

Description

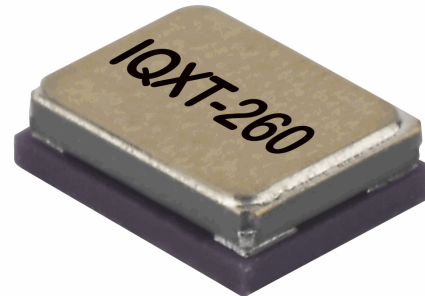
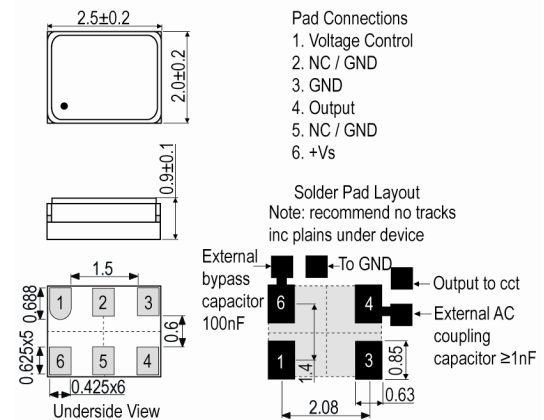
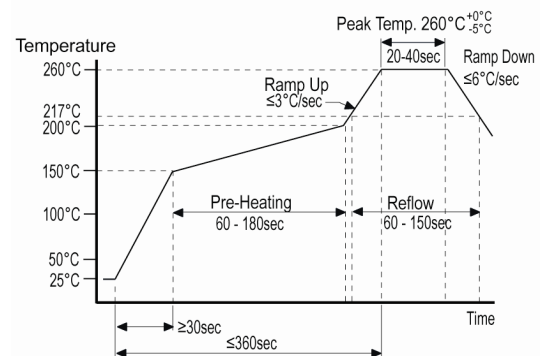
- The IQXT-260-17 employs an analogue ASIC for the oscillator and a high-order temperature compensation circuit in a 2.5 x 2.0mm size package.
- Model IQXT-260-17
- Model Issue number 2

Frequency Parameters

- Frequency 19.20MHz
- Frequency Tolerance $\pm 1.00\text{ppm}$
- Tolerance Condition @ 25°C $\pm 2^\circ\text{C}$
- Frequency Stability $\pm 0.50\text{ppm}$
- Operating Temperature Range -30.00 to 85.00°C
- Ageing $\pm 0.7\text{ppm}$ max over 1yr @ 25°C
- Frequency Stability: TA varied over operating temperature range, measurement referenced to frequency observed with $F_{\text{ref}} = (F_{\text{max}} + F_{\text{min}}) / 2$, $V_s = 1.8\text{V}$, $V_C = 0.9\text{V}$ and $\text{load} = 10\text{k}\Omega // 10\text{pF}$.
- Frequency Slope (minimum of one frequency reading every 2°C and $V_C = 0.9\text{V}$): -10°C to 60°C : $0.05\text{ppm}/^\circ\text{C}$ max
- Frequency Drift (calculated from frequency slope with temperature varied at a maximum of $1.92^\circ\text{C}/\text{min}$ ($0.032^\circ\text{C}/\text{s}$) over -10°C to 60°C): $1.6\text{ppb}/\text{sec}$ max
- Frequency Slope (minimum of one frequency reading every 2°C and $V_C = 0.9\text{V}$): -30°C to 85°C : $0.1\text{ppm}/^\circ\text{C}$ max
- Frequency Drift (calculated from frequency slope with temperature varied at a maximum of $0.96^\circ\text{C}/\text{min}$ ($0.016^\circ\text{C}/\text{s}$) over -30°C to 85°C): $1.6\text{ppb}/\text{sec}$ max
- Note: Frequency Drift rate is calculated from the equation $\text{ppb}/\text{s} = ^\circ\text{C}/\text{s} \times \text{ppb}/^\circ\text{C}$.
- Small Thermal Cycle Frequency Slope (measured at 0.5°C intervals over any 5°C heating and 5°C cooling cycle, at a minimum rate of $1^\circ\text{C}/\text{minute}$ within the operating temperature range): $50\text{ppb}/^\circ\text{C}$ max
(Note: Discard the first 0.5°C interval of each heating and cooling cycle.)
- Small Thermal Cycle Hysteresis (difference in frequency measurements over any 5°C heating and 5°C cooling cycle, at a minimum rate of $1^\circ\text{C}/\text{minute}$ within the operating temperature range): 50ppb pk-pk max
- Supply Voltage Variation ($\pm 5\%$ change @ 25°C): $\pm 0.1\text{ppm}$ max
- Load Variation ($\pm 10\%$ change @ 25°C): $\pm 0.2\text{ppm}$ max
- Reflow Variation (after two consecutive reflows as per profile shown and 1hr recovery @ 25°C): $\pm 1\text{ppm}$ max
- Note: Parts should be shielded from drafts causing unexpected thermal gradients. Temperature changes due to ambient air currents can lead to short term frequency drift.

Electrical Parameters

- Supply Voltage 1.8V $\pm 5\%$
- Current Draw 1.500mA
- Supply Current (@ $T_A = 25^\circ\text{C}$, V_s max and $\text{load} = 10\text{k}\Omega // 10\text{pF}$): 1.5mA max


Outline (mm)

Pb-Free Reflow

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Frequency Adjustment

- Pulling $\pm 15.6\text{ppm}$ to $\pm 24.0\text{ppm}$
- Control Voltage $0.9\text{V} \pm 0.6\text{V}$
- Input Impedance $500\text{k}\Omega$
- Input Impedance: Measured between control voltage and GND pins.
- Linearity (deviation from a straight line curve fit): 20% max

Output Details

- Output Compatibility Clipped Sine
- Drive Capability $10\text{k}\Omega//10\text{pF} \pm 10\%$
- Output Voltage Level (@ $T_A=25^\circ\text{C}$, V_s min and load= $10\text{k}\Omega//10\text{pF}$): 0.8V pk-pk min
- Start Up Time (frequency within $\pm 0.5\text{ppm}$ of steady state frequency): 0.5ms max
- Output: DC coupled
- Note: AC-coupled output requires an external capacitor, $\geq 1\text{nF}$ recommended.

Noise Parameters

- Phase Noise @ 25°C (max):
 - 86dBc/Hz @ 10Hz
 - 110dBc/Hz @ 100Hz
 - 137dBc/Hz @ 1kHz
 - 143dBc/Hz @ 10kHz
 - 150dBc/Hz @ 100kHz
- Harmonics: -5dBc max

Environmental Parameters

- Storage Temperature Range: -40 to 85°C
- Shock: MIL-STD-202 M213: Half sine wave acceleration of 3000G peak amplitude, duration 0.3ms , velocity 12.3ft/s .
- Vibration: JESD22-B103-B: 10G peak acceleration for 20mins, 12 cycles in each of the 3 orientations, tested from $10\text{-}2000\text{Hz}$.
- Moisture Resistance: MIL-STD-202 M106g: 1000hrs @ 85°C , 85% RH, biased.
- Thermal Cycling: JESD22 Method JA-104C: 1000 temperature cycles, where each cycle consists of a 25mins soak time @ -40°C followed by a 25mins soak time @ 85°C , with a 60secs maximum transition time between temperatures, air to air transition.
- Note: Frequency shift $\leq 1\text{ppm}$ after environmental conditions.

Manufacturing Details

- Maximum Process Temperature: 260°C (40secs max)

Compliance

- RoHS Status (2011/65/EU) Compliant
- REACH Status Compliant
- MSL Rating (JDEC-STD-033): Not Applicable

Packaging Details

- Pack Style: Reel Tape & reel in accordance with EIA-481-D
Pack Size: $3,000$
- *Alternative packing option available*

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