

ISSUE 1; June 2017

### Description

- An ultra stable, surface-mount Temperature Compensated Crystal Oscillator (TCXO) delivering exceptional phase noise and jitter performance and enhanced frequency versus temperature stability.
- FEATURES:**  
RMS phase jitter down to 0.13ps.  
Phase noise < -160dBc/Hz noise floor.  
Voltage Control and T-sense options available.
- APPLICATIONS:**  
Positioning  
Test & Measurement  
Telecommunications  
HiRel / 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:  $\pm 0.05\text{ppm}$  to  $\pm 2.50\text{ppm}$
- Frequency Stability: Measurement referenced to  $(F_{\text{max}} + F_{\text{min}})/2$ .  
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 > 26.0MHz:  $\pm 2\text{ppm}$  max/yr,  $\pm 5\text{ppm}$  max over 10yrs
- Root Allan Variance (F=20.0MHz @ 25°C, tau=1sec):  $5 \times 10^{-11}$  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 Vs):  $\pm 25\text{ppb}$  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

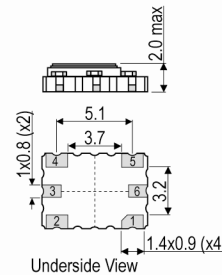
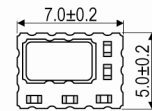
### Electrical Parameters

- 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

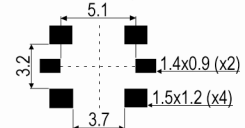
- Control Voltage: 1.5V  $\pm 1\text{V}$
- Pulling:  
F  $\leq 26.0\text{MHz}$ :  $\pm 5\text{ppm}$  min  
F > 26.0MHz:  $\pm 7\text{ppm}$  min

### Outline (mm)

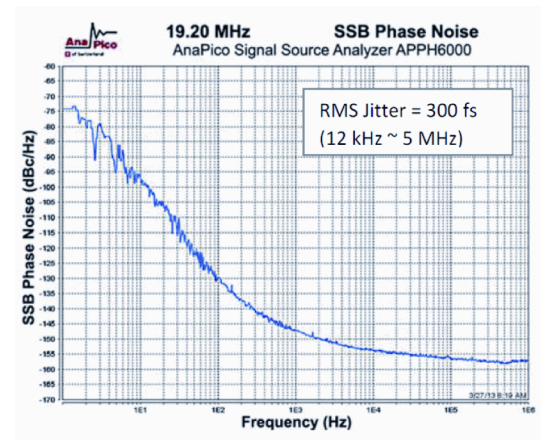


- Pad Connections
- Do not connect or Voltage Control
  - GND
  - Do not connect or Vref or Vtemp
  - Output
  - +Vs
  - Enable/Disable

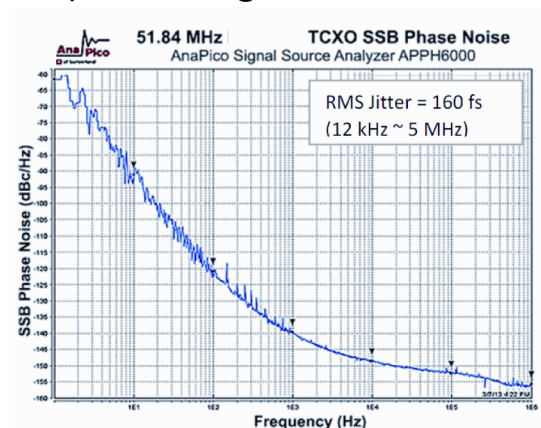
### Solder Pad Layout



### Example Phase Noise @ 19.20MHz



### Example Phase Noise @ 51.84MHz



### Sales Office Contact Details:

UK: +44 (0)1460 270200

USA: +1.760.318.2824

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

Web: [www.iqdfrequencyproducts.com](http://www.iqdfrequencyproducts.com)

#### Operating Temperature Ranges

- -20 to 70°C
- -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 (2015/863/EU) Compliant
- REACH Status Compliant
- MSL Rating (JDEC-STD-033): 1

#### Packaging Details

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

#### 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	%
1.25MHz	52.0MHz	-20 to 70	±0.05	-	-	-
		-55 to 105	±2.5	-	-	-

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.](#)

#### Chipset Approval Table

IQD Model	Ref No.	Frequency	Chipset Type	IC Supplier	
IQXT-314-1	E6127LF	12.80MHz	Si5348	SiLabs	
IQXT-314-2	E6213LF	40.0MHz	Si5328, AppNote 776	SiLabs	
IQXT-314-3	E6240LF	10.0MHz	82P33910 and multiple other 82P339xx	IDT	

#### Sales Office Contact Details:

UK: +44 (0)1460 270200

USA: +1.760.318.2824

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

Web: [www.iqdfrequencyproducts.com](http://www.iqdfrequencyproducts.com)