

## Single Port Ethernet Gigabit Copper PHYs

### PRODUCTS

MxL86110	RGMII
MxL86110C	Commercial Temperature
MxL86110I	Industrial Temperature
MxL86111	SGMII / RGMII
MxL86111C	Commercial Temperature
MxL86111I	Industrial Temperature
MxL86110I-EVK-1	Evaluation Kit

### FEATURES

- Supports
  - 10BASE-Te, 100BASE-TX: Full and half-duplex
  - 1000BASE-T: Full-duplex
- MAC interface
  - MxL86110: RGMII
  - MxL86111: RGMII or SGMII
- Package
  - MxL86110: QFN40
  - MxL86111: QFN48
- Low power of <400mW with external DC/DC
- Energy Efficient Ethernet for 100BASE-TX and 1000BASE-T
- No-link power saving
- Auto MDI/MDI-X
- Auto polarity detection and correction
- Internal DC/DC enables single 3.3V supply operation
- Supports 3.3V, 2.5V or 1.8V RGMII
- 25MHz XTAL or OSC clock input
- Three network status LEDs
- Cable diagnostic: Open, short, loop length
- Auto down-speed for bad cables or two pair loops
- 10k byte jumbo frame support
- Wake on LAN over BASE-T or Fiber (MxL86111)
- MxL86111: SGMII / 100BASE-FX / 1000BASE-X interface, media converter, dual media or RGMII to SGMII bridge functionality
- Supports SyncE (Synchronous Ethernet)



### Product Description

The MxL86110 and MxL86111 are state-of-the-art single port Ethernet Gigabit Copper PHYs with low power consumption, a small footprint and low RBOM. They support 10BASE-Te, 100BASE-TX and 1000BASE-T on the twisted pair interface. 10BASE-Te and 100BASE-TX support half- and full-duplex and 1000BASE-T full-duplex mode of operation. The devices are available for both commercial and industrial temperature ranges.

MxL86110 supports the RGMII MAC interface. MxL86111 integrates an SGMII / 100BASE-FX / 1000BASE-X interface and supports RGMII or SGMII as the MAC interface and dual media, media converter or RGMII to SGMII bridge applications.

Both devices have a low power consumption and support Energy Efficient Ethernet (EEE) for 100BASE-TX and 1000BASE-T. Further power saving can be achieved using the Wake-on-LAN functionality and the no-link detection.

The devices are provided in a small package (MxL86110: QFN40, MxL86111: QFN48). The devices can be operated from a single 3.3V power supply using the integrated DC/DC converter with few external components.

Advanced applications are supported by the industrial temperature range variants (MxL86110I and MxL86111I), SyncE support, integrated SerDes, and the integrated SGMII/BASE-X interface of MxL86111.

## BENEFITS

- Flexible interface
  - RGMII/SGMII/BaseX interface, media converter
  - 3.3V/2.5V/1.8V IO
- Reduced BOM
  - Single power source, 25MHz Crystal
- Green Power
  - EEE, Wake on LAN, link down saving
- Advanced Features
  - SyncE, dual media, industrial temperature

## APPLICATIONS

- Industrial PC & Industrial Equipment
- Ethernet Switches, Routers, & Gateways
- Power-over-Ethernet (PoE)
- Base Stations & Controllers
- Consumer STB, DVD Player, VOIP Phone, Digital TV & Game Consoles
- NAS Equipment
- Printers & Office Equipment

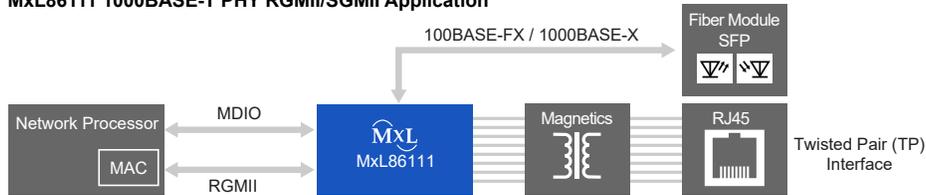
## Application Block Diagrams



**MxL86110 1000BASE-T PHY RGMII Application**



**MxL86111 1000BASE-T PHY RGMII/SGMII Application**



**MxL86111 Dual Media Application**



**MxL86111 Media Converter Application**



**MxL86111 RGMII to SGMII Bridge Application**

## Product Information

Part Number	Ordering Code	Temperature Range	Package (X x Y mm)	MAC Interface	Description
MxL86110C	MXL86110C-AQB-R	0°C to 70°C	QFN40 (5x5)	RGMII	Ethernet Gigabit Copper PHY with RGMII
MxL86110I	MXL86110I-AQB-R	-40°C to 85°C	QFN40 (5x5)	RGMII	
MxL86111C	MXL86111C-AQB-R	0°C to 70°C	QFN48 (6x6)	RGMII or SGMII	Ethernet Gigabit Copper PHY with RGMII or SGMII with dual media, media converter or RGMII to SGMII bridge functionality
MxL86111I	MXL86111I-AQB-R	-40°C to 85°C	QFN48 (6x6)	RGMII or SGMII	

## Evaluation Kit

MXL86110I-EVK-1	EVK for MxL8611xx equipped with MxL86110I, MxL86111I, and GSW145 devices
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