



Product image is only for reference.

InnoGrit® IG5220, implemented in advanced 12nm FinFET CMOS process, is an industry-leading **PCIe Gen4 x4, NVMe 1.4** SSD controller supporting capacity up to 4TB.

#### Stable and Outstanding Performance

- Speed up Sequential Read/Write to 7.4/6.8 GB/s, and Random Read/Write both to 1000K IOPS
- Support SLC/MLC/TLC/QLC NAND, with ONFI 5.0 or Toggle 2.0/3.0/4.0/5.0 and maximum data rate of 2400 or 1600 MT/s (depending on *Full Part Number*)
- Adopt an enhanced DRAM-less architecture with full support of HMB

#### Comprehensive Data Security and Integrity Protection

- Support multiple data encryption and protection schemes including AES, SHA, RSA, ECC, CRC, RAID and End-to-End data protection
- Apply the second generation of proprietary 4K LDPC ECC technology, to improve reliability, endurance and performance

#### Other Advanced Functions

- Smart Cache
- Thermal throttling protection
- Multi-Namespace
- SR-IOV with up to eight Virtual Functions
- Two temperature grades
- Intelligent PMU with multi-level power management
- Various peripheral interfaces: SPI, SMBus/I2C, UART, JTAG and GPIO
- Support NVMe-MI

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Please visit the website for more information:

<http://www.innogritcorp.com/>

For feedback or suggestions on documents:

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## Key Features and Specifications

Full Part Number	IG5220BAA(I)	IG5220BAA(I)-2400 IG5220BAAO-2400	IG5220BAAX	IG5220BBA(I)	IG5220BBA(I)-2400	IG5220BCA
Ball Number	216	216	216	361	361	216
Package	TFBGA			TFBGA		HTFBGA
Dimensions (unit: mm)	7.5 x 11			12 x 12		7.5 x 11
NAND CH x CE	4CH x 4CE	4CH x 4CE	4CH x 4CE	4CH x 8CE	4CH x 8CE	4CH x 4CE
NAND interface data rate	1600 MT/s	2400 MT/s	2400 MT/s	1600 MT/s	2400 MT/s	1600 MT/s
GPIO Number	8	8	8	9	9	8
Typical Application	Low-cost client computing (IG5220BAAX is specific for CFX applications)					
Max Read/Write Performance	Sequential Read 7.4 GB/s, Sequential Write 6.8 GB/s Random Read 1000K IOPS, Random Write 1000K IOPS					
Power Consumption	Peak: 2.5W					
Operating Temperature	Commercial grade 32°F (0°C) ~ 158°F (70°C) Industrial grade -40°F (-40°C) ~ 185°F (85°C)					
Reliability	UBER $\leq 10^{-16}$ , MTBF 3 million hours					
CPU	Multiple CPU cores					
Interface	PCIe Gen4 x4 interface NAND flash interface 1 x UART, 1 x SPI Master, 1 x JTAG 2 x SMBus/I2C Master/Slave 8 or 9 GPIOs					
Data Security	TCG Opal 2.01 (only IG5220BAAO-2400) AES-128/256 SHA3-256 RSA1024/2048/3072/4096					
Data Integrity Protection	Programmable RAID operation End-to-End data protection CRC protection Advanced LDPC ECC engine, support ECC protection for TCM, Cache, and SRAM					

NOTE: IG5220BAA / IG5220BAA-2400 / IG5220BAAO-2400 / IG5220BAAX / IG5220BBA / IG5220BBA-2400 / IG5220BCA is commercial grade. IG5220BAAI / IG5220BAAI-2400 / IG5220BBAI / IG5220BBAI-2400 is industrial grade.

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: <http://www.innogritcorp.com/>.

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