



MV331

Oven Controlled Crystal Oscillator
10 MHz

Revised 1/4/17

Your dedicated source for crystal oscillators and filters.

Features

- Small Package: 25.8 x 25.8 x10.6 mm
- Low Phase Noise
- Stability vs. Temperature: up to $\pm 3 \times 10^{-9}$
- Long Term Stability: up to $\pm 2 \times 10^{-8}$ /year
- HCMOS or Sinewave Output
- +5V & +12V

Applications

- SatCom
- Test equipment
- Network clock
- Base station

Specifications

Temperature Range	Temperature Stability Availability		Comments
	High	Higher	
0 to +55° C	$< \pm 1 \times 10^{-8}$	$< \pm 3 \times 10^{-9}$	
-10 to +60° C	$< \pm 1 \times 10^{-8}$	$< \pm 3 \times 10^{-9}$	
-20 to +70° C	$< \pm 1 \times 10^{-8}$	$< \pm 5 \times 10^{-9}$	Contact factory for $< \pm 3 \times 10^{-9}$
-40 to +70° C	$< \pm 1 \times 10^{-8}$	$< \pm 5 \times 10^{-9}$	
-40 to +85° C	$< \pm 1 \times 10^{-8}$	$< \pm 5 \times 10^{-9}$	

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		
D	$< \pm 2 \times 10^{-8}$ /year*		

* For all phase noise options, except ULN.

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	
Short term stability per 1 sec.	$< \pm 5 \times 10^{-12}$	$< \pm 2 \times 10^{-12}$	Allan deviation
Stability vs. Load ($\pm 5\%$)	$< \pm 5 \times 10^{-10}$		
Stability vs. power supply ($\pm 5\%$)	$< \pm 5 \times 10^{-10}$		
Warm-up time to w/ in $< \pm 2 \times 10^{-8}$	<3 minutes		@25° C

Specifications-Continued

Phase Noise, 10 MHz, 12V, Sinewave (dBc/Hz)				
Frequency Offset	Standard	LN	ILN	ULN
1 Hz	<-95	<-100	<-100	<-95
10 Hz	<-125	<-130	<-130	<-125
100 Hz	<-145	<-145	<-150	<-152
1 kHz	<-150	<-155	<-155	<-160
10 kHz	<-155	<-155	<-160	<-165

See ordering designations at the end of this data sheet.

Output	Output Parameters			
		HCMOS		Sinewave
Level	"0"	< 0.5V	12V	> 700 mV
	"1"	> 4.0V	5V	>300 mV
Load		<10K Ohms, 30 pF		50 Ohms \pm 5%
Rise/Fall Time		-		-
Harmonics		-		< -30 dBc

Contact factory for Rise/Fall time.

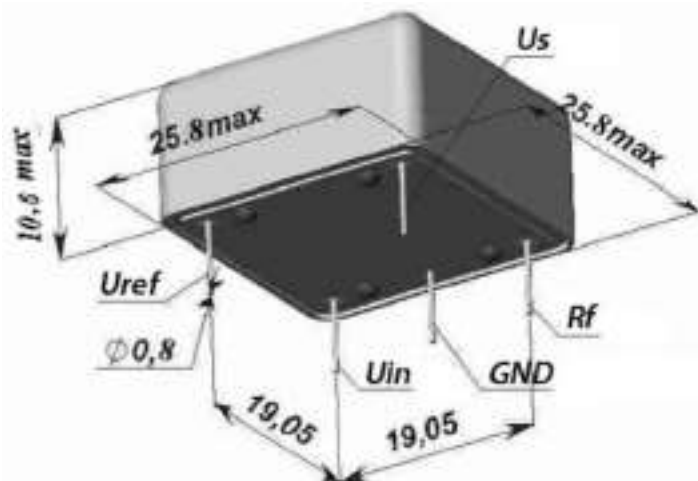
Power Supply & Voltage Control Parameters			
Specification		12V \pm 5%	5V \pm 5%
Steady state current @ 25 ^o C		< 130 mA	< 400 mA
Peak warm-up current @ -40 ^o C		< 400 mA	< 1000 mA
Frequency Adjust range (10 MHz)		> \pm 4x10 ⁻⁷	> \pm 4x10 ⁻⁷
Frequency Adjust Voltage (Uin)		0 to +5V	0 to +4.5V
Reference Voltage (Uref)		+5V	+4.5V

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 +85 ^o 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

Output
Sinewave
HCMOS

Power Supply
12V
5V

MV331 - C 3 E - 12V - SIN - 10.0 MHz - LN - 2E-12

Availability of certain stability vs. operating temperature range.				
		$\pm 1 \times 10^{-8}$	$\pm 5 \times 10^{-9}$	$\pm 3 \times 10^{-9}$
		10	5	3
A	0 to +55° C	A	A	A
B	-10 to +60° C	A	A	A
C	-20 to +70° C	A	A	C
D	-40 to +70° C	A	A	N
EX	-40 to +85° C	A	A	N

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

Short Term Stability /1 Sec, 10 MHz		
	LN & IULN	
5E-12	2E-12	

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
D	$\pm 2 \times 10^{-8}$ /year	C

* For all phase noise options, except ULN
A=Available, C=Contact factory, N=Not Available

Phase Noise (dBc/Hz) 10 MHz, Sinewave	Offset Frequency	Noise Options			
		-	LN	ILN	ULN
	1 Hz	<-95	<-100	<-100	<-95
	10 Hz	<-125	<-130	<-130	<-125
	100 Hz	<-145	<-145	<-150	<-152
	1 kHz	<-150	<-155	<-155	<-160
	10 kHz	<-155	<-155	<-160	<-165

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.