



Magic Xtal Ltd

Only Magic Technologies!

MXO37/8

Revised in July, 2010

MXO37 Series - Vacuum-Sealed Miniature OCXOs

Features

Ultra-Miniature Package Size
 Very Low Power Consumption (0.15W at +25°C)
 High Stability (to $\pm 5 \times 10^{-9}$ over -10°C to 60°C)
 Very Fast Warming-up (to 15 s)
 Low Phase-Noise Level (-165 dBc/Hz, TYP, floor)
 Low Aging (5×10^{-10} /day, 5×10^{-8} /year)
 Frequency range 5 – 100 MHz

Typical Applications

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

8DIP compatible

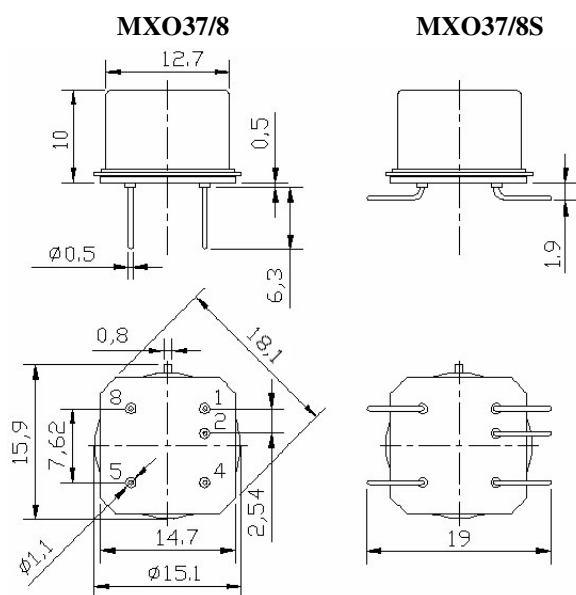


RoHS compliant

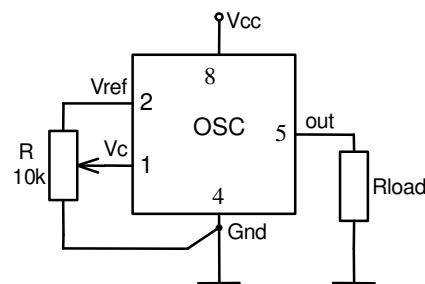
Description

The MXO37 series uses internal heating resonator technology (IHRT) with arrangement of the oven system together with the crystal plate inside TO-8 vacuum holder. Such approach results in radical reduction of the OCXO sizes, power consumption and warm-up time. In spite of ultra-miniature sizes and extremely low power consumption this part has excellent temperature stability, phase-noise and aging making it very advantaged over high-end OCXOs of conventional designs. The MXO37 series OCXOs are available in 8DIP and 14DIP compatible versions.

Physical Dimensions



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		5		50	MHz	
RF output							
HCMOS	Load		10		15	kOhm pF	
	H-level voltage	V_H	3.8			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 optional
Power consumption		Warm-up state Steady state, +25°C		0.7 0.150		W W	
Warm-up time	t_{up}	to $\Delta f/f=1e-7$, at +25°C	15		90	s	ref. to frequency after 15 min.
Frequency control							
Control voltage range	V_c	$V_{cc}=5V$ $V_{cc}=3.3V$	0 0		4.2 2.8	V V	Tuning slope - positive (standard option)
Tuning range			± 0.5	± 1		ppm	
Reference voltage	V_{ref}	$V_{cc}=5V$ $V_{cc}=3.3V$	4.10 2.70	4.2 2.8	4.30 2.90	V V	
Frequency stability							
vs. temperature		-30°C to +70°C, ref 25°C		± 50		ppb	See chart below
vs. supply voltage		ref V_{cc} typ.		± 2		ppb	
vs. acceleration		Worst direction			± 1	ppb/G	
SSB Phase noise		1 Hz		-90		dBc/Hz	For 10MHz operational frequency.
		10 Hz		-125			
		100 Hz		-145			
		1 kHz		-155			
		10 kHz		-165			
Allan variance		1 s		20		e-12	
Aging	per day	after 30 days of operation			± 0.5	ppb	Standard option S (see chart below)
	first year				± 0.05	ppm	
Environmental, mechanical conditions.							
Operating temperature range	-30°C to +70°C Standard. Other options - 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	260°C 10s						

Ordering code

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

1	Packaging type
Code	Case
/8	8 DIP
/8S	8 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	
XY	$\pm Xe-Y$		
59	$\pm 5e-9$	A...B	
18	$\pm 1e-8$	A...C	
28	$\pm 2e-8$	A...F	
58	$\pm 5e-8$	A...F	
17	$\pm 1e-7$	A...F	

4	Aging			
Code	Specification	Per day*	First year*	
L	Relaxed	1 ppb	0.1 ppm	
S	Standard	0.5 ppb	0.05 ppm	

* Figures for 10 MHz OXCO.

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

Deviation of the parameters is possible on customers' requirements.