



ISSUE 2; January 2015 - RoHS 2011/65/EU

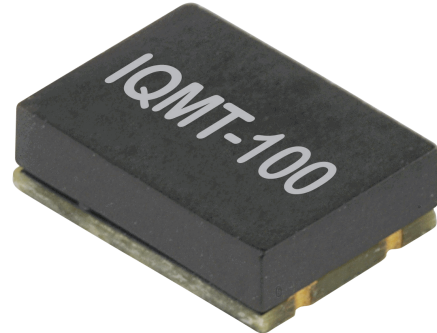
### Description

- Microcomputer Compensated Crystal Oscillator (MCXO), 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:

- IQMT-100-1 HCMOS output, without pulling
- IQMT-100-2 Clipped Sine output, without pulling
- IQMT-100-3 HCMOS output,  $\pm 10\text{ppm}$  to  $\pm 15\text{ppm}$  pulling
- IQMT-100-4 Clipped Sine output,  $\pm 10\text{ppm}$  to  $\pm 15\text{ppm}$  pulling

- A 10 pad version
- B 8 pad version



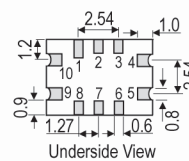
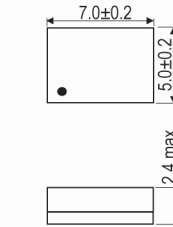
### Frequency Parameters

- Frequency: 10.0MHz to 50.0MHz
- Frequency Tolerance:  $\pm 0.50\text{ppm}$
- Tolerance Condition: @ 25°C, 3.3V & VC=1.65V
- Frequency Stability:  $\pm 0.05\text{ppm}$  to  $\pm 0.50\text{ppm}$
- Ageing:  $\pm 0.02\text{ppm}$  max per day,  $\pm 1.0\text{ppm}$  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)
- Frequency Stability: TA varied from over temperature, measurement referenced to frequency observed with TA=25°C, Vs=3.3V, VC=1.65V/NC, load=10k $\Omega$ //10pF/15pF 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=10k $\Omega$ //10pF/15pF):  $\pm 0.05\text{ppm}$  max
- Load Variation (5% load change measurement referenced to frequency observed with TA=25°C, Vs=3.3V, VC =1.65V/NC and load=10k $\Omega$ //10pF/15pF):  $\pm 0.1\text{ppm}$  max
- Short Term Stability (@ 25°C after 10mins power on): 2E-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, 38.88MHz, 40.0MHz

### Electrical Parameters

- Supply Voltage: 3.3V  $\pm 5\%$
- Current: TA=25°C, Vs=3.3V, VC=1.65V/NC and load=10k $\Omega$ //10pF/15pF

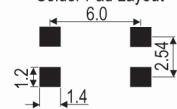
### Outline (mm) -A = 10 pad version



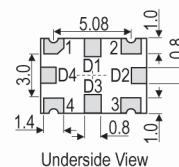
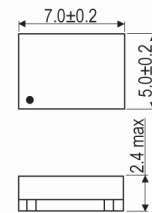
#### Pad Connections

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

#### Solder Pad Layout



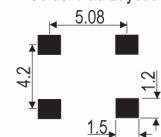
### Outline (mm) -B = 8 pad version



#### Pad Connections

- Voltage Control or N/C
  - GND
  - Output
  - +Vs
- D1, D2, D3, D4: N/C

#### Solder Pad Layout



### Sales Office Contact Details:

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**Frequency Adjustment**

- Pulling  $\pm 10\text{ppm}$  to  $\pm 15\text{ppm}$
- Control Voltage  $1.65\text{V} \pm 1.65\text{V}$
- Linearity:  $\pm 10\%$  max
- Slope: Positive
- Input Impedance:  $100\text{k}\Omega$  min
- Other specifications may be available, please contact one of IQD's Sales Offices for further details (e.g. different pulling or voltage control ranges, no pulling).

**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 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  $105^\circ\text{C}$
- 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, 6ms duration, sinewave, in each of 3 mutually perpendicular planes
- Vibration: IEC 60068-2-6, Test Fc: 10Hz-2000Hz, 0.75mm displacement, 10G acceleration, 1 cycle per 30mins, in each of 3 mutually perpendicular planes, test 2hrs

**Manufacturing Details**

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

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