NSEC Series Embedded Multimedia Card (eMMC) (MLC)

Overview

Insignis Technology Corporation eMMC products follow the JEDEC eMMC standard. It is an ideal universal storage solution for many electronic devices, including embedded, automotive and industrial electronic applications requiring high quality, wide temperature operation and high reliability. eMMC encloses the MLC NAND and eMMC controller inside as one JEDEC standard package, providing a standard interface to the host. The eMMC controller directly manages NAND flash, including ECC, wear-leveling, IOPS optimization and read sensing.

Features

- Bus mode
  - High-speed eMMC protocol
  - Clock frequency: 0-200MHz.
  - Ten-wire bus (clock, 1 bit command, 8 bit data bus) and a hardware reset.
- Supports three different data bus widths: 1 bit (default), 4 bits, 8 bits
  - Data transfer rate: up to 52Mbyte/s (using 8 parallel data lines at 52 MHz)
  - Single data rate: up to 200Mbyte/s @ 200MHz
  - Dual data rate: up to 400Mbyte/s @ 200MHz
- Operating voltage range:
  - VCCQ = 1.8 V/3.3 V
  - VCC = 3.3 V
- Error free memory access
  - Internal error correction code (ECC) to protect data communication
  - Internal enhanced data management algorithm
  - Solid protection of sudden power failure safe-update operations for data content
- Security
  - Support secure bad block erase commands
  - Enhanced write protection with permanent and partial protection options
- Quality
  - RoHS compliant
- Supports Field Firmware Update (FFU)
- Enhanced Device Lifetime
- Support Pre EOL information
- Optimal Size
- Supports Production State Awareness
- Supports Power Off Notification for Sleep
- Supports HS400
- Also available in p-SLC mode
- Automotive temp (AT) parts are PPAP and AEC-Q100 compliant
- Temperature range
  - Operation:

    100ball eMMC
    - Automotive (AT) grade 3: -40℃ to 85℃
    - Automotive (AT) grade 2: -40℃ to 105℃
    - Industrial (IT): -40℃ to 85℃

    153ball eMMC
    - Automotive (AT) - MLC only: -40℃ up to 105℃
    - Automotive (AT) - pSLC only: -40℃ to 85℃
    - Industrial (IT) - MLC and pSLC: -40℃ to 85℃

  - Storage:

    100ball eMMC
    - Automotive (AT): -40℃ up to 105℃
    - Industrial (IT): -40℃ to 85℃

    153ball eMMC
    - Automotive (AT) - MLC only: -40℃ up to 105℃
    - Automotive (AT) - pSLC only: -40℃ to 85℃
    - Industrial (IT) - MLC and pSLC: -40℃ to 85℃
- JEDEC Standard Package with a 0.5mm pitch.

How to Order

BGA100 Package

5.0

- Packaged NAND flash memory with eMMC 5.0 interface
- Compliant with eMMC Specification Ver. 4.4, 4.41, 4.5, 5.0

Operating voltage	Package	NAND	Option	Usable Capacity	Insignis Part Number
VCC=3.3V, VCCQ=1.8V/3.3V	BGA100	MLC	Industrial Temperature	4GB	NSEC00K004-IT
				32GB	NSEC00K032-IT
			Automotive Temperature*	4GB	NSEC00K004-AT
				32GB	NSEC00K032-AT

5.1

- Packaged NAND flash memory with eMMC 5.1 interface
  - Compliant with eMMC Specification Ver. 4.2, 4.3, 4.4, 4.41, 4.5, 4.51, 5.0, 5.1
  - Device can be converted to eMMC 4.3, 4.41 (Shows 4.4), 4.51 (Shows 4.5), 5.0 via initializing
- Major Supported eMMC 5.1 Features
  - Enhanced Strobe, Cache Flushing Report, BKOPS Control, Cache Barrier, RPMB Throughput Improve, Secure Write Protection

Operating voltage	Package	NAND	Option	Usable Capacity	Insignis Part Number
VCC=3.3V, VCCQ=1.8V/3.3V	BGA100	MLC	Industrial Temperature	8GB	NSEC00K008-IT
				16GB	NSEC00K016-IT
			Automotive Temperature*	8GB	NSEC00K008-AT
		pSLC	Industrial Temperature	4GB	NSEC00K004-ITJ

* Automotive Temperature (-AT) devices are available in all densities.
- AT devices have options of Automotive Grade 2 or Automotive Grade 3 specifications.
- AT, Grade 2 devices are only available with VCCQ=1.8V.
- AT devices are subject to spec agreement with customer.

Visit: http://insignis-tech.com/how-to-buy

Engineering Specifications are available upon request by emailing info@insignis-tech.com

FBGA153 Package

5.0

- Packaged NAND flash memory with eMMC 5.0 interface
- Compliant with eMMC Specification Ver. 4.4, 4.41, 4.5, 5.0

Operating voltage	Package	NAND	Option	Usable Capacity	NEW Insignis Part Number
VCC=3.3V, VCCQ=1.8V/3.3V	FBGA153	MLC	Industrial	4GB	NSEC53K004-IT
			Automotive	4GB	NSEC53K004-AT
		pSLC	Industrial	2GB	NSEC53K002-ITJ

5.1

- Packaged NAND flash memory with eMMC 5.1 interface
  - Compliant with eMMC Specification Ver. 4.2, 4.3, 4.4, 4.41, 4.5, 4.51, 5.0, 5.1
  - Device can be converted to eMMC 4.3, 4.41 (Shows 4.4), 4.51 (Shows 4.5), 5.0 via initializing
- Major Supported eMMC 5.1 Features
  - Enhanced Strobe, Cache Flushing Report, BKOPS Control, Cache Barrier, RPMB Throughput Improve, Secure Write Protection

Operating voltage	Package	NAND	Option	Usable Capacity	Insignis Part Number
VCC=3.3V, VCCQ=1.8V/3.3V	BGA153	MLC	Industrial	8GB	NSEC53K008-IT
			Automotive	8GB	NSEC53K008-AT
		pSLC	Industrial	4GB	NSEC53K004-ITJ

* Automotive Temperature (-AT) devices are available in all densities.
- AT devices have options of Automotive Grade 2 or Automotive Grade 3 specifications.
- AT, Grade 2 devices are only available with VCCQ=1.8V.
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