PERFORMANCE SPECIFICATION SHEET

OSCILLATOR, CRYSTAL CONTROLLED, TYPE 1 (CRYSTAL OSCILLATOR (XO)),
0.1 Hz THROUGH 80 MHz, HERMETIC SEAL, SQUARE WAVE, TTL

This specification is approved for use by all Departments
and Agencies of the Department of Defense.

The requirements for acquiring the product described herein
shall consist of this specification and MIL-PRF-55310.

<table>
<thead>
<tr>
<th>Pin number</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>NC</td>
</tr>
<tr>
<td>2</td>
<td>NC</td>
</tr>
<tr>
<td>3</td>
<td>NC</td>
</tr>
<tr>
<td>4</td>
<td>NC</td>
</tr>
<tr>
<td>5</td>
<td>NC</td>
</tr>
<tr>
<td>6</td>
<td>NC</td>
</tr>
<tr>
<td>7</td>
<td>B - (GND/CASE)</td>
</tr>
<tr>
<td>8</td>
<td>OUTPUT</td>
</tr>
<tr>
<td>9</td>
<td>NC</td>
</tr>
<tr>
<td>10</td>
<td>NC</td>
</tr>
<tr>
<td>11</td>
<td>NC</td>
</tr>
<tr>
<td>12</td>
<td>NC</td>
</tr>
<tr>
<td>13</td>
<td>NC</td>
</tr>
<tr>
<td>14</td>
<td>B+</td>
</tr>
</tbody>
</table>

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Unless otherwise specified, tolerances are ±0.005 (0.13 mm) for three place decimals and ±0.02 (0.5 mm) for two
place decimals.
4. All pins with NC function may be connected internally and are not to be used as external tie points or
connections.

FIGURE 1. Dimensions and configuration.
REQUIREMENTS:

Interface and physical dimensions: See figure 1.

Mounting: See figure 1.

Terminals: See figure 1.

Seal: Hermetic in accordance with MIL-PRF-55310, maximum leakage rate $5 \times 10^{-8}$ atm cc/s.

Weight: 0.5 ounce, maximum.

* Oscillator: Class 2 or any class 1 or class 3 oscillator meeting all class 2 requirements and verification tests specified herein and in MIL-PRF-55310.

Calibration: Manufacturer calibrated.

Screening: In accordance with MIL-PRF-55310, product level B or S, as applicable.

Temperature:

Operating: See table I.

Storage: -62°C to +125°C.

Oscillator load: Standard TTL loads (see table I).

Output waveform: Symmetrical square wave.

Supply voltage: 5.0 V dc ±10 percent.

Input current: At designated supply voltage (see table I).

Output frequency: Frequency as designated at time of acquisition (see table I).

Output voltage: At designated TTL load (see table I).

Logic 1: 2.4 V dc, minimum.

Logic 0: 0.5 V dc, maximum.

Rise and fall times: See table I.

Duty cycle: See table I.

Initial accuracy at reference temperature (up to 30 days after shipment): See table I.

Initial frequency-temperature accuracy (one-half temperature cycle): Verification applicable. 1/

Frequency-temperature tolerance (one-half temperature cycle, referenced to frequency measured at +23°C ±1°C, immediately prior to starting of the test): See table I. Measurements taken at ten equally spaced increments over the specified operating temperature range. 1/

1/ For the purpose of transitioning this device to MIL-PRF-55310, 'Frequency stability versus temperature' has been renamed 'Frequency-temperature tolerance'. The verification requirements of 'initial frequency-temperature accuracy (one-half temperature cycle)' shall apply except that frequency measurements shall be referenced to the frequency measured at +23°C ±1°C ($f_{ref}$) instead of to the nominal frequency ($f_{nom}$).
### TABLE I. Dash numbers and operating characteristics.

<table>
<thead>
<tr>
<th>Dash number</th>
<th>Output frequency range</th>
<th>Input current max at 5.25 V ±1% 1/</th>
<th>Pulse characteristics</th>
<th>Initial accuracy ppm at +23°C ±1°C</th>
<th>Frequency aging ppm/year after 30 days</th>
<th>Frequency-temperature tolerance (ppm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>mA 158 ns 15 percent 45 to 55</td>
<td>Rise and fall times max</td>
<td>10 TTL  ±15  ±5  ±50  ±40  ±25</td>
<td>+15  ±50  ±100  ±80  ±50  ±50  ±25</td>
<td>-55°C to +125°C  -55°C to +105°C  -20°C to +70°C</td>
</tr>
<tr>
<td>01</td>
<td>0.1 Hz to 250 Hz</td>
<td>158 15 45 to 55</td>
<td>10 TTL  ±15  ±5  ±50  ±40  ±25</td>
<td>+15  ±50  ±100  ±80  ±50  ±50  ±25</td>
<td>+15  ±50  ±100  ±80  ±50  ±50  ±25</td>
<td>A  B  C</td>
</tr>
<tr>
<td>04</td>
<td>0.1 Hz to 250 Hz</td>
<td>94 15 45 to 55</td>
<td>10 TTL  ±15  ±5  ±50  ±40  ±25</td>
<td>+15  ±50  ±100  ±80  ±50  ±50  ±25</td>
<td>+15  ±50  ±100  ±80  ±50  ±50  ±25</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>250 Hz to 150 kHz</td>
<td>70 15 45 to 55</td>
<td>10 TTL  ±15  ±5  ±50  ±40  ±25</td>
<td>+15  ±50  ±100  ±80  ±50  ±50  ±25</td>
<td>+15  ±50  ±100  ±80  ±50  ±50  ±25</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>250 Hz to 150 kHz</td>
<td>30 15 40 to 60</td>
<td>10 TTL  ±15  ±5  ±50  ±40  ±25</td>
<td>+15  ±50  ±100  ±80  ±50  ±50  ±25</td>
<td>+15  ±50  ±100  ±80  ±50  ±50  ±25</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>150 kHz to 5 MHz</td>
<td>65 5 40 to 60</td>
<td>6 TTL  ±15  ±5  ±50  ±40  ±25</td>
<td>+15  ±50  ±100  ±80  ±50  ±50  ±25</td>
<td>+15  ±50  ±100  ±80  ±50  ±50  ±25</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>150 kHz to 5 MHz</td>
<td>30 15 40 to 60</td>
<td>10 TTL  ±15  ±5  ±50  ±40  ±25</td>
<td>+15  ±50  ±100  ±80  ±50  ±50  ±25</td>
<td>+15  ±50  ±100  ±80  ±50  ±50  ±25</td>
<td></td>
</tr>
<tr>
<td>31</td>
<td>4 MHz to 20 MHz</td>
<td>65 5 40 to 60</td>
<td>6 TTL  ±15  ±5  ±50  ±40  ±25</td>
<td>+15  ±50  ±100  ±80  ±50  ±50  ±25</td>
<td>+15  ±50  ±100  ±80  ±50  ±50  ±25</td>
<td></td>
</tr>
<tr>
<td>34</td>
<td>4 MHz to 20 MHz</td>
<td>30 15 40 to 60</td>
<td>10 TTL  ±15  ±5  ±50  ±40  ±25</td>
<td>+15  ±50  ±100  ±80  ±50  ±50  ±25</td>
<td>+15  ±50  ±100  ±80  ±50  ±50  ±25</td>
<td></td>
</tr>
<tr>
<td>41</td>
<td>20 MHz to 80 MHz</td>
<td>65 5 40 to 60</td>
<td>6 TTL  ±15  ±5  ±50  ±40  ±25</td>
<td>+15  ±50  ±100  ±80  ±50  ±50  ±25</td>
<td>+15  ±50  ±100  ±80  ±50  ±50  ±25</td>
<td></td>
</tr>
<tr>
<td>44</td>
<td>20 MHz to 80 MHz</td>
<td>65 5 40 to 60</td>
<td>6 TTL  ±15  ±5  ±50  ±40  ±25</td>
<td>+15  ±50  ±100  ±80  ±50  ±50  ±25</td>
<td>+15  ±50  ±100  ±80  ±50  ±50  ±25</td>
<td></td>
</tr>
</tbody>
</table>

1/ Maximum input current for no load condition. Actual configuration of TTL loads must be added to determine power supply requirements.

2/ A TTL unit load is defined as: 1.6 mA sink, 0.04 mA source, and 2pF capacitance.

Frequency-voltage tolerance: ±2 ppm maximum for a ±10 percent change in supply voltage. Measurements taken at reference temperature and operating temperature range end points.

Frequency aging: Measurements shall be taken at +70°C ±0.2°C at intervals of not more than every 72 hours for 30 days minimum (see table I).

- ±5 ppm per year, maximum
- ±0.7 ppm per 30 days.
- ±1.5 ppm per 90 days
- ±10 ppm per year, maximum
- ±1.5 ppm per 90 days
- ±3 ppm per 90 days

Terminal strength: Method 211 of MIL-STD-202, test condition C.

Applied force: 2 pounds each terminal for 10 seconds.

Bends: Five at 45 degrees each.

Frequency-environmental tolerance: Not applicable.


Nonoperating: Test condition D.

Operating: Not required.
Ambient pressure:

Nonoperating: In accordance with MIL-PRF-55310.

Operating: Method 105 of MIL-STD-202, test condition C.

Part or Identifying Number (PIN): Consists of “M” prefix followed by specification sheet number, a dash and coded alphas, and numeric number. See example:

EXAMPLE

M55310/16- S 01 A XXXXXXXX

M prefix and specification sheet number
Product level (S, B, or C)
Dash number (see table I)
Operating temperature range (A, B, or C) (see table I)
Frequency

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