



Revised in March 2015

Low power high-strength miniature OCXO

Features MXO37/8D

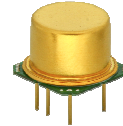
Very small sizes
 Ultra low power consumption: 0.23W at +25°C
 Very high mechanical strength: to up 500G, 1 ms shocks,
 Vibration 30G to 2000Hz sine
 High frequency stability: to ± 10 ppb over -40°C to 85°C
 Fast warming up: 60s – typical, 30s - optionally
 Operational frequency range: 8 – 100 MHz

Typical Applications

Portable and battery fed wireless
 Mobile test equipment
 Beacons & Rescue systems
 Equipment working at severe mechanical factors

8DIP compatible

MXO37/8D

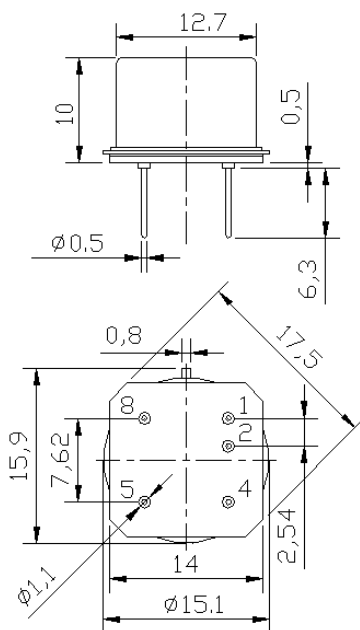


RoHS compliant

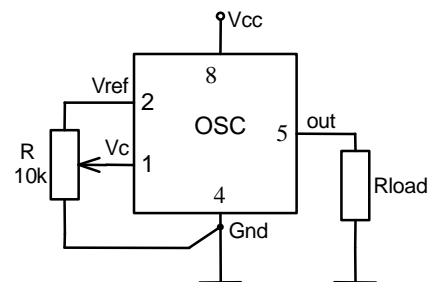
Description

The MXO37 series uses the internal heating resonator (IHR) technology with arrangement of the whole 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 its warm-up time providing at that excellent temperature stability, low phase-noise and aging. The MXO37/8D model utilizes essentially strengthened mechanical construction of the IHR enabling extraordinary mechanical durability.

Physical Dimensions



Pin Connections



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

Specification
Ultra Low Power High Durable Miniature OCXO

Parameter	Sym.	Conditions	Value			Unit	Note
			Min.	Typ.	Max.		
Frequency range	f_0		8		100	MHz	
RF output							
HCMOS	Load		10		15	kOhm pF	10 MHz op. freq.
	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		1.0 0.23		W W	
Warm-up time	t_{up}	to $\Delta f/f=1e-7$, at +25°C, $V_{cc}=5\text{ V}$ to $\Delta f/f=1e-7$, at +25°C, $V_{cc}=3.3\text{ V}$	30 40	60 70		s	ref. to frequency after 15 min. for 10 MHz
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 V	Tuning slope - positive
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 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	± 0.5		± 1	ppb/G	
SSB Phase noise		1 Hz		-97		dBc/Hz	Utmost phase noise level 10 MHz op. freq.
		10 Hz		-127			
		100 Hz		-152			
		1 kHz		-162			
		10 kHz		-166			
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	See chart below.						
Storage temperature range	-60°C to +90°C						
Humidity	Non-condensing 95%						
Mechanical shock	Per MIL-STD-202, 500G half sine pulse, 1 ms						
Vibration	Per MIL-STD-202, 30G 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	/8D	-	C	58	C	5	-	10MHz
			1	2	3	4		

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	
		10MHz	100MHz
XZ	$\pm Xe-Z$		
59	$\pm 5e-9$	A...B	
18	$\pm 1e-8$	A...F	
28	$\pm 2e-8$	A...G	A
38	$\pm 3e-8$	A...G	A...B
58	$\pm 5e-8$	A...G	A...E
17	$\pm 1e-7$	A...G	A...G

3	Aging: per day/per year, $10^{-9}/10^{-6}$		
Code			
Z	0.3/0.03		$\leq 10\text{ MHz}$
C	0.5/0.05		$\leq 20\text{ MHz}$
D	1/0.1		$\leq 40\text{ MHz}$
E	1.5/0.15		$\leq 50\text{ MHz}$
F	2/0.2		$\leq 100\text{ MHz}$
G	3/0.3		
H	5/0.5		

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

Deviation of the parameters is possible on customers' requirements.