

ISSUE 1; October 2021

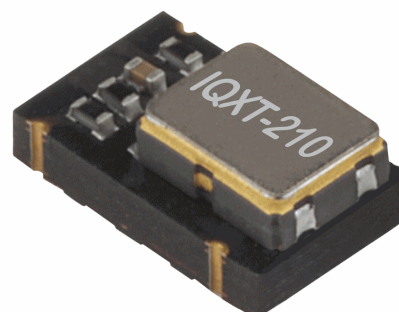
Description

- 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



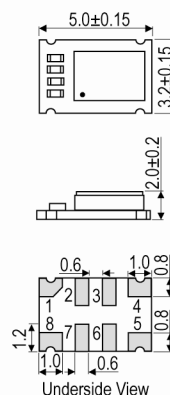
Frequency Parameters

- Frequency: 10.0MHz to 50.0MHz
- Frequency Tolerance: ± 0.50 ppm
- Tolerance Condition: @ 25°C, 3.3V & VC=1.5V/NC
- Frequency Stability: ± 0.05 ppm to ± 1.00 ppm
- Ageing: ± 0.02 ppm max per day, ± 1 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): ± 0.1 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): ± 0.1 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

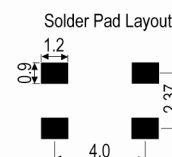
Electrical Parameters

- 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



Sales Office Contact Details:

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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 sale office to discuss your requirements)

Operating Temperature Ranges

- -20 to 70°C
- -30 to 75°C
- -40 to 85°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°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 sinewave, 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°C (30secs max)

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Ordering Information

- Frequency*
- Model Option*
- Output Type*
- Frequency Stability (over operating temperature range)*
- Operating Temperature Range*
- Supply Voltage
- Pulling*
- (*minimum required)
- Example
- 10.0MHz IQXT-210-3
- HCMOS ±0.14ppm -40 to 85C 3.3V ±10ppm to ±15ppm
- Note: not all stability/temperature combinations are available for all frequencies (please contact the IQD sales office to discuss your specific requirements)

Compliance

- RoHS Status (2015/863/EU) Compliant
- REACH Status Compliant
- MSL Rating (JDEC-STD-033): 2

Packaging Details

- Pack Style: Reel Tape & reel in accordance with EIA-481-D
- Pack Size: 1,000

Electrical Specification - maximum limiting values 3.3V ±5%

Frequency Min	Frequency Max	Temperature Range	Stability (Min)	Current Draw	Rise and Fall Time	Duty Cycle
		°C	ppm	mA	ns	%
10.0MHz	50.0MHz	-20 to 70	±0.05	10	-	-
		-30 to 75	±0.05	10	-	-
		-40 to 85	±0.14	10	-	-

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