



MV295

Oven Controlled Crystal Oscillator
10-40 MHz

Revised 1/1/15

Your dedicated source for crystal oscillators and filters.

Features

- **Small SMD Package:** 25.4 x 22 x 12.5 (10.0) mm
- High Stability vs. Temperature: up to $\pm 5 \times 10^{-9}$
- Long Term Stability: up to $\pm 2 \times 10^{-8}$ /year
- Oven Alarm Function
- HCMOS or Sinewave Output
- +3.3V, +5V & +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	$< \pm 5 \times 10^{-8}$	$< \pm 1 \times 10^{-8}$	Contact factory for $< \pm 5 \times 10^{-9}$
-20 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	$< \pm 5 \times 10^{-8}$	$< \pm 2 \times 10^{-8}$	Contact factory for $< \pm 1 \times 10^{-8}$
-40 to +85° C	$< \pm 5 \times 10^{-8}$	$< \pm 2 \times 10^{-8}$	

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

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

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.	$< \pm 1 \times 10^{-11}$	-	Allan deviation
Stability vs. Load ($\pm 5\%$)	$< \pm 3 \times 10^{-9}$		
Stability vs. power supply ($\pm 5\%$)	$< \pm 3 \times 10^{-9}$		
Warm-up time to w/ in $< \pm 1 \times 10^{-7}$	< 3 minutes		@25° C

Specifications-Continued

Frequency Offset	Phase Noise, 10 MHz, Sinewave (dBc/Hz)			Comments
	-	LN	ULN	
1 Hz	< -90	< -90	< 100	
10 Hz	< -120	< -120	< -130	
100 Hz	< -135	< -140	< -145	
1 kHz	< -145	< -150	< -150	
10 kHz	< -150	< -155	< -155	

See ordering designations at the end of this data sheet.

Output	Output Parameters			
		HCMOS		
Supply Voltage		12V	5V	3.3V
Level	"0"	< 0.5V	< 0.5V	< 0.3V
	"1"	> 4.5V	> 4.0V	> 2.4V
Load		10kOhms/15pF	10kOhms/15 pF	10kOhms/15 pF
Rise/Fall Time		< 6 nS	< 6 nS	< 6 nS
Harmonics		-	-	-

See ordering designations at the end of this data sheet.

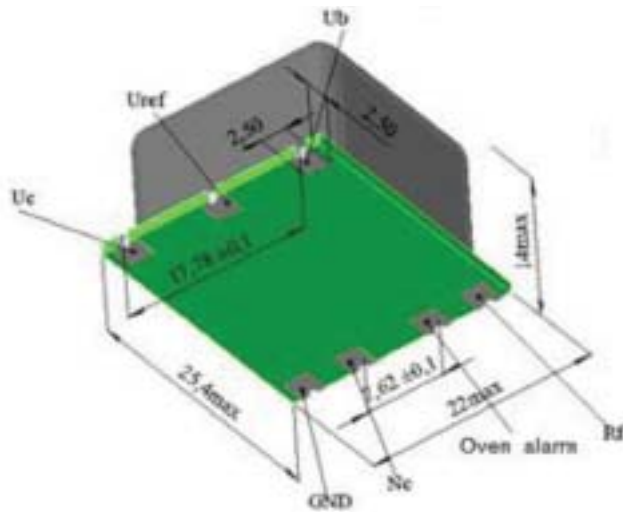
Power Supply & Voltage Control Parameters			
Specification	12V $\pm 5\%$	5V $\pm 5\%$	3.3V $\pm 5\%$
Steady state current @ 25 ^o C	< 85 mA	< 250 mA	< 300 mA
Peak warm-up current @ -40 ^o C	< 220 mA	< 500 mA	< 750 mA
Frequency Adjust range (10 MHz)	$< \pm 5.0 \times 10^{-7}$	$< \pm 5.0 \times 10^{-7}$	$< \pm 5.0 \times 10^{-7}$
Frequency Adjust Voltage (Uin)	0 to +5V	0 to +4.5V	0 to +2.8V
Reference Voltage (Uref)	+5V	+4.5V	+2.8V

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 \pm 1 mS
Humidity	98%
Storage Temperature	-55 to +85 ^o C
RoHs	Option

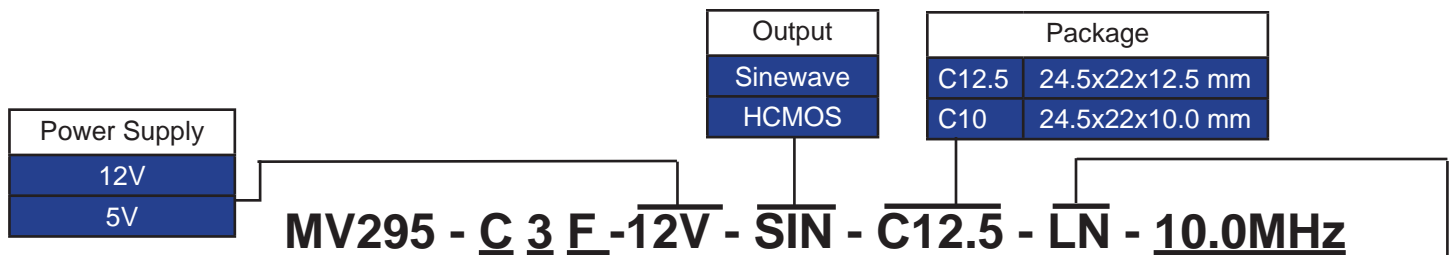
Contact factory for extended environmental conditions.

Outline Drawing



Pin	Value
Ub	Power Supply
Uref	Reference Voltage
Uc	Control Voltage
RF	RF Out
NC	Oven Alarm
GND	Ground

Ordering Guide



Availability of certain stability vs. operating temperature range.		$\pm 5 \times 10^{-8}$			
		$\pm 5 \times 10^{-8}$	$\pm 2 \times 10^{-8}$	$\pm 1 \times 10^{-8}$	$\pm 5 \times 10^{-9}$
A	0 to +55° C	A	A	A	A
B	-10 to +60° C	A	A	A	C
C	-20 to +70° C	A	A	A	C
D	-40 to +70° C	A	A	C	C
EX	-40 to +85° C	A	A	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	15.36 MHz	16.384 MHz	20.0 MHz	30.72 MHz
H	$\pm 2 \times 10^{-7}$ /year	A	A	A	A	A	A
G	$\pm 1 \times 10^{-7}$ /year	A	A	A	A	C	C
F	$\pm 5 \times 10^{-8}$ /year	A	A	A	C	N	N
E	$\pm 2 \times 10^{-8}$ /year	C	C	N	N	N	N

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

Additional Notes:

- Contact factory for daily aging values.
General rule: $x10^{-x}$ /year = $x10^{-(x+2)}$ /day.
- Advise RoHs requirement at Order.
- Contact factory for non-standard temperature ranges.

Phase Noise (dBc/Hz)	-	LN	ULN
10 MHz, Sinewave	-	LN	ULN
1 Hz	<-90	<-90	<-100
10 Hz	<-120	<-120	<-130
100 Hz	<-135	<-140	<-145
1 kHz	<-145	<-150	<-150
10 kHz	<-150	<-155	<-155