

CELLULAR SYSTEM SOLUTION 6517

Fully integrated graphics and multimedia for high-end EDGE phones



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ST-Ericsson introduces its fourth generation single-core system solution for the high-end EDGE handset market. It has increased processing power and can support all multimedia use cases with EDGE data transfer in the background. The refined power management unit ensures outstanding play and standby time. The USB 2.0 high-speed link guarantees the fastest PC connectivity. The OpenVG 2D-graphic HW acceleration enables vivid displays. The embedded multimedia engine offers a 3-Mpixel camera interface and a QVGA video camcorder as well as an MP3 music player/recorder. Cellular system solution 6517 is cost effective and allows fast time-to-market development.

KEY FEATURES

Telecom

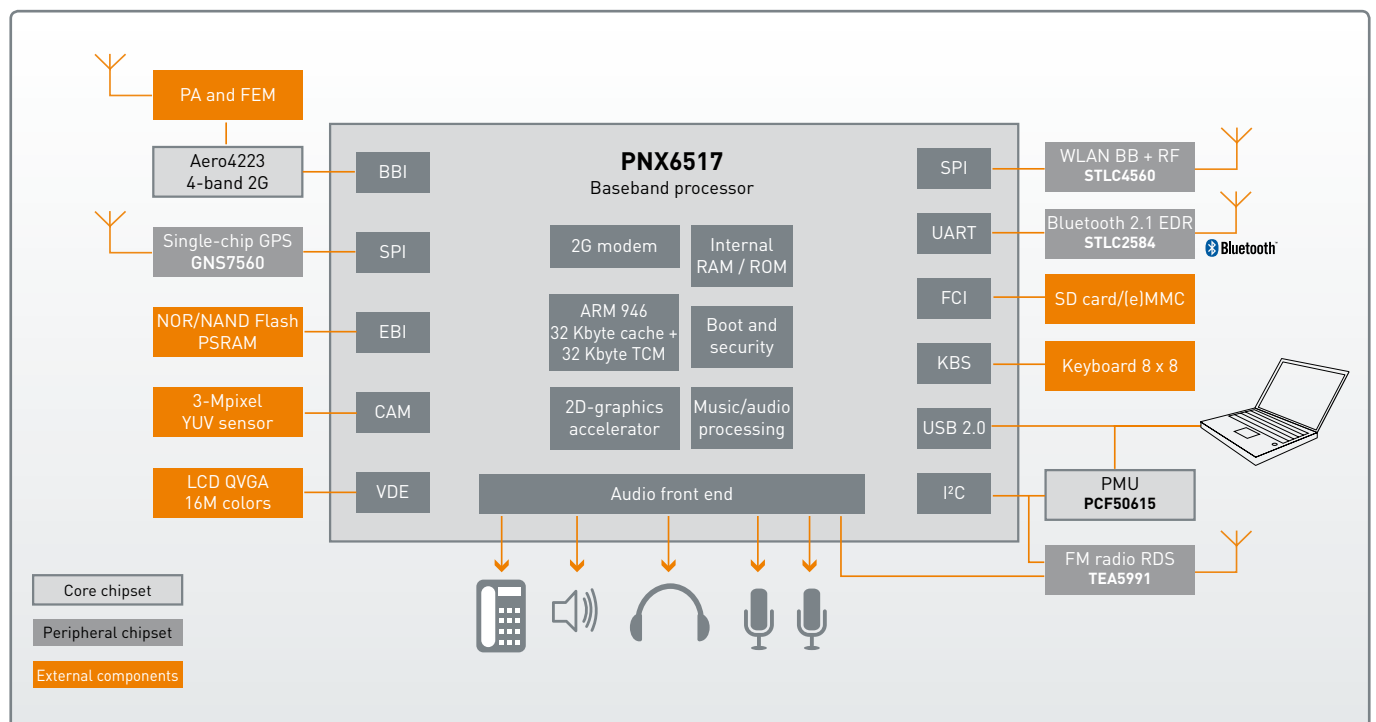
- ARM946 @ 208 MHz, DSP RD 16024 @ 143 MHz
- Quad-band 850/900/1800/1900
- Release 99 EDGE class 10
- HR/FR/EFR/AMR
- A5/3, GEA3
- SAIC/MIC
- A-GPS
- File system target-FFS for Flash types: NAND, NOR, FAT32 NAND, FTL NAND, FTL NOR
- Multi TA / 07.10: allows modem application with multi-tasking OS
- LifeVibes™ 1.2 acoustic echo canceller, and VoiceClarity 2.0 from NXP Software
- Low power consumption: 1.6 mA DRX2, 25 mA MP3
- Telecom part compatible with PNX6511/PNX6515

Multimedia

- QVGA display interface with 16M colors
- QVGA decoding H.263 or MPEG-4 25 fps / AAC
- QCIF decoding H.263 or MPEG-4 30 fps / AAC
- QCIF decoding H.264 15 fps / AAC
- QCIF streaming 2G premium H.264 / eAAC+
- QVGA encoding H.263 or MPEG-4 14 fps 200 Kbit/s
- 3-Mpixel YUV and 5-Mpixel JPEG
- Stereo audio player
 - MP3, WMA, AAC, AAC+, eAAC+
 - MIDI 64 tones
- Stereo audio recorder
 - WB AMR 16 kHz
 - MP3 32 kHz, AAC 32 kHz
- Bluetooth SBC encoder in DSP
- DRM2.0, WDRM

Connectivity

- USB 2.0 high-speed with USB charge
- Up to 60 Mbit/s USB mass storage
- 3rd, 4th UART interface
- Dual 4-bit SD/(e)MMC interface, High Speed (primary interface)
- Memory Stick PRO duo interface



ST-Ericsson cellular system solution 6517 application diagram

POWERFUL ARCHITECTURE

With its increased processing power, memory bandwidth, and additional DSP/hardware acceleration, cellular system solution 6517 is powerful enough to run complex multimedia use cases in parallel with EDGE data transfer without any limitations. For instance, it is possible to listen to FM radio on a stereo Bluetooth® headset and record at 32 kHz in MP3, while at the same time navigating effortlessly through the menu on a QVGA display thanks to OpenVG acceleration, and having an EDGE data transfer in the background.

EFFICIENT POWER MANAGEMENT

The cellular system solution 6517 platform has been refined at all levels: PMU, transceiver, telecom stack, CPU operating modes and DSP firmware, in order to achieve outstanding play time and standby time.

- Up to 30 hours MP3 play time
- 9 hours talk time
- 500 hours DRX2 standby time

FASTEST CONNECTIVITY

With its 480 MHz pace, the USB 2.0 high-speed link ensures the transfer of large amounts of multimedia to and from a PC. In order to achieve an unprecedented data throughput of 60 Mbit/s in USB mass storage/MTP mode, particular attention has been paid to the entire path from the PC to the Flash card, including PC and embedded drivers, file system, internal data transfer and 4-bit high-speed primary Flash card interface. All this means that it takes only 30 seconds to transfer a 20-track compressed audio CD.

OpenVG 2D-GRAPHICS HW ACCELERATION

With its direct memory fetch mechanism, this embedded accelerator boosts the bitmap part of the OpenVG rendering pipeline, including geometric transformations, color space conversions and blending, while lightening the CPU load. With only a fraction of the CPU load, this block enables tremendous acceleration of graphic transformations on a full size QVGA display. Combined with an OpenVG software stack it allows the customer to develop an appealing user interface easily and still support complex multimedia use cases in parallel.



3-MPIXEL CAMERA INTERFACE

The fully qualified ST-Ericsson embedded image subsystem (ISS) has already been widely adopted in volume production as a competitive alternative to an external image/multimedia processor. The cellular system solution 6517 latest-generation imaging and video subsystem introduces:

- 3-Mpixel YUV, 5-Mpixel JPEG camera interface
- Camcorder up to QVGA encode/decode (MPEG-4, H.263), QCIF decode (H.264)
- 16M color QVGA display for all use cases (video encode, decode, MMI, JPEG capture)
- 8/16-bit display interface supporting low cost, 8-bit only, 16M color QVGA displays

In addition to feature upgrades, the ISS architecture enhancements include a hardware upscaler, a hardware JPEG encoder/decoder, and improved internal data flow management.

This new 3-Mpixel evolution of the ISS continues to offer an extraordinarily fast picture processing time without compromising on the WYSIWYG architecture: the image shown on the display after a camera shot, even with a 2x zoom, is the real 3-Mpixel image captured and stored in the phone memory. The entire process (including capture, encode, store, decode, resize and display) runs in less than 1 second.

INTEGRATED MUSIC PHONE

Cellular system solution 6517 benefits from the same set of integrated features that have made previous ST-Ericsson solutions successful in a range of high-running music phones:

- Extended play time
- SBC encoder in DSP for efficient stereo Bluetooth headset support
- 32 kHz FM-stereo record in MP3
- Fast PC-to-phone download
- PlayForSure™ certified

REDUCED MEMORY FOOTPRINT

New architecture improvements make it possible to support the embedded camera functionality with as little as 128 Mbits of total external RAM for the entire system solution, including the customer application.

COST-EFFECTIVE, COMPACT SOLUTION

With its core 3-chip footprint totaling only 133 mm², cellular system solution 6517 is one of the most compact solutions able to provide this level of multimedia without the addition of a multimedia processor or an application engine. Furthermore, thanks to the maturity and level of integration of this solution, very few external glue components are needed. Some of the typical external components that are not needed with cellular system solution 6517 are: USB charge IC, additional LDOs or DC-DCs, USB 2.0 transceiver, audio switch, audio amplifier.

FAST TIME TO MARKET

Cellular system solution 6517 comes with a reference design, development environment, industrialization tools and an industry approved telecom and multimedia stack. It is supported by a worldwide sales and application support organization.

Type name	Function	Package	Package size
Core chipset			
PNX6517	Multimedia baseband processor	LFBGA-296 TFBGA-296	10 x 10 mm 9 x 9 mm
PCF50615	Power supply and battery management controller	HVQFN-52	6 x 6 mm
Aero4223	Quad band EDGE transceiver	LFBGA-49	4 x 4 mm
Peripheral chipset			
STLC2584	Bluetooth V2.1 + EDR	WLCSP-48	PCB area < 33 mm ²
TEA5991	Stereo FM RDS receiver	WLCSP-20	PCB area < 10 mm ²
GNS7560	Single-chip GPS receiver	WLCSP-54	PCB area < 25 mm ²
STLC4560	Single-chip IEEE 802.11b/g WLAN radio	LFBGA-240	8.5 x 8 mm

ST-Ericsson cellular system solution 6517 chipset

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Order code: Cellular6517BR_2

