



Revised in November 2014

### Ultra Low power Ultra High Stability OCXO

#### Features

Miniature 5 ccm packaging  
 Power consumption: <200 mW  
 High stability - to  $\pm 5 \times 10^{-10}$  over -40 to +85°C  
 Low aging rate - to  $\pm 2 \times 10^{-10}$ /day,  $2 \times 10^{-8}$ /year  
 Low Allan variance value – up to  $3 \times 10^{-12}$  at 1s  
 Frequency range: 8 to 100 MHz

#### Typical Applications

GPS Disciplined Mobile Frequency Standards  
 Portable Instrumentation  
 Mobile Communication Systems  
 Battery Supply Beacons

Packaging: 20.2 x 20.2 x 12.0 mm

# NEW!

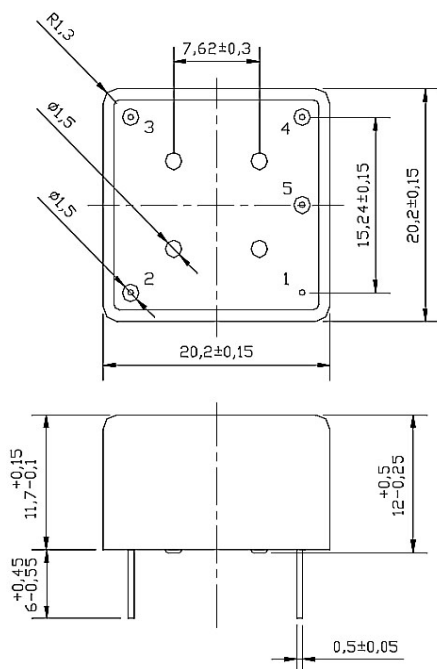


RoHS compliant

#### Description

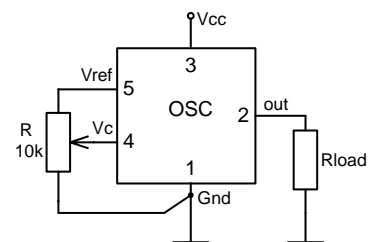
The MXO37/R model is built on advanced internally heated resonator (IHR) technology providing combination of very low power consumption and small sizes with outstanding frequency stability in wide temperature range that is unachievable with usage of conventional OCXO designs. The unique parameters of the oscillators make it very prospective for application in various high-end portable (especially battery supplied) equipment demanding superb frequency stability at minimal power consumption and smallest sizes.

#### Physical Dimensions



\*12.9 mm, 14.1 mm height and 0.8 mm pins are available

#### Pin Connections



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

**Specification**

Parameter	Sym.	Conditions	Value			Unit	Note
			Min.	Typ.	Max.		
Frequency range	$f_0$		8		100	MHz	
Initial tolerance	$(f-f_0)/f_0$	+25°C, $V_{cc}=V_{c0}$	±0.01	±0.1		ppm	
<b>RF output</b>							
HCMOS (TTL) option	Load		10		15	kOhm pF	10 MHz op. freq.
	H-level voltage	$V_{Hl}$	3.8			V	
	L-level voltage	$V_{Ll}$			0.4	V	
	Duty cycle		45		55	%	
	Rise/Fall time				10	ns	10 MHz op. freq.
Sine-wave option	Level	L		+8		dBm	
	Load	$R_L$		50		Ohm	
	Harmonics level				-30	dBc	
Sub-harmonics level		Operational frequency ≤25 MHz Operational frequency >25 MHz		none		dBc	Frequency multiplier used
<b>Power supply</b>							
Voltage	$V_{cc}$		4.75	5.0	5.25	V	
Power consumption		Warm-up state Steady state, +25°C		180	200	W mW	
Warm-up time	$t_{up}$	at +25°C to $\Delta f/f=1e-8$ , $\Delta f/f=1e-7$			150 90	sec sec	ref. to frequency after 20 min.
<b>Frequency control*</b>							
Control voltage range	$V_c$	$V_{cc}=5V$ $V_{cc}=3.3V$	0 0		4.2 2.8	V	Tuning slope - positive
Tuning range				±0.3		ppm	
Reference voltage	$V_{ref}$	$V_{cc}=5V$ $V_{cc}=3.3V$	4.10 2.7	4.20 2.8	4.30 2.9	V	
<b>Frequency stability</b>							
vs. temperature		-40°C to +85°C, ref 25°C			±0.5	ppb	See chart below
vs. supply voltage		ref Vcc typ.			±0.2	ppb	
Retrace		24h after 24h off			±10	ppb	
SSB Phase noise		1 Hz	-103			dBc/Hz	Utmost phase noise level 10 MHz op. freq.
		10 Hz	-135				
		100 Hz	-158				
		1 kHz	-167				
		10 kHz	-169				
		100 kHz	-170				
Allan variance		1 s	3	5		e-12	
Aging	per day	after 30 days of operation			±0.2	ppb	For 10 MHz operational frequency
	first year				±20	ppb	
<b>Environmental, mechanical conditions.</b>							
Operating temperature range	See chart below.						
Storage temperature range	-60°C to +90°C						
Humidity	Hermetically sealed						
Mechanical shock	Per MIL-STD-202, 30G half sine pulse, 11ms						
Vibration	Per MIL-STD-202, 5G swept sine 10 to 500 Hz						
Soldering conditions	Hand solder only – not reflow compatible. 260°C 10s (on pins)						

\* No frequency control option – on customer requirement

**Ordering code**

MXO37/R - B 50 B 5 T - 10MHz  
 1 2 3 4 5

1 Temperature range		2 Stability over temperature			
Code	Specification	Code	Specification	Temperature range code available for 10 MHz	Temperature range code available for 100 MHz
A	0°C..50°C	XZ	±Xe-Y	A...B	-
B	-10°C..60°C	30	±3e-10	A...F	-
C	0°C..70°C	50	±5e-10	A...F	-
D	-20°C..70°C	19	±1e-9	A...F	-
E	-30°C..70°C	39	±3e-9	A...F	A...B
F	-40°C..85°C	59	±5e-9	A...F	A...F
		18	±1e-8	A...F	A...F
		28	±2e-8	A...F	A...F
		38	±3e-8	A...F	A...F

3 Aging per day/year, ppb/ppm	
Code	Specification
B	0.2/0.02
Z	0.3/0.03
C	0.5/0.05
D	1/0.1
E	1.5/0.15
F	2/0.2
G	3/0.3
H	5/0.5

5 Output	
Code	Specification
T	HSMOS/TTL
S	Sine wave

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

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