FAIRCHILD SEMICONDUCTOR™

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# Application Brief: FSAL200 LAN Switch Reduces Component Cost for Laptop PCs Using Docking Stations

Mobile PCs now offer much of the same computing performance of a desktop. However, desktop interface devices such as a CRT monitor, mouse and full-sized keyboard are often larger and easier to use than the mobile versions. Also, interface to I/O devices such as Local Area Networks (LAN), printers and joysticks are more cumbersome on mobile PCs due to the extra cables and adapters often required. In these cases a solution for interfacing the mobile PC to desktop I/O hardware on a more permanent basis is the docking station.

Laptops are being designed with many onboard features, such as built-in audio, video and LAN controllers, and I/O ports. A docking station solution with audio, video and LAN connections may cause a redundancy of components, which increases overall system cost.

A wide-bandwidth analog LAN switch, such as the FSAL200, can minimize total system part count by avoiding the use of redundant, and expensive, 10/100 Ethernet Physical Layer (PHY) chips or integrated Ethernet Media Controller (MAC) + PHY chips. The FSAL200 is an ideal solution because of its flat $R_{ON}$ (±2% from $V_{IN}$ = 0V to 5V) and high bandwidth (137 MHz typical, into a 100Ω load).

Using only a single MAC+PHY chip on the laptop motherboard, the FSAL200 is used to switch the PHY's analog transmit and receive pairs to either the laptop LAN connector or to the docking station LAN connector. Isolation magnetics are required at each connector to protect on-board components from accidental connection to higher-voltage telephone lines. Isolation magnetics are usually required by IEEE standards. A docking station detect signal can be used to stimulate firmware to switch the select on the FSAL200 automatically.

The Figure 1 shows such an application.

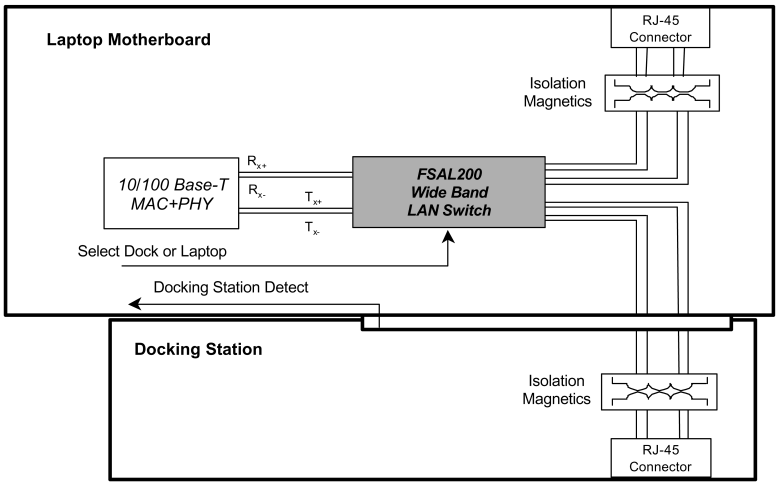


**FIGURE 1.**