

# Microsemi Secured Connectivity FPGAs



SmartFusion2 SoC FPGAs

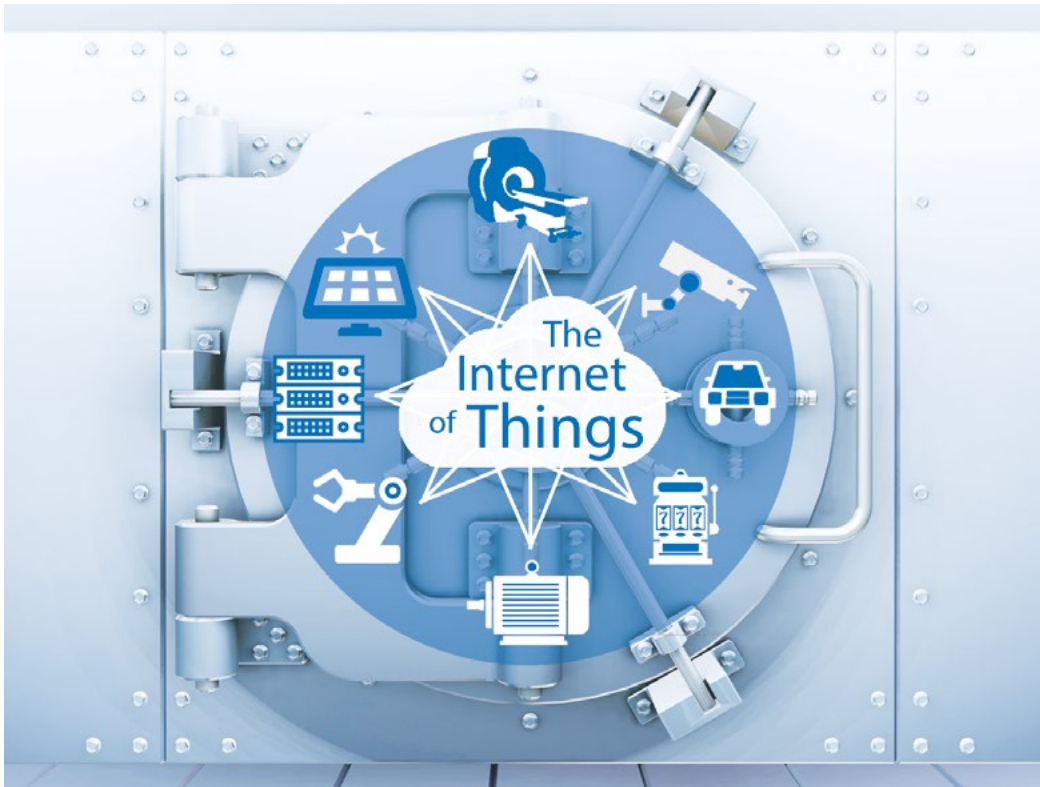
Low Power

Small Form Factors

Scalable Security

# Secured Connectivity FPGAs – Best in Class for IoT Infrastructure

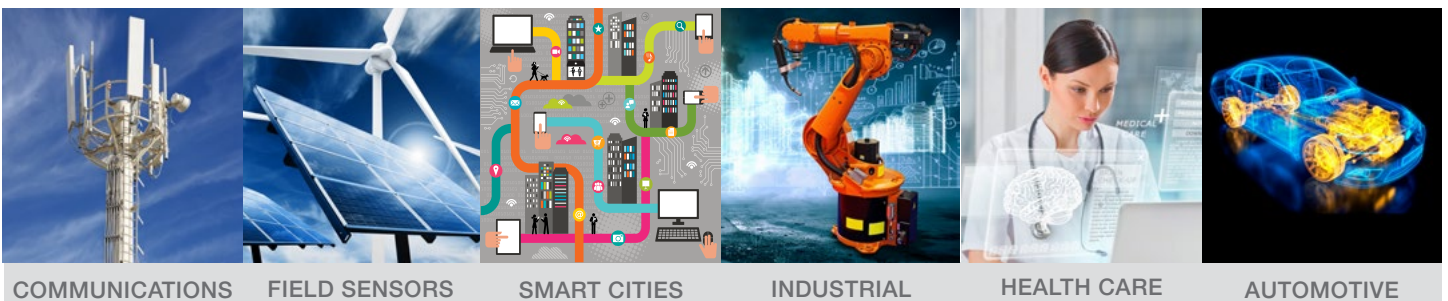
The IoT Infrastructure comprises complex connected systems in a variety of vertical market segments. Microsemi's SoC FPGAs enable a wide variety of these complex systems to be deployed at the lowest power, smallest size and with the highest levels of security available in any FPGA family.



## 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.

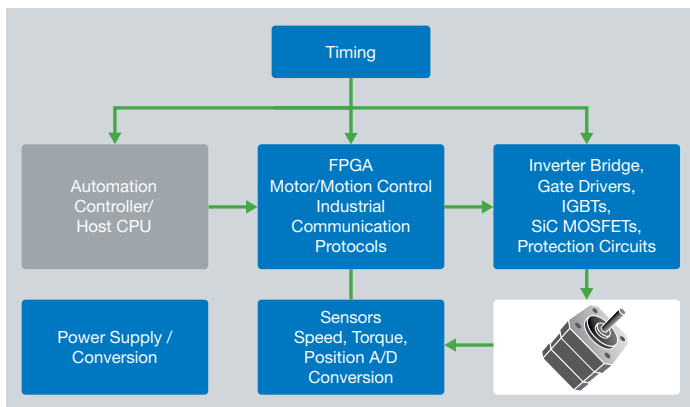


# IoT Infrastructure Application Examples

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

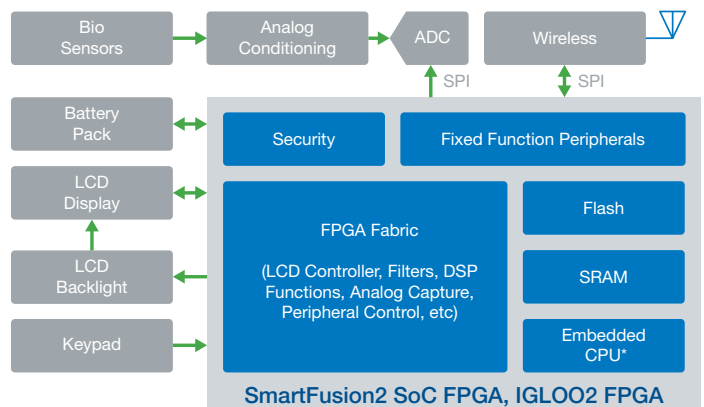
A flexible motor control and monitoring solution that leverages the ARM® Cortex™-M3 and SmartFusion2 FPGA fabric. The fabric is used for faster parallel processing and the communications protocol in the microcontroller subsystem does not impact the motor control algorithm. This solution is ideal for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



[Learn More About Motor Control Kit & IP >>](#)

## Medical Health Monitor

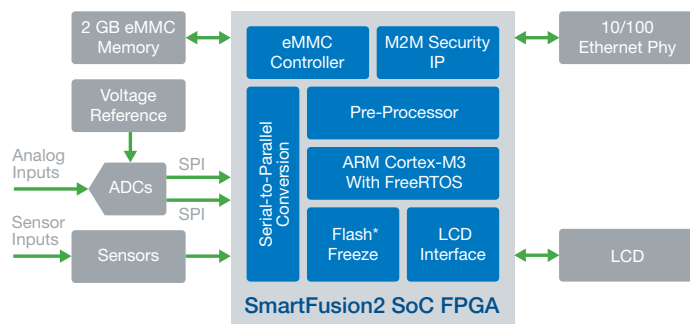
The ARM Cortex-M3 and the MSS (Microcontroller Sub System) are an ideal platform for numerous IoT devices. The flash-based FPGA fabric provides flexibility, immunity to SEU and the highest possible reliability. All these features in the lowest power and small form factor packages.



[Learn More About SoC Design Software >>](#)

## Cloud Based Communications Module

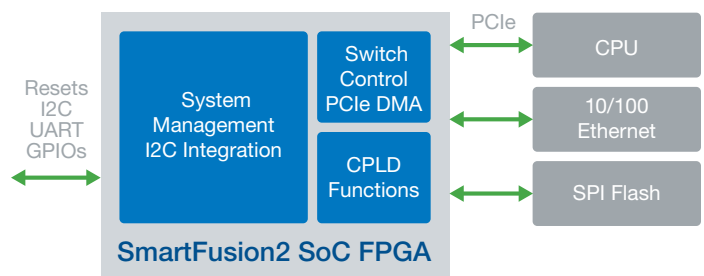
One of the major challenges in all IoT infrastructure products is security. Whether it involves M2M (machine to machine) communications, design and IP security or securing the hardware supply chain, Microsemi has the broadest security solutions available, including the flash-based SmartFusion2 with built-in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

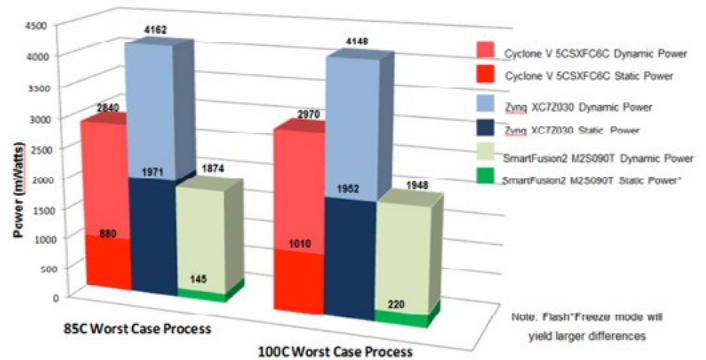
# Low Power, Small Form Factor and Scalable Security

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.

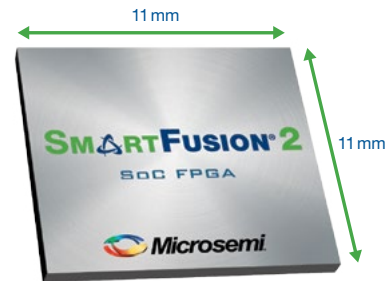
- 10x lower static power
- Up to 50% lower total power
- 5x lower SERDES power



## 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.

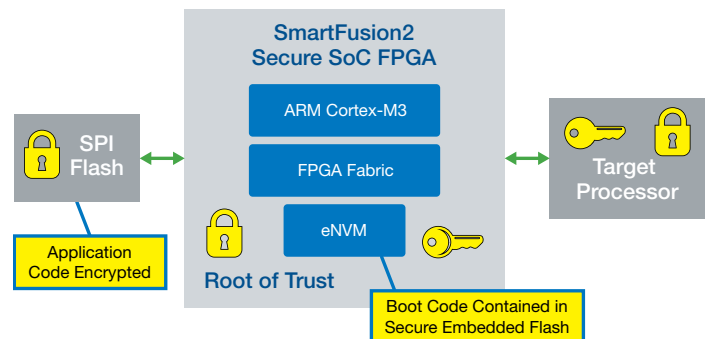
- 166 MHz ARM Cortex-M3 subsystem
- 5G transceivers with built-in PCI Express endpoints
- Highest number of PCI compliant 3.3V I/O
- 60K LEs & 200 I/O in an 11x11mm package



## 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

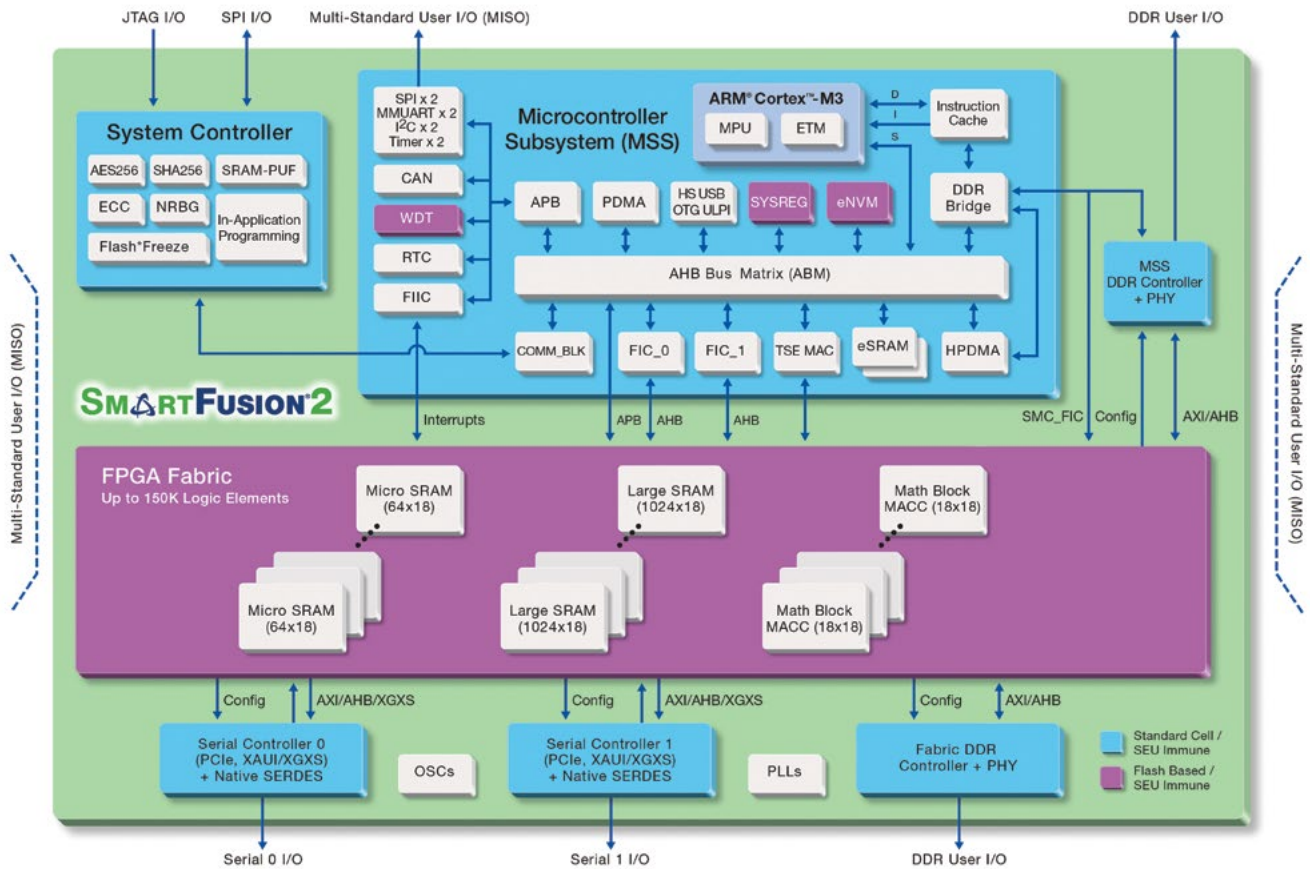
- Anti-Tamper
- M2M Secure Communications
- Secure Supply Chain
- IP Theft Protection
- Information Assurance
- SecureBoot-CPU™, SRAM FPGA and Linux
- Cryptography



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			
MSS	Security	AES256, SHA256, RNG			AES256, SHA256, RNG, ECC, PUF				
	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							
Fabric Memory	Multi-Mode UART, SPI, I2C, Timer	2 Each							
	LSRAM 18K Blocks	10	21	31	69		109	236	
	uSRAM 1K Blocks	11	22	34	72		112	240	
High Speed	Total RAM (K bits)	191	400	592	1,314		2,074	4,488	
	DDR Controllers (count x width)	1x18			2x36	1x18		2x36	
	SERDES Lanes	0	4		8	4		16	
User I/O	PCIe End Points	0	1		2		4		
	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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