

**O-CEX-XXXXXXXX-X Very Low Phase Noise  
Precision SC-cut HF OCXO in 36x27mm “Europack”**

Rev. M

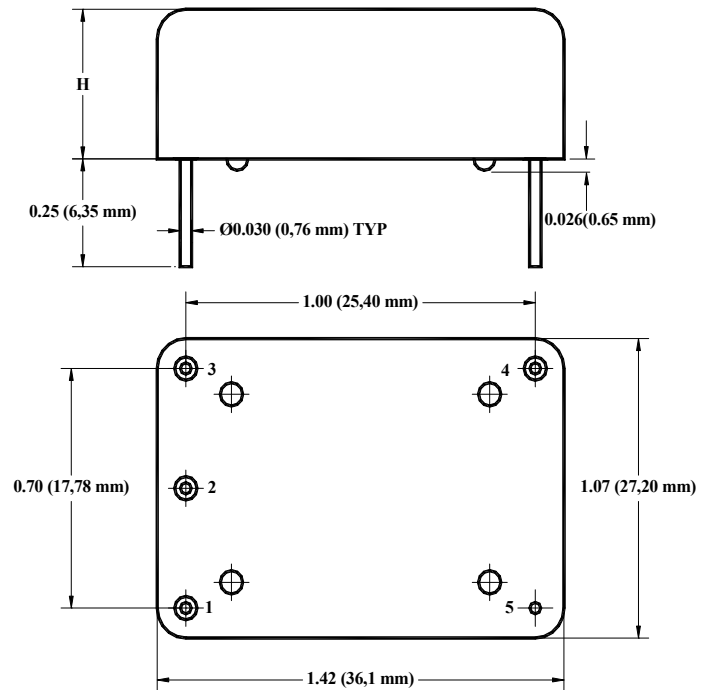
**Product Data Sheet**

**Features**

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

**Applications**

- Radar
- Instrumentation and Test Equipment
- Synthesizer
- References



H code	Height, inches, TYP
5	0.5 (12.7 mm)
6	0.63 (16 mm)
7	0.75 (19 mm)

Code 6 is standard unless code 5 is requested. Code 7 is for special requirements.

\*Stand-off positions may vary.

Parameter	Symb	Condition	Min	Typ	Max	Unit	Note
<b>Absolute Maximum Ratings</b>							
<b>Input Break Down Voltage</b>	Vcc		-0.5		13.0	V	Vcc option F Vcc option 0
<b>Storage temper.</b>	Ts		-55		85	°C	
<b>Control Voltage</b>	Vc		-1		10	V	

### Electrical (1)

<b>Frequency</b>	F		80		128	MHz	
<b>Frequency stability</b>	$\Delta F/F$	vs. Temp.		$\pm 50$		ppb	See table below
		vs. Supply			2	ppb/5% change	
		Vs. load			2	ppb/5% change	
<b>Aging</b>		per day per first year 10 years		5E-9 5E-7	2.0	ppm	After 30 days of continuous operation
<b>Allan Deviation</b>		.01s to 1s		5E-11			
<b>SSB Phase Noise</b>	$\mathcal{L}(\Delta f)$	10 Hz			-95	dBc/Hz	Grade "L"
		100 Hz			-125		
		1 KHz			-158		
		10 KHz			-170		
		$\geq 100$ KHz			-178		
		10 Hz			-100		Grade "P"
		100 Hz			-130		
		1 KHz			-160		
		10 KHz			-172		
		$\geq 100$ KHz			-178		
		10 Hz		-105	-135		Grade "U", Available with slope option "L"
		100 Hz			-162		
		1 KHz			-175		
		10 KHz			-178		
		$\geq 100$ KHz			-185		
		10 Hz		-135	-105		Grade "E" Available with slope option "L", Vcc option "0" (5V) only
		100 Hz		-166	-164		
		1 KHz		-182	-180		
		10 KHz		-187	-185		
		$\geq 100$ KHz			-185		
<b>Retrace</b>		After 30 minutes		$\pm 20$		ppb	
<b>G-sensitivity</b>		worst direction			$\pm 0.5$	ppb/G	
<b>Input Voltage</b>	Vcc	12V $\pm 5\%$	11.4	12.0	12.6	V	Option "F"
		5V $\pm 5\%$	4.75	5.0	5.25	V	Option "0"
<b>Power consumption</b>	P	steady state, 25°C		1.2	1.5	W	Still air
		steady state, -40°C start-up		2.5 3.0	3.5		
<b>Spectral Purity</b>		Output power	13	17		dBm dBc	Non-supply related
		Subharmonics		none			
		Spurious Harmonics		-35	-80 -30		
<b>Load</b>	50 Ohm (Internally AC-coupled)						
<b>Warm-up time</b>	$\tau$	to 0.1ppm accuracy		3	5	minutes	
<b>Output Waveform</b>	Sine-wave						
<b>Control voltage</b>	Vc		0		10.0	V	Slope option "L" Slope option "P"
			0		4.5		
<b>Pull range</b>		from nominal F		$\pm 3.0$		ppm	
<b>Modulation Bandwidth</b>	MBW	Vc port input LPF 3dB cut-off freq.	DC		1	KHz	Note 3
<b>Absolute pull range</b>	APR	Over all conditions	$\pm 0.5$			ppm	

All parameters for 100,000 MHz

<b>Deviation slope</b>		Monotonic, posit		0.7 1.3		ppm/V	Slope option "L" Slope option "P"
<b>Linearity</b>			±10%				
<b>Reference Voltage</b>	Vref			N/A 4.5		V	Slope option "L" Slope option "P"
<b>Setability</b>	Vc0	@25°C, Fnom.	4.0 1.75	5.0 2.25	6.0 2.75	V	Slope option "L", no bias Slope option "P"

Note: 1. All parameters, unless otherwise specified, are at nominal conditions, ie: T=25°C, Nominal Vcc & Nominal Load.  
3. Older and stock units max have MBW of 150 Hz Max.

**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>	Per MIL-STD 883, Method 1014, Cond A and Cond C
<b>Soldering Conditions</b>	260°C for 10s Max leads only

**Electrical Connections**

<b>Pin Out</b>	Pin #1- Voltage Control ; Pin #2 – Vref or N/C ; Pin #3 – Vcc; Pin#4 – Output; Pin#5 - GND
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**Creating a Part Number**

**Q - C E X - X X X XX XX X - X - Freq**

OXCXO

Conventional Power

**Package Code**

E 5 pin 36x27mm

Height Code per dwg.

**Supply Voltage**

Code	Specification
F	12V ±5%
0	5.0V ±5%

**Control Voltage**

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

**Output**

Code	Specification
S	Sinewave

**Temperature Stability**

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

**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

**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, not designed for reflow

**Phase Noise Grade (see table)**

Code	Specification
L	Standard
P	Premium
U	Ultimate
E	Extraordinary

**\*\*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		

Note 2 \*\*: The units will be functional down to -55°C with expected deterioration of frequency Stability by up to 2ppm.

### Phase Noise Plot:

#### 100 MHz Output Frequency

