

ISSUE 1; May 2016

### Description

- The IQXV-89 is a very high performance VCXO delivering ultra low close-in phase noise for RF/Analog applications and ultra low RMS phase jitter optimised for high speed serial data and digital applications.
- Applications:
  - Communications
  - Ethernet
  - SONET/SDH
  - DSL/ADSL
  - Basestation
  - WiFi
  - WiMAX/WLAN
- Features:
  - Ultra Low Jitter 0.05 to 0.3 ps integrated 12kHz to 20MHz
  - Excellent close-in phase noise performance
  - CMOS, LVPECL, or LVDS Output options
  - Wide frequency range

### Frequency Parameters

- Frequency 1.0MHz to 800.0MHz
- Frequency Stability  $\pm 10.00\text{ppm}$  to  $\pm 20.00\text{ppm}$
- Frequency Stability (including tolerance, temperature range, supply voltage variation, load variation and 15 years ageing at 25°C)

### Electrical Parameters

- Supply Voltage Options:
  - 3.3V  $\pm 10\%$
  - 2.5V  $\pm 5\%$
- Supply Current:
  - CMOS 1 to 40mA max
  - LVPECL 40 to 120mA max
  - LVDS 30 to 80mA max

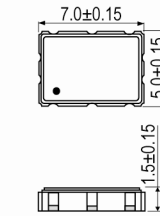
### Frequency Adjustment

- Pulling  $\pm 50\text{ppm}$  min APR
- Voltage Control:
  - Absolute Pull Range: (APR)  $\pm 50\text{ppm}$  min
  - Total Pull Range: (Frequency shift from minimum to maximum control voltage): 100 to 250ppm max
  - Control Voltage (Nominal 1.65V): 0 to 3.3V
  - Linearity (Control voltage 0.3 to 3V): 10% max
  - Slope: Positive only
  - Modulation BW (Control voltage 0.3 to 3V): 15kHz min
  - Input Impedance: 0.1 to 10M $\Omega$  min

### Operating Temperature Ranges

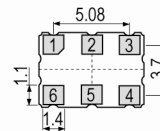
- -40 to 85°C

### Outline (mm) 1.5mm package height



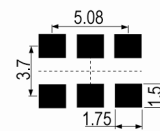
#### Pad Connections

1. Voltage Control
2. Enable/Disable or NC
3. GND
4. Output (CMOS)
5. Output (LVPECL/LVDS) or E/D or NC
6. +Vs

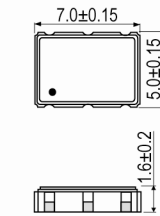


Underside View

#### Solder Pad Layout

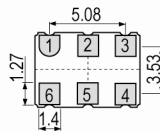


### Outline (mm) 1.6mm package height



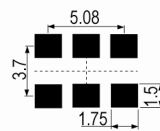
#### Pad Connections

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2. Enable/Disable or NC
3. GND
4. Output (CMOS)
5. Output (LVPECL/LVDS) or E/D or NC
6. +Vs

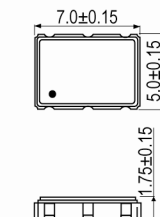


Underside View

#### Solder Pad Layout

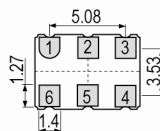


### Outline (mm) = 1.75mm package height



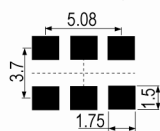
#### Pad Connections

1. Voltage Control
2. Enable/Disable or NC
3. GND
4. Output (CMOS)
5. Output (LVPECL/LVDS) or E/D or NC
6. +Vs



Underside View

#### Solder Pad Layout



### Sales Office Contact Details:

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Email: [info@iqdfrequencyproducts.com](mailto:info@iqdfrequencyproducts.com)  
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#### Output Details

- Output Compatibility CMOS/LVPECL/LVDS
- Output Characteristics (CMOS up to 200MHz):  
Load: 10pF  
Output Low (Vol): 10%Vs max  
Output High (Voh): 90%Vs min  
Duty Cycle @ 50% Vs: 45/55% max  
R/F Time (@ 90%/10%): 3ns max  
Phase Jitter (12kHz-20MHz): 0.05 to 0.3ps rms max
- Output Characteristics (LVPECL):  
Load: 50Ω  
Output Low (Vol): Vs-1.6V max  
Output High (Voh): Vs-1.03V min  
Duty Cycle (@ Vs-1.3V): 45/55% max  
R/F Time (@ 80%/20%): 0.6ns max  
Phase Jitter (12kHz-20MHz): 0.05 to 0.3ps rms max
- Output Characteristics (LVDS):  
Load: 100Ω  
Differential Output Voltage: 350mV  
Duty Cycle (@ 1.25V): 45/55% max  
R/F Time: 0.6ns max  
Phase Jitter (12kHz-20MHz): 0.05 to 0.3ps rms max

#### Output Control

- Enable/Disable:  
Logic '1' (70%Vs min) or no connection enables oscillator output  
Logic '0' (30%Vs max) disables oscillator output

#### Noise Parameters

- Phase Noise (typ at 77.76MHz):  
-73dBc/Hz @ 10Hz  
-100dBc/Hz @ 100Hz  
-128dBc/Hz @ 1kHz  
-137dBc/Hz @ 10kHz  
-148dBc/Hz @ 100kHz
- Phase Noise (typ at 122.88MHz):  
-67dBc/Hz @ 10Hz  
-98dBc/Hz @ 100Hz  
-127dBc/Hz @ 1kHz  
-147dBc/Hz @ 10kHz  
-150dBc/Hz @ 100kHz

#### Environmental Parameters

- Shock: MIL-STD-883, Method 2002
- Storage Temperature Range: -55 to 125°C
- Humidity: after 48 hours at 85 °C ±2 °C 85 % relative humidity non-condensing
- Thermal Shock: MIL-STD-883, Method 1011
- Vibration: MIL-STD-883, Method 2007

#### Manufacturing Details

- Maximum Process Temperature: 260°C (40secs max)

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### Ordering Information

- Frequency\*
- Model\*
- Output Type\*
- Pad 2 function\*
- Supply Voltage\*
- Frequency Stability\*
- Operating Temperature Range\*
- (\*minimum required)

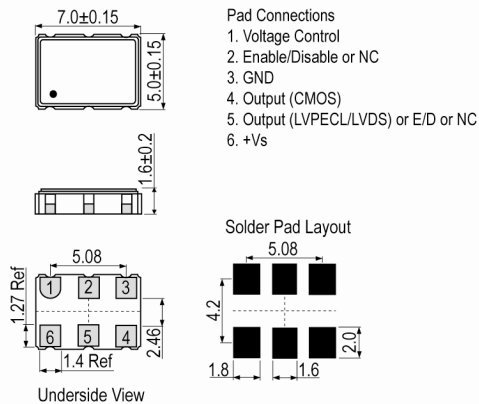
### Compliance

- RoHS Status (2011/65/EU)      Compliant
- REACH Status                      Compliant
- MSL Rating (JDEC-STD-033):    Not Applicable

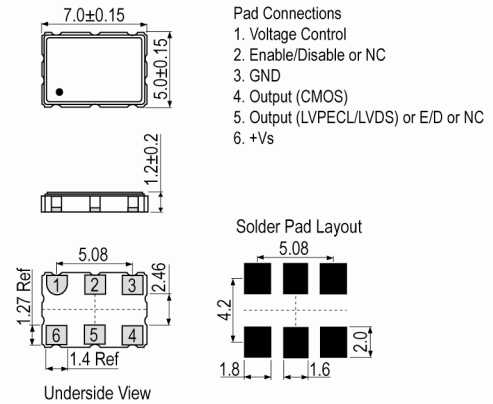
### Packaging Details

- Pack Style: Bulk                    Loose in bulk pack  
Pack Size: 1
- Pack Style: Reel                  Tape & reel in accordance with EIA-481-D  
Pack Size: 2,000

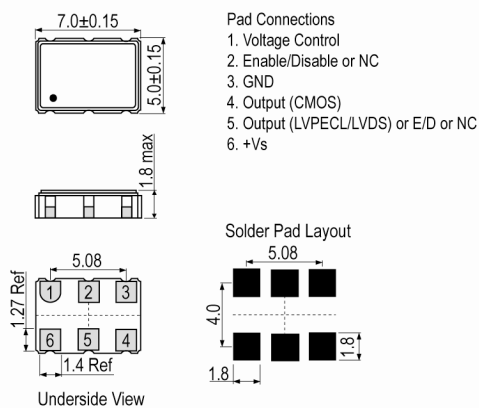
### Outline (mm) = 1.6mm package height



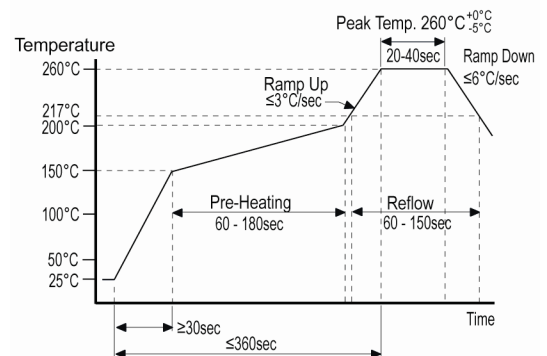
### Outline (mm) = 1.2mm package height



### Outline (mm) NONE = 1.8mm package height



### Pb-Free Reflow



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Electrical Specification - maximum limiting values

Frequency Min	Frequency Max	Temperature Range	Stability (Min)	Current Draw	Rise and Fall Time	Duty Cycle
		°C	ppm	mA	ns	%
1.0MHz	800.0MHz	-40 to 85	-	-	-	-

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