



**THE DATASHEET OF  
LAN8740A-EN**



# 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 RMI 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 transmission 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 RMI 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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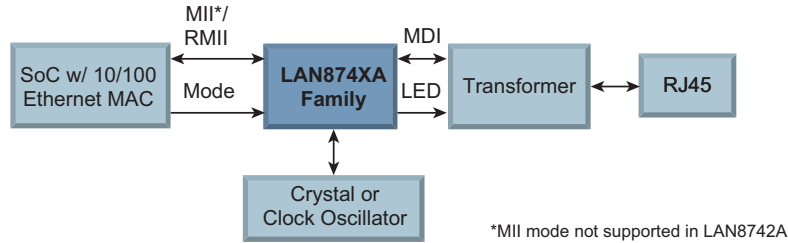


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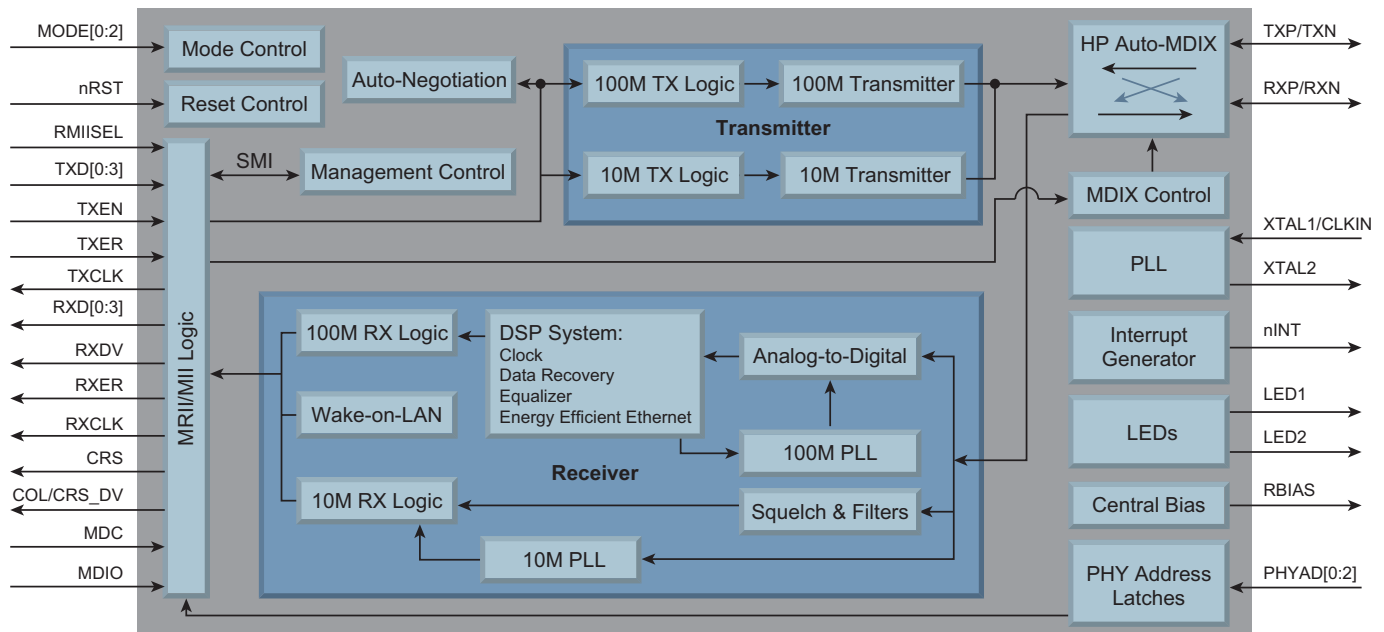
## Which LAN874XA Family Member is Right for Your Design?

| 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



## LAN874XA Family Block Diagram



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