



# MV336

Oven Controlled Crystal Oscillator  
10 MHz

Revised 11/15/18

Your dedicated source for crystal oscillators and filters.

**New**

### Features

- Standard frequency: 10 MHz
- **Short term stability (Alan deviation) to  $1 \times 10^{-13}$**
- **Ultra Low Phase Noise Close to Carrier**
- **High Stability vs. Temperature: up to  $\pm 2 \times 10^{-11}$**
- 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	$<\pm 1 \times 10^{-10}$	$<\pm 2 \times 10^{-11}$	
B -10 to +60 <sup>0</sup> C	$<\pm 1 \times 10^{-10}$	$<\pm 2 \times 10^{-11}$	
C -20 to +70 <sup>0</sup> C	C	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	$<\pm 5 \times 10^{-8}$	$<\pm 1 \times 10^{-8}$	Contact factory for $<\pm 1 \times 10^{-8}$

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

	Short Term Stability (ADEV)		
	Per 1 Sec.	Per 10 Sec.	Per 100 Sec.
	$<5 \times 10^{-13}$	$<4 \times 10^{-13}$	$<5 \times 10^{-13}$
	$<4 \times 10^{-13}$	$<3 \times 10^{-13}$	$<4 \times 10^{-13}$
	$<3 \times 10^{-13}$	$<2 \times 10^{-13}$	$<3 \times 10^{-13}$
	$<2 \times 10^{-13}$	$<1.5 \times 10^{-13}$	
	$<1 \times 10^{-13}$		

## 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	< -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.

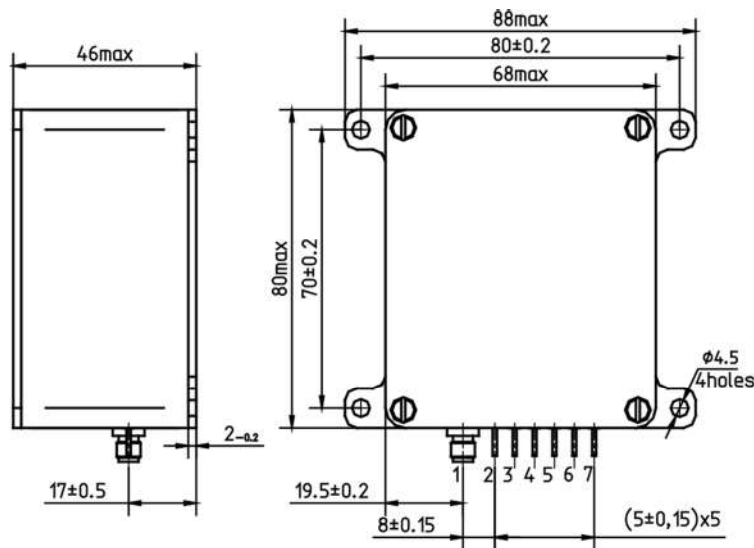
Power Supply & Voltage Control Parameters	
Supply Voltage	12V $\pm$ 1%
Steady state current @ 25 <sup>o</sup> C	< 700 mA
Peak warm-up current @ -20 <sup>o</sup> C	< 1300 mA
Frequency Adjust range (10 MHz)	-
Frequency Adjust Voltage (Uin)	-
Reference Voltage (Uref)	-

See 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	NC
5	NC
6	NC
7	Supply Voltage

## Ordering Guide

### MV336-A 003 D-10.0MHz-ULN- 1S/2E-13, 10S/3E-13, 100S/3E-13

Availability of certain stability vs. operating temperature range.		±1x10 <sup>-10</sup>	±5x10 <sup>-11</sup>	±3x10 <sup>-11</sup>	±2x10 <sup>-11</sup>
		01	005	003	002
A	0 to +55 <sup>0</sup> C	A	A	A	A
B	-10 to +60 <sup>0</sup> C	A	A	A	A
C	-20 to +70 <sup>0</sup> C	C	C	C	C

A=Available, C=Contact factory, NA=Not available.  
 Upon request: upto <math>1 \times 10^{-11}</math> for any 20<sup>0</sup> C window inside operating temperature ranges A, B C.

Availability of certain aging values for certain frequencies.		Standard Frequency
		10.0 MHz
F	±5x10 <sup>-8</sup> /year	A
E	±3x10 <sup>-8</sup> /year	A
D	±2x10 <sup>-8</sup> /year	A
C	±1x10 <sup>-8</sup> /year	A

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

Short Term Stability (ADEV)		
Per 1 Sec.	Per 10 Sec.	Per 100 Sec.
<math><5E-13</math>	<math><4E-13</math>	<math><5E-13</math>
<math><4E-13</math>	<math><3E-13</math>	<math><4E-13</math>
<math><3E-13</math>	<math><2E-13</math>	<math><3E-13</math>
<math><2E-13</math>	<math><1.5E-13</math>	
<math><1E-13</math>		

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

Additional Notes:

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