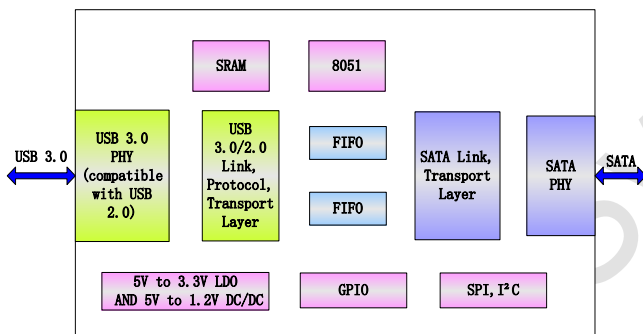


NS1068/NS1068X USB 3.0 to SATA Bridge Controller

Introduction

NS1068/NS1068X is a versatile high-performance and low power USB 3.0 to SATA bridge controller. On one side, it interfaces with the USB interface and is compatible with USB SuperSpeed (5Gbps), Hi-Speed (480Mbps), and Full-Speed (12Mbps). On the other side, it interfaces with hard drive or SSD devices through the SATA interface. NS1068 and NS1068X are pin-to-pin compatible. NS1068 supports SATA I (1.5Gbps) and SATAII (3Gbps). NS1068X also supports SATA III (6Gbps).

Block Diagram



Highlights

- Self-developed high-performance, low-jitter, and low-power USB 3.0 and SATA transceivers with built-in test capabilities for guaranteed functions and performance.
- Integrated high-efficiency on-chip regulators including a 5V to 3.3V LDO and a 5V to 1.2V DC/DC.
- Compliant with USB bus-powered and self-powered power consumption requirements. Consume less than 2.5mA in USB 3.0 and USB 2.0 suspend mode.
- Passed system ESD +/-15kV air-gap discharge and +/-8kV contact discharge without external ESD protection devices.

Features

- Support USB 3.0 Specification Revision 1.0.
- USB 3.0 adaptive receiver equalization for better and more reliable SuperSpeed operation.
- Support USB Specification Revision 2.0.
- Support USB Super-speed/High-speed/Full-speed (5Gbps/480Mbps/12Mbps) data transfer rates.
- Support USB Mass Storage Class, Bulk-Only Transport Specification 1.3.
- Support UAS Attached SCSI Protocol Specification 1.0. (customized firmware required)
- Support USB 3.0 U0/U1/U2/U3 (P0/P1/P2/P3) and USB 2.0 L0/L1/L2 power saving modes.
- Fully support USB bus-powered and self-powered power consumption requirements; consumes less than 150mA in USB 3.0 U0 mode, less than 100mA in USB 2.0 L0 mode and less than 2.5mA in USB 3.0 and USB 2.0 suspend mode. Currents are measured over 5V power supply.
- Support SATA 1.5Gbps and 3.0Gbps data transfer rates.
- Support Gen2i/Gen2m of Serial ATA Specification Revision 2.6.
- Support Gen3i of Serial ATA Specification Revision 3.0 (NS1068X only).
- Support ATA/ATAPI PACKET command set.
- Support ATA/ATAPI LBA48 addressing mode.
- Support SPI interface for firmware and Vendor VID/PID customization.
- Support three dedicated LED controllers. Additional LEDs are supported via GPIO pins and the customized firmware.
- Support two dedicated Button on/off controllers. Additional button input functions are supported via GPIO pins and the customized firmware.
- Support hard drive power down control pin.
- Support multi-GPIO pins.
- Support in-system SPI flash programming, for both initial program and follow-on upgrade via the USB interface.
- The functions of all digital pins, including the Button in, LED, GPIO and hard drive power down control pins are programmable by the firmware.
- Support one-button disk backup.
- Support Win8/Win7/Vista/XP/2000/Me, Linux and Mac OS 9.x/10.x.
- 25MHz external crystal.
- Integrated 5V to 3.3V LDO and 5V to 1.2V DCDC voltage regulators. No external voltage regulator is required.
- QFN48 6x6 package.

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