Application: 10/100/1000/Base-T Ethernet LAN Switching in Notebook PC Docking Platform

Pericom Device: PI3L301D – Gigabit LAN Switch

Overview

Pericom's PI3L301D is the first unified Gigabit Ethernet LAN Switch solution in the world. The PI3L301D Gigabit LAN Switch is ideal for "Corporate" or high-end notebook computers, which offer docking station options integrating the Ethernet functionality. This single low cost device can replace the 2nd PHY that often resides on the docking station (see Figure 1). For notebook manufacturers that have already eliminated the 2nd PHY, and use multiple previous generation LAN switches (see Figure 2), this is also the perfect solution.

Laptop & Docking Station Configuration

Dual PHY Solution

Historically, most notebook computers offering docking stations with LAN capabilities used Ethernet PHY devices both on the notebook computer and the docking station. Since these PHY devices are relatively expensive components (~$7 USD), the duplication makes for a costly design. See Figure 1 below.

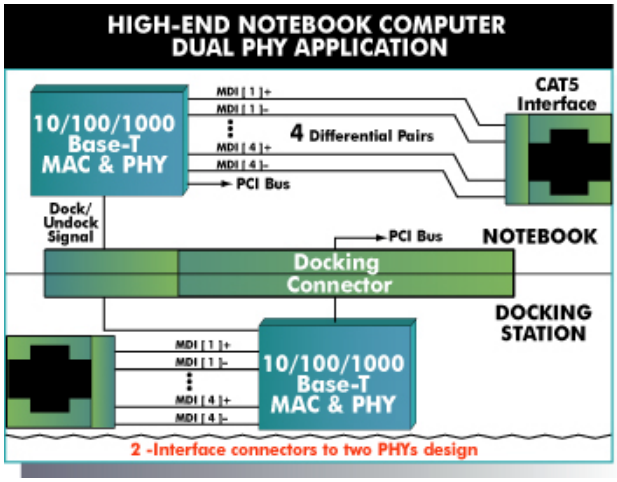

Figure 1: 2-Interface Connectors to 2-PHYs Design

Single PHY Solution with 2 LAN Switch

To save considerable cost, some manufacturers dropped the PHY on the docking station and instead added a simple LAN switch like Pericom's PI3L100 or PI5L200 devices. With Gigabit LAN's growing popularity, it required the computer manufacturers to use two of these devices to handle the increased number of Media Dependant Interface (MDI) lines. See Figure 2.

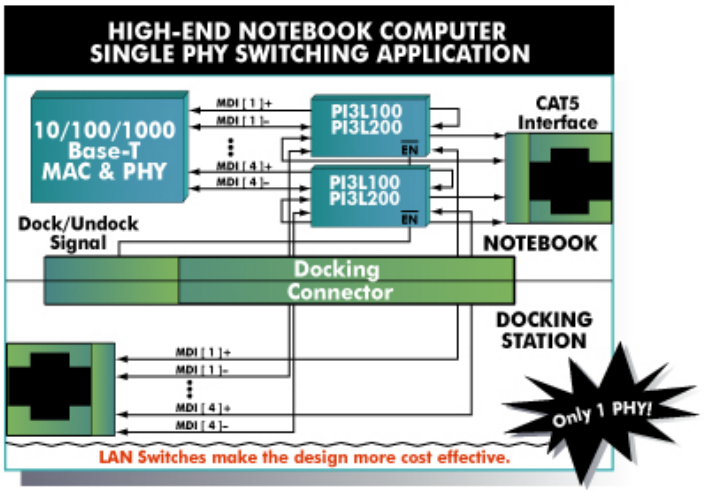

Figure 2: Single PHY Solution with 2 LAN Switches

Single PHY Solution with One Gigabit LAN Switch

Pericom's new Gigabit LAN switch supports all the needs of the system with one device. It has also been designed for ease of layout. The PI3L301D aligns the differential signals from the Gigabit Ethernet transceiver in such a way to reduce Crosstalk and other noise interference between the signal lines.

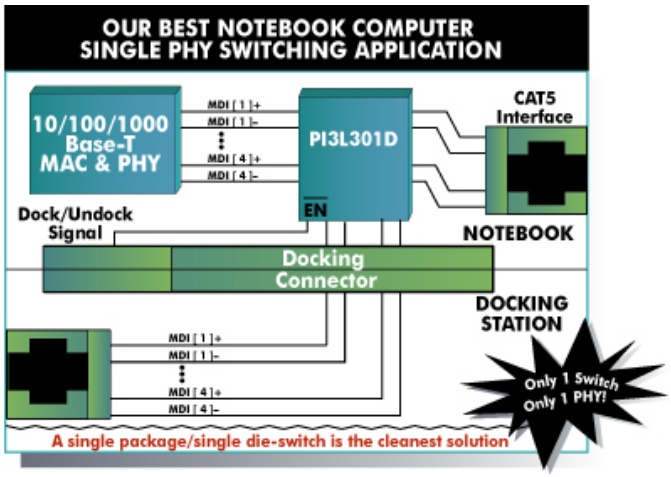

Figure 3: Single PHY Solution with One Gigabit LAN Switch

Key Features & Specifications

- ❑ Single Device
- ❑ Differential 16-bit to 8-bit Mux/Demux Switching
- ❑ Package and pinout created for this application
  - Standard TSSOP & reduced pin pitch TVSOP
- ❑ Low On-Resistance for maximum signal transfer and low distortion
  - 4-Ohms with a 3V supply
  - 1-Ohm On-Resistance flatness
- ❑ Low Current Drain: 5 micro amps (max)
- ❑ Operating Voltage: 3.3V +/-10%
- ❑ Excellent Isolation & unwanted signal rejection
  - Off Isolation: -75dB at 250 MHz
  - Crosstalk: -90dB at 250 MHz
- ❑ Low bit-to-bit output skew (100ps)
- ❑ Near-Zero Propagation Delay: 250ps
- ❑ Switching Speed: 9ns
- ❑ Channel Off-Capacitance: 6pF
- ❑ Bandwidth/Data Frequency: >350 MHz

Key Benefits

- ❑ Integrated 10/100/1000-BaseT Solution
- ❑ Lower Cost Solution (Replaces PHY or multiple Switches)
- ❑ Easy layout (Does not require multiple PCB layers for routing the I/O lines)

Competition

- ❑ Currently none at the Gigabit performance level.

Product Status

- ❑ Samples: Available Today
- ❑ Production:Available Today

Pricing

$1.66 per 500 pieces

Additional Information

- ❑ On the Public Website
  - Application Note
  - Datasheet
  - Customer Power Point Presentation

Contact Information

Please contact your local Pericom Sales Representative or franchised distributor. Contact list provided on the web: http://www.pericom.com/partners/index.php

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