High-Performance, Small Form Factor Open Standard SoMs

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Director, Technical Marketing
January 14, 2025

INNOVATIVE TECHNOLOGIES • SUDDEN SERVICE • GLOBAL REACH

ABOUT US

Founded in 1976, Samtec is much more than just another connector company, we put people first with a commitment to exceptional service and quality products. We believe that taking care of our customers and our employees is paramount in how we approach our business. This belief is deeply ingrained throughout Samtec and means that you can expect **exceptional service** coupled with **technologies** that take the industry further faster.

GLOBAL **REACH**

HEADQUARTERS
NEW ALBANY, IN
USA

40 LOCATIONS

125+ COUNTRIES SERVED

6,500+ EMPLOYEES

PRIVATELY
OWNED COMPANY

SUDDEN **SERVICE**

ReserVe SHIPS TOMORROW — MORE THAN 200k PART NUMBERS SHIP IN 1 DAY

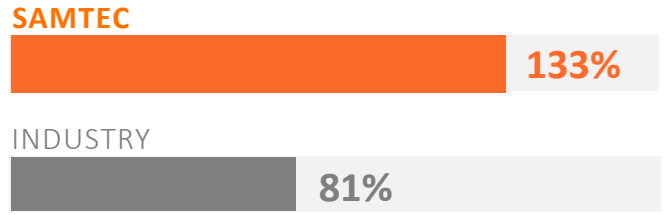
24HOUR SUDDEN SAMPLE — 24-HOUR FREE SAMPLES

2DAYS WORLD DIRECT — 2 DAYS TRANSIT TO ALL MAJOR MARKETS

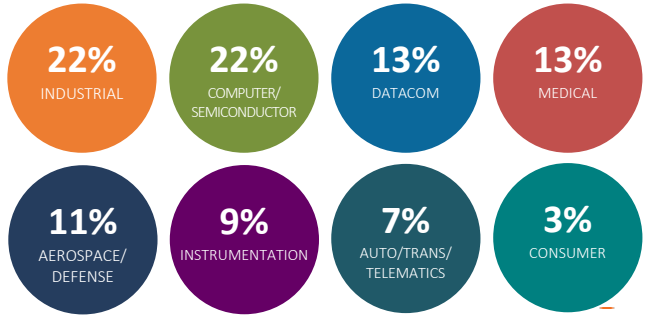
Bishop — **#1** CONNECTOR MANUFACTURER

INDUSTRY **UPDATE**

SALES GROWTH (10-year span)



MARKETS SERVED



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TECHNOLOGY'S INFLUENCE ON OPEN STANDARDS

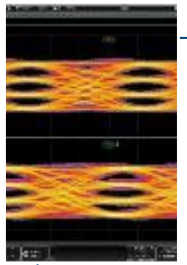
Artificial Intelligence

Commercial Space

MCUs, FPGAs, XPUs, SOCs . . .

Optics/Machine Vision

Smaller Form Factors



Transmission Protocols

SpaceX Starship example: Watch for major paradigm shifts!

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NEW PCI EXPRESS 7.0 SPECIFICATION

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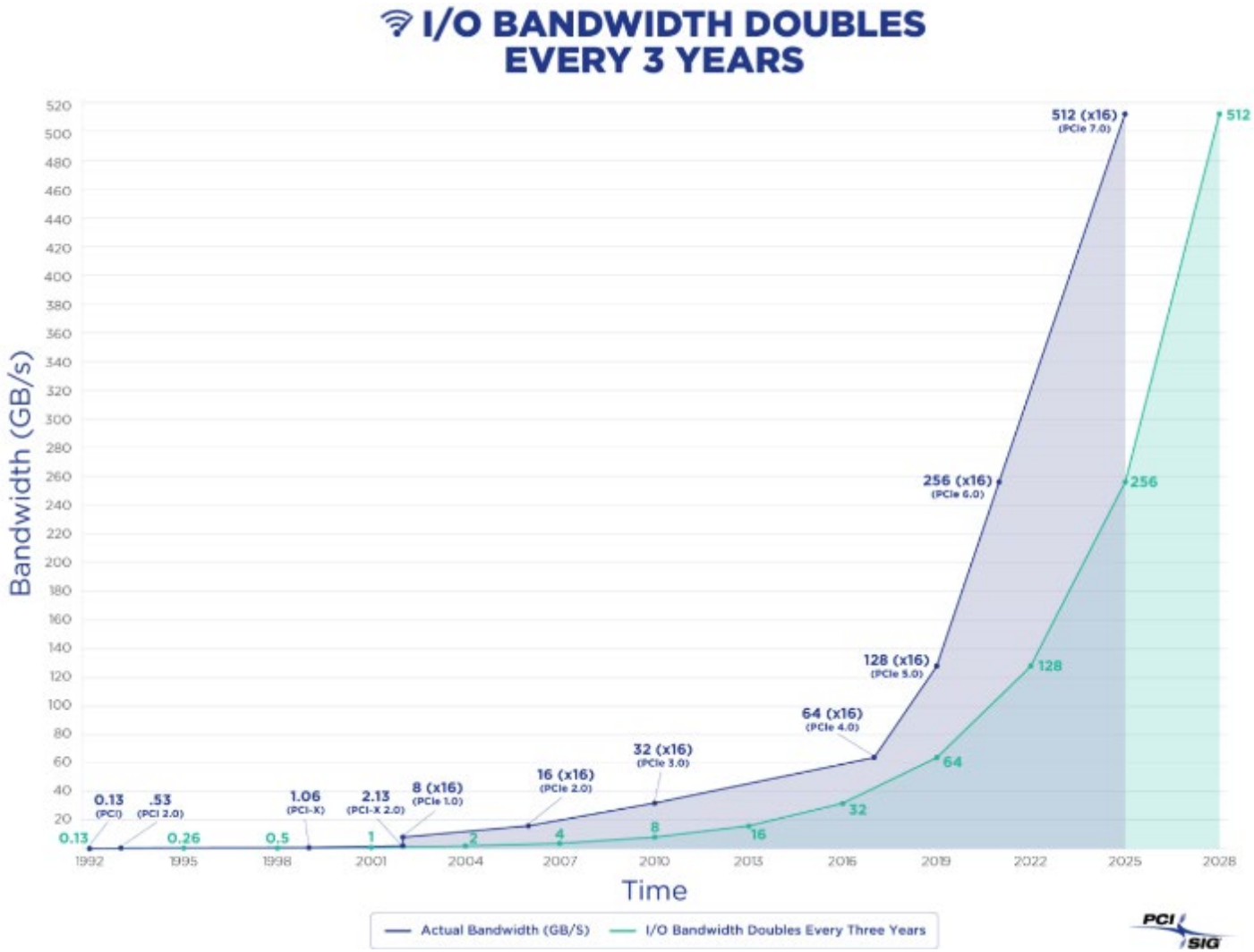
- PCI-SIG aims to double performance every 2-3 years
- PCIe 6.0 releases in 2022, so . . . .
- PCIe 7.0 Key features
  - Delivering 128 GT/s raw bit rate and up to 512 GB/s bi-directionally via x16 configuration
  - Utilizing PAM4 (Pulse Amplitude Modulation with 4 levels) signaling
  - Focusing on the channel parameters and reach
  - Continuing to deliver the low-latency and high-reliability targets
  - Improving power efficiency
  - Maintaining backwards compatibility with all previous generations of PCIe technology



PICMG COM-HPC® UPDATE

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- Computer-on-module (COM) specification for high-performance computing (HPC)
- Server-class bandwidth, power, and performance
- Modular, two-board architecture
- COM-HPC 1.2 Updates
- Introducing COM-HPC Mini
  - New smaller form factor only uses a single 400-pin connector
- Lower power budgets
- Rugged, thinner profiles for panels PCs
- COM-HPC 1.3 – Under development
- Solder-column options
- New weld-tab options
- Formalize PCIe 6.0 capabilities

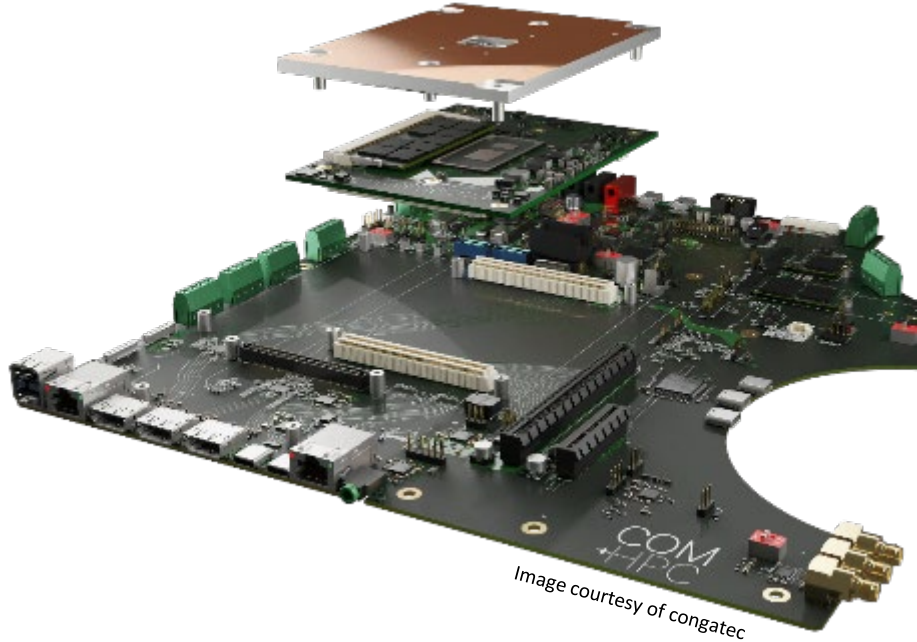

Image courtesy of congatec

POPULAR SGET SOM/COM SOLUTIONS

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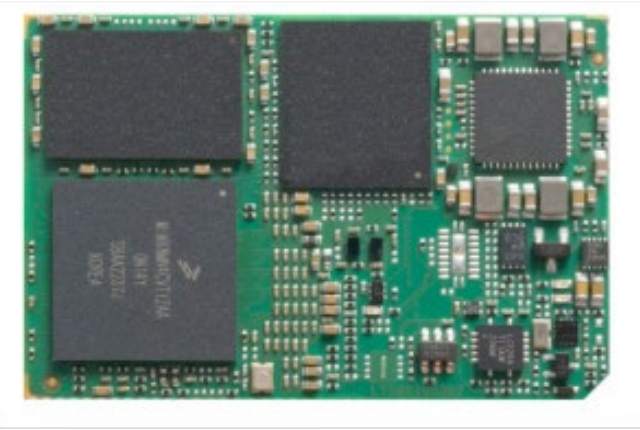

Q SEVEN

SMARC module

OPEN STANDARD MODULE ™

SGeT STANDARDIZATION GROUP FOR EMBEDDED TECHNOLOGIES

SGET HARMONIZED FPGA MODULE™ (HFM)

samtec
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Developing a groundbreaking standard and uniform design approach to FPGA and SoC FPGAs SOMs enabling free choice between solderable and connector-based modules.

Solderable HFM (s.HFM)

- Reliability and security
- Improved signal integrity
- Space efficiency
- Simplified manufacturing

Connector-based HFM (c.HFM)

- Mid- to high-mid-range FPGA support
- Simplifying evaluation, prototyping and stock management
- Cost saving

SGeT STANDARDIZATION GROUP FOR EMBEDDED TECHNOLOGIES

PC/104™ CONSORTIUM – WHAT IS IT?

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- Adapt desktop computer technology for embedded applications
- Connector intensive stackable SBCs for modular architectures
- Simple and elegant designs for rugged applications
  - Rugged environments
  - Space applications (CubeSATS, LEOS/MEOS, etc.)
  - Industrial transportation
- Evolves and expands as speeds and density increase . . .

PC104
Embedded PC Modules

PC/104™ CONSORTIUM – MANY OPTIONS?

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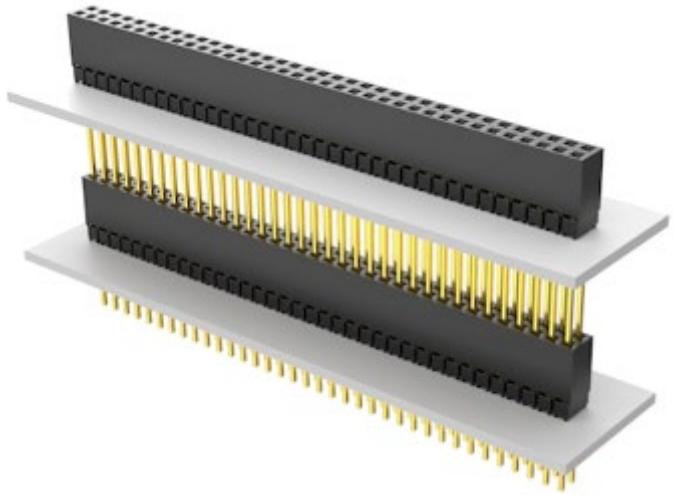
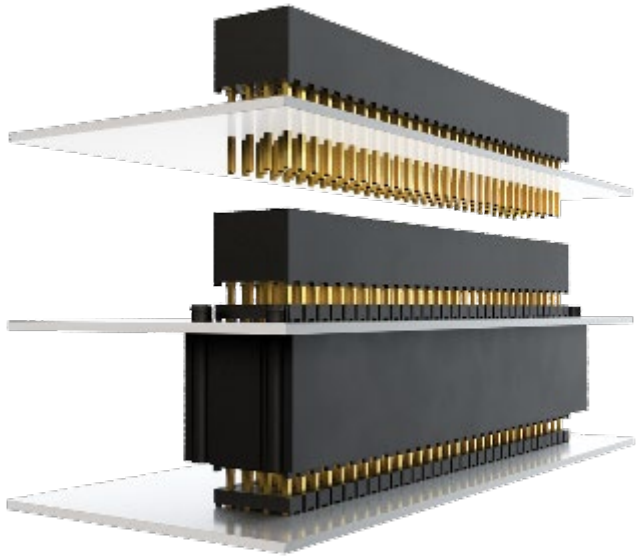
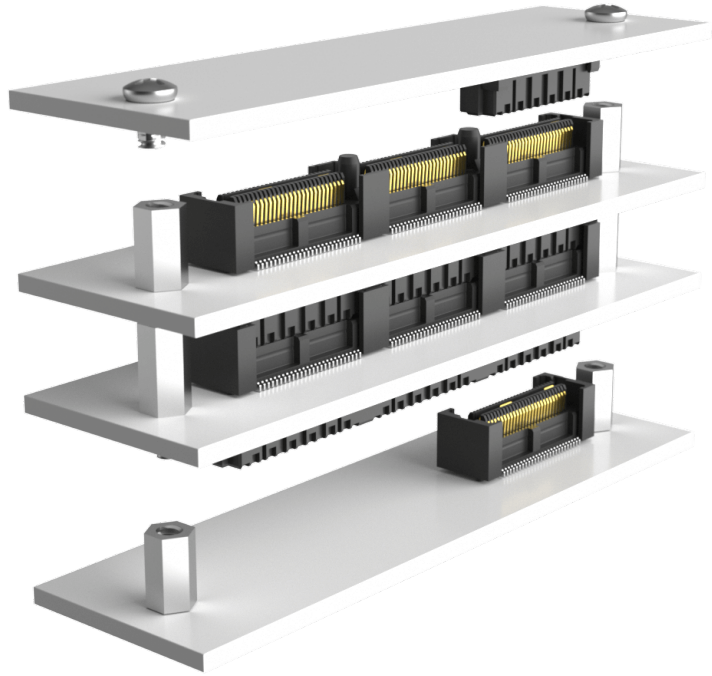


PC/104™



PC/104-*PLUS*™



PCI/104-EXPRESS™

PC104 Embedded PC Modules

SO . . . WHAT'S NEW?

PC/104™ CONSORTIUM – THE UXV/35™ STORY

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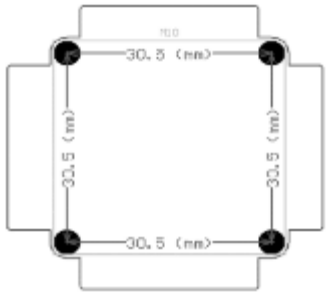
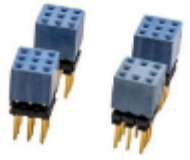
- UxV – (UAV/UAS, USV, UGV) + 35-pin connector
- Making rapid manufacture of drones easier via a durable, versatile standard
  - Compact footprint
  - Stackable bus architecture
  - Plug-and-play extensibility for 3rd parties
- Benefits of the standard
  - Enables rapid development and manufacturing of drones, automatic vehicles and vessels
  - Enables mix-and-match components from multiple vendors
  - Facilitates rpaid market access for 3rd party design of open, innovative open-source components
- Boards easily assemble firmly and securely into stack without tools



4 Quadrants of the Bus



UxV/35 Connectors

PC104
Embedded PC Modules

the kairos band
KA
MADE IN THE USA
american

VITA 90.X VNX+ OVERVIEW

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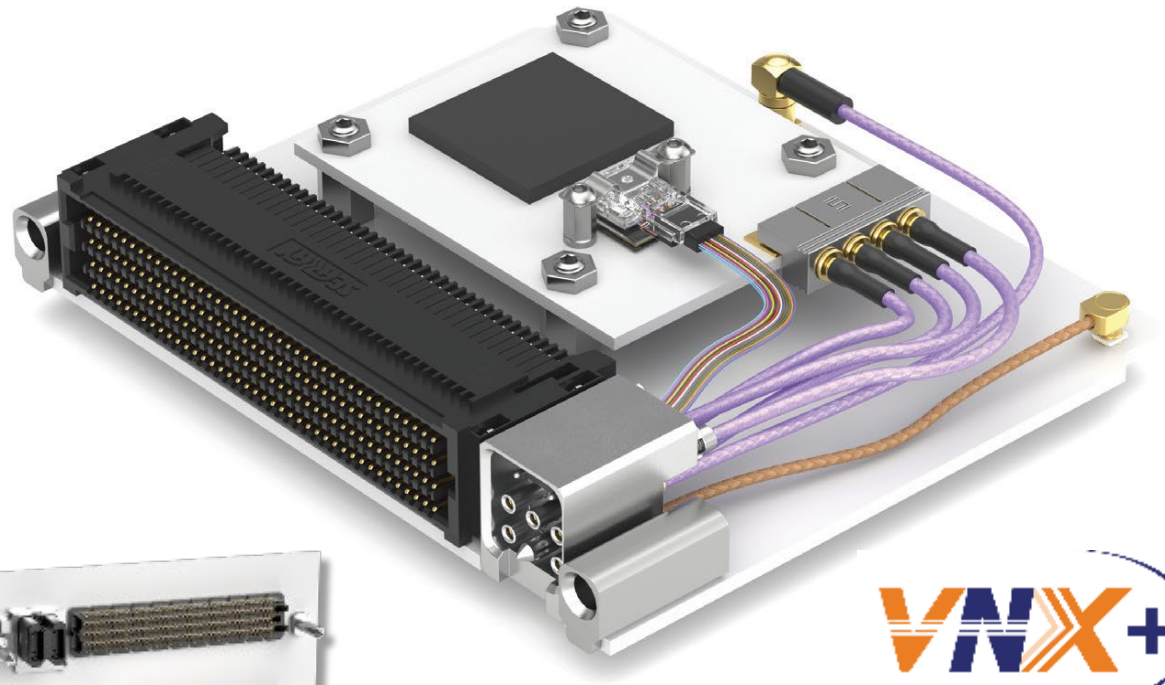
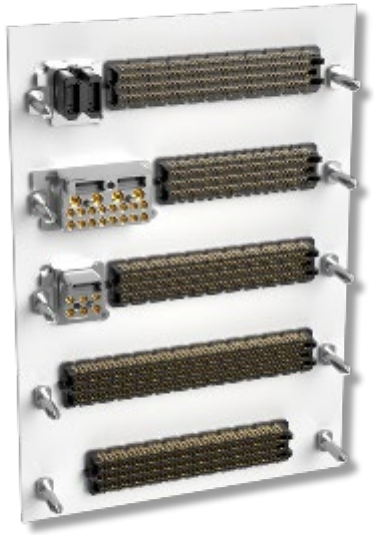
- Designed and optimized for the needs of the Mil/Aero SFF community
- Plug-In Module to Backplane Interface engineered as a full system solution to ensure reliability
- Robust 3-stage alignment
- Shrouded housing provides maximum contact protection from FOD and accidental damage
- Supports 5" common launch tube deployment
- Multiple aperture profiles supported
  - 240 pin Connector + 16x Size 20 RF + 4x Size 16 RF + 2 MT
  - 320 pin Connector + 6x Size 20 RF + 1 MT
  - 320 pin Connector + 2 MT
  - 320 Pin Connector + 6x 75 Ω, Size 16 + 1 MT
  - 320 Pin Connector + 8x 75 Ω, Size 16





VNX+™

VITA 90.2 VNX+ RF/OPTICAL APERTURES

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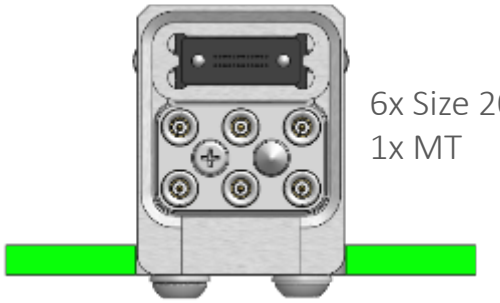
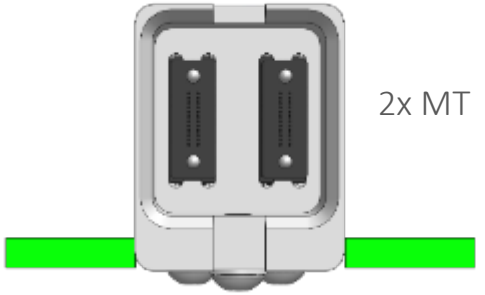
2x MT
4x Size 16
16x Size 20



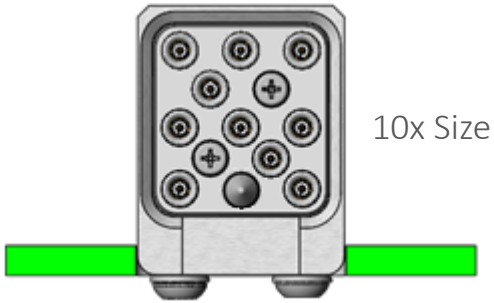
6x Size 20
1x MT



2x MT

8x Size 16

6x Size 16
1x MT



10x Size 20

VITA 93.0 QMC SFF MEZZANINE

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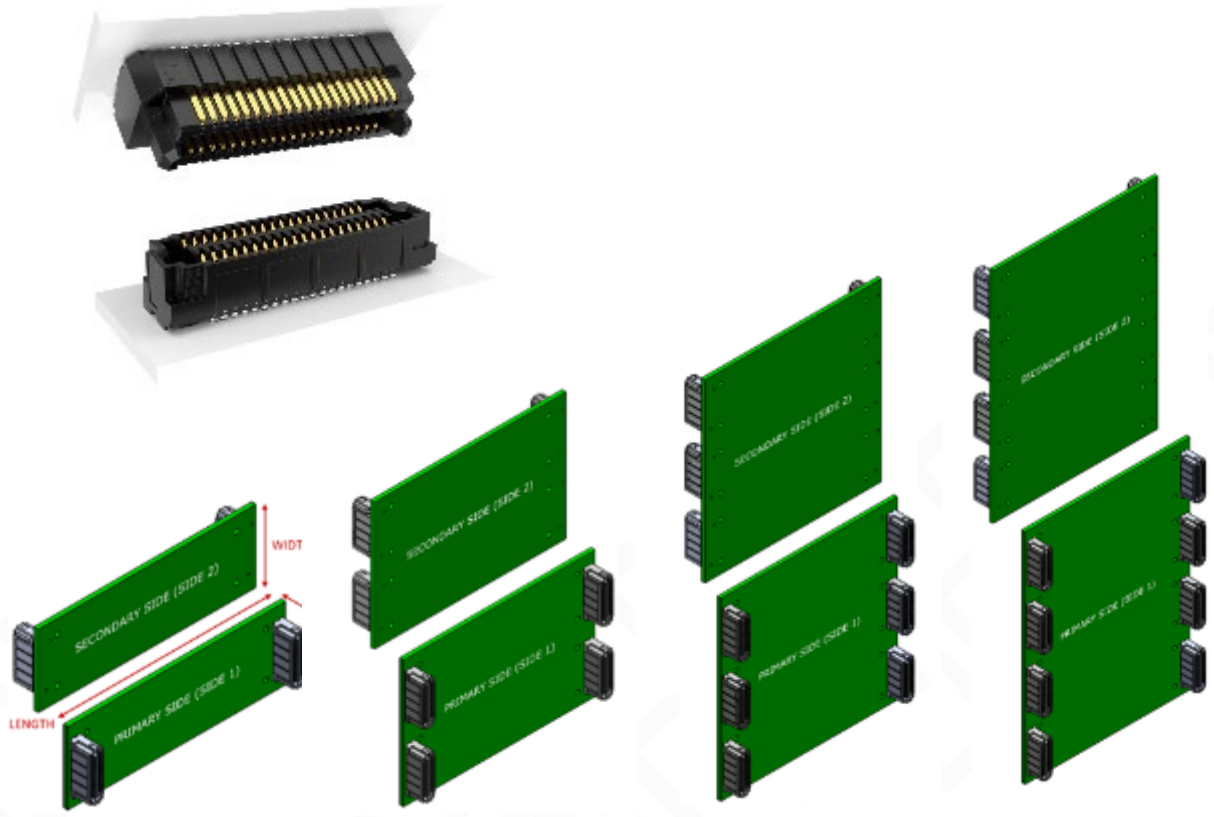
- New SFF I/O mezzanine system
- Designed to fit in several existing hardware formats
- Modular, flexible and scalable – four form factors
- Multiple stack heights
- Analogous to FMC ecosystem
- Leverages Samtec's AcceleRate® HD Ultra-Dense Slim Body Arrays
  - 80 pins in 4x20 configuration
  - Slim 5 mm width
  - Edge Rate® contact system optimized for signal integrity performance
  - Open-pin-field design for grounding and routing flexibility
  - Supports 64 Gbps PAM4 (32 Gbps NRZ) applications



SINGLE QMC DOUBLE QMC TRIPLE QMC QUAD QMC

KEY TAKEWAYS

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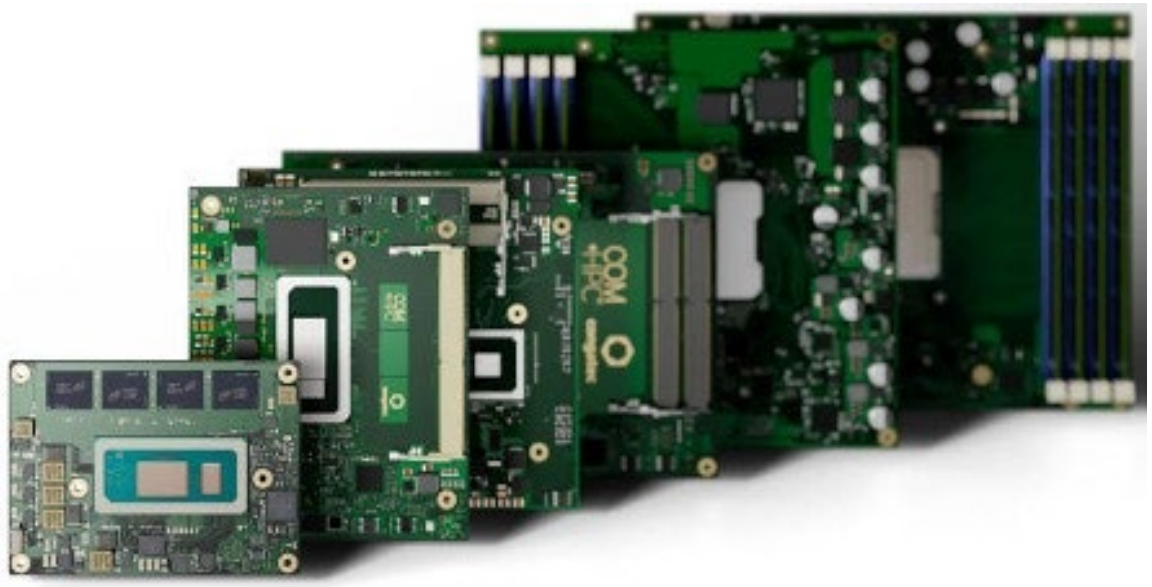
- Samtec offers a comprehensive portfolio of high-performance interconnect solutions ideally suited for Industry Standards and open-standard SoMs

- Samtec's global team of SI technical experts, online design tools and world-class customer service are available to support any Industry Standards and open-standard SoM applications

- For more information:
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- standards@samtec.com