

## NSEC Series Embedded Multimedia Card (eMMC) (3D TLC)

### 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 BiCS3 (3D TLC) 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
  - Supports secure erase/trim 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
- Supports Cache Barrier
- Supports Cache Flushing Report
- RPMB throughput improvement
- Supports BKOP Control
- Supports Enhanced Data Strobe
- Supports Secure Write Protection
- Temperature range
  - Operation:
    - Automotive (AT): -40°C to 85°C
    - Industrial (IT): -40°C to 85°C
  - Storage:
    - Automotive (AT): -40°C to 85°C
    - Industrial (IT): -40°C to 85°C
- Component weight:
  - One unit of 4Gb eMMC 153 ball: 0.37g
- JEDEC Standard Package with a 0.5mm pitch.

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**How to Order**

Operating voltage	Package	NAND	Option	Usable Capacity	NEW Insignis Part Number
VCC=3.3V, VCCQ=1.8V/3.3V	FBGA153	BiCS3 3D TLC	Industrial Temperature	16GB	NSEC53T016-IT
				32GB	NSEC53T032-IT
				64GB	NSEC53T064-IT
				128GB	NSEC53T128-IT
			Automotive Temperature	32GB	NSEC53T032-AT
				64GB	NSEC53T064-AT
		128GB		NSEC53T128-AT	
		pSLC	Industrial Temperature	4GB	NSEC53T004-ITJ
				8GB	NSEC53T008-ITJ
				16GB	NSEC53T016-ITJ
				32GB	NSEC53T032-ITJ
			Automotive Temperature	8GB	NSEC53T008-ATJ
				16GB	NSEC53T016-ATJ
				32GB	NSEC53T032-ATJ

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Engineering Specifications are available upon request by emailing [info@insignis-tech.com](mailto:info@insignis-tech.com).