



Revised in November 2014

Miniature Ultra High Stability OCXO

Features

Miniature 5 ccm packaging
 High stability - to $\pm 1 \times 10^{-10}$ over -30 to +70°C
 Low aging rate - to $\pm 2 \times 10^{-10}$ /day, 2×10^{-8} /year
 Low Allan variance value – up to 3×10^{-12} at 1s
 Frequency range: 8 to 100 MHz

Typical Applications

Rubidium Standard Replacement
 GPS Disciplined Frequency Standards
 Instrumentation
 Communication Systems

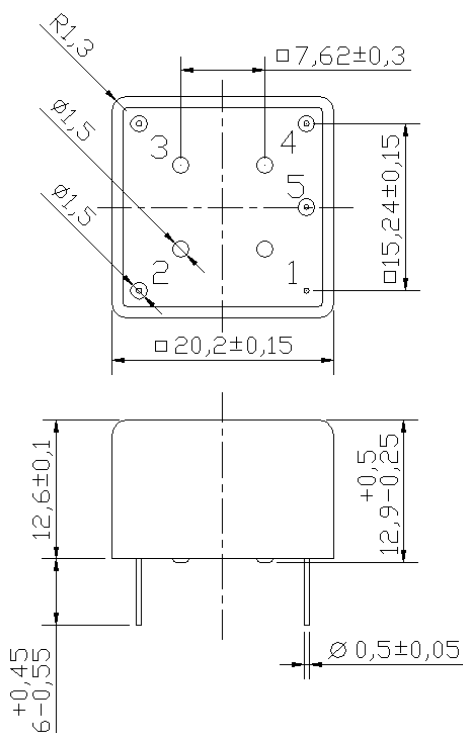
Packaging: 20.2 x 20.2 x 12.9 mm



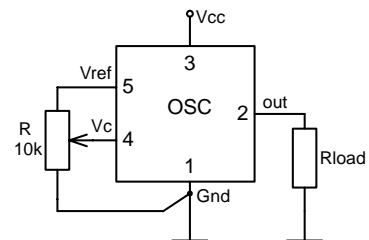
Description

The MXODR series combines advantageous of the double-oven and internal heated resonator (IHR) technologies providing smallest in the class 5 ccm volume and less than 1W power consumption at as high as 0.1 ppb temperature stability and 0.2 ppb/day aging (for 10MHz). The MXODR oscillators are excellent to use in high-end clock systems, instrumentation, and other applications where utmost frequency stability should go along with the smallest sizes.

Physical Dimensions



Pin Connections



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

Parameter	Sym.	Conditions	Value			Unit	Note	
			Min.	Typ.	Max.			
Frequency range	f_0		8		100	MHz		
RF output								
HCMOS (TTL) option	Load		10		15	kOhm pF	10 MHz op. freq.	
	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		
Sine-wave option	Level	L		+8		dBm	10 MHz op. freq.	
	Load	R_L		50		Ohm		
	Harmonics level				-30	dBc		
Sub-harmonics level		Operational frequency ≤ 25 MHz Operational frequency > 25 MHz		none		-40	dBc	Frequency multiplier used
Power supply								
Voltage	V_{cc}		4.75	5.0	5.25	V	3.3V available	
Power consumption		Warm-up state Steady state, +25°C			4.5	W		
Warm-up time	t_{up}	to $\Delta f/f=1e-8$, at +25°C			5	min	ref. to frequency after 30 min.	
Frequency control*								
Control voltage range	V_c	$V_{cc}=5$ V $V_{cc}=3.3$ V	0		4.2	V	Tuning slope - positive	
Tuning range				± 0.5		ppm		
Reference voltage	V_{ref}	$V_{cc}=5$ V $V_{cc}=3.3$ V	4.00	4.20	4.50	V		
			2.70	2.80	2.90	V		
Frequency stability								
vs. temperature		-10°C to +60°C, ref 25°C			± 0.2	ppb	See chart below	
vs. supply voltage		ref V_{cc} typ.			± 0.2	ppb		
Retrace		24h after 30 min off			± 20	ppb		
SSB Phase noise		1 Hz			-103	dBc/Hz	Utmost phase noise level 10 MHz op. freq.	
		10 Hz			-135			
		100 Hz			-158			
		1 kHz			-167			
		10 kHz			-169			
		100 kHz			-170			
Allan variance		1 s			3	e-12		
Aging	per day	after 30 days of operation			± 0.2	ppb	For 10 MHz operational frequency	
	first year				± 20	ppb		
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, 11 ms							
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

MXODR - B 50 C 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

2	Stability over temperature			
Code	Specification	Temperature range code available		
		10 MHz	100 MHz	
XZ	$\pm X e - Y$			
10	$\pm 1 e - 10$	A...E		
20	$\pm 2 e - 10$	A...E	A...B	
30	$\pm 3 e - 10$	A...E	A...E	
50	$\pm 5 e - 10$	A...E	A...E	

3	Aging per day/year, ppb/ppm	
Code	Specification	
B	0.2/0.02	Frequency below 50 MHz
C	0.5/0.05	
D	1/0.1	
E	1.5/0.15	
F	2/0.2	Frequency above 50 MHz
G	3/0.3	
H	5/0.5	

4	Supply voltage	
Code	Specification	
3	3.3V $\pm 5\%$	
5	5V $\pm 5\%$	

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

Deviations of the parameters are possible on Customer's requirements.