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Datasheet: SD Memory Card Controller AS2705ENLT

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1. Foreword

This document has been produced by ASolid Technology Co., Ltd., should the company modifies the contents of this specification, it will be re-released with an identifying change of release date and an increase in revision number as follows:

Revision mn.xy, where:

- mn the first two digit are incremented for major changes of substance, e.g., functional changes.
- xy the second two digits are incremented when minor changes have been incorporated into the specification, i.e., enhancements, corrections, updates, etc.

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2. Statement of Scope

This Datasheet document is description the SD Memory Card Controller methods and abstractions of reliability. The contents include the concept and measurement methodologies.

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3. General Description

SD Memory Card Controller AS2705ENLT is the SD controller launched by ASolid Technology Co., Ltd., which utilizes UMC process technology. AS2705ENLT is featured with higher performance and lower power consumption, and supports SD1.01, SD1.10, SD2.02, SD3.01, SD4.1, SD5.1, SD6.0 and SD6.1. The product is built in with single channel high speed flash interface with BCH error correction code (ECC), and supports all kinds of 3D NAND type flash including TLC and QLC.

3.1. Feature

- Compatible with SD Card standard specification v1.01/v1.1/v2.02/v3.01/v4.1/v5.1/v6.0/v6.1.
 - Supports SPI mode.
 - Supports Bus Speed Mode: Default Speed mode, High Speed mode, SDR12, SDR25, SDR50, SDR104, and DDR50.
 - Copyright Protection Mechanism-Complies with highest security of SDMI standard.
 - Supports standard capacity SD memory card ($\leq 2\text{GB}$).
 - Supports SDHC capacity (4GB to 32GB).
 - Supports SDXC capacity (32GB to 2TB).
 - Supports SD command class 0, 2, 4, 5, 6, 7, 8 and 10.
 - Supports password protection and built-in write protection features.
 - Supports CMD queue function
 - Supports Cache function.
 - Supports Function Extension.
 - Supports LVS(Low Voltage Signaling interface)
 - Supports A1(Application performance class)
- SD card interface with programmable output drive capability
- Flash interface support:
 - UP to 4 flash chip selection and 8-bit flash IO access
 - Supports both 1.2V and 1.8V flash IO voltage for SD card
 - Supports both 2.5V and 3.3V flash core voltage for SD card
- Flash memory support:
 - Supports ECC function to correct up to equivalent 91-bits data errors per 1K bytes data

automatically

- Supports 3D TLC/QLC type NAND flash
- Supports flash with 8KB/16KB page architecture
- Supports four-plane 16KB-page/eight-plane 8KB-page operation
- Supports Toggle Mode flash
- Support ONFI3.0/ONFI2.3/ONFI2.2/ONFI2.1/ONFI2.0 flash
- Low power consumption
- Enhanced ESD design
- Non-Direct remap architecture
- Manufacturing utility ready

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3.2. AS2705ENLT Function Block Diagram

The following diagram is the internal block diagram of AS2705ENLT.

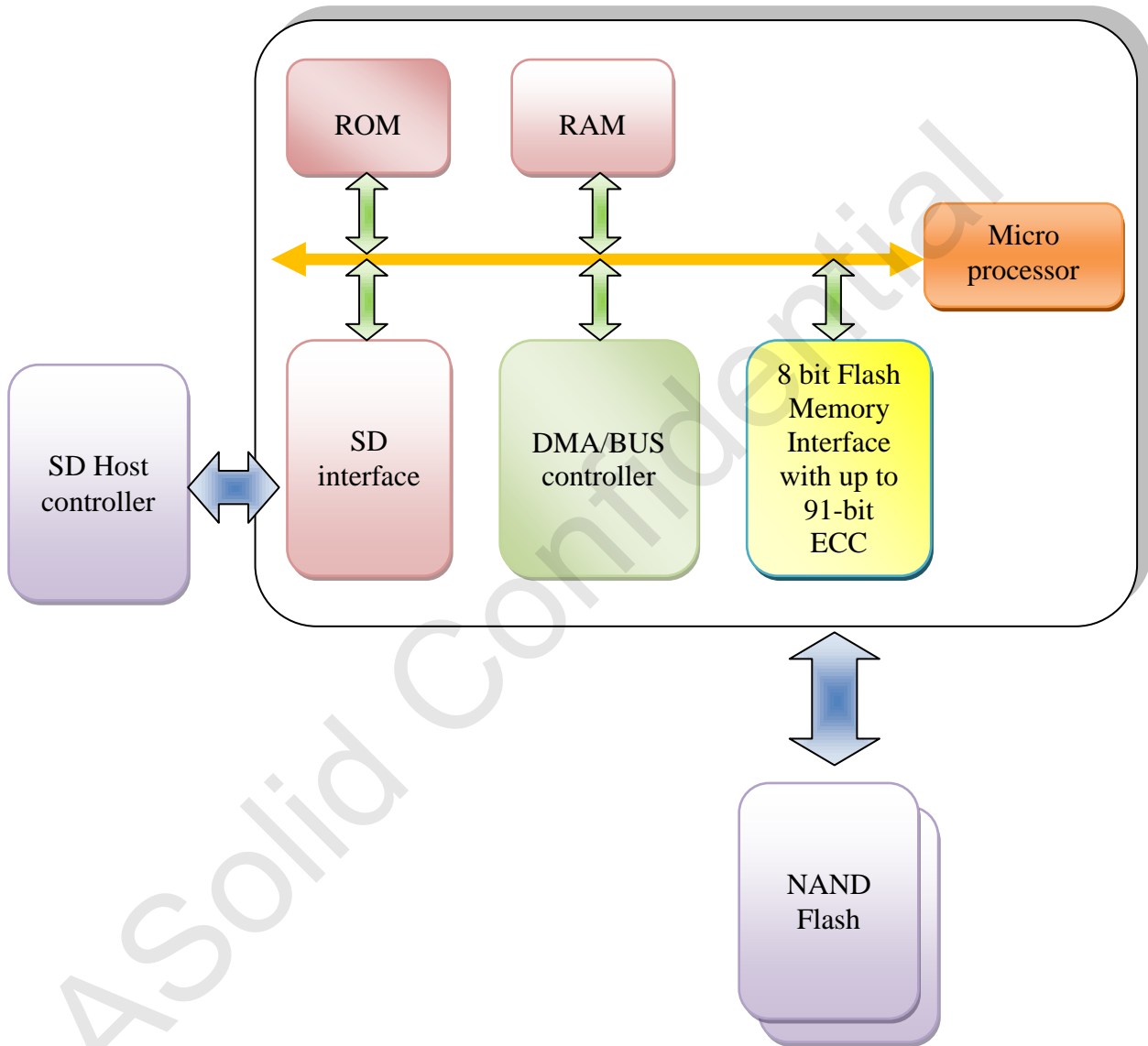


Figure 3-1 AS2705ENLT Function Block Diagram