MHO+ Series
14 pin DIP, 5.0 Volt, HCMOS/TTL, Clock Oscillator



RoHS Compliant

Ordering Information

MHO+ 1 3 F A D -R 00.0000 MHz

Product Series

Temperature Range
- 1: 0°C to +70°C
- 2: -40°C to +85°C
- 3: -55°C to +105°C
- 4: -55°C to +125°C
- 5: -10°C to +85°C
- 6: -20°C to +70°C
- 7: 0°C to +85°C

Stability
- 1: ±1000 ppm
- 2: ±500 ppm
- 3: ±100 ppm
- 4: ±50 ppm
- 5: ±35 ppm
- 6: ±25 ppm
- 7: +0/-200 ppm
- *8: ±20 ppm

Output Type
- F: Fixed
- T: Tristate (1.000 to 80.000 MHz)

Symmetry/Logic Compatibility (See Table Below)
- A: 40/60 HCMOS/TTL
- B: 45/55 TTL
- C: 45/55 HCMOS
- D: 45/55 HCMOS/TTL
- F: 40/60 TTL
- G: 40/60 HCMOS

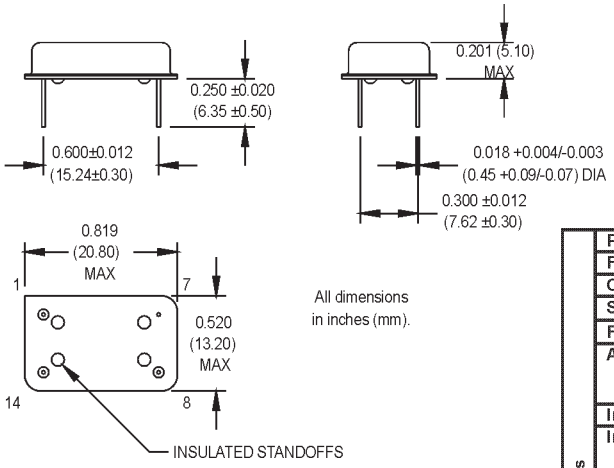
Package/Lead Configurations
- D: DIP; Nickel Header
- G: Gull Wing; Nickel Header

RoHS Compliance
- Blank: non-RoHS compliant part
- -R: RoHS compliant part

Frequency (customer specified)

*Contact factory for availability
M2014Sxxx - Contact factory for datasheet.

Features:
- Standard 14 DIP Package
- RoHS Compliant Version Available (-R)
- Tristate Option
- Wide Operating Temperature Range



All dimensions in inches (mm).

Pin Connections

PIN	FUNCTION
1	N/C or Tristate
7	Circuit/Case Ground
8	Output
14	+Vdd

Available Symmetry

FREQUENCY RANGE	STD.	OPTIONS
0.732 kHz to 50 MHz	A	B, C, D
50.001 to 60 MHz	A	B, C
60.001 to 67 MHz	A	C
67.001 to 80 MHz	F,G	C

	PARAMETER	Symbol	Min.	Typ.	Max.	Units	Condition/Notes
Electrical Specifications	Frequency Range	F	.732 kHz		80	MHz	See Note 1
	Operating Temperature	TA	(See ordering information)				
	Storage Temperature	Ts	-55		+125	°C	
	Frequency Stability	ΔF/F	(See ordering information)				
	Aging 1st Year Thereafter (per year)			 ±3 ±2		 ppm ppm	
	Input Voltage	Vdd	4.5	5.0	5.5	V	
	Input Current	Idd			15 25 60	mA mA mA	.732 kHz to 2.999 MHz 3.000 to 25.999 MHz 26.000 to 80.000 MHz
	Output Type						HCMOS/TTL
	Load			5 TTL or 50 pF 10 TTL or 50 pF 10 TTL or 15 pF			See Note 2 .732 kHz to 2.999 MHz 3.000 to 25.999 MHz 26.000 to 80.000 MHz
	Symmetry (Duty Cycle)		(See ordering information)				See Note 3
	Logic "1" Level	Voh	90% Vdd Vdd-0.5			V V	HCMOS Load TTL Load
	Logic "0" Level	Vol			10% Vdd 0.5	V V	HCMOS Load TTL Load
	Output Current				±8 ±16	mA mA	.732 kHz to 2.999 MHz 3.000 to 80.000 MHz
	Rise/Fall Time	Tr/Tf			 20 10	 ns ns	See Note 4 .732 kHz to 2.999 MHz 3.000 to 25.999 MHz
	Tristate Function		Input Logic "1" or floating: output active Input Logic "0": output to high-Z				
	Start up Time				10	ms	
	Random Jitter	Rj		5	12	ps RMS	1-Sigma
Environmental	Mechanical Shock		MIL-STD-202, Method 213, C (100 g's)				
	Vibration		MIL-STD-202, Method 201 & 204 (10 g's from 10-2000 Hz)				
	Thermal Cycle		MIL-STD-883, Method 1010, B (-55°C to +125°C, 15 min dwell, 10 cycles)				
	Hermeticity		MIL-STD-202, Method 112				
	Solderability		Per EIAJ-STD-002				
	Max Wave Soldering Conditions		+260°C for 10 seconds				

1. Contact the factory for availability of higher frequencies.
2. TTL load - see Load Circuit Diagram #1. HCMOS load - see Load Circuit Diagram #2.
3. Symmetry is measured at 1.4 V with TTL load and at 50% Vdd with HCMOS load.
4. Rise/fall times are measured between 0.4 V and 2.4 V with TTL load, and between 10% Vdd and 90% Vdd with HCMOS Load.

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