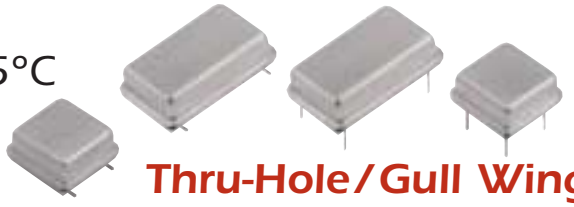
VOLTAGE CONTROLLED OSCILLATORS
HCMOS, -40° to +85°C

FULL SIZE D.I.L.
M6321 thru M6322
L6321 thru L6322

HALF SIZE D.I.L.
H6321 thru H6322



Thru-Hole/Gull Wing, 3.3V
1 MHz to 100 MHz

Extended Temp Thru-Hole VCXOs, 3.3V

Industrial temperature (-40°C to 85°C) thru-hole 3.3V VCXOs are available in a variety of off-the-shelf models. Versions in full size (M) and half size (H) cans are offered as standard designs in frequencies of 1Mhz thru 100 MHz. These models are recommended for new equipment in exacting environments that operate at 3.3 volt to minimize current, power, and heat dissipation. Two combinations of pull and control are available, to accommodate a variety of filtering and driving circuitry.

The standard designs described here have a center frequency stability of ±50 ppm, and frequency capture range to ±100 ppm. These oscillators have excellent long-term reliability, loading characteristics, and superior startup performance. All VCXOs are tested and guaranteed over the full operating temperature.

These 3.3V VCXOs generate an HCMOS frequency output which is controlled by an input voltage. The end-point frequency/voltage parameters are defined, as is the center frequency.

CONNECTIONS

Full Size	Half Size	
Pin 1.	Pin 1.	Control Voltage, V_C
Pin 7.	Pin 4.	Ground & Case
Pin 8.	Pin 5.	Output
Pin 14.	Pin 8.	+3.3V, V_{DD}

CAPTURE RANGE

The Frequency-Capture range is equal to the (Center-Frequency ± the Frequency Deviation), because every MF VCXO is ATE-tested to meet the Frequency-Deviation over the temperature range. ***Frequency Capture specification includes all effects of temperature and supply voltage. It is not necessary to make additional capture allowances.***

FEATURES

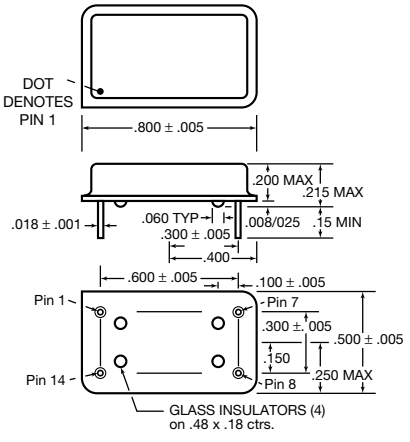
- Frequency from 1 MHz to 100 MHz
- Capture-range is fully defined, under all conditions
- Start-up time less than 5 ms.
- Typical jitter is less than 15 ps RMS
- Choice of thru-hole or gull wing

FREQUENCY STABILITY

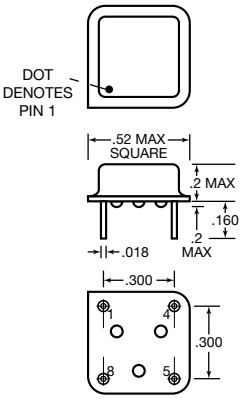
Frequency stability vs. Temperature is typically less than ±40 ppm for -40 to +85°C. Since the deviation of each oscillator is tested and guaranteed over the whole operating temperature range, it is not necessary to reduce the deviation by the stability to obtain the capture range. All oscillators will capture frequencies with the full minimum values of the deviation under all conditions.

QUALITY

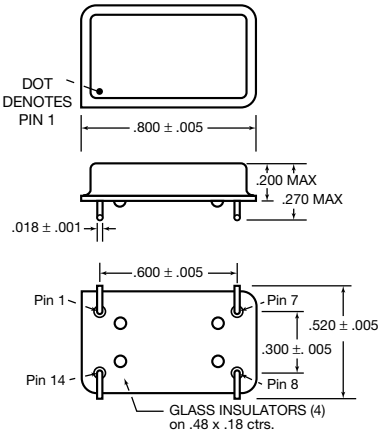
Each VCXO is computer-tested at three temperatures to guarantee full compliance to the specification.



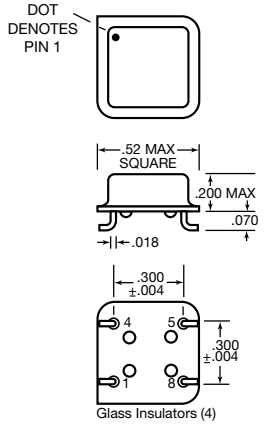
"M" Package – "L" Package is same as "M" but seated height is 0.190



"H" Package



"M" Package with Gull Wing



"H" Package with Gull Wing

MF ELECTRONICS
10 Commerce Drive, New Rochelle, NY10801 • 914-576-6570 • Fax: 914-576-6204 • http://www.mfelectronics.com • email:mfsales@mfelec.com

FULL SIZE D.I.L.
M6321 thru M6322
L6321 thru L6322

HALF SIZE D.I.L.
H6321 thru H6322

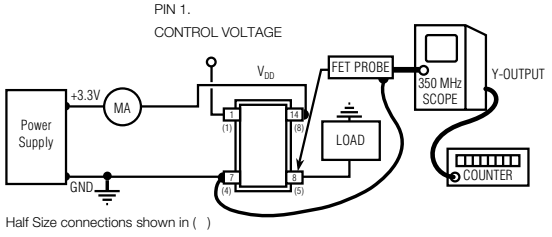
VOLTAGE CONTROLLED OSCILLATORS
HCMOS, -40° to +85°C
Thru-Hole, 3.3V
1 MHz to 100 MHz

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)
6321	0.5 to 2.5	± 75 to 150	± 75	1.5	± 30, typ
6322	0.5 to 2.5	± 100 to 200	± 100	1.5	± 50, max

DESCRIPTIONS

M6321, H6321, L6321	±75 ppm capture when using using 0.5 to 2.5V control-voltage and 1.5V center with ±50 ppm stability
M6322, H6322, L6322	±100 ppm capture when using using 0.5 to 2.5V control-voltage and 1.5V center with ±50 ppm stability



Half Size connections shown in ( )

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

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

ALL OSCILLATORS HAVE INTERNAL BYPASS CAPACITORS

TEST CIRCUIT

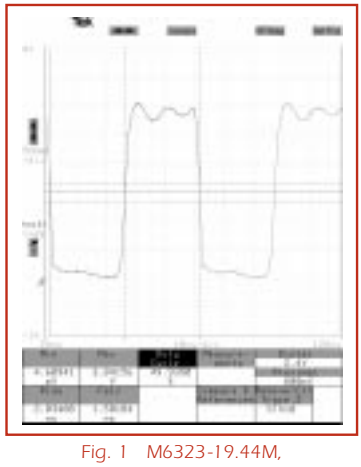


Fig. 1 M6323-19.44M, without load

ENVIRONMENTAL SPECIFICATIONS

Temperature Cycle – Not to exceed ±5 ppm change when exposed to 2 hours maximum at each temperature from 0 to 120°C, with 25°C reference

Shock – 1000 G's, 0.35 ms, 1/2 sine wave, 3 shocks in each plane

Vibration – 10-2000 Hz of .06" d.a. or 20 G's, whichever is less

Humidity – Resistant to 85° R.H. at 85°C

SPECIFICATIONS

Temperature

Operating	0 to 70°C
Storage	–55 to +125°C

Frequency Stability

V_C = 2.5V ±50 ppm, max.

	MIN.	TYP	MAX	UNITS
Input Voltage, V_{DD}	3.0	3.3	3.6	volts
Input Current				
1 KHz to 10 MHz		8	14	ma
10.1 to 25 MHz		15	20	ma
25.1 to 50 MHz		20	30	ma
50.1 to 75 MHz		25	35	ma
75.1 to 125 MHz		30	40	ma
Output Levels				
"0" Level, sinking 16 ma			0.4	volts
"1" Level, sourcing 8 ma	V_{DD}-.4		0.5	volts
Rise and Fall Times				
CMOS, 15 pf, 20 to 80% (<60 MHz)		3.0	4	ns
CMOS, 30 pf, 20 to 80% (<60 MHz)		4.0	5	ns
CMOS, 50 pf, 20 to 80% (<60 MHz)		6.0	8	ns
CMOS, 15 pf, 20 to 80% (>60 MHz)		2.0	2.5	ns
CMOS, 30 pf, 20 to 80% (>60 MHz)		3.0	4.5	ns
Symmetry				
CMOS, @ 50% V_{DD}		48/52	45/55	percent
Input Impedance		15	1000	Kohms
Control Voltage Bandwidth	15	150		KHz

MECHANICAL SPECIFICATIONS

Gross Leak – Each unit checked in 125°C flurocarbon

Fine Leak – Mass spectrometer leak rate less than 2 X 10^{-8} atmos, cc/sec of helium

Pins – Kovar, nickel plated with 60/40 solder coat

Bend Test – Will withstand two bends of 90° from reference

Header – Steel, with nickel plate

Case – Stainless steel, type 304

Marking – Printing is black epoxy ink

Resistance to Solvents – MIL STD 202, Method 215

AGING

3 to 5 ppm, first year, typ.
1 ppm per year thereafter, typ.

VOLTAGE CONTROLLED OSCILLATORS
HCMOS, -40° to +85°C
Thru-Hole, 3.3V
1 MHz to 100 MHz

M6322-19.412M, TYPICAL

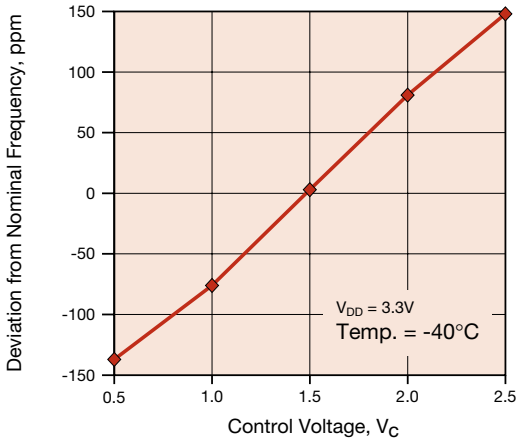


Fig. 2 Frequency vs. Control Voltage

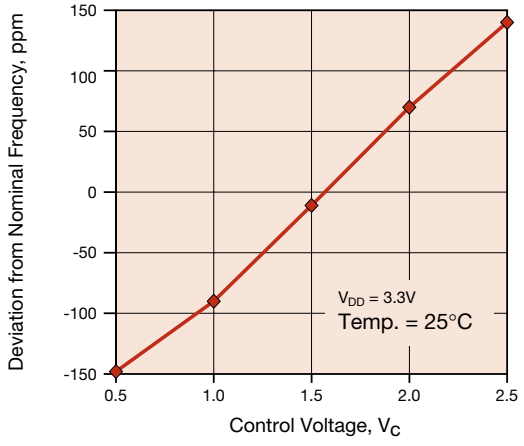


Fig. 3 Frequency vs. Control Voltage

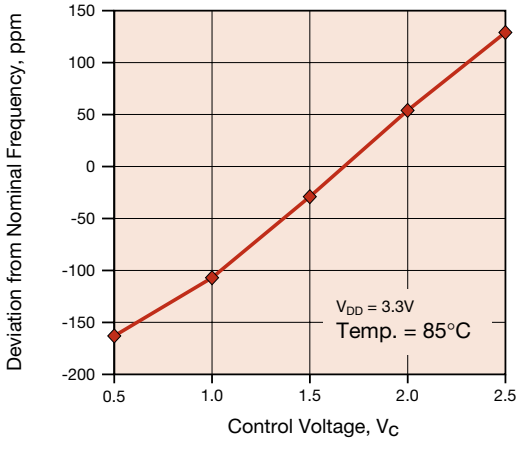


Fig. 4 Frequency vs. Control Voltage

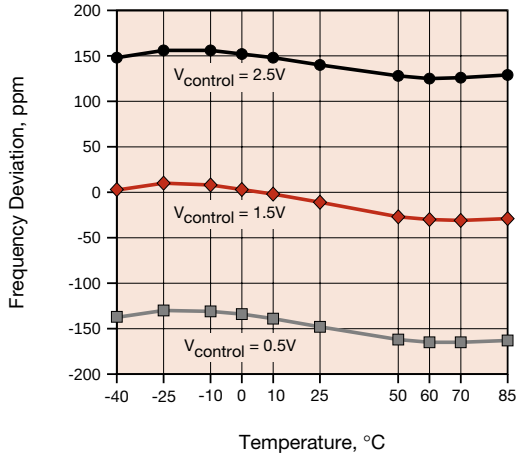


Fig. 5 Frequency Deviation vs. Temperature

HOW TO ORDER

For Part Number, put package type before model number, and add frequency in MHz, for example:

H 6321-12.352M G

- "M" is full size DIL "H" is half size DIL "L" is low height, full size DIL
- "6321" is model type
- "12.352 M" frequency in MHz
- Add "G" for gullwing

MF ELECTRONICS
10 Commerce Drive, New Rochelle, NY10801 • 914-576-6570 • Fax: 914-576-6204 • http://www.mfelectronics.com • email:mfsales@mfelec.com