USB82514

Automotive-Grade USB 2.0 Hi-Speed 4-Port Hub

Features

- High-performance, low-power, small footprint hub controller IC with 4 downstream ports
- Specifically designed, fabricated, tested, characterized and qualified for automotive applications
- Fully-compatible with the USB 2.0 specification
- **MultiTRAK™ technology:** Dedicated Transaction Translator (TT) for every downstream port provides best-in-class performance
- **PortMap:** Flexible port mapping and port disable sequence supports multiple platform designs
- **PortSwap:** Programmable USB differential-pair pin locations ease PCB design by aligning USB signal traces directly to connectors
- **PHYBoost:** Programmable USB transceiver drive strength for recovering signal integrity due to compromised system environment
- Enhanced OEM configuration options available through either a single serial I^2C EEPROM or SMBus slave port
- Customizable Vendor ID, Product ID and Device ID
- Easily configurable as 2, 3 or 4 port hub in common PCB layout
- Over 30 port configuration options
- On-chip Power-on Reset saves bill of material cost
- Integrated 3.3 V to 1.8 V regulator
- Enhanced ESD protection performance
- 36-pin (6 x 6 mm^2) QFN lead-free, RoHS-compliant package
- Temperature range: -40 °C to +85 °C
- TrueAuto™ design, service and support

Applications

- Automotive integrated head unit
- Automotive consumer connectivity ports
- Portable device charging via USB

Ordering Information

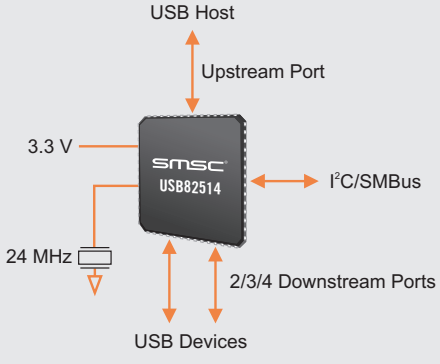
The USB82514 is available as:

USB82514 Tray

Order No. B10289

USB82514 Tape & Reel

Order No. B10258



Description

The USB82514 is a versatile, cost-effective and energy-efficient USB 2.0 hub controller. Leveraging SMSC's MultiTRAK technology that delivers industry-leading data throughput in mixed-speed USB environments, the USB82514 is designed for applications that demand low power and a small footprint without compromising performance. The USB82514 has been specifically designed to meet the stringent requirements of the automotive industry.

Over 30 programmable features, including SMSC's unique PortMap, PortSwap and PHYBoost are designed to aid system designers in simplifying PCB layout and optimizing bill of material cost.

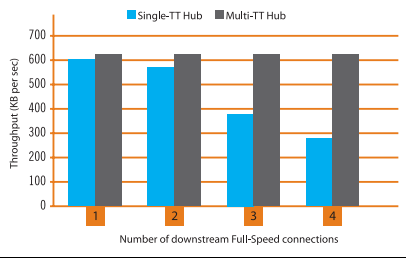
SMSC automotive grade devices are designed, fabricated, tested, characterized, qualified, and supported specifically for use in automotive applications. TrueAuto robustness begins with proprietary design for reliability techniques within the silicon IC itself and in the design of the package.

TrueAuto qualified technologies and processes are used to fabricate the products with enhanced monitors to continuously drive improvements in accordance with our zero dpm goals.

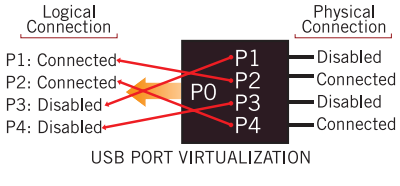
Product qualification is focused on the most demanding customer expectations and exceeds many of the automotive reliability standards including AEC-Q100.

SMSC TrueAuto services are provided by a dedicated organization composed of sales, marketing, applications engineering, operations, quality, and product support personnel specialized in meeting the requirements of the automotive customer.

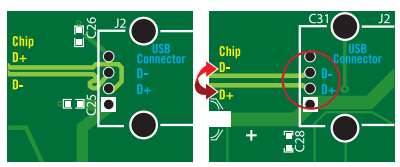
MultiTRAK technology utilizes a dedicated TT per port to maintain consistent Full-Speed data throughput regardless of the number of active downstream connections. MultiTRAK outperforms conventional USB 2.0 hubs with a single TT in USB Full-Speed data transfers by up to 100%, effectively doubling the amount of data throughput for every downstream port.



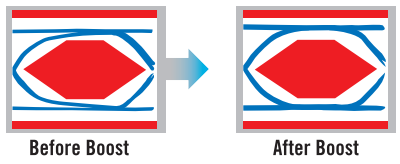
PortMap provides flexible port mapping and disable sequences. The downstream ports of a USB82514 hub can be reordered or disabled in any sequence to support multiple platforms with a single design. For any port that is disabled, the USB82514 automatically reorders the remaining ports to match the USB host controller's port numbering scheme.



PortSwap adds per-port programmability to USB differential-pair pin locations. PortSwap allows direct alignment of USB signals (D+/D-) to connectors avoiding uneven trace length or crossing of the USB differential signals on the PCB.



PHYBoost enables programmable four-level USB signal drive strengths in downstream port transceivers. PHYBoost attempts to restore USB signal integrity that has been compromised by system level variables such as poor PCB layout, long cables, etc. The graphics at the right show an example of Hi-Speed USB eye diagrams before (PHYBoost at 0%) and after (PHYBoost at 12%) signal integrity restoration in a compromised system environment.



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