



# MV180

Double Oven Controlled Crystal Oscillator  
5-16.4 MHz

Revised 1/1/15

Your dedicated source for crystal oscillators and filters.

## Features

- Low Sensitivity to Rapid Temperature Changes
- Low Profile Package: height of 19 (17) mm
- High Stability vs. Temperature: up to  $\pm 1 \times 10^{-10}$
- +5V & +12V
- HCMOS & Sinewave Output

## Applications

- SatCom
- Test equipment
- Network clock
- Base station

## Specifications

Temperature Range	Temperature Stability Availability		Comments
	High	Higher	
0 to +55° C	$< \pm 1 \times 10^{-9}$	$< \pm 1 \times 10^{-10}$	
-10 to +60° C	$< \pm 1 \times 10^{-9}$	$< \pm 1 \times 10^{-10}$	
-20 to +70° C	$< \pm 1 \times 10^{-9}$	$< \pm 2 \times 10^{-10}$	Contact factory for $< \pm 1 \times 10^{-10}$
-40 to +70° C	$< \pm 1 \times 10^{-9}$	$< \pm 3 \times 10^{-10}$	Contact factory for $< \pm 2 \times 10^{-10}$

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	
5.0 MHz	$< \pm 5 \times 10^{-8}$	$< \pm 2 \times 10^{-8}$	Contact factory for $< \pm 1 \times 10^{-8}$
8.192 MHz	$< \pm 5 \times 10^{-8}$	$< \pm 3 \times 10^{-8}$	Contact factory for $< \pm 2 \times 10^{-8}$
10.0 MHz	$< \pm 5 \times 10^{-8}$	$< \pm 2 \times 10^{-8}$	Contact factory for $< \pm 1 \times 10^{-8}$
16.384 MHz	$< \pm 5 \times 10^{-8}$	$< \pm 3 \times 10^{-7}$	Contact factory for $< \pm 2 \times 10^{-8}$

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

## Specifications-Continued

Phase Noise, (dBc/Hz)  
Sinewave

Standard Frequencies		10 MHz	5 MHz
@ Offset Frequency	1 Hz	-100	-105
	10 Hz	-125	-130
	100 Hz	-140	-145
	1 kHz	-145	-150
	10 kHz	-150	-155

Harmonics

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

## Output Parameters

Output		HCMOS	Sinewave
Level	"0"	< 0.5V	7±2 dBm
	"1"	> 4.5V	
Load		10K Ohms, 30 pF	50 Ohm ±10%
Rise/Fall Time		-	-
Harmonics		-	>-35 dBc

Contact factory for Rise/Fall time.

## Power Supply &amp; Voltage Control Parameters

Specification	12V ±5%	5V ±5%
Steady state current @ 25° C	< 250 mA	< 600 mA
Peak warm-up current @ +25° C	< 600 mA	< 300 mA
For "D" Temperature Range (-40° C)	<900 mA	Contact Factory
Frequency Adjust range	>±3x10 <sup>-7</sup>	>±3x10 <sup>-7</sup>
Frequency Adjust Voltage (Uin)	0 to +5V	0 to +4V
Reference Voltage (Uref)	+5.0V	+4.0V

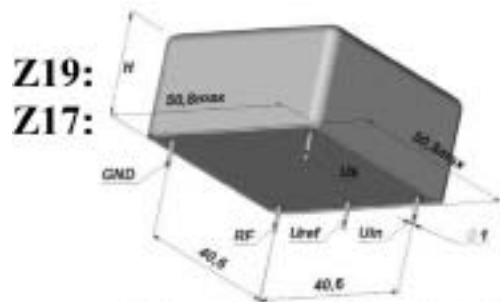
See ordering designations at the end of this data sheet.

## Environmental Parameters

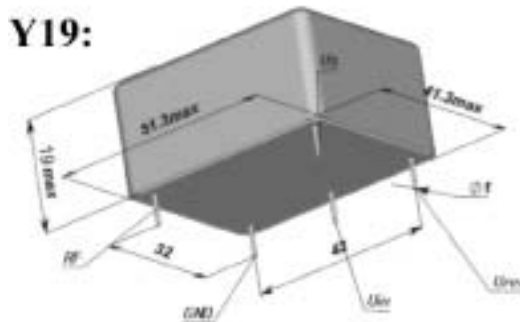
Specification	Conditions
Vibration Frequency	10-200 Hz
Vibration Acceleration	5 gs
Shock Acceleration	150 gs
Shock Duration	3±1 mS
Humidity	-
Storage Temperature	-55 to +80° C
RoHs	Option

Contact factory for extended environmental conditions.

## Outline Drawing

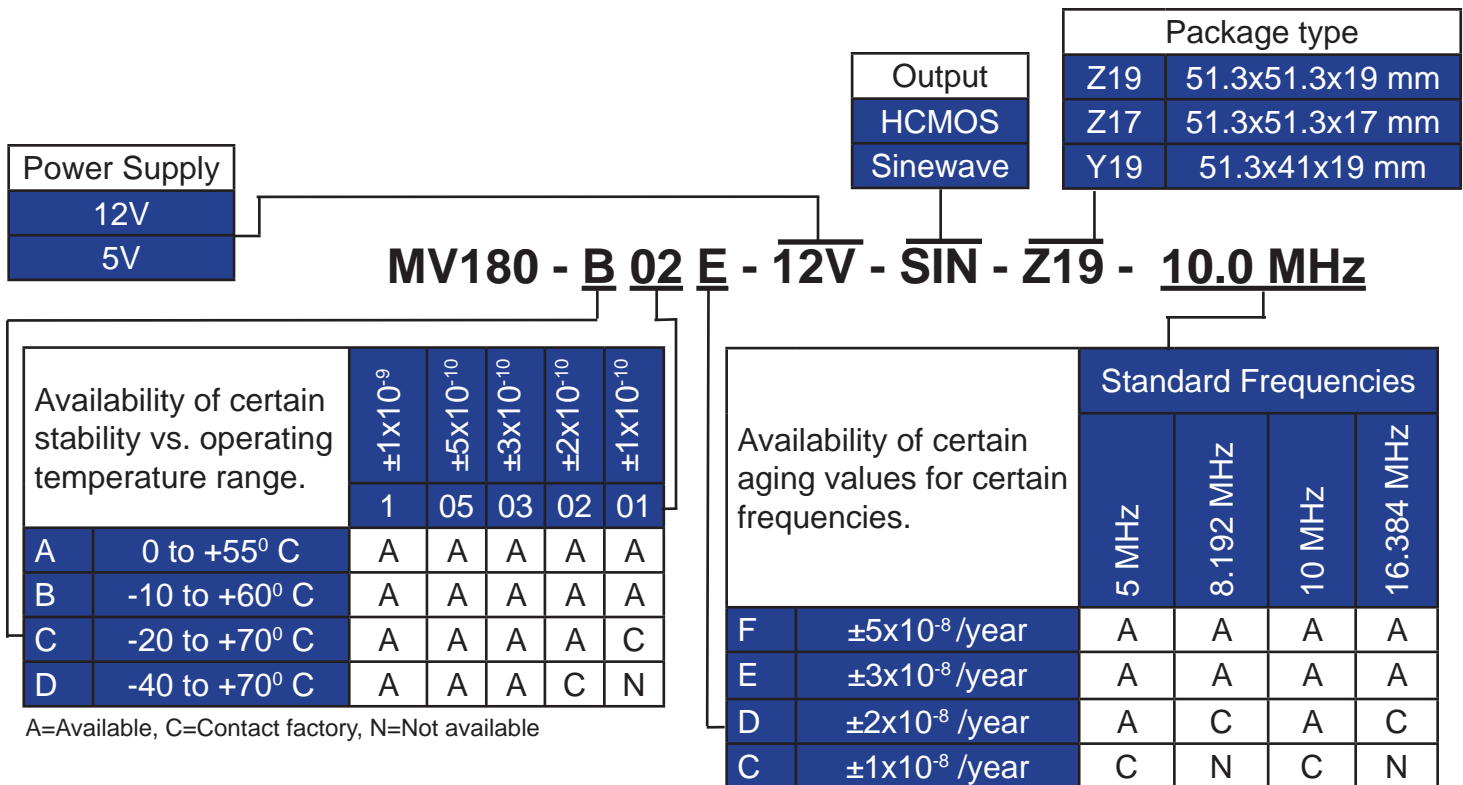


H=19 mm for Z19; H=17 mm for Z17.



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

## Ordering Guide



### 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.