C6-Integra™ OMAP-L1x DSP+ARM® Processors

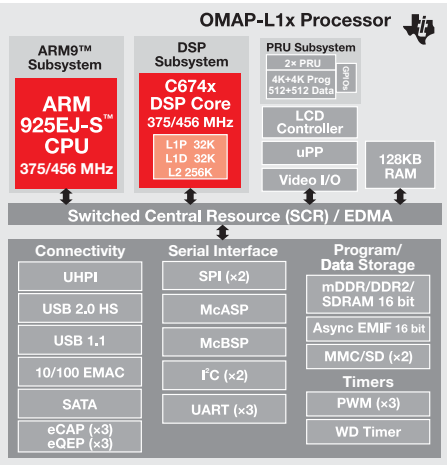
Multimedia performance and low power with C6-Integra OMAP-L1x DSP+ARM processors

Enabling developers to integrate feature-rich GUIs into their portable designs, the C6-Integra OMAP-L1x generation of DSP+ARM processors includes an ARM9™ core along with a TMS320C674x digital signal processor. Devices contain a variety of peripherals for networking, and will run Linux®, Microsoft® Windows® Embedded CE 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 fixed-/floating-point DSP generation and AM1x Sitara™ ARM MPU product generation. The combination of peripherals, architectures and price points starting at under U.S. $17 for 1000-unit 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 375-/456-MHz ARM9 and choose from Linux, Windows CE or an operating system of their choice to add feature-rich GUIs or touchscreen support.

Through pin-for-pin compatibility with other C6-Integra OMAP-L1x products as well as the C674x DSP generation, C6-Integra OMAP-L1x processors offer an unprecedented level of scalability. The high-performance 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.



Note: Not all features in all products.

Increase the battery life of applications through TI process technology

Combining industry-leading, cutting-edge 65-nm process technology with low-leakage transistor technology, C6-Integra OMAP-L1x processors offer high performance and scalability with power consumption as low as 12 mW* in deep-sleep mode, 37 mW† in standby mode and 480 mW‡ total power in active mode.

The high-performance and low-power silicon architecture and power management software technology used for C6-Integra 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 and cost 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)

Key features:

- Integrate feature-rich GUIs into portable designs
- Networking simplified with advanced peripherals
- Operating system flexibility with Linux, Windows Embedded CE or DSP/BIOS real-time kernel
- Pin-for-pin compatible with select devices in the TMS320C674x generation and TI AM1x Sitara ARM MPU devices
- Power consumption ranging from 12 mW* deep-sleep power to 480 mW‡ total power
- Smaller, ergonomic products with 13×13-mm, 16×16-mm and 17×17-mm packaging

* Power-use scenario – deep sleep: 1.0-V core, idle ARM® DSP clock OFF, all peripherals clock OFF, RTC ON, PLL disabled, 25°C

† Power-use scenario – standby: 1.0-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°C

Technical details

Architectural features

- 375-/456-MHz ARM9™ processor
- High-precision 32-/64-bit C674x fixed-/floating-point DSP core combined with ARM9

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, I^2C, 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 (0°C to 90°C), industrial (–40°C to 105°C) and automotive (–40°C to 125°C) temperature ranges].

Applications

- Software-defined radio
- Portable instrumentation
- Portable data terminals
- Portable connectivity

for interfacing with FPGAs, data converters and other inter-processor communication, UHPI, multi-channel serial ports and an LCD controller negating the need 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 C6-Integra™ OMAP-L1x devices cater to those applications that have varying size constraints.

Get started quickly

To get started quickly, designers can purchase C6-Integra OMAP-L1x development kits with built-in emulation for less than U.S. $500 and low-cost Hawkboard community board for less than U.S. $100. All development kits contain Linux board support packages, Codec Engine and the associated debugging environment. Additional software and tools are also available by TI third parties. C6-Integra OMAP-L1x processors are supported by Linux tools and Code Composer Studio™ (CCStudio) integrated development environment.

For more information on C6-Integra OMAP-L1x DSP+ARM processors, visit **www.ti.com/omapl1x**.

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