



### Features

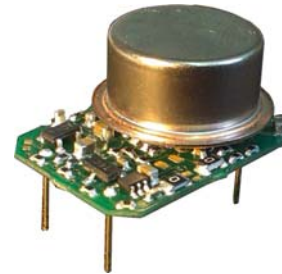
14DIP Compatible 9.3mm Height Packaging  
 Very Low Power Consumption (0.18W at +25°C)  
 High Stability (up to  $\pm 3 \times 10^{-9}$  over -40°C to 85°C)  
 Fast Warming-up 60 s (to 15 s – spec. option)  
 Low Phase Noise (-173 dBc/Hz floor at 100MHz)  
 Low Aging ( $2 \times 10^{-10}$ /day,  $2 \times 10^{-8}$ /year)  
 Wide Frequency range (8 – 150 MHz)

### Typical Applications

Portable Wireless Communications  
 Mobile Test equipment  
 Synthesizers  
 Battery Powered Application

9.3mm height 14 DIP compatible

# NEW!



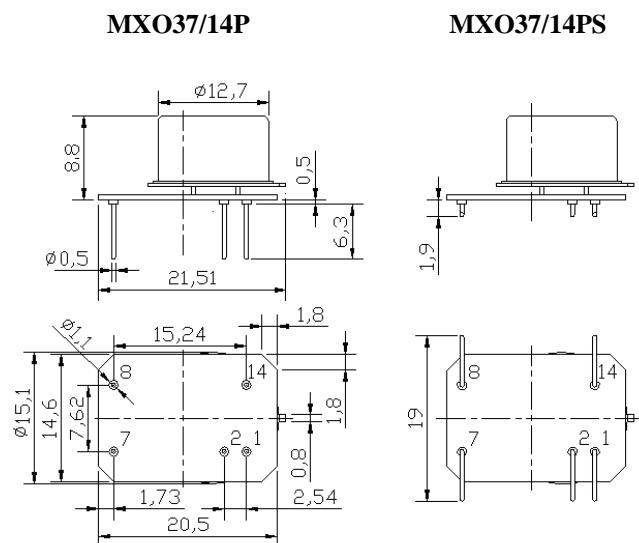
RoHS compliant

### Description

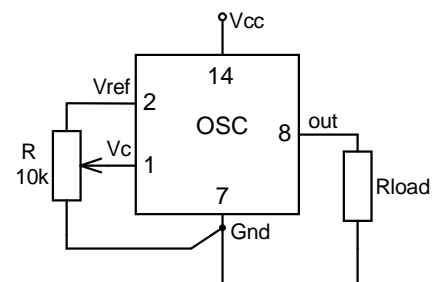
The MXO37 series utilizes the internal heating resonator (IHR) technology incorporating the whole oven system together with the crystal plate inside the TO-8 vacuum holder. Such OCXO concept results in radical reduction of its volume, power consumption and warm-up time.

The novel MXO37/14P version differs from the basic MXO37/14 model by improved oscillator circuitry providing essentially better temperature stability at the same miniature sizes, extremely low power consumption and low phase-noise level.

### Physical Dimensions



### Pin Connections



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

**Specification**
**Ultra Low Power High Stability Miniature OCXO**

Parameter	Sym.	Conditions	Value			Unit	Note
			Min.	Typ.	Max.		
Frequency range	$f_0$		8		150	MHz	
<b>RF output</b>							
HCMOS	Load		10		10 / 5	kOhm pF	10MHz / 100MHz op. freq.
	H-level voltage	$V_H$	3.8			V	
	L-level voltage	$V_L$			0.4	V	
	Duty cycle		45		55	%	
	Rise/Fall time				10 / 3	ns	
Sine-wave	Level	L	$V_{cc}=5\text{ V}$		+5	+8	dBm
	Load	$R_L$			50		Ohm
	Harmonics					-25	dBm
Sub-harmonics level			None				
<b>Power supply</b>							
Voltage	$V_{cc}$		4.75	5.0	5.25	V	3.3V available
Power consumption		Warm-up state Steady state, +25°C		1.0 0.180		W W	
Warm-up time	$t_{up}$	to $\Delta f/f=1e-7$ , at +25°C ref. to frequency after 15 min.			60	s	15 s - optionally
<b>Frequency control</b>							
Control voltage range	$V_c$	$V_{cc}=5\text{ V}$ $V_{cc}=3.3\text{ V}$	0 0		4.2 2.8	V V	Tuning slope - positive
Tuning range			$\pm 0.5$	$\pm 1$		ppm	
Reference voltage	$V_{ref}$	$V_{cc}=5\text{ V}$	4.1	4.2	4.5	V	
		$V_{cc}=3.3\text{ V}$	2.7	2.8	2.9	V	
<b>Frequency stability</b>							
vs. temperature		-40°C to +85°C, ref 25°C			$\pm 3$	ppb	10MHz - See chart below
vs. supply voltage		ref $V_{cc}$ typ.			$\pm 2$	ppb	
vs. acceleration		Worst direction			$\pm 1$	ppb/G	0.5 ppb/G – optionally
SSB Phase noise		1 Hz			-100 / ---	dBc/Hz	Utmost phase noise level: 10MHz / 100MHz op. freq.
		10 Hz			-135 / -97		
		100 Hz			-159 / -128		
		1 kHz			-166 / -155		
		10 kHz			-170 / -170		
		100 kHz			-170 / -173		
Aging	per day	after 30 days of operation			$\pm 0.2$	ppb	10MHz op. freq. See chart below
	first year				$\pm 0.02$	ppm	
<b>Environmental, mechanical conditions.</b>							
Operating temperature range	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	Hand solder only – not reflow compatible 260°C 10s (on pins)						

**Ordering code**

MXO37	/14P-	F	59	C	5	S	-	10 MHz
	1	2	3	4	5	6		

1 Packaging type	
Code	Case
/14P	14 DIP
/14PS	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	
		10MHz	100MHz
XZ	$\pm Xe-Z$		
39	$\pm 3e-9$	A..F	
59	$\pm 5e-9$	A...F	A
18	$\pm 1e-8$	A...F	A...F
28	$\pm 2e-8$	A...F	A...F
38	$\pm 3e-8$	A...F	A...F
58	$\pm 5e-8$	A...F	A...F

4 Aging per day,ppb/year,ppm		Frequency
Code	Specification	
B	0.2 / 0.02	$\leq 10\text{MHz}$
Z	0.3 / 0.03	
C	0.5 / 0.05	$\leq 20\text{MHz}$
D	1 / 0.1	$\leq 40\text{MHz}$
E	1.5 / 0.15	$\leq 50\text{MHz}$
F	2 / 0.2	
G	3 / 0.3	$\leq 120\text{MHz}$
H	5 / 0.5	$\leq 150\text{MHz}$

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

6 RF Output	
Code	Specification
T	HCMOS
S	Sine-wave

Deviation of the parameters is possible on customers' requirements.