

NSEC Series Embedded Multimedia Card (eMMC)

Overview

Insignis Technology Corporation eMMC products follow the JEDEC eMMC 5.1 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 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

- Packaged NAND flash memory with eMMC 5.1 interface
- Compliant with eMMC Specification Ver. 4.3, 4.4, 4.41, 4.5, 4.51, 5.0, 5.1
- 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 Life time
- Support Pre EOL information
- Optimal Size
- Supports Production State Awareness
- Supports Power Off Notification for Sleep
- Supports HS400
- Also available in p-SLC mode
- Temperature range
 - Operation:
 - 100ball eMMC
 - Automotive (AT): -40°C to 85°C
 - Industrial (IT): -40°C to 85°C
 - Extended Test (ET): -25°C to 85°C
 - 153ball eMMC
 - Automotive (AT) - MLC only: -40°C to 105°C
 - Automotive (AT) - pSLC and 3D TLC only: -40°C to 85°C
 - Industrial (IT) - MLC, pSLC, and 3D TLC: -40°C to 85°C
 - Storage:
 - 100ball eMMC
 - Automotive/Industrial/Extended Test: -40°C to 85°C
 - 153ball eMMC
 - Automotive (AT) - MLC only: -40°C to 125°C
 - Automotive (AT) - pSLC and 3D TLC only: -40°C to 85°C
 - Industrial (IT) - MLC, pSLC, and 3D TLC: -40°C to 85°C
- Component weight:
 - One unit of 4Gb eMMC 100 ball: 0.54g
 - One unit of 4Gb eMMC 153 ball: 0.37g
- JEDEC Standard Package with a 0.5mm pitch.

DISCLAIMER: All product, product specifications, and data are subject to change without notice to improve reliability, function or design, or otherwise. The information provided herein is correct to the best of Insignis Technology Corporation's knowledge. No liability for any errors, facts or opinions is accepted. Customers must satisfy themselves as to the suitability of this product for their application. No responsibility for any loss as a result of any person placing reliance on any material contained herein will be accepted.

How to Order**BGA100 Package**

Operating voltage	Package	NAND	Option	NAND Density	Insignis Part Number
VCC=3.3V, VCCQ=1.8V/3.3V	BGA100	MLC	Extended Test	4GB	NSEC00K004-ET
				8GB	NSEC00K008-ET
				16GB	NSEC00K016-ET
				32GB	NSEC00K032-ET
				64GB	NSEC00K064-ET
			Industrial Temperature	4GB	NSEC00K004-IT
				8GB	NSEC00K008-IT
				16GB	NSEC00K016-IT
				32GB	NSEC00K032-IT
				64GB	NSEC00K064-IT
			Automotive Temperature	4GB	NSEC00K004-AT
				8GB	NSEC00K008-AT
				16GB	NSEC00K016-AT
				32GB	NSEC00K032-AT
				64GB	NSEC00K064-AT
		pSLC*	Extended Test	2GB	NSEC00J002-ET
				4GB	NSEC00J004-ET
				8GB	NSEC00J008-ET
				16GB	NSEC00J016-ET
				32GB	NSEC00J032-ET
			Industrial Temperature	2GB	NSEC00J002-IT
				4GB	NSEC00J004-IT
				8GB	NSEC00J008-IT
				16GB	NSEC00J016-IT
				32GB	NSEC00J032-IT
			Automotive Temperature	2GB	NSEC00J002-AT
				4GB	NSEC00J004-AT
				8GB	NSEC00J008-AT
16GB	NSEC00J016-AT				
32GB	NSEC00J032-AT				

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

* See notes regarding MLC and pSLC drives on page 3.

FBGA153 Package

Operating voltage	Package	NAND	Option	NAND Density	Insignis Part Number
VCC=3.3V, VCCQ=1.8V/3.3V	FBGA153	MLC	Industrial Temperature	4GB	NSEC53K004-IT
				8GB	NSEC53K008-IT
				16GB	NSEC53K016-IT
				32GB	NSEC53K032-IT
				64GB	NSEC53K064-IT
			Automotive Temperature	4GB	NSEC53K004-AT
				8GB	NSEC53K008-AT
				16GB	NSEC53K016-AT
				32GB	NSEC53K032-AT
				64GB	NSEC53K064-AT
		pSLC*	Industrial Temperature	2GB	NSEC53J002-IT
				4GB	NSEC53J004-IT
				8GB	NSEC53J008-IT
				16GB	NSEC53J016-IT
				32GB	NSEC53J032-IT
			Automotive Temperature	2GB	NSEC53J002-AT
				4GB	NSEC53J004-AT
				8GB	NSEC53J008-AT
				16GB	NSEC53J016-AT
				32GB	NSEC53J032-AT
		BiCS3 3D TLC	Industrial Temperature	16GB	NSEC53T016-IT
				32GB	NSEC53T032-IT
				64GB	NSEC53T064-IT
				128GB	NSEC53T128-IT
			Automotive Temperature	16GB	NSEC53T016-AT
				32GB	NSEC53T032-AT
				64GB	NSEC53T064-AT
					128GB

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* Notes regarding MLC and pSLC drives:

Drive Capacity	Insignis PN	NAND Flash	Remark
4GB	NSEC00K004/NSEC53K004	MLC	
8GB	NSEC00K008/NSEC53K008	MLC	
16GB	NSEC00K016/NSEC53K016	MLC	
32GB	NSEC00K032/NSEC53K032	MLC	
64GB	NSEC00K064/NSEC53K064	MLC	
2GB	NSEC00J002/NSEC53J002	pSLC	FW change from NSEC00K004/NSEC53K004
4GB	NSEC00J004/NSEC53J004	pSLC	FW change from NSEC00K008/NSEC53K008
8GB	NSEC00J008/NSEC53J008	pSLC	FW change from NSEC00K016/NSEC53K016
16GB	NSEC00J016/NSEC53J016	pSLC	FW change from NSEC00K032/NSEC53K032
32GB	NSEC00J032/NSEC53J032	pSLC	FW change from NSEC00K064/NSEC53K064