

Description

- The IQXT-272-1 employs an analogue ASIC for the oscillator and a high order temperature compensation circuit in a 2.0 x 1.6 mm size package. The device can be placed in power-down mode through a single input pin.
- Model: IQXT-272-1
- Model Issue number: 1

Frequency Parameters

- Frequency: 26.0MHz
- 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: -40.00 to 85.00°C
- Ageing: $\pm 1\text{ppm}$ max per year @ 25°C
- Frequency Stability: TA varied over the operating temperature range, measurement referenced to frequency observed with $F_{\text{ref}} = (F_{\text{max}} + F_{\text{min}}) / 2$, $V_s = 1.8\text{V}$ and load = 10k Ω / 10pF (see note 1).
- Frequency Slope (minimum of 1 frequency reading every 2°C, over the operating temperature range - see note 1): 0.1ppm/°C max
- Static Temperature Hysteresis (frequency change after reciprocal temperature ramped over the operating range - frequency measured before and after @ 25°C): $\pm 0.6\text{ppm}$ max
- Frequency Drift on Power-up:
 - Drift Period: 0.03 to 1.0 seconds: 500ppb/s max
 - Drift Period: 1.0 to 2.0 seconds: 40ppb/s max
 - Drift Period: 2.0 to 3.0 seconds: 2.5ppb/s max
- Supply Voltage Variation ($\pm 5\%$ change @ 25°C): $\pm 0.1\text{ppm}$ max
- Load Variation ($\pm 10\%$ change @ 25°C - see note 2): $\pm 0.2\text{ppm}$ max
- Reflow Variation (two consecutive reflows as per the profile shown, after 1hr relaxation @ 25°C): $\pm 1\text{ppm}$ 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.

Electrical Parameters

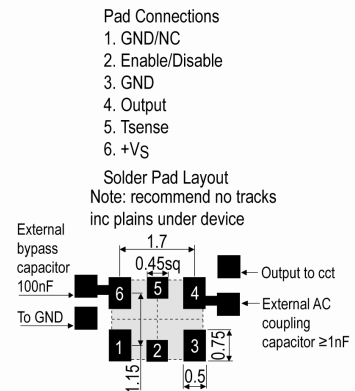
- Supply Voltage: 1.8V $\pm 5\%$
- Current Draw: 2.00mA
- Supply Current (@ V_s max - see note 2): 2mA max
- Temperature Sensor Output Voltage (@ 25°C): 0.85 to 1.05V
- Temperature Sensor Slope: -8.9 to -8.5 mV/°C
- Temperature Sensor Output Impedance (@ 25°C): 1.5k Ω max

Output Details

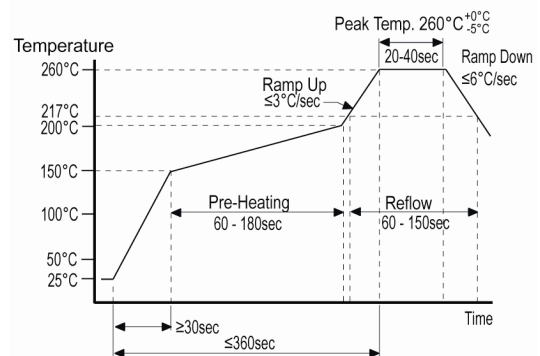
- Output Compatibility: Clipped Sine
- Drive Capability: 10k Ω / 10pF $\pm 10\%$
- Output Voltage Level (@ V_s min - see note 2): 0.8V pk-pk min
- Output: DC coupled (see note 3)
- Note 2: Specified for the load stated in the Output Details section @ 25°C.
- Note 3: External AC-coupling capacitor required, 1nF or greater recommended.



Outline (mm)



Pb-Free Reflow



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Output Control

- Power-down:
Logic '1' (80%Vs min) to pad 1 enables oscillator output.
Logic '0' (20%Vs max) to pad 1 disables oscillator output.
- Standby Current: 2µA max (<0.01µA typ)
- Start-up Time (amplitude within 90% of specified output level):
0.5ms max
- Start-up Time (frequency within ±0.5ppm of steady state): 2ms max

Noise Parameters

- Phase Noise @ 25°C (typ):
-62dBc/Hz @ 1Hz
-90dBc/Hz @ 10Hz
-112dBc/Hz @ 100Hz
-132dBc/Hz @ 1kHz
-145dBc/Hz @ 10kHz
-147dBc/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.
- Thermal Cycling: JESD22 Method JA-104C: 1000 temperature cycles, where each cycle consists of 25mins soak time @ -40°C followed by 25mins soak time @ 85°C, with 60secs maximum transition time between temperatures, air to air transition.
- Moisture Resistance: MIL-STD-202 M106g: 1000hrs @ 85°C, 85%RH, biased.
- 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: *Cutt* In tape, cut from a reel
Pack Size: 100
- *Alternative packing option available*

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