MV199

Oven Controlled Crystal Oscillator
8.192-20 MHz

Revised 1/1/15

Your dedicated source for crystal oscillators and filters.

Features
- Small Package: 20.35 x 20.35 x 12.7 mm
- High Stability vs. Temperature: up to ±1x10^{-9}
- Long Term Stability: up to ±3x10^{-8} /year
- +5V & +12V

Applications
- SatCom
- Test equipment
- Network clock
- Base station

Specifications

Temperature Stability Availability			
Temperature Range	High	Higher	Comments
0 to +55^{0} C	<±5x10^{-9}	<±2x10^{-9}	Contact factory for <±1x10^{-9}
-10 to +60^{0} C	<±5x10^{-9}	<±3x10^{-9}	Contact factory for <±2x10^{-9}
-20 to +70^{0} C	<±5x10^{-9}	<±3x10^{-9}	Contact factory for <±2x10^{-9}
-40 to +70^{0} C	<±5x10^{-9}	C	Contact factory for <±3x10^{-9}
-40 to +85^{0} C	<±5x10^{-9}	C	Contact factory for <±3x10^{-9}

*emperature ranges from -60^{0} C to +85^{0} C available. Comtact factory and see ordering designations at the end of this data sheet.

Long Term Stability (Yearly Aging) Availability			
Standard Frequencies	High	Higher	Comments
10.0 MHz	<±1x10^{-7}	<±3x10^{-8}	
12.8 MHz	<±1x10^{-7}	<±5x10^{-8}	Contact factory for <±3x10^{-8}
13.0 MHz	<±1x10^{-7}	<±5x10^{-8}	Contact factory for <±3x10^{-8}
16.384 MHz	<±2x10^{-7}	<±1x10^{-7}	Contact factory for <±5x10^{-8}
20 MHz	<±2x10^{-7}	C	Contact factory for <±1x10^{-7}

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

Short Term, Pulling & Pushing Stability			
Specification	Standard	Option	Comments
Short term stability per 1 sec.	<±5x10^{-12}	<±2x10^{-12}	Allan deviation, for 10 MHz
Stability vs. Load (±5%)	<±5x10^{-10}		
Stability vs. power supply (±5%)	<±5x10^{-10}		
Warm-up time to w/ in <±2x10^{-8}	<3 minutes		@25^{0} C
Option to w/ in <±2x10^{-7}		<1 minute	@25^{0} C

Specifications-Continued

Phase Noise, 10 MHz, 12V, Sinewave (dBc/Hz)			
Frequency Offset	Standard	Low Noise	Comments
1 Hz	< -95	< -100	Contact factory for lower phase noise
10 Hz	< -125	< -130	
100 Hz	< -145	< -150	
1 kHz	< -150	< -155	
10 kHz	< -155	< -160	

Comtact factory for lower phase noise perfomance and see ordering designations at the end of this data sheet.

Output Parameters			
Output		HCMOS	Sinewave
Level	"0"	< 0.5V	> 300 mV
	"1"	> 4.0V	
Load		10K Ohms, 30 pF	50 Ohms ± 5%
Rise/Fall Time		< 6 nS (3 nS Optional)	-
Harmonics		-	> -30 dBc

See ordering designations at the end of this data sheet.

Power Supply & Voltage Control Parameters		
Specification	12V ±5%	5V ±5%
1Steady state current @ 25^0 C	< 100 mA	< 250 mA
Peak warm-up current @ -40^0 C	< 400 mA	< 650 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

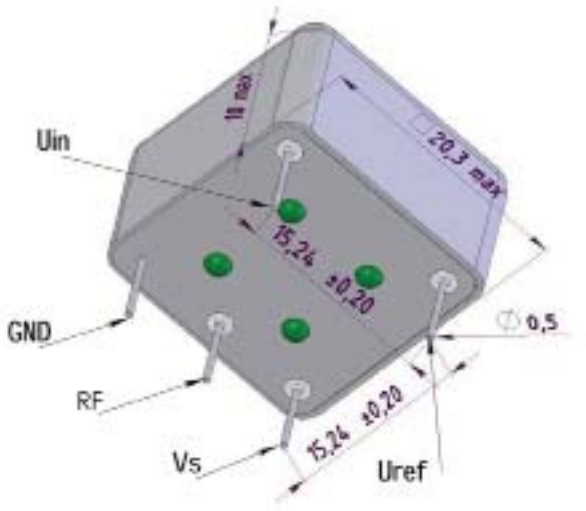
See ordering designations at the end of this data sheet.

Environmental Parameters	
Specification	Conditions
Vibration Frequency	10-500 Hz
Vibration Acceleration	5 gs
Shock Acceleration	75 gs
Shock Duration	3±1 mS
Humidity	98%
Storage Temperature	-55 to $+85^0$ C
RoHs	Option

Contact factory for extemded environmental conditions.

MV199

Outline Drawing



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

Ordering Guide

Power Supply
12V
5V

Output
Sinewave
HCMOS

MV199 - C 3 F - 12V - SIN - 10.0 MHz - LN

Availability of certain stability vs. operating temperature range.		±5x10^{-9}	±3x10^{-9}	±2x10^{-9}	±1x10^{-9}
		5	3	2	1
A	0 to +55^{0} C	A	A	A	C
B	-10 to +60^{0} C	A	A	C	C
C	-20 to +70^{0} C	A	A	C	C
D	-40 to +70^{0} C	A	C	C	N
EX	-40 to +85^{0} C	A	C	N	N

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	±2x10^{-7} /year	NA	NA	NA	A	A
G	±1x10^{-7} /year	A	A	A	A	C
F	±5x10^{-8} /year	A	A	A	C	NA
E	±3x10^{-8} /year	A	C	C	NA	NA

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

Phase Noise (dBc/Hz) 10 MHz, Sinewave	-	Low Noise
Offset Frequency		12V Sinewave
1 Hz	<-95	<-100
10 Hz	<-125	<-130
100 Hz	<-145	-150
1 kHz	<-150	<-155
10 kHz	<-155	<-160

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.