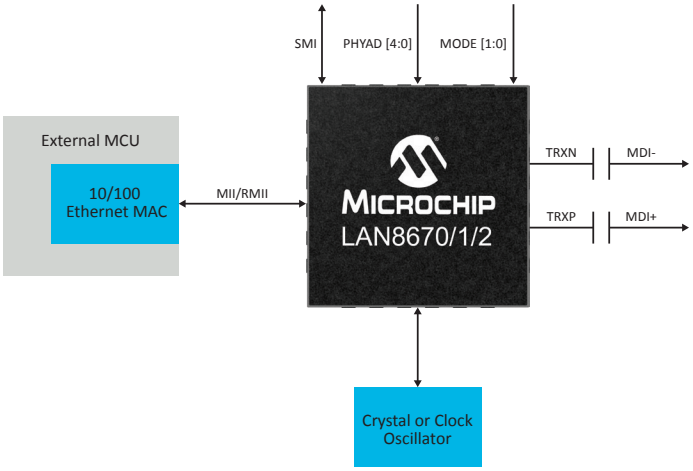
LAN8670/1/2 Family of 10BASE-T1S PHYs

Summary

Smart manufacturing is driving efficiencies in automation as digital networks increasingly connect machines, production line equipment and robotics. Operation Technology (OT) and Information Technology (IT) networks that are critical to the Industrial Internet of Things (IIoT) rely on Ethernet for interoperability and to speed data transmission and ensure security. The LAN8670/1/2 family of 10BASE-T1S PHYs, expands 10 Mbps Ethernet connectivity to the very edges of industrial networks, simplifying architectures and reducing risk for designers.



Product Description

Microchip's LAN8670, LAN8671 and LAN8672 Ethernet Physical Layer (PHY) transceivers are high-performance, small-footprint devices enabling connections to standard systems of low-speed devices including sensors and actuators that previously required their own communication systems.

With the LAN8670/1/2 devices, all-Ethernet infrastructures in most OT and IT systems can be expanded to the edges of the network. Microchip's LAN8670/1/2 devices eliminate the need for gateways that in the past were needed to interconnect incompatible communication systems. The single pair of wires reduces cost, while the multidrop bus architecture reduces the need for expensive switches and enhances scalability. Several nodes can operate on the same bus line with high data throughput.

Key Applications

- Factory automation networks – sensor and actuator
- Control cabinet wiring
- Building automation – temperature sensors, HVAC actuators, elevators
- Process automation – sensors and actuators
- Computer backplanes – Consolidation of multiple buses (I²C, CAN, RS-485, etc.) into an Ethernet architeture

Key Highlights

Ethernet architecture all the way to the edge of the network

- Consolidates a variety of buses that require specialized electrical interfaces, specialized protocols and custom software stacks
- Eliminate the need for gateways to move data to various levels of the network architecture
- Provide for scalable bandwidth
- Use well understood security mechanisms where needed

Multidrop Bus

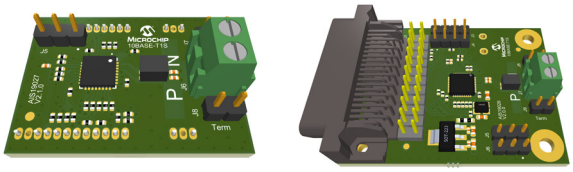
- Reduces the number of switch ports
- Fewer cables, connectors and PHYs

MII or RMII Interfaces

- Attach to a variety of microprocessors, microcontrollers and switches

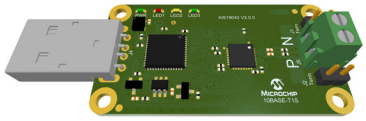
Tools and Software

10BASE-T1S PHY RMII and MII Evaluation Boards



- Standard form factor to connect to Microchip MCU platforms
- Includes the Bus Interface Network (analog front end)

10BASE-T1S PHY USB Evaluation Board



- Any USB host can be a 10BASE-T1S node
- Drivers for Linux® and Windows®

MPLAB® Harmony 3 Development Framework

- Integration into development framework for Microchip microcontrollers and microprocessors

Espresso T1S Network Spy

- Traces low level bus events
- Hardware timestamping
- 100BASE-TX interface to a personal computer for data and control
- Time-sync with Microchip's OptoLyzer® MOCCA family of tools
- Seamless integration into OptoLyzer Studio

Available Documentation

- Datasheet for the LAN8670, LAN8671 and LAN8672 10BASE-T1S Ethernet PHYs
- Application notes

Sampling and Availability

LAN8670, LAN8671 and LAN8672 devices are available from Microchip for volume orders in 32-pin, 24-pin and 36-pin Very Thin Plastic Quad Flat No Lead (VQFN) packages. For pricing and additional information, contact a Microchip sales representative or authorized worldwide distributor. To purchase products mentioned here visit Microchip's purchasing portal.

Complementary Devices

The LAN8670/1/2 family of 10BASE-T1S Ethernet PHYs can be used with a variety of Microchip Products:

- Microchip microcontrollers (e.g. SAM E54, SAM V71, SAM E70, etc.)
- LAN9360 AVB Audio Endpoint
- LAN9500 USB 2.0 to 10/100 Ethernet Controller
- LAN7431 – PCIe to Gigabit Ethernet Controller
- LAN937x – 5 to 8-Port 100BASE-T1 Switches
- KSZ856x – 3 to 7 Port 10/1000BASE-TX AVB Switches
- SAM E54 Curiosity Ultra Development Board
- SAM E70 Xplained Ultra Evaluation Kit
- LAN9360 Evaluation Board

Services

Microchip's Design Check Services include a LANCheck® Review. A Microchip engineer will review your component selection, schematic and PCB design and layout to look for common mistakes. We will provide a detailed report with guidance based on this review.