



Description

- The IQXT-316-10 uses ASIC technology and is designed to meet the short and medium term stability requirements of packet network synchronisation for Small Cells.
- Model IQXT-316-10
- Model Issue number 3

Frequency Parameters

- Frequency 30.720MHz
- Frequency Tolerance $\pm 1.00\text{ppm}$
- Tolerance Condition @ $25^\circ\text{C} \pm 1^\circ\text{C}$ & $VC=1.5\text{V}$
- Frequency Stability $\pm 0.05\text{ppm}$
- Operating Temperature Range 0.00 to 55.00°C
- Ageing (@ 25°C):
±5ppb typ per day (±20ppb max per day)
±1.5ppm max in 1st year
±4ppm max over 10yrs
- Temperature Rate of Change (maximum rate of change of temperature condition for guaranteed stability specifications):
1°C/min max
- Frequency Slope $\Delta F/\Delta T$ (in still air): ±20ppb/°C max
- Root Allan Variance (@ 25°C , $\tau=1\text{sec}$): 1ppb max
- Acceleration Sensitivity (gamma vector of all 3 axes from 30 to 1500Hz): Typically 2ppb/G max
- Supply Voltage Variation (±2% change @ 25°C , measurement referenced to frequency observed @ nominal Vs): ±10ppb typ
- Load Variation (±2% change @ 25°C , measurement referenced to frequency observed @ nominal load): ±10ppb typ
- Reflow Variation (pre to post reflow ΔF , measured after 1hr recovery @ 25°C): ±1ppm max
- Note: The characteristics of the oscillator may be temporarily affected by the processes of assembly and soldering. The in-service short term frequency stability specification applies after 48hrs continuous operation and after the first excursion over the temperature range. Nominal conditions apply unless otherwise stated.

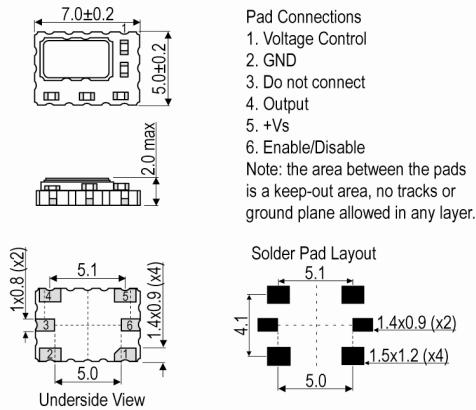
Electrical Parameters

- Supply Voltage $3.3\text{V} \pm 5\%$
- Current Draw 7.000mA
- Absolute Maximum Ratings:
Supply Voltage (Vs): -0.5V to 7V
Control Voltage (VC): -0.5V to 9V
All other inputs: -0.5V to Vs+0.5V
Power Dissipation: 100mW max
Junction Temperature: 150°C max
Note: Operating beyond these limits may result in change or permanent damage to the oscillator.

Frequency Adjustment

- Pulling $\pm 5\text{ppm}$ min
- Control Voltage $1.5\text{V} \pm 1.0\text{V}$
- Input Impedance $100\text{k}\Omega$ min
- Linearity: 1% max
- Frequency Tuning Slope: +7.5ppm/V typ
- Modulation Bandwidth: 1Hz min
- Note: Pulling referenced to frequency @ $VC=1.5\text{V}$.

Outline (mm)



Pad Connections
 1. Voltage Control
 2. GND
 3. Do not connect
 4. Output
 5. +Vs
 6. Enable/Disable
 Note: the area between the pads is a keep-out area, no tracks or ground plane allowed in any layer.

Sales Office Contact Details:

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Output Details

- Output Compatibility HCMOS
- Drive Capability 15pF
- Rise and Fall Time 8.0ns max
- Duty Cycle 45/55%
- Output Voltage Levels:
Output Low (VoL): 10%Vs max
Output High (VoH): 90%Vs min
- Start Up Time (amplitude within 90% of specified output level):
15ms max

Output Control

- Tri-State Mode:
Logic '0' (20%Vs max) to pad 6 disables the oscillator output, the output goes to a high impedance state.
Logic '1' (60%Vs min) or no connection to pad 6 enables the oscillator output.
Note: The tri-state control (enable) input pad has an internal 100kΩ pull up resistor which allows it to be left unconnected if not used. When in tri-state mode, the output stage is disabled, but the oscillator and compensation circuit are still active (Current Consumption: 2mA typ).
- Output Enable Time: 100μs max

Noise Parameters

- Phase Noise @ 25°C (typ):
-65dBc/Hz @ 1Hz
-92dBc/Hz @ 10Hz
-120dBc/Hz @ 100Hz
-139dBc/Hz @ 1kHz
-149dBc/Hz @ 10kHz
-151dBc/Hz @ 100kHz
-152dBc/Hz @ 1MHz
- RMS Phase Jitter @ 25°C (12kHz to 5MHz): 0.38ps typ

Environmental Parameters

- Low Temperature Storage: IEC 60068-2-01, Test Ab: 1000hrs @ -55°C.
- High Temperature Storage: IEC 60068-2-02, Test Bb: 1000hrs @ 150°C.
- Mechanical Shock: JESD22-B104: 1500G, 0.5ms duration, 5 pulses in each of 6 directions.
- Vibration: JESD22-B103: 20G peak acceleration for 4hrs in each of the 3 orientations, tested from 60-2000Hz, 12hrs total.
- High Temperature Operating Life (HTOL): JESD22-A108: 1008hrs @ 125°C.
- Thermal Cycling: JESD22-A104: 500 temperature cycles, -55 to 125°C.
- Solderability: JESD22-B102, Method 1, Condition E: 245°C for 5secs, (preconditioning: 150°C, 16hrs).
- Resistance to Soldering Heat: IPC/JEDEC J-STD-020: 3 reflow cycles (peak temperature 260°C).
- Humidity: JESD22-A101: After 1008hrs @ 85°C ±2°C, 85% RH non-condensing (preconditioning: 3 reflow cycles @ peak temperature 260°C).
- Ageing: MIL-PRF-55310: 1008hrs @ 85°C (preconditioning: 3 reflow cycles @ peak temperature 260°C).
- RoHS Terminations
- RoHS Reflow Temp 260°C max for 30secs max

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Compliance

- RoHS Status (2015/863/EU) Compliant
- REACH Status Compliant
- MSL Rating (JDEC-STD-033): 1

Packaging Details

- Tape & reel in accordance with EIA-481
- Quantities below the standard reel size to be supplied on cut tape
- Standard Pack Quantity: 500

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