

**Description**

- The IQXT-270-4 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-270-4
- Model Issue number 1

**Frequency Parameters**

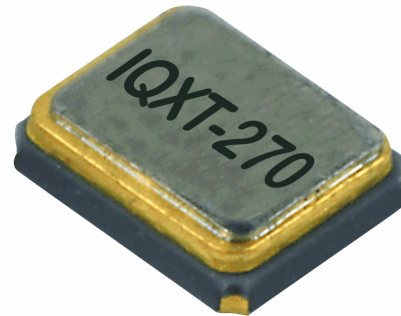
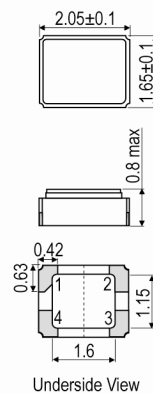
- Frequency 19.20MHz
- Frequency Tolerance  $\pm 1.00\text{ppm}$
- Frequency Stability  $\pm 0.50\text{ppm}$
- Operating Temperature Range  $-30.00$  to  $85.00^\circ\text{C}$
- Ageing  $\pm 0.7\text{ppm}$  max per year at  $25^\circ\text{C}$
- Frequency Tolerance: Offset from nominal frequency measured at  $25^\circ\text{C} \pm 2^\circ\text{C}$ .
- Reflow Shift (two consecutive reflows as per profile after 1 hour relaxation at  $25^\circ\text{C}$ ):  $\pm 1\text{ppm}$  max
- Frequency Stability: Referenced to the midpoint between minimum and maximum frequency value over the specified temperature range (note 1).
- Frequency Slope (temperature range  $-10$  to  $60^\circ\text{C}$ . Tested to a minimum of one frequency reading every  $2^\circ\text{C}$  - note 1):  $0.05\text{ppm}/^\circ\text{C}$  max
- Frequency Drift (calculated from frequency slope with temperature varied at a maximum of  $1.92^\circ\text{C}/\text{min}$  ( $0.032^\circ\text{C}/\text{s}$ ) over  $-10^\circ\text{C}$  to  $60^\circ\text{C}$ , Note 5):  $1.6\text{ppb}/\text{sec}$  max
- Frequency Slope (temperature range  $-30^\circ\text{C}$  to  $85^\circ\text{C}$ . Tested to a minimum of 1 frequency reading every  $2^\circ\text{C}$  Note 1):  $0.1\text{ppm}/^\circ\text{C}$  max
- Frequency Drift (calculated from frequency slope with temperature varied at a maximum of  $0.96^\circ\text{C}/\text{min}$  ( $0.016^\circ\text{C}/\text{s}$ ) over  $-30^\circ\text{C}$  to  $85^\circ\text{C}$ , Note 5):  $1.6\text{ppb}/\text{sec}$  max
- Small thermal cycle frequency slope (measured at  $0.5^\circ\text{C}$  intervals over any  $5^\circ\text{C}$  heating and  $5^\circ\text{C}$  cooling cycle, at a minimum rate of  $1^\circ\text{C}/\text{minute}$  within the operating temperature range, Note 6):  $50\text{ppb}/^\circ\text{C}$  max
- Small thermal cycle hysteresis (difference in frequency measurements over any  $5^\circ\text{C}$  heating and  $5^\circ\text{C}$  cooling cycle, at a minimum rate of  $1^\circ\text{C}/\text{minute}$  within the operating temperature range):  $50\text{ppb}$  pk-pk max
- Supply Voltage Variation ( $\pm 5\%$  change at  $25^\circ\text{C}$ ):  $\pm 0.1\text{ppm}$  max
- Load Variation ( $\pm 10\%$  change at  $25^\circ\text{C}$  - note 2):  $\pm 0.2\text{ppm}$  max

**Electrical Parameters**

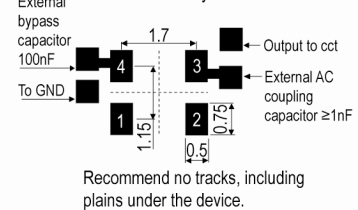
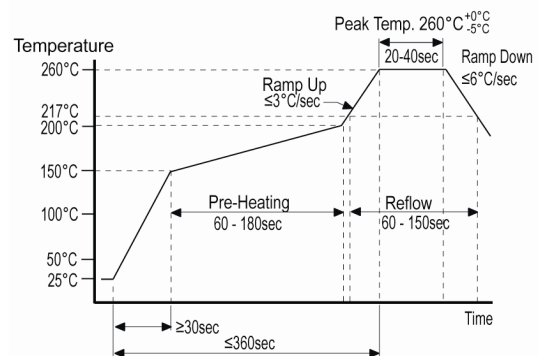
- Supply Voltage  $1.8\text{V} \pm 5\%$
- Current Draw  $1.50\text{mA}$
- Supply Current (at  $V_s$  max - note 2):  $1.5\text{mA}$  max

**Output Details**

- Output Compatibility Clipped Sine
- Drive Capability  $10\text{k}\Omega/10\text{pF} \pm 10\%$
- Output Voltage Level (at  $V_s$  min - note 2):  $0.8\text{V}$  pk-pk min
- Output: DC coupled (note 3)


**Outline (mm)**

**Pad Connections**

1. GND / N/C
2. GND
3. Output
4. +Vs

**Solder Pad Layout**

**Pb-Free Reflow**

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 Web: [www.iqdfrequencyproducts.com](http://www.iqdfrequencyproducts.com)

**Noise Parameters**

- Phase Noise at 25°C (typical):
  - 64dBc/Hz @ 1Hz
  - 93dBc/Hz @ 10Hz
  - 118dBc/Hz @ 100Hz
  - 137dBc/Hz @ 1kHz
  - 149dBc/Hz @ 10kHz
  - 151dBc/Hz @ 100kHz
- Phase Noise at 25°C (max):
  - 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  $\pm 1$ ppm max after environmental conditions.
- Note 5: Frequency drift rate is calculated from the equation  $\text{ppb/s} = \text{°C/s} \times \text{ppb/°C}$
- 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 (JEDEC-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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- Экспресс доставка в любую точку России;
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- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
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- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

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