



MV178

Oven Controlled Crystal Oscillator
5-10.0 MHz

Revised 1/1/15

Your dedicated source for crystal oscillators and filters.

Features

- Stability vs. Temperature: up to $\pm 1 \times 10^{-9}$
- Small Package: 36.1x27.2x15.0 mm
- +3.3V & +5V
- HCMOS Output

Applications

- SatCom
- Test equipment
- Network clock
- Base station

Specifications

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

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

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

Contact factory for non-standard long term stability performance and see ordering designations at the end of this data sheet.

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

Specifications-Continued

Phase Noise (dBc/Hz)
HCMOS

Frequency Offset

1 Hz	-80
10 Hz	-115
100 Hz	-135
1 kHz	-145
10 kHz	-148
Harmonics	-

Contact factory for harmonics, lower phase noise performance and see ordering designations at the end of this data sheet.

Output Parameters

Output

HCMOS

Level	"0"	-
	"1"	-
Load		10K Ohms, 15 pF
Rise/Fall Time		-
Harmonics		-

Contact factory for Output Levels and Rise/Fall time.

Power Supply & Voltage Control Parameters

Specification	3.3V \pm 5%	5V \pm 5%
Steady state current @ 25 ^o C	< 380 mA	< 300 mA
Peak warm-up current @ 25 ^o C	< 1200 mA	< 800 mA
Frequency Adjust range	$>\pm 5 \times 10^{-7}$	$>\pm 5 \times 10^{-7}$
Frequency Adjust Voltage (Uin)	0 to +3.0V	0 to +4.5V
Reference Voltage (Uref)	-	-

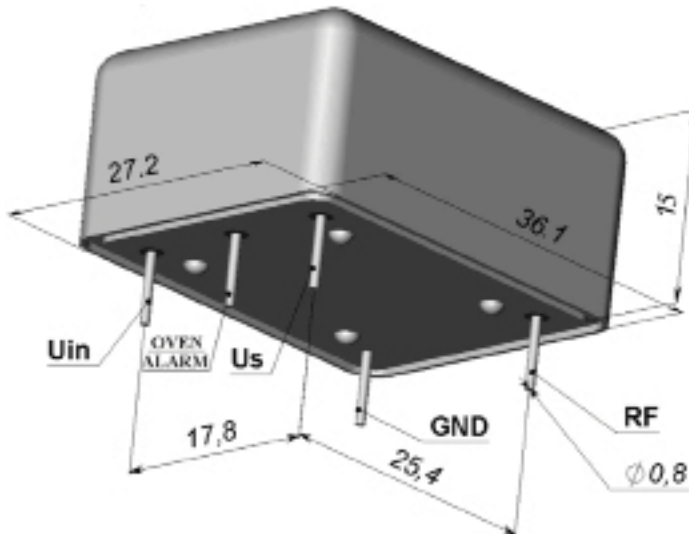
See ordering designations at the end of this data sheet.

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

Power Supply
5V
3.5V

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Availability of certain stability vs. operating temperature range.		$\pm 3 \times 10^{-8}$	$\pm 1 \times 10^{-8}$	$\pm 5 \times 10^{-9}$
		30	10	5
A	0 to +55° C	A	A	A
B	-10 to +60° C	A	A	A
C	-20 to +70° C	A	A	A
D	-40 to +70° C	A	A	C
EX	-40 to +85° C	A	A	N

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

Availability of certain aging values for certain frequencies.		Standard Frequencies		
		5.0 MHz	8.192 MHz	10.0 MHz
G	$\pm 1 \times 10^{-7}$ /year	A	A	A
F	$\pm 5 \times 10^{-7}$ /year	A	A	A
E	$\pm 3 \times 10^{-8}$ /year	A	A	A
D	$\pm 2 \times 10^{-8}$ /year	A	N	N

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

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) Temperature ranges of -60° C to +85° C available. Contact factory for non-standard temperature ranges.