

**Customer Part:**

**Description**

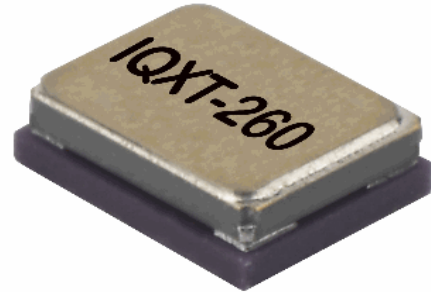
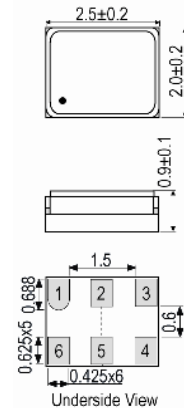
- The IQXT-260-17 employs an analogue ASIC for the oscillator and a high-order temperature compensation circuit in a 2.5 x 2.0mm size package.
- Model IQXT-260-17
- Model Issue number 2

**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: 0.05ppm/°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/sec max
- Frequency Slope (minimum of one frequency reading every 2°C and  $V_C = 0.9\text{V}$ ):  
-30°C to 85°C: 0.1ppm/°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/sec 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):  $\pm 0.1\text{ppm}$  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.

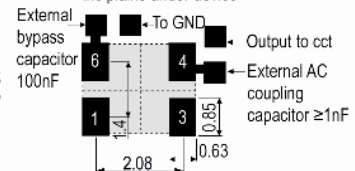
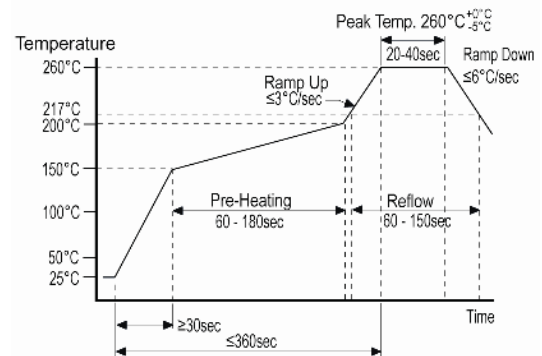
**Electrical Parameters**

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


**Outline (mm)**


- Pad Connections
1. Voltage Control
  2. NC / GND
  3. GND
  4. Output
  5. NC / GND
  6. +Vs

Solder Pad Layout  
Note: recommend no tracks inc plains under device


**Pb-Free Reflow**

**Sales Office Contact Details:**

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## Customer Part:

## 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= $10\text{k}\Omega//10\text{pF}$ ):  $0.8\text{V}$  pk-pk min
- Start Up Time (frequency within  $\pm 0.5\text{ppm}$  of steady state frequency):  $0.5\text{ms}$  max
- Output: DC coupled
- Note: AC-coupled output requires an external capacitor,  $\geq 1\text{nF}$  recommended.

## Noise Parameters

- Phase Noise @  $25^\circ\text{C}$  (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  $85^\circ\text{C}$
- Shock: MIL-STD-202 M213: Half sine wave acceleration of  $3000\text{G}$  peak amplitude, duration  $0.3\text{ms}$ , velocity  $12.3\text{ft/s}$ .
- Vibration: JESD22-B103-B:  $10\text{G}$  peak acceleration for 20mins, 12 cycles in each of the 3 orientations, tested from  $10$ - $2000\text{Hz}$ .
- Moisture Resistance: MIL-STD-202 M106g:  $1000\text{hrs}$  @  $85^\circ\text{C}$ ,  $85\%$  RH, biased.
- Thermal Cycling: JESD22 Method JA-104C: 1000 temperature cycles, where each cycle consists of a 25mins soak time @  $-40^\circ\text{C}$  followed by a 25mins soak time @  $85^\circ\text{C}$ , 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:  $260^\circ\text{C}$  (40secs max)

## Compliance

- RoHS Status (2015/863/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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