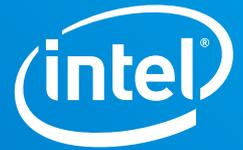


PRODUCT BRIEF

Connected Home
Intel® Ethernet Technology



Intel® Ethernet Network Connection GPY21x (2.5 GbE PHY)



Speed is an essential player in today's fast-moving, always-on environment. Unleashing the right speed starts with putting more robust tools into play. Intel is now offering a low-power, cost-effective 2.5 Gigabit Ethernet connection.

The Intel® Ethernet Network Connection GPY21x (2.5 GbE PHY) is a device that offers a cost-optimized and lower-power solution that is well-suited for routers, switches, and home gateways. The 2.5 GbE device provides great interoperability for NBaseT and the new IEEE 802.3bz standard, and is optimized to work with Intel's 2.5 GbE PHY for PCs.

The Challenges

Ramping up performance requires more than high bandwidth to the home. Better distribution is required with interoperability and greater efficiency. The various pieces of technology must work together seamlessly to move the customer experience forward, and interoperability is the cornerstone of transforming those needs into reality. Ultra-low power modes and energy-saving safeguards appeal to customers who want to maximize performance and minimize overall costs.

The Solutions

Intel offers a 2.5 GbE PHY for routers, switches, and home gateways that is optimized for interoperability with Intel's 2.5 GbE PHY for PCs. It's optimized for low power and low cost, featuring an ultra-low power mode, which is designed for battery operated devices.

Value Propositions

Low Power Consumption – The GPY21x has a low power consumption of 850 mW in 2500BASE-T mode. The device supports Energy-Efficient Ethernet to reduce power

consumption depending on traffic. In addition, power can be saved on system level by using the Wake-on-LAN (WoL) functionality, the ultra low power mode and the “no link” states.

Small Footprint and RBOM – The GPY21x is packaged in a small 7 x 7 mm single-row VQFN-56, ideal for 4-layer PCBs. The low EMI linedriver with integrated termination simplifies PCB design. The SGMII interface supports 10/100/1000/2500 Mbps speeds. The device can be operated from a single 3.3 V power supply using the integrated DC/DC switching regulator.

Advanced Features – Chip temperature is monitored by an internal thermal sensor, providing thermal information for system warnings or to initiate speed reduction in order to prevent system overheating. The precise timing synchronization according to the standards 1588v2 and SyncE required for Industrial, Transportation, and Mobile Networking is supported. GPY212 also supports MACsec point-to-point wire speed data security. The GPY21x is configurable via pin strapping, the MDIO interface, or by an external Flash.

Applications

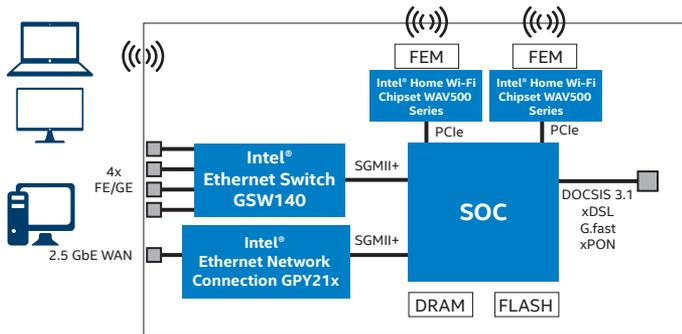
- Broadband router: xPON, wireless, 4G/5G, G.Fast, G.hn, cable, xDSL
- Home gateway: wireless gateway, home server, home storage (NAS)
- High port count 2.5G switch
- Dual-band dual-concurrent 802.11ac/ax enterprise access point
- Special ultra-low power mode (<10 mW, no cable connected)
- Multiple Gigabit ports with 2.5G uplink switch

To learn more about Intel® Ethernet Network Connection GPY21x (2.5 GbE PHY), visit www.intel.com/connectedhome.

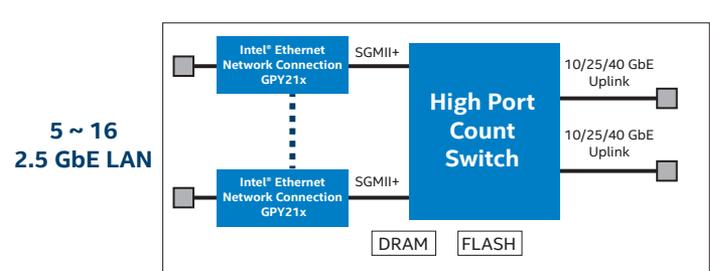
Key Features

Full-/half-duplex modes for 10BASE-T(e), 100BASE-T, 1000BASE-T and 2500BASE-T
Single power supply at 3.3 V using the integrated DC/DC switching regulator
Single-row VQFN-56 package (7 x 7 mm)
Low power consumption of typically 850 mW at 2500BASE-T
Precise time stamping according to IEEE 1588 Version 2
Synchronous Ethernet (SyncE)
Smart LED brightness control integrated for link status display
Smart AZ for legacy MAC to support IEEE 802.az power saving in idle mode
Programmable thermal sensor to monitor chip temperature for system warning and down speed
Industrial temperature range: -40°C to 85°C
Jumbo frames of up to 10 KB
Cable diagnostics
Auto down speed for Cat3 (4 wires) or bad cable
Auto MDI/MDI-X and Auto Polarity Correction
Wake-on-LAN
MACsec, 16 security channels and 32 association numbers (GPY212 only)
Standards: IEEE 802.3 (Relevant clauses) IEEE 802.3bz and NBASE-T IEEE 802.3az (Energy-Efficient Ethernet) IEEE 1588 Version 2 and SyncE

Router/Gateway Application



High Port Count Switch Application



Product Name	Description	Ordering Code	Package
Intel® Ethernet Network Connection GPY211	Single-port 2.5 GbE Ethernet PHY	GPY211B1VI	VQFN-56
Intel® Ethernet Network Connection GPY212	Single-port 2.5 GbE Ethernet PHY including MACsec	GPY212B1VI	VQFN-56



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