

Revised in May 2017

Features

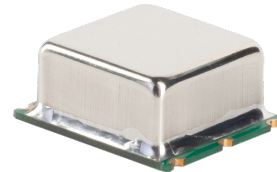
Extended to 300 MHz frequency range (multiplication is used)
Up to 3 ppb temperature stability in (-40...+85)°C at 100 MHz
Very low aging – to 50 ppb/year at 100 MHz
Low Allan variance, 5s to 1×10^{-12}
Compact Packaging

Typical Applications

Cellular Base Stations
Instrumentation
Microwave Applications
Stratum 3E clock systems
Radar reference

High stability low phase-noise OCXO

Packaging type S: "Surface mount" 25.4x22

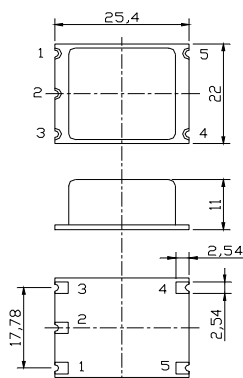


RoHS compliant

Description

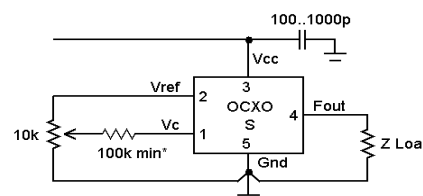
The OCXOs of series MXOH operate in wide frequency range - from 30 to 300 MHz with usage of internal frequency multiplication by 3 or 5. Besides, the internal multiplication of frequency enables to the oscillators improvement, comparing with the MXOC series, of the temperature stability, aging and Allan 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



12.7 mm height required for some versions

Pin Connections



* required for some versions

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

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Specification

Parameter	Sym.	Conditions	Value			Unit	Note		
			Min.	Typ.	Max.				
Frequency range	f_0		30		300	MHz	Frequency multiplication on 3 and 5		
Initial tolerance	$(f-f_0)/f_0$	+25°C, $V_{cc}=0.5 \cdot V_{ref}$	±0.01	±0.1		ppm			
RF output									
HCMOS (TTL) option	Load		10		5	kOhm pF	100 MHz		
	H-level voltage	V_H	$V_{cc}=5V, 12V$ $V_{cc}=3.3V$	3.7 2.4		V			
	L-level voltage	V_L			0.4	V			
	Duty cycle			45		55	%		
	Rise/Fall time					3	ns	100 MHz	
Sine-wave option	Level	L	$V_{cc}=5V, 12V$ $V_{cc}=3.3V$	+7 +4		dBm			
	Load	R_L			50	Ohm			
	Harmonics level					-30	dBc		
Sub-harmonics level							-40	dBc	100 MHz
Power supply									
Voltage	V_{cc}		11.4	12.0	12.6	V			
			4.75	5.0	5.25				
			3.15	3.3	3.45				
Power consumption		Warm-up time Steady state, +25°C			3500 1200	mW	100MHz, -40°C..85°C		
Warm-up time	t_{up}	at +25°C to $\Delta f/f=1e-7$			180	s	ref. to freq. after 15 min. of operation		
Frequency control									
Control voltage range	V_c	$V_{cc}=5V, 12V$ $V_{cc}=3.3V$	0 0		4.3 3.1	V			
Tuning range		Compliance with 10 years of aging	±0.5			ppm	positive slope		
Reference voltage	V_{ref}	$V_{cc}=5V, 12V$ $V_{cc}=3.3V$	4.0 2.5		4.3 3.1	V			
Frequency stability									
vs. temperature		ref. 25°C, air flow 0.5 m/s max.	±3.0			ppb	See ordering code		
vs. supply voltage		ref V_{cc} typ.		±0.2		ppb			
G – sensitivity		worst direction, 0 – 1kHz vibration BW (for 0 – 2kHz BW consult the factory)	±0.5	±1.0		ppb/G			
Retrace		24h work after 24h off			±10	ppb	100MHz		
SSB Phase noise			10 Hz		-110	-95	dBc/Hz	100MHz Frequency multiplication on 5 $V_{cc}=5V, 12V$	
			100 Hz		-130	-120			
			1 kHz		-145	-135			
			10 kHz		-155	-145			
			100 kHz		-155	-150			
Allan variance		1 s	5		30	e-12	100MHz		
Aging	per day	after 30 days of operation	±0.5			ppb	100MHz see ordering code		
	first year		±0.05			ppm			
Environmental, mechanical conditions									
Airflow velocity	0.5 m/s maximum								
Operating temperature range	See ordering code								
Storage temperature range	-60°C to +85°C								
Power voltage	-0.5V to $V_{cc}+20\%$								
Control voltage	-0.5V to 6V								
Humidity	Hermetically sealed								
Mechanical shock	Per MIL-STD-202, 30G half sine pulse, 11ms								
Vibration	Per MIL-STD-202, 10G swept sine 0 to 500Hz								
Soldering conditions	Hand solder only – not reflow compatible. 260°C 10s (on pins)								
Washing Conditions	Washing with water or alcohol based detergent allowed only with final enough drying stage								

For ordering code – see next page

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Ordering code

MXOHS	-	B	18	B	5	T	-	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
G	-55°C..85°C
Q	-60°C..85°C

2	Stability over temperature			
Code	Specific.	Temperature range code available for 100MHz 5V	Temperature range code available for 300MHz 5V	
XY	±Xe-Y			
29	±2e-9	A, B	-	
39	±3e-9	A, B, C, D, E, F	A, B	
59	±5e-9	A, B, C, D, E, F, G, Q	A, B, C, D, E, F	
18	±1e-8	A, B, C, D, E, F, G, Q	A, B, C, D, E, F, G, Q	
28	±2e-8	A, B, C, D, E, F, G, Q	A, B, C, D, E, F, G, Q	
38	±3e-8	A, B, C, D, E, F, G, Q	A, B, C, D, E, F, G, Q	
58	±5e-8	A, B, C, D, E, F, G, Q	A, B, C, D, E, F, G, Q	

3	Aging per day/year, ppb/ppm	
Code	Specification	
A	0.1/0.015	For frequency range of 30-150 MHz
B	0.2/0.02	
Z	0.3/0.03	
C	0.5/0.05	
D	1/0.1	
E	1.5/0.15	For frequency range of 150-300 MHz
F	2/0.2	
G	3/0.3	
H	5/0.5	

4	Supply voltage
Code	Specification
3	3.3V±5%
5	5V±5%
2	12V±5%

5	Output
Code	Specification
T	HSMOS/TTL
S	Sine wave

Deviation of the parameters is possible on customer's requirements. Please consult the factory.