



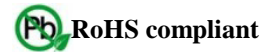
Revised in March 2015

High frequency high stability low power miniature OCXO

Features

Very low power consumption - to 0.15W at +25°C
 14 DIP compatible sizes and pins-out
 Extended to 300 MHz frequency range (multiplication is used)
 Up to 10 ppb temperature stability in (-40...+85)°C at 100 MHz
 Very low aging – to 50 ppb/year at 100 MHz
 Low Allan variance, 1s 1×10^{-11}
 Fast warming up – to 60 s typical, 15s - optionally

Packaging 14 DIP compatible



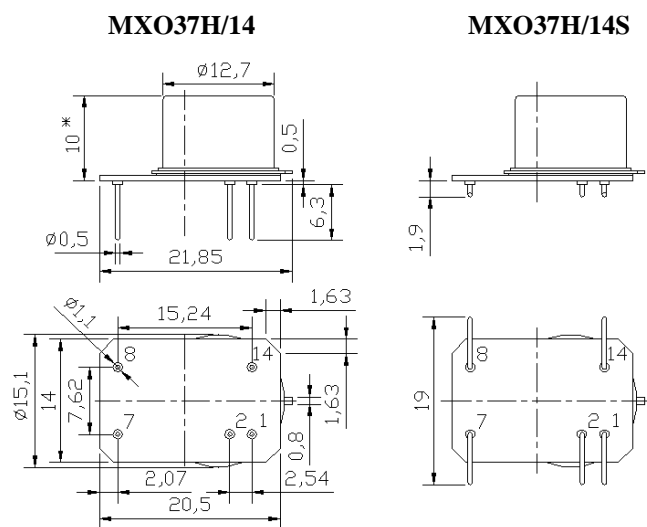
Typical Applications

- Portable and Low Power
- Synthesizer Reference
 - Microwave Communications
 - Instrumentation
 - Radar Reference

Description

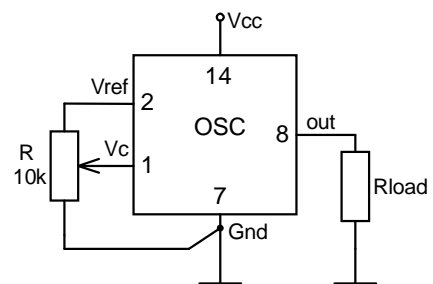
The MXO37H/14 series like the other MXO37 series utilizes the internally heated resonator technology (IHR) providing very low power consumption, miniature sizes and fast warming up. Usage of the internal multiplication of frequency (by 3 or 5) enables extension of the operational frequencies up to 300 MHz and improvement as compared to the MXO37 series of the temperature stability and aging rate in 30-150 MHz range.

Physical Dimensions



* - 9mm height is available on special request

Pin Connections



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

Specification
High frequency high stability low power miniature OCXO

OCXO Specification		Sym.	Condition	Value			Unit	Note
				Min.	Typ.	Max.		
Operational Frequency Range		f_0		30		300	MHz	Frequency multiplication
RF output								
HCMOS/ TTL compatible option	Load			10		5	kOhm	for 100MHz operational freq.
	H - level voltage	V_H	$V_{cc}=5V$ $V_{cc}=3.3V$	3.8 2.4			V	
	L - level voltage	V_L				0.4	V	
	Rise & Fall time					2.5	ns	
	Duty cycle			45		55	%	
Sine-wave option	Level	L	$V_{cc}=5V$		+7	+11	dBm	
	Load	R_L			50		Ohm	
	Harmonics					-25	dBc	
Subharmonics						-40	dBc	
Power supply								
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		sec.	ref. to frequency after 10 min.
Frequency control*								
Control voltage range		V_c	$V_{cc}=5V$ $V_{cc}=3.3V$	0 0		4.2 2.8	V	Positive tuning slope - standard option
Tuning range				± 0.5			ppm	for 100MHz operational freq.
Reference voltage		V_{ref}	$V_{cc}=5V$ $V_{cc}=3.3V$	4.10 2.70	4.20 2.80	4.30 2.90	V	
Frequency stability								
vs. temperature			-40°C to +85°C, ref 25°C	± 10	± 50		ppb	For 100 MHz, see chart below
vs. supply voltage			ref V_{cc} typ.		± 5		ppb	
vs. acceleration			Worst direction	± 0.5		± 1	ppb/G	
SSB Phase noise			10 Hz	-100			dBc/Hz	for 100MHz operational freq.
			100 Hz	-125				
			1 kHz	-145				
			10 kHz	-155				
			100 kHz	-160				
Allan variance			1 s	10	20		e-12	
Aging	per day		after 30 days of operation		± 1		ppb	for 100MHz standard option (see chart below)
	first year				± 0.1		ppm	
Environmental, mechanical conditions.								
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						
Washing conditions		Washing with water or alcohol based detergent allowed only with final enough drying stage						
Soldering conditions		Hand solder only – not reflow compatible. 260°C 10s (on pins)						

* No frequency control option – on customer requirement

Ordering code

MXO37H	/14	-	E	17	C	5	S	-	100 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
G	-55°C..85°C

3	Stability over temperature		
Code	Specification	Temperature range code available	
		for 100 MHz (mult. by 5)	for 300 MHz (mult. by 3)
XZ	$\pm X_e-Z$		
59	$\pm 5e-9$	A	-
18	$\pm 1e-8$	A...F	A
28	$\pm 2e-8$	A...G	A...E
58	$\pm 5e-8$	A...G	A...G
17	$\pm 1e-7$	A...G	A...G

4	Aging per day/year, ppb/ppm	
Code	Specification	
B	0.2/0.02	For frequency range of 30-150 MHz
Z	0.3/0.03	
C	0.5/0.05	
D	1/0.1	
E	1.5/0.15	
F	2/0.2	For frequency range of 150-300 MHz
G	3/0.3	
H	5/0.5	

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

6	Output
Code	Specification
T	HCMOS/TTL
S	Sinewave