

OMAP-Vox™ wireless platform: OMAPV2230 integrated UMTS solution

Integrated digital baseband and applications processor enabling advanced 3G handsets

Key features

- Advanced applications and modem functionality integrated in the same device enabling a low power and high performance system solution.
- Enables worldwide operation for WCDMA/GSM/GPRS/EDGE modem standards
- Advanced Imaging, Video and Audio Accelerator (IVA™ 2) boosts video performance in mobile phones by up to 4X and imaging performance by up to 1.5X
- Delivering a multimedia experience with consumer electronics quality to the handset
- Multi-engine parallel processing architecture for supporting complex usage scenarios
- Built-in M-Shield™ mobile security technology enables value-added services and terminal security
- Support for all major High Level Operating Systems (HLOS) aids applications development

– TI OMAP™ 2 architecture

– Proven GSM/GPRS/EDGE/WCDMA technology

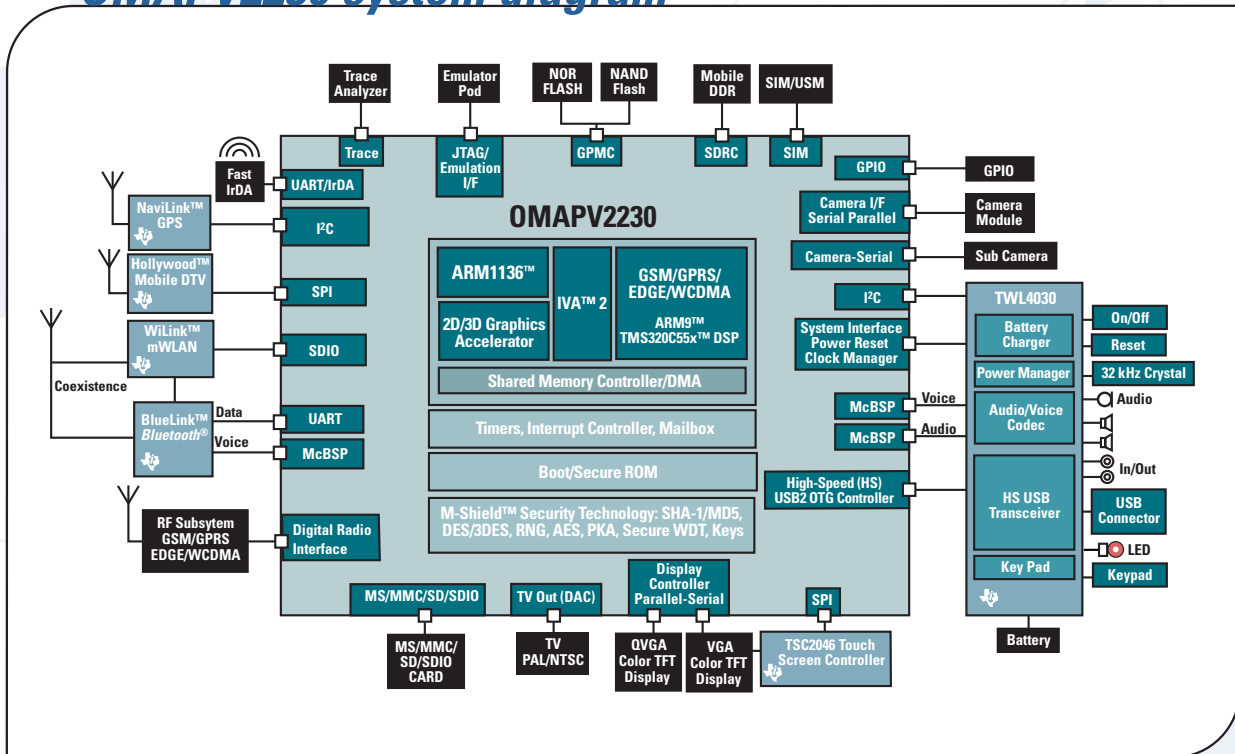
P R O D U C T B U L L E T I N

Integrated system solution

Texas Instruments' (TIs) OMAPV2230 3G solution is part of the OMAP-Vox™ processor family which integrates a digital baseband and an applications processor enabling size, performance and power consumption benefits for the end product. The digital baseband is based on proven GSM/GPRS/EDGE/WCDMA technology and the OMAPV2230's applications processor is based on TI's OMAP™ 2 architecture. Manufactured in TI's advanced 90-nanometer (nm) CMOS process technology, the OMAPV2230 enables worldwide roaming and supports a variety of multimedia applications with consumer electronics quality. Leveraging OMAP 2 architecture makes it easy for handset manufacturers to migrate their existing OMAP software investments onto the OMAPV2230 because of the applications processor commonalities, and high level of software re-use with other OMAP 2 based products. The OMAPV2230's open software platform and flexible connectivity options enable manufacturers and operators to customize and differentiate their products with value-added features.

The OMAPV2230 is capable of supporting high-level operating systems (HLOS) such as Linux®, Microsoft® Windows Mobile™, and Symbian OS™, as well as real-time operating systems such as Nucleus™. The built-in M-Shield™ security technology enables operators to support value-added services for content protection, transaction security and secure network access, plus terminal security functions such as secure flashing and booting, terminal identity protection and network lock protection.

OMAPV2230 system diagram



The powerful applications processor integrated with the advanced WCDMA technology enables a variety of mobile entertainment applications at streaming speeds up to 384 Kbps. The platform is capable of supporting video codecs such as H.263, MPEG4, H.264, Windows Media® Video 9 (WMV 9), RealVideo® and high-quality audio codecs such as MP3, WMA, RealAudio and AAC/AAC+. An advanced IVA 2 accelerator and a 3D graphics accelerator core enable the following:

- Video playback with high-quality audio up to 30 fps VGA
- Two-way Video Teleconferencing (VTC) up to 30 fps CIF
- Real-time video streaming with high quality audio up to 30 fps VGA
- Camcorder with high quality audio up to 30 fps VGA
- >5 megapixel digital still camera with <1 second shot-to-shot delay
- Interactive 3D gaming via powerful 3D gaming engine rendering up to 1 M polygons per second
- Fast audio and video download compared to 2.5G networks
- Mobile digital TV decode and display

TI's M-Shield™ security technology enables digital rights management (DRM). M-Shield Technology provides content protection for high-quality applications, enables new value-added services and offers increased terminal security. Because of its leading performance, the OMAPV2230 solution enables more optimized multimedia services that can reduce network costs for mobile operators and implements hardware-based security to protect the content providers' assets.

OMAP-Vox™
platform scalability

The OMAP-Vox platform, underlying the OMAPV2230, leverages TI's advanced OMAP 2 architecture enabling easy migration of applications developed on earlier TI OMAP products enabling significant software reuse. The OMAP-Vox hardware platform merges modem and application processing functionality onto the existing OMAP

architecture, saving system space, cost and power and allowing the use of a single hardware platform for products with air interfaces ranging from GSM/GPRS/EDGE to UMTS, HSDPA and beyond. In addition, a common software platform can be reused for a variety of growing market requirements to bring overall development costs down and save years of software design effort so manufacturers can quickly and cost-effectively deliver 3G handsets. These features provide greater flexibility for customized design and migration of developer technology to future product generations.

For design flexibility in a varied market, the OMAPV2230 provides connectivity to wireless standards such as WLAN, *Bluetooth*[®], GPS and mobile digital TV. As multimedia files grow in size, transfer speed is critical to deliver quality user experience. A high-speed USB OTG interface supports fast transfers on and off the system. TI plans in future versions of OMAP-Vox solutions to support its DRP[™] technology for digital radios to help deliver ultra-low cost UMTS products to lower the cost barrier even further.

Designed for security



The OMAPV2230 solution integrates an advanced hardware and software mobile security technology, M-Shield, which enables new value-added services and increased terminal security. Network operators can increase revenue with new services that secure sensitive assets and usage rights through:

- **Content protection.** High-value multimedia contents, such as audio, video and games, are protected against unauthorized usage.
- **Secure transactions.** Mobile e-commerce such as electronic ticketing, banking, brokering, and shopping are enabled by protecting end use.
- **Secure network access.** Virtual private networks (VPNs) are enabled, and users are protected against viruses and other invasions.

In addition, increased terminal security allows operators to minimize revenue loss by embedding the “root of trust” in the silicon, supporting functions such as:

- **Secure flashing and booting.** Only authorized software can be loaded on the handset.
- **Terminal identity protection.** Since stolen phones cannot have the identity altered, they become useless.
- **Network lock protection.** A user cannot go to the web to “unlock” the phone and switch networks.

All-in-One audio and power management



The TWL4030 is the optimized all-in-one audio and power manager to a host of OMAP processors including the OMAPV2230. It is an integrated power management/audio codec device intended for use in portable cellular telephone designs which derive their power from batteries based on Lithium-Ion, Lithium-Ion Polymer or Cobalt Nickel Manganese chemistries. It combines TI's SmartReflex[™] power and performance management technology compliant LDOs and DC/DC converters, an audio/voice codec section, class AB/D audio amplifiers, high-speed USB 2.0 transceiver, battery charger circuitry and much more into a highly integrated single chip.

In addition to audio/voice codecs and amplifiers, the audio resources on the TWL4030 include stereo/mono audio support for speakers, earpiece and headsets, analog and digital mixing, analog/digital microphone support as well as noise cancellation circuitry. The advanced battery charger system features support for charge via AC adapter, USB or car kit standard in addition to back-up battery management, battery presence and over voltage detection. Self contained voltage regulators and converters along with the integrated keyboard interface, LED and vibrator drivers, and real-time clock reduces the need for additional external components. The OMAPV2230 and TWL4030 combination boosts system performance, maximizes battery life and reduces board space.

Development support

Like all of TI's OMAP processors, the OMAPV2230 solution is supported by the OMAP Ecosystem, a worldwide network of application software developers, system integrators and development tool providers. The OMAPV2230 device is capable of supporting high-level operating systems such as Linux®, Symbian OS™ and Windows Mobile, as well as real-time operating systems such as Nucleus™. HLOS enables manufacturers and mobile operators to differentiate their products through:

- **A rich, easy-to-use, customizable user interface.** HLOS and OMAP platform third party tools provide powerful user interfaces, with support for a rich array of applications and services, and the ability to customize according to operators' needs.
- **A robust, flexible applications and services architecture.** Applications development and services deployment and management all benefit from the robust, flexible architecture provided by HLOS.
- **An extensive network of third-party developers.** HLOS have a large developers' base in the industry, which help make the platform richer and more complete.

TI has developed close relationships with all HLOS vendors. These relationships have provided a time-to-market advantage which is evident by the 100+ handset models our customers have shipped. As a result the great majority of Symbian, Microsoft Smartphones, and Montavista Linux phones are based on the TI OMAP platform. In addition, TI has built an extensive network of specialized system integrators, the Independent OMAP Technology Centers (OTCs), skilled in all aspects of HLOS porting and integration to enable our customers to speed time-to-market and leverage our technology centers to gain additional expertise. More information is available at www.ti.com/otc.

For more information

To learn more about the OMAPV2230 solution, or about other OMAP-Vox products from TI, visit www.ti.com/omap-vox. Find out how the OMAPV2230 can bring a new level of multimedia performance to your mobile communications system.

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