



MV289M

Oven Controlled Crystal Oscillator
5 MHz

New

Your dedicated source for crystal oscillators and filters.

Features

- High Stability vs. Temperature: up to $\pm 1 \times 10^{-9}$
- Long Term Stability: up to $\pm 5 \times 10^{-9}$ /year
- High Short Term Stability, per 1 Sec (Allan deviation), upto 1×10^{-13}
- Ultra Low Phase Noise
- Sinewave Output
- 12V

Applications

- Frequency synthesizer
- Test equipment
- Network clock
- Base station

Preliminary Specifications

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

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 | |
| 5.0 MHz* | $< \pm 3 \times 10^{-8}$ | $< \pm 5 \times 10^{-9}$ | See options at end of the data sheet |

* Consult factory for 5.115 MHz and other non-standard frequency. See ordering designations at the end of this data sheet.

| Specification | Short Term, Pulling & Pushing Stability | | | Comments |
|--|---|---------------------------|---------------------------|----------------------------|
| | Standard | Option | Option | |
| Short term stability per 1 sec. | $< \pm 5 \times 10^{-13}$ | $< \pm 2 \times 10^{-13}$ | $< \pm 1 \times 10^{-13}$ | Allan deviation, for 5 MHz |
| Stability vs. Load ($\pm 5\%$) | $< \pm 5 \times 10^{-10}$ | - | - | |
| Stability vs. power supply ($\pm 5\%$) | $< \pm 5 \times 10^{-10}$ | - | - | |
| Warm-up time to w/ in $< \pm 2 \times 10^{-8}$ | <8 minutes | - | - | @25° C |

Specifications-Continued

Phase Noise, 5 MHz, 12V, Sinewave (dBc/Hz)

| Frequency Offset | - | LN | ULN | Comments |
|------------------|--------|--------|--------|----------|
| 1 Hz | < -115 | < -120 | < -125 | |
| 10 Hz | < -145 | < -148 | < -148 | |
| 100 Hz | < -150 | < -155 | < -155 | |
| 1 kHz | < -155 | < -160 | < -157 | |
| 10 kHz | < -155 | < -161 | < -157 | |

See ordering designations at the end of this data sheet.

Output Parameters

| Output | Sinewave |
|----------------|-------------------|
| Level | > 500 mV |
| Load | <50 Ohms \pm 5% |
| Rise/Fall Time | - |
| Harmonics | > -30 dBc |

See ordering designations at the end of this data sheet.

Power Supply & Voltage Control Parameters

| | |
|---|----------------------------|
| Supply Voltage | 12V \pm 5% |
| Steady state current @ 25 ^o C | < 200 mA |
| Peak warm-up current @ -20 ^o C | < 600 mA |
| Frequency Adjust range | < \pm 2x10 ⁻⁷ |
| Frequency Adjust Voltage (Uin) | 0 to +5V |
| Reference Voltage (Uref) | +5V |

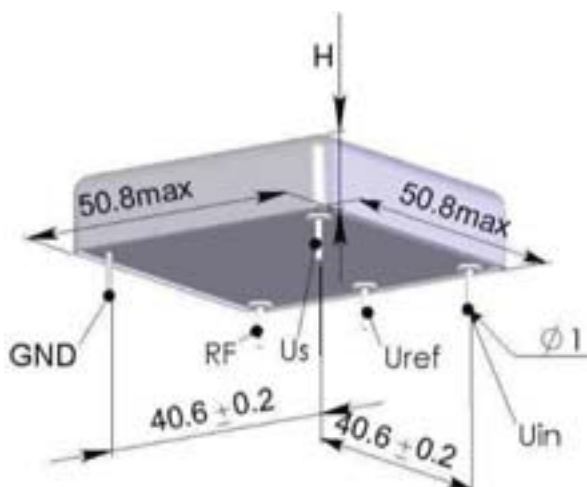
See ordering designations at the end of this data sheet.

Environmental Parameters

| Specification | Conditions |
|------------------------|---------------------------|
| Vibration Frequency | 10-200 Hz |
| Vibration Acceleration | 5 g |
| Shock Acceleration | 75 g |
| 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



H = 19 mm for Z19;
H = 25 mm for Z25.

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

Ordering Guide

| Short Term Stability /1 Sec Allan deviation | | |
|--|-----------------------|-----------------------|
| 1E-12 | 5E-13 | 3E-13 |
| <±1x10 ⁻¹² | <±5x10 ⁻¹³ | <±3x10 ⁻¹³ |

| Package | Size |
|---------|-----------------|
| Z19 | 50.8x50.8x19 mm |
| Z25 | 50.8x50.8x25 mm |

MV289M - C 2 B - 5.0MHz - ULN - 2E-13 - Z19

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

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

| Availability of certain aging values for certain frequencies. | | Standard Frequency |
|---|---------------------------|--------------------|
| | | 5.0 MHz* |
| E | ±3x10 ⁻⁸ /year | A |
| D | ±2x10 ⁻⁸ /year | A |
| C | ±1x10 ⁻⁸ /year | A |
| B | ±5x10 ⁻⁹ /year | A |

* Contact factory for 5.115 MHz (non-standard frequencies)
A=Available, C=Contact factory, N=Not available.

| Phase Noise (dBc/Hz), 10 MHz, Sinewave | | | |
|--|-------|-------|-------|
| Offset | - | LN | ULN |
| 1 Hz | <-115 | <-130 | <-125 |
| 10 Hz | <-145 | <-148 | <-148 |
| 100 Hz | <-150 | <-155 | <-155 |
| 1 kHz | <-155 | <-160 | <-157 |
| 10 kHz | <-155 | <-161 | <-157 |

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.