JMB322 RAID Port Multiplier

Overview

The JMicron JMB322 is a single chip, 1 to 2-port Serial ATA II Port Multiplier with RAID function support. It is designed to provide SATA port expansion, data protection and performance aggregation at various applications.

The device uses JMicron's production-proven Multi-port Serial ATA PHY technology and JMicron-proprietary storage processor to provide very high efficient RAID operation. With an easy configuration scheme, the device can be a pure port multiplier which provides SATA port expansion just like USB Hub, or hard-drive performance booster which provides a high performance device seen by host controller or hard-drive data protector which automatically backup data to prevent data loss from hard-drive damage.

The JMB322 is a self-contained storage processor chip which completely frees up the main CPU loading and the SATA ports comply with eSATA specification, making it suitable for use in both internal and external applications.

Feature

Compliance

- Compliant with *Serial ATA II Port Multiplier Spec. Revision 1.2*
- Compliant with *Serial ATA II Port Selector Spec. Revision 1.0*
- Compliant with *Serial ATA II PHY Electrical Spec. Revision 1.0*
- Compliant with *Serial ATA II High Speed Serialized AT Attachment Spec. Revision 2.5*

General

- Integrated 3-port SATA II PHY
- Integrated PLL for SATA II interface
- Total three independent SATA channel
- Integrated uP, PROM and SRAM for firmware programming
- Integrated high performance RAID processor
- Fabricated 0.13um CMOS Standard Logic Process
- 1.3V core and 3.3V I/O power supply

- Available in 48-pin QFN

SATA

- Supports 3-port 3.0Gbps SATA II interface
- Supports SATA II Gen2i and Gen2m (External SATA Connection, eSATA)
- Output swing control and automatic impedance calibration for SATA II PHY
- Supports asynchronous signal recovery
- Automatically speed negotiation for 3 Gbps or 1.5 Gbps
- Supports staggered spin-up
- Supports 48-bit LBA addressing
- Supports ATAPI drives
- Supports Hot-Plug
- Supports Asynchronous Notification
- Supports PM aware and non-PM aware host

RAID

- Fully hardware-accelerated RAID Engine
- No driver, BIOS or software required for

RAID operation

- No external DRAM or processor required for RAID operation
- Independent of device SATA port connection sequence
- Supports RAID: 0(Stripe) / 1(Mirror) / JBOD(Concatenation)
- SATA In-band application interface
- Supports more than 2Tera Bytes RAID drive
- Supports on-line command based bad sector recovery
- Supports on-line Auto-Rebuild
- Rebuild speed: 200GB/hour
- Rebuild proceed continuously between power

cycling
- Supports Hot Spare on RAID
- Supports various RAID configuration and monitoring method

GPIO

- Supports 15 GPIOs
- Supports I2C interface
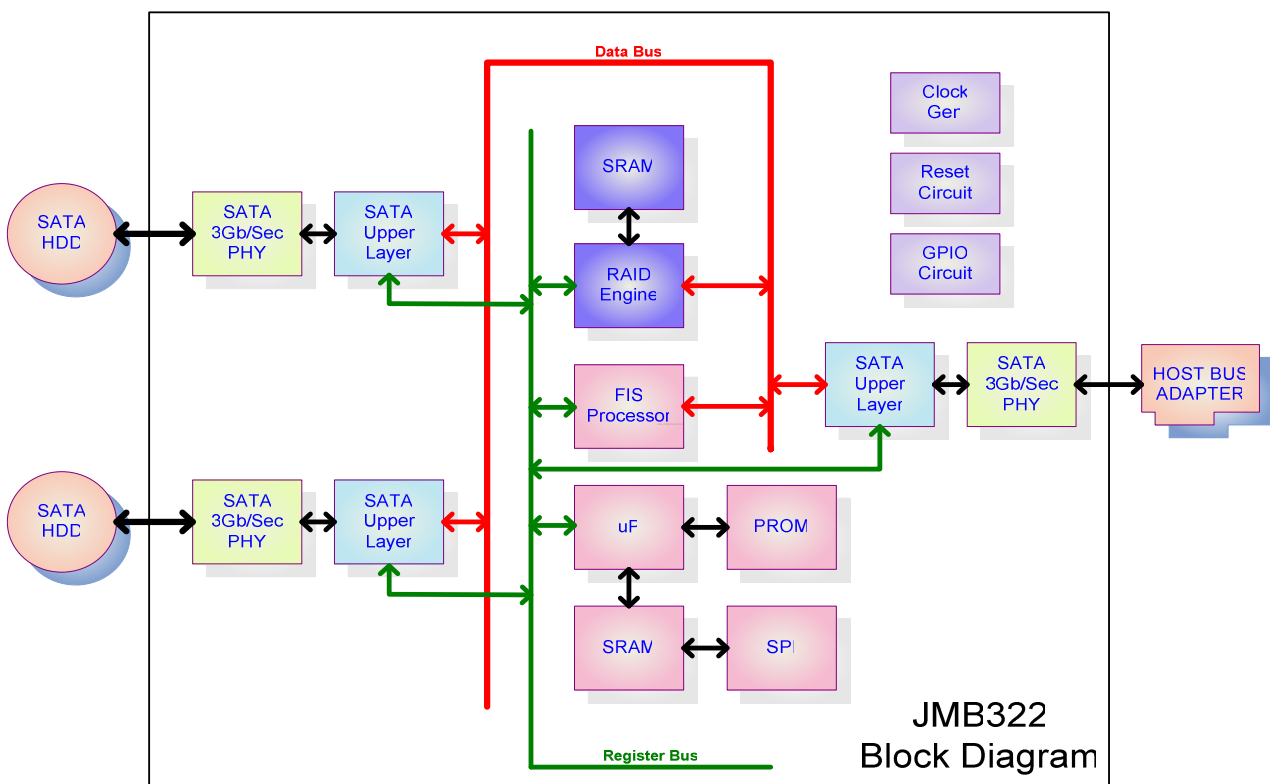- Supports ISA interface
- Supports SPI interface

Application

- Only for mother board application

Functional Description

JMB322 is a highly integrated single chip. It integrates three high-speed Serial I/O's, three SATA upper layers, a high-performance RAID engine, a microprocessor, SRAM, PROM, a high efficient data bus and other control logic into the chip. With proper firmware programming, JMB322 can be used as SATA port multiplier, RAID or disk clone system. The following paragraph describes each functional block in detail.

Block Diagram

Function View of JMB322

Supporting Document

1	Product Brief
2	Data Sheet
3	Hardware Design Guide
4	Application Schematic

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