



Product image is only for reference.

InnoGrit® IG5216 is an industry-leading **PCIe Gen3 x4, NVMe 1.4** SSD controller, supporting up to 2TB of storage capacity.

Built on an enhanced **DRAM-less architecture**, the chip is engineered for applications requiring ultra-slim form factors, extended battery life, and high performance without complex thermal solutions. With its exceptional power efficiency and reliability, the IG5216 is ideal for client computing, industrial control, Internet of Things (IoT), embedded systems, external storage, and server boot drives.

Stable and Outstanding Performance

- Sequential Read/Write speeds up to 3400/3000 MB/s; Random Read/Write up to 500K/350K IOPS
- Support SLC, MLC, TLC, and QLC NAND via ONFI 4.1 or Toggle 4.0 interface, with data rates up to 1066 MT/s or 1200 MT/s
- Adopt an enhanced DRAM-less architecture with full support of HMB

Comprehensive Data Security and Integrity

- Multiple data encryption and protection mechanisms: AES, SHA, RSA, SM2/3/4 (IG5216 V1.0 only), ECC, CRC, RAID, HMB data integrity protection, and end-to-end data protection
- Proprietary 4K LDPC ECC technology for enhanced reliability, endurance and performance

Advanced Features

- Smart Cache
- Thermal Throttling
- Support 2 Namespaces
- Built-in IPMU with multi-level power management
- Various peripheral interfaces: SPI, SMBus/I2C, UART, JTAG, and GPIO

Please visit the website for more information:

www.innogritcorp.com

For feedback or suggestions on documents:

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Key Features and Specifications

Full Part Number	IG5216BAA(I)	IG5216BBA(I)	IG5216 V1.0	IG5216BBA(O)-1200
Ball Number	256	198	198	198
Package Type	TFBGA	TFBGA	TFBGA	TFBGA
Dimensions	10mm × 10mm	7mm × 11mm	7mm × 11mm	7mm × 11mm
NAND Interface Data Rate	1066 MT/s	1066 MT/s	1066 MT/s	1200 MT/s
GPIO Number	10	7	7	7
Max Capacity	2TB			
CPU	Multiple CPU cores			
Max Read/Write Performance	Sequential Read: 3400 MB/s Sequential Write: 3000 MB/s Random Read: 500K IOPS Random Write: 350K IOPS			
Power Consumption	Peak: 1.35W PS3: 50mW PS4: <1mW			
Operating Temperature*	Commercial grade, 32°F ~ 158°F (0°C ~ 70°C) Industrial grade, -40°F ~ 185°F (-40°C ~ 85°C)			
Reliability	UBER ≤ 10 ⁻¹⁶ MTBF: 2 million hours			
Interface	PCIe Gen3 x4 interface NAND flash interface, 4CH x 4CE 1 x UART, 1 x SPI Master, 1 x JTAG 2 x SMBus/I2C Master/Slave 10 or 7 GPIOs			
Data Security	TCG Opal 2.01 (IG5216BBAO-1200 only) AES-128/256 SHA3-256 SM2/3/4 (IG5216 V1.0 only)			
Data Integrity Protection	Programmable RAID operation HMB data integrity protection End-to-end data protection CRC protection Advanced LDPC ECC engine, with ECC protection for TCM, Cache and SRAM			

* Commercial-grade models: IG5216BAA, IG5216BBA, IG5216 V1.0, IG5216BBA-1200, IG5216BBAO-1200. Industrial-grade models: IG5216BAAI, IG5216BBBAI.

InnoGrit, a fabless IC design company, is focused on advancing storage technology to solve the data storage and data transport problems in AI and big data applications. Our innovation in system performance, efficiency, reliability and security is the foundation that supports our mission to unleash the potential limited by traditional data processing architectures and enable a new class of products to consumers, data centers, and enterprises.

For more product and technology information, please visit: www.innogritcorp.com.

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