



Features

Ultra High Stability - to $\pm 1 \times 10^{-10}$ over (-30 to +70)°C
 Low Aging - to $\pm 1 \times 10^{-10}$ /day, 1.5×10^{-8} /year
 Low Phase Noise level (-165 dBc/Hz, TYP, floor)
 Excellent Allan Variance - to 2×10^{-12} ($\tau = 1$ s)
 Miniature Packaging

Typical Applications

Rubidium Standard Replacement
 GPS Receivers
 Instrumentation
 Stratum 2 Clock Systems

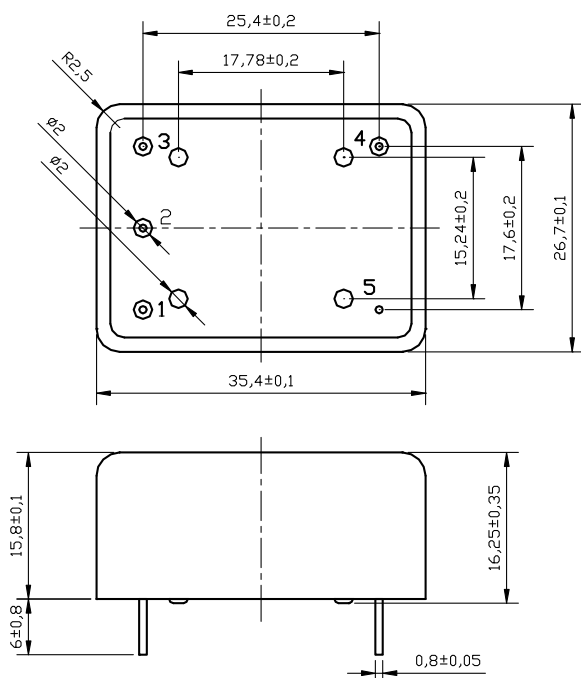
Packaging: "Europack" 36x27x15.8 mm



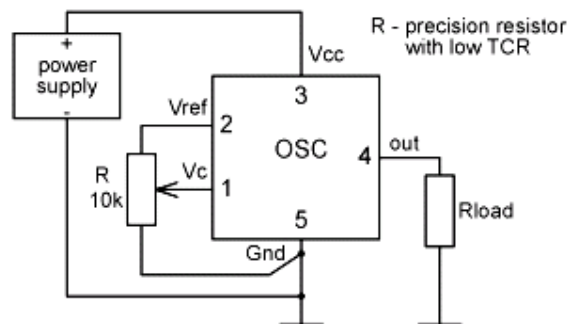
Description

The OCXOs of MXODE series use double-oven design providing very high frequency vs. temperature stability. Owing to effective double-oven design the OCXOs provide up to 1×10^{-10} temperature stability, 2×10^{-12} /1s Allan variance and aging to 1.5×10^{-8} /year at 15 cm³ volume and about 1.5 W power consumption. The MXODE series is excellent to use in Stratum II clock system, instrumentations, local reference as Rb-standard replacement and in other high-end applications. The double-oven parts are available in wide frequency range - from 5 to 100 MHz.

Physical Dimensions



Pin Connections



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

Specification

Ultra Stable Miniature OCXOs

Parameter	Sym.	Conditions	Value			Unit	Note	
			Min.	Typ.	Max.			
Frequency range	f_0		5		100	MHz		
RF output								
HCMOS (TTL) option	Load		10		15	kOhm pF	For 10MHz operational frequency	
	H-level voltage	V_H	3.8			V		
	L-level voltage	V_L			0.4	V		
	Duty cycle		45		55	%		
Sine-wave option	Rise/Fall time				10	ns	for 10 MHz operational frequency	
	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	12V optional, 3.3V optional	
Power consumption		Warm-up state Steady state, +25°C		1.25	6.5 1.75	W 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		0		4.2	V	Tuning slope - positive	
Tuning range			± 0.3	± 0.35		ppm		
Reference voltage	V_{ref}		4.09	4.2	4.41	V		
Frequency stability								
vs. temperature		0°C to +50°C, ref 25°C			± 0.1	ppb	See chart below	
vs. supply voltage		ref V_{cc} typ.			± 0.02	ppb		
SSB Phase noise		1 Hz		-95		dBc/Hz	tor 10MHz operational frequency	
		10 Hz		-128				
		100 Hz		-145				
		1 kHz		-155				
		10 kHz		-165				
Allan variance		1 s		5		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				± 0.35	ppm		
Environmental, mechanical conditions.								
Operating temperature range	0°C to +50°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

MXODE	-	B	20	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..85°C

2	Stability over temperature		
Code	Specification	Temperature range code available	
XZ	$\pm Xe-Y$		
10	$\pm 1e-10$	A...E	
20	$\pm 2e-10$	A...E	
50	$\pm 5e-10$	A...F	
19	$\pm 1e-9$	A...F	
29	$\pm 2e-9$	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., better aging is possible per special request

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

5	Output	
Code	Specification	
T	HSMOS/TTL	
S	Sinewave	

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