



# MV333M

High Stability Miniature OCXO  
10 MHz

Revised 1/1/15

Your dedicated source for crystal oscillators and filters.

### Features

- Short Term Stability (ADEV) to  $<5E-13$
- Low Phase Noise to -120 dBc/Hz @ 1Hz,  
to -170 dBc/Hz @ 10 kHz offset.
- Stability vs. Temperature: up to  $\pm 5 \times 10^{-9}$
- Long Term Stability: up to  $\pm 2 \times 10^{-8}$  /year
- 12 Volt Supply

### Applications

- SatCom
- Test equipment
- Network clock
- Base station

## Specifications

Temperature Range	Temperature Stability Availability		Comments
	High	Higher	
0 to +55° C	$<\pm 1.5 \times 10^{-8}$	$<\pm 5 \times 10^{-9}$	
-10 to +60° C	$<\pm 1.5 \times 10^{-8}$	$<\pm 5 \times 10^{-9}$	
-20 to +70° C	$<\pm 1.5 \times 10^{-8}$	$<\pm 1 \times 10^{-8}$	Contact factory for $<\pm 5 \times 10^{-9}$
-40 to +70° C	$<\pm 1.5 \times 10^{-8}$	$<\pm 1 \times 10^{-8}$	Contact factory for $<\pm 5 \times 10^{-9}$
-40 to +85° C	$<\pm 1.5 \times 10^{-8}$	$<\pm 1 \times 10^{-8}$	Contact factory for $<\pm 5 \times 10^{-9}$

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

Options	Long Term Stability (Yearly Aging) Availability		Comments
	Value		
G	$<\pm 1 \times 10^{-7}$ /year		
F	$<\pm 5 \times 10^{-8}$ /year		
E	$<\pm 3 \times 10^{-8}$ /year		

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 Phase noise 2-4	Option Phase noise 4	
Short term stability per 1 sec.	$<2 \times 10^{-12}$	$<8 \times 10^{-13}$	$<5 \times 10^{-13}$	Allan deviation
Stability vs. Load ( $\pm 5\%$ )	$<\pm 5 \times 10^{-10}$	-		
Stability vs. power supply ( $\pm 5\%$ )	$<\pm 5 \times 10^{-10}$	-		

## Specifications-Continued

Phase Noise, 10 MHz, Sinewave (dBc/Hz)				
Frequency Offset	1	2	3	4
1 Hz	<-110	<-115	<-115	<-118...-120
10 Hz	<-140	<-135	<-140	<-140
100 Hz	<-158	<-158	<-158	<-158
1 kHz	<-165	<-163	<-165	<-163
10 kHz	<-170	<-165	<-170	<-165

Contact factory for lower phase noise performance and see ordering designations at the end of this data sheet.

Output Parameters	
Output	Sinewave
Level	> 300 mV
Load	50 Ohms $\pm$ 5%
Rise/Fall Time	-
Harmonics	> -30 dBc

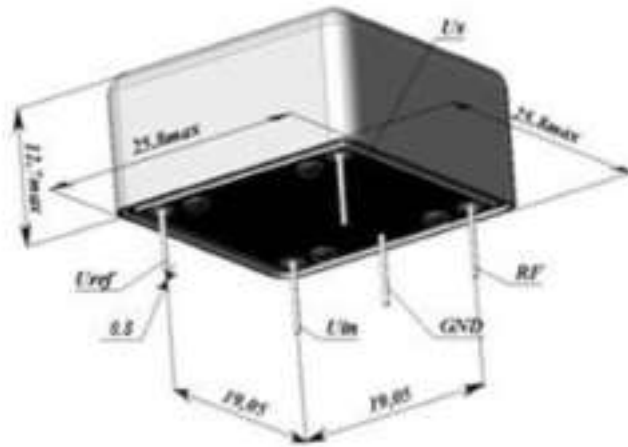
Power Supply & Voltage Control Parameters	
Specification	12V $\pm$ 5%
Steady state current @ 25 <sup>o</sup> C	< 170 mA
Peak warm-up current @ -10 <sup>o</sup> C	< 500 mA
Frequency Adjust range (10 MHz)	> $\pm$ 3x10 <sup>-7</sup>
Frequency Adjust Voltage (Uin)	0 to +5V
Reference Voltage (Uref)	+5V

See ordering designations at the end of this data sheet.

Environmental Parameters	
Specification	Conditions
Vibration Frequency	10-500 Hz
Vibration Acceleration	5 gs
Shock Acceleration	75 gs
Shock Duration	3 $\pm$ 1 mS
Humidity	98%
Storage Temperature	-55 to +70 <sup>o</sup> 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

Package Size	
36x27x16.0 mm	B16
25.8x25.8x12.7 mm	A12.7

Short Term Stability (ADEV)
< 2E-12
< 8E-13
< 5E-13

**MV333 - C 5 F - B16 - 10.0 MHz - 2 - 8E-13**

Availability of certain stability vs. operating temperature range.		$\pm 1.5 \times 10^{-8}$	$\pm 1 \times 10^{-8}$	$\pm 5 \times 10^{-9}$
		15	10	5
A	0 to +55 <sup>o</sup> C	A	A	A
B	-10 to +60 <sup>o</sup> C	A	A	A
C	-20 to +70 <sup>o</sup> C	A	A	C
D	-40 to +70 <sup>o</sup> C	A	A	C
EX	-40 to +85 <sup>o</sup> C	A	A	C

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

Availability of certain aging values (10 MHz)		
G	$\pm 1 \times 10^{-7}$ /year	A
F	$\pm 5 \times 10^{-8}$ /year	A
E	$\pm 3 \times 10^{-8}$ /year	A

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

Phase Noise (dBc/Hz) 10 MHz, Sinewave	Noise Options			
	1	2	3	4
Offset Frequency				
1 Hz	<-95	<-98	<-90	<-95
10 Hz	<-125	<-130	<-125	<-125
100 Hz	<-155	<-158	<-158	<-158
1 kHz	<-165	<-165	<-168	<-168
10 kHz	<-170	<-170	<-174	<-174

### Additional Notes:

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