OMAP-L1x Applications Processors

Multimedia performance and low power with OMAP-L1x applications processors

Enabling developers to integrate feature-rich GUIs into their portable designs, the OMAP-L1x generation of applications processors includes ARM9 and ARM9-plus-DSP architectures. Devices contain a variety of peripherals for networking, and will run Linux or the DSP/BIOS™ real-time kernel for operating system flexibility. The product line is also pin-for-pin compatible with select devices in the TMS320C674x and C640x DSP generations. The combination of peripherals, architectures and price points starting at under USD $11 for 100u quantities allows designers to choose the right processor for their application needs.

Combining broad operating system flexibility with low-cost and easy-to-use development tools allows for faster prototyping through a familiar and robust development environment.

Designers can take advantage of the 300-MHz ARM9 and choose from either MontaVista or open-source Linux, Windows® CE or an operating system of their choice to add feature-rich GUIs or touch-screen support.

Through pin-for-pin compatibility with other OMAP-L1x products as well as select C640x and C674x DSP generations, OMAP-L1x processors offer an unprecedented level of scalability. The high-performance TMS320C64x+™ and high-precision C674x embedded processor cores, flexible cache architecture, enhanced DMA subsystem and dynamic power management (DPM) functionality provide system designers with a flexible and scalable platform to add portability to applications such as software defined radio (SDR), portable instrumentation, portable data terminals, portable connectivity and other applications needing high performance, rich user interfaces or high-level operating systems.

Floating-point versions from the OMAP-L1x generation will be sampling in Q4 2008, with fixed-point versions sampling in Q1 2009.

Increase the battery life of applications through TI process technology

Combining industry-leading, cutting-edge 65-nm process technology with low-leakage transistor technology, OMAP-L1x processors offer high performance and scalability with power consumption as low as 6 mW* in deep-sleep mode, 11 mW† in standby mode and 435 mW‡ total power in active mode.

The high-performance and low-power silicon architecture and power management software technology used for OMAP-L1x processors give designers not only granularity for frequency and voltage, but also the ability to manipulate the individual peripherals to further optimize power consumption.

Designers will be able to save significant system power through peripheral integration such as 10/100 EMAC, USB 1.1 Host/2.0 Host/Device/OTG, MMC/SD controllers, a universal parallel port (uPP) for interfacing with FPGAs, data converters and other inter-processor communication, UHPI, multi-channel serial ports and an LCD controller negating the need

Key Features:

- Integrate feature-rich GUIs into portable designs
- Networking simplified with advanced peripherals
- Operating system flexibility with Linux or DSP/BIOS™ real-time kernel
- Pin-for-pin compatible with select devices in the TMS320C674x and C640x DSP generations
- Power consumption ranging from 6 mW* deep-sleep power to 435 mW‡ total power
- Smaller, ergonomic products with 13×13-mm packaging

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* Power-use scenario – deep sleep: 0.95-V core, idle ARM® DSP clock OFF, all peripherals clock OFF, RTC ON, PLL disabled, 25°C

† Power-use scenario – standby: 0.95-V core, idle ARM and DSP clock OFF, all peripherals clock OFF, RTC ON, PLL enabled, 25°C

‡ Power-use scenario – active: 70% max load of the DSP running at 300 MHz at 1.2 V, ARM running at 300 MHz doing typical activity (peripheral configurations, other housekeeping activities); mDDR 133 MHz/16 bit accessed 50% of the time, McBSP, SPI and GPIOs peripherals are active, 25 degrees C

Technical details

Architectural features

- 300-MHz ARM9 processor
- Multiple architectures:
  - High-precision 32-/64-bit C674x floating-point DSP core combined with ARM9
  - High-performance 16-/32-bit C64x+™ fixed-point processor core combined with ARM9
  - Audio co-processors combined with ARM9
  - ARM9-only

System integration

- Up to 448 KB of internal memory through a combination of L1/L2 cache and internal RAM memory
- VPIF interface for a glueless interface to many image sensors and display drivers
- Universal Parallel Port (uPP) provides a direct interface to FPGAs, high-speed A/Ds, data converters and inter-processor communication
- Up to 64-channel DMA supporting 1D, 2D and 3D data transfers
- NAND flash controller with 8-/16-bit interface for commands, addresses and data
- Connectivity: host DMA port, UARTs, McASP/McBSPs, SPI, I²C, MMC/SD controllers, USB 1.1/ 2.0 interfaces, SATA, eCAP, eQEP
- Variety of memory controller options providing glueless connection to multiple banks of external mDDR, DDR2, SDRAM, SRAM and Flash
- Multiple package options: QFP, BGA, nFBGA in various sizes and ball pitches (commercial temperature and industrial range 0°C to 70°C or –40°C to 85°C)

Applications

- SDR
- Portable instrumentation
- Portable data terminals
- Portable connectivity

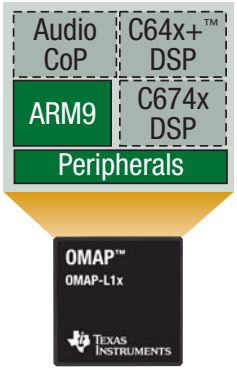
for external processors and/or logic. On-chip memory scalability options of up to 448 KB reduce the need for external memory in some applications saving both power and cost.

Availability of a wide selection of packages on some OMAP-L1x devices cater to those applications that have varying size constraints.

Get started quickly

To get started quickly, designers can purchase OMAP-L1x development kits with built-in emulation for less than USD$400 and limited-use development kits for less than USD$100. All kits contain Linux board support packages, Codec Engine and the associated debugging environment. OMAP-L1x processors are supported by Linux tools and Code Composer Studio™ (CCStudio) integrated development environment.

For more information on OMAP-L1x processors, visit **www.ti.com/omapl1x**.



6 mW*–435 mW‡

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SPRT465A

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