



Revised in March of 2015

High stability high frequency very low power OCXO

Features

High temperature stability: up to 2 ppb (over -40+80°C)
 Low aging: 0.5 ppb/day, 50 ppb/year (at 100 MHz)
 Ultra low power consumption: 0.18W at +25°C
 Low Allan Variance: $1e-11$ /at 1s
 Very fast warming-up: 60 s typical, 15 s - optionally
 Wide frequency range: 30 – 300 MHz
 Hermetically sealed miniature steel package

Typical Applications

Portable Wireless Communications
 Mobile Test equipment
 Synthesizer reference
 Microwave communication
 Battery Powered Application

Packaging type R: 20.4 x 20.4 x 12.0 mm

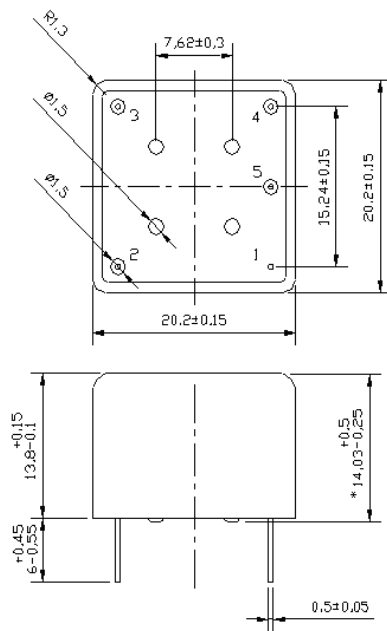


RoHS compliant

Description

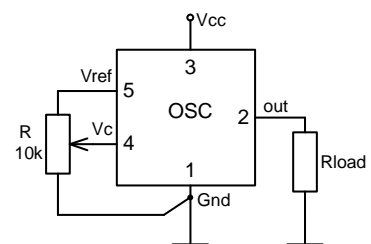
The MXO37H/R series utilizes the internal heated resonator technology (IHR) providing very small oscillator volume, less than 0.18W power consumption and fast warming up. Usage of the internal multiplication of frequency (by 3 or 5) enables to the oscillators extension of the operational frequencies up to 300 MHz and improvement of the temperature stability and aging rate in 30-150 MHz range. Being enclosed in hermetically sealed steel packaging the MXO37/R oscillators are intended for employment in harsh environmental conditions (100% humidity, high or low pressure, etc.) and are excellent solution for various portable or (and) battered systems.

Physical Dimensions



* 12 mm, 12.9 mm heights and 0.8 mm pins are available

Pin Connections



Pin	Signal
1	GND
2	RF Out
3	+V Supply
4	Electrical tuning
5	Reference voltage



Specification

Parameter	Sym.	Conditions	Value			Unit	Note
			Min.	Typ.	Max.		
Frequency range	f ₀		30		300	MHz	At multiplication by 3 or 5
RF output							
HCMOS (TTL) option	Load		10		5	kOhm	For 100 MHz
	H-level voltage	V _H	V _{cc} =5V V _{cc} =3.3V	3.8 2.4		V V	
	L-level voltage	V _L			0.4	V	
	Duty cycle			45		55	%
	Rise/Fall time					2.5	ns
Sine-wave option	Level	L		+8	+11	dBm	
	Load	R _L		50		Ohm	
	Harmonics level				-25	dBc	
Sub-harmonics level					-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 0.15		W W	
Warm-up time	t _{up}	to Δf/f=1e-7, at +25°C	15	60		s	ref. to frequency after 15 min.
Frequency control							
Control voltage range	V _c	V _{cc} =5 V V _{cc} =3.3 V	0 0		4.2 2.8	V V	Tuning slope - positive (standard option)
Tuning range			±0.5	±1		ppm	
Reference voltage	V _{ref}	V _{cc} =5 V V _{cc} =3.3 V	4.1 2.70	4.2 2.8	4.3 2.9	V V	
Frequency stability							
vs. temperature		-40°C to +80°C, ref 25°C	±2	±10		ppb	For 100 MHz, see chart below
vs. supply voltage		ref V _{cc} typ.		±2		ppb	
vs. acceleration		Worst direction	±0.5	±1		ppb/G	
SSB Phase noise		10 Hz		-95		dBc/Hz	For 100MHz
		100 Hz		-130			
		1000 Hz		-145			
		10 kHz		-150			
		100 kHz		-155			
Allan variance		1 s	10	20		e-12	
Aging	per day	after 30 days of operation	±0.5			ppb	see chart below
	first year		±0.05			ppm	
Environmental, mechanical conditions.							
Operating temperature range	-40°C to +85°C Standard. Other options - see chart below.						
Storage temperature range	-60°C to +90°C						
Humidity	Hermetically sealed						
Mechanical shock	30G half sine pulse, 11ms						
Vibration	5G swept sine 10 to 500 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)						

Ordering code

MXO37H /R - C 18 C 5 S - 100 MHz
 1 2 3 4 5

1	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

2	Stability over temperature		
Code	Specification	Temperature range code available for 100 MHz	
XZ	±Xe-Z		
19	±1e-9	A...B	
29	±2e-9	A...F*	
39	±3e-9	A...G*	
59	±5e-9	A...G	
18	±1e-8	A...G	
28	±2e-8	A...G	
58	±5e-8	A...G	
17	±1e-7	A...G	

3	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	For frequency range of 150-300 MHz
F	2/0.2	
G	3/0.3	
H	5/0.5	

4	Supply voltage	
Code	Specification	
3	3.3V±5%	
5	5V±5%	

5	Output	
Code	Specification	
T	HSMOS/TTL	
S	Sinewave	

*temperature stability is available at up to +80°C operation temperature