

Product Brief



GRF6504

PHS RF CMOS Transceiver

GRF6504 Features

- ▶ True single-chip CMOS RF transceiver
 - Integrated LNA fully covering international 1.9 GHz PHS band
 - Fully integrated transmitter with programmable output power
 - Built-in channel selection filter
 - Fully integrated sigma-delta fractional-N frequency synthesizer including VCO and loop filters
 - Integrated I/Q up/down conversion mixer (1.2MHz of IF signals)
 - Programmable gain stage in Rx
 - Programmable output power in Tx
- ▶ Low-cost CMOS process technology with high performance
 - Allow under -104dBm min-sen (typ)
 - NF ~ 5.5dB, IIP3 ~ -15.5 dBm (typ.)
- ▶ Small form factor
 - 48pin 7mm x 7mm QFN
- ▶ Low power consumption
 - Tx: 50 mA at 2.8V, Rx: 100mA at 3.0V (typ)
- ▶ Fast switching time
 - Support seamless handover
 - Less than 25 us switching time: channel switching, Tx, Rx switching
- ▶ High performance ultra fast-lock PLL
 - Phase noise: -118dBc/Hz at 600kHz offset (typ)
 - Fast channel switching time: 20 us (typ)
- ▶ Analog base-band interface
 - Tx: Zero-IF I/Q differential
 - Rx: 1.2 MHz IF output
 - 3-wire program interface
 - RSSI output
- ▶ Supply voltage from 2.7V to 3.3V

GRF6504 Benefits

- ▶ Most cost-effective PHS RF transceiver
 - TRUE single-chip transceiver
 - Lowest BOM count < 50 components
- ▶ Extends frequency bands to support many nations including Japan, China, India, Mexico and Vietnam
- ▶ Outstanding performance per cost
 - Good sensitivity performance for mobile applications
 - Considerable RF performance margins for mobile applications
 - Longer battery-life
- ▶ Easy design and interface

Description

GCT's GRF6504 is a highly integrated monolithic RF transceiver for PHS applications based on GCT's industry proven CMOS RF technologies. This transceiver includes GCT's intrinsic low-IF (intermediate frequency) radio technology and requires a minimum number of external components, resulting in lower BOM cost and a smaller PCB area. GRF6504 is housed in 48-pin 7mmx7mm QFN package.

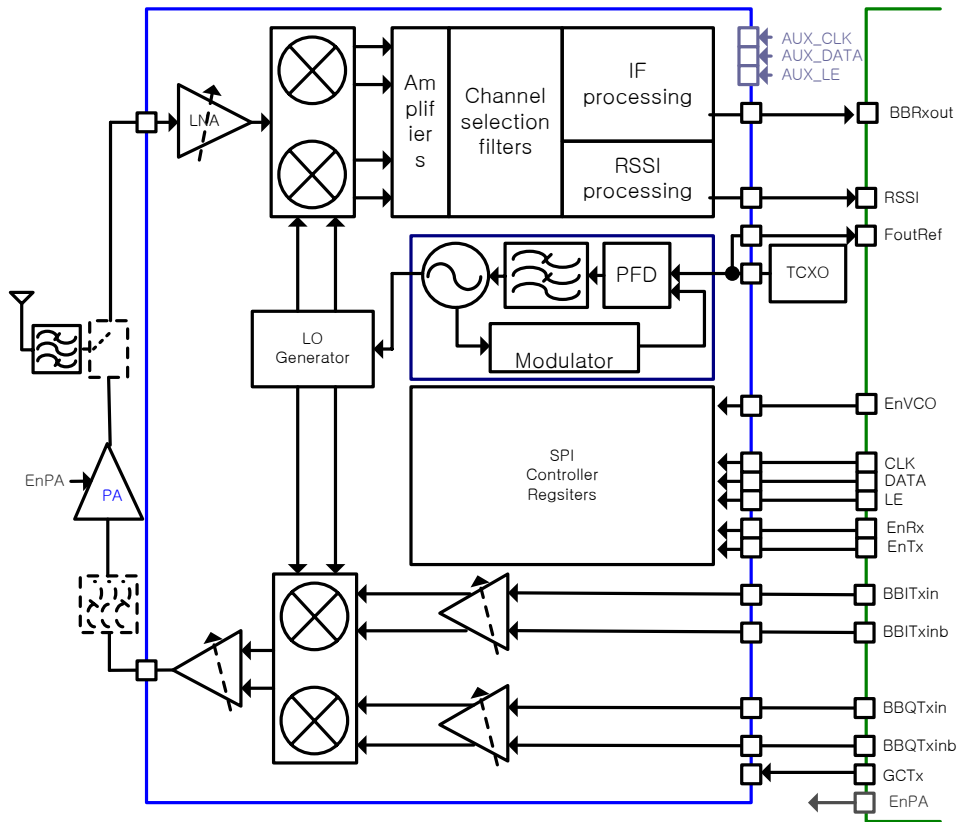
GRF6504 consists of a receiver, a transmitter, and PLL. The receiver section includes all functional blocks from the RF front-end to the base-band interface; LNA for 1.9GHz bands, down-conversion mixers, base-band filters, gain-controlled amplifiers and analog 1.2MHz IF interface. The transmitter section uses I/Q up-conversion architecture including analog base-band I/Q interface, up-conversion mixers and preamplifiers. The on-chip PLL includes VCO, a sigma-delta fractional-N frequency synthesizer, and built-in loop filters meeting fast and stable switching time requirements.

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Applications

- ☐ PHS mobile devices

Simplified Application Block Diagram



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