

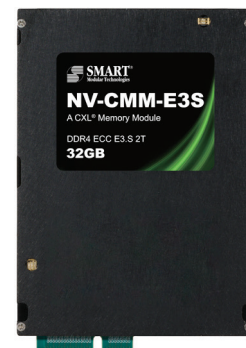
# NV-CMM-E3S Memory Module

## For the CXL<sup>®</sup> Standard

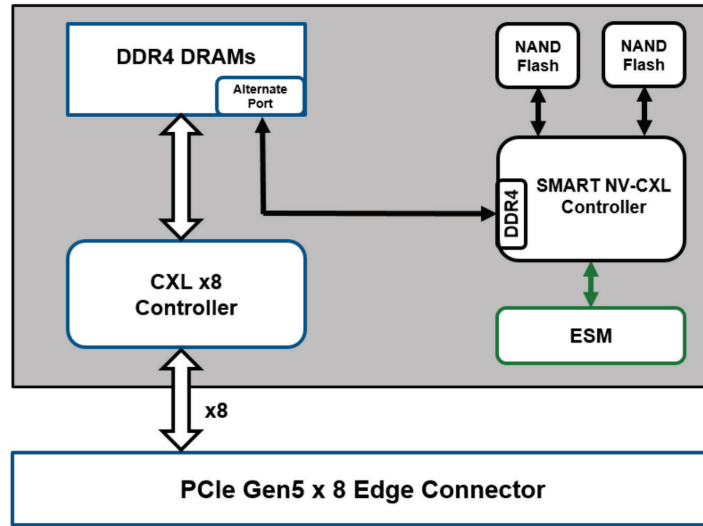
SMART's NV-CMM-E3S is an E3.S 2T form factor non-volatile memory module utilizing the CXL standard with a built in backup power source. It uses a x8 CXL controller as well as a SMART NV-CXL Controller and 2Rx4 Buffered DDR4 DRAM. The host accesses the DRAM via the CXL x8 interface during runtime. In the event of a catastrophic failure, the NV-CMM will back up the DRAM data into the NAND devices using power from the onboard Energy Source Module (ESM). Then, when power is restored, the NV-CMM will copy data back from the NAND to the DRAM to enable persistent operation.

### Key Features

- Form Factor: E3.S 2T
  - Height: 76mm
  - Length: 112.75mm
  - Width: 15.0mm
- Density
  - 32GB w/16Gb DRAM
- Performance
  - Round Trip Latency: < 200ns
  - Throughput: 32GB/s
- Host CXL Interface using Microchip Controller
  - CXL Type 3 memory
  - Supports CXL 1.1/2.0
  - Configured for CXL x8 Gen 5
  - OOB Interfaces: SMBus (I2C), SPI, and UART
    - Enterprise Class RAS features
    - End-to-end data path integrity with overlapping parity/ECC
    - SECDED ECC support to DDR
    - Reed-Solomon ECC support to DDR
    - Programmable patrol scrub
    - Secure boot
    - Secure firmware update
    - Device personalization/certificates
- Attestation
  - Key management
  - Firmware encryption
  - CXL IDE
- Persistent Memory Features
  - ASIC and FPGA based Controllers
  - Non-Volatile storage via Backup to NAND
  - Onboard Energy Source Module (ESM) for backup power
  - AES-256 data encryption for data at rest
- Power Consumption
  - Active: TBD
  - Backup: ~11 watts (estimate)
- Ambient Operating Temperature: 40°C max
- Applications
  - System acceleration – check pointing, caching, etc.
  - Large in-memory databases
  - Quick data recovery following power loss or system hang/crash



# System Block Diagram



## Pinout

This module is compliant to EDSFF Electrical specification as defined in SFF-TA-1009 (Rev-3.0) for E3.S x4 interface.

## Ordering Information

NV-CMM		
SMART Part Number	Density	Description
STXBB32GNM44S18MF	32GB	CXL 2.0, E3.S 2T, DDR4-3200

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