

2.5Gigabit Ethernet PHY for Routers, Switches, and Gateway

PRODUCTS

GPY241	4-port 2.5GbE PHY
GPY245	4-port 2.5GbE PHY with industrial temperature range, MACsec, and SyncE

FEATURES

- Support of 10BASE-T_e, 100BASE-TX full and half-duplex, 1000BASE-T and 2.5GBASE-T full-duplex
- Two power sources for SGMII and three power sources for USXGMII (3.3V/1.8V/core)
- FC-BGA-256 package (12 x 12mm)
- Four channel SGMII+ or single channel USXGMII-4x2.5G mode
- Typical power consumption around 1W per port in 2.5GBASE-T mode
- Precise time stamping according to the *IEEE 1588 Version 2 and Synchronous Ethernet (SyncE)*
- Smart LED brightness control integrated for the link status display
- Smart AZ for legacy MAC to support *IEEE 802.3az* power saving in idle mode
- Remote firmware upgradable through external optional flash
- Programmable thermal sensor to monitor the device temperature for the system warning and the down speed
- Industrial temperature range is from -40°C to 85°C (GPY245 only)
- Jumbo frames of up to 10 KB
- Cable diagnostics
- Auto down speed for Cat3 (four wires) or bad cable
- Auto MDI/MDI-X and auto polarity correction
- Wake-on-LAN
- Rate adaptation over USXGMII
- Preamble alignment
- MACsec, 16 security channels and 32 association numbers (GPY245 only)

APPLICATIONS

- Broadband router: xPON, wireless, 4G/5G, G.Fast, G.hn, cable, xDSL
- Home gateway: wireless gateway, home server, home storage (NAS)
- High and low port count 2.5 GbE switch
- Dual-band dual-concurrent *802.11ac/ax* enterprise access point



4-Port 2.5G Ethernet PHY for Gateways and Switches

Faster Ethernet connectivity enables users to make the most of increased speeds available through the enhanced broadband access networks. 2.5Gigabit Ethernet (GbE) increases the bandwidth without changing cables, is more cost-effective, and consumes less power than 5GbE or 10GbE.

The Ethernet network connection of the GPY24x device is a 4-port 2.5G Ethernet PHY that is suited for routers, switches, and home gateways. It provides interoperability and is optimized to work with 2.5GbE PHY for PCs.

The device temperature is monitored by an internal thermal sensor that provides thermal information for system warnings or initiates speed reduction to prevent system overheating. It supports a timing synchronization according to the *IEEE 1588v2 and SyncE* standard required for industrial, transportation, and mobile networking.

The GPY24x device also supports MACsec point-to-point wire speed data security. Rate adaptation using *IEEE 802.3x* pause frames supports 10Mbps, 100Mbps, and 1Gbps transmission over the SGMII+.

STANDARDS:

- IEEE 802.3: Relevant clauses
- IEEE 1588 Version 2 and SyncE (ITU-T G.8261/G.8262)
- IEEE 802.1: AE MACSec

GPY24x Ethernet Network Connection

The GPY24x device supports the 10G USXGMII-4x2.5G mode to connect the SoC or the switch MAC interface with less pin counts.

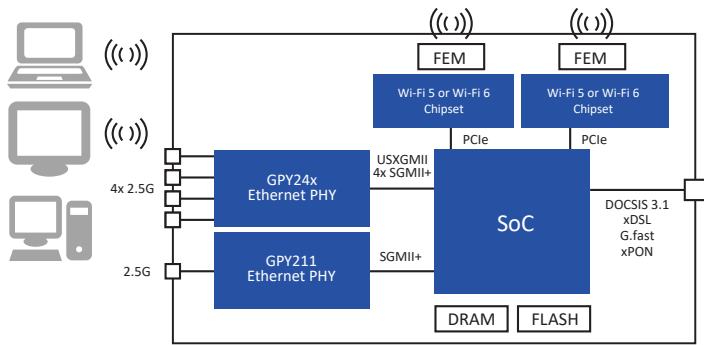
It provides four SGMII+ to the SoC or the switch MAC which supports SGMII+ only.

Low Power Consumption

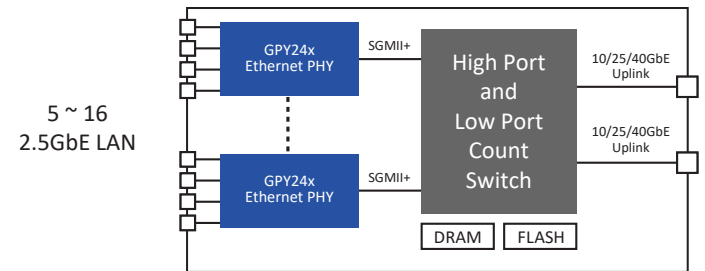
The GPY24x device has a typical power consumption of around 1W per port in 2.5GBASE-T mode. The device supports energy-efficient Ethernet to reduce power consumption depending on traffic. Additionally, the power can be saved at the system level by using the Wake-on-LAN (WoL) functionality and the *no link* states.

Small Footprint and RBOM

The GPY24x device is packaged in a small 12 x 12mm FC-BGA-256, ideal for 4-layer PCBs. The low EMI line driver with integrated termination simplifies the PCB design. Four SGMII+ and one USXGMII interfaces support 10/100/1000/2500Mbps speeds. The device requires only 3 power sources (3.3V/1.8V/core).



Router and Gateway Application



High Port and Low Port Count Switch Application

Product Information

Product	Description	Ordering Code	Package
GPY241 Ethernet Network Connection	4-port 2.5GbE PHY	GPY241A1BI	FC-BGA-256
GPY245 Ethernet Network Connection	4-port 2.5GbE PHY with industrial temperature range, MACsec, and SyncE	*	FC-BGA-256

*Advance information, ordering code to be determined.



Corporate Headquarters:
 5966 La Place Court
 Suite 100
 Carlsbad, CA 92008
 Tel.: +1 (760) 692-0711
 Fax: +1 (760) 444-8598
www.maxlinear.com

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