M90 SERIES: Low Jitter - Low Phase Noise - Best Frequency Stability
Crystal Oscillator | 2.5 to 70 MHz | 2.5V & 3.3V | CMOS | 3.2x2.5 mm Ceramic SMD

Features
- Industry Standard Package
- Shortest Lead Time
- Smallest Hi-Rel Package
- Customer Support & Service
- Tightest Stability Over Temperature
- ECCN - EAR 99

Electrical SPECIFICATIONS
Supply Voltage Options | Voltage CODE
--- | ---
2.5V ±10% | 25
3.3V ±10% | 33

<table>
<thead>
<tr>
<th>Frequency Range</th>
<th>Supply Current @ Vcc 210% (mA)</th>
<th>Rise/Fall Time (nsec)</th>
<th>Symmetry min / max (%)</th>
<th>Aging per year max 2/ (ppm)</th>
<th>Operating Temperature vs. Stability*</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.5 to 70 MHz</td>
<td>@2.5V</td>
<td>2.8</td>
<td>3.0</td>
<td>5</td>
<td>45/55</td>
</tr>
<tr>
<td>2.5 to 70 MHz</td>
<td>@3.3V</td>
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<td>5</td>
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<td>2.5 to 70 MHz</td>
<td>2.8</td>
<td>3.0</td>
<td>5</td>
<td>45/55</td>
<td>±2</td>
</tr>
</tbody>
</table>

Phase Noise PERFORMANCE
Phase @ 25 MHz | Offset (Hz) | Phase Noise (dBc/Hz)
--- | --- | ---
100 | -110
1K | -139
10K | -155
100K | -158
1M | -160

RMS Jitter: 0.3 psec

Mechanical SPECIFICATIONS
TriState Function Pad 1
VIH: 0.7 * Vcc (min); VIL: 0.3 * Vcc (max)
Output is disabled and high-Z impedance when logic low and oscillator is stopped.
Enabled with lock operational with either logic high or no connect.

Solder Reflow Profile, 10 seconds max at peak temp ≤260ºC.

How To ORDER
M90C25A-2M500000

ISO 9001:2008
MIL-STD-790 Certified
Pb-free RoHS Certified
QPL per MIL-PRF-55310

FREQUENCY MANAGEMENT | International
15302 Bolsa Chica Street
Huntington Beach, CA 92649
FrequencyManagement.com
M90

**Features**

- Best Frequency Stability vs. Temperature in its class
- Ultra Small Form Factor
- Ruggedized Design
- High-Shock & Vibration
- Best Service
- ECCN - EAR 99

**Materials**

1. Package Materials:
   - Ceramic, Alumina 90% min
2. Pad Plating Material:
   - Gold Plate 0.3 µm (12 µ inch) over 2 µm (80 µ inch) min. Nickel

**Applications**

- Mobile and Stationary Systems
- Smart Ammunition
- UAV, Drone
- Navigation Systems
- Radar DSP
- Guidance Systems
- Vision Systems
- Aircraft Control
- Position Sensors

**Screening, B & C LEVELS**

<table>
<thead>
<tr>
<th>Screening Method</th>
<th>Level</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature Cycling MIL-STD-883, Method 1010, Condition B</td>
<td>✔</td>
<td>B</td>
</tr>
<tr>
<td>Constant Acceleration MIL-STD-883, Method 2001, Condition A (Y1 only, 5000 g’s)</td>
<td>✔</td>
<td>B</td>
</tr>
<tr>
<td>Seal: Fine Leak MIL-STD-883, Method 1014, Condition A1</td>
<td>✔</td>
<td>C</td>
</tr>
<tr>
<td>Seal: Gross Leak MIL-STD-202, Method 112, Condition D</td>
<td>✔</td>
<td>C</td>
</tr>
<tr>
<td>Electrical Test Functional Test Only</td>
<td>✔</td>
<td>C</td>
</tr>
<tr>
<td>Marking &amp; Serialization MIL-STD-1285</td>
<td>✔</td>
<td>C</td>
</tr>
<tr>
<td>Electrical Test Nominal Vcc &amp; Extremes and Nominal Temp and Extremes</td>
<td>✔</td>
<td>C</td>
</tr>
<tr>
<td>Burn-in (no-load) +125°C, Nominal Supply Voltage and Burn-in load, 48 hours min</td>
<td>✔</td>
<td>C</td>
</tr>
<tr>
<td>Burn-in (load) +125°C, Nominal Supply Voltage and Burn-in load, 160 hours min</td>
<td>✔</td>
<td>C</td>
</tr>
<tr>
<td>External Visual &amp; Mechanical MIL-STD-883, Method 2009.10</td>
<td>✔</td>
<td>C</td>
</tr>
<tr>
<td>Final Electrical Test</td>
<td>✔</td>
<td>C</td>
</tr>
<tr>
<td>a) Input current, output frequency, output waveform, are tested at +23°C ±2°C</td>
<td>✔</td>
<td>C</td>
</tr>
<tr>
<td>b) Frequency stability is tested over the specified temperature range; at both extremes and at +25°C at a minimum of 5 temperature increments</td>
<td>✔</td>
<td>C</td>
</tr>
<tr>
<td>note: Recording of test data is by lot # and then serial #</td>
<td>✔</td>
<td>C</td>
</tr>
</tbody>
</table>

**Environmental COMPLIANCE**

<table>
<thead>
<tr>
<th>Environmental Specification</th>
<th>Method</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thermal Shock</td>
<td>MIL-STD-883</td>
<td>Method 1011</td>
</tr>
<tr>
<td>Moisture Resistance</td>
<td>MIL-STD-883</td>
<td>Method 1004</td>
</tr>
<tr>
<td>Terminal Strength</td>
<td>MIL-STD-883</td>
<td>Method 2004</td>
</tr>
<tr>
<td>Solderability</td>
<td>MIL-STD-883</td>
<td>Method 2003</td>
</tr>
<tr>
<td>Resistance to Soldering Heat</td>
<td>MIL-STD-202</td>
<td>Method 210</td>
</tr>
<tr>
<td>Mechanical Shock</td>
<td>MIL-STD-883</td>
<td>Method 2002</td>
</tr>
<tr>
<td>Mechanical Vibration</td>
<td>MIL-STD-883</td>
<td>Method 2007</td>
</tr>
<tr>
<td>Gross Leak</td>
<td>MIL-STD-883</td>
<td>Method 1004</td>
</tr>
<tr>
<td>Fine Leak</td>
<td>MIL-STD-883</td>
<td>Method 1004</td>
</tr>
<tr>
<td>Moisture Sensitivity Level</td>
<td>MSL</td>
<td></td>
</tr>
</tbody>
</table>

**Military Reference Specifications**

- MIL-PRF-55310 Oscillators, Crystal Controlled, General Specification For
- MIL-PRF-38534 Hybrid Microcircuits, General Specification For
- MIL-STD-202 Test Method Standard, Electronic and Electrical Components
- MIL-STD-883 Test Methods and Procedures for Microelectronics
- MIL-STD-1686 Electrostatic Discharge Control Program for Protection of Electrical and Electronic Parts, Assemblies and Equipment

**Products for Space Applications**

Contact us for assistance with your specification. We will provide you with the technical support and the required documentation.

**ISO 9001:2008**

**MIL-STD-790 Certified**

**Pb-free RoHS Certified**

**QPL per MIL-PRF-55310**

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