

Product Bulletin

# TRF3761 Frequency Synthesizer: High-Performance Single-Chip PLL and VCO for Wireless Infrastructure

### Single-Chip PLL/VCO

The TRF3761 high-performance frequency synthesizer from Texas Instruments (TI) provides an integer N PLL and VCO in a compact 6mm x 6mm package. Optimized for high-performance communication applications such as wireless-infrastructure, the highly integrated TRF3761 fulfills 3G requirements, saving system cost without sacrificing performance. Application areas that can benefit from the integration, flexibility and performance of the TRF3761 include RF transmitter and receiver local oscillator for:

- WCDMA/CDMA/GSM
- WiMAX
- Software-Defined Radio (SDR)
- Military Communications
- Satellite Communications
- Test and Measurement
- Instrumentation
- Radar

The flexible TRF3761 has low noise characteristics and a wide range of input and output frequencies. By integrating both the PLL and VCO in a small quad flatpack, the device cuts board space requirements in half, reduces power consumption and lowers the BOM. Additionally, it simplifies design and manufacturing, and enhances system reliability – all factors that contribute to lowering the

equipment and operating cost of wireless infrastructure.

### Performance and Flexibility

The TRF3761 provides output frequencies of up to 2.4 GHz, which can be divided-by-two or by four to enable output frequencies as low as 375 MHz. This range of frequencies is supported by specific frequency optimized versions of the TRF3761.

The device's extremely low phase noise of the  $-160$  dBc/Hz at 10 MHz offsite while operating at 1.9 GHz enables infrastructure equipment manufacturers to maintain signal integrity. This

### Key Features

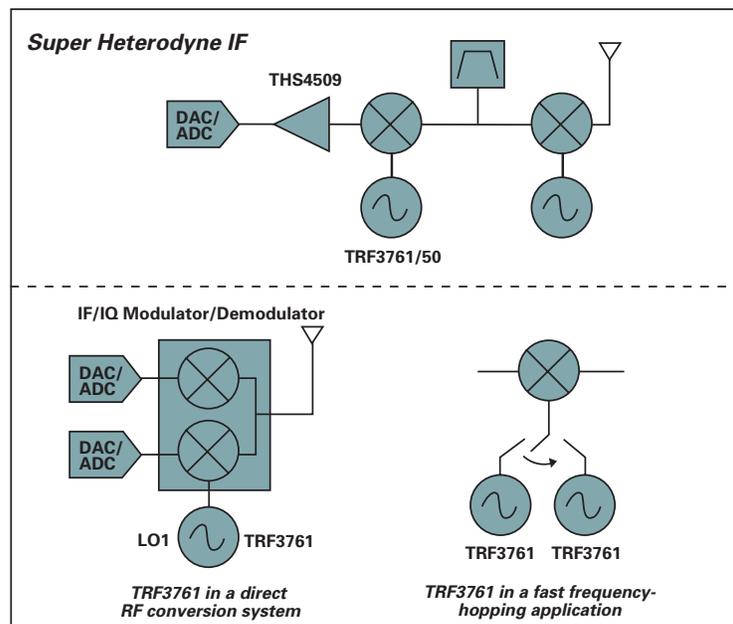
- Monolithic device with integrated PLL and VCO
- Small 6mm x 6mm form factor
- Input frequency range: 10 MHz to 104 MHz
- Output frequency range: 375 MHz to 2.4 GHz
- Low phase noise of  $-138$  dBc/Hz at 1.9 GHz with 600 kHz carrier offset and  $-160$  dBc/Hz with 10 MHz offset
- Flexible divide-by-2, by-4 outputs

represents as much as a 10x (10 dB) improvement over previously available products.

Designed using high-performance SiGe technology, the TRF3761 operates from a single 5 V power supply and features programmable charge pump current. It is controlled through a three-wire SPI and can be powered down through hardware or software when not in use.

### Development Support

The TRF3761 is backed by TI's worldwide design support and manufacturing capacity. An evaluation module is available to



give system designers a fast start in development. TI's in-depth support and manufacturing strength help speed time-to-market and volume ramp up for wireless infrastructure products.

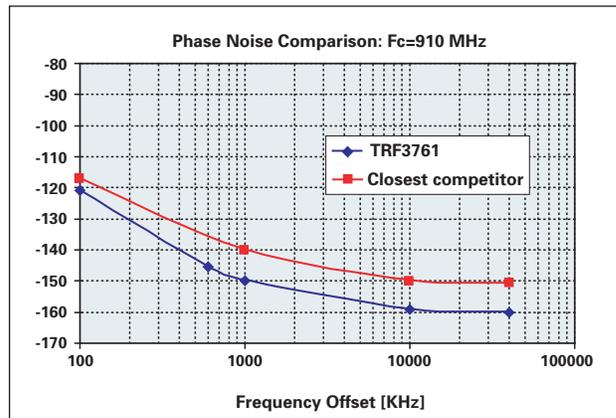
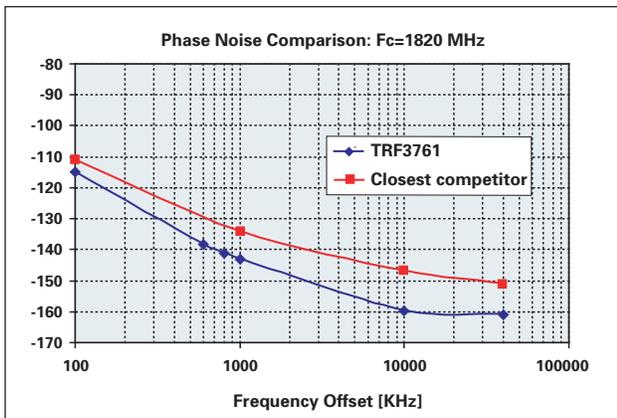
In addition to the TRF3761, TI offers a complete signal chain solution for wireless infrastructure applications. Available products

include high-speed data converters (ADS5546/45/00), up and down converters (GC1115/5016/5018), clocks and interfaces (CDCM7005), high-speed amplifiers (THS4509), power management (T2 power modules), digital signal processors (TMS320TCI6482), as well as ASIC and logic devices.

**For More Information**

To learn more about the TRF3761 frequency synthesizer, visit our Web site at [www.ti.com/trf3761](http://www.ti.com/trf3761)

Find out how TI can help you to cost-effectively enhance your next generation of wireless infrastructure products. Contact your local sales office or visit our Web site at [www.ti.com/wi](http://www.ti.com/wi)



The TRF3761 frequency synthesizer produces high-performance outputs with phase noise as much as 10 dB lower than competing solutions, maintaining signal integrity and simplifying system design.

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