

## Description

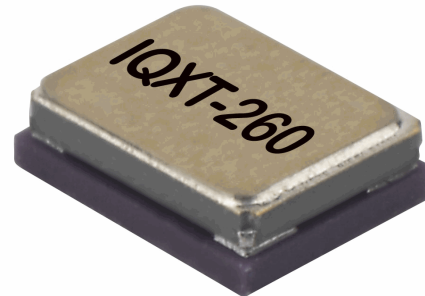
- The IQXT-260-11 employs an analogue ASIC for the oscillator and a high-order temperature compensation circuit in a 2.5 x 2.0mm size package.
- Model: IQXT-260-11
- Model Issue number: 1

## Frequency Parameters

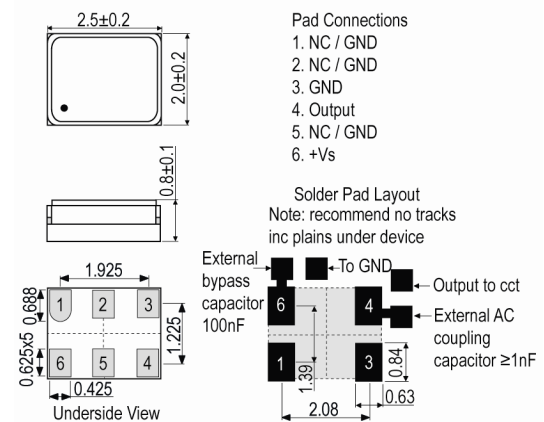
- Frequency: 19.20MHz
- Frequency Tolerance:  $\pm 1.00$ ppm
- Tolerance Condition: @ 25°C  $\pm 2^\circ\text{C}$
- Frequency Stability:  $\pm 0.50$ ppm
- Operating Temperature Range: -30.00 to 85.00°C
- Ageing:  $\pm 1$ ppm max over 1yr @ 25°C
- Frequency Stability: TA varied over operating temperature range, measurement referenced to frequency observed with  $F_{ref} = (F_{max} + F_{min})/2$ ,  $V_s = 1.8\text{V}$  and load = 10k $\Omega$ //10pF.
- Frequency Slope (minimum of one frequency reading every 2°C):
  - 10 to 60°C: 0.05ppm/°C max
- Frequency Drift (calculated from frequency slope with temperature varied at a maximum of 1.92°C/min (0.032°C/s) over -10°C to 60°C): 1.6ppb/s max
- Frequency Slope (minimum of one frequency reading every 2°C):
  - 30 to 85°C: 0.1ppm/°C max
- Frequency Drift (calculated from frequency slope with temperature varied at a maximum of 0.96°C/min (0.016°C/s) over -30°C to 85°C): 1.6ppb/s max
- Note: Frequency Drift rate is calculated from the equation  $\text{ppb/s} = ^\circ\text{C/s} \times \text{ppb/}^\circ\text{C}$
- 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°C/minute within the operating temperature range): 50ppb/°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°C/minute within the operating temperature range): 50ppb pk-pk max
- Supply Voltage Variation ( $\pm 5\%$  change @ 25°C):  $\pm 0.1$ ppm max
- Load Variation ( $\pm 10\%$  change @ 25°C):  $\pm 0.2$ ppm max
- Reflow Variation (after two consecutive reflows as per profile shown and 1hr recovery @ 25°C):  $\pm 1$ 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

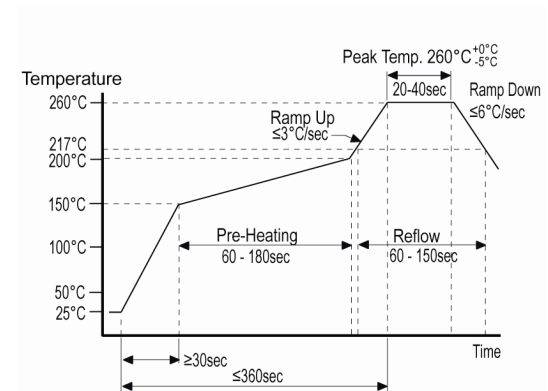
- Supply Voltage: 1.8V  $\pm 5\%$
- Current Draw: 1.50mA
- Supply Current (@ TA=25°C, Vs max and load=10k $\Omega$ //10pF): 1.5mA max



## Outline (mm)



## Pb-Free Reflow



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**Output Details**

- Output Compatibility                      Clipped Sine
- Drive Capability                            10kΩ//10pF ±10%
- Output Voltage Level (@ TA=25°C, Vs min and load=10kΩ//10pF): 0.8V pk-pk min
- Start Up Time (amplitude within 90% of specified output level): 0.5ms max
- Start Up Time (frequency within ±0.5ppm of steady state frequency): 2ms max
- Output: DC coupled
- Note: AC-coupled output requires an external capacitor, ≥1nF recommended.

**Noise Parameters**

- Phase Noise @ 25°C (typ):
  - 64dBc/Hz @ 1Hz
  - 94dBc/Hz @ 10Hz
  - 117dBc/Hz @ 100Hz
  - 139dBc/Hz @ 1kHz
  - 150dBc/Hz @ 10kHz
  - 152dBc/Hz @ 100kHz

**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 10-2000Hz.
- 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 ≤1ppm 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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