



Revised in March 2015

MXOC series - High stability low phase-noise OCXOs

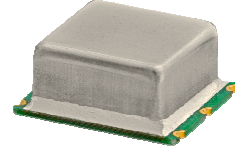
Features

High temperature stability: to ± 1 ppb in (-40 +85) $^{\circ}$ C
 Very low phase noise: (to -175 dBc/Hz, floor)
 Low aging: to 0.2 ppb/day and 0.02 ppm/year
 Fundamental operation at 5 through 150 MHz
 Compact surface mount packaging

Typical Applications

Cellular Base Stations
 Instrumentation
 Stratum 3E Clock Systems
 Radar Reference
 Microwave Applications

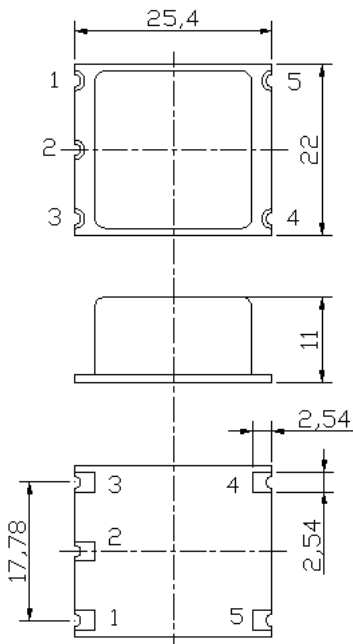
Packaging type S: "Surface mount" 25x22x11.0 mm



Description

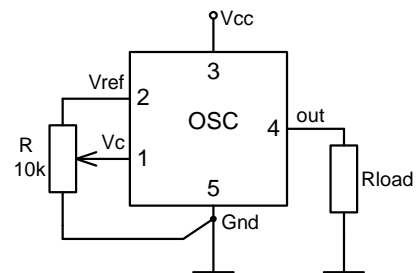
The MXOC series oven-controlled crystal oscillators are intended for wide applications where high temperature stability, low aging, low phase-noise along and compact sizes are major requirements. The module concept of the OCXOs design allowed realization of same performance in a variety of small packages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

Physical Dimensions



*12.7 mm height is available

Pin Connections



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

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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	for 10 MHz operational frequency
Sine-wave option	Level	L		+6	+8	+10	dBm	
	Load	R _L			50		Ohm	
	Harmonics level					-30	dBc	
Sub-harmonics level				none			dBc	
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 W		
Warm-up time	t _{up}	to Δf/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 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				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	Non-condensing, 95%							
Mechanical shock	Per MIL-STD-202, 30G half sine pulse, 11ms							
Vibration	Per MIL-STD-202, 10G swept sine 10 to 500 Hz							
Impermeability	Not hermetical. Don't wash or immerse into liquid when cleaning!							
Soldering conditions	Hand solder only – not reflow compatible. 260°C, 10s (on pins)							

* No frequency control option – on customer requirement

Ordering code

MXOCS - 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 code available		
XZ	±Xe-Y	for 10 MHz	for 100 MHz	
50	±5e-10	A...B	-	
19	±1e-9	A...F	-	
29	±2e-9	A...F	-	
39	±3e-9	A...G	A	
59	±5e-9	A...G	A...F	
18	±1e-8	A...G	A...G	
28	±2e-8	A...H	A...G	
58	±5e-8	A...H	A...G	
17	±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	≤10 MHz
C	0.5/0.05	≤20 MHz
D	1/0.1	≤40 MHz
E	1.5/0.15	≤50 MHz
F	2/0.2	≤50 MHz
G	3/0.3	≤120 MHz
H	5/0.5	≤150 MHz

Deviation of the parameters is possible on customers' requirements.

4	Supply voltage	
Code	Specification	
3	3.3V±5%	
5	5V±5%	
2	12V±10%	

5	Output	
Code	Specification	
T	HSMOS/TTL	
S	Sine-wave	

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