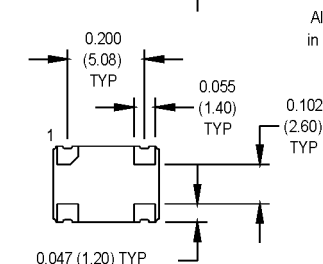
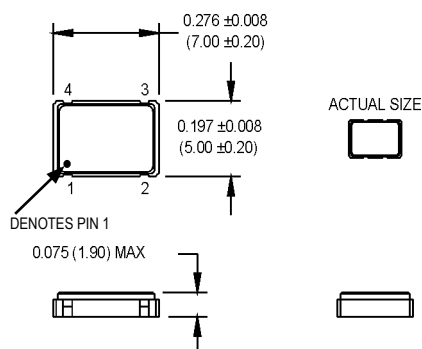
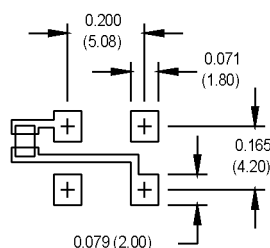


## M2 Series

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



SUGGESTED SOLDER PAD LAYOUT



**NOTE:** A capacitor of value 0.01  $\mu$ F or greater between Vdd and Ground is recommended.

### Pin Connections

| PIN | FUNCTION        |
|-----|-----------------|
| 1   | N/C or Tristate |
| 2   | Ground          |
| 3   | Output          |
| 4   | +Vdd            |

### 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: $\pm 100$ ppm               |    | 4: $\pm 50$ ppm     |   |             |   |   |             |
| 5: $\pm 35$ ppm                |    | 6: $\pm 25$ ppm     |   |             |   |   |             |
| *8: $\pm 20$ 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                    |    |                     |   |             |   |   |             |
| Frequency (customer specified) |    |                     |   |             |   |   |             |

\*Contact Factory for Availability

\*\* A and G codes are used interchangeably on the M2 Series

| PARAMETER                 | Symbol       | Min.                                                                                  | Typ.    | Max.    | Units   | Condition/Notes       |
|---------------------------|--------------|---------------------------------------------------------------------------------------|---------|---------|---------|-----------------------|
| Frequency Range           | F            | 1.5                                                                                   |         | 135     | MHz     | See Note 1            |
| Operating Temperature     | Ta           | (See ordering information)                                                            |         |         |         |                       |
| Storage Temperature       | Ts           | -55                                                                                   |         | +125    | °C      |                       |
| Frequency Stability       | $\Delta$ F/F | (See ordering information)                                                            |         |         |         |                       |
| Aging                     |              |                                                                                       |         |         |         |                       |
| 1 <sup>st</sup> Year      |              |                                                                                       | $\pm 3$ |         | ppm     |                       |
| Thereafter (per year)     |              |                                                                                       | $\pm 2$ |         | 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 MHz  |
|                           |              |                                                                                       |         | 55      | mA      | 67.001 to 135.000 MHz |
| Standby Current           |              |                                                                                       |         | 10      | $\mu$ A | "Q" Output Type       |
| Output Type               |              |                                                                                       |         |         |         | HCMOS/TTL Compatible  |
| Load                      |              | 2 TTL or 15 pF                                                                        |         |         |         | See Note 2            |
| Symmetry (Duty Cycle)     |              | (See ordering information)                                                            |         |         |         | 1/2 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            |              |                                                                                       |         | $\pm 4$ | mA      |                       |
| Rise/Fall Time            | Tr/Tf        |                                                                                       |         | 6       | ns      | See Note 3            |
|                           |              |                                                                                       |         | 4       | ns      | 1.500 to 50.000 MHz   |
|                           |              |                                                                                       |         | 2       | ns      | 50.001 to 80.000 MHz  |
|                           |              |                                                                                       |         |         |         | 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             |              |                                                                                       | 5       |         | ms      |                       |
| Random Jitter             | Rj           |                                                                                       | 4       | 10      | ps RMS  | 1-Sigma               |
| Mechanical Shock          |              | Per MIL-STD-202, Method 213, Condition C (100 g's, 6 ms duration, 1/2 sinewave)       |         |         |         |                       |
| Vibration                 |              | Per MIL-STD-202, Method 201 & 204 (10 g's from 10-2000 Hz)                            |         |         |         |                       |
| Hermeticity               |              | Per MIL-STD-202, Method 112, (1x10 <sup>-8</sup> 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      |              | +260°C max. for 10 secs.                                                              |         |         |         |                       |

1. Consult factory for availability of higher frequencies.
2. See Load circuit diagram #2. 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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## MtronPTI Lead Free Solder Profile

