Rev. G

O-LE-XXXXYZX-X
Ultra Low Phase Noise, Ultra Low Power Consumption SC-cut OCXO in "Europack"

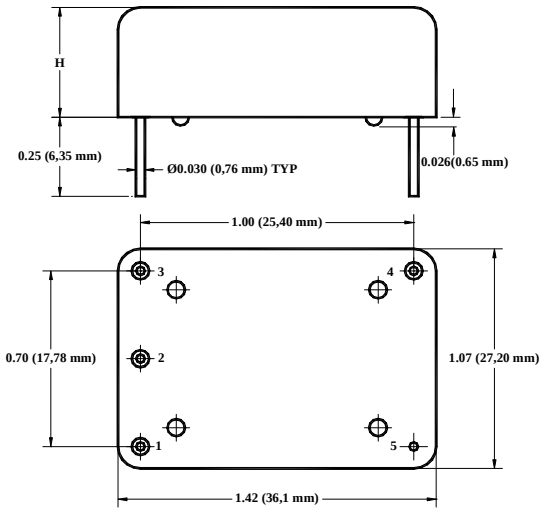
Product Data Sheet

Features

- **Ultra Low Power Consumption**
- **Ultra Low Phase Noise**
- **Wide frequency Range (8 to 125 MHz)**

Applications

- **Synthesizer**
- **Instrumentation**
- **Battery powered equipment**
- **GPS**
- **Medical Diagnostic and Imaging Equipment**
- **Communication Systems**
- **Radar**



The package height is 0.75" (19.0 mm)

-Stand-off positions may vary

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CRYSTAL OSCILLATORS

Data Sheet 1410A

Parameter	Symb	Condition	Min	Typ	Max	Unit	Note	
Absolute Maximum Ratings								
Input Break Down Voltage	Vcc		-0.5		5.5	V		
Storage temper.	Ts		-40		85	°C		
Operating temper.	To		-40		85	°C		
Control Voltage	Vc		-1		12	V		
Electrical (6)								
Frequency	F		8.0	10.000	125.000	MHz	*	All parameters for 10 MHz
Frequency stability	ΔF/F	vs. Temp.		10		ppb	See chart below	
		vs. Supply		1	2	ppb/5%Vcc		
Aging		per day per year, first year 10 years		5E-10 1E-7	 3.5E-7		after 30 days 5E-8 available 1*	
Allan Deviation		.1s to 1s		1E-12				
SSB Phase Noise		1Hz 10 Hz 100 Hz 1 KHz 10 KHz 100 KHz		-115 -146 -158 -168 -170 -174	-112 -145 -156 -165 -168 -172	dBc/Hz	2* Specs for Vcc = 5.0 V	
Retrace		After 30 minutes			±10	ppb	24 hrs off	
G-sensitivity		Worst direction			±1.0	ppb/G	5*	
								All parameters for 100 MHz
Frequency stability	ΔF/F	vs. Temp		+/-100		ppb	See chart below	
		vs. Supply		3	5	ppb/5%Vcc		
Aging		per day per year, first year 10 years		2E-9 4E-7	 1.5E-6		after 30 days 1*	
Allan Variance		.1s to 1s		1E-11				
SSB Phase Noise		10 Hz 100 Hz 1 KHz 10 KHz 100 KHz			-100 -130 -160 -170 -178	dBc/Hz	2* Specs for Vcc = 5.0 V	
G-sensitivity		worst direction			±0.5	ppb/G	6*	
Input Voltage	Vcc		4.75 3.165	5.0 3.30	5.25 3.465	V	See chart below to specify	
Power consumption	P	steady state, 25°C start-up		200 800	250 1,200	mW	Still air, 10 MHz	
		steady state, 25°C start-up		400 1,000	450 1,400		Still air, 100 MHz	
Spectral Purity		Subharmonics Spurious Harmonics		none -50 -35	 -45 -80 -30	dBc	8 – 20 MHz; 60 – 125 MHz 20 – 60 MHz	
Load	10KOhm//15pF (HCMOS/TTL), AC-coupled 50 Ohm (Sine-wave)						Output Code T Output Code S	
Warm-up time	τ	to 0.10ppm accuracy			90	seconds		
Output Power			+10 +15	+13 +17		dBm	Output Code S, 10 MHz Output Code S, 100 MHz	
Logic 1 (CMOS)	Voh		0.7 Vref			V	Output Code T	
Logic 0 (CMOS)	Vol				0.1 Vref	V	Output Code T	

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Control voltage	Vc		0 0 -4		Vref 10 4	V	Slope Option "P" Slope Option "L" Slope Option "N" 4*
Reference Voltage	Vref			4.5 3.0		V	5 V supply 3.3 V supply
Pull range		from nominal F, 10 MHz	±0.4 ±0.3	±0.5 ±0.4		ppm	5 V supply 3.3 V supply
Pull range		from nominal F, 100 MHz	±2.0 ±1.6	±2.5 ±2.0		ppm	5 V supply 3.3 V supply
Deviation slope		Monotonic, posit. 100 MHz		0.8 1.0		ppm/V	5 V supply 3.3 V supply
Input impedance	Zin	At Vc pin	10			KOhm	
Modulation bandwidth	Fm		DC		1	KHz	
Setability	Vc0	@25°C, Fnom.	Vref/2- 0.35 4.5 -0.35	Vref/2	Vref/2 + 0.35 5.5 0.35	V	Slope option "P" 2* Slope option "L" Slope option "N" 4*
Initial Calibration		Vc = Vcenter @25°C			±100	ppb	10 MHz

Environmental and Mechanical

Operating temp. range	-20°C to 70°C Standard, Other options – see chart below
Mechanical Shock	Per MIL-STD-202, 30G, 11ms
Vibration	Per MIL-STD-202, 5G to 2000 Hz
Soldering Conditions	260°C for 10s Max leads only

Electrical Connections

Pin Out	Pin #1-- Vc; Pin#2 – Vref/NC; Pin #3 – Vcc; Pin #4 – Output; Pin #5 - GND

Notes:

1. Aging rates are proportional to the operating frequency. Pull range will be adjusted accordingly to provide for lifetime possibility to set on frequency
2. The Vc input may or may not be internally biased to roughly Vref/2. If internal bias is needed – it has to be specified on PO.
3. All parameters, unless otherwise specified, are at nominal conditions, ie: T=25°C, Nominal Vcc & Nominal Load.
4. Option "N" is available for 8 to 60 MHz frequency range only.
5. Optional G-sensitivity for 10 MHz is 0.5 ppb/g as a design goal.
6. Optional G-sensitivity for 100 MHz is 0.3 ppb/g as a design goal.

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Creating a Part Number

O - L E X X XX YY X - X FREQ MHz

OCXO

Low Power Cons.

Package Code

E 5 pin 36x27mm

Supply Voltage

Code	Specification
0	5 V TYP
A	3.3 V TYP

Output

Code	Specification
S	Sinewave
T	HCMOS/TTL

Temperature Stability (±)

Code	Specification
17	$1x10^{-7}$
58	$5x10^{-8}$
28	$2x10^{-8}$
18	$1x10^{-8}$
YZ	$Yx10^{-Z}$

Temperature Range

Code	In 5ºC steps **
First letter	Lowest temperature from A = -40ºC
Second letter	Highest temperature to Z = 85ºC
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

Pull Slope Option

Code	Specification
L	0 to 10 V, Positive
P	0 to Vref, Positive
N	-4 to 4 V, Negative

Not all combinations are available – consult factory

****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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