



MV209

Double Oven Controlled Crystal Oscillator
5-10 MHz

Revised 1/1/15

Your dedicated source for crystal oscillators and filters.

Features

- Low Sensitivity to Rapid Changes in Ambient Temperature
- High Stability vs. Temperature: up to $\pm 2 \times 10^{-10}$
- Short Term Stability: up to $\pm 2 \times 10^{-12}$ /Sec
- Long Term Stability: up to $\pm 2 \times 10^{-8}$ /year
- Standard CO-08 Package: (36 x 27 x 19.0 mm)
- Sinwave Output
- +12V

Applications

- SatCom
- Test equipment
- Network clock
- Base station

Specifications

Temperature Range	Temperature Stability Availability		Comments
	High	Higher	
0 to +55° C	$<\pm 5 \times 10^{-10}$	$<\pm 2 \times 10^{-10}$	Contact factory for $<\pm 1 \times 10^{-10}$
-10 to +60° C	$<\pm 5 \times 10^{-10}$	$<\pm 2 \times 10^{-10}$	Contact factory for $<\pm 1 \times 10^{-10}$
-20 to +70° C	$<\pm 5 \times 10^{-10}$	$<\pm 3 \times 10^{-10}$	Contact factory for $<\pm 2 \times 10^{-10}$
-40 to +70° C	$<\pm 5 \times 10^{-10}$	C	Contact factory for $<\pm 3 \times 10^{-10}$

Temperature ranges from -60° C to +85° C available. Contact factory and see ordering designations at the end of this data sheet.

Standard Frequencies	Long Term Stability (Yearly Aging) Availability		Comments
	High	Higher	
5.0 MHz	$<\pm 5 \times 10^{-8}$	$<\pm 1 \times 10^{-8}$	
8.192 MHz	$<\pm 5 \times 10^{-8}$	$<\pm 2 \times 10^{-8}$	Contact factory for $<\pm 1 \times 10^{-8}$
10.0 MHz	$<\pm 5 \times 10^{-8}$	$<\pm 2 \times 10^{-8}$	Contact factory for $<\pm 1 \times 10^{-8}$

Contact factory for non-standard long term stability performance and see ordering designations at the end of this data sheet.

Specification	Short Term, Pulling & Pushing Stability			Comments
	Standard	Option	Option	
Short term stability per 1 sec.	$<\pm 5 \times 10^{-12}$	$<\pm 2 \times 10^{-12}$	$<\pm 1 \times 10^{-12}$	Allan deviation
Stability vs. Load ($\pm 5\%$)	$<\pm 1 \times 10^{-10}$	-	-	
Stability vs. power supply ($\pm 5\%$)	$<\pm 1 \times 10^{-10}$	-	-	
Warm-up time to w/ in $<\pm 5 \times 10^{-8}$	<10minutes	-	-	@25° C

Specifications-Continued

Phase Noise, 10 MHz, 12V, Sinewave (dBc/Hz)

Frequency Offset	Standard	Low Noise	Comments
1 Hz	< -95	< -100	Contact factory for lower phase noise
10 Hz	< -125	< -130	
100 Hz	< -143	< -148	
1 kHz	< -152	< -155	
10 kHz	< -158	< -160	

See ordering designations at the end of this data sheet.

Output Parameters

Output	Sinewave
Level	> 400 mV
Load	50 Ohms \pm 5%
Rise/Fall Time	-
Harmonics	> -30 dBc

Contact factory for improved harmonics

Power Supply & Voltage Control Parameters

Specification	12V \pm 5%
Steady state current @ 25° C	< 150 mA
Peak warm-up current @ 25° C	< 700 mA
Frequency Adjust range	$> \pm 4 \times 10^{-7}$
Frequency Adjust Voltage (Uin)	0 to +5V
Reference Voltage (Uref)	+5V

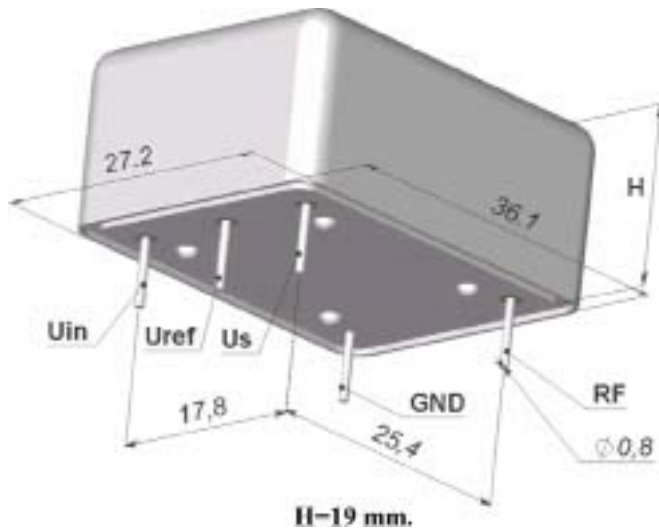
See ordering designations at the end of this data sheet.

Environmental Parameters

Specification	Conditions
Vibration Frequency	10-500 Hz
Vibration Acceleration	10 gs
Shock Acceleration	150 gs
Shock Duration	3 \pm 1 mS
Humidity	-
Storage Temperature	-55 to +80° C
RoHs	Option

Contact factory for extended environmental conditions.

Outline Drawing



Pin	Value
Uref	Reference Voltage
Us	Power Supply
RF	RF Out
GND	Ground
Uin	Frequency Adjustment Voltage

Ordering Guide

MV209 - B 05 E - 10.0 MHz - LN

Availability of certain stability vs. operating temperature range.

		$\pm 5 \times 10^{-10}$	$\pm 3 \times 10^{-10}$	$\pm 2 \times 10^{-10}$	$\pm 1 \times 10^{-10}$
		05	03	02	01
A	0 to +55° C	A	A	A	C
B	-10 to +60° C	A	A	A	C
C	-20 to +70° C	A	A	C	C
D	-40 to +70° C	A	C	C	C

A=Available, C=Contact factory, N=Not available.

Availability of certain aging values for certain frequencies.

		Standard Frequencies		
		5.0 MHz	8.192 MHz	10.0 MHz
F	$\pm 5 \times 10^{-8}$ /year	A	A	A
E	$\pm 3 \times 10^{-8}$ /year	A	A	A
D	$\pm 2 \times 10^{-8}$ /year	A	A	A
C	$\pm 1 \times 10^{-8}$ /year	A	C	C

A=Available, C=Contact factory, N=Not available.

Phase Noise (dBc/Hz) 10 MHz, Sinewave		Low Noise
Offset Frequency		12V Sinewave
1 Hz	<-95	<-100
10 Hz	<-125	<-130
100 Hz	<-143	<-148
1 kHz	<-152	<-155
10 kHz	<-158	<-160

Additional Notes:

- Contact factory for daily aging values.
General rule: $x10^{-x}$ /year = $x10^{-(x+2)}$ /day.
- Advise RoHs requirement at Order.
- Contact factory for non-standard temperature ranges.