LAN874XA Family

Small-Footprint, 10/100 PHY Family
Featuring Energy Efficient Ethernet and Wake-On-LAN

Summary

Microchip's LAN8740A, LAN8741A and LAN8742A are the latest generation of low-power, 10/100 Fast Ethernet PHYs featuring Energy Efficient Ethernet (IEEE 802.3az) and Wake-On-LAN functionality, which provides system sleep modes for improved power savings. The LAN874XA family features deterministic loop back delay, assuring real-time system performance as well as cable diagnostics which reduce network installation costs. All devices are available in both commercial (0° to 70°C) and industrial (−40° to 85°C) temperature ranges. The LAN874XA family is well-suited for set-top box, PVR/DVR, industrial and test/measurement instrumentation applications. Additionally, these devices support auto-negotiation, auto-polarity correction, HP Auto-MDIX* and are compliant with IEEE 802.3 and 802.3u standards. Microchip also offers its complimentary and confidential LANCheck® online design review services to customers who select our products for their application design-in.**

Highlights

- Single-chip Ethernet PHY
- Comprehensive flexPWR® technology
  - Flexible power management architecture
  - LVCMOS variable I/O voltage range +1.6V to +3.6V
  - Integrated 1.2V regulator with disable feature
- Energy Efficient Ethernet (IEEE 802.3az)
- Cable diagnostics
- Deterministic latency
- Uses a low-cost 25 MHz crystal for RMII mode to drive 50 MHz output
- Wake-On-LAN
- HP Auto-MDIX support
- Supports commercial (0° to 70°C) and industrial (−40° to 85°C) temperature ranges
- 32-pin, 5 × 5 mm and 24-pin, 4 × 4 mm SQFN, RoHS-compliant packages

Target Applications

- Set-top boxes
- DVRs/PVRs
- Digital TVs/iPTVs
- Printers
- IP and video phones
- Industrial
- Embedded/telecom
- Test/measurement instrumentation
- Wireless access points

Key Features	Benefits
Energy Efficient Ethernet (IEEE 802.3az)	When used with an Energy Efficient Ethernet MAC, LAN8740A and LAN8741A detect when no activity is occurring, signal the MAC to enter a low power mode and enable low latency recovery. Reduces the duty cycle of trasmission by 99% during idle periods.
Wake-On-LAN	Allows the SoC's integrated MAC to be powered down while system retains the ability to wake from select activity
Power management features	Energy detect power-down reduces power usage when the Ethernet cable is unplugged
Cable diagnostics	Detects and reports cable shorts, opens and measure of cable length for proactive system maintenance
Deterministic latency	Assures precision timing in industrial applications
Single crystal for RMII mode	LAN874XA can generate a 50 MHz clock from a 25 MHz crystal, if required, reducing BOM and overall system cost
Industrial temperature (−40° to 85°C) range options available	Designed to perform in rugged industrial environments

*HP Auto-MDIX eliminates the need for special "crossover" cables when connecting LAN devices together.
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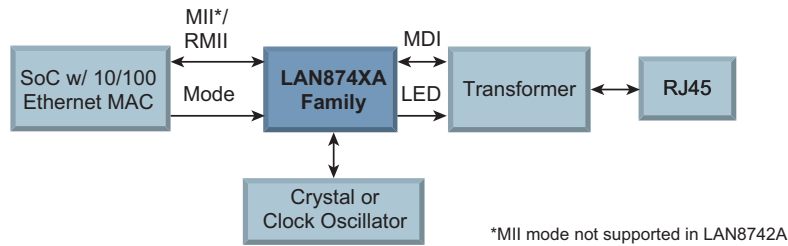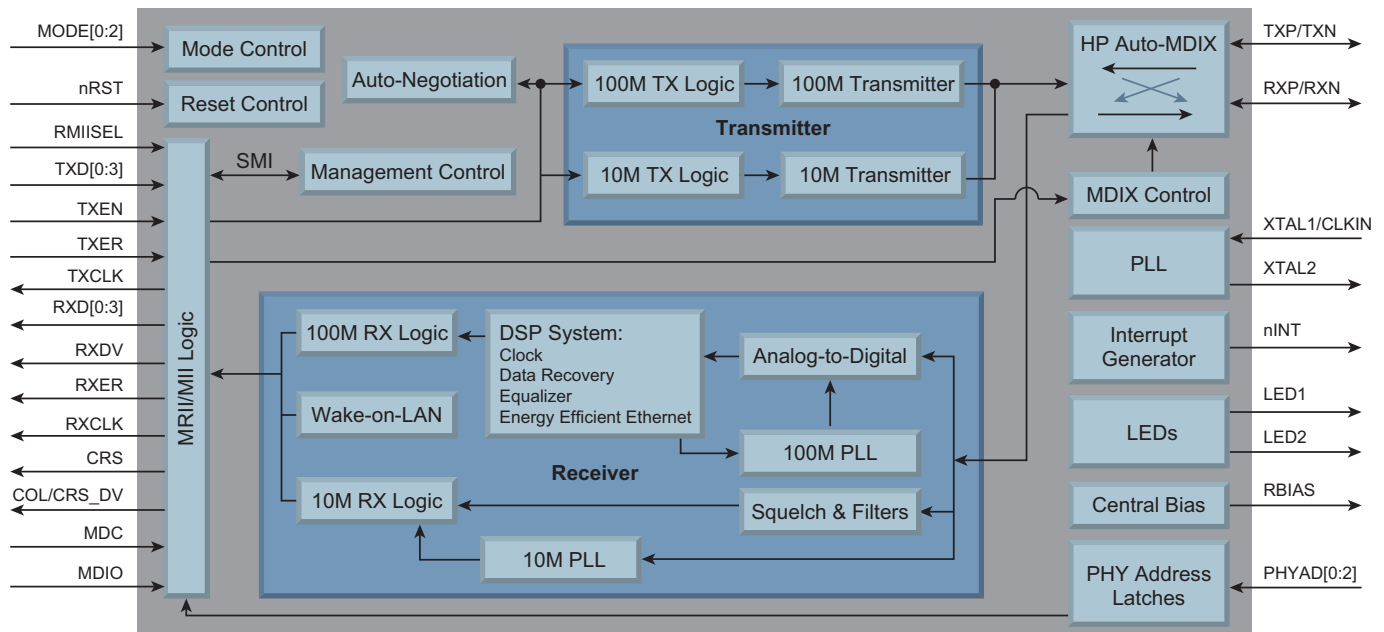
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Which LAN874XA Family Member is Right for Your Design?

Features	LAN8740A	LAN8741A	LAN8742A
MAC Interface(s)	MII/RMII	MII/RMII	RMII
Media	Cu	Cu	Cu
Energy Efficient Ethernet	✓	✓	–
Wake-on-LAN	✓	–	✓
Cable Diagnostics	✓	–	✓
RMII REF_CLK_OUT	–	–	✓
Pin Compatible	with LAN8710A	with LAN8710A	with LAN8720A
Package Size	32-pin 5 × 5 mm SQFN	32-pin 5 × 5 mm SQFN	24-pin 4 × 4 mm SQFN

LAN874XA Family System Diagram

*MII mode not supported in LAN8742A

LAN874XA Family Block Diagram