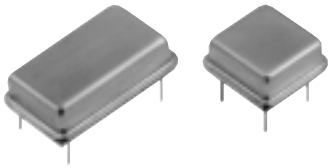
CRYSTAL OSCILLATORS
HCMOS 5V



FULL SIZE D.I.L
M package
M1254, M1256, M1258
M3254, M3256, M3258
M4001 thru M4009
M4301 thru M4309

HALF SIZE D.I.L
H package
H1254, H1256, H1258
H3254, H3256, H3258
H4001 thru H4009
H4301 thru H4309

Thru-Hole
Extended Temperature/COTS
FIXED/TRISTATE, 20 KHz to 150 MHz

FEATURES

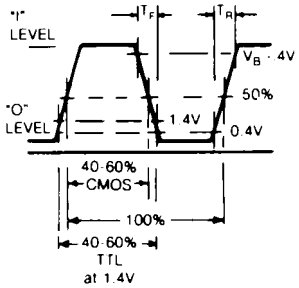
- Extremely wide operating temperature options available
- Jitter from positive edge to positive edge is 50 ps RMS max
- Hermetically sealed
- Low supply current
- All crystals are processed in-house with tight angle control to assure best frequency-temperature characteristics
- All units are vacuum baked before sealing at 175°C for 16 hours to eliminate moisture traces and pre-age units for superior aging
- Tristate option available

TYPICAL APPLICATIONS

- Thru-hole PCB applications that require an HCMOS/TTL 5V clock and that might be exposed to extremely harsh environmental conditions.

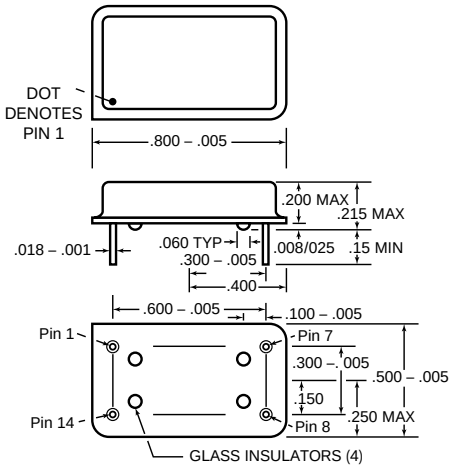
Description

MF Electronics extended temperature/ COTS thru-hole oscillators provide clock waveforms needed to clock standard HCMOS or TTL circuits in PCBS that may be mounted in environments that are exposed to temperature extremes.

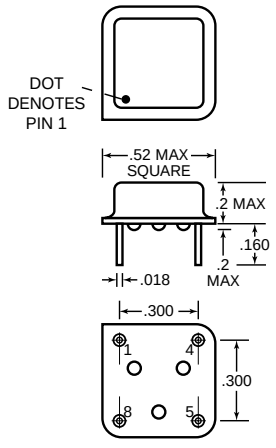


WAVEFORMS

FIXED OUTPUT MODEL	TRISTATE MODEL	Frequency Stability	Operating Temperature
1254	3254	±50 ppm	0 to 175°C
1256	3256	±75 ppm	-55 to +85°C
1258	3258	±100 ppm	-40 to +85°C
4001	4301	±500 ppm	-55 to 200°C
4002	4302	±500 ppm	0 to 200°C
4003	4303	±250 ppm	-55 to 200°C
4004	4304	±250 ppm	0 to 200°C
4005	4305	±250 ppm	-55 to 175°C
4006	4306	±250 ppm	0 to 175°C
4007	4307	±150 ppm	-55 to 175°C
4008	4308	±150 ppm	0 to 175°C
4009	4309	±100 ppm	-55 to 125°C



"M" Package



"H" Package

CRYSTAL OSCILLATORS
HCMOS 5V
Thru-Hole
Extended Temperature/COTS
20 KHz to 150 MHz

FULL SIZE D.I.L	HALF SIZE D.I.L
M package	H package
M1254, M1256, M1258	H1254, H1256, H1258
M3254, M3256, M3258	H3254, H3256, H3258
M4001 thru M4009	H4001 thru H4009
M4301 thru M4309	H4301 thru H4309

ELECTRICAL SPECIFICATIONS

Frequency Range 20 KHz to 150 MHz

Frequency Stability Includes calibration at 25°C, operating temperature, change of input voltage, change of load, shock and vibration.

Output
All units, full range
Loads 3 TLL loads, or 10 LSTTL loads, or 15 pf CMOS

	TYP	MAX	UNITS
Input Voltage	5.0 ± 0.5		volts
Input Current		40	mA
Jitter			
From positive edge to positive edge		50	ps RMS
Rise and Fall Time			
TTL and LSTTL from 0.4 to 2.4V		10	ns
CMOS, 15pf, from 0.4 to (V_{DD} -0.4) V		10	ns
CMOS, 30pf, from 0.4 to (V_{DD} -0.4) V		20	ns
Symmetry *			
TTL and LSTTL @ 1.4V		40/60	percent
CMOS @50% V_{DD}		40/60	percent
Aging			
First year	3		ppm
After first year	1		ppm/yr

*Superior symmetry available on all models.

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 Gs, 0.35 ms, 1/2 sine wave, 3 shocks in each plane

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

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

MECHANICAL SPECIFICATIONS

Gross Leak – Each unit checked in 125°C fluorocarbon

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

Pins – Alloy 52, nickel plated with 60/40 solder coat, or 7 microinch gold over nickel

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

Header – Steel, with nickel plate, or 7 microinch gold over nickel

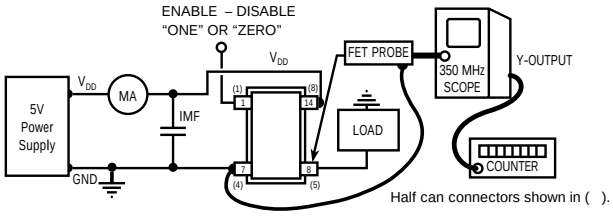
Case – Stainless steel, type 304

Marking – Permanent black epoxy ink or laser marked

Resistance to Solvents – MIL STD 202, Method 215

CONNECTIONS

	FULL SIZE	HALF SIZE	Fixed Output	Tristate
PIN	1	1	NOT USED	Floating or "1": Oscillator runs Ground or "0": Disable or Tristate
PIN	7	4	Ground and Case	
PIN	8	5	Output	
PIN	14	8	5V, V_{DD}	



ALL OSCILLATORS HAVE INTERNAL BYPASS CAPACITORS

TEST CIRCUIT

HOW TO ORDER

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

H 4309 - 16M

"M" is full size DIL
"H" is half size DIL

"4309" is model type

"16 M" frequency in MHz

SS#	Rev.
M1254	A

Unless customer-specific terms and conditions are signed by an officer of MF Electronics, the sale of this and all MF Electronics products are subject to terms and conditions set forth at www.mfelectronics.com/terms

MF ELECTRONICS

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