**Crystal Oscillators [20.0 ~ 50.0 MHz]**

**HJ _ _**

- **Ultra low phase noise**
  - RMS Phase Jitter 48 fsec

**Features**
- The HJ series is ultra low phase noise crystal oscillators.
- Compared with standard oscillator, Mercury’s HJ series has much better phase noise and jitter. HJ series with output frequency 49.152MHz has phase jitter 48 fsec (RMS, 12 KHz to 20 MHz) when V_DD at 3.3V.

**General specifications of all available packages, at Ta=+25°C, CL=15pF**

<table>
<thead>
<tr>
<th>Model</th>
<th>[ Output Logic ]</th>
<th>&quot; HJ &quot; series [ LVCMOS ]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>HJ32</td>
<td>HJ53</td>
</tr>
<tr>
<td>Dimensions</td>
<td>3.2 * 2.5 * 1.0 mm</td>
<td>5.0 * 3.2 * 1.2 mm</td>
</tr>
<tr>
<td>Available Frequency Range</td>
<td>20.0 ~ 50.0 MHz</td>
<td>20.0 ~ 50.0 MHz</td>
</tr>
<tr>
<td>Supply Voltage V_DD</td>
<td>1.8 V_DD ± 10%</td>
<td>+2.5 V_DD ± 10%</td>
</tr>
<tr>
<td>Voltage code is &quot; 18 &quot;</td>
<td>Voltage code is &quot; 25 &quot;</td>
<td>Voltage code is &quot; 3 &quot;</td>
</tr>
<tr>
<td>Current Consumption</td>
<td>3 mA (typical) : 5 mA (max.)</td>
<td>4.7 mA (typical) : 7 mA (max.)</td>
</tr>
<tr>
<td>Output Logic &quot; High &quot; , &quot; 1 &quot;</td>
<td>1.62 V (min.)</td>
<td>2.25 V (min.)</td>
</tr>
<tr>
<td>Output Logic &quot; Low &quot; , &quot; 0 &quot;</td>
<td>0.08 V (max.)</td>
<td>0.25 V (max.)</td>
</tr>
<tr>
<td>Rise Time (Tr) / Fall Time (Tf)</td>
<td>5.0 ns (typical) : 10 ns (max.)</td>
<td>2.0 ns (typical) : 10 ns (max.)</td>
</tr>
</tbody>
</table>

**Frequency Stability Codes**
- Frequency Stability over Operating Temperature Range ± 25 ppm ± 50 ppm ± 100 ppm
- If non-standard, please enter the desired stability after the " C " or " I "
  - Commercial ( -10°C to +70°C )
    - A
  - Industrial ( -40°C to +85°C )
    - D

**Supply Voltage vs Freq. Sensitivity** ± 1.0 ppm (max.)

**Load**
- 15 pF (CMOS)

**Start-up Time**
- 0.8 m sec. (typical)
- 5.0 m sec. (max.)

**Duty Cycle**
- 50% ± 5% (measured at 50% V_DD)

**Tri-state Function on pad No. 1**
- High Enable

**Enable / Disable Time**
- Enable : 1 m sec. (max.)
- Disable : 201 n sec. (max.)

**Storage Temperature**
- -55°C to +150°C

**Aging at Ta=+25°C**
- ± 3 ppm max. first year
- ± 2 ppm max. per year thereafter

**RMS Jitter [49.152MHz, 3.3V]**
- 48 fsec (typical) [12KHz to 20MHz]

**SSB Phase Noise [49.152MHz, 3.3V]**
- Offset 10 Hz 100 Hz 1 KHz 10 KHz 100 KHz 1 MHz 10 MHz 20 MHz dBc/Hz
  - 91
  - 126
  - 141
  - 153
  - 166
  - 171
  - 172
  - 174

**Outline Dimensions (Unit: mm), Suggested pad Layout for SMDs**

**Outline Dimensions (Unit: mm)**

**Suggested pad Layout for SMDs**

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