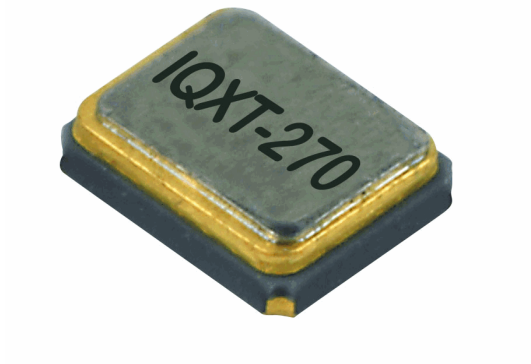
Description

- The IQXT-270-10 Temperature Compensated Crystal Oscillator (TCXO) employs an analogue ASIC for the oscillator and a high order temperature compensation circuit in a 2.0 x 1.6mm size package.
- Model IQXT-270-10
- Model Issue number 1



Frequency Parameters

- Frequency 19.20MHz
- Frequency Tolerance ±1.00ppm
- Frequency Stability ±0.50ppm
- Operating Temperature Range -30.00 to 85.00°C
- Ageing ±0.7ppm max per year at 25°C
- Frequency Tolerance: Offset from nominal frequency measured at 25˚C ±2˚C.
- Reflow Shift (two consecutive reflows as per profile after 1 hour relaxation at 25°C): ±1ppm max
- Frequency Stability: Referenced to the midpoint between minimum and maximum frequency value over the specified temperature range. Control voltage set to midpoint of control voltage (note 1).
- Frequency Slope (minimum of one frequency reading every 2°C, over -10 to 60°C. Control voltage set to midpoint of control voltage, note 1): 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, note 5): 1.6ppb/sec max
- Frequency Slope (minimum of one frequency reading every 2°C, over -30°C to -85°C. Control voltage set to midpoint of control voltage, note 1): 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, note 5): 1.6ppb/sec max
- 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, note 6): 50ppb/°C max
- 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 (±5% change at 25°C): ±0.1ppm max
- Load Variation (±10% change at 25°C): ±0.2ppm max

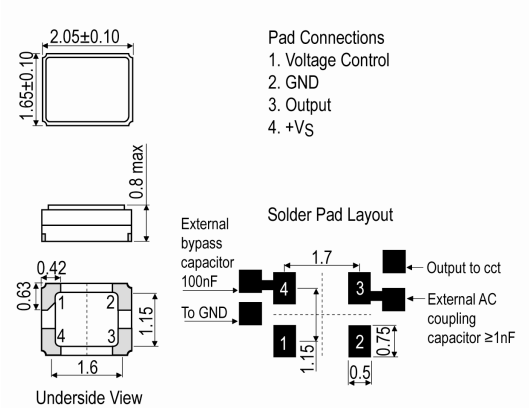
Electrical Parameters

- Supply Voltage 2.85V ±0.15V
- Current Draw 1.50mA
- Supply Current (at Vs max - note 2)

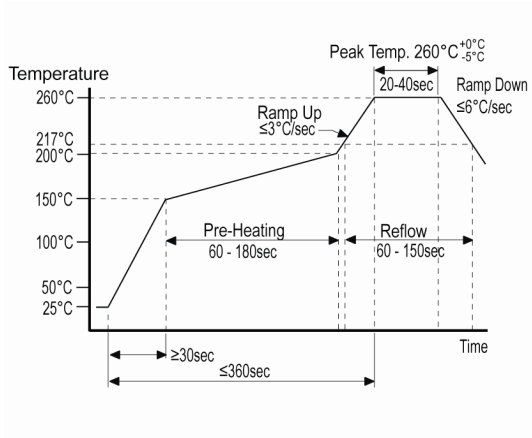
Frequency Adjustment

- Pulling ±15.6ppm to ±24ppm
- Control Voltage 1.4V ±1.0V
- Input Impedence 500kΩ min
- Control voltage range: the nominal control voltage value is midway between the minimum and maximum. Voltage control should not exceed the supply voltage +0.2V or GND.
- Linearity (deviation from straight line curve fit): 10% max

Outline (mm)



Pb-Free Reflow



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Output Details

- Output Compatability — Clipped Sine
- Drive Capability — 10kΩ//10pF ±10%
- Output: DC coupled (note 3)
- Output Voltage Level (at Vs min - note 2): 0.8V pk-pk min

Noise Parameters

- Phase Noise (typ @ 25˚C):
  -64dBc/Hz @ 1Hz
  -93dBc/Hz @ 10Hz
  -118dBc/Hz @ 100Hz
  -137dBc/Hz @ 1kHz
  -149dBc/Hz @ 10kHz
  -151dBc/Hz @ 100kHz
- Phase Noise (max @ 25˚C):
  -57dBc/Hz @ 1Hz
  -86dBc/Hz @ 10Hz
  -111dBc/Hz @ 100Hz
  -133dBc/Hz @ 1kHz
  -144dBc/Hz @ 10kHz
  -148dBc/Hz @ 100kHz

Environmental Parameters

- Shock: MIL-STD-202 M213 (note 4): Half sine-wave acceleration of 3000G peak amplitude, duration 0.3ms, velocity 12.3ft/s.
- Moisture Resistance: MIL-STD-202 M106g (note 4): 1000 hours at 85°C, 85% relative humidity. Biased.
- Thermal Cycling: JESD22 Method JA-104C (note 4): 1000 temperature cycles, where each cycle consists of a 25 minutes soak time at -40°C followed by a 25 minute soak time at 85°C, with a 60 second maximum transition time between temperatures. Air to air transition.
- Vibration: JESD22-B103-B (also see note 4): 10G peak acceleration for 20 minutes 12 cycles in each of the 3 orientations, swept from 10-2000Hz.
- Storage Temperature Range: -40 to 85°C

Manufacturing Details

- Maximum Process Temperature: 260˚C (40secs max)
- Note 1: Parts should be shielded from drafts causing unexpected thermal gradients. Temperature changes due to ambient air currents can lead to short term frequency drift.
- Note 2: Specified for the load stated in Output Details above, at 25°C.
- Note 3: External AC coupling capacitor required; 1nF or greater recommended.
- Note 4: Frequency shift of ±1ppm max after environmental conditions.
- Note 5: Frequency drift rate is calculated from the equation ppb/s=°C/s x ppb/°C
- Note 6: Discard the first 0.5°C interval of each heating and cooling cycle.

Compliance

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

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Packaging Details

- Pack Style: Cutt In tape, cut from a reel
  Pack Size: 100
- *Alternative packing option available*

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