



Outstanding performance for mid-range mobile phones

Philips Nexperia cellular multimedia baseband PNX5230 for GSM/GPRS/EDGE handsets

This baseband, used in the successful Nexperia cellular system solution 5210, improves performance while lowering overall cost in mid-range GSM/GPRS/EDGE mobile phones. It combines very high integration with an exceptionally efficient architecture and eliminates the need for a separate coprocessor or audio chip.

Key features

- Architecture optimized for multimedia functionality
 - 130-MHz ARM946E-S system controller
 - 117-MHz 16-bit Philips Adelante™ DSP
 - Large on-chip instruction and data caches
 - Integrated peripheral connectivity and audio features
- Superior performance (as measured on the Nexperia cellular system solution 5210)
 - 95% CPU availability during GSM speech call
 - 85% CPU availability during data transfer EGRPS C8 MCS9 Data Link over EDGE
 - Data transfer downlink of up to 220 kbps (EDGE Class 10)
- Comprehensive connectivity interfaces
 - SPI, UART, I²C, USB, MMC/SD, SIM
 - Stereo AUX in/out audio with accessory detection
- Fully integrated 1.3-Mpixel camera interface with hardware JPEG encoder
- Dynamic downloading for new multimedia codecs
- Pre-integrated UMA codecs
- Built-in security functions (DRM1.0, customer OTP)
- Low power consumption
- Small, lead-free LFBGA280 package (11 x 11 mm)
- Easy upgrade from PCF5212/5213 basebands
- Flexible design tools for rapid design-in

The Nexperia cellular baseband PNX5230, a core component of the proven Nexperia cellular system solution 5210, offers superior performance while lowering overall cost in mid-range (2.75G) GSM/GPRS/EDGE mobile phones.

It integrates an ARM9 system controller, a 16-bit DSP, embedded memories, connectivity interfaces, a high-performance camera interface that supports fast preview, overlay, resizing, and rotation, plus a stereo AUX audio interface with accessory detection. As a result, it delivers superior performance without an external coprocessor or audio chip.

The PNX5230 uses the same basic architecture as the PCF5212 and PCF5213 basebands, so it offers an easy upgrade for existing phone designs.

Exceptionally efficient architecture

The PNX5230 is a full quad-band solution, supporting operation in 850, 900, 1800, and 1900 MHz bands. Manufactured in a 90-nm CMOS process, it combines an ARM946E-S system controller, running at up to 130 MHz, with a 16-bit Philips Adelante DSP RDI6024 running at up to 117 MHz.

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To significantly reduce power consumption, the core uses a reduced supply of 1.2 V. Using separate clocks for the DSP, the ARM9 controller, and the analog subsystems, reduces power consumption further.

The PN5230 is pre-loaded with MIC, the Philips implementation of Single Antenna Interference Cancellation (SAIC). MIC increases network capacity, improves dropped-call rates in situations with strong interference, and reduces re-transmission rates to deliver a higher effective data rate for downloads.

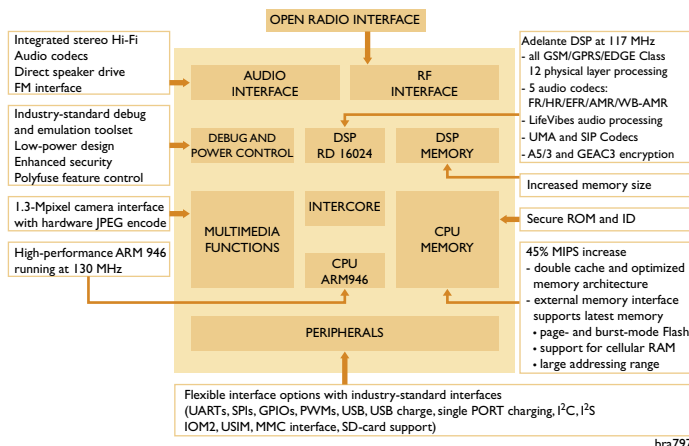
On-chip audio features include a full stereo audio codec (Rx and Tx) with a sampling frequency up to 48 kHz plus functionality for audio mixing and equalizing. The baseband also includes built-in support for exceptional hands-free performance.

The fully integrated camera interface supports 1.3-Mpixel camera sensors and complies with CCIR656. It has a built-in JPEG encoder and enables simultaneous audio/video capture. It supports up to 20 fps at QCIF+ resolution and performs real-time overlay processing. It offers multishot capabilities, a fast preview rate of 25 fps with direct stream from the sensor to the display, can flip and rotate pictures, and supports 4x digital zoom.

The PNX5230 offers a comprehensive set of connectivity features, including SPI, a 1.8-Mbps UART, I²C, and a USB 2.0 full-speed (12 Mbps) device with a transceiver. The PNX5230 also offers stereo AUX audio with accessory detection, an MMC/SD flash card interface, and a SIM interface. UMA and SiP codecs are pre-integrated.

To protect valuable content and ensure safe transactions, the PNX5230 offers a comprehensive set of built-in security features, including enhanced DRM I.O, A5/3 and GEAC3 hardware accelerators, and customer-programmable OTP.

The PNX5230 is delivered with complete telecom firmware, so there's no need to modify the DSP subsystem. To simplify integration of the baseband into the handset stack, the core software includes a set of drivers/handlers as example code.



Functional blocks of the PNX5230

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