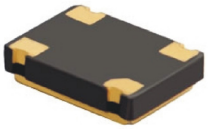
M2 Series

5x7 mm, 3.3 Volt, HCMOS/TTL Compatible Output, Clock Oscillator



Features:

- Leadless Chip Carrier (LCC) package
- Seam sealed package
- Tri-state or Standby function options
- Stabilities to ±20 ppm
- Fully RoHS 6 compliant

Applications:

- Microprocessors/Controllers, DSP
- Gig E, SONET
- Industrial Controllers
- Broadband Access
- Test & Measurement Equipment

Ordering Information

M2 1 3 T C N 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 +125°C
- **6:** -20°C to +70°C
- **7:** 0°C to +85°C

Stability
- **3:** ±100 ppm
- **4:** ±50 ppm
- **5:** ±35 ppm
- **6:** ±25 ppm
- ***8:** ±20 ppm

Output Type
- **F:** Fixed
- **Q:** Standby Function
- **T:** Tristate

Symmetry/Logic Compatibility
- **A or G:** 40/60 @ 50% Vdd**
- **C:** 45/55 HCMOS

Package/Lead Configurations
- **N:** Leadless Ceramic

Frequency (customer specified)

*Contact Factory for Availability
** A and G codes are used interchangeably on the M2 Series
M2002Sxxx - Contact factory for datasheet

	PARAMETER	Symbol	Min.	Typ.	Max.	Units	Condition/Notes
Electrical Specifications	**Frequency Range**	F	1.5		135	MHz	See Note 1
	Operating Temperature	T_A	(See ordering information)				
	Storage Temperature	T_S	-55		+125	°C	
	Frequency Stability	ΔF/F	(See ordering information)				
	Aging						
	1st Year			±3		ppm	
	Thereafter (per year)			±2		ppm	
	Input Voltage	Vdd	3.0	3.3	3.6	V	
	Input Current	Idd			10	mA	1.500 to 20.000 MHz
					20	mA	20.001 to 50.000 MHz
					30	mA	50.001 to 67.000
					55	mA	67.001 to 135.000 MHz
	Standby Current				10	µA	"Q" Output Type Only
	Output Type						HCMOS/TTL Compatible
	Load				15/2	PF/TTL	See Note 2
	Symmetry (Duty Cycle)		(See ordering information)				½ Vdd
	Logic "1" Level	Voh	90% Vdd			V	HCMOS Load
			Vdd -0.5			V	TTL Load
	Logic "0" Level	Vol			10% Vdd	V	HCMOS Load
					0.5	V	TTL Load
	Output Current				±4	mA	
	Rise/Fall Time	Tr/Tf					See Note 3
					6	ns	1.500 to 50.000 MHz
					4	ns	50.001 to 80.000 MHz
					2	ns	80.001 to 135.000 MHz
	Standby/Tristate Function		Input Logic "1" or floating: output active Input Logic "0"; output disables to high-Z				
	Start up Time				10	ms	
	Random Jitter	Rj		4	10	ps RMS	1-Sigma
Environmental	**Mechanical Shock**	Per MIL-STD-202, Method 213, Condition C (100 g's, 6 mS duration, ½ sinewave)					
	Vibration	Per MIL-STD-202, Method 201 & 204 (10 g's from 10-2000 Hz)					
	Hermeticity	Per MIL-STD-202, Method 112, ($1x10^{-8}$ atm. cc/s of Helium)					
	Thermal Cycle	Per MIL-STD-883, Method 1010, Condition B (-55°C to +125°C, 15 min. dwell, 10 cycles)					
	Solderability	Per EIAJ-STD-002					
	Soldering Conditions	See solder profile, Figure 1					

1. Consult factory for availability of higher frequencies.
2. HCMOS Load - See Load circuit diagram. Consult factory with nonstandard output load requirements.
3. Rise/Fall times are measured between 0.5 V and 2.4 V with TTL load, and between 10% Vdd and 90% Vdd with HCMOS load.

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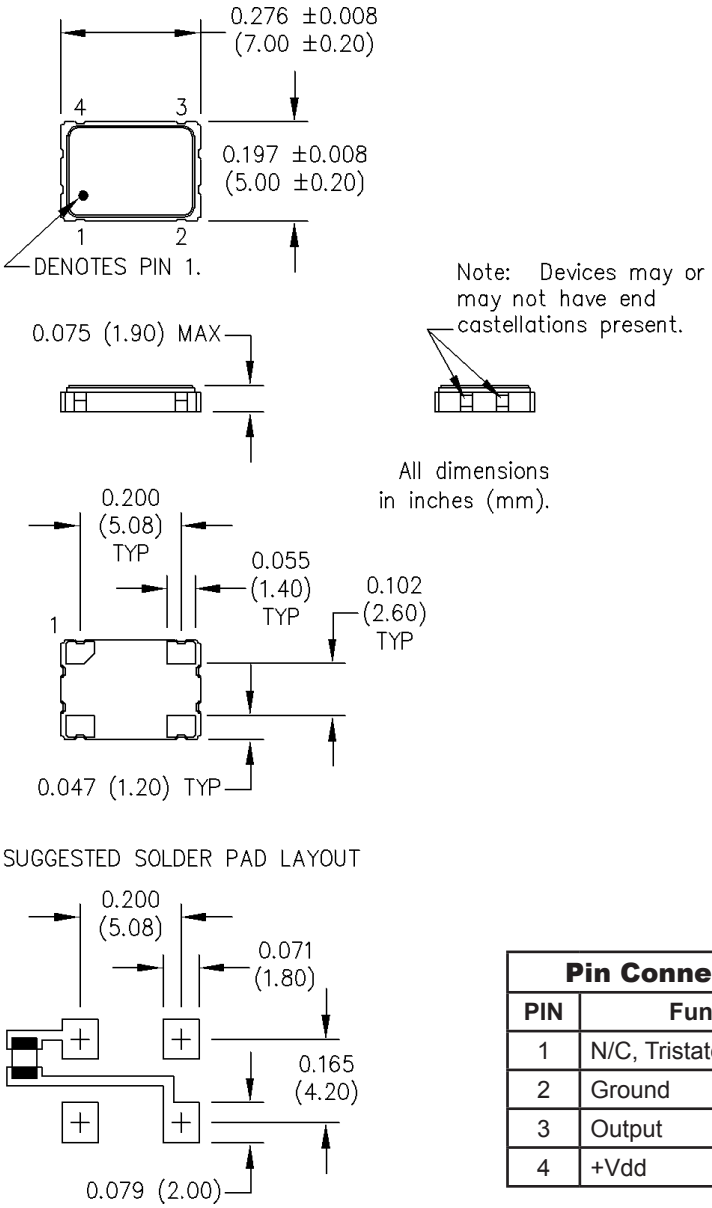
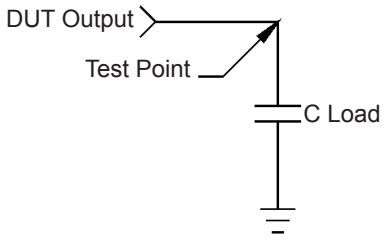


Load Circuit Diagram



Note: C Load includes probe and fixturing.

SUGGESTED SOLDER PAD LAYOUT

Pin Connections	
PIN	**Function**
1	N/C, Tristate or Standby
2	Ground
3	Output
4	+Vdd

MtronPTI Lead Free Solder Profile