



# MV336M

Oven Controlled Crystal Oscillator

10 MHz

Revised 11/15/18

Your dedicated source for crystal oscillators and filters.

**New**

## Features

- **Digital Control**
- Standard Frequency: 10 MHz
- **Short term stability (Alan deviation) to  $1.5 \times 10^{-13}$**
- **High Stability vs. Temperature: up to  $\pm 4 \times 10^{-11}$**
- **Ultra Low Phase Noise Close to Carrier**
- Long Term Stability: up to  $\pm 1 \times 10^{-8}$  /year
- Sinewave
- 12 Volt

## Applications

- Network clock
- 5 G
- Test equipment

## Preliminary Specifications

Temperature Range	Temperature Stability Availability		Comments
	High	Higher	
A 0 to +55 <sup>0</sup> C	$<\pm 5 \times 10^{-11}$	$<\pm 4 \times 10^{-11}$	
B -10 to +60 <sup>0</sup> C	$<\pm 5 \times 10^{-11}$	C	Contact factory
C -10 to +70 <sup>0</sup> C	$<\pm 5 \times 10^{-11}$	C	Contact factory

Upon request: upto  $<1 \times 10^{-11}$  for any 20<sup>0</sup> C window inside operating temperature ranges A, B C.

Standard Frequency*	Long Term Stability (Yearly Aging) Availability		Comments
	High	Higher	
10 MHz	$<\pm 5 \times 10^{-8}$	$<\pm 1 \times 10^{-8}$	

Specification	Pulling & Pushing Stability		Comments
	Standard		
Stability vs. Load ( $\pm 5\%$ )	$<\pm 2 \times 10^{-11}$		
Stability vs. power supply ( $\pm 1\%$ )	$<\pm 2 \times 10^{-11}$		
Warm-up time to w/ in $<\pm 5 \times 10^{-8}$	$<14$ minutes		@25 <sup>0</sup> C

Per 1 Sec Options	Short Term Stability (ADEV)		Per 100 Sec.
	Per 10 Sec.		
$<3.0E-10, -2E-10, <1.5E-13$	Contact Factory		Contact Factory

## Specifications-Continued

Phase Noise, 10 MHz, 12V, Sinewave (dBc/Hz)				
Frequency Offset	-	LN	ULN	Comments
0.1 Hz	< -80	< -85	< -92	
1 Hz	< -113	< -116	< -119...-120	
10 Hz	< -143	< -144	< -145	
100 Hz	< -154	< -156	< -157	
1 kHz	< -160	< -160	< -160	
10 kHz	< -160	< -160	< -160	

See ordering designations at the end of this data sheet.

Output Parameters	
Output	Sinewave
Level	> +4 dBm
Load	50 Ohms $\pm$ 5%
Rise/Fall Time	-
Harmonics	< -30 dBc

See ordering designations at the end of this data sheet.

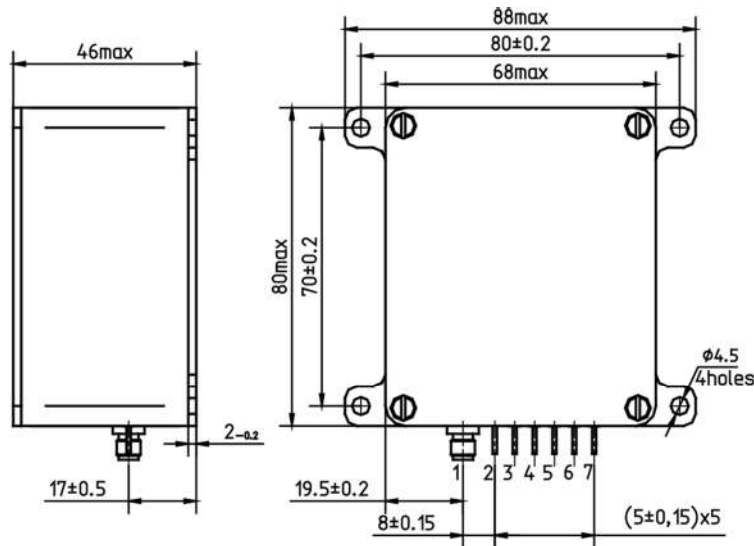
Power Supply & Voltage Control Parameters	
Supply Voltage	12V $\pm$ 1%
Steady state current @ 25 <sup>o</sup> C	< 700 mA
Peak warm-up current @ -20 <sup>o</sup> C	< 1300 mA
Frequency Adjust range (10 MHz)	$\pm$ 1.5E-7
Frequency Adjust Control	Analog(0..+5V) or Digital (I <sup>2</sup> C)*

\*See Outline Drawing & ordering designations at the end of this data sheet.

Environmental Parameters	
Specification	Conditions
Vibration Frequency	10-200 Hz
Vibration Acceleration	5 g
Shock Acceleration	75 g
Shock Duration	3 $\pm$ 1 mS
Humidity	98%
Storage Temperature	-55 to +85 <sup>o</sup> C
RoHs	Option

Contact factory for extended environmental conditions.

## Outline Drawing



Pin	Value
1	Output (SMA)
2	Ground (case)
3	NC
4	SCLK
5	DIN
6	CS
7	Supply Voltage

## Ordering Guide

### MV336M-A 003 D-10.0MHz-ULN- 1S/2E-13, 10S/CF, 100S/CF

Availability of certain stability vs. operating temperature range.

		$\pm 5 \times 10^{-11}$	$\pm 4 \times 10^{-11}$
		005	004
A	0 to +55° C	A	A
B	-10 to +60° C	C	C
C	-10 to +70° C	C	C

A=Available, C=Contact factory, NA=Not available.  
Upon request: upto  $<1 \times 10^{-11}$  for any 20° C window inside operating temperature ranges A, B C.

Availability of certain aging values for certain frequencies.

Standard Frequency

10.0 MHz

F	$\pm 5 \times 10^{-8}$ /year	A
E	$\pm 3 \times 10^{-8}$ /year	A
D	$\pm 2 \times 10^{-8}$ /year	A
C	$\pm 1 \times 10^{-8}$ /year	A

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

#### Short Term Stability (ADEV) Options

Per 1 Sec.	Per 10 Sec.	Per 100 Sec.
<3E-13	Contact Factory	Contact Factory
<2E-13		
<1.5E-13		

#### Phase Noise (dBc/Hz), 10 MHz, Sinewave

Offset	-	LN	ULN
0.1 Hz	<-80	<-85	<-92
1 Hz	<-113	<-116	<-119..-120
10 Hz	<-143	<-144	<-145
100 Hz	<-154	<-156	<-157
1 kHz	<-160	<-160	<-160
10 kHz	<-160	<-160	<-160

Additional Notes:

- 1) Contact factory for daily aging values.
- 2) Advise RoHs requirement at Order.
- 3) Contact factory for non-standard temperature ranges.