

ISSUE 1; September 2020

Description

- The IQXC-140 is a low profile SMD AT-cut quartz crystal with a thermally coupled temperature sensor in a ceramic package with a 2.0 x 1.6mm foot print.
- Applications:
 - Automotive
 - Communications
 - GPS
 - Mobile phones
 - Wi-Fi
- Features:
 - Low ageing
 - Excellent shock and vibration performance
 - Thermally coupled temperature sensor

Frequency Parameters

- Frequency: 19.2MHz to 52.0MHz
- Frequency Tolerance: $\pm 10.00\text{ppm}$ to $\pm 50.00\text{ppm}$
- Tolerance Condition: @ 25°C $\pm 2^\circ\text{C}$
- Frequency Stability: $\pm 12.00\text{ppm}$ to $\pm 50.00\text{ppm}$
- Ageing: $\pm 2\text{ppm}$ max per year @ 25°C
- Reflow shift (Frequency shift after reflow with 4 hours settling at 25°C): $\pm 1\text{ppm}$ max
- Frequency stability over temperature referenced to frequency reading at 25°C and the specified load capacitance.
- Frequency perturbations (Peak-to-peak deviation from the frequency versus temperature curve fit 5th order. Minimum of 1 frequency reading every 3°C over operating temperature range): 0.5ppm max
- Pullability (load and frequency dependant): 0.5ppm/pF min

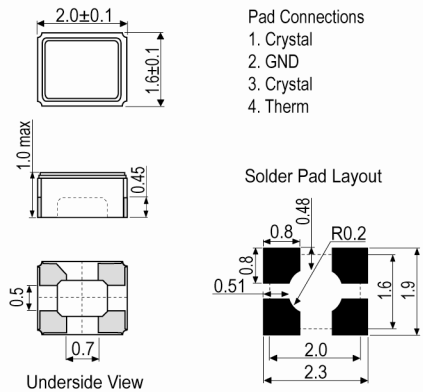
Electrical Parameters

- Load Capacitance (CL): 5.0pF to 32.0pF
- Shunt Capacitance (C0): 0.5 to 3pF
- Drive Level: 100µW max
- Frequency vs Temperature Curve Fit Coefficients:
 - Inflection temperature (T0) (Reference temperature for calculation of 3rd order coefficients) 28 to 32°C
 - First/second/third order coefficients: typical values using third order curve fitting referenced to T0. Calculated over the operating temperature range: TBD
- Temperature Sensor Characteristics:
 - Resistance (Ro) Resistance at 25°C (To): 10 to 100kΩ
 - Resistance tolerance: $\pm 1\%$ max
 - Beta constant: (25 - 50°C) 10kΩ, calculated between two specified temperatures points R and Ro. T and To are absolute temperature (K). $\text{Beta} = \ln(R/R_o) / (1/T - 1/To)$: 3380K
 - Beta constant (25 - 50°C) 100kΩ, calculated between two specified temperatures points R and Ro. T and To are absolute temperature (K). $\text{Beta} = \ln(R/R_o) / (1/T - 1/To)$: 4250K
 - Beta Tolerance: $\pm 1\%$ max
- Thermistor size: 0201

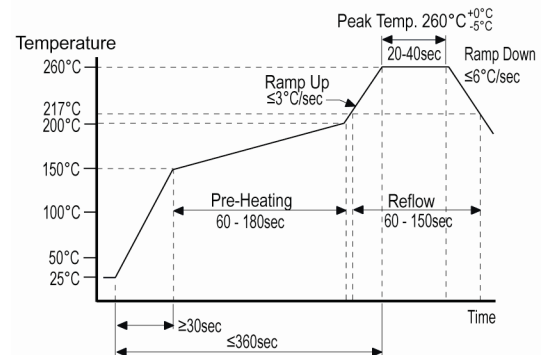
Operating Temperature Ranges

- -40 to 85°C

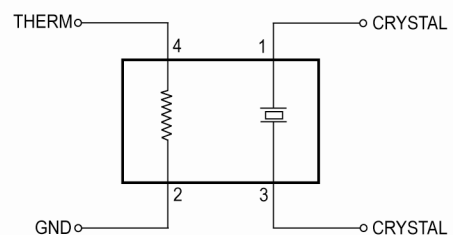
Outline (mm)



Pb-Free Reflow



Electrical Circuit



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Environmental Parameters

- g Sensitivity Gamma vector of all three axes from 30Hz to 1500Hz at 10RMS: 2ppb/g max
- Insulation Resistance (100V ±15V at 25°C): 500MΩ min
- Shock: Half sine-wave acceleration of 3000G peak amplitude. Duration: 0.3ms, Velocity: 12.3ft/s [MIL-STD-202 M213]
- Moisture resistance: 1000 hours at 85°C, 85% Relative Humidity. Biased. [MIL-STD-202 M106G]
- Temperature cycling: 1000 temperature cycles, where each cycle consists of a 25 minute soak time at -45°C followed by a 25 minute soak time at 85°C, with a 60 second maximum transition time between temperatures. Air to air transition. [JESD22 METHOD JA-104C]
- Vibration 5g for 20 minutes. 12 cycles in each of 3 orientations. Test from 10-2000 Hz [JESD22-B103-B]
- Storage temperature: -40 to 105°C

Manufacturing Details

- Able to withstand aqueous washing process.

Ordering Information

- *minimum information required
 Frequency*
 Model*
 Frequency Tolerance*
 Frequency Stability*
 Operating Temperature Range*
 Load Capacitance*

Compliance

- RoHS Status (2015/863/EU) Compliant
- REACH Status Non-Compliant
- MSL Rating (JDEC-STD-033): Not Applicable

Packaging Details

- Pack Style: Reel Tape & Reel in accordance with
 Pack Size: 3,000 EIA-481-D

Electrical Specification - maximum limiting values

Frequency Min	Frequency Max	Temperature Range	Stability (Min)	Over Tone Order	ESR
		°C	ppm		Ω
19.2MHz	52.0MHz	-40 to 85	±12	Fundamental	85

*Stability Maximum values ±50ppm

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