



NXP Nexperia HEDGE cellular baseband PNX6712 for multimedia connectivity

Generate multimedia content and share it in real time

Equipped with outstanding multimedia and connectivity capabilities, this highly efficient, highly compact HEDGE baseband processor extends battery life while enabling the latest features in cellular operation, music, video, connectivity, and security.

Key features

- ▶ Advanced communication platform
 - EGPRS multi-slot Class 12, DL/UL 236/236 kbps
 - UMTS/FDD R6, UL/DL 384/384 kbps
 - HSDPA 3GPP R6, category 8, DL 7.2 Mbps
 - HSUPA 3GPP R6, category 5, UL 2.0 Mbps
 - Equipped with SAIC and operator-compliant UMA
- ▶ High-performance processing with 312-MHz ARM926-EJ core
 - 32 kB each of instruction and data cache
 - Support for 166-MHz DDR SDRAM
 - Dual 16-bit DSPs for maximum audio/modem flexibility
- ▶ Outstanding embedded multimedia capabilities
 - Extended music decode and options for music encode
 - Exceptional voice clarity with handset, headset, and handsfree
 - Longer video and music playtimes, higher-quality recording, UMTS video telephony
 - Leading audio performance with handset and headset
 - Best-in-class hardware encode and decode, and display resolutions of QVGA and WQVGA
 - 3-Mpixel YUV/JPEG camera interface and hardware JPEG encode/decode
 - TV-out

- ▶ Comprehensive connectivity interfaces
 - High-speed USB 2.0 OTG, SDIO, SPI, SD, MMC, MS
 - System-level extensions for A-GPS, NFC, Bluetooth, FM
- ▶ Compact TFBGA487 package (12 x 12 mm, 0.4-mm pitch, PoP on request)

The PNX6712 delivers superior voice quality and industry-leading standby times. It supports quad-band 2G and tri-band 3G operation, plus HSDPA/EDGE (HEDGE).

It uses an ARM926-EJ processor, manufactured in a power-efficient, 65-nm CMOS process technology, that runs at 312 MHz and is supported by 32 kB each of instruction and data cache. For maximum flexibility, the ARM processor is complemented by two 16-bit DSP cores that can be programmed to keep pace with evolving algorithms and new codecs. The on-chip modem delivers EGPRS Class 12 performance, with DTM class 5/9/11 and single antenna interface cancellation (SAIC).

The baseband's memory architecture has integrated SRAM and ROM and uses multiple parallel buses to support the latest technologies, including NAND Flash and DDR SDRAM. To optimize the interaction with on- and off-chip memories, the ARM processor uses a multilayer AHB bus structure that separates slow external peripherals from faster external memories. Independent processing units serve as bus masters to let functional units form a balanced network, and built-in Java acceleration improves performance in multimedia environments.

Unique algorithms for voice/audio

The PNX6712 has integrated stereo codecs for high-quality voice and audio, and takes advantage of NXP's unique portfolio of sound-enrichment algorithms to provide superior sound quality. Voice calls are exceptionally clear in all environments, whether using the handset, a headset, or handsfree options. Comprehensive speech functionality includes WB-AMR, NB-AMR, EFR, RF, HR, handsfree, noise reduction, and wideband synthesis.

For audio applications, auxiliary stereo audio I/O channels support optional music sources and sinks. There are four microphone inputs, and there is a 2 x 650-mW Class-D amplifier. The audio algorithms go beyond the standard play and record functions to offer high-quality music performance. The PNX6712 has everything necessary to convert the phone to an MP3 player, enabling music downloads and streaming from the cellular network. In addition to MP3, the PNX6712 supports AAC, AAC+, eAAC+, WMA, MIDI, 128 voices polyphony, and 3D widening. Options for music encode include AAC stereo and hardware-based SBC encode.

Low-power video, graphics, and camera features

The PNX6712 leverages NXP's extensive experience in video processing to incorporate a low-power video engine that plays videos longer than current solutions and can record video clips at a new level of quality. In HSPA applications, the PNX6712 enables video downloads and uploads from the cellular network. Low-power H.263 encoding and decoding performs at up to CIF 30 fps and there is support for H.264 and VC-1 at QVGA 30 fps for IMS applications. The display interface is optimized for QVGA and WQVGA and supports text, image, and video with graphics overlay.

For still pictures, the PNX6712 uses hardware-based JPEG for encoding and decoding, and integrates a 3-Megapixel camera interface with "smooth zooming" features and low-power preview. There is also a TV-out interface, for connecting the phone to a TV and viewing images on a larger screen. Multimedia functions are easy to access with a keyboard controller that supports up to 64 keys and offers a jog-dial function.

Comprehensive connectivity

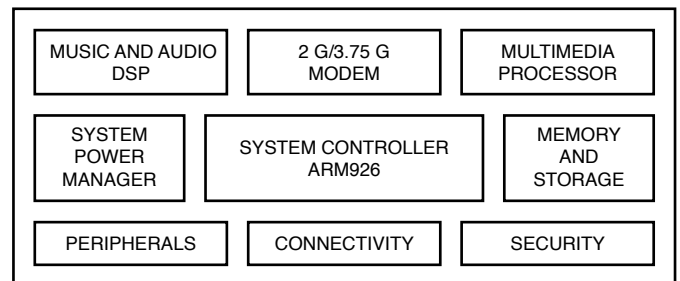
Several connectivity interfaces make it easy for the PNX6712 to share information with peripherals and other handhelds. For convenient cable connections, there is a high-speed USB 2.0 and USB OTG interface. For wireless applications, there are interfaces for Bluetooth, WLAN, Wireless USB, and NFC. For removable storage applications, memory-card support includes 4-bit SD Card, Memory Stick, and MultiMedia Card. General-purpose interfaces include I²C-bus, I²S, SPI, and more.

Built-in security features

To protect valuable content and ensure safe transactions, the PNX6712 offers a comprehensive set of built-in security features, including secure storage and high-speed crypto, for implementing security functions that comply with OMA DRM.

Longer battery life

The PNX6712 uses advanced power-management algorithms to extend battery life and deliver industry-leading standby times. That means consumers can enjoy more of their music, have longer phone conversations, and wait longer between battery charges.



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PNX6712 block diagram