



Revised in March 2015

MXOC series - High stability low phase-noise OCXOs

Features

High temperature stability: to ± 1 ppb in $(-40 +85)^{\circ}\text{C}$
 Very low phase noise: to -175 dBc/Hz, floor
 Low aging: to 0.2 ppb/day and 20 ppb/year
 Fundamental operation at 5 through 150 MHz
 Compact packaging

Typical Applications

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

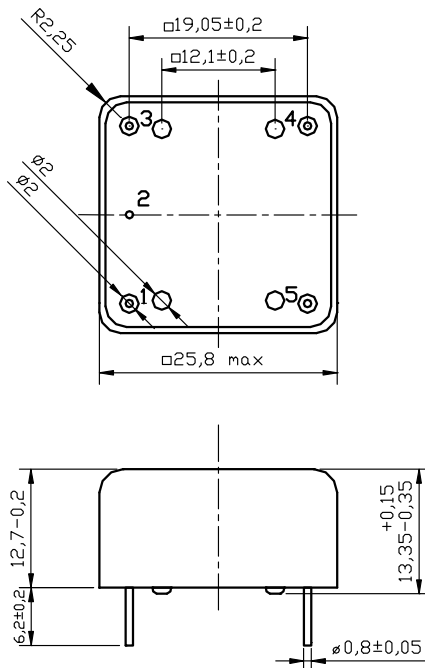
Packaging type I: "Inch x Inch" 25x25x12.4 mm



Description

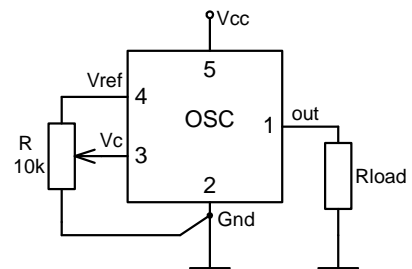
The MXOC series oven-controlled crystal oscillators are intended for wide applications where high temperature stability, low aging, low phase-noise along and compact sizes are major requirements. The module concept of the OCXOs design allowed realization of same performance in a variety of small packages on customer choice: MXOCE, MXOCI, MXOCR, MXOCS models.

Physical Dimensions



* - 10.7 mm height is available

Pin Connections



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

YOU ARE WELCOME TO CONTACT US: By E-mail:mxl@mxtal.com, website:www.mxtal.com.

Customers in China and HongKong please contract our distributor:ShangHai QiZhong Electronic Technology Co.,Ltd

**Specification**

Parameter	Sym.	Conditions	Value			Unit	Note
			Min.	Typ.	Max.		
Frequency range	f_0		5		150	MHz	Fundamental operation
RF output							
HCMOS (TTL) option	Load		10		15	kOhm pF	for 10 MHz operational frequency
	H-level voltage	V_H	$V_{cc}=5$ or 12 V $V_{cc}=3.3$ V	3.8 2.4		V V	
	L-level voltage	V_L			0.4	V	
	Duty cycle			45		55	%
	Rise/Fall time					10	ns
Sine-wave option	Level	L	+6	+8	+10	dBm	
	Load	R_L		50		Ohm	
	Harmonics level				-30	dBc	
Spurious level					-100	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 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 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 V	
Frequency stability							
vs. temperature		-40°C to +85°C, ref 25°C		± 10		ppb	See chart below
vs. supply voltage		ref V_{cc} typ.		± 1		ppb	
vs. acceleration		Worst direction	± 0.5		± 1	ppb/G	
SSB Phase noise		1 Hz	-106/-	-100/-		dBc/Hz	for 10MHz/100 MHz operational frequency
		10 Hz	-135/-95	-125/-90			
		100 Hz	-155/-130	-145/-120			
		1 kHz	-163/-155	-155/-150			
		10 kHz	-170/-170	-165/-165			
		100 kHz	-172/-175	-168/-168			
Allan variance		1 s	5	10		e-12	
Aging	per day	after 30 days of operation	0.2	0.5		ppb	For 10 MHz (see chart below)
	first year		20	50		ppb	
	for 20 years		0.3	0.5		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

MXOCI	-	C	18	B	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..85°C
G	-55°C..85°C
H	-40°C..125°C

2	Stability over temperature			
Code	Specification	Temperature range available		
		for 10 MHz	for 100 MHz	
XZ	$\pm Xe-Y$	A...B		
50	$\pm 5e-10$	A...B		
19	$\pm 1e-9$	A...F	-	
29	$\pm 2e-9$	A...F	-	
39	$\pm 3e-9$	A...G	A	
59	$\pm 5e-9$	A...G	A...F	
18	$\pm 1e-8$	A...G	A...G	
28	$\pm 2e-8$	A...H	A...G	
58	$\pm 5e-8$	A...H	A...G	
17	$\pm 1e-7$	A...H	A...G	

3	Aging per day/year, ppb/ppm	
Code	Specification	
B	0.2/0.02	≤ 10 MHz
Z	0.3/0.03	
C	0.5/0.05	≤ 20 MHz
D	1/0.1	≤ 40 MHz
E	1.5/0.15	≤ 50 MHz
F	2/0.2	≤ 120 MHz
G	3/0.3	
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	HSMOS/TTL	
S	Sine-wave	

Deviation of the parameters is possible on customers' requirements.

YOU ARE WELCOME TO CONTACT US: By E-mail:mxl@mxtal.com, website:www.mxtal.com.

Customers in China and HongKong please contract our distributor:ShangHai QiZhong Electronic Technology Co.,Ltd