



Revised in January 2007

MXOC Series - High Stability Low Phase-Noise OCXO

Features

High Stability (up to $\pm 4 \times 10^{-9}$ over -40°C to $+80^{\circ}\text{C}$)
 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: 20x20x11.7 mm

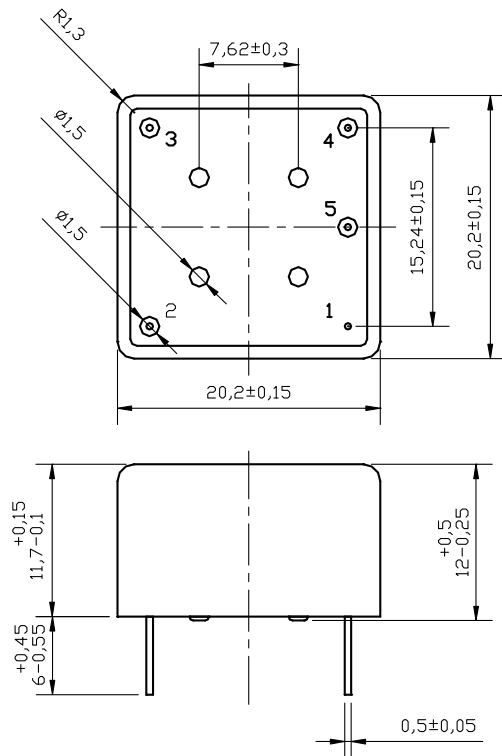


RoHS compliant

Description

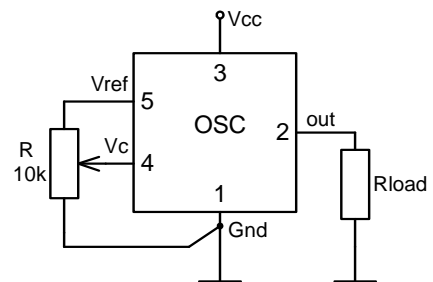
The MXOC series oven-controlled crystal oscillators are intended for wide applications where high temperature stability, low aging, low phase-noise along and compact sizes are major requirements. The module approach to the OCXO design allowed providing the same performance in a variety of small packages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

Physical Dimensions



* $\pm 2 \times 10^{-9}$ temperature stability option has 12.7 mm packaging height

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	3.9			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	Frequency multiplier 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		4.3 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	4.19 2.73	4.3 2.8	4.41 2.87	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	tor 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 +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 500 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	$\pm Xe-Y$		
29	$\pm 2e-9$	A...B	
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.