

ISSUE 3; March 2020

Description

- Temperature compensated crystal oscillator available with or without voltage control function.

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.



Frequency Parameters

- Frequency: 10.0MHz to 40.0MHz
- Frequency Tolerance: ± 1.00 ppm
- Frequency Stability: ± 0.28 ppm
- Ageing: ± 0.02 ppm max/day, ± 1 ppm max/year
- Frequency Tolerance: Measurement referenced to frequency observed with $T_A=25^\circ\text{C}$, $V_s=3.3\text{V}$, $V_C=1.5\text{V}$ and load= $10\text{k}\Omega//10\text{pF}$, within 30 days after ex-works.
- Frequency Stability: T_A varied across the operating temperature range, measurement referenced to frequency observed with $f_{\text{ref}}=(f_{\text{max}}+f_{\text{min}})/2$, $V_s=3.3\text{V}$, $V_C=1.5\text{V}$, load= $10\text{k}\Omega//10\text{pF}$ and temperature variable speed less than $2^\circ\text{C}/\text{min}$.
- Ageing: V_s , V_C , T_A and load constant, measurement referenced to frequency observed with $T_A=25^\circ\text{C}$, $V_s=3.3\text{V}$, $V_C=1.5\text{V}$, load= $10\text{k}\Omega//10\text{pF}$ and after 1hr of operation.
- Supply Voltage Variation (measurement referenced to frequency observed $T_A=25^\circ\text{C}$, V_s varied from 3.13V to 3.47V, $V_C=1.5\text{V}$ and load= $10\text{k}\Omega//10\text{pF}$): ± 0.1 ppm max
- Load Variation (measurement referenced to frequency observed with $T_A=25^\circ\text{C}$, $V_s=3.3\text{V}$, $V_C=1.5\text{V}$ and load change= $10\text{k}\Omega//10\text{pF} \pm 5\%$): ± 0.1 ppm max
- Developed Frequencies: 10.0MHz, 12.80MHz, 16.320MHz, 16.3840MHz, 19.20MHz, 20.0MHz, 30.720MHz, 32.7680MHz, 38.880MHz, 40.0MHz.

Electrical Parameters

- Supply Voltage: $3.3\text{V} \pm 5\%$
- Current Consumption (@ $T_A=25^\circ\text{C}$, $V_s=3.3\text{V}$, $V_C=1.5\text{V}$ and load= $10\text{k}\Omega//10\text{pF}$): 5mA max

Frequency Adjustment

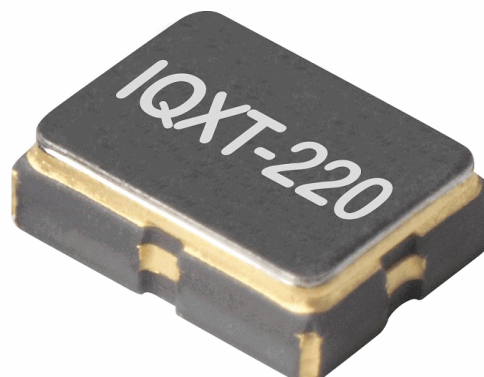
- For devices with Voltage Control:
 - Pulling: ± 10 ppm min to ± 15 ppm max
 - Control Voltage: $1.5\text{V} \pm 1.0\text{V}$
 - Input Impedance: $100\text{k}\Omega$ min
 - Linearity: 10% max
 - Slope: Positive

Operating Temperature Ranges

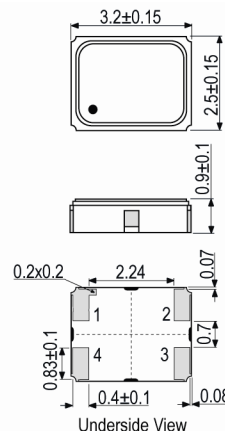
- 40 to 85°C

Output Details

- Output Compatibility: Clipped Sine
- Drive Capability: $10\text{k}\Omega//10\text{pF}$
- Output Voltage Level: 0.8V pk-pk min

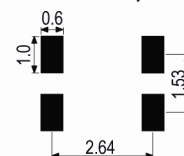


Outline (mm) None =



- Pad Connections
1. N/C or Voltage Control
 2. GND
 3. Output
 4. +Vs

Solder Pad Layout



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Noise Parameters

- Phase Noise @ 25°C (F=10.0MHz, typ):
 - 90dBc/Hz @ 10Hz
 - 120dBc/Hz @ 100Hz
 - 140dBc/Hz @ 1kHz
 - 145dBc/Hz @ 10kHz
 - 148dBc/Hz @ 100kHz

Environmental Parameters

- Operable Temperature Range: -40 to 85°C
- Storage Temperature Range: -55 to 105°C
- ESD Levels:
 - ESD Human Body Model (JEDEC JS-001-2010): Class 2: 2000V to 4000V
 - ESD Machine Model (JEDEC JESD22-A115C): Class B: 200V to 400V
- Shock: IEC 60068-2-27, Test Ea, Severity 50A: 100G acceleration for 6ms, half sine wave, 3 times in 3 mutually perpendicular planes.
- Vibration: IEC 60068-2-06, Test Fc: 10Hz-2000Hz, 0.75mm amplitude, 10G acceleration, 30mins per cycle, 3 times in 3 mutually perpendicular planes, test duration 2hrs.

Manufacturing Details

- Storage Conditions:
 - Temperature: -10 to 35°C
 - Humidity: 20 to 70% RH
- RoHS Reflow 260°C max for 30sec max

Compliance

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

Packaging Details

- Pack Style: Cutt Cut tape
 Pack Size: 100
- Pack Style: Reel Tape & reel in accordance with EIA-481-D
 Pack Size: 2,000

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	40.0MHz	-40 to 85	±0.28	5	-	-

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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