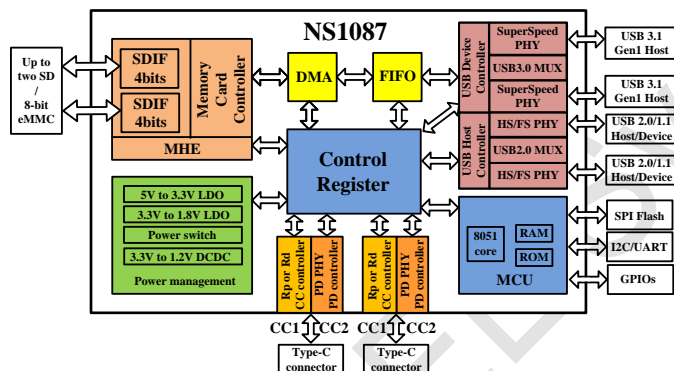


NS1087 Type-C Flash Card Controller

Introduction

NS1087 is a high-performance USB Type-C Flash Card controller. It supports two Type-C CC ports, compliant to USB Type-C spec and Power Delivery spec Rev 3.0. Each Type-C port can be configured as Source, Sink, and Dual-Role port. NS1087 supports Apple MFi Spec, USB OTG, and Android Open Accessory (AOA) Protocol 2.0. On one side, NS1087 connects with up to two USB interfaces such as Type-C, Type-A, and Apple Lightning Interface. On the other side, it connects with up to two 4-bit flash media cards, such as Secure Digital (SD) and microSD (T-Flash); or one 8-bit flash card such as eMMC.

Block Diagram



Highlights

- Two USB 3.1 Gen1 PHY with integrated MUX, and two low-power USB 2.0 Host specifically optimized for smartphone applications.
- Two configurable USB Type-C CC ports, both supporting Downstream Facing Port (DFP), Upstream Facing Port (UFP), and Dual-Role Port (DRP).
- Support charging mode detection and advertisement, compliant to USB PD 3.0, Type-C, BC1.2, and Apple.
- Support AOA Protocol 2.0, allowing USB accessory built with NS1087 to support USB accessory mode, which powers the USB bus and communicates with Android phone simultaneously.

Features

- USB 3.1 Gen1 Type-C dual differential channel with integrated USB switch.
- Two configuration Type-C CC ports, both supporting Type-C DFP/UFP/DRP and Power Delivery (PD).
- Compliant to Type-C Cable and Connector Spec 2.0, and PD spec Rev 3.0 Ver 1.2 with BMC PHY.
- Type-C cable attach and orientation detection.
- Default/1.5A/3A current detection and advertisement.
- Both USB 2.0 ports support Apple and BC1.2 charging detection and advertisement.
- Support Apple MFi Accessory Interface Spec R35.
- Support Apple Accessory iAP2 protocol, featuring EA Native Transport, Device Powered, and APP launch.
- Support Apple MFi USB Role Switch.
- Support Android Open Accessory (AOA) Protocol 2.0.
- Support USB Spec Rev 2.0 Host and Device.
- Support USB Mass Storage Class, Bulk-Only Transport
- Support Secure Digital v1.0/v1.1/v2.0 SDHC/SDXC (Capacity up to 2TB).
- Support Secure Digital v3.0 UHS-I (Ultra High Speed) SDR12/SDR25/SDR50/DDR50/SDR104/DDR200.
- Support eMMC Spec v5.1 HS400 mode.
- Spread Spectrum Clocking (SSC) for flash media card to help minimize EMI.
- Support SPI, I2C, UART communication.
- Support firmware booting from SPI Flash or SD card.
- Support firmware upgrade to SPI Flash or SD card either from PC or from iDevice.
- Support two copies of the firmware image.
- On-chip power switch for supplying SD card power.
- High efficiency 3.3V to 1.2V DC-DC regulator.
- On-chip 5V to 3.3V and 3.3V to 1.8V regulators.
- Package available in 52 pin 6x6 (RoHS) QFN.

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