



Revised in March 2015

Ultra Low power Ultra High Stability OCXO

Features

Miniature 5 ccm packaging
 Power consumption: <math><180\text{ mW}</math>
 High stability - to $\pm 5 \times 10^{-10}$ over -40 to $+80^\circ\text{C}$
 Low aging rate - to $\pm 2 \times 10^{-10}/\text{day}$, $2 \times 10^{-8}/\text{year}$
 Low Allan variance value – up to 3×10^{-12} at 1s
 Frequency range: 8 to 150 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

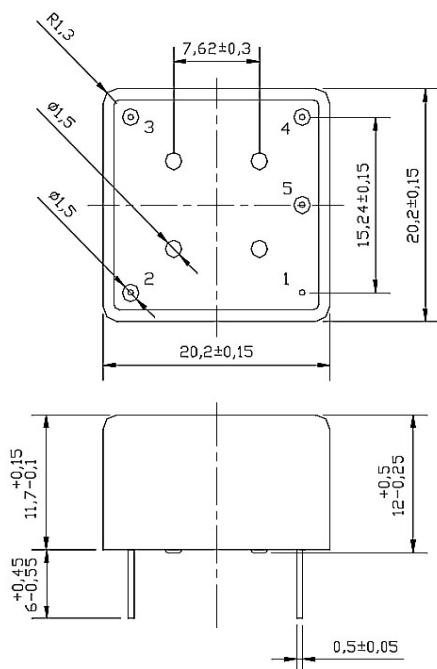


RoHS compliant

Description

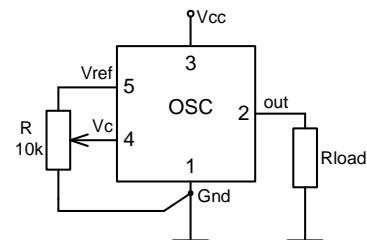
The MXO37/R model is built on advanced internally heated resonator (IHR) technology providing combination of very low power consumption and small sizes with outstanding frequency stability in wide temperature range that is unachievable with usage of conventional OCXO designs. The unique parameters of 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		150	MHz	
Initial tolerance	$(f-f_0)/f_0$	+25°C, $V_c=V_{c0}$	±0.01	±0.1		ppm	
RF output							
HCMOS (TTL) option	Load		10		15	kOhm pF	10 MHz op. freq.
	H-level voltage	V_H	$V_{cc}=5V$ $V_{cc}=3.3V$	3.8 2.4		V	
	L-level voltage	V_L			0.4	V	
	Duty cycle			45		55	%
	Rise/Fall time					10	ns
Sine-wave option	Level	L		+8		dBm	
	Load	R_L		50		Ohm	
	Harmonics level				-30	dBc	
Sub-harmonics level			none				
Power supply							
Voltage	V_{cc}		4.75	5.0	5.25	V	
Power consumption		Warm-up state Steady state, +25°C		180	1.2	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.
Frequency control*							
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}	$V_{cc}=5V$ $V_{cc}=3.3V$	4.1 2.7	4.2 2.8	4.3 2.9	V	
Frequency stability							
vs. temperature		-40°C to +80°C, ref 25°C	±0.5			ppb	See chart below
vs. supply voltage		ref V_{cc} typ.			±0.2	ppb	
Retrace		24h after 24h off			±10	ppb	
SSB Phase noise		1 Hz	-105/-65	-95/-60		dBc/Hz	For 10MHz/100 MHz operational frequency.
		10 Hz	-135/-97	-125/-90			
		100 Hz	-151/-130	-145/-120			
		1 kHz	-160/-155	-155/-153			
		10 kHz	-170/-170	-165/-165			
		100 kHz	-172/-172	-168/-168			
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	
Environmental, mechanical conditions.							
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						
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/R - **B** **50** **B** **5** **T** - 10MHz
 1 2 3 4 5

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		
XZ	±Xe-Y	for 10 MHz	for 100 MHz	
30	±3e-10	A...B	-	
50	±5e-10	A...F*	-	
19	±1e-9	A...G*	-	
39	±3e-9	A...G	A...B	
59	±5e-9	A...G	A...F*	
18	±1e-8	A...G	A...G	
28	±2e-8	A...G	A...G	
38	±3e-8	A...G	A...G	
58	±5e-8	A...G	A...G	
17	±1e-7	A...G	A...G	

3 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	≤120 MHz
G	3/0.3	
H	5/0.5	

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

5 Output	
Code	Spec
T	HSMOS /TTL
S	Sine-wave

*temperature stability is available at up to +80°C operation temperature

YOU ARE WELCOME TO CONTACT US: By E-mail:mxl@mxtal.com, website:www.mxtal.com,Tel:400 878 9158.
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