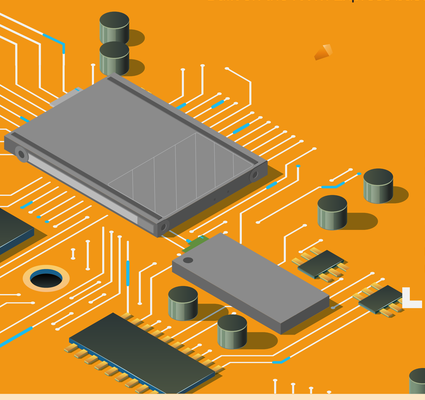
Enterprise and Datacenter Standard Form Factor (EDSFF)

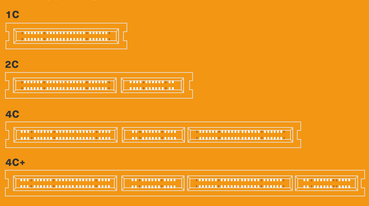
KIOXIA

for NVM Express™ SSDs

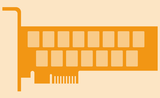
What is an NVM Express™ (NVMe™) SSD?

- Speaks NVMe commands
  Built on the NVM Express base specification
- Speeds across the PCIe® bus
  Typically x4, x8 or x16 PCIe lanes





Form Factor Evolution of SSDs



Add-in Card (AIC)

High Performance Storage
Server Accelerator

2.5-inch (U.2)

Data Storage
Cache
Client, Servers, Storage

M.2
(2242, 2280, 22110)

Data Storage
Boot
Client, Servers

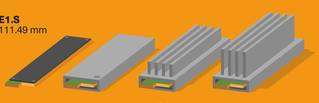
BGA (16x20mm)
M.2 (2230)

Data Storage
Boot
Laptop, Tablet

EDSFF: Form Factors for the Next Generation Hyperscale and Enterprise Data Centers

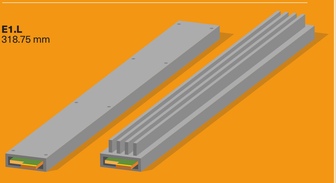
E1– Hyperscale Servers & Storage

E1.S
111.49 mm



5.9 mm | 9.5 mm | *15 mm | *25 mm

E1.L
318.75 mm

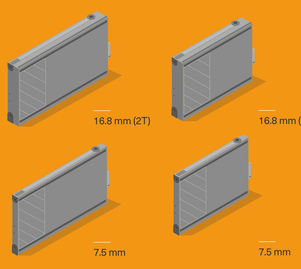


9.5 mm | *18 mm

*Heat sinks increases height.

E3– Enterprise Servers & Storage

E3.L 142.2 mm | **E3.S** 112.75 mm



Individual dimensions indicate the device thickness.

Benefits of EDSFF SSDs

Supports OCP NVMe Cloud SSD specification

Addresses limitations with M.2, AIC and 2.5-inch (U.2) form factors

Improvements for thermal and cooling management

Support for hot plug

Common connector for all form factors

More robust signal integrity for future PCIe generations

Range of power envelopes for higher performance profiles

Wider PCBs for more flexible NAND chip layouts

Where to Find More on EDSFF?

Open Compute Platform NVMe Cloud SSD Specification
https://www.opencompute.org/wiki/Storage#Documents

SNIA SSD Form Factors Web Page
https://www.snia.org/forums/cmsi/knowledge/formfactors

E1.S & E1.L

SNIA SFF-TA-1002 Rev. 1.3 – Protocol Agnostic Multi-lane High Speed Connector
SNIA SFF-TA-1006 Rev. 1.5 – Enterprise and Datacenter 1U Short Device Form Factor (E1.S)
SNIA SFF-TA-1007 Rev. 1.2 – Enterprise and Datacenter 1U Long Device Form Factor (E1.L)
SNIA SFF-TA-1009 Rev. 3.0a – Enterprise and Datacenter Standard Form Factor Pin and Signal Specification
SNIA REF-TA-1012 Rev. 1.0 – Pin Assignment Reference for SFF-TA-1002 Connectors
SNIA SFF-TA-1023 Rev. 0.8.4 – Thermal Characterization Specification for EDSFF Devices

E3.S & E3.L

SNIA SFF-TA-1002 Rev. 1.3 – Protocol Agnostic Multi-Lane High Speed Connector
SNIA SFF-TA-1008 Rev. 2.0 – Enterprise and Datacenter Device Form Factor (E3)
SNIA SFF-TA-1009 Rev. 3.0a – Enterprise and Datacenter Standard Form Factor Pin and Signal Specification
SNIA REF-TA-1012 Rev. 1.0 – Pin Assignment Reference for SFF-TA-1002 Connectors
SNIA SFF-TA-1023 Rev. 0.8.4 – Thermal Characterization Specification for EDSFF Devices

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