

CG5110 G.hn

Modem for Home Entertainment Networks over coax, phonline & power line with ClearPath Extreme™



Sigma's breakthrough G.hn chipset – the CG5110 with ClearPath Extreme™ – is the only home networking solution that enables a completely self-install home entertainment network for distribution of Triple Play and IPTV over all existing wires in the home: power line, coax and phonline. With the CG5110, IPTV deployment costs can drop by 50% or more because there is no need to lay new wires. The CG5110 enables novice end-users to install their own networks, thus avoiding the need for truck rolls. The solution provides unparalleled, full-home coverage over power line with ClearPath Extreme™ – Sigma's G.hn compliant MIMO technology. The CG5110 also affords end-users unprecedented convenience and flexibility because every power outlet, coaxial outlet and phone jack in the home becomes a network connectivity point on the same mesh network.

Sigma's CG5110 is the first system-on-chip (SoC) to unify the fragmented IPTV market with a G.hn chipset. It is the only SoC with a full ITU-T G.hn (G.9960/1) stack protocol that guarantees a seamless migration from ITU-T G.9954 Recommendation (HomePNA™ 3.1) and HomePlug® AV Version 1.1/IEEE P1901 to G.hn.

POWERING THE NEW DIGITAL HOME



SET-TOP
BOXES

CONSUMER
ELECTRONICS

AV
NETWORKS

HOME
CONTROL

COMMERCIAL
SYSTEMS

FEATURES

- Compliant with ITU-T G.hn Recommendation (G.9960/1) over all existing wires: power line, coax, and phonline
- Compliant with ITU-T G.9954 Recommendation (HomePNA™ 3.1)
- Compliant with HomePlug® AV Version 1.1/IEEE P1901
- Compliant with ITU-T G.cx Recommendation (G.9972) over power line
- PHY rate up to 1 Gbps per medium
- Plug & Play solution – auto configuration; self-install over all three media
- G.hn over power line employs ClearPath Extreme™ technology – enables usage of power line as a multiple input multiple output (MIMO) channel, thus extending coverage, improving the network's immunity to noise and delivering a higher throughput
- Supports both G.hn master and G.hn endpoint applications
- Enables auto detection of supported technologies (G.hn, HomePNA™ and HomePlug® AV) and their corresponding media (power line, coaxial cable, and phonline)
- Supports simultaneous connection to multiple media to allow auto selection and ensure connectivity
- Supports enhanced algorithms for dynamic topology detection and routing
- Multi-hop relaying/repeater capability among G.hn-based products on every wire
- Supports coordination and coexistence with neighboring networks
- Intelligent Rate Adaptive algorithm to ensure optimal rate on any channel in noisy environments
- Coexists with VDSL2/bonded VDSL2/VDSL/ADSL2+/ADSL2/ADSL, ISDN, POTs, terrestrial and satellite TV

Features continued on page 3

CG5110 Chipset

G.hn Modem with ClearPath Extreme™

Sigma's CG5110 ensures unprecedented levels of consistency and reliability, making it the ideal solution for embedding into G.hn-enabled consumer electronics devices, gateways and set-top boxes for whole-home networking of multiple HD and 3DTV video streams. It provides more throughput than any legacy technology by supporting a 1 Gbps physical layer (PHY) bit rate for multimedia and data distribution over a single medium and up to 3 Gbps by simultaneously using all three wires inside the home. The CG5110 contains a flexible digital engine, the CG5111, with an integrated media access control (MAC) and PHY transceiver that interfaces with an external analog front-end (AFE), the CG5113.

Devices that use the CG5110 will deliver to end-users the highest Quality of Experience (QoE) due to the chipset's network level and device level QoS. The chipset is optimized to deliver multiple streams of high and standard definition TV (HDTV and SDTV) video content, 3DTV video traffic, audio content, Voice over Internet Protocol (VoIP), data, gaming and other applications that are highly QoS-sensitive.

Over power line, the CG5110 chipset offers unmatched performance with ClearPath Extreme™, Sigma's MIMO (multiple input, multiple output) feature. ClearPath Extreme uses all three wires in the power outlet – phase, neutral, and ground – to enable the best delivery of IPTV traffic over power lines, even in the presence of surge protectors, circuit breakers and across multiple phases. ClearPath Extreme achieves unprecedented coverage across power outlets, higher guaranteed throughput, and better immunity to noise while maintaining compatibility with ITU-T G.hn Recommendations.

The CG5110 is the first and only technology that enables a completely self-install home entertainment network over coaxial cable. It provides strong immunity to noise caused by compromised infrastructure (poorly shielded cables, bad connectors, and unterminated stubs).

The CG5110 is the highest performing and most robust home entertainment networking solution over phonenumber and it coexists with xDSL. It has the longest reach available and also has repeaters, which extend that reach even further.

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FEATURES

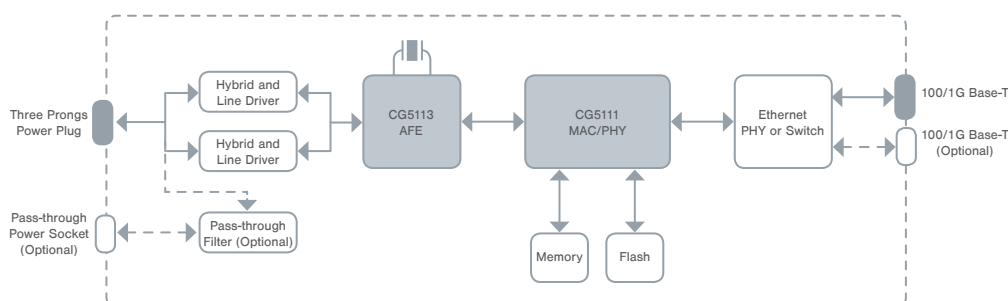
- Implements OFDM multicarrier modulation, advanced error correction codes, advanced channel adaptation and noise mitigation schemes to maximize throughput
- Supports 16384/4096/1024/512/256/128/64/32/16/ 8-QAM, QPSK, BPSK and robust modulation schemes employing diversity in time and frequency
- MAC methods: CSMA/CA, TDMA, and CSMA
- GMII, RGMII and MII host interfaces. Supports MAC and PHY modes
- Comprehensive traffic classification for QoS and flow definition, analysis of layers 2 to 4
- Guaranteed Quality of Service (QoS), prioritized and parameterized
- Device Level QoS
- Supports IPv6, IPv4. Manages multicast using IGMP v1-3 and MLD v1-2
- Supports real multicast for audio and video traffic
- 128-bit AES encryption with key management.
- Instant Security. Also supports legacy pushbutton-based privacy mechanism
- Support for Broadband Forum's remote management and diagnostics based on TR-069
- Quick system troubleshooting using built-in diagnostic tools and APIs
- Signal quality LED indication
- Field-upgradeable firmware
- Fully configurable device able to integrate customized functionality
- Environmentally-friendly technology - integrates innovative features for reduced energy consumption
- Green and RoHS compliant packaging
- CG 5111A-IBE3: 196 Pin HSBGA
- CG 5113A-INE1: 88 Pin QFN
- Industrial temperature range
- Full development systems and turnkey reference designs enable fast time-to-market

BENEFITS

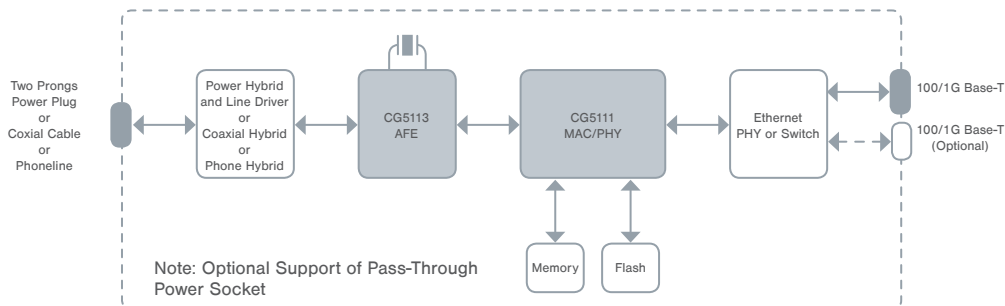
- Eliminates the cost of professional installation
- Enables flexible deployment architecture according to the customer's preference. No need to locate the STB near the primary TV or the Gateway near the primary PC
- Consistent user experience and improved immunity to interference on the network for reliable HD picture quality
- Full-home coverage and connectivity results in increased customer satisfaction, higher profits and fewer support calls
- No need to hold double inventory; the same solution can support all media and legacy technologies
- No need to run new wires; G.hn operates over existing power line, coax and phoneline.
- No need to use new CAT5 cables since existing cables can be used to communicate from device to device
- Instantly secure the home network without the hassle of SSID and other cumbersome mechanisms
- Enables fast and cost-effective trouble-shooting via advanced local/remote diagnostic tools
- With CG5110, all CE products in a home can be part of the same mesh network
- Enables a smooth and seamless migration from HomePNA™ and HomePlug® AV 1.1 technologies to G.hn. Unifies the fragmented IPTV market
- Auto technology/auto medium detection eliminates the need for user configuration
- Quick customization and product differentiation via optimized software API
- Fast integration and time-to-market enabled by full development systems and turnkey reference designs, including board layout, manufacturing diagnostic tools, documentation and more

SYSTEM IMPLEMENTATION EXAMPLES:

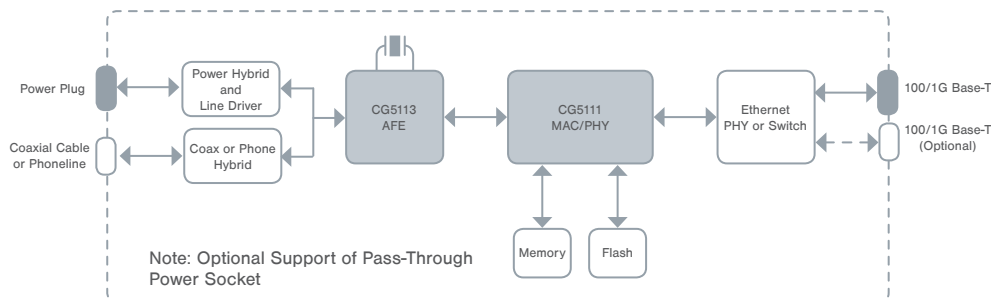
Ethernet over Power Line Bridge using ClearPath Extreme™



Ethernet over Power Line or Coaxial Cable or Phonenumber Bridge



Ethernet over Power Line and Coaxial Cable/Phonenumber Bridge



APPLICATIONS

- Home AV networks
- 3D, High definition (HD) and Standard definition (SD) in-home video distribution, Multi-room DVR
- Video and audio streaming in Media Gateway (IPTV) applications
- Thin clients
- Voice Over IP (VoIP)
- Shared Broadband Internet Access
- PC file and application sharing
- Security and Surveillance (home monitoring)
- Home Health Care
- Gaming

PRODUCTS

- Set-top boxes and CE products
- Residential gateways
- Optical network terminals (ONTs)

- Home Audio and Home Theater Systems
- Network-attached storage devices (NAS)
- IP cameras
- Video game consoles
- VoIP adaptors
- Ethernet to G.hn bridges

ORDERING INFORMATION

CG5111A-IBE3	G.hn Digital MAC and PHY IC
CG5113A-INE1	G.hn Analog Front-End IC
CG5110HEP	Ethernet-over-Power Line Bridge
CG5110HEPC	Ethernet-over Power Line and Coax Bridge
CG5110HDK	Hardware Development Kit
CG5110SDK	Software Development Kit

DISTRIBUTORS

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