

ISSUE 1; February 2018

### Description

- The IQXT-311 delivers exceptional phase noise and jitter performance, and enhanced frequency versus temperature stability. The single chip oscillator with its analogue compensation circuit is capable of sub 0.1ppm frequency stability over an extended temperature range and RMS phase jitter down to 0.13ps for IEEE1588 and SyncE applications.
- FEATURES:**
  - RMS phase jitter down to 0.13ps.
  - Phase noise <  $-160\text{dBc/Hz}$  noise floor.
  - Voltage Control and T-sense options available.
- APPLICATIONS:**
  - Positioning
  - Test & Measurement
  - Telecommunications
  - Hi-Rel / Defence
- Standard Frequencies: 10.0MHz, 12.80MHz, 16.3840MHz, 19.20MHz, 19.440MHz, 20.0MHz, 25.0MHz, 26.0MHz, 30.720MHz, 38.880MHz and 40.0MHz.

### Frequency Parameters

- Frequency: 1.25MHz to 52.0MHz
- Frequency Tolerance:  $\pm 1.00\text{ppm}$
- Tolerance Condition: @ 25°C  $\pm 1^\circ\text{C}$
- Frequency Stability (referenced to  $(F_{\text{max}}+F_{\text{min}})/2$ ):  $\pm 0.05\text{ppm}$  to  $\pm 2.50\text{ppm}$   
Note: The best available stability depends on the nominal frequency and selected operating temperature range.
- Ageing:
  - $F \leq 26.0\text{MHz}$ :  $\pm 1\text{ppm max/yr}$ ,  $\pm 3\text{ppm max over 10yrs}$
  - $F > 26.0\text{MHz}$ :  $\pm 2\text{ppm max/yr}$ ,  $\pm 5\text{ppm max over 10yrs}$
- Root Allan Variance ( $F=20.0\text{MHz}$  @ 25°C,  $\tau=1\text{sec}$ ):  $5 \times 10^{-11}$  typ
- Acceleration Sensitivity (gamma vector of all 3 axes from 30 to 1500Hz): Typically 2ppb/G max
- Supply Voltage Variation ( $\pm 5\%$  change @ 25°C ref to frequency @ nominal  $V_s$ ):  $\pm 25\text{ppb typ}$
- Load Variation:
  - HCMOS & ACMOS ( $\pm 5\text{pF}$  change @ 25°C ref to frequency @ nominal load):  $\pm 50\text{ppb typ}$
  - Sine & Clipped Sine ( $\pm 10\%$  change @ 25°C ref to frequency @ nominal load):  $\pm 50\text{ppb typ}$
- Reflow Variation (after 1hr recovery @ 25°C):  $\pm 0.5\text{ppm max}$

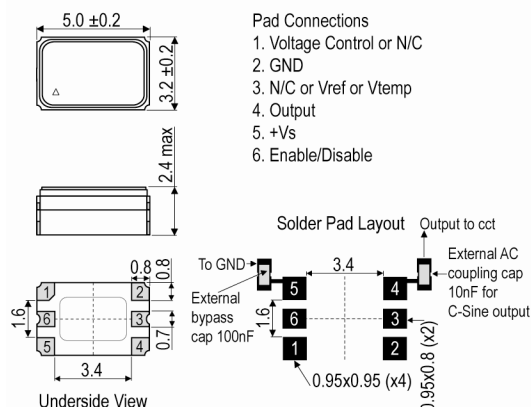
### Electrical Parameters

- Supply Voltage Range: 2.5V to 5.7V (Standard Voltages are 3.0, 3.3 & 5.0V)
- Supply Current:
  - HCMOS: 4mA typ
  - ACMOS: 8mA typ
  - Sine: 8mA typ
  - Clipped Sine: 2mA typ

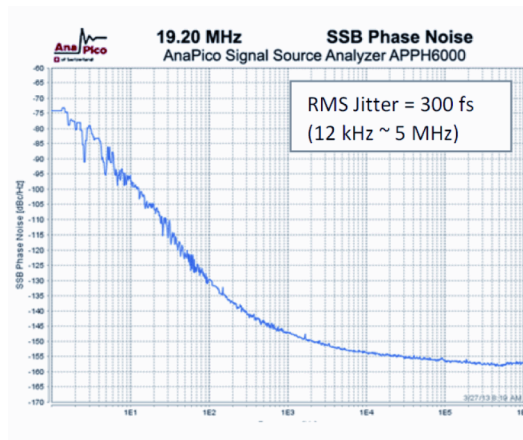
### Frequency Adjustment

- Control Voltage: 1.5V  $\pm 1.0\text{V}$
- Pulling:
  - $F \leq 26.0\text{MHz}$ :  $\pm 5\text{ppm min}$
  - $F > 26.0\text{MHz}$ :  $\pm 7\text{ppm min}$

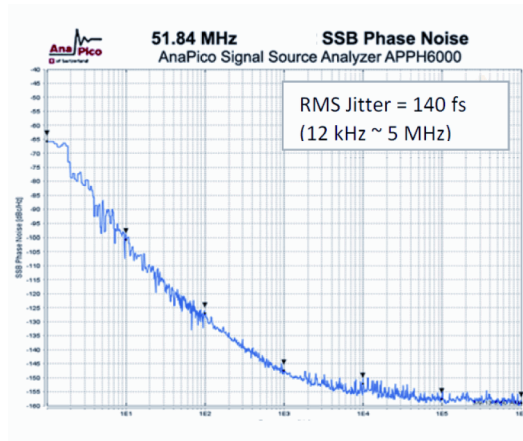
### Outline (mm)



### Example Phase Noise @ 19.20MHz



### Example Phase Noise @ 51.84MHz



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**Operating Temperature Ranges**

- -55 to 105°C

**Output Details**

- Output Compatibility HCMOS/Sine/Clipped Sine
- Output Compatibility: HCMOS, AC MOS, Sine or Clipped Sine.
- Start Up Time (amplitude within 90% of specified output level): 5ms to 15ms

**Output Control**

- Tri-State Mode:  
 Logic '0' (20%Vs max) to pad 6 disables the oscillator output, the output goes to a high impedance state.  
 Logic '1' (60%Vs min) or no connection to pad 6 enables the oscillator output.

**Compliance**

- RoHS Status (2011/65/EU) Compliant
- REACH Status Compliant
- MSL Rating (JDEC-STD-033): 3

**Packaging Details**

- Pack Style: Bulk Bulk pack  
 Pack Size: 100
- Pack Style: Reel Tape & reel in accordance with EIA-481-D  
 Pack Size: 1,000

**Electrical Specification - maximum limiting values**

Frequency Min	Frequency Max	Temperature Range	Stability	Current Draw	Rise and Fall Time	Duty Cycle
		°C	ppm	mA	ns	%
1.25MHz	52.0MHz	-55 to 105	-	-	-	-

*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.](#)

**Chipset Approval Table**

IQD Model	Ref No.	Frequency	Chipset Type	IC Supplier	
IQXT-311-1	E6282LF	20.0MHz	82P33731	IDT	
IQXT-311-2	E6579LF	20.0MHz	BCM85820	Broadcom	
IQXT-311-3	E6580LF	20.0MHz	BCM85820	Broadcom	

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