



Revised in November 2010

MXOC Series - High Stability Low Phase-Noise OCXO

Features

High Stability (up to $\pm 1 \times 10^{-9}$ over -10°C to $+60^\circ\text{C}$,
 $\pm 3 \times 10^{-9}$ over -40°C to $+85^\circ\text{C}$)
 Low Phase Noise (-165 dBc/Hz, TYP, floor)
 Low Aging
 Wide Frequency Range: 5 to 200 MHz
 Miniature Package

Typical Applications

GPS Receivers
 Cellular Base Stations
 Instrumentation
 Stratum 3E clock systems
 VSAT, INMARSAT

Packaging type R: 20x20x12 mm

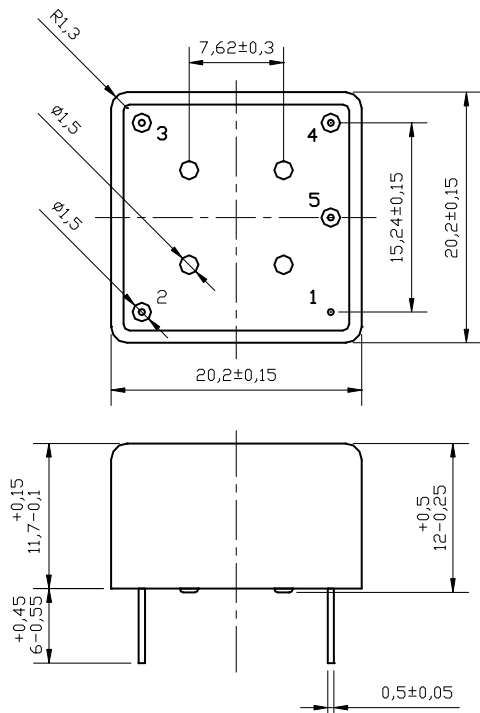


RoHS compliant

Description

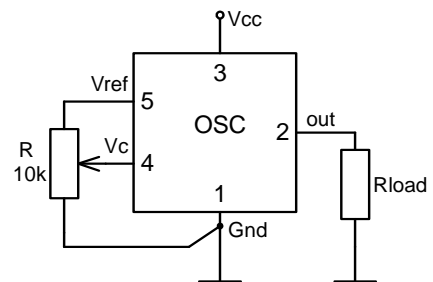
The MXOC series oven-controlled crystal oscillators are intended for wide applications where high temperature stability, low aging, low phase-noise along and compact sizes are major requirements. The module approach to the OCXO design allowed providing the same performance in a variety of small packages (MXOCE, MXOCI, MXOCR, MXOCS models). The OCXOs of MXOC series are produced for 5-250 MHz range, for above 30 MHz - using internal multiplication circuitry.

Physical Dimensions



For some combinations of parameters 12.9mm or 14.1mm height of package can be used
 On customer's requirement 0.8mm diameter of leads is possible

Pin Connections



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

Specification
MXOC Series High Stability Low Phase-Noise OCXO

Parameter	Sym.	Conditions	Value			Unit	Note
			Min.	Typ.	Max.		
Frequency range	f_0		5		250	MHz	
RF output							
HCMOS (TTL) option	Load		10		15	kOhm	
	H-level voltage	V_H	3.8			V	
	L-level voltage	V_L			0.4	V	
	Duty cycle		45		55	%	
	Rise/Fall time				10	ns	for 10 MHz operational frequency
Sine-wave option	Level	L	+6	+8	+10	dBm	
	Load	R_L			50	Ohm	
	Harmonics level				-25	dBc	
Sub-harmonics level		Operational frequency <30 MHz Operational frequency \geq 30 MHz		none	-40	dBc	Internal frequency multiplication used
Power supply							
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	s	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	
Reference voltage	V_{ref}	$V_{cc}=5$ or 12 V $V_{cc}=3.3$ V	4.1 2.7	4.2 2.8	4.3 2.9	V	
Frequency stability							
vs. temperature		-30°C to +70°C, ref 25°C		± 10		ppb	See chart below
vs. supply voltage		ref Vcc typ.		± 1		ppb	
vs. acceleration		Worst direction			± 1	ppb/G	
SSB Phase noise		1 Hz		-95		dBc/Hz	for 10MHz operational frequency
		10 Hz		-125			
		100 Hz		-145			
		1 kHz		-155			
		10 kHz		-165			
Allan variance		1 s		10		e-12	
Aging	per day	after 30 days of operation			± 0.5	ppb	Standard option S (see chart below)
	first year				± 50	ppb	
	for 20 years				± 0.5	ppm	
Environmental, mechanical conditions.							
Operating temperature range	-30°C to +70°C Standard. Other options - see chart below.						
Storage temperature range	-60°C to +95°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 1000 Hz						
Soldering conditions	260°C 10s						

* No frequency control option – on customer requirement

Ordering code

MXOCR	-	C	18	S	5	T	-	10 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..80°C

2	Stability over temperature		
Code	Specification	Temperature range code available	
XZ	$\pm Xe-Y$		
19	$\pm 1e-9$	A...B	
29	$\pm 2e-9$	A...E	
39	$\pm 3e-9$	A...F	
59	$\pm 5e-9$	A...F	
18	$\pm 1e-8$	A...F	
28	$\pm 2e-8$	A...F	
58	$\pm 5e-8$	A...F	
17	$\pm 1e-7$	A...F	

3	Aging			
Code	Specification	Per day*	First year*	
L	Relaxed	1 ppb	100 ppb	
S	Standard	0.5 ppb	50 ppb	
P	Improved	0.2 ppb	30 ppb	

* for 10 MHz 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	HSMOS/TTL	
S	Sinewave	

Deviation of the parameters is possible on customers' requirements.

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