

## LAN8742A/LAN8742Ai



# Small Footprint RMII 10/100 Ethernet Transceiver with HP Auto-MDIX and flexPWR<sup>®</sup> Technology

## PRODUCT FEATURES

Data Brief

### Highlights

- Single-Chip Ethernet Physical Layer Transceiver (PHY)
- Cable diagnostic support
- Wake on LAN (WoL) support
- Comprehensive flexPWR<sup>®</sup> technology
  - Flexible power management architecture
  - LVCMOS Variable I/O voltage range: +1.8 V to +3.3 V
  - Integrated 1.2 V regulator with disable feature
- HP Auto-MDIX support
- Miniature 24-pin SQFN, RoHS-compliant package (4 x 4 x 0.9 mm height)

### Target Applications

- Set-Top Boxes
- Networked Printers and Servers
- Test Instrumentation
- LAN on Motherboard
- Embedded Telecom Applications
- Video Record/Playback Systems
- Cable Modems/Routers
- DSL Modems/Routers
- Digital Video Recorders
- IP and Video Phones
- Wireless Access Points
- Digital Televisions
- Digital Media Adaptors/Servers
- Gaming Consoles
- POE Applications (Refer to SMSC Application Note 17.18)

### Key Benefits

- High-performance 10/100 Ethernet transceiver
  - Compliant with IEEE 802.3/802.3u (Fast Ethernet)
  - Compliant with ISO 802-3/IEEE 802.3 (10BASE-T)
  - Loop-back modes
  - Auto-negotiation
  - Automatic polarity detection and correction
  - Link status change wake-up detection
  - Vendor specific register functions
  - Supports the reduced pin count RMII interface
- Power and I/Os
  - Various low power modes
  - Integrated power-on reset circuit
  - Two status LED outputs
  - May be used with a single 3.3 V supply
- Additional Features
  - Ability to use a low cost 25 MHz crystal for reduced BOM
- Packaging
  - 24-pin SQFN (4 x 4 mm), RoHS-compliant package with RMII
- Environmental
  - Commercial temperature range (0°C to +70°C)
  - Industrial temperature range (-40°C to +85°C)

**ORDER NUMBER(S):**

**LAN8742A-CZ (Tray) for 24-pin, SQFN, RoHS-compliant package (0°C to +70°C temp)**

**LAN8742Ai-CZ (Tray) for 24-pin, SQFN, RoHS-compliant package (-40°C to +85°C temp)**

**LAN8742A-CZ-TR (Tape & Reel) for 24-pin, SQFN, RoHS-compliant package (0°C to +70°C temp)**

**LAN8742Ai-CZ-TR (Tape & Reel) for 24-pin, SQFN, RoHS-compliant package (-40 to +85°C temp)**

**This product meets the halogen maximum concentration values per IEC61249-2-21.**

**For RoHS compliance and environmental information, please visit [www.smsc.com/rohs](http://www.smsc.com/rohs).**

*Please contact your SMSC sales representative for additional documentation related to this product such as application notes, anomaly sheets, and design guidelines.*

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## General Description

The LAN8742A/LAN8742Ai is a low-power 10BASE-T/100BASE-TX physical layer (PHY) transceiver with variable I/O voltage that is compliant with the IEEE 802.3 and 802.3u standards.

The LAN8742A/LAN8742Ai supports communication with an Ethernet MAC via a standard RMII interface. It contains a full-duplex 10-BASE-T/100BASE-TX transceiver and supports 10 Mbps (10BASE-T) and 100 Mbps (100BASE-TX) operation. The LAN8742A/LAN8742Ai implements auto-negotiation to automatically determine the best possible speed and duplex mode of operation. HP Auto-MDIX support allows the use of direct connect or cross-over LAN cables. Integrated Wake on LAN (WoL) support provides a mechanism to trigger an interrupt upon reception of a perfect DA, broadcast, magic packet, or wakeup frame.

The LAN8742A/LAN8742Ai supports both IEEE 802.3-2005 compliant and vendor-specific register functions. However, no register access is required for operation. The initial configuration may be selected via the configuration pins. Register-selectable configuration options may be used to further define the functionality of the transceiver.

The LAN8742A/LAN8742Ai can be programmed to support wake-on-LAN at the physical layer, allowing detection of configurable Wake-up Frame and Magic packets. This feature allows filtering of packets at the PHY layer, without requiring MAC intervention. Additionally, the LAN8742A/LAN8742Ai supports cable diagnostics which allow the device to identify opens/shorts and their location on the cable via vendor-specific registers.

Per IEEE 802.3-2005 standards, all digital interface pins are tolerant to 3.6 V. The device can be configured to operate on a single 3.3 V supply utilizing an integrated 3.3 V to 1.2 V linear regulator. The linear regulator may be optionally disabled, allowing usage of a high efficiency external regulator for lower system power dissipation.

The LAN8742A/LAN8742Ai is available in commercial (0°C to +70°C) and industrial (-40°C to +85°C) temperature range versions. A typical system application is shown in [Figure 1](#). [Figure 2](#) provides an internal block diagram of the device.

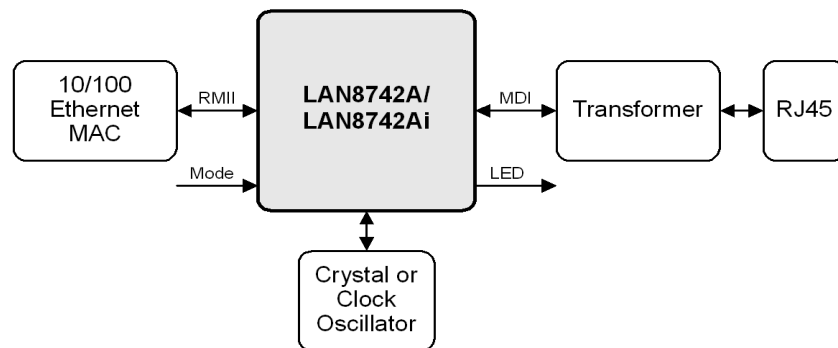


Figure 1 System Block Diagram

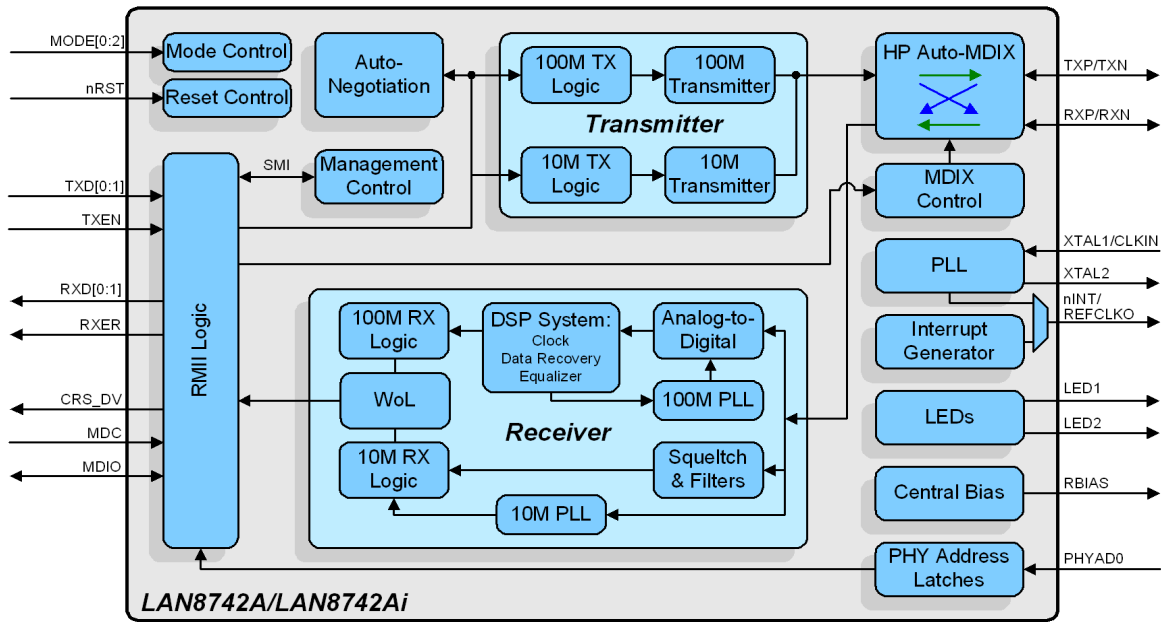


Figure 2 Architectural Overview

# Package Outline

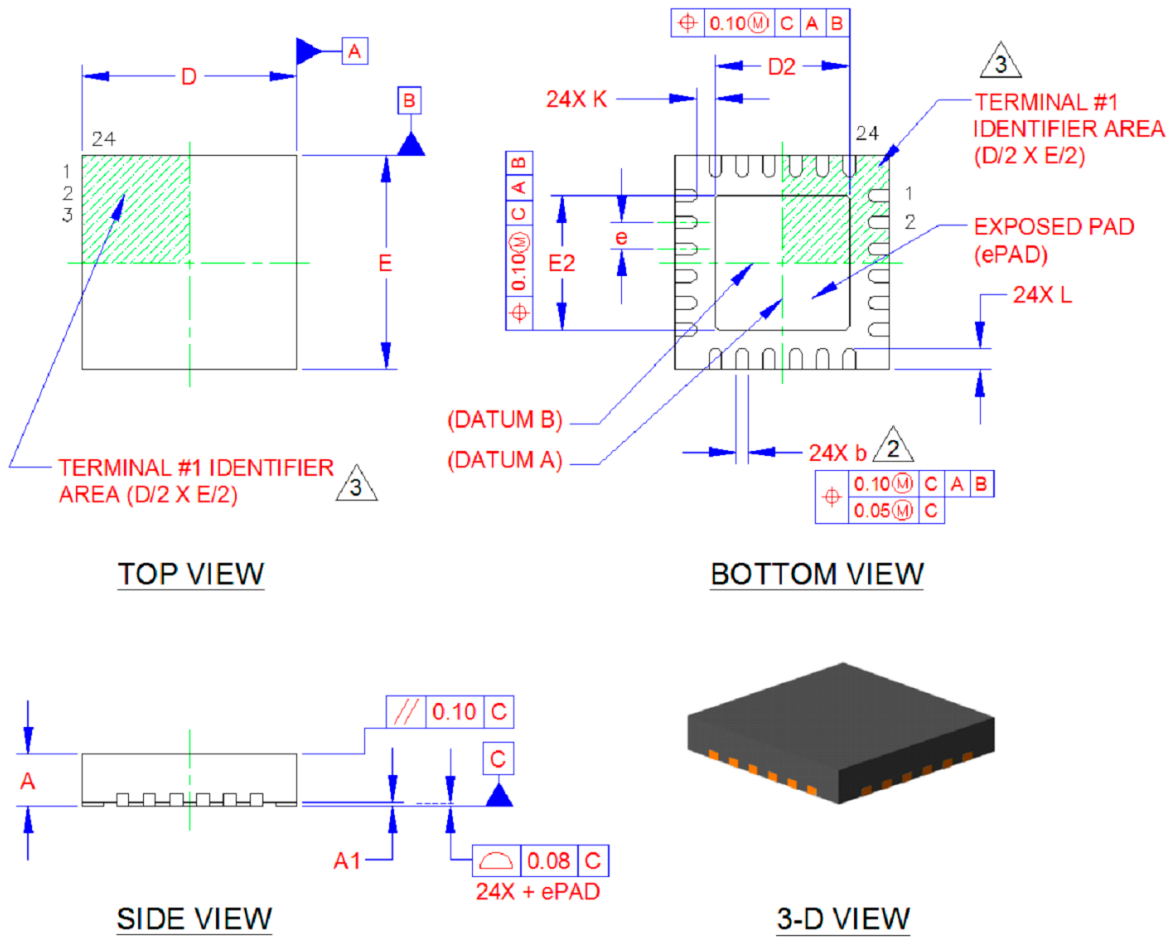


Figure 3 24-SQFN Package

Table 1 32-SQFN Dimensions

	MIN	NOMINAL	MAX	REMARKS
A	0.80	0.90	1.00	Overall Package Height
A1	0	0.02	0.05	Standoff
D/E	3.90	4.00	4.10	X/Y Body Size
D2/E2	2.40	2.50	2.60	X/Y Exposed Pad Size
L	0.35	0.40	0.45	Terminal Length
b	0.18	0.25	0.30	Terminal Width
k	0.25	0.35	-	Pin to Exposed Pad Clearance
e	0.50 BSC			Terminal Pitch

**Notes:**

1. All dimensions are in millimeters unless otherwise noted.
2. Dimension "b" applies to plated terminals and is measured between 0.15 and 0.30 mm from the terminal tip.
3. The pin 1 identifier may vary, but is always located within the zone indicated.

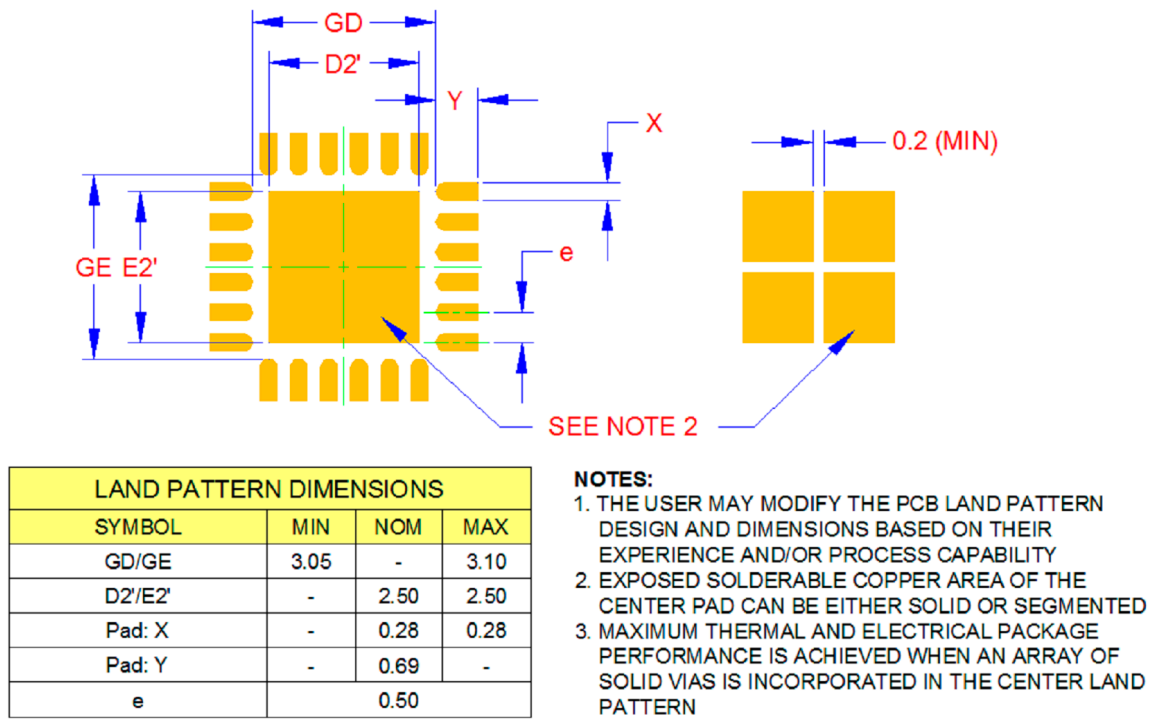


Figure 4 Recommended PCB Land Pattern

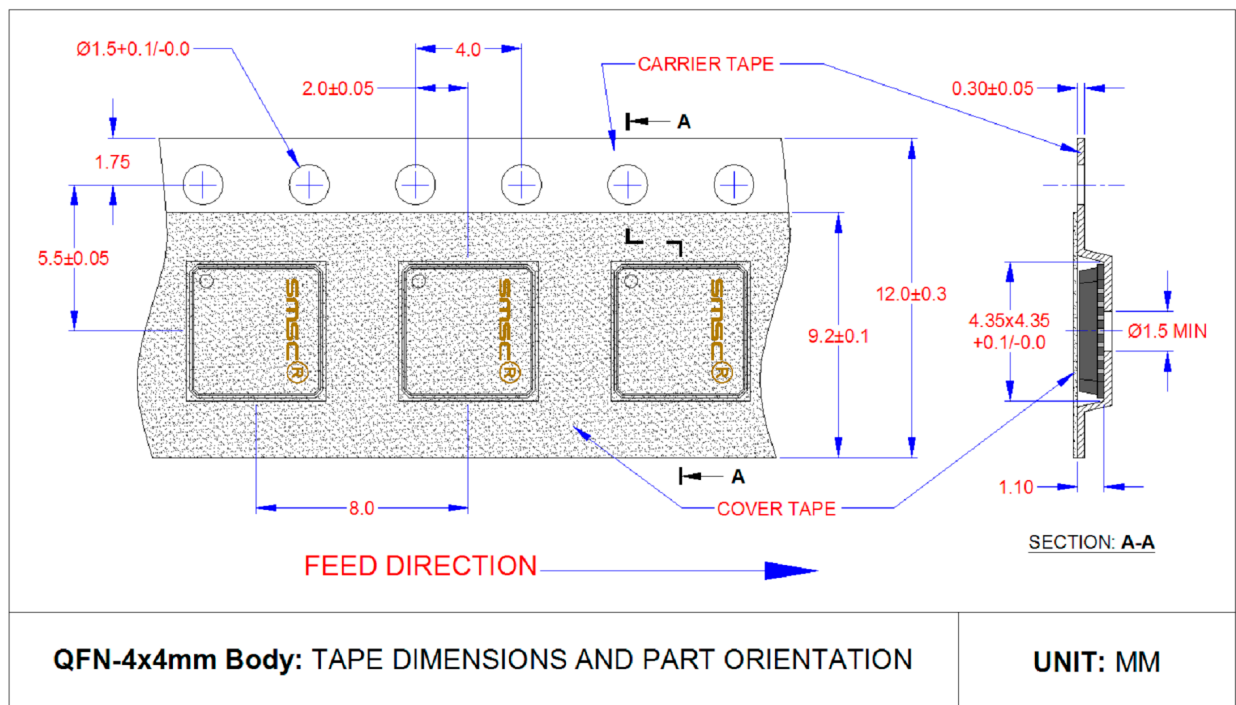


Figure 5 Taping Dimensions and Part Orientation

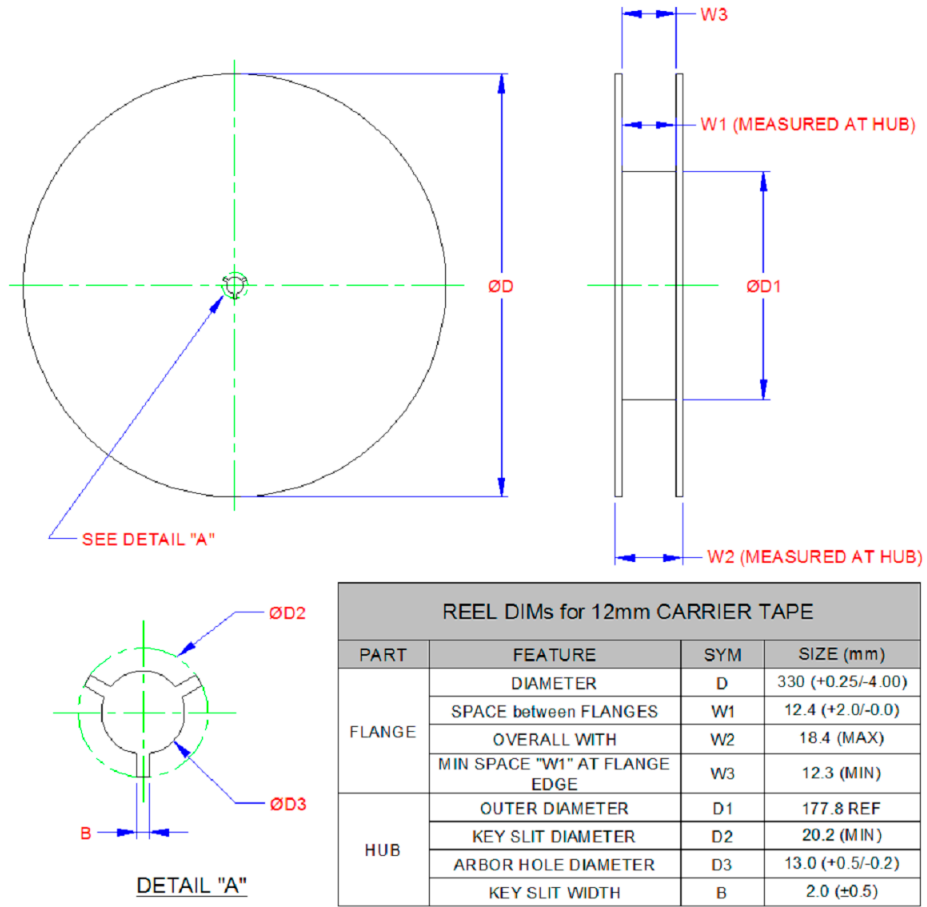


Figure 6 Reel Dimensions

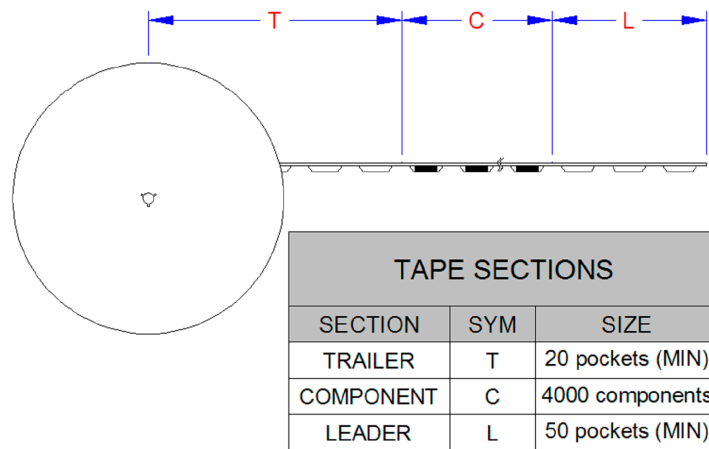


Figure 7 Tape Length and Part Quantity

**Note:** Standard reel size is 4,000 pieces per reel.