



Thru-Hole/Gull Wing

Commercial: 0° to 70°C

FIXED FREQUENCY, 1 KHz to 175 MHz TRISTATE, 32.768 KHz to 175 MHz "HARD ZERO", 62.5 KHz to 125 MHz

FEATURES

- Frequency from 1 KHz to 175 MHz
- Choice of thru-hole packages
 DIL Full Size ("M")
 Half Size DIL ("H")
 Gull Wing SMD
- · Tristate and "Hard Zero" options accommodate ATE
- · Very low power when tristated
- · Start up time less than 5 ms
- Stability options from ±100 ppm to ±20 ppm
- · Guaranteed start-up with ramping DC Supply
- 45/55 symmetry available
- Internal bypass capacitor delivers superior waveform characteristics
- Jitter from positive edge to positive edge is 50 ps RMS max

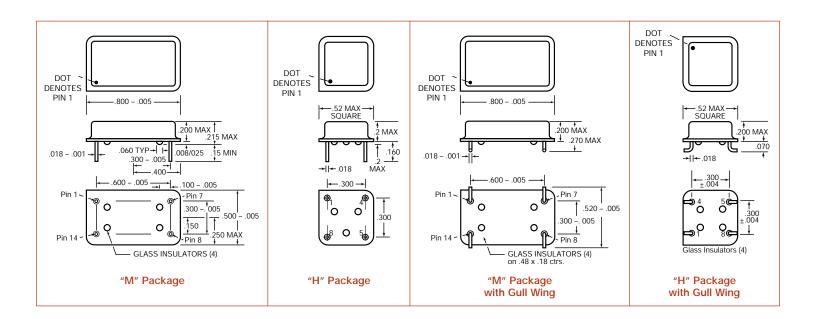
TYPICAL APPLICATIONS

 Any thru-hole PCB that requires a standard HCMOS/TTL 5V clock, including microprocessors and microcontrollers.

FULL SIZE D.I.L. HALF SIZE D.I.L. M package H package H1280, H1281, M1280, M1281, M1282, M1286, H1282, H1286, H1288, H1289, M1288, M1289, M1290, M1291, H1290, H1291, M1292, M1298, H1292, H1298, M1299 H1299 M1991, M1992, H1991, H1992, M1998, M1999 H1998, H1999 M3290, M3291, H3290, H3291, M3292, M3296, H3292, H3296, M3298, M3299 H3298, H3299 M3991, M3992, H3991, H3992, H3998, H3999 M3998, M3999

Description

MF Electronics thru-hole oscillators embody 25 years of design and manufacturing know-how. They are available in full-size and half size packages, all hermetically sealed with welded stainless steel cover. These 5V thru-hole oscillators are designed for everyday stresses of 0°C to 70°C operation and extended frequency selection of 1 KHz to 175 MHz. Higher (5V) operation ensures superior output loading and faster rise/fall times characteristics.







CRYSTAL OSCILLATORS HCMOS/TTL 3.3V

Thru-Hole/Gull Wing

Commercial: 0° to 70°C

FIXED FREQUENCY, 1 KHz to 175 MHz TRISTATE, 32.768 KHz to 175 MHz "HARD ZERO", 62.5 KHz to 125 MHz

FULL SIZE D.I.L. HALF SIZE D.I.L. H package M package M1280, M1281, H1280, H1281, M1282, M1286, H1282, H1286, H1288, H1289, M1288, M1289, M1290, M1291, H1290, H1291, M1292, M1298, H1292, H1298, M1299 H1299 M1991, M1992, H1991, H1992, M1998, M1999 H1998, H1999 M3290, M3291, H3290, H3291, M3292, M3296, H3292, H3296, M3298, M3299 H3298, H3299 M3991, M3992, H3991, H3992, M3998, M3999 H3998, H3999

ELECTRICAL SPECIFICATIONS

Frequency Range

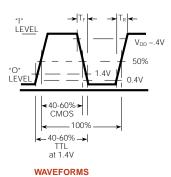
Fixed Output 1 KHz to 175 MHz 32.768 to 175 MHz Tristate 62.5 KHz to 125 MHz "Hard Zero"

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

vibration.

	MIN	TYP	MAX	UNITS
Input Voltage, V _{DD}	4.50	5.0	5.50	volts
Input Current				
1 KHz to 10 MHz		10	20	mA
10.1 to 25 MHz		20	35	mA
25.1 to 50 MHz		25	45	mA
50.1 to 75 MHz		40	55	mA
75.1 to 125 MHz		50	60	mA
100.1 to 175 MHz		55	65	mA
Output Levels				
"0" Level, sinking 16 mA "1" Level.			0.4	volts
TTI	2.4	4.6		volts
CMOS, sourcing 8 mA	V _{DD} 4	7.0		volts
Rise and Fall Times	. 00			
TTL, from 0.8 to 2.4V		2.4	4	ns
HCMOS, 15 pf, 20 to 80%		2.4	4	113
1 KHz to 75 MHz		2.5	4	ns
75.1 to 175 MHz		1.5	2	ns
HCMOS, 30 pf, 20 to 80%		1.0	-	113
1 KHz to 125MHz		4.0	6	ns
HCMOS, 50 pf, 20 to 80%		1.0	O	113
1KHz to 75 MHz		4.0	6	ns
Jitter				
From positive edge to positive	ve edge		50	ps RMS
Symmetry				
10 TTL, @ 1.4V		45/55	40/60	percent
Depending on model			or 45/55	percent
HCMOS, @ 50% V _{DD}		45/55	40/60	percent
Depending on model			or 45/55	percent
Aging				
First year		3		ppm
After first year		1		ppm/yr
Input Requirements for Pin 1.	:			

"1": On - Pin 1 may float or 2.4V min., sourcing 400 microAmp "0": Disable or Tristate - Pin 1 requires 0.4V, sinking 400 microAmp



CONNECTIONS — All models

	FULL SIZE	HALF SIZE	M1280's H1280's	M1290's, "Hard-Zero" M3290's, H3290's Tristate
PIN	1	1	NOT USED	Floating or "1": Oscillator runs Ground or "0": Hard "0" for M1290's or Tristate for 3290's
PIN	7	4	Ground and Case	
PIN	8	5	Output	
PIN	14	8	5V, V _{DD}	

	(ED PUT	TRISTATE		HARD ZERO	
40/60 Symmetry	45/55 Symmetry	40/60 Symmetry	45/55 Symmetry	40/60 Symmetry	Frequency Stability
1280	1286	3290	3296	M1290	±100 ppm
1281	1991	3291	3991	M1291	±25 ppm
1282	1992	3292	3992	M1292	±50 ppm
1288	1998	3298	3998	M1298	±20 ppm
1289	1999	3299	3999	M1299	±32 ppm





CRYSTAL OSCILLATORS HCMOS/TTL 3.3V

Thru-Hole / Gull Wing

Commercial: 0° to 70°C

FIXED FREQUENCY, 1 KHz to 175 MHz TRISTATE, 32.768 KHz to 175 MHz "HARD ZERO", 62.5 KHz to 125 MHz

HALF SIZE D.I.L.
H package
H1280, H1281,
H1282, H1286,
H1288, H1289,
H1290, H1291,
H1292, H1298,
H1299
H1991, H1992,
H1998, H1999
H3290, H3291,
H3292, H3296,
H3298, H3299
H3991, H3992,
H3998, H3999

ENVIRONMENTAL SPECIFICATIONS

Temperature

Operating 0° to 70° C Storage -55° to $+125^{\circ}$ C

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 - 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 - Permanent black epoxy ink or laser marked

Resistance to Solvents - MIL STD 202, Method 215

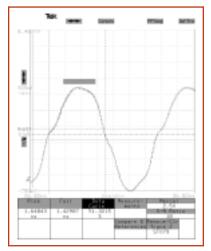
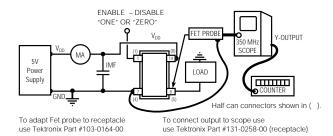
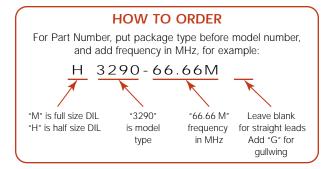


Fig. 1 M1286-148.26M with 10pf load Duty Cycle is 51.3% at V_{DD}/2



ALL OSCILLATORS HAVE INTERNAL BYPASS CAPACITORS

TEST CIRCUIT



SS# Rev. M1280 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