

ISSUE 2; May 2018

**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:  $\pm 1.00$ ppm
- Frequency Stability:  $\pm 0.28$ ppm
- Ageing:  $\pm 0.02$ ppm max/day,  $\pm 1$ 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= $10\text{k}\Omega//10\text{pF}$ ):  $\pm 0.1$ 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= $10\text{k}\Omega//10\text{pF} \pm 5\%$ ):  $\pm 0.1$ 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: 3.3V  $\pm 5\%$
- 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:  $\pm 10$ ppm min to  $\pm 15$ ppm max
  - Control Voltage: 1.5V  $\pm 1.0\text{V}$
  - Input Impedance:  $100\text{k}\Omega$  min
  - Linearity: 10% max
  - Slope: Positive

**Operating Temperature Ranges**

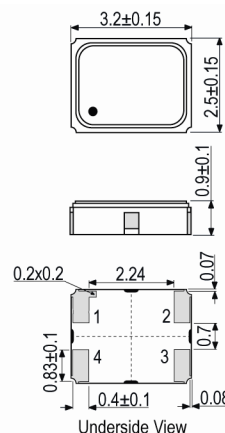
- 40 to  $85^\circ\text{C}$

**Output Details**

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

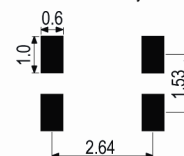


Outline (mm) None =



- 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: ANSI/ESDA/JEDEC JS-001-2010:  
Human Body Model, Class 2: 2000V to 4000V  
Machine Model, 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): Not Applicable

#### Packaging Details

- Pack Style: Cutt Cut tape  
Pack Size: 100
- 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	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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