# MV83

Oven Controlled Crystal Oscillator
4.6-20 MHz

Revised 1/1/15

**Your dedicated source for crystal oscillators and filters.**

**Features**
- High Stability vs. Temperature: up to ±7.5x10$^{-9}$
- Long Term Stability: up to ±3x10$^{-8}$ /year
- Multiple Package Options
- Low Phase Noise
- Low Power Consumption
- +12V

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

## Specifications

| Temperature Stability | | | |
|---|---|---|---|
| Temperature Range | High | Higher | Comments |
| 0 to +55$^0$ C | <±1x10$^{-7}$ | <±7.5x10$^{-9}$ | |
| -10 to +60$^0$ C | <±1x10$^{-7}$ | <±1x10$^{-8}$ | Contact factory for <±7.5x10$^{-9}$ |
| -20 to +70$^0$ C | <±1x10$^{-7}$ | <±1x10$^{-8}$ | |
| -40 to +70$^0$ C | <±1x10$^{-7}$ | <±2x10$^{-8}$ | Contact factory for <±1x10$^{-8}$ |

Temperature 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 |
| 5.0 MHz | <±2x10$^{-7}$ | <±5x10$^{-8}$ | Contact factory for <±3x10$^{-8}$ |
| 6.4 MHz | <±2x10$^{-7}$ | <±5x10$^{-8}$ | Contact factory for <±3x10$^{-8}$ |
| 8.192 MHz | <±2x10$^{-7}$ | <±5x10$^{-8}$ | |
| 10.0 MHz | <±2x10$^{-7}$ | <±5x10$^{-8}$ | Contact factory for <±5x10$^{-8}$ |
| 12.8 MHz | <±2x10$^{-7}$ | <±5x10$^{-8}$ | Contact factory for <±3x10$^{-8}$ |
| 16.384 MHz | <±2x10$^{-7}$ | <±5x10$^{-8}$ | Contact factory for <±3x10$^{-8}$ |
| 20.0 MHz | <±2x10$^{-7}$ | <±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 | HCMOS & Sinewave | Comments |
| Stability vs. Load (±5%) | <±2x10$^{-9}$ | |
| Stability vs. power supply (±5%) | <±2x10$^{-9}$ | |
| Warm-up time to w/ in <±5x10$^{-78}$ | <7 minutes | @25$^0$ C |
| Short-term stability per 1 second | <5x10$^{-12}$ | Allan deviation |

# Specifications-Continued

| Phase Noise (dBc/Hz) | | | |
|---|---|---|---|
| | | Sinewave | |
| Output | | Fundamental | Option X |
| Phase Noise, typical @ | 1 Hz | -100 | -95 |
| | 10 Hz | -130 | -123 |
| | 100 Hz | -150 | -140 |
| | 1 kHz | -155 | -145 |
| | 10 kHz | -158 | -150 |

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

| Output Parameters | |
|---|---|
| Output | Sinewave |
| Level | > 225 mV |
| Load | 50 Ohms ± 5% |
| Rise/Fall Time | - |
| Harmonics | > -30 dBc |

See ordering designations at the end of this data sheet.

| Power Supply & Voltage Control Parameters, 12V ±5% | | |
|---|---|---|
| Specification | Std | Low Current |
| Steady state current @ 25$^0$ C | < 85 mA | < 35 mA |
| Peak warm-up current | < 600 mA | < 400 mA |
| Frequency Adjust range (10 MHz) | <±3x10$^{-7}$ | <±3x10$^{-7}$ |
| Frequency Adjust Voltage (Uin) | 0 to +5V | 0 to +5V |
| Slope | Positive | Positive |
| or with Potentiometer | 20 kOhm | 20 kOhm |
| Reference Voltage (Uref) | +5V | +5V |

See ordering designations at the end of this data sheet.

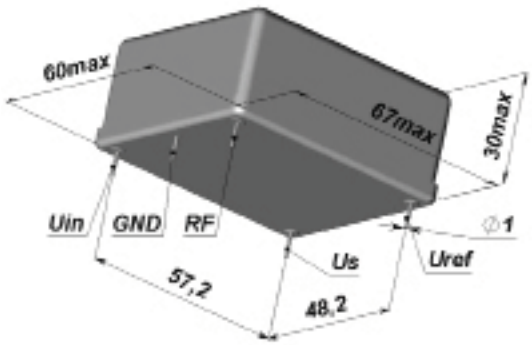
| Environmental Parameters | |
|---|---|
| Specification | Conditions |
| Vibration Frequency | 10-500 Hz |
| Vibration Acceleration | 10 g |
| Shock Acceleration | 100 g |
| Shock Duration | - |
| Humidity | - |
| Storage Temperature | -55 to +85$^0$ C |
| RoHs | Option |

Contact factory for extemded environmental conditions.

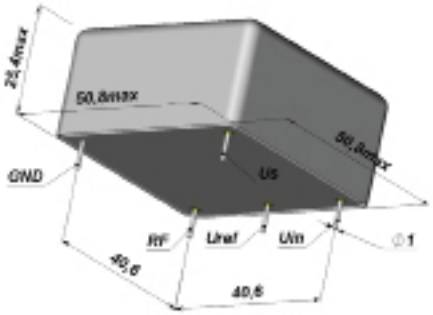
# MV83

## Outline Drawing

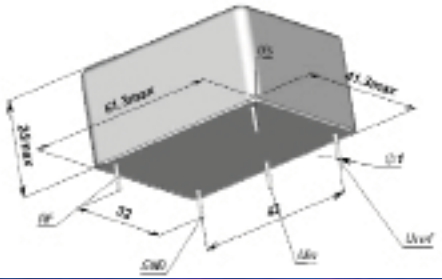
**Package type X**




**Package type Z**




**Package type Y**



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

## Ordering Guide

| Package | Size |
|---|---|
| X | 67x60x30 mm |
| Z | 50.8x50.8x25.4 mm |
| Y | 51.3x41.3x25 mm |

**MV83 - C 10 F - Z - 10.0 MHz - X**

| Availability of certain stability vs. operating temperature range. | | ±1x10$^{-7}$ | ±5x10$^{-8}$ | ±3x10$^{-8}$ | ±2x10$^{-8}$ | ±1x10$^{-8}$ | ±7.5x10$^{-9}$ |
|---|---|---|---|---|---|---|---|
| | | 100 | 50 | 30 | 20 | 10 | 7 |
| A | 0 to +55$^0$ C | A | A | A | A | A | A |
| B | -10 to +60$^0$ C | A | A | A | A | A | C |
| C | -20 to +70$^0$ C | A | A | A | A | A | N |
| D | -40 to +70$^0$ C | A | A | A | A | C | N |
| Two current consumption options are available | | | | | | | |
| 85 mA - Steady State<br>600 mA - Peak current | | A | A | A | A | A | A |
| 35 mA - Steady State<br>400 mA - Peak current | | A | A | A | C | N | N |
| A=Available, C=Contact factory, N=Not available | | | | | | | |

| Availability of certain aging values for certain frequencies. | | Standard Frequencies | | | |
|---|---|---|---|---|---|
| | | 5.0 MHz | 6.4 MHz | 8.192 MHz | 10.0 MHz |
| | | Multiplied Frequencies (Option X) None by default | | | |
| | | 10.0 MHz | 12.8 MHz | 16.384 MHz | 20.0 MHz |
| H | ±2x10$^{-7}$ /year | A | A | A | A |
| G | ±1x10$^{-7}$ /year | A | A | A | A |
| F | ±5x10$^{-8}$ /year | A | A | A | C |
| E | ±3x10$^{-8}$ /year | C | C | 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.