

Hybrid SoC integrates HomePlug Green PHY and ZigBee



Greenvity Communications introduced what it asserts is 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 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 integrate both PLC and ZigBee communication capabilities. When the Hybrii chip is deployed in an energy-efficient appliance, consumers do not 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.

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

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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.

Greenvity Communications

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