Magic Xtal Ltd

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MXO37/8

Revised in January 2007

MXO37 Series - Vacuum-Sealed Miniature OCXOs

Features

Ultra-Miniature PackageSize
Very Low Power Consumption (0.15W at +25°C)
High Stability (to ± 5x10-9 over -10°C to 60°C)
Very Fast Warming-up (to 15 s)
Low Phase-Noise Level (-165 dBc/Hz, TYP, floor)
Low Aging (5x10-10/day, 5x10-8/year)
Frequency range 5 – 50 MHz

Typical Applications

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

8DIP compatible

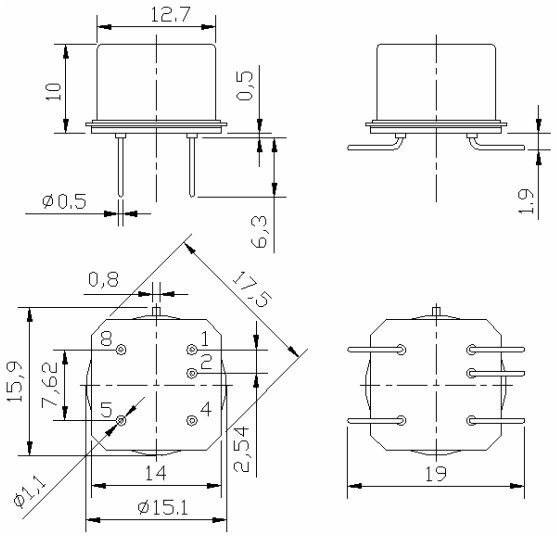
RoHS compliant

Description

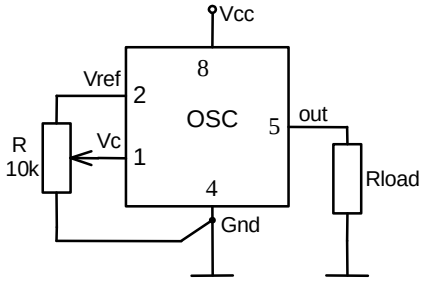
The MXO37 series uses internal heating resonator technology (IHRT) with arrangement of the oven system together with the crystal plate inside TO-8 vacuum holder. Such approach results in radical reduction of the OCXO sizes, power consumption and warm-up time. In spite of ultra-miniature sizes and extremely 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

MXO37/8 **MXO37/8S**



Pin Connections



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

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Specification

MXO37 Series Vacuum-Sealed Miniature OCXOs

Parameter		Sym.	Conditions	Value Min.	Value Typ.	Value Max.	Unit	Note
Frequency range		f_0		5		50	MHz	
RF output								
HCMOS	Load			10		15	kOhm pF	
	H-level voltage	V_H		3.9			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, +25ºC		0.7 0.150		W W	
Warm-up time		t_{up}	to Δf/f=1e-7, at +25ºC	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		4.3 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	4.19 2.73	4.3 2.8	4.41 2.87	V V	
Frequency stability								
vs. temperature			-30ºC to +70ºC, ref 25ºC		±50		ppb	See chart below
vs. supply voltage			ref Vcc 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	-30ºC to +70ºC Standard. Other options - see chart below.
Storage temperature range	-60ºC to +90ºC
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	260ºC 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	0ºC..50ºC
B	-10ºC..60ºC
C	0ºC..70ºC
D	-20ºC..70ºC
E	-30ºC..70ºC
F	-40ºC..85ºC

3	Stability over temperature	
Code	*Specification*	*Temperature range code available*
XY	±Xe-Y	
59	±5e-9	A…B
18	±1e-8	A…C
28	±2e-8	A…F
58	±5e-8	A…F
17	±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 OCXO.

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

Deviation of the parameters is possible on customers' requirements.

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