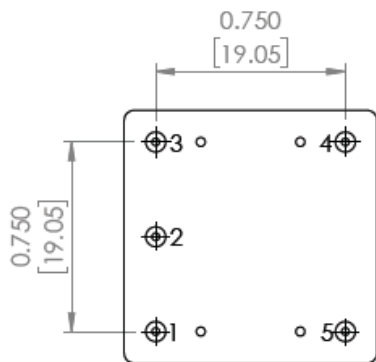
Mechanical Dimensions



TOP VIEW



FRONT VIEW



BOTTOM VIEW

Stand-off positions may vary.

H Code	Height, inches (mm) TYP
4	0.4 (10.2 mm)
5	0.5 (12.7 mm)

Code 5 is standard unless code 4 is Requested.

Pin #	Function
1	Output
2	GND
3	Voltage Control
4	Vref or NC
5	Vcc

Dimensions: inches [mm]

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Phase Noise Plot

100 MHz Output Frequency

