



Revised in September 2021

Features

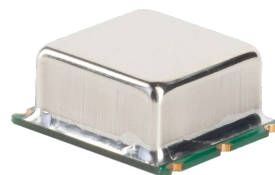
300 MHz frequency range (multiplication is used)
3 ppb stability in $(-40...+85)^{\circ}\text{C}$ at 100 MHz
Very low aging – to 50 ppb/year at 100 MHz
Low Allan variance, 5s to 1×10^{-12}
Compact Packaging

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

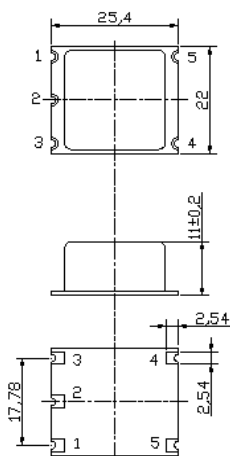


RoHS compliant

Description

The OCXOs of series MXOHS 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.

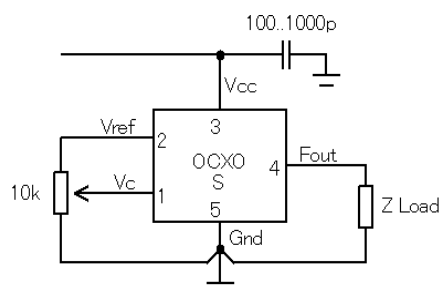
Physical Dimensions



*Some frequency stabilities are available in 13.6mm height only.

The manufacturer reserves the right to reduce the external dimensions without changing of connecting dimensions.

Pin Connections



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 by 3 or 5
Initial tolerance		(f-f ₀)/f ₀	+25°C, V _C =0.5*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} =5 V, 12V V _{cc} =3.3 V	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} =5 V, 12V V _{cc} =3.3 V	+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 4.75 3.15	12.0 5.0 3.3	12.6 5.25 3.45	V	
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 Δf/f=1e-7			180	s	ref. to freq. after 15 min. of operation
Frequency control								
Control voltage range		V _C	V _{cc} =5 V, 12V V _{cc} =3.3 V	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} =5 V, 12V V _{cc} =3.3 V	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, 0-500 Hz vibration BW (for 0-2kHz BW consult the factory)	±0.2	±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 deviation			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 sweep 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
<i>Code</i>	<i>Specification</i>
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		
<i>Code</i>	<i>Specific.</i>	<i>Temperature range code available for 100MHz 5V</i>	<i>Temperature range code available for 300MHz 5V</i>
XY	±Xe-Y		
19	±1e-9	A, B, C, D, E, F	-
29	±2e-9	A, B, C, D, E, F, G	A, B, C, D, E
39	±3e-9	A, B, C, D, E, F, G, Q	A, B, C, D, E, F
59	±5e-9	A, B, C, D, E, F, G, Q	A, B, C, D, E, F, G
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	
<i>Code</i>	<i>Specification</i>	
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
<i>Code</i>	<i>Specification</i>
3	3.3V±5%
5	5V±5%
2	12V±5%

5	Output
<i>Code</i>	<i>Specification</i>
T	HCMOS/TTL
S	Sine wave

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