



Revised in March 2015

Low power miniature high stability OCXO

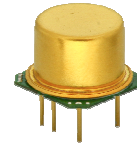
Features

Miniature DIP8 sizes
 Very low power consumption: to 0.15W at +25°C
 High frequency stability: to ± 10 ppb over -40°C to 85°C
 Very fast warming-up: 60s, 15s - optionally
 Low phase-noise level: -165 dBc/Hz, floor
 Low aging: to 0.2 ppb/day, 20 ppb/year
 Frequency range: 8-100 MHz

Typical Applications

Portable Wireless Communications
 Mobile Test equipment
 Beacons & Rescue systems
 Battery Powered Applications

8DIP compatible

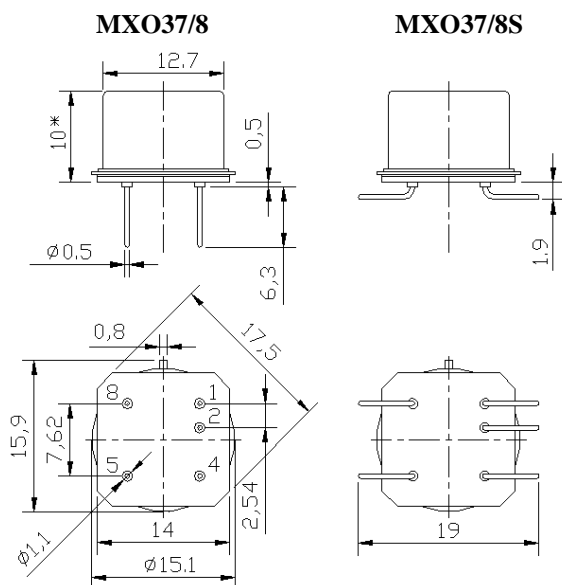


RoHS compliant

Description

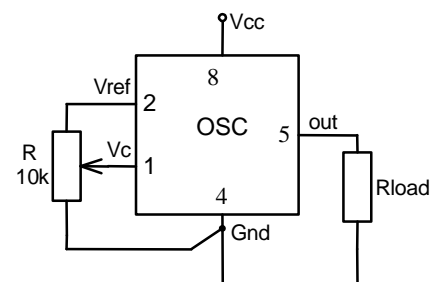
The MXO37 series utilizes the internal heating resonator technology (IHR) with arrangement of the oven system together with the crystal plate inside the TO-8 vacuum holder. Such approach results in radical reduction of the OCXO sizes, power consumption and warm-up time. In spite of very small sizes and extremely low power consumption these oscillators exhibit excellent frequency stability and low phase-noise level comparable with that of the high-end conventional OCXO designs. The MXO37/8 and MXO37/8S (SMD) models have DIP8 compatible sizes and pins-out and are the world smallest high stability OCXOs.

Physical Dimensions



* - 9mm height also available on special request

Pin Connections



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



Specification

Parameter	Sym.	Conditions	Value			Unit	Note
			Min.	Typ.	Max.		
Frequency range	f_0		8		100	MHz	
RF output							
HCMOS	Load		10		15	kOhm pF	For 10 MHz
	H-level voltage	V_H	$V_{cc}=5\text{ V}$ $V_{cc}=3.3\text{ V}$	3.8 2.4		V	
	L-level voltage	V_L			0.4	V	
	Duty cycle			45		55	%
	Rise/Fall time					10	ns
Power supply							
Voltage	V_{cc}		4.75	5.0	5.25	V	3.3V available
Power consumption		Warm-up state Steady state, +25°C		0.7 0.15		W	
Warm-up time	t_{up}	to $\Delta f/f=1e-7$, at +25°C	15	60		s	ref. to frequency after 15 min.
Frequency control							
Control voltage range	V_c	$V_{cc}=5\text{ V}$ $V_{cc}=3.3\text{ V}$	0 0		4.2 2.8	V	Tuning slope - positive (standard option)
Tuning range			± 0.5	± 1		ppm	
Reference voltage	V_{ref}	$V_{cc}=5\text{ V}$ $V_{cc}=3.3\text{ V}$	4.1 2.7	4.2 2.8	4.3 2.9	V	
Frequency stability							
vs. temperature		-40°C to +85°C, ref. 25°C		± 5		ppb	See chart below
vs. supply voltage		ref V_{cc} typ.		± 2		ppb	
vs. acceleration		Worst direction	± 0.5		± 1	ppb/G	
SSB Phase noise		1 Hz	-100	-95		dBc/Hz	For 10MHz operational frequency.
		10 Hz	-130	-125			
		100 Hz	-148	-145			
		1 kHz	-158	-155			
		10 kHz	-165	-165			
Allan variance		1 s	5	20		e-12	
Aging	per day	after 30 days of operation	± 0.2	± 0.5		ppb	See the chart below
	first year		± 0.02	± 0.05		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)						

Ordering code

MXO37 /8 - C 58 B 5 - 10 MHz
 1 2 3 4 5

1 Packaging type	
Code	Case
/8	8 DIP
/8S	8 DIP SMD

3 Stability over temperature			
Code	Specification	Temperature range code available for 10 MHz	Temperature range code available for 100 MHz
XY	$\pm Xe-Y$		
39	$\pm 3e-9$	A...B	-
59	$\pm 5e-9$	A...E	-
18	$\pm 1e-8$	A...F	-
28	$\pm 2e-8$	A...G	A...B
58	$\pm 5e-8$	A...G	A...E
17	$\pm 1e-7$	A...G	A...G

4 Aging per day/year, ppb/ppm		
Code	Specification	
B	0.2/0.02	≤ 10 MHz
Z	0.3/0.03	
C	0.5/0.05	≤ 20 MHz
D	1/0.1	≤ 40 MHz
E	1.5/0.15	≤ 50 MHz
F	2/0.2	
G	3/0.3	≤ 100 MHz
H	5/0.5	

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

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

Deviation of the parameters is possible on customers' requirements.