

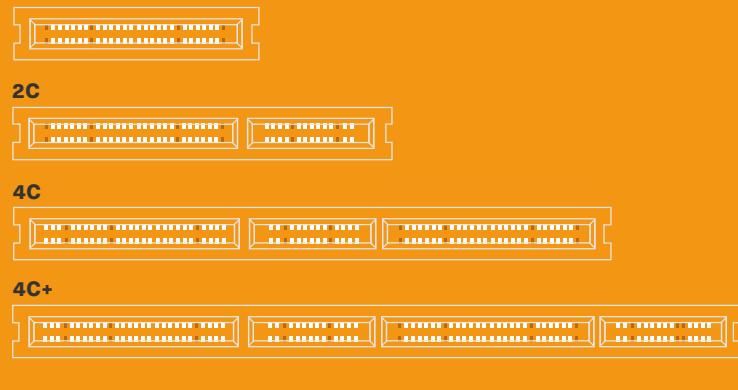
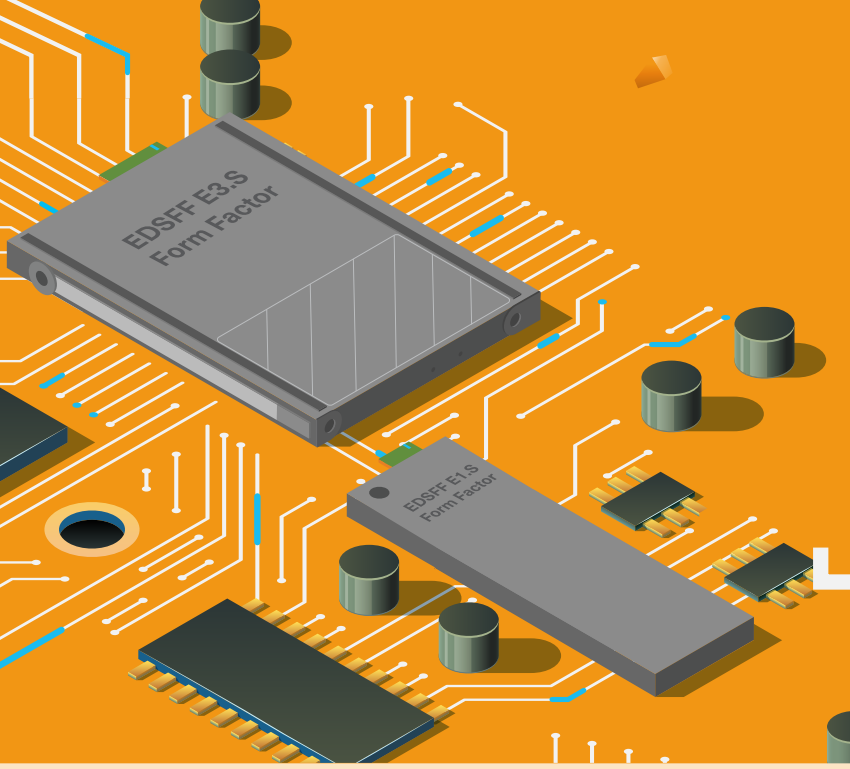
# Enterprise and Datacenter Standard Form Factor (EDSFF)

KIOXIA

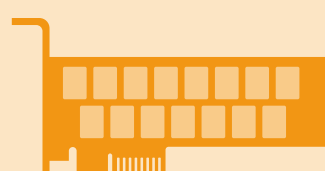
for NVMe™ SSDs

## What is an NVMe™ (NVMe™) SSD?

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



## Form Factor Evolution of SSDs



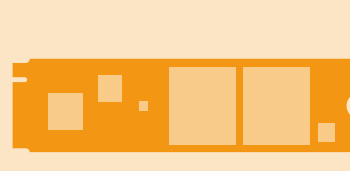
**Add-in Card (AIC)**

High Performance Storage  
Server Accelerator



**2.5-inch (U.2/U.3)**

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

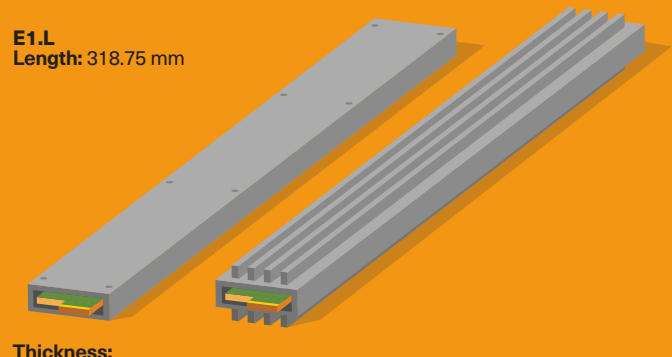
## EDSFF: Form Factors for the Next Generation Hyperscale and Enterprise Data Centers

### E1 – Hyperscale Servers & Storage



**E1.S**  
Length: 111.49 mm & 118.75 mm

Thickness:  
5.9 mm 8.0 mm 9.5 mm 15 mm\* 25 mm\*



**E1.L**  
Length: 318.75 mm

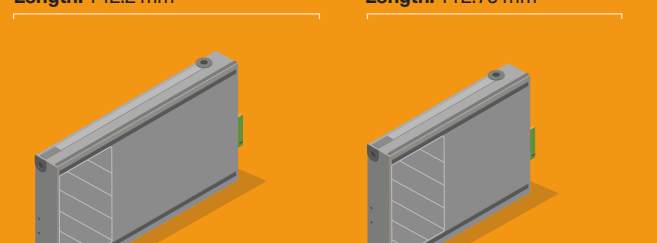
Thickness:  
9.5 mm 18 mm\*

\*Heatsink increases thickness.

### E3 – Enterprise Servers & Storage

**E3.L** Length: 142.2 mm

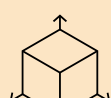
**E3.S** Length: 112.75 mm



Thickness: 16.8 mm (2T) 16.8 mm (2T)

Thickness: 7.5 mm 7.5 mm

## Benefits of EDSFF SSDs



### Flexibility

EDSFF connector design is compliant to the same connector standard specification across all EDSFF configurations, and it can be used without limitation on the number of lanes and is flexible to chassis and backplane designs.



### Powerful

EDSFF is designed to support higher power up to 70W\*, delivering superior performance, while 2.5-inch SSDs using the SFF-8639 connector typically max out at 25W.

\*The design value of maximum power depends on the device.



### Higher Performance

EDSFF can support up to 4x higher performance in a 4C configuration with 16 lanes and 2x higher performance in a 2C configuration with 8 lanes than a 2.5-inch SSD (U.2 or U.3). \*

\*The number of lanes depends on the device. As of December 2024, KIOXIA does not support SSDs beyond PCIe® x4 lanes.



### Efficient

The EDSFF is designed with efficient use of space and surface area, improving thermal dissipation and allowing for higher density chassis.



### Versatile

EDSFF is designed to support other PCIe® devices, such as NICs or accelerators, that can be used in the same chassis not limited to SSDs.

## KIOXIA EDSFF E1.S Offerings

### KIOXIA XD8 Series Data Center NVMe™ SSD

- PCIe® Gen5 x4 (32 GT/s x4)
- NVMe™ 2.0 specification compliant
- OCP Datacenter NVMe™ SSD specification v2.5 support
- 1.92 TB, 3.84 TB and 7.68 TB capacities
- 1 DWPD endurance



9.5 mm



15 mm



25 mm

### KIOXIA XD7P Series Data Center NVMe™ SSD

- PCIe® Gen4 x4 (16 GT/s x4)
- NVMe™ 2.0 specification compliant
- OCP Datacenter NVMe™ SSD specification v2.0 support
- 1.92 TB, 3.84 TB and 7.68 TB capacities
- 1 DWPD endurance



9.5 mm

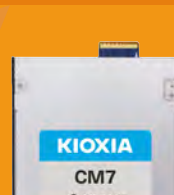


15 mm



25 mm

## KIOXIA EDSFF E3.S Offerings



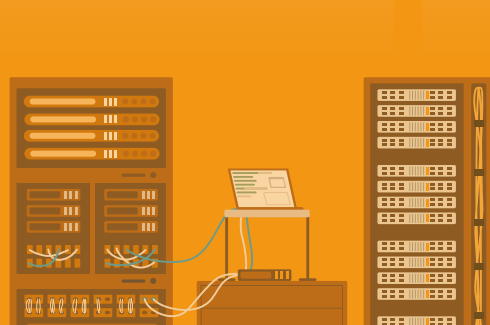
### KIOXIA CM7 Series Enterprise NVMe™ SSD

- PCIe® Gen5 x4 (32 GT/s x4)
- NVMe™ 2.0 specification compliant
- OCP Datacenter NVMe™ SSD specification v2.0 support
- 1.6 TB to 15.36 TB capacities
- 1 and 3 DWPD endurance



### KIOXIA CD8P Series Data Center NVMe™ SSD

- PCIe® Gen5 x4 (32 GT/s x4)
- NVMe™ 2.0 specification compliant
- OCP Datacenter NVMe™ SSD specification v2.0 support
- 1.6 TB to 15.36 TB capacities
- 1 and 3 DWPD endurance



## Where to Find More on EDSFF?

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

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

**E3.S & E3.L** SNIA SFF-TA-1002 – Protocol Agnostic Multi-Lane High Speed Connector  
SNIA SFF-TA-1008 – Enterprise and Datacenter Device Form Factor (E3)  
SNIA SFF-TA-1009 – Enterprise and Datacenter Standard Form Factor Pin and Signal Specification  
SNIA REF-TA-1012 – Pin Assignment Reference for SFF-TA-1002 Connectors  
SNIA SFF-TA-1023 – Thermal Characterization Specification for EDSFF Devices

### NOTES

In every mention of a KIOXIA product:

Definition of capacity - KIOXIA Corporation defines a megabyte (MB) as 1,000,000 bytes, a gigabyte (GB) as 1,000,000,000 bytes and a terabyte (TB) as 1,000,000,000,000 bytes. A computer operating system, however, reports storage capacity using powers of 2 for the definition of 1GB = 2<sup>30</sup> bytes = 1,073,741,824 bytes and 1TB = 2<sup>40</sup> bytes = 1,099,511,627,776 bytes and therefore shows less storage capacity. Available storage capacity (including examples of various media files) will vary based on file size, formatting, settings, software and operating system, and/or pre-installed software applications, or media content. Actual formatted capacity may vary.

Drive Write(s) Per Day. One full drive write per day means the drive can be written and re-written to full capacity once a day, every day, for the specified lifetime. Actual results may vary due to system configuration, usage and other factors.

Images may differ from the actual products and services.

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