

**Description**

- The IQXT-316-7 uses ASIC technology and is designed to meet the short and medium term stability requirements of packet network synchronisation for Small Cells. The oscillator has low jitter to meet network interface requirements (e.g. 10GE) and low phase noise to meet radio interface requirements of LTE-A (TS 36.104) and WCDMA (TS 25.104) transceivers. The IQXT-316-7 is the ideal choice for Small Cell synchronisation requirements.
- |                    |            |
|--------------------|------------|
| Model              | IQXT-316-7 |
| Model Issue number | 1          |

**Frequency Parameters**

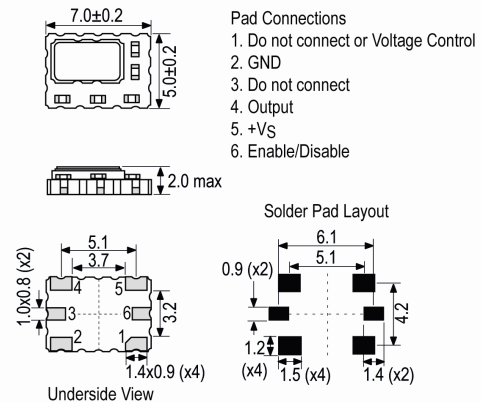
- Frequency: 24.5760MHz
- Frequency Tolerance:  $\pm 1000.00\text{ppb}$
- Tolerance Condition: @ 25°C  $\pm 1^\circ\text{C}$  & VC=1.65V
- Frequency Stability Max:  $\pm 160.00\text{ppb}$
- Operating Temperature Range: -20.00 to 70.00°C
- Ageing @ 25°C:
  - $\pm 20\text{ppb}$  max per day
  - $\pm 200\text{ppb}$  max per month
  - $\pm 1\text{ppm}$  max per year
  - $\pm 2\text{ppm}$  max over 3yrs
- Acceleration Sensitivity (gamma vector of all 3 axes from 30 to 1500Hz): Typically 2ppb/G max
- Supply Voltage Variation ( $\pm 2\%$  change @ 25°C ref to frequency @ nominal Vs):  $\pm 10\text{ppb}$  typ
- Load Variation ( $\pm 1\text{pF}$  change @ 25°C ref to frequency @ nominal load):  $\pm 10\text{ppb}$  typ
- Reflow Variation (after 1hr recovery @ 25°C):  $\pm 0.5\text{ppm}$  max
- Temperature Rate of Change (maximum rate of change of temperature condition for guaranteed stability specifications):  $1^\circ\text{C}/\text{min}$  max
- Note: The characteristics of the oscillator may be temporarily affected by the processes of assembly and soldering. The frequency specifications apply 48hrs after assembly and after the first excursion over the operating temperature range.

**Electrical Parameters**

- Supply Voltage: 3.3V  $\pm 5\%$
- Current Draw: 6.500mA
- Absolute Maximum Ratings:
  - Supply Voltage (Vs): -0.5 to 7V
  - Control Voltage (VC): -0.5V to 9V
  - All other inputs: -0.5 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:  $\pm 5\text{ppm}$  to  $\pm 10\text{ppm}$
- Control Voltage: 1.65V  $\pm 1.15\text{V}$
- Input Impedance: 100k $\Omega$  min
- Linearity: 1% max
- Slope: +7ppm/V typ
- Modulation Bandwidth: 1Hz min


**Outline (mm)**

**Sales Office Contact Details:**

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 USA: +1.760.318.2824

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 Web: [www.iqdfrequencyproducts.com](http://www.iqdfrequencyproducts.com)

**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

**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: When disabled the oscillator and compensation circuit are still active (Current Consumption: 2mA typ)
- Output Enable Time: 100us max

**Noise Parameters**

- Phase Noise @ 25°C (typ):  
-60dBc/Hz @ 1Hz  
-98dBc/Hz @ 10Hz  
-127dBc/Hz @ 100Hz  
-143dBc/Hz @ 1kHz  
-151dBc/Hz @ 10kHz  
-154dBc/Hz @ 100kHz  
-157dBc/Hz @ 1MHz
- Phase Jitter (12kHz to 5MHz): 290fs RMS 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: 260°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, 85% RH (preconditioning: 3 reflow cycles @ peak temperature 260°C).
- Ageing: MIL-PRF-55310: 1008hrs @ 85°C (preconditioning: 3 reflow cycles @ peak temperature 260°C).

**Manufacturing Details**

- Maximum Process Temperature: 260°C (30secs max)

**Compliance**

- RoHS Status (2011/65/EU) Compliant
- REACH Status Compliant
- MSL Rating (JDEC-STD-033): 1

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**Packaging Details**

- Pack Style: Reel      Tape & reel in accordance with EIA-481-D  
Pack Size: 1,000
- *Alternative packing option available*

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