Microsemi Secured Connectivity FPGAs

SmartFusion2 SoC FPGAs

Low Power

Small Form Factors

Scalable Security

Microsemi

Power Matters.™

Secured Connectivity FPGAs – Best in Class for IoT Infrastructure

The IoT Infrastructure comprises complex connected systems in a variety of vertical market segments. Microsemi's SoC FPGAs enable a wide variety of these complex systems to be deployed at the lowest power, smallest size and with the highest levels of security available in any FPGA family.
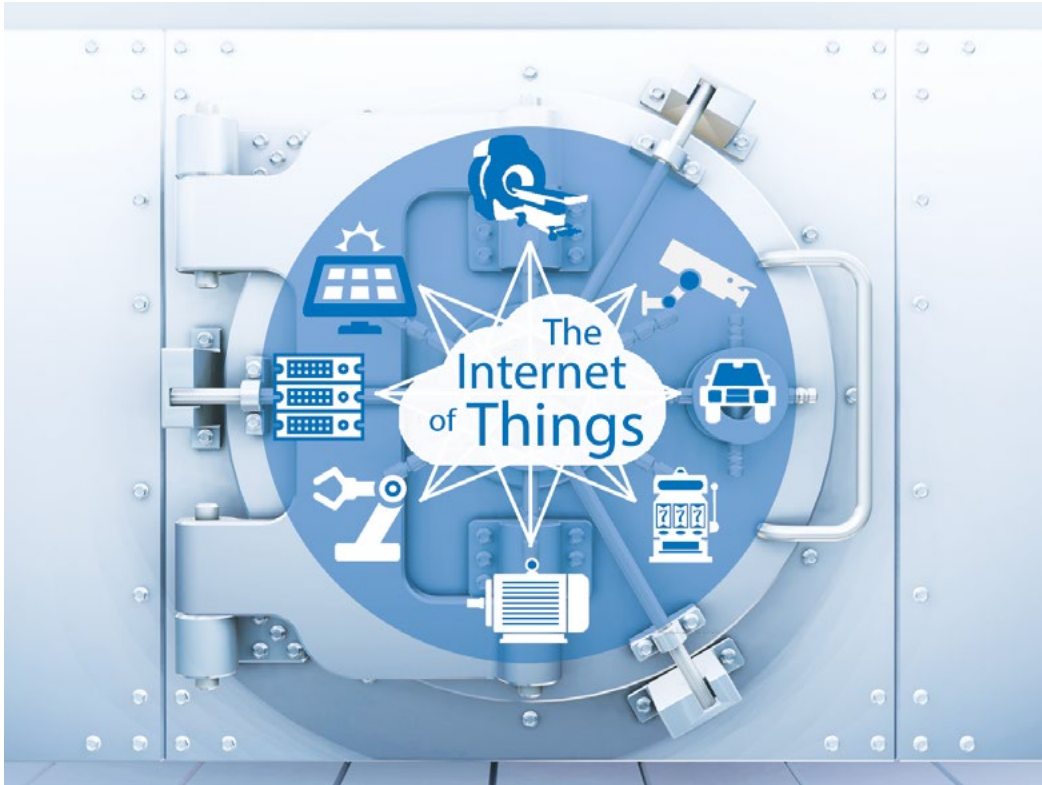
Microsemi Flash SoC FPGAs
• **Lowest Power**   • **Small Form Factors**   • **Scalable Security**

As hardware and software strategies evolve to accommodate the deployment of the Internet of Things and its supporting infrastructure, several concerns have to be addressed at the system level. These advanced systems are remote, increasingly compact, power conscious and offer an ideal gateway for malevolent hackers. Microsemi is the only company with a mainstream programmable logic portfolio that addresses all these concerns comprehensively. For the IoT infrastructure, the SmartFusion2 SoC FPGAs minimize power and offer small form factors without compromising on functionality and cost. These FPGAs also deploy best in class security solutions that prevents tampering, counterfeiting and installation of malicious code.

COMMUNICATIONS   FIELD SENSORS   SMART CITIES   INDUSTRIAL   HEALTH CARE   AUTOMOTIVE
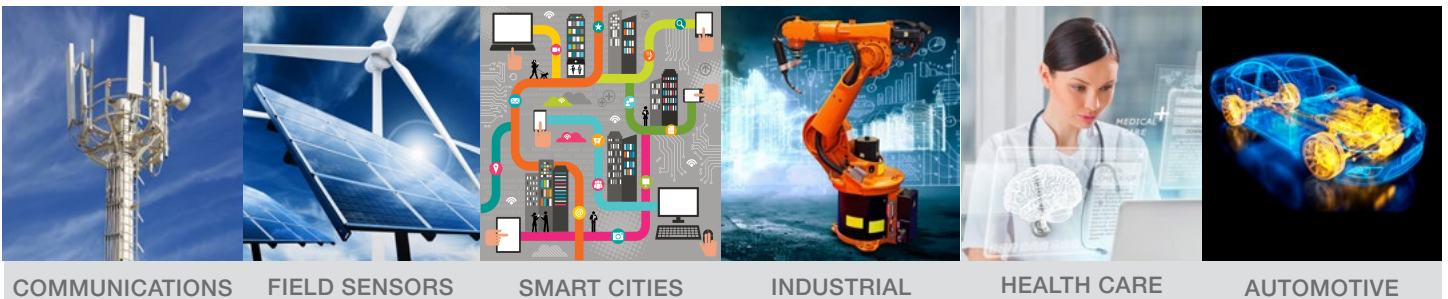
IoT Infrastructure Application Examples

These example designs leverage the low power, scalable security and small form factors of Microsemi FPGAs. In addition to other devices from Microsemi including Power Management, Sensors, Power over Ethernet (PoE), Timing and more.

Factory Automation - Motor Control

A flexible motor control and monitoring solution that leverages the ARM® Cortex™-M3 and SmartFusion2 FPGA fabric. The fabric is used for faster parallel processing and the communications protocol in the microcontroller subsystem does not impact the motor control algorithm. This solution is ideal for high reliability, high RPM, brushless DC, stepper motors and more.
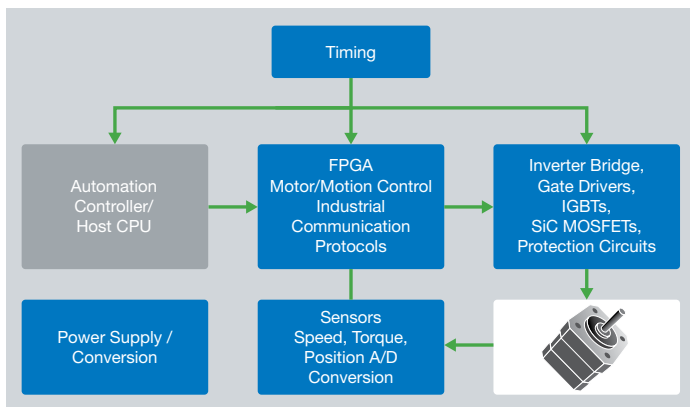
Learn More About Motor Control Kit & IP >>

Medical Health Monitor

The ARM Cortex-M3 and the MSS (Microcontroller Sub System) are an ideal platform for numerous IoT devices. The flash-based FPGA fabric provides flexibility, immunity to SEU and the highest possible reliability. All these features in the lowest power and small form factor packages.
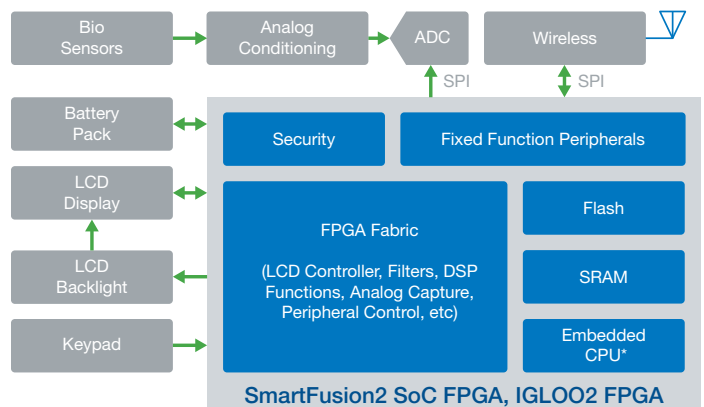
Learn More About SoC Design Software >>

Cloud Based Communications Module

One of the major challenges in all IoT infrastructure products is security. Whether it involves M2M (machine to machine) communications, design and IP security or securing the hardware supply chain, Microsemi has the broadest security solutions available, including the flash-based SmartFusion2 with built-in scalable security.
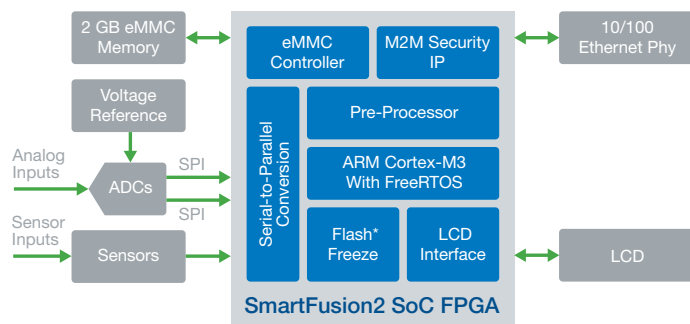
Learn More About Security Eval Board & Demos >>

Control Plane Interface

Although today's embedded processors and application processor contain various I/Os, often for IoT infrastructure applications some protocols are not supported or additional I/Os are needed. The PCIe gen 2 endpoint in the SmartFusion2 is ideal for these I/O expansion applications.
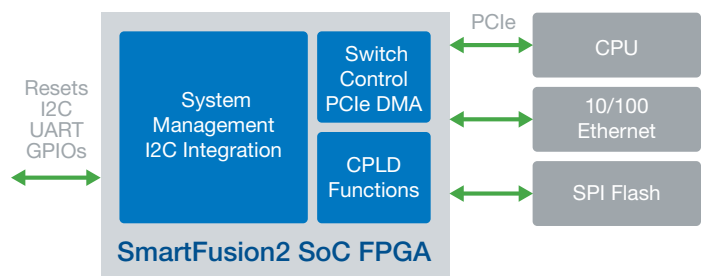
Learn More About PCIe Eval Board & IP >>

www.microsemi.com/products/fpga-soc/design-resources/dev-kits/smartfusion2-kits

Low Power, Small Form Factor and Scalable Security

Microsemi's SmartFusion2 SoC FPGAs are ideal to address the fundamental requirements for IoT infrastructure designs, low power, high integration in small form factors & scalable security. Trust Microsemi to solve your IoT FPGA challenges so you can focus on adding value & differentiation to your product.

Leadership In Low Power FPGAs

Lowest power of any 5Gbps SERDES FPGA.
- 10x lower static power
- Up to 50% lower total power
- 5x lower SERDES power
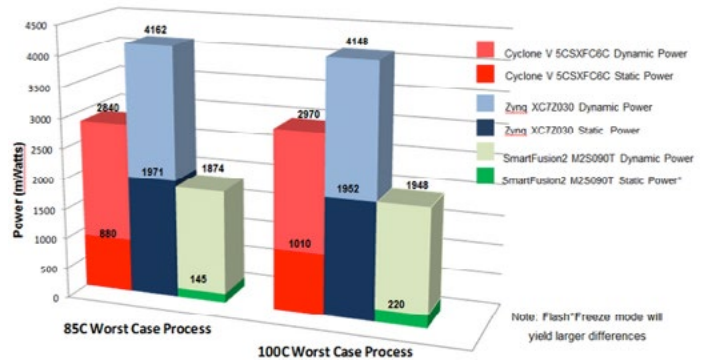
Leadership in Integration & Small Form Factor

With SmartFusion2's true flash-based architecture, overall footprint is smaller than competitive SRAM FPGAs that require an external SPI flash device.
- 166 MHz ARM Cortex-M3 subsystem
- 5G transceivers with built-in PCI Express endpoints
- Highest number of PCI compliant 3.3V I/O
- 60K LEs & 200 I/O in an 11x11mm package

## Leadership In FPGA Security

Microsemi SoC Root of Trust FPGAs are immune to side channel attacks because of its licensed DPA countermeasure scheme. Microsemi not only supplies secure FPGAs, but also a comprehensive ecosystem of secure solutions and consulting services for secure hardware and software. Our security solutions portfolio includes
- Anti-Tamper
- M2M Secure Communications
- Secure Supply Chain
- IP Theft Protection
- Information Assurance
- SecureBoot-CPU™, SRAM FPGA and Linux
- Cryptography
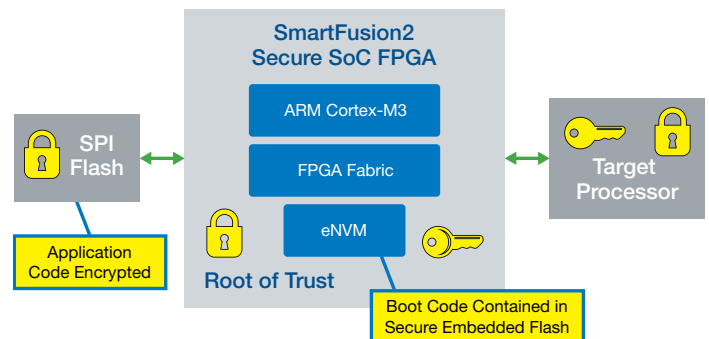
SecureBoot-CPU™ Reference Design

SmartFusion2 SoC FPGAs
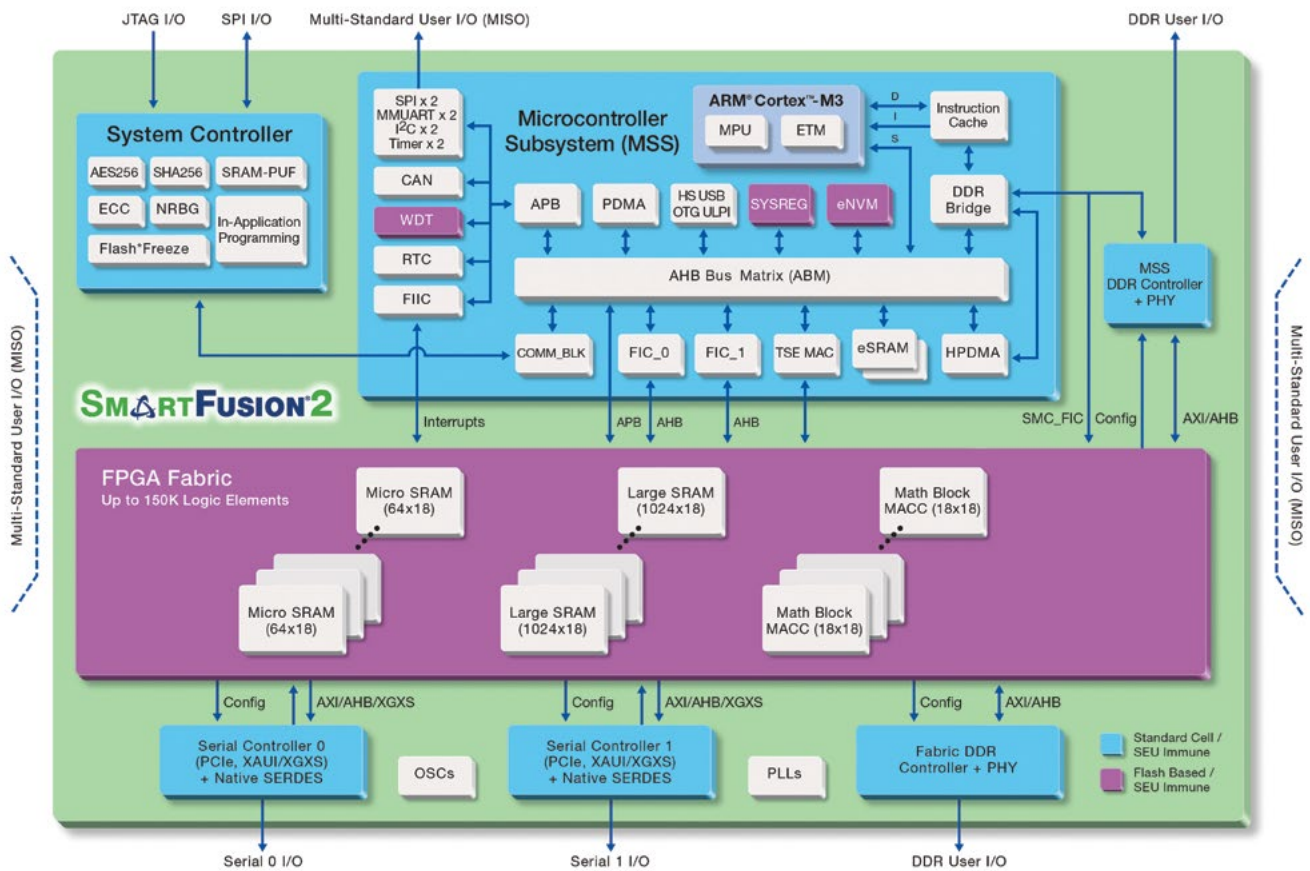
SmartFusion2	Features	M2S005	M2S010	M2S025	M2S050	M2S060	M2S090	M2S150
Logic/DSP	Maximum Logic Elements (4LUT + DFF)	6,060	12,084	27,696	56,340	56,520	86,184	146,124
	Math Blocks (18x18)	11	22	34	72	72	84	240
	Fabric Interface Controllers (FICs)		1		2	1		2
	PLLs and CCCs		2		6			8
	Security		AES256, SHA256, RNG			AES256, SHA256, RNG, ECC, PUF		
MSS	Cortex-M3 + instruction Cache				Yes			
	eNVM (K Bytes)	128		256			512	
	eSRAM (K Bytes)				64			
	eSRAM (K Bytes) Non-SECDED				80			
	CAN, 10/100/1000 Ethernet, HS USB				1 Each			
	Multi-Mode UART, SPI, I2C,Timer				2 Each			
Fabric Memory	LSRAM 18K Blocks	10	21	31	69		109	236
	uSRAM 1K Blocks	11	22	34	72		112	240
	Total RAM (K bits)	191	400	592	1,314		2,074	4,488
High Speed	DDR Controllers (count × width)		1×18		2×36	1×18		2x36
	SERDES Lanes	0	4		8	4		16
	PCIe End Points	0	1		2			4
User I/O	MSIO (3.3V)	115	123	157	139	271	309	292
	MSIOD (2.5V)	28	40		62	40		106
	DDRIO (2.5V)	66	70		176	76		176
	Total User I/Os	209	233	267	377	387	425	574

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Microsemi Corporation (Nasdaq: MSCC) offers a comprehensive portfolio of semiconductor and system solutions for communications, defense & security, aerospace and industrial markets. Products include high-performance and radiation-hardened analog mixed-signal integrated circuits, FPGAs, SoCs and ASICs; power management products; timing and synchronization devices and precise time solutions, setting the world's standard for time; voice processing devices; RF solutions; discrete components; security technologies and scalable anti-tamper products; Ethernet solutions; Power-over-Ethernet ICs and midspans; as well as custom design capabilities and services. Microsemi is headquartered in Aliso Viejo, Calif., and has approximately 3,600 employees globally. Learn more at www.microsemi.com.

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