IQXO-22,-23 Commercial Oscillator

**Issue 17; 6 October 2004**

**Delivery Options**
- Please contact our sales office for current leadtimes and refer also to our stock list.

**Output Compatibility**
- HCMOS/TTL
- Drive Capability: 50pF or 10TTL (<70.0MHz)
  - 30pF (70.0 to 160.0MHz)
- Non tri-state (IQXO-22, -22I)
- Tri-state (IQXO-23, -23I)

**Package Outline**
- 8-pin DIL compatible resistance welded enclosure, hermetically sealed with glass to metal seal. Available over 0 to 70°C (IQXO-22, -23) or -40 to 85°C (IQXO-22I, -23I)

**Standard Frequency Stabilities**
- ±25ppm, ±50ppm, ±100ppm
  (over operating temperature range)

**Operating Temperature Ranges**
- 0 to 70°C (IQXO-22, -23)
- -40 to 85°C (IQXO-22I, -23I)

**Storage Temperature Range**
- -55 to 125°C

**Environmental Specification**
- Terminal Strength: 0.91kg max. Force perpendicular to top & bottom
- Hermetic Seal: not to exceed 1x10^-8 mBar litres of Helium leakage
- Solderability: MIL-STD-202E, Method 208C
- Vibration: 10 to 55Hz 0.76mm displacement, sweep 60 seconds, duration 2 hours
- Rapid Change of Temperature over Operating Temperature Range: 10 cycles
- Shock: 981m/s² for 6ms, three shocks in each direction along the three mutually perpendicular planes

**Tri-state Operation (IQXO-23, -23I)**
- Logic ‘0’ to pin 1 disables oscillator output; when disabled the oscillator output goes to the high impedance state
- No connection or Logic ‘1’ to pin 1 enables oscillator output
- Maximum ‘pull-down’ resistance required to disable output = 20kΩ

**Disable current 50μA typical**

**Marking**
- Model number + Operating Temperature Code (if applicable)
- Frequency Stability Code
- Frequency
- Date Code (Year/Week)

**Minimum Order Information Required**
- Frequency + Model Number + Operating Temperature (if applicable) + Frequency Stability

**Outline in mm**

**Pin connections**
1. N/C or Enable/Disable
4. GND
5. Output
8. +Vs

**Output Waveform - HCMOS/TTL**

<table>
<thead>
<tr>
<th>Voltage Level</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>+Vs</td>
<td>2.4V</td>
</tr>
<tr>
<td>90%Vs</td>
<td>1.4V</td>
</tr>
<tr>
<td>50%Vs</td>
<td>0.4V</td>
</tr>
<tr>
<td>10%Vs</td>
<td></td>
</tr>
<tr>
<td>0V</td>
<td></td>
</tr>
</tbody>
</table>

Duty cycle = \( \frac{t_1}{T} \times 100(\%) \)
Electrical Specifications - maximum limiting values when measured in HCMOS test circuit.

<table>
<thead>
<tr>
<th>Frequency Range</th>
<th>Frequency Stability</th>
<th>Supply Voltage</th>
<th>Supply Current</th>
<th>Rise Time(t_r)</th>
<th>Fall Time(t_f)</th>
<th>Duty Cycle</th>
<th>Model Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>500.0kHz to &lt; 5.0kHz</td>
<td>±25ppm, ±50ppm, ±100ppm</td>
<td>5V ±0.25V</td>
<td>20mA</td>
<td>15ns</td>
<td>15ns</td>
<td>45/55%</td>
<td>IQXO-22, -22I, -23, -23I</td>
</tr>
<tr>
<td>5.0 to &lt; 16.0kHz</td>
<td>±25ppm, ±50ppm, ±100ppm</td>
<td>5V ±0.25V</td>
<td>20mA</td>
<td>10ns</td>
<td>10ns</td>
<td>45/55%</td>
<td>IQXO-22, -22I, -23, -23I</td>
</tr>
<tr>
<td>16 to &lt; 30.0kHz</td>
<td>±25ppm, ±50ppm, ±100ppm</td>
<td>5V ±0.25V</td>
<td>30mA</td>
<td>10ns</td>
<td>10ns</td>
<td>45/55%</td>
<td>IQXO-22, -22I, -23, -23I</td>
</tr>
<tr>
<td>30 to &lt; 50.0kHz</td>
<td>±25ppm, ±50ppm, ±100ppm</td>
<td>5V ±0.25V</td>
<td>40mA</td>
<td>8ns</td>
<td>8ns</td>
<td>45/55%</td>
<td>IQXO-22, -22I, -23, -23I</td>
</tr>
<tr>
<td>50 to &lt; 70.0kHz</td>
<td>±25ppm, ±50ppm, ±100ppm</td>
<td>5V ±0.25V</td>
<td>50mA</td>
<td>6ns</td>
<td>6ns</td>
<td>40/80%</td>
<td>IQXO-22, -22I, -23, -23I</td>
</tr>
<tr>
<td>70 to 160.0kHz</td>
<td>±25ppm, ±50ppm, ±100ppm</td>
<td>5V ±0.25V</td>
<td>70mA</td>
<td>5ns</td>
<td>5ns</td>
<td>40/80%</td>
<td>IQXO-22, -22I, -23, -23I</td>
</tr>
</tbody>
</table>

Ordering Example
Frequency
Model number -22, -22I = Non tri-state & -23, -23I = Tri-state
Operating Temperature Code: I = -40 to 85°C Not applicable for 0 to 70°C
Frequency Stability: A = ±25ppm, B = ±50ppm, C = ±100ppm

Please note that the rise and fall times listed are the maximum values we specify to cover various frequency breaks. In practice the actual values are generally lower depending upon the spot frequency chosen. For typical values please contact our sales office.

Test Circuit - HCMOS

Test Circuit - TTL

*Inclusive of jigging & equipment capacitance
Note: Pin 1 = No connection on non tri-state models