World's First Hybrid System-On-Chip Integrates HomePlug Green PHY and ZigBee

Hybrii family of single-chip Home-Area-Network solutions combines powerline and wireless communications for smart energy management and electric vehicles

Greenvity® Communications introduces the world's first hybrid system-on-chip (SoC) family that integrates powerline communication (PLC) and wireless capabilities on a single chip. The Greenvity Hybrii® chip family supports both the HomePlug Green PHY PLC and ZigBee® worldwide standards simultaneously to enable robust and intelligent connectivity for a variety of home and building energy management and electric vehicle applications. The first Hybrii family members include the Hybrii-XL chip for smart grid, smart energy management, industrial and consumer applications, and the Hybrii-PLC device for rugged, high temperature conditions.

Hybrii-XL makes smart grid products possible that for the first time integrate both PLC and ZigBee communication capabilities. The single-chip solution allows customers to reduce costs and power consumption by using one chip and one board, rather than the traditional approach requiring multiple chips and boards to support both standards.

When the Hybrii chip is deployed in an energy-efficient appliance, consumers are assured reliable, robust communication as well as ease of use. They don't have to worry about which standard an appliance supports and can place the appliance anywhere in their house without worrying about wireless reception issues or multi-phase issues related to power lines. The Hybrii chip automatically chooses the best medium to transmit energy-related data—wirelessly or via existing power lines—and extends the range to cover an entire home or building. If wireless nodes are noisy due to interference then PLC will be enabled and vice versa, ensuring reliable communication.

"The Hybrii family of single-chip energy management solutions will help enable consumers and utilities to take advantage of the energy and cost savings promised by the smart grid and smart energy systems," said Hung Nguyen, president and CEO of Greenvity Communications. "With our best-in-class hybrid chip offerings that

support both HomePlug Green PHY and ZigBee standards, Greenvity aims to speed the adoption of smart energy products, as well as the growth of the electric vehicle market."

Hybrii-XL for industrial and consumer applications
The Hybrii-XL (GV7011) is a highly integrated single chip with HomePlug Green PHY PLC and ZigBee wireless functions integrated for low cost and lower power consumption. Both HomePlug Green PHY PLC and ZigBee can operate simultaneously, providing high reliability and robust connectivity. The GV7011 is a highly compact chip that integrates analog front-end, RF, baseband, MAC and embedded memory. It also includes a microcontroller (MCU) for low power energy management. The GV7011 offers high performance with data rate up to 9.8 Mbps in PLC mode and 250 Kbps in wireless mode. With versatility and plug-and-play purposes, the Hybrii-XL is powered with multiple interfaces of SPI, Ethernet 10/100 MAC and MII interfaces.

The Hybrii-XL chip provides backbone, two-way communication in HEMS/BEMS applications such as smart meters, energy-efficient appliances, home gateways, routers, HVAC and thermostats, enabling demand response and load balancing that can reduce energy usage by more than 50 percent. For multi-dwelling units (MDU) such as condos and apartment buildings, existing power lines can transfer data and cover a longer distance than wireless alone, while ZigBee will cover each room wirelessly. Additional applications include solar inverters and smart and controlled lighting.

Hybrii-PLC for electric vehicles
The Hybrii-PLC chip (GV7012) was designed to support electric vehicle and electric vehicle supply equipment (EVSE) or battery chargers. The single-chip solution with HomePlug Green PHY PLC integrates analog front-end, baseband, MAC, embedded memory and an MCU. It can support up to 9.8 Mbps of data rate over power line. The GV7012 chip also is equipped with SPI, Ethernet 10/100 MAC and MII interfaces. Designed to meet rugged conditions and automotive grade temperatures (-40 degrees C to +105 degrees C), the Hybrii-PLC is ideal for demanding environments such as inside a car where high-temperature capability is a requirement.

HomePlug Green PHY and ZigBee standards
HomePlug Green PHY PLC and ZigBee wireless are emerging as the de facto standards for smart grid, home energy management systems (HEMS) and building energy management systems (BEMS), according to the Association of Home Appliance Manufacturers (AHAM). In addition, the international Society of Automotive Engineers (SAE) and the European Automobile Manufacturers' Association (ACEA) have selected HomePlug Green PHY PLC as the communication standard for the universal charging system that supports both AC charging and ultra-fast DC charging in electric vehicles.

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