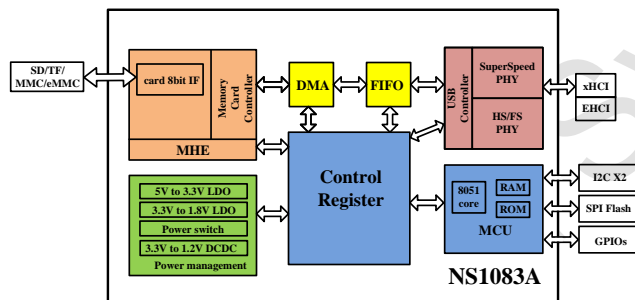![Norelsys logo]

NS1083A USB 3.0 Flash Card Controller for iDevice

Introduction

NS1083A is a high-performance USB 3.0 Flash Card controller designed specifically for MFi applications. It is fully in compliance with MFi Specification, supporting iAP2 protocols and EA Native Transport, Device Powered, and App Launch. It also supports MFi USBRole Switch and USB OTG. On one side, NS1083A connects with a USB interface such as Type-A, Type-C, or Apple Lightning, compatible with USB 3.1 Gen1 (5Gbps), USB Hi-Speed, and Full-Speed. 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. It also supports high density memory cards with capacity up to 2TB, and high speed memory cards including SD 3.0 UHS-I and eMMC 4.5 HS200.

Block Diagram

NS1083A

Highlights

- Integrated a very low-power USB 2.0 host controller to support MFi Role switch, allowing accessory to connect iDevice by Apple charge and sync cable.

- Support charging mode detection compatible with specifications from Apple and USB BC1.2. During data transfer, an iDevice can be simultaneously charged from a USB port or a power adapter at the maximum supported charging current.

- Capable of operating SD card at different frequencies for Read and Write independently. This patented technology guarantees the best performance of Read and Write while meeting the MFi requirement of the maximum current limit.

Features

- Pin compatible with Norelsys NS1081A.

- Support Apple MFi Accessory Interface Specification.

- Support Apple Accessory iAP2 protocol, featuring EA Native Transport, Device Powered, and APP launch.

- Support Apple MFi USB Role Switch and USB OTG.

- Support Apple and USB BC1.2 charging detection.

- Detection of maximum supply current from a USB port or a power adapter at 500mA, 1A, 1.5A, 2.1A, 2.4A; and capable of charging iDevice at 1A, 2.1A, 2.4A.

- SD card read and write frequencies can be configured independently from 15 to 96MHz for up to 9 levels.

- Support USB 3.0 Specification Revision 1.0.

- Support USB Specification Revision 2.0.

- Support USB Mass Storage Class, Bulk-Only Transport

- Support USB 3.0 U0/U1/U2/U3 (P0/P1/P2/P3) and USB 2.0 L0/L1/L2 power saving modes.

- 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.

- Support two x4 flash media cards operating in RAID0 mode to double both speed and capacity, or operating in JBOD mode to only double card capacity.

- Support eMMC specification v4.5 HS200 mode.

- Spread Spectrum Clocking (SSC) for flash media card to help minimize EMI.

- Support SPI, I2C, UART communication.

- Support firmware upgrade to SPI Flash either from PC or from iDevice.

- Support high reliability operation with two copies of the firmware image stored in SPI Flash.

- On-chip power switch for supplying SD card power.

- Support two dedicated LED controllers.

- 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 48 pin 6x6 (RoHS) QFN.

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