



Revised in March 2015

MXOH series - High stability high frequency OCXOs

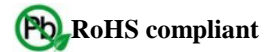
Features

Extended to 300 MHz frequency range (multiplication is used)
 Up to 3 ppb temperature stability in (-40...+85)°C at 100 MHz
 Very low aging – to 50 ppb/year at 100 MHz
 Low Allan variance, 1s to 1×10^{-11}
 Compact Packaging

Typical Applications

Wireless Communications
 Synthesizer Reference
 Microwave Communications
 Instrumentation

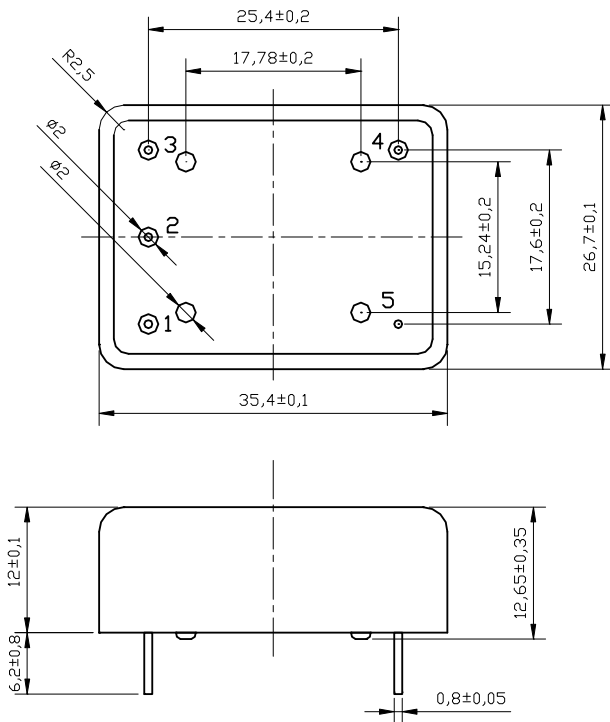
Packaging type E “Europack”: 35.5 x 26.8 x 10.5 mm



Description

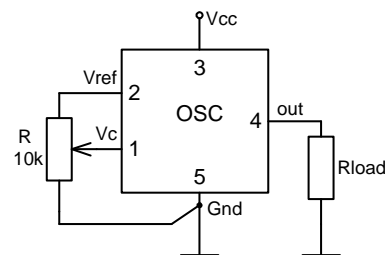
The OCXOs of series MXOH operate in wide frequency range - from 30 to 300 MHz with usage of internal frequency multiplication by 3 or 5. Besides, the internal multiplication of frequency enables to the oscillators improvement, comparing with the MXOC series, of the temperature stability, aging and Allan variance in 30-150 MHz operational range. The module concept of the OCXOs design allowed realization of same performance in a variety of small packages on customer choice: MXOHE, MXOHI, MXOHR, MXOHS models.

Physical Dimensions



* - 10.5mm and 13.2 mm heights are available t

Pin Connections



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

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Specification

OCXO Specification	Sym.	Condition	Value			Unit	Note
			Min.	Typ.	Max.		
Operational Frequency Range	f_0		30		300	MHz	Frequency multiplication
RF output							
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	
	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					-30	dBc
Subharmonics						-40	dBc
Power supply							
Voltage	V_{cc}		4.75	5.0	5.25	V	3.3V, 12V available
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.
Frequency control*							
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			± 0.5	± 1		ppm	for 100MHz operational freq.
Reference voltage	V_{ref}	$V_{cc}=5$ or 12 V $V_{cc}=3.3$ V	4.10 2.70	4.20 2.80	4.30 2.90	V	
Frequency stability							
vs. temperature		-40°C to +85°C, ref 25°C	± 3			ppb	For 100 MHz, see chart below
vs. supply voltage		ref Vcc typ.		± 3		ppb	
vs. acceleration		Worst direction	0.5		± 1	ppb/G	
SSB Phase noise		10 Hz		-95		dBc/Hz	for 100 MHz operational freq.
		100 Hz		-125			
		1 kHz		-140			
		10 kHz		-150			
		100 kHz		-155			
Allan variance		1 s	10	30		e-12	
Aging	per day	after 30 days of operation	± 0.5			ppb	For 100 MHz (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	Hermetically sealed						
Mechanical shock	Per MIL-STD-202, 30G half sine pulse, 11ms						
Vibration	Per MIL-STD-202, 10G 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)						

* No frequency control option – on customer requirement

Ordering code

MXOHE - E 18 C 5 S - 100 MHz
 1 2 3 4 5

1 Temperature range		2 Stability over temperature				3 Aging per day/year, ppb/ppm	
Code	Specification	Code	Specification	Temperature range code available		Code	Specification
A	0°C..50°C	XZ	$\pm X e-Z$	<i>for 100 MHz (mult. by 5)</i>	<i>for 300 MHz (mult. by 3)</i>	B	0.2/0.02
B	-10°C..60°C	29	$\pm 2e-9$	A...B	-	Z	0.3/0.03
C	0°C..70°C	39	$\pm 3e-9$	A...F	A...B	C	0.5/0.05
D	-20°C..70°C	59	$\pm 5e-9$	A...G	A...F	D	1/0.1
E	-30°C..70°C	18	$\pm 1e-8$	A...G	A...G	E	1.5/0.15
F	-40°C..85°C	28	$\pm 2e-8$	A...G	A...G	F	2/0.2
G	-55°C..85°C	58	$\pm 5e-8$	A...G	A...G	G	3/0.3
		17	$\pm 1e-7$	A...G	A...G	H	5/0.5

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	Sine-wave

Deviation of the parameters is possible on customers' requirements.

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