

-----New product announcement, released for mass production-----

2-way communication via satellite with NXP's TFF1003HN

Design a Ku-band VSAT transmitter or transceiver that meets IESS-308

The TFF1003HN is a Ku-band RF PLL intended for low phase-noise Local Oscillator (LO) circuits in Ku-band VSAT transmitters and transceivers. Manufactured in a high-performance SiGeC process, it delivers extremely low phase noise at 13.05 GHz from a 10-MHz reference, and complies with the IESS-308 from Intelsat.

Features

- Phase noise compliant with IESS-308 (Intelsat)
- LO generator with VCO range from 12.8 to 13.05 GHz
- Input signal from 50 to 815 MHz
- Differential input and output
- Divider settings at 16, 32, 64, 128 or 256
- Lock-detect output
- SiGeC technology (120-GHz f_T process)
- HVQFN24 (SOT616-1) package

VSAT networks are commonly used to transmit narrowband data, such as point-of-sale transactions for credit cards, or to transmit broadband data that supports satellite Internet access to a remote location, VoIP, or video.

The network typically consists of a dish antenna, an outdoor unit, and an indoor unit. The outdoor unit is used for frequency translation between RF and IF, and usually includes a microwave-based uplink/downlink separator, a Low Noise Block (LNB) for receiving the downlink signals, and a Block Up Converter (BUC).

The TFF1003HN can be used to create the LO generator for a linear BUC (meaning the IF or RF conversion is done by mixing with an LO). In Ku-band applications, the LO frequency is either 13.05 GHz for standard range or 12.8 GHz for extended range.

To enable precise frequency and time multiplexing, the downlink signal provides an accurate frequency reference of 10 MHz. The indoor unit frequency multiplexes this with the uplink IF signal, and the LO signal in the BUC needs to be frequency locked to the reference.

The TFF1003HN is housed in a 24-pin HVQFN (SOT616-1) package. The pins have been assigned for optimal performance. Three voltage domains are used to separate the block on the IC, and two pins for each output (OUT-P) and OUT-N) have been reserved to match a typical layout using a linewidth of $Z=50 \Omega$ microstrip on a 20-mil RO4003 board (1.1 mm).

The ground pins have been placed next to the reference input and the output, and, to minimize crossings in the application, all the supply pins are on the same side of the IC.

Product information & datasheet

[http://www.nxp.com/#/pip/pip=\[pip=TFF1003HN_1\]|pp=\[t=pip,i=TFF1003HN_1\]](http://www.nxp.com/#/pip/pip=[pip=TFF1003HN_1]|pp=[t=pip,i=TFF1003HN_1])

Application information:

[http://www.nxp.com/#/aip/aip=\[aip=477,ip=BlockDiagram\]|pp=\[t=aip,i=477\]](http://www.nxp.com/#/aip/aip=[aip=477,ip=BlockDiagram]|pp=[t=aip,i=477])

Literature: http://www.nxp.com/acrobat_download2/literature/9397/75016804.pdf

RF Manual: www.nxp.com/rfmanual

-----New product announcement, released for mass production-----

Broadband QUBiC4 MMIC for all 400-2700 MHz applications

NXP Medium-Power MMIC BGA7024 for broadband applications

Produced in NXP's proven QUBiC4 Si BiCMOS process, these MMICs bring improved thermal performance and added-value features to all 400-2700 MHz applications – at a lower cost than GaAs versions.

Features

- ❑ ESD protection at all pins
- ❑ Single-supply operation (3.3 or 5 V)
- ❑ Integrated active biasing
- ❑ Fast shutdown
- ❑ Quiescent current adjustment
- ❑ Leaded package SOT-89

Applications

- ❑ Wireless infrastructure (base station, repeater)
- ❑ eMetering
- ❑ Broadband CPE (customer premises equipment)
- ❑ Satellite Master Antenna TV (SMATV)
- ❑ Industrial applications
- ❑ W-LAN / ISM / RFID
- ❑ MoCA

Manufactured in NXP's breakthrough QUBiC4 process, this MMIC delivers a comparable level of RF performance as their GaAs equivalents, but at a lower cost and with additional features, like thermal performance and ESD robustness. The QUBiC4 process makes it possible to support even more features, including active biasing, quiescent adjustment, VGA interfaces, and a power-saving shutdown mode.

To increase design flexibility, the MMIC supports single-supply (3.3/5 V) operation.

MoCA

This MMIC is exceptionally well-suited for use as a MoCA (Multimedia over Cable Alliance) PA in both the STB and in PC dongles. The MMIC offers the system designer the ability to tailor gain or P1dB for specific platform requirements. Between 475-625 MHz and 1.15-1.5 GHz gain flatness is unrivalled. NXP Medium Power MMIC operates at low current consumption and offers a fast shutdown function to save as much power as possible. With ESD protection, active biasing, design-in is simplified and requires a minimum of external components.

Base station

The high power level of this MMIC makes it an excellent choice for mobile-infrastructure applications. It offers the highest gain overall all base station frequencies. The quiescent-current feature allows for high efficiency and linearity in Class-AB operation. The bias circuitry delivers a stable performance over temperature and supply variations. The integrated shutdown function is a power-saving feature and can be used for fast shutdown. The MMIC can be tuned for any band between VHF and 2.7 GHz. Unbeatable thermal performance (30 °C/W) improves overall quality and reliability.

eMetering

This MMIC is also very well suited to eMetering applications in the 900-2400 MHz ISM band. High integration and single-supply operation mean that the MMIC can be combined with just a few other components to create a full-featured solution. The MMIC can be operated on battery power (with an energy-saving shutdown mode) and are tunable between Class A and AB. It can also

work on a power-line network, so it supports gas metering with or without a power connection. The built-in reliability and quality of a silicon-based process provides longevity, as does the improved ESD performance.

Product information & datasheet

[http://www.nxp.com/#/pip/pip=\[pip=BGA7024_1\]|pp=\[t=pip,i=BGA7024_1\]](http://www.nxp.com/#/pip/pip=[pip=BGA7024_1]|pp=[t=pip,i=BGA7024_1])

Application information

[http://www.nxp.com/#/aip/aip=\[aip=478,jp=BlockDiagram\]|pp=\[t=aip,i=478\]](http://www.nxp.com/#/aip/aip=[aip=478,jp=BlockDiagram]|pp=[t=aip,i=478])

Literature

http://www.nxp.com/acrobat_download2/literature/9397/75016678.pdf

RF Manual: www.nxp.com/rfmanual

NOTE: NXP offers demo boards of the medium power amplifiers. Order via you NXP representative.