

AC2600ie SDIO Combo Controller ASSP

Features

- Meets SDIO card v2.0 specification
- Meets SD Memory Card Physical Layer specification v1.10
- Supports SDIO SPI, 1-bit and 4-bit SD modes
- Built-in memory write protection
- NAND Flashes as storage memory
- Supports memory size of 128 MB to 2 GB
- Host clock rate up to 50 MHz
- Single SDIO function interface
- SD commands processed in hardware
- Reset output on completion of initialization
- Indication of high speed and high power enabling to application logic
- 1024 bytes maximum block size
- CRC7 and CRC16 modules
- Supports direct R/W (IO52) and extended R/W (IO53) commands
- APB bus interface
- Parallel bus interface
- UART interface

Overview

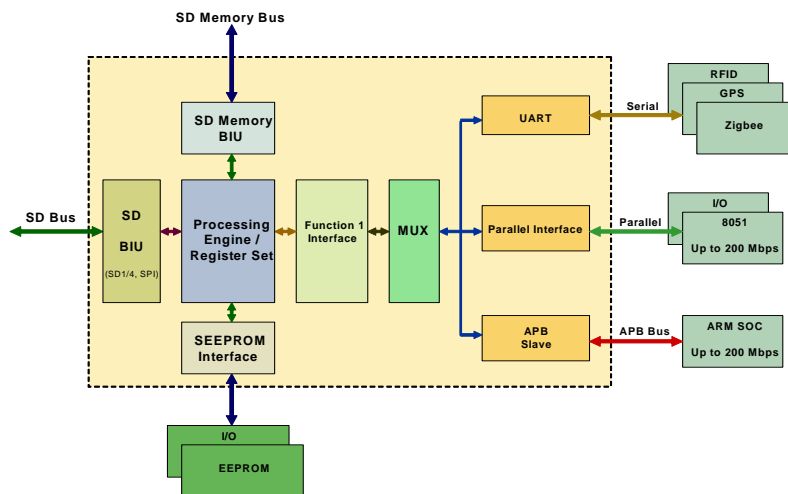
The Arasan AC2600ie SDIO Combo Controller is an ASSP with an SDIO/SD Memory interface connected to APB, Parallel, and UART buses. The ASSP is designed to support a wide range of portable low-power applications such as Wi-Fi / SD Memory combo card, GPS, UWB, camera, Zigbee, RFID, and scanner. The availability of APB, Parallel, and UART interfaces provides flexibility for applications with different types of interfaces to communicate with the SD memory bus or SD bus.

When operating in SDIO mode, the AC2600ie can be configured to operate as a master when the application logic does not have a CPU. The AC2600ie can initiate and control data transfers to application logic. In applications with embedded processors such as ARM or 8051, the AC2600ie SDIO Combo Controller ASSP can be configured to provide a slave interface. In slave mode, the application CPU controls the initialization of AC2600ie and the setting of its internal registers. An optional EEPROM can be connected to AC2600ie. The EEPROM can either be programmed by the SD host or CPU connected to AC2600ie, or it can be used for initializing devices attached to AC2600ie.

When operating in SD Memory mode, the NAND Flashes from the host or CPU side can be accessed or modified through the SD bus. The AC2600ie is compliant with the SD Memory Card Physical Layer Specification v1.10. It supports memory size from 128 MB to 2 GB.

The AC2600ie SDIO Combo Controller ASSP is implemented in 0.25-micron, 3.3 V technology. It is available in 64 TFBGA package with industrial operating temperature. The device is RoHS compliant and is qualified for both industrial and commercial grades. The AC2600ie SDIO Combo Controller is pin compatible with the AC21C00 and AC2200ie SDIO Controllers.

AC2600ie SDIO Combo Controller Functional Block Diagram



AC2600ie SDIO Combo Controller ASSP

SD Bus Interface Unit:

The BIU communicates with the SD host through the SD bus. SDIO SPI, SD1, and SD4 transfer modes are supported. The BIU houses the 16 bit CRC generator and checker for the data lines, 7 bit CRC generator and checker for the command and response lines, transmitter state machine, receiver state machine, interrupt state machine, BIU master state machine, command decoder, and the response generator. The BIU bus capability is determined by bit values programmed in the R/W CCCR registers. At reset, the SD bus is set to SD 1-bit mode.

APB Interface:

The AC2600ie provides an interface for embedded application using the ARM core with an APB bus. The AC2600ie implements the 8-bit APB slave interface. The APB interface supports a maximum data transfer rate of 30 Mbyte/sec and a maximum clock frequency of 60 MHz. NAND Flash memory management can be performed by the ARM processor.

UART:

The AC2600ie UART module supports up to 1Mbit/sec. The serial interface is a PC16550D like UART. Features include XON/XOFF modes, 5, 6, or 7 bit selectable characters, even, odd or no-parity bit generation and detection, 1, 1.5, or 2 stop bit generation, 0-1.5 M baud programmable, independent controlled interrupts, and modem control functions.

Parallel Bus Interface:

The general purpose parallel bus provides a high-speed 8-bit or 16-bit interface to I/O devices. AC2600ie operates in master mode like a processor. The parallel bus supports a maximum data transfer rate of 100 Mbyte/sec and a maximum clock frequency of 60 MHz.

Generic 8051 Bus Interface:

The general 8051 bus provides a high-speed 8-bit or 16-bit interface to I/O devices for 8051 subsystems. The parallel bus supports a maximum clock frequency of 60 MHz.

Benefits:

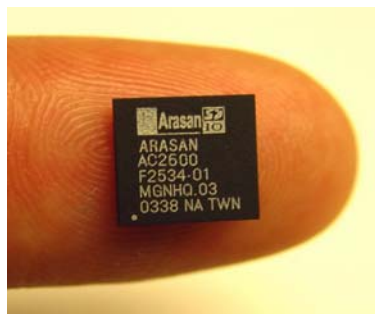
- Fully compliant SDIO core
- Premier direct support from Arasan IP core designers
- Customer training available

Availability:

- In volume production
- Commercial and industrial grades
- RoHS compliant
- 3 V technology
- 64-pin TFBGA package

Development Platform:

- AC2600 Hardware Development Kit (HDK)
- Concurrent hardware and software development
- Client binary drivers for palm or WinCE OS provided along with HDK



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Related Links:

AC2600 Hardware Development Kit:
http://www.arasan.com/products/prod_overview/AC2600-HDK-Flyer-1-0.pdf

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