Customer Part:

Description

- The IQXT-316-3 uses ASIC technology and is designed to meet the short and medium term stability requirements of packet network synchronisation for Small Cells.
- Model IQXT-316-3
- Model Issue number 1

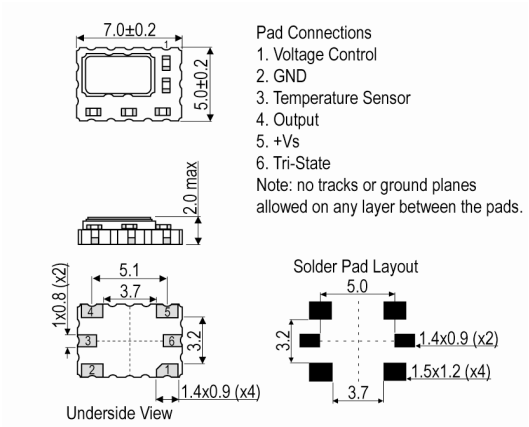
Frequency Parameters

- Frequency 30.720MHz
- Frequency Tolerance ±1.00ppm
- Tolerance Condition @ 25°C ±1°C & VC=1.5V
- Frequency Stability ±0.25ppm
- Operating Temperature Range -5.00 to 85.00°C
- In□service Short-term Frequency Stability (over any 24-hr timeslot @ fixed supply voltage and load):
  50 to 70°C: ±80ppb max
  15 to 85°C: ±100ppb max
  -5 to 85°C: ±250ppb max
- Ageing (@ 25°C):
  ±20ppb max/day
  ±200ppb max/month
  ±1ppm max/year
  ±2ppm max over 3yrs
- Temperature Rate of Change (maximum rate of change of temperature condition for guaranteed stability specifications): 1°C/min 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 (±1pF 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 3.3V ±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.

Outline (mm)



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Customer Part:

Frequency Adjustment

- Pulling ±7ppm min to ±12ppm max
- Control Voltage 1.5V ±1.0V
- Input Impedance 100kΩ min
- Linearity (deviation from straight line curve fit): 1% max
- Frequency Tuning Slope: Positive
- Modulation Bandwidth: 1Hz min
- Note: Pulling referenced to frequency @ VC=1.5V

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
- Temperature Sensor Output (pad 3):
  Vtemp (@ 25°C): 1.76V typ
  Slope Option: -2.1mV/°C typ
  Resistive Load: 100kΩ min
  Capacitive Load: 30pF max
  Output Impedance (@ 25°C): 1kΩ typ
  Sensor Linearity: 1.5% typ

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
  -95dBc/Hz @ 10Hz
  -125dBc/Hz @ 100Hz
  -143dBc/Hz @ 1kHz
  -149dBc/Hz @ 10kHz
  -152dBc/Hz @ 100kHz
  -155dBc/Hz @ 1MHz
- Phase Jitter (12kHz to 5MHz): 300fs RMS typ

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Customer Part:

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 ±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).

Manufacturing Details

- Maximum Process Temperature: 260°C (30secs max)
- RoHS Terminations
- RoHS Reflow Temp 260°C max for 30secs max

Compliance

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

Packaging Details

- Pack Style: Cutt Cut tape
  Standard Pack Quantity: 100
- *Alternative packing option available*

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