

Intelligent SoC Solutions for Computational Storage and Video Processing

Codensity D400 Solid State Drives

Enterprise-class PCIe 4.0 NVMe SSD

Modern data-intensive applications, including analytics, artificial intelligence, and large transactional systems, are driving unprecedented demand to scale storage capacity and improve storage performance. Developers of these large data-intensive applications, along with operators of enterprise and cloud datacenters, need flexible, standards-based Solid-State Drives (SSD) to scale their storage architectures. Codensity™ D400 PCIe NVMe SSDs deliver enterprise-class storage capacities and features, industry-leading throughput, with high performance and reliability to overcome data and video storage scalability challenges.



FEATURES

PCIe 4.0 Interface

NVMe Protocol

Enterprise-Class

Capacity, Performance, and Reliability

U.2 Form Factor

Flexible Architecture

BENEFITS

4.0 GB/s Throughput

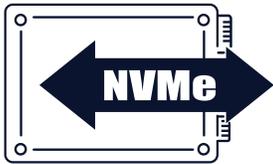
Up to 3.2TB Storage

Up to 450K IOPS

Designed for scalability and high performance

PCIe 4.0 Interface delivers industry-leading throughput

Codensity is delivering tomorrow's Peripheral Component Interconnect (PCI) throughput today, with the industry's first SSD supporting a PCIe 4.0 x4 interface specification. With Codensity D400 SSD, data-intensive applications benefit from 2x the throughput per PCIe lane relative to any PCIe 3.0 SSD product on the market today.



NVMe unleashes the speed of solid state non-volatile memory

Codensity D400 SSDs support the latest NVMe protocol to maximize the I/O performance and speed of solid state non-volatile memory (NVM) technology. NVMe supports multiple long-command queues, with a streamlined interface, to deliver superior performance and lower latencies compared to SATA or SAS data storage solutions.

Enterprise-class capacity and performance

The Codensity D400 supports 3.2TB of raw storage capacity, and up to 450k random I/O processes per second (IOPS), with less than 100 μ s read latency and 20 μ s write latency, to deliver SSD storage performance for mission-critical enterprise and cloud applications.



Reliability Reliability achieved through comprehensive error correction



A comprehensive Error Correction Code (ECC) implementation, based on Low Density Parity Check (LDPC) algorithms, overcomes some of the inherent bit storage challenges with NAND Flash technology, resulting in a high-reliability SSD solution with mean time to failure (MTTF) of 2 million device hours.

PCIe Form Factor

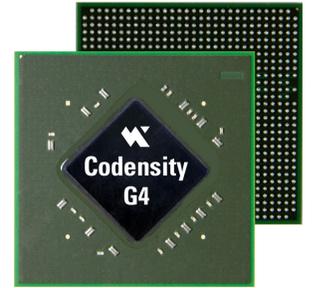
Codensity D400 SSDs are available compact 2.5" U.2 plug-in module form factors. Codensity D400 SSDs are also backwards compatible to function with PCIe Gen3 host servers.



Codensity G4 SSD Controller SoC

The Intelligence Inside

At the heart of all D400 SSDs is the Codensity G4 SSD Controller System on Chip (SoC), designed for flexibility and packed with innovative features to fully leverage modern NAND Flash technologies and deliver scalability for data-intensive processing and applications.



Flexible architecture supports optimizations for unique data access and storage requirements

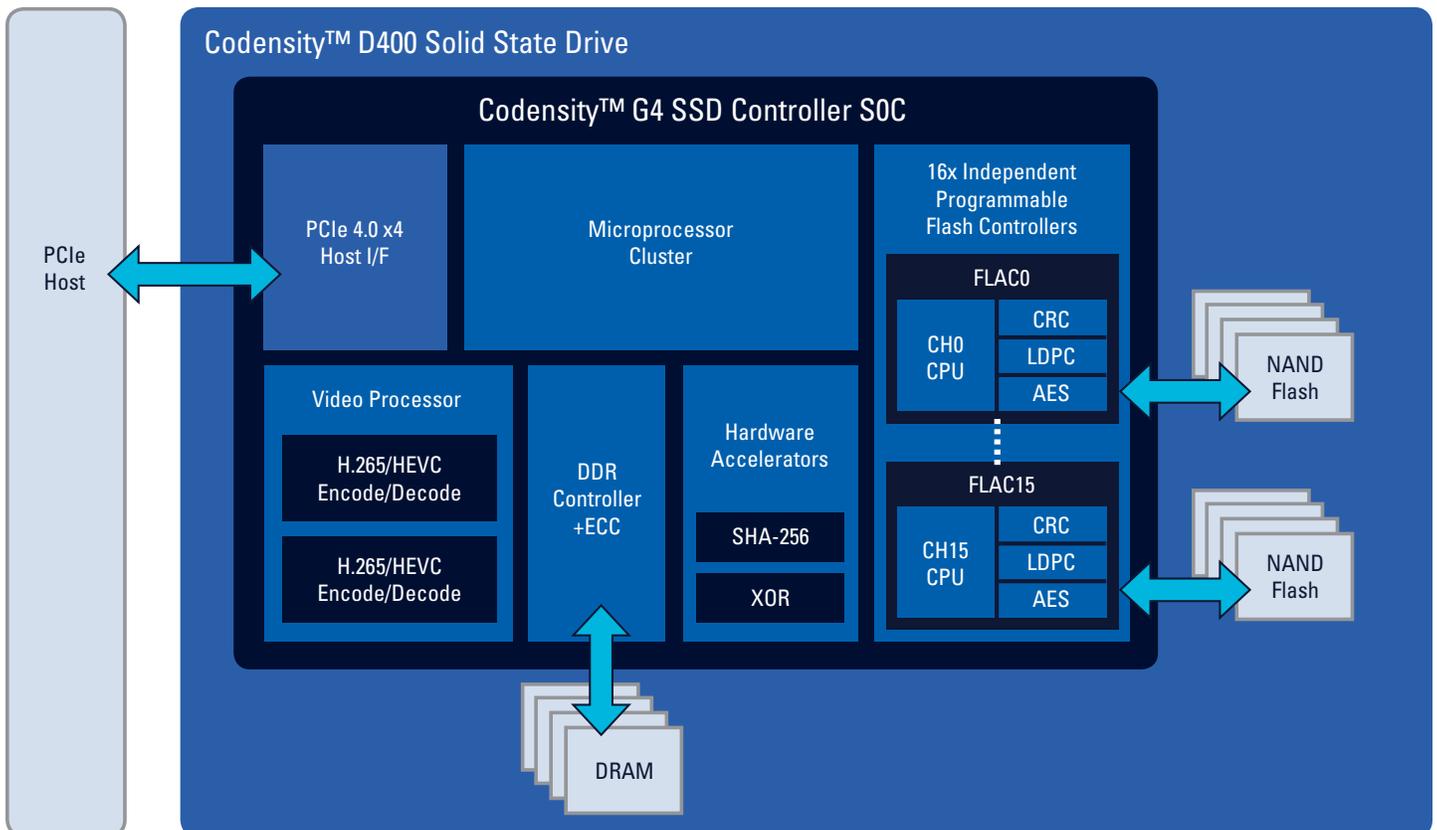
Many high performance applications with I/O-intensive requirements could take advantage of different tradeoffs in terms of read/write performance, endurance, capacity, security, and data integrity than manufacturers commonly provide. The Codensity G4 SSD controller SoC is based on a programmable microprocessor architecture, allowing NETINT engineers to work with our customers to optimize the Flash Translation Layer (FTL) and pipeline processing to your application and system priorities, often leading to large performance increases.

Up to 16 programmable NAND Flash controllers with independent optimization

NAND Flash devices can vary between technologies, vendors, and instruction sets. The Codensity G4 supports up to 16 independent NAND Flash control channels that can be optimized for different Flash devices, data integrity, or reliability requirements.

Supports variety of 3D TLC or QLC NAND Flash components

The flexibility of the Codensity G4 Flash controllers allows NETINT to support 3D TLC NAND Flash for applications requiring high reliability with raw storage capacities up to 16 TB using 512 Gb TLC. It can also support newer QLC NAND for higher capacities.



Codensity SSD Technical Specifications

D400-U.2	
Form Factor	SFF-8639 2.5" Width / Height: 15mm
Interface	PCIe 4.0 x4
Protocol	NVMe
Raw Capacity Options	3.2 TB
NAND Flash Memory	3D TLC NAND Flash (standard)
Sustained Sequential Read/Writes	
Read/Write Bandwidth	4.0 GB/s 1.4 GB/s
Read/Write Latency	100 μ s 20 μ s
4KB Read/Writes	
Random I/O Operations Per Second	Up to 450 / 180 KIOPS
Power Consumption (Typical)	Max Read: 11W, Max Write: 24W, Idle: 2W
Advanced Technology	Enhanced Power Loss Protection
	Temperature Monitoring and Logging
	End to End Data Protection
	LDPC (Low-Density Parity Check)
	High Endurance Technology
	Video Compression Offload Engine
Life Expectancy	2 million hours MTBF (Mean Time Between Failure)
Lifetime Endurance	Enterprise Grade. Detailed number is related to Flash selection and firmware configuration.
Usage	24/7 Operation
Operation Temperature	0 degrees C to 70 degrees C
RoHS Compliance	Meets requirements of European Union (EU) ROHS Compliance Directives
Product Health Monitoring	Self-Monitoring, Analysis, and Reporting Technology (SMART) commands



NETINT Technologies is an innovator of SoC solutions intersecting computational storage and video processing. Its Codensity portfolio enables cloud data centers, edge computing companies, and content providers to deploy scalable high-performance applications, while minimizing their data storage and video processing costs. NETINT, founded by an experienced team of storage SoC veterans, is a Canadian venture-funded high-tech company with R&D facilities in Vancouver, Toronto and Shanghai, China.

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