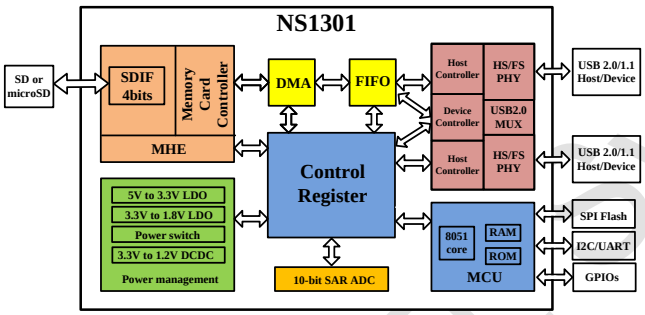
NS1301 USB 2.0 Host Controller for Smartphone

Introduction

NS1301 is a general USB 2.0 host controller designed specifically for smartphone applications. It has two USB 2.0 transceivers and able to connect with up to two USB ports. It is fully in compliance with Apple MFi Specification, supporting MFi USB Role Switch and iAP2 protocols such as EA Native Transport, Device Powered, and App Launch. It also supports USB OTG and Android Open Accessory (AOA) Protocol 2.0. NS1301 connects with one4-bit flash media card, such as Secure Digital(SD) and microSD (T-Flash). It also integrates a 10-bit ADC, multiple serial interfaces and multiple GPIOs, making it an ideal USB host controller used for low power smartphone applications.

Block Diagram



Highlights

- Two low-power USB 2.0 Host specifically optimized for smartphoneapplications. Each USB 2.0 transceiver can be configured to either USB 2.0/1.1 Host or USB 2.0/1.1 device. An integrated USB 2.0 MUX enables data selection from one of the USB 2.0 transceivers.
- 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.
- Support AOA Protocol 2.0, allowing USB accessory built with NS1301 to support USB accessory mode, which powers the USB bus and communicates with Android phone simultaneously.

Features

- 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.
- Support Android Open Accessory (AOA) Protocol 2.0.
- Support Apple and USB BC1.2 charging detection.
- Detection of maximum supply current from a USB port or a power adapter at 500mA, 1.0A, 1.5A, 2.1A, 2.4A; and capable of charging iDevice at 500mA, 1.0A, 2.1A, and 2.4A.
- SD card read and write frequencies can be configured independently from 15 to 96MHz for up to 9 levels.
- Support USB Specification Rev 2.0, host and device.
- Two USB ports can be configured as either USB Host or USB Device.
- Support USB Mass Storage Class, Bulk-Only Transport
- Support 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.
- 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 high reliability operation with two copies of the firmware image stored in SPI Flash or SD card.
- On-chip power switch for supplying SD card power.
- Support up to 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.
- On-chip 10-bit 50kHz SAR ADC.
- Package available in 40 pin 5x5 (RoHS) QFN.

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