



BLACKfin[™] SoftFone[®] EDGE/GSM/GPRS Terminal Platform

Features

- Complete Hardware/Software Platform
- High-performance Blackfin[™] Processor Core
- ARM[®] Control Processor
- Extended peripheral interfaces for Multimedia Applications
- Othello[®] EGPRS Direct-conversion Radio
- EGPRS Software package from TTPCom

Overview

The Blackfin SoftFone GSM/GPRS/EDGE platform is a complete hardware and software system that enables rapid development of EGPRS terminal devices, including cellular phones, PC card form-factor wireless data cards, multimedia "smartphones", and wireless-enabled PDAs. It supports EGPRS operation up to Class 12 (5 active slots, 296 kilobits per second total). The platform comprises four chips (a fifth enables EDGE transmission if needed) supplied by Analog Devices. TTPCom of Cambridge, England provides software and a reference design platform.



With the entire signal chain and software perfectly tuned as one, Analog Devices Blackfin SoftFone product represents the most complete and advanced solution in the industry.

Baseband Processing Section

The AD6532 baseband digital processor includes the Blackfin[®] processor core, based on the MicroSignal Architecture jointly developed by Analog Devices and Intel. The Blackfin processor operates at speeds scalable up to 247 MHz (494 MMACs) and offers the processing speed necessary for EDGE signal equalization demodulation, and speech-coding algorithms, with additional MIPS available for advanced audio and video processing. An ARM microcontroller is included for the protocol-stack processing and control functions.

The processing speed of the Blackfin processor core in the AD6532 enables multimedia algorithms such as MP3, MPEG4, noise-reduction, echo-cancellation, etc., to enhance the features and audio quality of the end product. A wide range of peripheral devices is supported, including high-resolution color displays, cameras, and both MultiMedia Card (MMC) and Secure Digital (available to SD Association members only) removable media.

The AD6555 analog baseband chip includes high-linearity baseband receive A/D converters needed for the EDGE signal, and dual-mode transmit D/A converters with GMSK and 8-PSK modulators. The voiceband codec supports 8 and 16 kHz sample rates for high-quality voice recording. A stereo D/A converter with variable sample rates from 8 to 48 kHz provides MP3-quality audio, game sounds, and polyphonic ringtone, with integrated stereo headphone/speaker drivers. Complete power management is provided, including USB power and dynamic power management for the digital baseband processor to reduce core voltage and extend battery life.

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Radio Section

The radio section of the Blackfin SoftFone platform is based on Analog Devices' award-winning Othello® direct-conversion technology. The AD6538 Othello One Plus quad-band GSM/GPRS transceiver IC can be used for applications requiring EDGE forward link (handset receive) operation and GPRS reverse link (handset transmit) operation. The AD6021 Othello One ET (EDGE Transmit) modulator chip enables EDGE reverse link operation (8-PSK transmission). The AD6021 extracts internal signals from the AD6538 transceiver and uses polar modulation to generate the EDGE 8-PSK waveform.

The ADL5561 X-PA™ power amplifier with integrated TruPwr® power detector/controller technology completes the chipset. This dual-mode quad-band power amplifier module provides power-added efficiency greater than 25% in linear (EDGE) mode, and greater than 50% in GSM/GPRS mode. The integrated power detector includes both phase and amplitude control, to maintain the spectral purity of the transmitted signal.

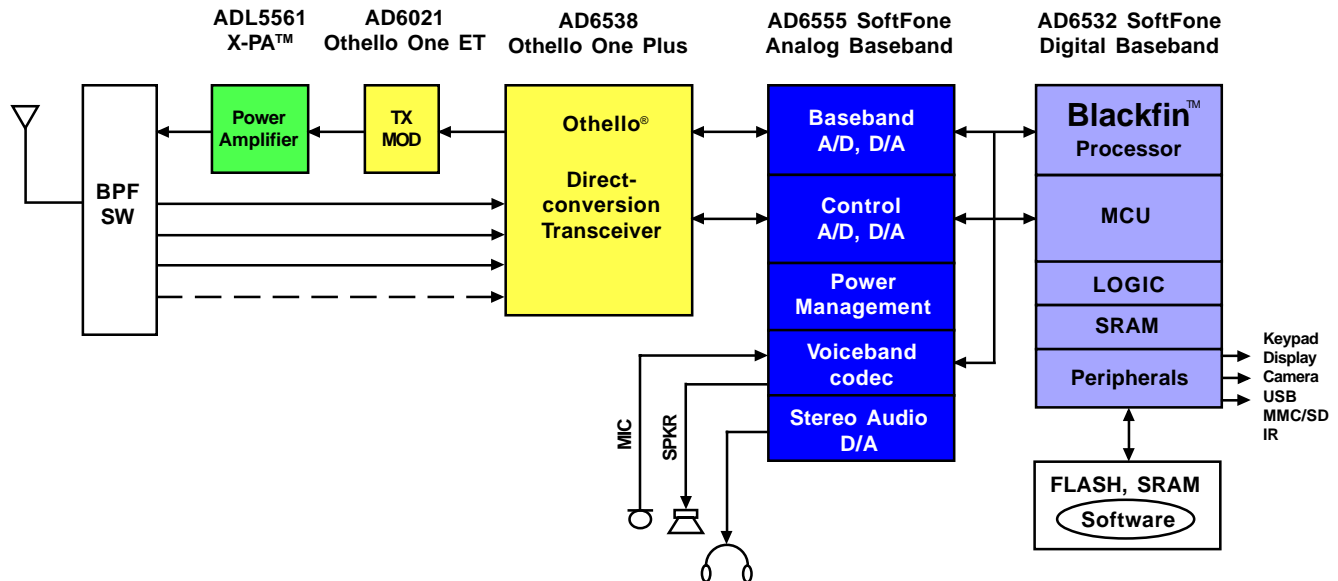
This combination of chips provides tri-mode (EDGE/GSM/GPRS) operation in all GSM bands (850, 900, 1800, and 1900 MHz) and supports full Class 12 (up to 4 transmit slots) operation.

Software

TTPCom Ltd is a world leading independent supplier of technology for digital wireless communications. Their technology features in products such as mobile phones, wireless PDAs and modems, base stations and test equipment, that are sold all over the world.

TTPCom's GSM and GPRS protocol-stack products are field-proven and well respected in the industry, with extensive interoperability testing and continuous integration of enhanced features. EDGE is one such extension of the existing technology.

EDGE Handset Block Diagram:



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