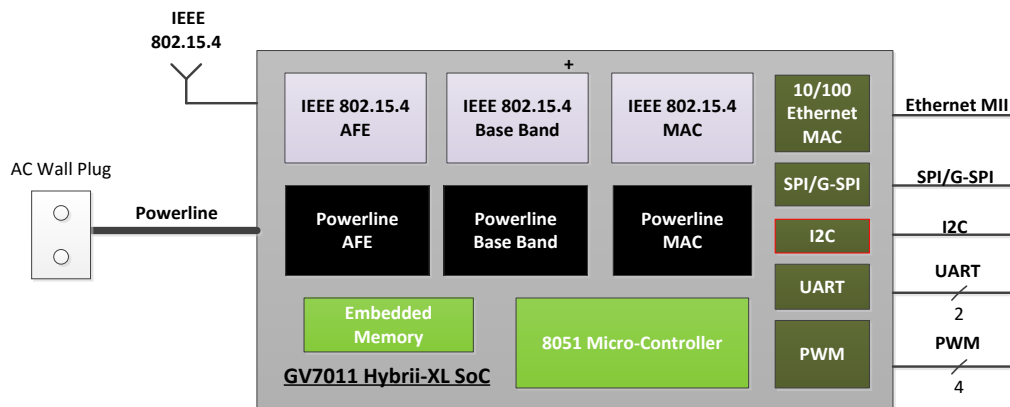


GV7011 Hybrii-XL™ SoC Product Brief

A Hybrid System-on-Chip Integrating 2.4GHz IEEE802.15.4 Wireless and Wide Band Power Line Communications with Ethernet



Product Description

The Hybrii-XL™ SoC (GV7011) is the industry's first hybrid System-on-Chip (SoC) that integrates two international standards, IEEE 802.15.4 wireless and wide band powerline communications. IEEE 802.15.4 is the industry leading wireless standard which is used in many applications including control, monitoring and sensor applications due to its easy-to-use, low cost and low power implementation. IEEE 802.15.4 the most popular wireless standards that used in smart grid, smart energy and HAN applications.

Hybrii-XL is the most compact hybrid SoC that delivers robust and reliable wireless and powerline communications designed for range extension.

Applications

- Home Energy Management System
- Building Energy Management System
- MDU
- Home Area Networks
- Home Gateways
- Routers
- STBs and TVs
- Solar DC-AC inverters and Micro-inverters
- Smart Meters / Appliances
- Controlled LED Lighting, Signage and Display's

Key Features

- Integrate IEEE 802.15.4 wireless and wide band powerline communications
- Embedded high performance 8051 MCU
- Integrate Ethernet 10/100 MAC
- Features SPI, (2) UART, (4) PWM, I2C and GPIO pins
- Supports a serial flash
- Utilizes a single low cost 24MHz crystal
- Industrial temperature range from -40 to +85 °C
- RoHS, 12 x12 mm 148-QFN package

IEEE 802.15.4 Wireless

- 2.4 GHz IEEE 802.15.4 compliant RF transceiver
- Supports worldwide wireless frequencies: US, China, Europe
- Integrate RF, PHY baseband and MAC
- Support ZigBee SE 1.x and SE 2.0 stacks
- Receiver sensitivity: <-85dBm
- Receiver gain: -10 dB to +79 dB
- Excellent dynamic range: +89 dB
- High output power: +8 dBm
- Multi-path delay spread: <400 ns
- Internal T/R switch
- Differential TX/RX ports
- On-board LPF and BPF filters
- Temperature sensor and power sensor are integrated for calibration purpose
- Supports battery operation
- Sup RSSI and LQI
- Data rates: 250 Kbps
- Security: AES 128 encryption/decryption co-processor
- Automatic calibration for DC offset and I/Q mismatch
- Co-existence with Wi-Fi and Bluetooth

Wide Band Power Line Communications

- Integrate Analog Front End (AFE) with PHY Baseband and MAC
- Wideband spectrum: from 2 to 28 MHz
- Data rates:
 1. Mini-ROBO mode: 3.8 Mbps
 2. HS-ROBO mode: 9.8 Mbps
- Differential I/O for RX/TX
- Integrate filters
- Integrate internal line driver:
 1. Differential output swing: 1.5 V_{pp} @ 50 Ω
 2. Capable to support other impedance loads
 3. Peak current: 7.5 mA
- Receiver gain: -18 dB to +48 dB
- Wide dynamic Range: 66 dB
- Supports: 277 VAC and DC
- AES 128 encryption/ decryption co-processor

Embedded Micro-Controller

- Integrate low power 8-bit 8051 MCU
- Integrate 256 Kbytes of RAM for code memory
- Integrate 48 Kbytes of RAM for data memory
- Boots from internal ROM or from external serial flash
- Supports external serial flash: 256 Kbytes to 2 Mbytes

10/100 Ethernet MAC

- Integrate 10/100 Ethernet MAC
- Support MII interface operating at 25 MHz
- Interface connects seamlessly to commercial 10/100 Ethernet PHY
- Compliant to IEEE 802.3 specification

Serial Peripheral Interface

- 4 pins interface including a clock pin
- Support both Master and Slave modes
- Configurable to interface up to 8 slave devices
- Support DMA for burst data transfer between Hybrii and external CPU

I2C Interface

- 2 pins serial interface
- Programmed as Host interface

UART Interface

- Support 2-pins UART for communication and tracing with Keil debugging tools
- Support standard UART

Serial FLASH Interface

- Support standard serial FLASH interface
- Instructions for micro-controller are stored in the serial flash and are downloaded to the internal Code memory via serial flash interface at power up

GPIO

- 23 GPIO pins are available for software programming

Software API

- Software API and commands are available upon request to interface with Hybrii chip through SPI and Ethernet MII

Development Kit

- Hybrii Development Kit is available upon request to sales@greenvity.com
- The development kit will include the following items:
 1. Reference design module
 2. Software and firmware in executable (binary) format
 3. Operating manual with software API and command specification

Smart LED Lighting Control with Sensor Network



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