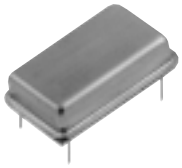
CRYSTAL OSCILLATORS
Harmonically Related Dual Output HCMOS



Thru-Hole
Commercial: 0º to 70ºC
FIXED FREQUENCY, 1.0 MHz to 16 MHz

FEATURES
- 2 times TTL frequency on M1259
- 4 times TTL frequency on M1257
- MOS output drives 200 pf
- Start up time is less than 10 ms after application of the supply voltage
- Frequency stability is +0 -0.02% (200ppm)
- All devices will drive a full 200 pf load required in driving loads over long runs

TYPICAL APPLICATIONS
- 4Mhz frequency drives Zilog Z80A, Zilog Z8000 and Mostek MK 3880-4
- M1260-4M will drive a 200pf load at requiredlevels for MOS microprocessors
- M1259-4M will deliver a second, 8Mhz, output
- M1257-4M will deliver a second, 16Mhz, output

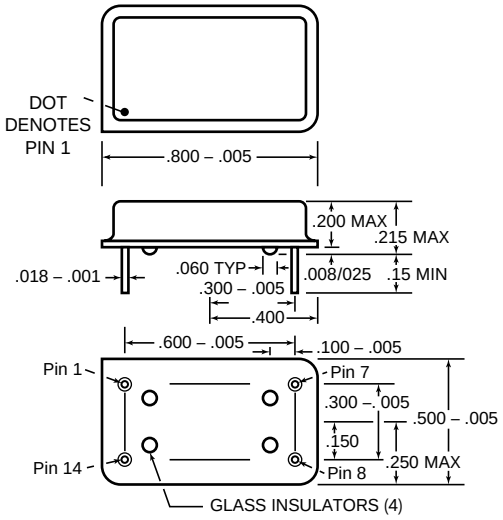
Description

Microprocessors and large ASICs frequently require two different but harmonically related frequencies. MF Electronics single-crystal, dual-frequency oscillators have been created for such applications. Designed to drive high capacitance (to 200 pf) MOS microprocessor loads, the dual oscillator family covers a 1 MHz to 16 MHz frequency range, and delivers frequency ratios from 2:1 to 4:1. When driving TTL loads, the upper frequency limit is increased fourfold over MOS loading frequencies.

SERIES	FREQUENCY
M1260	MOS: 1 MHz - 16 MHz
M1259	MOS: 1 MHz - 8 MHz TTL: 2 times MOS frequency
M1257	MOS: 1 MHz - 8 MHz TTL: 4 times MOS frequency

CONNECTIONS

	M1260	M1259	M1257
Pin 1.	N.C.	2 times TTL output	4 times TTL output
Pin 7.	Ground & Case	Ground& Case	Ground & Case
Pin 8.	MOS from 1 MHz - 16 MHz	MOS from 1 MHz - 8 MHz	MOS from 1 MHz - 4 MHz
Pin 14.	+5 VDC	+5 VDC	+5 VDC



"M" Package

CRYSTAL OSCILLATORS
Harmonically Related Dual Output HCMOS
Thru-Hole
Commercial: 0º to 70ºC
FIXED FREQUENCY, 1.0 MHz to 16 MHz

Thru-hole D.I.L.
M package
M1257, M1259, M1260

ELECTRICAL SPECIFICATIONS

Frequency Range
Fixed Output 1 MHz to 16 MHz

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

M1260
Output: (Pin 8.) 1 MHz - 16 MHz +0 -.02% MOS

M1259
Output: (Pin 8.) 1 MHz - 8 MHz +0 -.02% MOS
Output 2: (Pin 1.) 2 times frequency in TTL

M1257
Output 1: (Pin 8.) 1 MHz - 8 MHz +0 -.02% MOS
Output 2: (Pin 1.) 4 times frequency in TTL

	MIN	TYP	MAX	UNITS
Input Voltage, V_{DC}	4.5	5	5.5	volts
Input Current			70	mA
Output Levels				
MOS				
Load Capacitance			200	pf
Pulse Width, High	(.5 / f_0) –10			ns
Pulse Width, Low	(.5 / f_0) –10			ns
Rise Time (T_r)			10	ns
Fall Time (T_f)			10	ns
Zero Level (Low)			0.45	volts
One Level (High)	(V_{DD} - 0.5V)			
TTL				

Rise and Fall Time 10 ns maximum from 0.5 to 2.4V
"0" level, sinking 16 mA +0.4V
"1" level, sourcing
400 microAmp, min. 2.5V
Loads 10 TTL loads

Symmetry 55/45 @ 1.4 VDC (M1260, M1259)
60/40 @ 1.4 VDC (M1257)

Aging

First year	3	ppm
After first year	1	ppm/yr

ENVIRONMENTAL SPECIFICATIONS

Temperature
Operating 0º to 70°C
Storage -55º to +125°C

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

Leak – MIL STD 883, Method 1014, condition A1

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

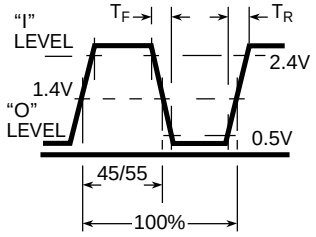
Bend Test – Will withstand two bends of 90° from reference

Header – Steel, with nickel plate

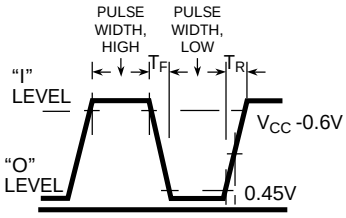
Case – Stainless steel, type 304

Marking – Epoxy ink or laser engraved

Resistance to Solvents – MIL STD 202, Method 215



TTL



Phase Relationship:
MOS positive edge follows within 15ns of TTL positive edge

MOS negative edge follows within 15ns of TTL positive edge

MOS

HOW TO ORDER

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

M 1259 - 6M

M is full size DIL
1259 is model type
6 M frequency in MHz

SS#	Rev.
M1257	A

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