



Revised in March 2019

High stability high frequency very low power OCXO

Features

High temperature stability: up to 1 ppb (over -40+80°C)
 Low aging: 0.5 ppb/day, 50 ppb/year (at 100 MHz)
 Low power consumption: 0.23W at +25°C
 Low Allan Variance: 5e-12/at 1s
 Fast warming-up: <90 s
 Wide frequency range: 30 – 300 MHz
 Hermetically sealed miniature steel package

Packaging: 20.2 x 20.2 mm



RoHS compliant

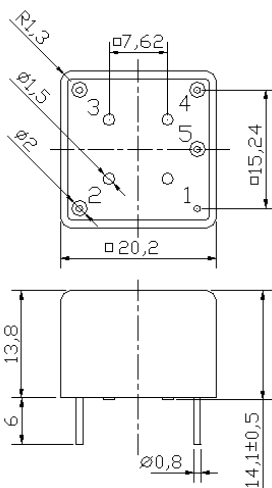
Typical Applications

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

Description

The MXO37H/R series utilizes the internal heated resonator technology (IHR) providing very small oscillator volume, low 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 MXO37H/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.

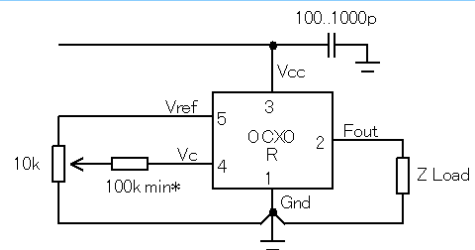
Physical Dimensions



12.9 mm, 12.0 mm height are available

The manufacturer reserves the right to reduce the external dimensions without changing of connecting dimensions.

Pin Connections



* required for some versions

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

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Specification

Parameter	Sym.	Conditions	Value			Unit	Note	
			Min.	Typ.	Max.			
Frequency range	f_0		30		300	MHz	Frequency multiplication on 3 and 5	
Initial tolerance	$(f-f_0)/f_0$	+25°C, $V_c=0.5*V_{ref}$		±0.1		ppm		
RF output								
HCMOS (TTL) option	Load		10		5	kOhm pF	100 MHz	
	H-level voltage	V_H	$V_{cc}=5V$ $V_{cc}=3.3V$	3.7 2.4		V		
	L-level voltage	V_L			0.4	V		
	Duty cycle			45		55	%	
	Rise/Fall time					3	ns	100 MHz
Sine-wave option	Level	L	$V_{cc}=5V$ $V_{cc}=3.3V$	+7 +4			dBm	
	Load	R_L			50		Ohm	
	Harmonics level					-30	dBc	
	Sub-harmonics level					-40	dBc	
Power supply								
Voltage	V_{cc}		4.75 3.15	5.0 3.3	5.25 3.45	V		
Power consumption		Warm-up time Steady state, +25°C		230	1200	mW	100MHz, -40°C..85°C	
Warm-up time	t_{up}	at +25°C to $\Delta f/f=1e-7$ at +25°C to $\Delta f/f=1e-8$		90 120		s	ref. to freq. after 15 min. of operation	
Frequency control								
Control voltage range	V_c	$V_{cc}=5V$ $V_{cc}=3.3V$	0 0		4.3 3.1	V		
Tuning range		Compliance with 10 years of aging	±0.3			ppm	positive slope	
Reference voltage	V_{ref}	$V_{cc}=5V$ $V_{cc}=3.3V$	4.0 2.7		4.3 3.1	V		
Frequency stability								
vs. temperature		ref. 25°C, air flow 0.5 m/s max.	±1.0			ppb	See ordering code	
vs. supply voltage		ref V_{cc} typ.		±0.2		ppb		
G – sensitivity		worst direction, 0 – 1kHz vibration BW (for 0 – 2kHz BW consult the factory)	±0.2	±1.0		ppb/G		
Retrace		24h work after 24h off			±10	ppb	10MHz	
SSB Phase noise		10 Hz	-110		-100	dBc/Hz	100MHz multiplication by 5 $V_{cc}=5V$	
		100 Hz	-130		-120			
		1 kHz	-145		-140			
		10 kHz	-155		-150			
		100 kHz	-155		-150			
Allan deviation		1 s	5		30	e-12	100MHz	
Aging	per day	after 30 days of operation	±0.5			ppb	100MHz see ordering code	
	first year		±0.05			ppm		
Environmental, mechanical conditions								
Airflow velocity	0.5 m/s maximum							
Operating temperature range	See ordering code							
Storage temperature range	-60°C to +85°C							
Power voltage	-0.5V to $V_{cc}+20\%$							
Control voltage	-0.5V to 6V							
Humidity	Hermetically sealed							
Mechanical shock	Per MIL-STD-202, 30G half sine pulse, 11ms							
Vibration	Per MIL-STD-202, 10G swept sine 10 to 2000Hz (5G swept sine 10 to 500Hz for OCXO with 0.5mm pins)							
Soldering conditions	Hand solder only – not reflow compatible. 260°C 10s (on pins)							
Washing Conditions	Washing with water or alcohol based detergent allowed only with final enough drying stage							

For ordering code – see next page

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Ordering code

MXO37H/R	-	B	50	B	5	T	-	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
J	-40°C..80°C
F	-40°C..85°C
G	-55°C..85°C
Q	-60°C..85°C

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

2	Stability over temperature	
Code	Specific.	Temperature range code available for 100MHz 5V
XY	±Xe-Y	
30	±3e-10	-
50	±5e-10	A, B
19	±1e-9	A, B, C, D, E, J
29	±2e-9	A, B, C, D, E, J
39	±3e-9	A, B, C, D, E, J
59	±5e-9	A, B, C, D, E, J, F
18	±1e-8	A, B, C, D, E, J, F, G
28	±2e-8	A, B, C, D, E, J, F, G
38	±3e-8	A, B, C, D, E, J, F, G, Q
58	±5e-8	A, B, C, D, E, J, F, G, Q
17	±1e-7	A, B, C, D, E, J, F, G, Q

3	Aging per day/year, ppb/ppm	
Code	Specification	
A	0.1/0.015*	For frequency range of 30-150 MHz
B	0.2/0.02	
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	

* available for temperature range A,B,C,D,E

5	Output
Code	Specification
T	HSMOS/TTL
S	Sine wave

Deviation of the parameters is possible on customer's requirements. Please consult the factory.

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