Multicore Microcontrollers Can Perform Multiple Simultaneous Tasks

XMOS announces a significant extension in its range of general-purpose multicore microcontrollers, the L Series. The company is adding 6-, 10- and 12-core variants, plus new memory size options, to the existing 8- and 16-core products in its xCORE family, which now includes over 50 devices, the world’s broadest range of multicore microcontrollers.

With the new introductions XMOS delivers a range of solutions that is perfectly scaled to customers’ requirements in terms of capability, price and performance. The new products join the recently announced xCORE-USB devices, and existing members of the general purpose L series (formerly known as L1 and L2). The L-series now consists of:

• The 6-core XS1-L6-64

• The 8-core XS1-L8-64

• The 8-core, 1000MIPS XS1-L8-128 with extended memory

• The 10-core XS1-L10-128,

• The 12-core XS1-L12-128

• The 16-core XS1-L16-128

Individual products are available in a variety of package and performance options as well as commercial and industrial variants.

The new L8-128 integrates 128Kbytes of on-chip RAM and delivers enhanced performance, with each of the eight logical cores able to deliver up to 125MIPS of computing power. The introduction of 10- and 12-core options provides xCORE users with more flexibility than ever in balancing the price and performance requirements of their products. The entire L-Series is organized into two pin-compatible groups, allowing designers to build multiple end-product variants using a single hardware platform, and to performance-enhance or cost-optimize designs as requirements evolve.

Devices based on the XMOS xCORE multicore architecture with Hardware Response can perform multiple simultaneous tasks, delivering a new level of performance and real-time response in a low cost easy-to-use software programmable platform. As a result, engineers can implement functions that traditionally required hardware, by writing a software program. Designers using xCORE can choose from a growing range of off-the-shelf software-based peripherals delivered as part of the company's xSOFTip IP library, and develop their code using an easy-to-use suite of development tools.

The new L-Series multicore microcontrollers are enabled by an evolution of the fundamental xCORE technology, which is based on powerful deterministic processor 'tiles', each of which is optimized to support a number of logical cores. For example, the XS1-L10-128 has two tiles, each of which provides five logical cores, giving a total of 10 logical cores in the device. Each logical core has its own instruction stream and register files, and takes a share in the tile's 64KBytes of RAM. An on-chip network connects the separate tiles and logical cores together, and the operation of the device is controlled by a hardware scheduler that ensures deterministic processing at all times.

The unique xCORE Hardware-Response I/O technology allows XMOS to provide ready-made and adaptable xSOFTip for a wide variety of functions, from communications protocols to motor control, and LCD drivers to audio equalization. The supporting xTIMEcomposer Studio development tools offer designers access to multicore processing using a familiar C/C++ environment. xTIMEcomposer Studio includes static timing analysis and cycle-accurate simulation tools, making it easy for designers to meet precise real-time requirements. These tools are available to download free of charge at www.xmos.com/tools [1].

The XS1-L8-64 and XS1-L16-128 are available now (alternatively designated L1 and L2 respectively). The new L-Series parts are available in February 2013, with prices starting at $4.67 in volume. Further details are available from www.xmos.com/newlseries [2]

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