



MV140

Oven Controlled Crystal Oscillator
10-20 MHz

Revised 1/1/15

Your dedicated source for crystal oscillators and filters.

Features

- High Stability vs. Temperature: up to $\pm 5 \times 10^{-9}$
- Standard 25x22x12.5 mm **SMD Package**
- Oven Alarm and Oscillation ON/OFF Function
- Ultra Low Phase Noise
- Sinewave Output
- +12V

Applications

- SatCom
- Test equipment
- Network clock
- Base station

Specifications

Temperature Range	Temperature Stability Availability		Comments
	High	Higher	
0 to +55° C	$< \pm 5 \times 10^{-8}$	$< \pm 5 \times 10^{-9}$	
-10 to +60° C	$< \pm 5 \times 10^{-8}$	$< \pm 5 \times 10^{-9}$	
-20 to +70° C	$< \pm 5 \times 10^{-8}$	$< \pm 5 \times 10^{-9}$	
-40 to +70° C	$< \pm 5 \times 10^{-8}$	$< \pm 1 \times 10^{-8}$	Contact factory for $< \pm 5 \times 10^{-9}$
-40 to +70° C	$< \pm 5 \times 10^{-8}$	C	Contact factory for $< \pm 2 \times 10^{-8}$

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

Standard Frequency	Long Term Stability (Yearly Aging) Availability		Comments
	High	Higher	
10 MHz	$< \pm 2 \times 10^{-7}$	$< \pm 3 \times 10^{-8}$	
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 $< \pm 1 \times 10^{-7}$

See ordering designations at the end of this data sheet.

Specification	Short Term, Pulling & Pushing Stability			Comments
	Option 1	Option 2	Option 3	
Short term stability per 1 sec.	$< 5 \times 10^{-12}$	$< 5 \times 10^{-11}$	$< 5 \times 10^{-10}$	Allan deviation, 10 MHz
Stability vs. Load ($\pm 5\%$)	$< \pm 5 \times 10^{-10}$	$< \pm 2 \times 10^{-9}$	$< \pm 5 \times 10^{-9}$	
Stability vs. power supply ($\pm 5\%$)	$< \pm 5 \times 10^{-10}$	$< \pm 2 \times 10^{-9}$	$< \pm 5 \times 10^{-9}$	
Warm-up time to w/ in $< \pm 1 \times 10^{-7}$	<3 minutes	-	-	@25° C

Specifications-Continued

Phase Noise, 10 MHz, 12V, Sinewave (dBc/Hz)

Frequency Offset	1	2	3	Comments
1 Hz	< -110	< -90	< -80	
10 Hz	< -130	< -120	< -110	
100 Hz	< -145	< -140	< -135	
1 kHz	< -150	< -150	< -145	
10 kHz	< -155	< -155	< -155	

See ordering designations at the end of this data sheet.

Output Parameters

Output	Sinewave
Level	> 400 mV
Load	50 Ohms
Rise/Fall Time	-
Harmonics	-

Contact factory for harmonic performance.

Power Supply & Voltage Control Parameters

Supply Voltage	12V \pm 5%
Steady state current @ 25 ^o C	-
Peak warm-up current	< 360 mA
Frequency Adjust range	> $\pm 5 \times 10^{-7}$
Frequency Adjust Voltage (Uin)	0 to +5V
Reference Voltage (Uref)	+5V

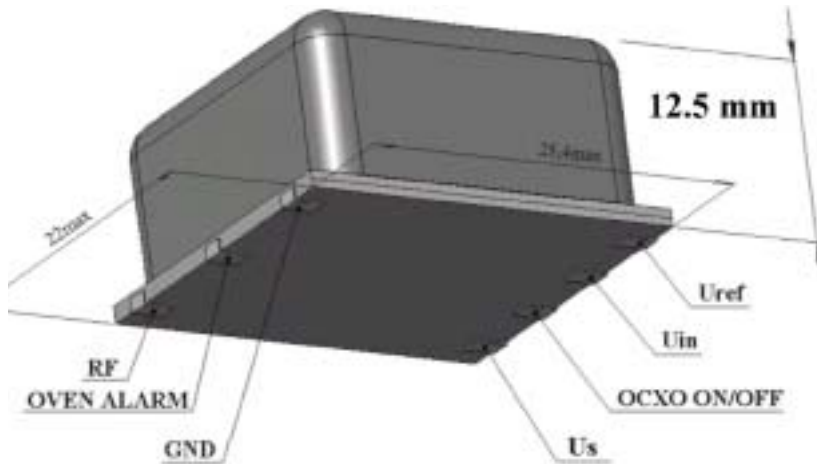
See ordering designations at the end of this data sheet.

Environmental Parameters

Specification	Conditions
Vibration Frequency	10-500 Hz
Vibration Acceleration	10 g
Shock Acceleration	100 g
Shock Duration	-
Humidity	-
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

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Availability of certain stability vs. operating temperature range.		$\pm 5 \times 10^{-8}$	$\pm 2 \times 10^{-8}$	$\pm 1 \times 10^{-8}$	$\pm 5 \times 10^{-9}$
		50	20	10	5
A	0 to +55° C	A	A	A	A
B	-10 to +60° C	A	A	A	A
C	-20 to +70° C	A	A	A	A
D	-40 to +70° C	A	A	A	C
EX	-40 to +85° C	A	C	N	N

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

Availability of certain aging values for certain frequencies.		Standard Frequencies				
		10 MHz	12.8 MHz	13.0 MHz	16.384 MHz	20.0 MHz
H	$\pm 2.0 \times 10^{-7}$ /year	A	A	A	A	A
G	$\pm 1.0 \times 10^{-7}$ /year	A	A	A	A	C
F	$\pm 5.0 \times 10^{-8}$ /year	A	A	A	C	N
E	$\pm 3.0 \times 10^{-8}$ /year	A	C	C	N	N

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

Short Term, Pull & Push Stability, 10 MHz			
Option	1	2	3
Short Term Stability /1Sec	$< \pm 5 \times 10^{-12}$	$< \pm 5 \times 10^{-11}$	$< \pm 5 \times 10^{-10}$
Stability vs. Load	$< \pm 5 \times 10^{-10}$	$< \pm 2 \times 10^{-9}$	$< \pm 5 \times 10^{-9}$
Stability vs. Power Supply	$< \pm 5 \times 10^{-10}$	$< \pm 2 \times 10^{-9}$	$< \pm 5 \times 10^{-9}$

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.