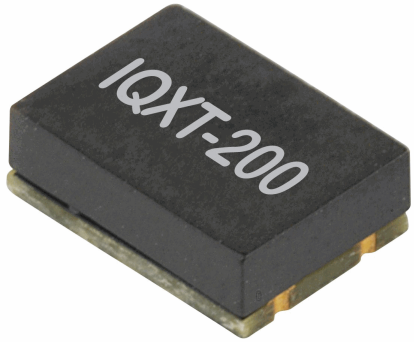
ISSUE 2; April 2016

Description

- Temperature compensated crystal oscillator available with or without voltage control in 8-pad or 10-pad package options. 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.

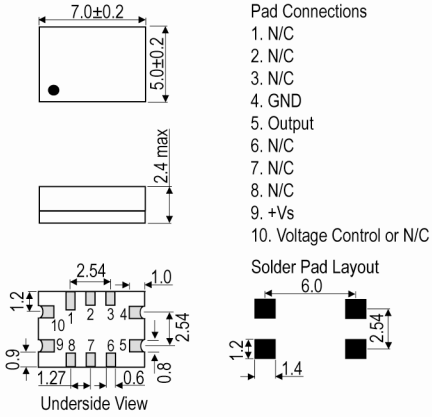
  Standard model options:-
  IQXT-200-1 HCMOS, no pulling
  IQXT-200-2 Clipped sine, no pulling
  IQXT-200-3 HCMOS, with pulling
  IQXT-200-4 Clipped sine, with pulling
- -A 10 pad version
- -B 8 pad version



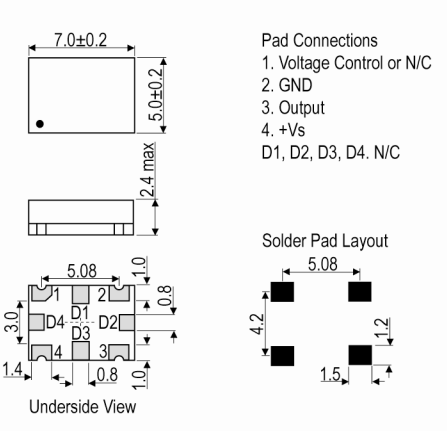
Frequency Parameters

- Frequency 10.0MHz to 50.0MHz
- Frequency Tolerance ±0.50ppm
- Tolerance Condition @ 25°C, 3.3V & VC=1.65V/NC
- Frequency Stability ±0.28ppm to ±2.00ppm
- Ageing ±0.02ppm max per day, ±1.0ppm max per year
- Frequency Tolerance (measurement referenced to frequency observed with TA=25°C, Vs=3.3V, VC=1.65V/NC and within 30 days after ex-works): ±0.5ppm
- Frequency Stability: TA varied across the operating temperature range, measurement referenced to frequency observed with TA=25°C, Vs=3.3V, VC=1.65V/NC, load=15pF/10kΩ//10pF and temperature variable speed less than 2°C per minute.
- Ageing: TA=25°C, Vs=3.3V, VC=1.65V/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=1.65V/NC and load=15pF/10kΩ//10pF): ±0.1ppm max
- Load Variation (5% load change measurement referenced to frequency observed with TA=25°C, Vs=3.3V, VC=1.65V/NC and load=15pF/10kΩ//10pF): ±0.1ppm max
- Short Term Stability (@ 25°C after 10mins power on): 5E-10/s typ @ 10.0MHz
- Developed Frequencies: 10.0MHz, 12.80MHz, 13.0MHz, 16.320MHz, 16.3840MHz, 19.20MHz, 19.440MHz, 20.0MHz, 25.0MHz, 26.0MHz, 30.720MHz, 38.88MHz, 40.0MHz

Outline (mm) -A = 10 pad version



Outline (mm) -B = 8 pad version



Electrical Parameters

- Supply Voltage 3.3V ±5%
- Current: TA=25°C, Vs=3.3V, VC=1.65V/NC and load=15pF/10kΩ//10pF

Frequency Adjustment

- Pulling ±10ppm to ±15ppm
- Control Voltage 1.65V ±1.65V
- Linearity: ±10% max
- Slope: Positive
- Input Impedance: 100kΩ min

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Operating Temperature Ranges

- -20 to 70°C
- -30 to 75°C
- -40 to 85°C

Output Details

- Output Compatability HCMOS/Clipped Sine
- Duty Cycle (HCMOS): 45/55%
- Rise/Fall Time (HCMOS): 8ns max
- Output Load (HCMOS): 15pF
- Output Levels (HCMOS):
  Low (@ Vs=3.3V, load=15pF): 0.4V max
  High (@ Vs=3.3V, load=15pF): 2.4V min
- Output Load (Clipped Sine): 10kΩ//10pF
- Output Levels (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, 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)

Ordering Information

- Frequency*
  Model Option*
  Pad Variant*
  Output Type*
  Frequency Stability (over operating temperature range)*
  Operating Temperature Range*
  Supply Voltage
  Pulling*
  (*minimum required)
- Pad Variants:
  -A = 10 pad
  -B = 8 pad
- Example
  10.0MHz IQXT-200-3-B
  HCMOS ±0.28ppm -20 to 70C 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)
- Note: 50MHz device has a reduced pulling range of ±5ppm to ±10ppm (please contact the IQD sale office to discuss your requirements)

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Compliance

- RoHS Status (2011/65/EU) Compliant
- REACh Status Compliant
- MSL Rating (JDEC-STD-033): 2

Packaging Details

- Pack Style: Bulk Loose in bulk pack
  Pack Size: 1
- Pack Style: Reel Tape & reel in accordance with EIA-481-D
  Pack Size: 600

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	±0.28	10	-	-
		-30 to 75	±0.28	10	-	-
		-40 to 85	±0.28	10	-	-

This document was correct at the time of printing; please contact your local sales office for the latest version.
Click to view latest version on our website.

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