M2M Magazine

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Super Chips
June 2005

How much can you fit on one chip? The answer seems to be, “just a little bit more.” Semiconductors available on the market can do about anything required of them without adding bulk to a system, creating impressive flexibility for M2M hardware and application development.

Bringing to market what it calls a “system-on-a-chip,” Ember Corp., www.ember.com, Boston, Mass., has its own fully loaded chip. The 2.4-gigahertz EM250 is an 802.15.4-based, ZigBee-compliant semiconductor system with a programmable microprocessor, radio frequency radio, network protocol stack, and memory. All this is on one chip instead of multiple chips as ZigBee systems usually are.

The seven-millimeter chip enables “location awareness” for network nodes for easier commissioning, management, and network sub-segmentation. Its size allows for reductions in component size, cost, and power consumption. Ember says this will help buildings consume less energy, improve industries’ environmental impact, and make homes safer. Ember’s single-chip platform enables self-organizing, self-healing wireless networks.

Meanwhile, Sensor Platforms Inc., www.sensorplatforms.com, Santa Rosa, Calif., introduced the SSP1492 Sensor Signal Conditioning Integrated Circuit (IC), which can work with multiple resistive, capacity, inductive, voltage, and pulsed sensor elements on the same chip. It works with sensors used for monitoring pressure, temperature, acceleration, magnetism, and position, among others. It has up to 15 sensor input channels and high-speed capabilities for flexible multisensor configurations, especially for collaborative processing of mixed sensor inputs.

George Hsu, president and CEO of Sensor Platforms, says, “As sensor manufacturers and system integrators plan their application development to address their customers’ ever-changing requirements, the SSP1492 is a huge piece of the puzzle, providing an instant IC solution meeting their cost, size, power consumption, and performance specifications.”

The IC is available as a 4.3-sq.mm. bare die with bond pads on the upper surface for wire bonding or soldered wiring; in 80-pin ball grid array with solder balls on the underside for mounting, and in an 80-pin quad-flat package with leads on the four sides.