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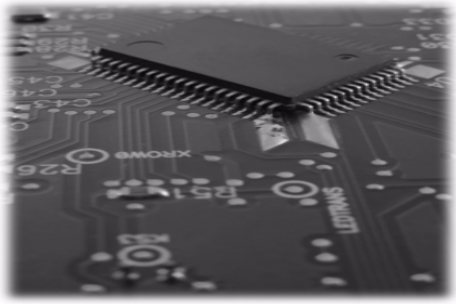
The Future of Connectivity



SW6315

Single Chip USB 3.0 to SATA Bridge

Features

- Compliance:
  - USB specification Rev 2.0, 3.0
  - Serial ATA Rev 2.6
  - USB Attached SCSI Protocol (UASP)
  - Advanced Host Controller I/F (AHCI) Rev 1.1
- USB Device Controller and PHY
  - SuperSpeed, High Speed & Full Speed
  - Bidirectional non-blocking architecture
  - Master/slave loopback for compliance test
  - Advanced Power Management features
- High Performance CPU
  - Integrated ROM/RAM
  - ROM, Flash or SATA boot/downloads
- Low BOM cost
  - Integrated oscillator, Single 25MHz crystal
  - Integrated 1.2V core regulators
- 169-pin Very-Fine BGA (VFBGA), 11mm x 11mm, 0.8 mm pitch

Overview

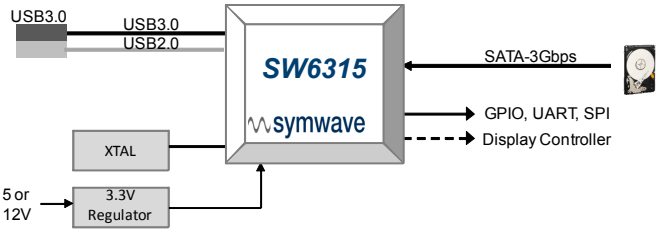
Symwave's SW6315 single-chip USB 3.0 to SATA Bridge controller is the ideal device for next generation external Hard Disk Drive (HDD) and Solid-State Disk (SSD) storage products. This highly configurable, low-cost device translates the communication protocol between USB 3.0/2.0 and SATA-II. The device enumerates in UASP or BOT mode and provides SCSI to ATA-8 command conversion. The integrated USB device controller/ PHY supports SuperSpeed, High Speed and Full Speed modes. The SW6315 supports low-power operation by implementing USB 3.0 U0-U3 power states, USB 2.0 standby/suspend states and SATA idle, standby and sleep modes. USB specification compliance ensures backward compatibility with legacy USB devices in the field.

The SW6315 integrates a high performance 32-bit CPU to support advanced software features and product customizations.

Applications

- SATA External HDD Desktop/Portable storage
- SATA External SSD Desktop/Portable storage

Figure 1. SW6315 Application



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The integrated USB 3.0 PHY uses Symwave's unique clock recovery algorithms for minimal clock jitter and simplified PCB layout. An integrated high-performance CPU allows the SW6315 to efficiently handle USB and SATA Link Management protocols with minimal overhead. Integrated Read-Only-Memory (ROM) supports program storage and default USB/SATA link management. Optional external EEPROM/Flash support is available for additional software enhancements.

Leveraging the enhancements of the USB 3.0 specification, the SW6315 offers advanced power management controls to minimize USB and SATA power consumption in low power states. The device controller supports all USB 3.0 power classes, including states U0 through U3, and disabled. The device has programmable GPIO, SPI and Serial Port interfaces for additional end-product flexibility and customization options. The SW6315 comes in a low pin count package and requires minimal external components and support circuitry.

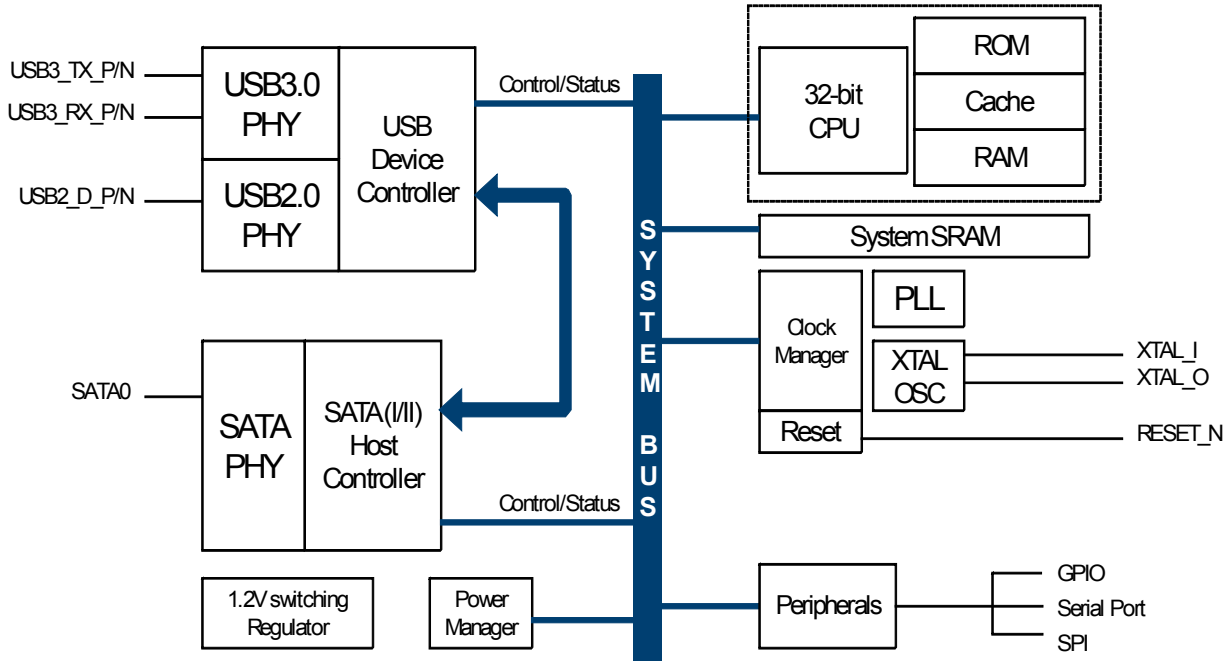

Figure 2. SW6315 Block Diagram

Design materials (schematics, layout, data sheet) are available upon request.

Ordering Information

Part Number	Product Name	Description
SW6315	USB 3.0 to SATA Bridge	USB 3.0/2.0 to SATA-I/II Bridge Controller