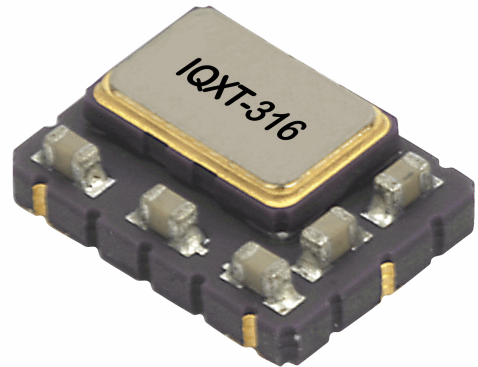


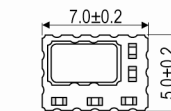
ISSUE 1; July 2024

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.

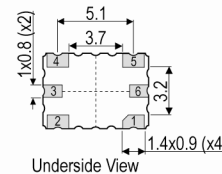


Outline (mm)



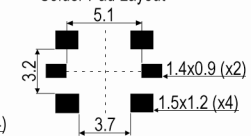
Pad Connections

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



Underside View

Solder Pad Layout



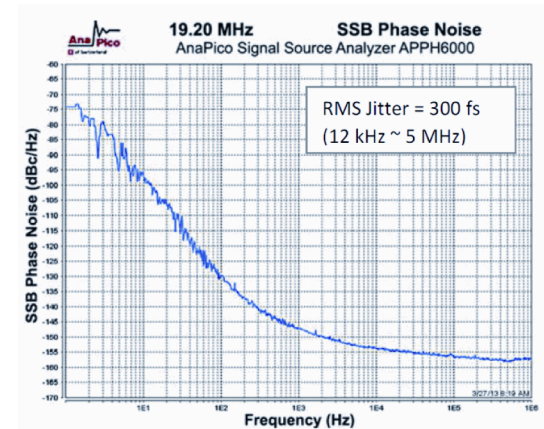
Frequency Parameters

- Frequency: 19.20MHz to 40.0MHz
- Frequency Tolerance: ± 1.00 ppm
- Tolerance Condition: @ 25°C $\pm 1^\circ\text{C}$
- In-service Short-term Frequency Stability (all effects for 24hrs): ± 50 ppb to ± 250 ppb
- Ageing:
 ± 20 ppb max/day
 ± 200 ppb max/month
 ± 1 ppm max/year
 ± 3 ppm max over 10yrs
- Frequency Slope $\Delta F/\Delta T$ (in still air): ± 20 ppb/ $^\circ\text{C}$ to ± 100 ppb/ $^\circ\text{C}$
- Acceleration Sensitivity (gamma vector of all 3 axes from 30 to 1500Hz): Typically 2ppb/G max
- Supply Voltage Variation ($\pm 2\%$ change @ 25°C ref to frequency @ nominal Vs): ± 10 ppb typ
- Load Variation:
HCMOS (± 1 pF change @ 25°C ref to frequency @ nominal load): ± 10 ppb typ
Clipped Sine ($\pm 2\%$ change @ 25°C ref to frequency @ nominal load): ± 10 ppb typ
- Reflow Variation (after 1hr recovery @ 25°C): ± 0.5 ppm max
- Temperature Rate of Change (maximum rate of change of temperature condition for guaranteed stability specifications): $1^\circ\text{C}/\text{min}$ 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 $\pm 5\text{ppm}$ to $\pm 12\text{ppm}$
- Control Voltage $1.5\text{V} \pm 1\text{V}$
- Input Impedance $100\text{k}\Omega$ min

Operating Temperature Ranges

- -40 to 85°C

Output Details

- Output Compatibility HCMOS/Clipped Sine
- HCMOS Output Waveform:
Output Voltage Level Low (VoL): $10\%V_s$ max
Output Voltage Level High (VoH): $90\%V_s$ 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 (@ $T_A=25^\circ\text{C}$, V_s min and load= $10\text{k}\Omega//10\text{pF}$): 0.8V pk-pk min
Output Load Capability: $10\text{k}\Omega//10\text{pF}$
- Start Up Time (amplitude within 90% of specified output level): 5ms to 15ms

Output Control

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

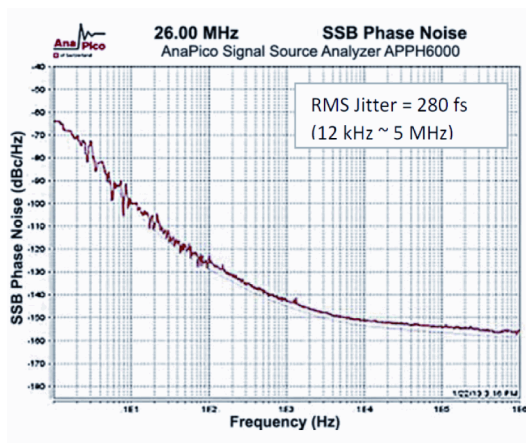
Compliance

- 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
Standard Pack Quantity: 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	-	-	-	-

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[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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