

DISCOVER EVENT-DRIVEN PROCESSORS

Based on the successful XS1-G family, the second generation XS1-L1 device is an event-driven, multi-threaded processor programming language using a unified C-based design flow.

The XS1-L1 is an energy-efficient, general-purpose device ideally suited to a wide range of embedded applications requiring control code, DSP and interfacing. Typical applications include audio DSP, USB peripherals, networked LED displays and robotic motor control.

The XS1-L1 lets you integrate any of these functions without compromise to cost and power requirements.

Performance

- Event-driven processor providing 400MIPS and up to eight concurrent, deterministic real-time tasks
- 64KBytes single-cycle SRAM for code and data storage
- 32 x 32 → 64bit MAC providing high performance DSP and cryptographic functions

Responsive

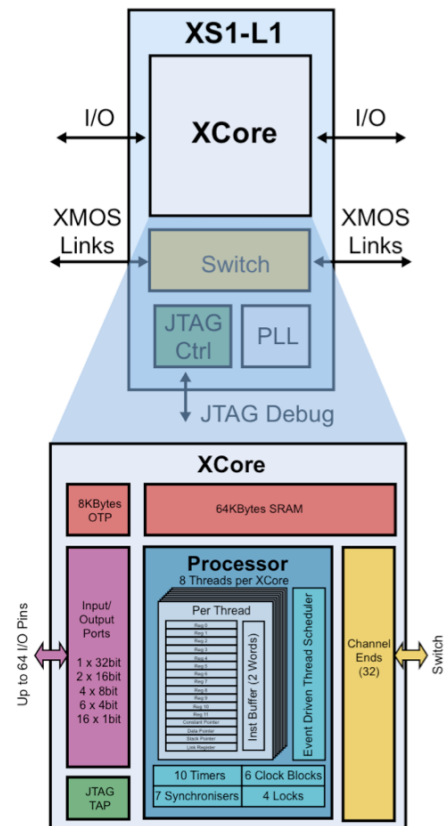
- Up to 64 I/O pins
- Time aware ports provide up to 10ns timing resolution
- Next thread cycle event response

Easy-to-use

- Designs implemented using a software-based design flow
- Use C, C++ or the XC language which extends C to support real-time programming
- 32 channel ends for easy and scalable communication with other threads, on or off-chip
- Low cost 64 and 128 pin QFP packages supporting two layer PCBs

Secure

- 8KBytes OTP memory for applications, boot code or security keys, with security mode
- Protect your IP from cloning or reverse engineering



Device	MIPS	Threads	Memory	Package	User I/O	Availability
XS1-L01A-LQ64	400	8	64KB RAM 8KB OTP	LQFP64 10 x 10mm	36	Q2 09
XS1-L01A-TQ128	400	8	64KB RAM 8KB OTP	TQFP128 14 x 14mm	64	Q3 09

DESIGNED FOR LOW POWER

Mode	Power	Processor	Usage
Active	15 – 200 mW	Active	Normal operation
Standby	15 mW	Paused	Waiting for events
*Sleep	<500 μ W	Powered down	External or timer wakeup

* Not available on LQFP64

Using TSMC’s 65nm process and a power aware architecture, the XS1-L1 provides performance when you need it without compromising on power.

Active mode

400MIPS sustained processing power at only 200mW when running in active mode. Use the MIPS for control software, DSP or interfaces.

Standby mode

When threads are waiting for an event, the device stops the clock and enters standby mode, consuming only 15mW of power. No change to your code is necessary to take advantage of standby mode. Wakeup is automatic and instantaneous.

Sleep mode

The XS1-L1 device* contains power control circuitry that allows power to be completely removed from the core for minimum current draw measured in microamps. Wakeup can be from an external signal or an internal interval counter.

SOFTWARE DEVELOPMENT TOOLS

XMOS provides development tools to take your XS1-L powered product from concept to volume production.

The tools are based on a standard embedded software flow that supports XC, C and C++. XC includes extensions to C for concurrency, communications, and timed I/O operations. As well as providing compilers and a debugger, the tools validate that hard real-time constraints are met on your target device. Utilities for deploying compiled binaries onto your development board are also included.

Designed to be intuitive and easy to use, you can chose to drive them from the XMOS Development Environment (XDE) as well as the command line.

The tools are available on Windows, Mac and Linux platforms.

For more information about XMOS or our products, to purchase an L1 based development kit, or to download your free development tools, please visit www.xmos.com.

