

**MV197**Oven Controlled Crystal Oscillator
8.192-20 MHz

Revised 1/1/15

Your dedicated source for crystal oscillators and filters.**Features**

- Package Height from 10 mm to 16 mm
- High Stability vs. Temperature: up to $\pm 5 \times 10^{-10}$
- Long Term Stability: up to $\pm 2 \times 10^{-8}$ /year
- Fast Warm-Up (1 min)
- HCMOS & Sinewave Output
- 12V & +5V

Applications

- SatCom
- Test equipment
- Network clock
- Base station

Specifications

Temperature Range	Temperature Stability Availability		Comments
	High	Higher	
0 to +55° C	$< \pm 5 \times 10^{-9}$	$< \pm 3 \times 10^{-10}$	
-10 to +60° C	$< \pm 5 \times 10^{-9}$	$< \pm 5 \times 10^{-10}$	Contact factory for $< \pm 3 \times 10^{-10}$
-20 to +70° C	$< \pm 5 \times 10^{-9}$	$< \pm 1 \times 10^{-9*}$	$< \pm 7.5$ & 5×10^{-10} available in B10 package
-40 to +70° C	$< \pm 5 \times 10^{-9}$	$< \pm 1 \times 10^{-9*}$	$< \pm 7.5$ & 5×10^{-10} available in B10 package
-40 to +85° C	$< \pm 5 \times 10^{-9}$	$< \pm 1 \times 10^{-9*}$	$< \pm 7.5$ & 5×10^{-10} available in B10 package

* Contact factory and see ordering designations at the end of this data sheet.

Temperature ranges from -60° C to +85° C available.

Standard Frequencies	Long Term Stability (Yearly Aging) Availability		Comments
	High	Higher	
10.0 MHz	$< \pm 2 \times 10^{-7}$	$< \pm 2 \times 10^{-8*}$	
12.8 MHz	$< \pm 2 \times 10^{-7}$	$< \pm 5 \times 10^{-8}$	Contact factory for $< \pm 3 \times 10^{-8}$
13.0 MHz	$< \pm 2 \times 10^{-7}$	$< \pm 5 \times 10^{-8}$	Contact factory for $< \pm 3 \times 10^{-8}$
16.384 MHz	$< \pm 2 \times 10^{-7}$	$< \pm 1 \times 10^{-7}$	Contact factory for $< \pm 5 \times 10^{-8}$
20 MHz	$< \pm 2 \times 10^{-7}$	C	Contact factory for $< \pm 1 \times 10^{-7}$

* -only for B16 package

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.	$< 5 \times 10^{-12}$	$< 2 \times 10^{-12}$	Allan deviation, 10 MHz
Stability vs. Load ($\pm 5\%$)	$< \pm 5 \times 10^{-10}$	$< \pm 2 \times 10^{-10}$	
Stability vs. power supply ($\pm 5\%$)	$< \pm 5 \times 10^{-9}$	$< \pm 2 \times 10^{-10}$	
Warm-up time to w/ in $< \pm 2 \times 10^{-7}$	<3 minutes	<1 minute	@25° C

Contact factory for 1 minute warm-up.

Specifications-Continued

Frequency Offset	Phase Noise, 10 MHz, 12V, Sinewave (dBc/Hz)				
	-	LN	ULNF	ULN	UNLI Preliminary
1 Hz	< -95	< -100	< 100	< 103	< 105
10 Hz	< -125	< -130	< -130	< -133	< -135
100 Hz	< -145	< -153	< -155	< -155	< -155
1 kHz	< -150	< -158	< -160	< -160	< -160
10 kHz	< -155	< -160	< -165	< -161	< -161

See ordering designations at the end of this data sheet.

Output	Output Parameters		
	HCMOS	Sinewave	
Level	"0" "1"	< 0.5V > 4.5V	300 mV to 9±1 dBm (12V option)
Load		10kOhms/30pF	50 Ohms±5%
Rise/Fall Time		< 6 nS (3 nSec Optional)	-
Harmonics		-	>-30 dBc

See ordering designations at the end of this data sheet.

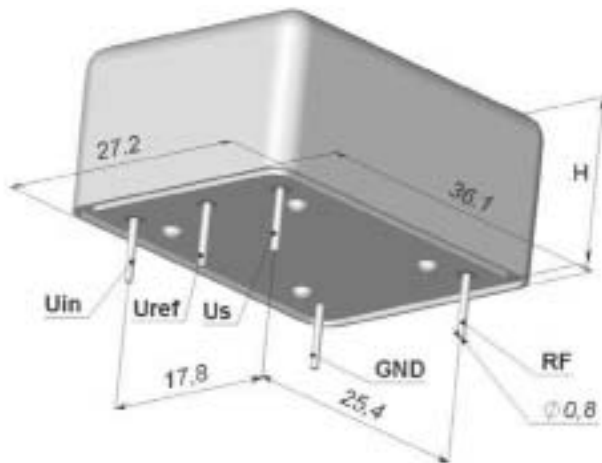
Power Supply & Voltage Control Parameters			
Specification	12V ±5%	5V ±5%	
Steady state current @ 25° C	< 150 mA	< 400 mA	
Peak warm-up current @ -40° C	< 400 mA	< 1000 mA	
Frequency Adjust range (10 MHz)	>±4.0x10 ⁻⁷	>±4.0x10 ⁻⁷	
Frequency Adjust Voltage (Uin)	0 to +5V	0 to +4.5V	
Reference Voltage (Uref)	+5V	+4.5V	

See ordering designations at the end of this data sheet.

Environmental Parameters	
Specification	Conditions
Vibration Frequency	10-200 Hz
Vibration Acceleration	5 gs
Shock Acceleration	75 gs
Shock Duration	3±1 mS
Humidity	98%
Storage Temperature	-55 to +85° C
RoHs	Option

Contact factory for extended environmental conditions.

Outline Drawing



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

For "H" definition please see package type

Ordering Guide

Power Supply		Output		Package	
12V		Sinewave		B16	36x27x16.0 mm
5V		HCMOS		B12.7	36x27x12.7 mm
				B10	36x27x10.0 mm

MV197 - C 3 E -12V - SIN - B12.7 - LN - 10.0MHz

Availability of certain stability vs. operating temperature range.		Standard Frequencies						
		$\pm 5 \times 10^{-9}$	$\pm 3 \times 10^{-9}$	$\pm 2 \times 10^{-9}$	$\pm 1 \times 10^{-9}$	$\pm 7.5 \times 10^{-10}$	$\pm 5 \times 10^{-10}$	$\pm 3 \times 10^{-10}$
A	0 to +55°C	A	A	A	A	A	A	A
B	-10 to +60°C	A	A	A	A	A	A	C
C	-20 to +70°C	A	A	A	A	A*	A*	N
D	-40 to +70°C	A	A	A	A	A*	A*	N
EX	-40 to +85°C	A	A	A	A	A*	C	N

*For B10 package.
A=Available, C=Contact Factory, N=Not available

Availability of certain aging values for certain frequencies.		Standard Frequencies				
		10.0 MHz	12.8 MHz	13.0 MHz	16.384 MHz	20.0 MHz
H	$\pm 2 \times 10^{-7}$ /year	A	A	A	A	A
G	$\pm 1 \times 10^{-7}$ /year	A	A	A	A	C
F	$\pm 5 \times 10^{-8}$ /year	A	A	A	C	N
E	$\pm 3 \times 10^{-8}$ /year	A	C	C	N	N
D*	$\pm 2 \times 10^{-8}$ /year	A	C	C	N	N

A=Available, C=Contact Factory, N=Not available
*=B16 package only.

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.

Phase Noise (dBc/Hz)	-	LN	ULNF	ULN	ULNI
1 Hz	<-95	<-100	<-100	<-103	<-105
10 Hz	<-125	<-130	<-130	<-133	<-135
100 Hz	<-145	<-153	<-155	<-155	<-155
1 kHz	<-150	<-158	<-160	<-160	<-160
10 kHz	<-155	<-160	<-165	<-161	<-161