



Revised in November, 2010

## MXOH Series - High Frequency Low Phase-Noise OCXOs

### Features

Very Low Phase-Noise Level:  
 -155 dBc/Hz at 1kHz  
 -170 dBc/Hz floor  
 Very Low Phase Jitter  
 High Stability (up to  $\pm 1 \times 10^{-8}$  over  $-40^{\circ}\text{C}$  to  $85^{\circ}\text{C}$ )  
 Operational Frequency up to 130 MHz  
 Compact Packaging

### Typical Applications

Synthesizer Reference  
 Microwave Communications  
 Instrumentation  
 Radar Reference

Packaging type E: "Europack" 35.5 x 26.8 x 12.7 mm

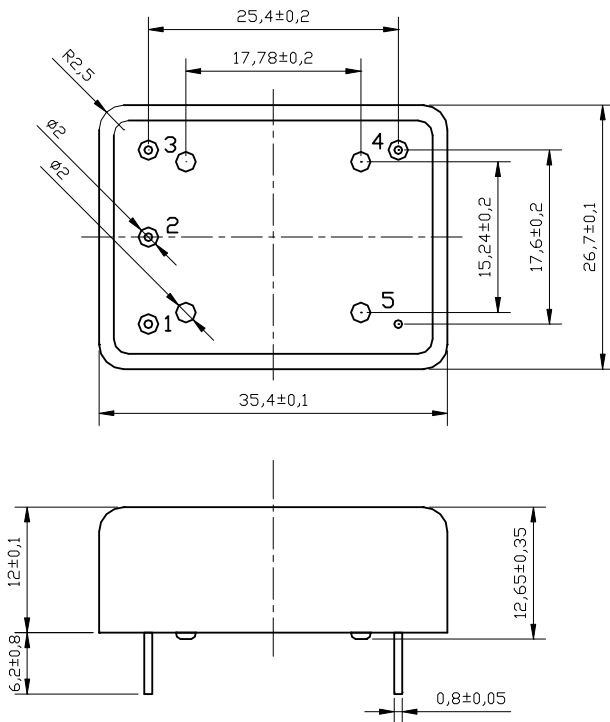


RoHS compliant

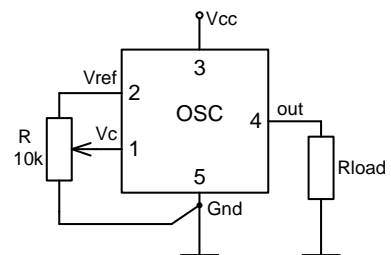
### Description

The OCXOs of series MXOH operate with direct oscillation at the output frequency (no multiplication). Very low phase-noise level and absence of sub-harmonics in the oscillator spectra allowed substantial reduction of the phase jitter making the OCXO attractive for application a variety of UHF and microwave applications. Original oven design provides high temperature stability at small OCXO size and power consumption.

### Physical Dimensions



### Pin Connections



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

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**Specification**
**MXOH Series - High Frequency Low Phase-Noise OCXOs**

OCXO Specification		Sym.	Condition	Value			Unit	Note
				Min.	Typ.	Max.		
<b>Operational Frequency Range</b>		$f_0$		30		130	MHz	
<b>RF output</b>								
HCMOS/ TTL compatible option	Load			10		5	kOhm pF	for 100MHz operational freq.
	H - level voltage	$V_H$	$V_{cc}=5$ or 12 V $V_{cc}=3.3$ V	3.8 2.4			V	
	L - level voltage	$V_L$				0.4	V	
	Rise & Fall time					2.5	ns	for 100MHz operational freq.
	Duty cycle			45		55	%	
Sine-wave option	Level	L	$V_{cc}=5$ or 12 V	+5	+7	+11	dBm	
	Load	$R_L$			50		Ohm	
	Harmonics					-25	dBc	
Subharmonics				none			dBc	
<b>Power supply</b>								
Voltage		$V_{cc}$		4.75	5.0	5.25	V	3.3V, 12V optional
Power consumption			Warm-up state Steady state, +25°C		3.2 1	3.5 1.2	W	
Warm-up time		$t_{up}$	to $\Delta f/f=1e-7$ , at +25°C			180	sec.	ref. to frequency after 30 min.
<b>Frequency control*</b>								
Control voltage range		$V_c$	$V_{cc}=5$ or 12 V $V_{cc}=3.3$ V	0 0		4.2 2.8	V	Positive tuning slope - standard option
Tuning range				$\pm 1$			ppm	for 100MHz operational freq.
Reference voltage		$V_{ref}$	$V_{cc}=5$ or 12 V $V_{cc}=3.3$ V	4.1 2.70	4.2 2.80	4.3 2.90	V	
<b>Frequency stability</b>								
vs. temperature			-30°C to +70°C, ref 25°C		$\pm 30$		ppb	See chart below
vs. supply voltage			ref $V_{cc}$ typ.		$\pm 3$		ppb	
vs. acceleration			Worst direction			$\pm 1$	ppb/G	
<b>SSB Phase noise</b>			10 Hz			-95	dBc/Hz	for 100 MHz operational freq.
			100 Hz			-125		
			1 kHz			-153		
			10 kHz			-165		
			100 kHz			-168		
<b>Allan variance</b>			1 s		30		e-12	
<b>Aging</b>	per day		after 30 days of operation			$\pm 3$	ppb	Standard option S (see chart below)
	first year					$\pm 0.3$	ppm	
<b>Environmental, mechanical conditions.</b>								
Operating temperature range		-30°C to +70°C Standard. Other options - 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 2000 Hz						
Soldering conditions		260°C 10s						

\* No frequency control option – on customer requirement

**Ordering code**

MXOHE - E 17 S 5 S - 100 MHz  
 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

2	Stability over temperature		
Code	Specification	Temperature range code available	
XZ	$\pm X e-Z$		
59	$\pm 5 e-9$	A...B	
18	$\pm 1 e-8$	A...E	
28	$\pm 2 e-8$	A...E	
58	$\pm 5 e-8$	A...F	
17	$\pm 1 e-7$	A...F	

3	Aging			
Code	Specification	Per day*	First year*	
L	Relaxed	5 ppb	0.5 ppm	
S	Standard	3 ppb	0.3 ppm	
P	Improved	2 ppb	0.2 ppm	

\* For 100MHz operational freq.

4	Supply voltage	
Code	Specification	
3	3.3V $\pm 5\%$	
5	5V $\pm 5\%$	
2	12V $\pm 10\%$	

5	Output	
Code	Specification	
T	HCMOS/TTL	
S	Sinewave	

Deviation of the parameters is possible on customers' requirements.