

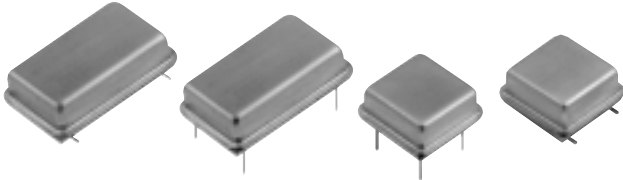


SUNSTAR 微波光电 <http://www.rfoe.net/> TEL: 0755-83396822 FAX: 0755-83376182 E-MAIL: szss20@163.com

VOLTAGE CONTROLLED CRYSTAL OSCILLATORS HCMOS/TTL 3.3V

**FULL SIZE D.I.L.
M package**
M2306
M2321, M2322
M2331, M2332
M2341, M2342

**HALF SIZE D.I.L.
H package**
H2306
H2321, H2322
H2331, H2332
H2341, H2342



Thru-Hole/Gull Wing

Commercial: 0° to 70°C
1 MHz to 150 MHz

GUARANTEED CAPTURE RANGE/ABSOLUTE PULL RANGE

Guaranteed Capture Range (GCR) and Absolute Pull Range (APR) are terms often used interchangeably. MF's Guaranteed Capture Range (GCR) is defined as the minimum guaranteed frequency deviation or "pull" (in ppm) around the nominal frequency, with all effects of temperature, variations in V_{DD} and load taken into account. This amount of absolute frequency deviation is available under all operating conditions for modulation or capturing other signals. No additional frequency capture allowances are necessary.

FEATURES

- Excellent incremental and best-straight-line linearity
- Start-up time is less than 5ms
- Each unit is ATE-tested to guarantee full compliance with all electrical specifications

TYPICAL APPLICATIONS

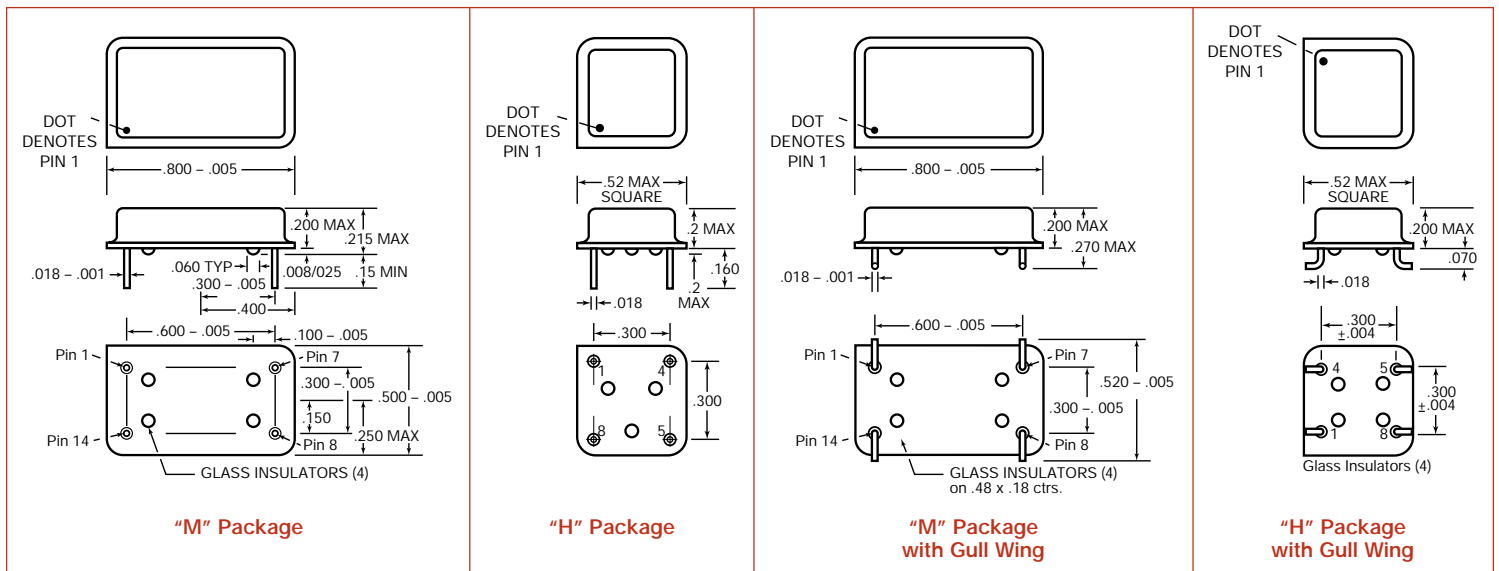
- Phase locked loops and data acquisition projects, including:
 - xDSL customer premise equipment
 - Cable modems
 - ATM/SONET/SDH

Description

These thru-hole VCXOs generate a 3.3 volt HCMOS/TTL frequency output which is controlled ("pulled") by an input voltage. MF Electronics' VCXO specification defines not only the end-point frequency/voltage parameters, but also the center voltage at which the nominal frequency is achieved.

CONNECTIONS

| | Full Size | Half Size |
|--------|------------------------|------------------------|
| Pin 1. | Control Voltage, V_C | Control Voltage, V_C |
| Pin 4. | | Ground & Case |
| Pin 5. | | Output |
| Pin 7. | Ground & Case | |
| Pin 8. | Output | $+3.3V, V_{DD}$ |
| Pin14. | $+3.3V, V_{DD}$ | |





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Center Frequency is Between Two Voltages

| MODEL | Control Voltage (Volts) | Frequency Deviation (ppm) | Guaranteed Capture Range (ppm) | Control Voltage at Center Frequency | Center Frequency Stability (ppm) |
|-------|-------------------------|---------------------------|--------------------------------|-------------------------------------|----------------------------------|
| 2306 | 0 to 3.0 | ± 150 min | ± 150 | — | ± 30, typ ± 50, max |

Center Frequency is at 1.5V with ±50 ppm stability

| MODEL | Control Voltage (Volts) | Frequency Deviation (ppm) | Guaranteed Capture Range (ppm) | Control Voltage at Center Frequency | Center Frequency Stability (ppm) |
|-------|-------------------------|---------------------------|--------------------------------|-------------------------------------|----------------------------------|
| 2321 | 0.5 to 2.5 | ± 75 to 150 | ± 75 | 1.5 | ± 30, typ ± 50, max |
| 2322 | 0.5 to 2.5 | ± 100 to 200 | ± 100 | 1.5 | ± 50, max |

Center Frequency is at 1.5V with ±25 ppm stability

| MODEL | Control Voltage (Volts) | Frequency Deviation (ppm) | Guaranteed Capture Range (ppm) | Control Voltage at Center Frequency | Center Frequency Stability (ppm) |
|-------|-------------------------|---------------------------|--------------------------------|-------------------------------------|----------------------------------|
| 2331 | 0.5 to 2.5 | ± 75 to 150 | ± 75 | 1.5 | ± 20, typ ± 25, max |
| 2332 | 0.5 to 2.5 | ± 100 to 200 | ± 100 | 1.5 | ± 25, max |

Center Frequency is at 1.5V with ±20 ppm stability

| MODEL | Control Voltage (Volts) | Frequency Deviation (ppm) | Guaranteed Capture Range (ppm) | Control Voltage at Center Frequency | Center Frequency Stability (ppm) |
|-------|-------------------------|---------------------------|--------------------------------|-------------------------------------|----------------------------------|
| 2341 | 0.5 to 2.5 | ± 75 to 150 | ± 75 | 1.5 | ± 15, typ ± 20, max |
| 2342 | 0.5 to 2.5 | ± 100 to 200 | ± 100 | 1.5 | ± 20, max |

DESCRIPTIONS

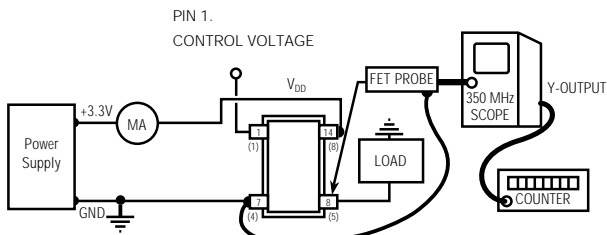
| | |
|--------------|--|
| M2306, H2306 | ±150 ppm, min. deviation when using 0 to 3 control-voltage |
| M2321, H2321 | ±75 ppm capture when using 0.5 to 2.5V control-voltage and 1.5V center with ±50 ppm stability |
| M2322, H2322 | ±100 ppm capture when using using 0.5 to 2.5V control-voltage and 1.5V center with ±50 ppm stability |
| M2331, H2331 | ±75 ppm capture when using using 0.5 to 2.5V control-voltage and 1.5V center with ±25 ppm stability |
| M2332, H2332 | ±100 ppm capture when using using 0.5 to 2.5V control-voltage and 1.5V center with ±25 ppm stability |
| M2341, H2341 | ±75 ppm capture when using using 0.5 to 2.5V control-voltage and 1.5V center with ±20 ppm stability |
| M2342, H2342 | ±100 ppm capture when using using 0.5 to 2.5V control-voltage and 1.5V center with ±20 ppm stability |

FREQUENCY STABILITY

Frequency stability vs. Temperature (0 to 70°C) is typically better than ±20 ppm. Since the deviation of each oscillator is tested and guaranteed over the whole operating temperature range, it is not necessary to make additional capture allowances. All oscillators will capture frequencies with the full minimum values of the deviation under all conditions.

QUALITY

Each VCXO is computer-tested at three temperatures to guarantee full compliance to the specification.



Half Size connections shown in ()

To adapt Fet probe to receptacle use Tektronix Part #103-0164-00

To connect output to scope use Tektronix Part #131-0258-00 (receptacle)

ALL OSCILLATORS HAVE INTERNAL BYPASS CAPACITORS

TEST CIRCUIT

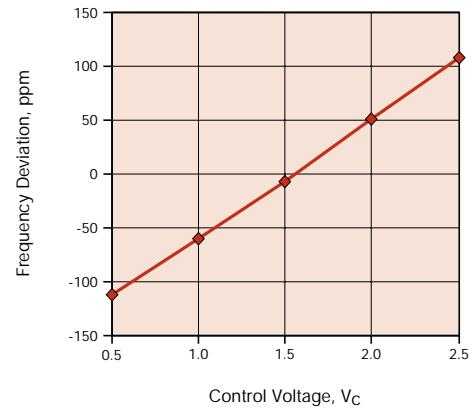


Fig. 1 Frequency vs. Control Voltage for M2331-16M



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