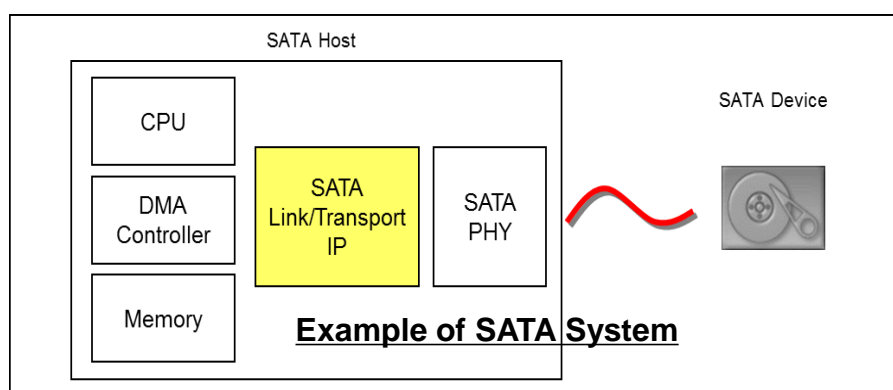# Serial ATA
Serial ATA 3.2 Host Link/Transport IP Core

Overview

The Renesas Serial ATA 3.2 Host Link/Transport IP is compliant with Serial ATA Rev.3.2 specification. This IP can be implemented in Host Controller, transmit and receive high-speed data with mass storage devices.

This IP supports Gen3 feature with Link/Transport Layer and PHY DIGITAL. You can get very high throughput (6Gbps) for data stream using this IP.

This IP has standard and easy interface. You can easily implement this IP to your system.

This IP is silicon proven and has been verified with many commercial-release HDDs and SSDs. You can make use of this IP with a sense of security to your system.

Example of SATA System

Key Features

General
- Compliant with Serial ATA Rev.3.2 specification
- Supports Gen1(1.5Gbps) and Gen2(3bps) and Gen3(6Gbps) transfer rate
- Supports Shadow Register and Serial ATA Register compatible with Parallel ATA
- AHB interface for register access
- Very small memory for DMA access
- Silicon proven – already verified with many commercial-release HDDs and SSDs

Support Options
- Supports SSC
- Supports Asynchronous Signal Recovery
- Supports Power Management (Partial and Slumber, HIPM and DIPM, Automatic Partial to Slumber)
- Supports Native Command Queuing
- Supports BIST (Far-Ended retimed loopback and other BIST activated FIS test modes)
- Supports Asynchronous Notification

Product Details

IP Core
The Renesas Serial ATA 3.2 Host IP implements the Transport Layer, the Link Layer and the PHY DIGITAL.
The Transport Layer composes FIS from registers set up by CPU and decomposes FIS from the Link Layer and exchanges data with external DMA controller.
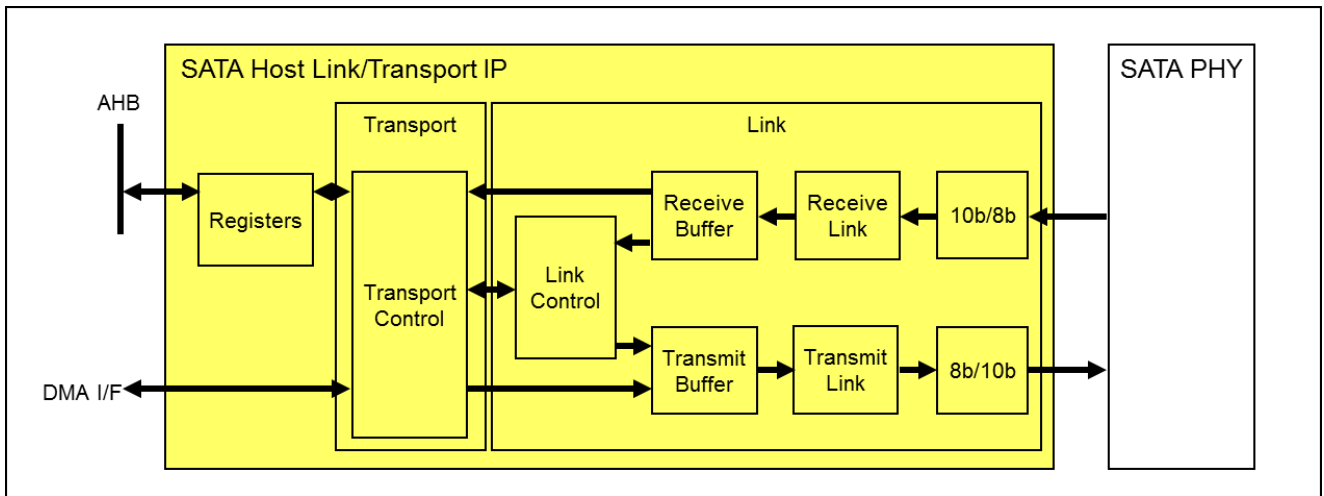The Link Layer transmits and receives frames with primitives. And the Link Layer executes scramble/descramble, 8b/10b encode/decode , CRC generate/check and primitive handshake.
The Link Layer also includes PHY DIGITAL which executes OOB and power management and has elastic buffer.
The control registers control many parameters of this IP. You can configure this IP to match your system.

Interface
The Renesas Serial ATA 3.2 Host IP has two interfaces, AHB interface and DMA interface.
AHB interface is used for register access. You can easily connect it to AMBA system.
DMA interface is used to transfer Data FIS. It is Renesas Original interface.

Block Diagram

Block Diagram