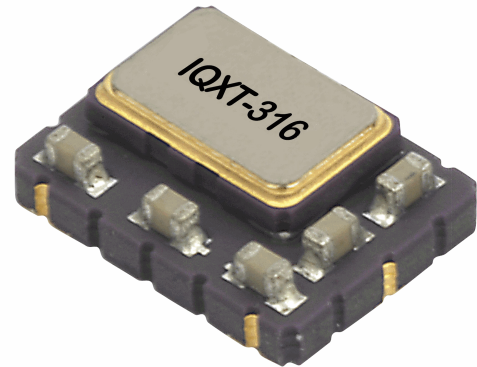


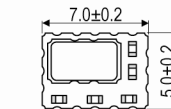
ISSUE 1; October 2017

### Description

- The IQXT-316 uses ASIC technology and is designed to meet the short and medium term stability requirements of packet network synchronisation for small cells. The oscillator has low jitter to meet network interface requirements (e.g. 10GE) and low phase noise to meet radio interface requirements of LTE-A (TS 36.104) and WCDMA (TS 25.104) transceivers. The IQXT-316 is the ideal choice for small cell synchronisation requirements.
- FEATURES:  
Patented 'varactor linearisation' removes the effects of tilt when using voltage control.  
HCMOS and Clipped Sinewave output options available.  
LTE phase noise compliant.
- APPLICATIONS:  
Small Cells -  
WCDMA  
LTE  
LTE-A
- Standard Frequencies: 19.20MHz, 24.5760MHz, 25.0MHz, 26.0MHz, 30.720MHz, 38.40MHz and 40.0MHz.

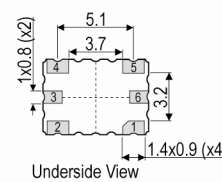


### Outline (mm)

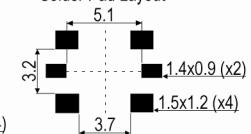


#### Pad Connections

1. Do not connect or Voltage Control
2. GND
3. Do not connect or Vref or Vtemp
4. Output
5. +Vs
6. Enable/Disable



#### Solder Pad Layout



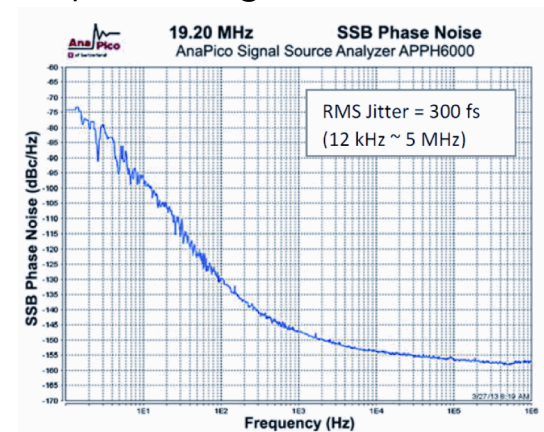
### Frequency Parameters

- Frequency: 19.2MHz to 40.0MHz
- Frequency Tolerance: ±1.00ppm
- Tolerance Condition: @ 25°C ±1°C
- In-service Short-term Frequency Stability (all effects for 24hrs): ±50ppb to ±250ppb
- Ageing:  
±20ppb max/day  
±200ppb max/month  
±1ppm max/year  
±3ppm max over 10yrs
- Frequency Slope  $\Delta F/\Delta T$  (in still air): ±20ppb/°C to ±100ppb/°C
- Acceleration Sensitivity (gamma vector of all 3 axes from 30 to 1500Hz): Typically 2ppb/G max
- Supply Voltage Variation (±2% change @ 25°C ref to frequency @ nominal Vs): ±10ppb typ
- Load Variation:  
HCMOS (±1pF change @ 25°C ref to frequency @ nominal load): ±10ppb typ  
Clipped Sine (±2% change @ 25°C ref to frequency @ nominal load): ±10ppb typ
- Reflow Variation (after 1hr recovery @ 25°C): ±0.5ppm max
- Temperature Rate of Change (maximum rate of change of temperature condition for guaranteed stability specifications): 1°C/min max

### Electrical Parameters

- Supply Voltage Range: 2.5V to 5.7V  
(Standard Voltages are 3.0 & 3.3; other values available on request)
- Supply Current:  
HCMOS: 4mA typ  
Clipped Sine: 2mA typ

### Example Phase Noise @ 19.20MHz



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### Frequency Adjustment

- Pulling ±5ppm to ±12ppm
- Control Voltage 1.5V ±1V
- Input Impedance 100kΩ min

### Operating Temperature Ranges

- -40 to 85°C

### Output Details

- Output Compatibility HCMOS/Clipped Sine
- HCMOS Output Waveform:  
 Output Voltage Level Low (VoL): 10%Vs max  
 Output Voltage Level High (VoH): 90%Vs min  
 Rise and Fall Times (measured @ 15pF): 8ns max  
 Duty Cycle (measured @ 50% level): 45/55% max  
 Output Load Capability: 15pF
- Clipped Sine Output Waveform:  
 Output Voltage Level (@ TA=25°C, Vs min and load=10kΩ//10pF): 0.8V pk-pk min  
 Output Load Capability: 10kΩ//10pF
- 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.

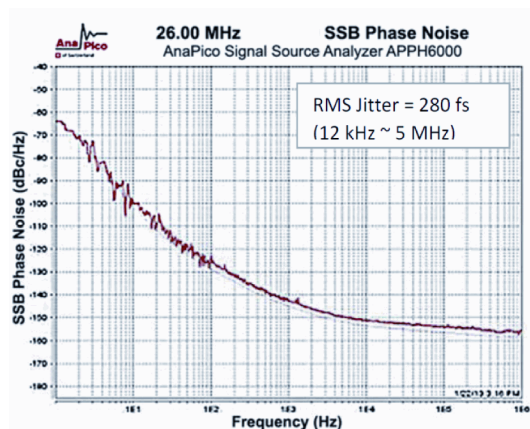
### Compliance

- 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

### Example Phase Noise @ 26.00MHz



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**Electrical Specification - maximum limiting values**

Frequency Min	Frequency Max	Temperature Range	Stability	Current Draw	Rise and Fall Time	Duty Cycle
		°C	ppb	mA	ns	%
19.2MHz	40.0MHz	-40 to 85	-	-	-	-

*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-316-1	E6288LF	19.20MHz	FSM9xxx, FSM99xx	Qualcomm	
IQXT-316-2	E6291LF	19.20MHz	BCM61750, BCM71765	Broadcom	
IQXT-316-3	E6392LF	30.720MHz	OCTEON Fusion CNF71xx	Cavium	
IQXT-316-4	E6399LF	25.0MHz	Transcede 2000, Transcede 3000, Transcede 4000	Intel	
IQXT-316-5	E6401LF	19.20MHz	Transcede 2000, Transcede 3000, Transcede 4000	Intel	
IQXT-316-6	E6403LF	40.0MHz	Transcede 2000, Transcede 3000, Transcede 4000	Intel	
IQXT-316-7	E6406LF	24.5760MHz	TCI6612, TCI6614, TCI6630	Texas Instruments	
IQXT-316-8	E6447LF	38.40MHz	FSM9xxx, FSM99xx	Qualcomm	
IQXT-316-9	E6520LF	30.720MHz	OCTEON Fusion CNF71xx	Cavium	
IQXT-316-10	E6245LF	30.720MHz	Cyclone IV FPGA	Intel	

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