

ISSUE 1; January 2015 - RoHS 2011/65/EU

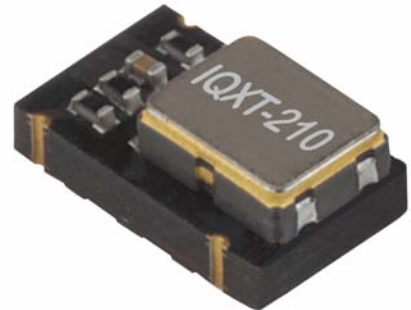
**Description**

- Temperature compensated crystal oscillator available with or without voltage control

Please note: This document is intended to illustrate the general capability and versatility of IQD's design. For specific enquiries please contact one of IQD's Sales Offices where we can tailor a unique specification to meet your needs.

Standard model options:-

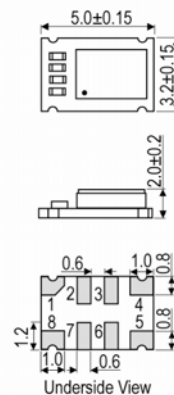
- IQXT-210-1 HCMOS, no pulling
- IQXT-210-2 Clipped sine, no pulling
- IQXT-210-3 HCMOS, with pulling
- IQXT-210-4 Clipped sine, with pulling


**Frequency Parameters**

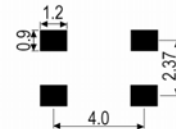
- Frequency: 10.0MHz to 50.0MHz
- Frequency Tolerance:  $\pm 0.50\text{ppm}$
- Tolerance Condition: @ 25°C, 3.3V & VC=1.5V/NC
- Frequency Stability:  $\pm 0.05\text{ppm}$  to  $\pm 1.00\text{ppm}$
- Ageing:  $\pm 0.02\text{ppm}$  max per day,  $\pm 1\text{ppm}$  max per year
- Frequency Tolerance (measurement referenced to frequency observed with TA=25°C, Vs=3.3V, VC=1.5V/NC and within 30 days after ex-works)
- Frequency Stability: TA varied across the operating temperature range, measurement referenced to frequency observed with TA=25°C, Vs=3.3V, VC=1.5V/NC, load=15pF/10kΩ/10pF and temperature variable speed less than 2°C per minute.
- Ageing: TA=25°C, Vs=3.3V, VC=1.5V/NC and after 1hr of operation.
- Supply Voltage Variation (measurement referenced to frequency observed with TA=25°C, Vs varied from 3.13V to 3.47V, VC=1.5V/NC and load=15pF/10kΩ/10pF):  $\pm 0.1\text{ppm}$  max
- Load Variation (5% load change measurement referenced to frequency observed with TA=25°C, Vs=3.3V, VC=1.5V/NC and load=15pF/10kΩ/10pF):  $\pm 0.1\text{ppm}$  max
- Short Term Stability (@ 25°C after 10mins power on): 5E-10/s typ @ 10MHz
- Developed Frequencies: 10.0MHz, 12.80MHz, 13.0MHz, 16.320MHz, 16.3840MHz, 19.20MHz, 19.440MHz, 20.0MHz, 25.0MHz, 26.0MHz, 30.720MHz, 38.880MHz, 40.0MHz

**Electrical Parameters**

- Supply Voltage: 3.3V  $\pm 5\%$
- Current: TA=25°C, Vs=3.3V, VC=1.5V/NC and load=15pF/10kΩ/10pF

**Outline (mm)**


- Pad Connections
- Voltage Control or N/C
  - N/C
  - N/C
  - GND
  - Output
  - N/C
  - N/C
  - +Vs

**Solder Pad Layout**

**Sales Office Contact Details:**

UK: +44 (0)1460 270200

Germany: +49 (0) 30 408 192 300

France: +33 (0)5 34 50 91 18

USA: +1 408.273.4530

 Email: [info@iqdfrequencyproducts.com](mailto:info@iqdfrequencyproducts.com)

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



**Frequency Adjustment**

- Pulling  $\pm 10\text{ppm}$  to  $\pm 15\text{ppm}$
- Control Voltage  $1.5\text{V} \pm 1.5\text{V}$
- Linearity:  $\pm 10\%$  max
- Slope: Positive
- Input Impedance:  $100\text{k}\Omega$  min
- Note: 50MHz device has a reduced pulling range of  $\pm 5\text{ppm}$  to  $\pm 10\text{ppm}$  (please contact the IQD sales office to discuss your requirements)

**Operating Temperature Ranges**

- -20 to  $70^\circ\text{C}$
- -30 to  $75^\circ\text{C}$
- -40 to  $85^\circ\text{C}$

**Output Details**

- Output Compatibility HCMOS/Clipped Sine
- Duty Cycle (HCMOS): 45/55%
- Rise/Fall Time (HCMOS): 8ns max
- Output Load (HCMOS): 15pF
- Output Load (Clipped Sine):  $10\text{k}\Omega//10\text{pF}$
- Output Levels (HCMOS):  
Low (@  $V_s=3.3\text{V}$ , load=15pF): 0.4V max  
High (@  $V_s=3.3\text{V}$ , load=15pF): 2.4V min
- Output Level (Clipped Sine): 0.8V pk-pk min

**Noise Parameters**

- Phase Noise (@ 10MHz typ):  
-90dBc/Hz @ 10Hz  
-115dBc/Hz @ 100Hz  
-135dBc/Hz @ 1kHz  
-145dBc/Hz @ 10kHz  
-148dBc/Hz @ 100kHz  
-150dBc/Hz @ 1MHz

**Environmental Parameters**

- Storage Temperature Range:  $-55$  to  $105^\circ\text{C}$
- ESD Level:  
HBM, Class 2: 2000V to 4000V, JEDEC JS-001-2010  
Machine Model, Class B: 200V to 400V, JEDEC JS-001-2010
- Shock: IEC 60068-2-27, Test Ea: 100G acceleration for 6ms, half sine wave, in 3 mutually perpendicular planes
- Vibration: IEC 60068-2-6, Test Fc: 10Hz-2000Hz, 0.75mm amplitude, 10G acceleration, 30mins per cycle, in 3 mutually perpendicular planes, test duration 2hrs

**Manufacturing Details**

- Moisture Sensitivity Level: 2
- Maximum Reflow Temperature:  $260^\circ\text{C}$  (30secs max)

**Sales Office Contact Details:**

UK: +44 (0)1460 270200

France: +33 (0)5 34 50 91 18

Email: [info@iqdfrequencyproducts.com](mailto:info@iqdfrequencyproducts.com)

Germany: +49 (0) 30 408 192 300

USA: +1 408.273.4530

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

