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VSC7170

2:1 Active-Active Multiplexer, Serial ATA 1:2 Port Multiplier, and Serial ATA 2:1 Port Selector

Low-Cost SATA Multiplexer/Buffer

This product is Not Recommended for New Designs. Some versions may be No Longer Available or being discontinued and subject to Last Time Buy, after which new orders can not be placed.

Description

The VSC7170 is a Serial ATA (SATA) multiplexer/buffer that implements a 2:1 failover-switch function for 1.5Gbps and 3.0Gbps links. The failover switch operates as defined by the Serial ATA II Port Selector Specification Revision 1.0 or as an active-active device, allowing multiple initiators to access a single drive. This function is used when dual hosts, such as I/O controllers, must access single-port disk drives in high-availability storage subsystems where redundancy and load sharing are important. The VSC7170 provides high output swings with the preemphasis and programmable receiver sensitivity needed to drive long backplanes and external cables.

The VSC7170 also supports a 1:2 port multiplier mode where one host can connect to two drives. A common application is when a SATA host bus adapter (HBA) requires an internal and an external connector. The VSC7170 steers serial data between the HBA and the two connectors.

Port connectivity for the device is configured by driving external I/O pins and internal registers.

Key Features

- Three Independent SATA Channels
- Auto Negotiation of the Data Transfer Rate of 1.5Gbps or 3.0Gbps for Each Channel
- Supports Port Multiplier Configuration of One Host to Two Devices, and Port Selector Configuration of Two Hosts to One Drive
- Conforms to Serial ATA II Port Multiplier Specification Revision 1.1
- Conforms to Serial ATA II Port Selector Specification Revision 1.0
- Conforms to Serial ATA II PHY Electrical Specification Revision 1.0 (1i, 1x, 2i, 2x)
- Supports Both Command and FIS-Based Switching When in Port Multiplier Mode
- No External Flash Memory Required
- Four Levels of Output Preemphasis, Input Line Equalization, and Analog LOS Thresholds (Configurable by Pin)

- Two Levels of Output Swing Amplitude (Configurable by Pin)
- Supports SATA Asynchronous Signal Recovery
- Supports Spread-Spectrum Clocking
- Built-In Self Test (BIST) with Diagnostic Loopback
- Active-Active Circuitry Allows Multiple Initators in Port Selector Mode
- Optional Retimer Mode
- Port Multiplier Control Port State Machine
- Staggered Drive Spin-Up in Port Multiplier Mode
- Single 3.3V Power Supply, 1.5W Typical Power

Applications/Uses

- Active-Passive or Active-Active Redundant Failover Systems
- Buffers for Externally Connected Links
- Disk-Based Backup System
- Dual-Port SAS/STP Expander Disk Arrays Using SATA Drives
- Dual-Port SATA Disk Arrays (JBOSs)
- DVD or Tape Library Replacements with Low-Cost SATA Desktop Drives
- High-Availability, Critical Data Storage Systems
- Integration into Storage Area Networks for Back-End Storage
- Midrange Systems for Storing Less Essential Records such as E-Mail or Medical Records
- NAS Servers
- RAID Subsystems
- SATA HBAs Selecting Between Internal and External Connectors
- SATA Port Replicators

Part Number	Package
VSC7170XYQ-01	QFN; 52Pin; 64mm^2

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