



Revised in January 2007

### MXO37 Series - Vacuum-Sealed Miniature OCXOs

#### Features

- Low Power Consumption (0.15W at +25°C)
- 14DIP Compatible Packaging
- High Stability (up to  $\pm 5 \times 10^{-9}$  over -10°C to 60°C)
- Very Fast Warming-up (15 s)
- Low Phase Noise (-165 dBc/Hz, TYP, floor)
- Low Aging ( $5 \times 10^{-10}$ /day,  $5 \times 10^{-8}$ /year)
- Wide Frequency range (5 – 250 MHz)

#### Typical Applications

- Portable Wireless Communications
- MobileTest equipment
- Synthesizers
- Battery Powered Application

14 DIP compatible



RoHS compliant

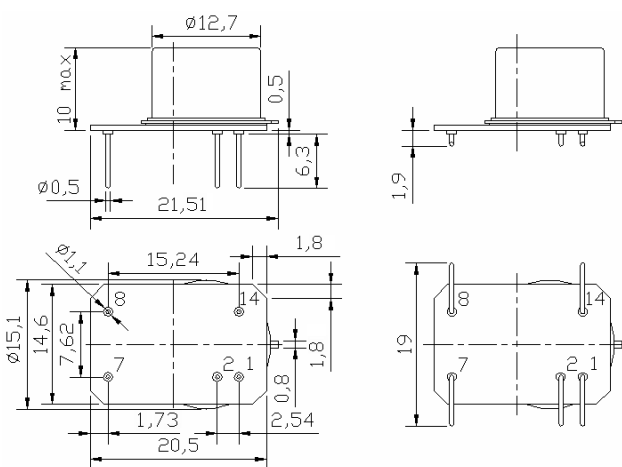
#### Description

The MXO37 series uses internal heating resonator technology (IHRT) with arrangement of the oven system together with the crystal plate inside TO-8 vacuum holder. Such approach results in radical reduction of the OCXO sizes, power consumption and warm-up time. In spite of ultra-miniature sizes and extremely low power consumption this part has excellent temperature stability, phase-noise and aging making it very advantaged over high-end OCXOs of conventional designs. The MXO37 series OCXOs are available in 8DIP and 14DIP compatible versions.

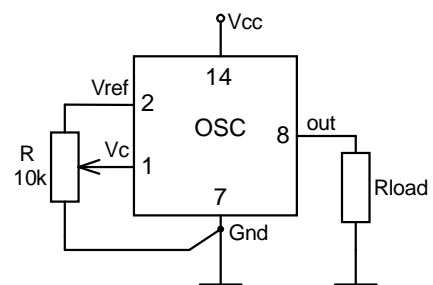
#### Physical Dimensions

MXO37/14

MXO37/14S



#### Pin Connections



Pin	Signal
1	Electrical tuning
2	Reference voltage
7	GND
8	RF Out
14	+V Supply

**Specification**
**MXO37 Series Vacuum-Sealed Miniature OCXOs**

Parameter	Sym.	Conditions	Value			Unit	Note
			Min.	Typ.	Max.		
Frequency range	$f_0$		5		250	MHz	
<b>RF output</b>							
HCMOS (TTL) option	Load		10		15	kOhm	
	H-level voltage	$V_H$	3.9			V	
	L-level voltage	$V_L$			0.4	V	
	Duty cycle		45		55	%	
	Rise/Fall time				10	ns	For 10MHz operational Frequency.
Sine-wave option	Level	L	+6	+8	+10	dBm	
	Load	$R_L$		50		Ohm	
	Harmonics level				-25	dBc	
Sub-harmonics level		Operational frequency <30 MHz Operational frequency $\geq$ 30 MHz		none		dBc	Frequency multiplier used
<b>Power supply</b>							
Voltage	$V_{cc}$		4.75	5.0	5.25	V	3.3V optional
Power consumption		Warm-up state Steady state, +25°C		0.7 0.150		W	
Warm-up time	$t_{up}$	to $\Delta f/f=1e-7$ , at +25°C	15		60	s	ref. to frequency after 15 min.
<b>Frequency control</b>							
Control voltage range	$V_c$	$V_{cc}=5V$ $V_{cc}=3.3V$	0 0		4.3 2.8	V	Tuning slope - positive (standard option)
Tuning range			$\pm 0.5$	$\pm 1$		ppm	
Reference voltage	$V_{ref}$	$V_{cc}=5V$ $V_{cc}=3.3V$	4.19 2.73	4.3 2.8	4.41 2.87	V	
<b>Frequency stability</b>							
vs. temperature		-30°C to +70°C, ref 25°C		$\pm 50$		ppb	See chart below
vs. supply voltage		ref $V_{cc}$ typ.		$\pm 2$		ppb	
vs. acceleration		Worst direction			$\pm 1$	ppb/G	
SSB Phase noise		1 Hz		-90		dBc/Hz	For 10MHz operational frequency.
		10 Hz		-125			
		100 Hz		-145			
		1 kHz		-155			
		10 kHz		-165			
Allan variance		1 s		20		e-12	
Aging	per day	after 30 days of operation			$\pm 0.5$	ppb	Standard option S (see chart below)
	first year				$\pm 0.05$	ppm	
<b>Environmental, mechanical conditions.</b>							
Operating temperature range	-30°C to +70°C Standard. Other options - see chart below.						
Storage temperature range	-60°C to +90°C						
Humidity	Non-condensing 95%						
Mechanical shock	Per MIL-STD-202, 30G half sine pulse, 11ms						
Vibration	Per MIL-STD-202, 10G swept sine 10 to 2000 Hz						
Soldering conditions	260°C 10s						

**Ordering code**

MXO37	/14	-	C	58	S	5	S	-	10 MHz
1	2		3	4	5	6			

1	Packaging type	
Code	Case	
/14	14 DIP	
/14S	14 DIP SMD	

2	Temperature range	
Code	Specification	
A	0°C..50°C	
B	-10°C..60°C	
C	0°C..70°C	
D	-20°C..70°C	
E	-30°C..70°C	
F	-40°C..85°C	

3	Stability over temperature		
Code	Specification	Temperature range code available	
XZ	$\pm Xe-Z$		
59	$\pm 5e-9$	A...B	
18	$\pm 1e-8$	A...E	
28	$\pm 2e-8$	A...F	
58	$\pm 5e-8$	A...F	
17	$\pm 1e-7$	A...F	

4	Aging			
Code	Specification	Per day*	First year*	
L	Relaxed	1 ppb	0.1 ppm	
S	Standard	0.5 ppb	0.05 ppm	

\* Figures for 10 MHz OCXO.

5	Supply voltage	
Code	Specification	
3	3.3V $\pm$ 5%	
5	5V $\pm$ 5%	

6	Output	
Code	Specification	
T	HSMOS/TTL	
S	Sinewave	

Deviation of the parameters is possible on customers' requirements.