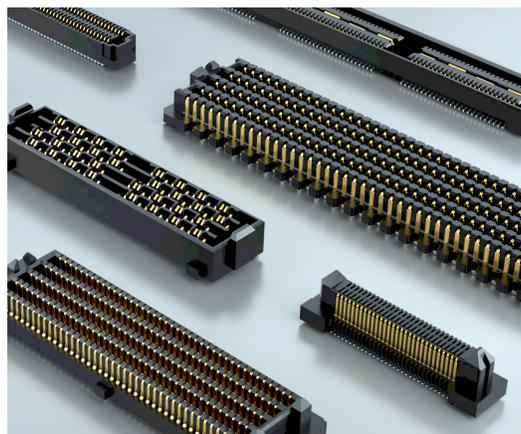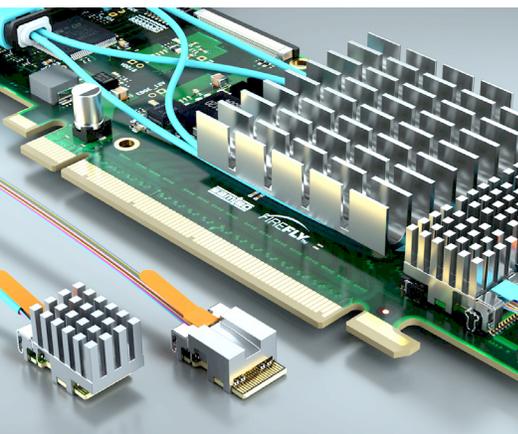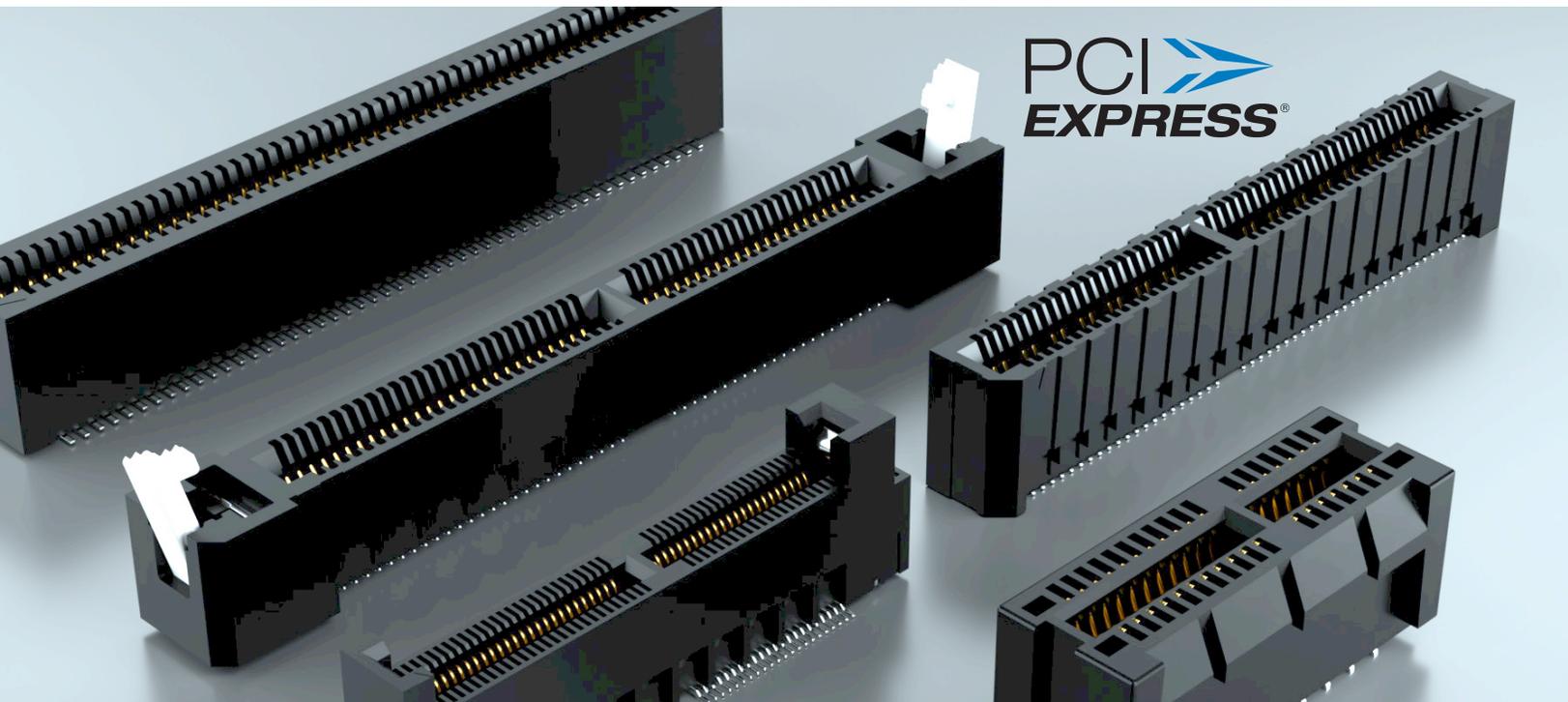# PCI Express®
## INTERCONNECT SOLUTIONS

**PCIe® CEM AIC • PCIe® Capable Solutions • Future-Proof 56+ Gbps PAM4 Solutions**

Samtec offers a number of solutions supporting the PCI Express® I/O interconnect bus. Samtec's PCI Express® product line includes connectors, cable assemblies and PCIe® CEM AICs that help drive fast, efficient, point-to-point communication.
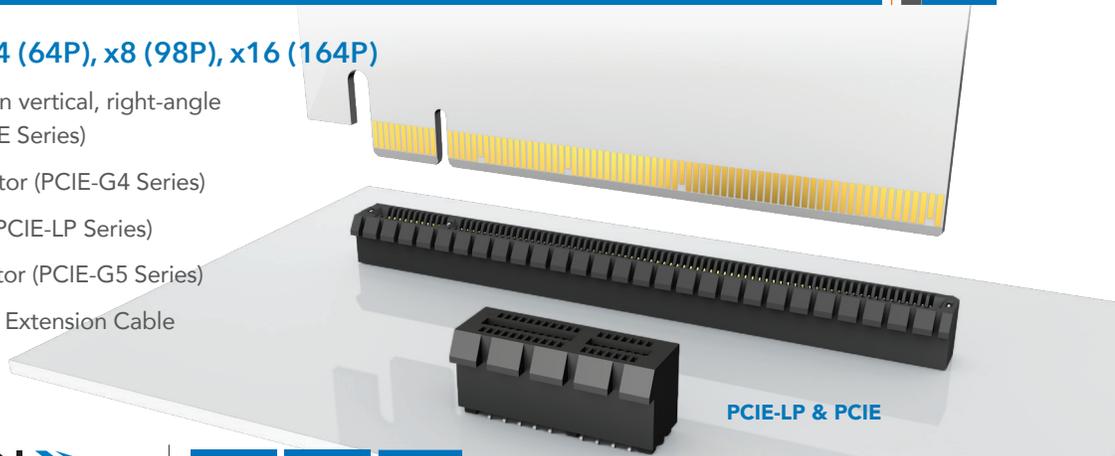
# PCI Express® CEM AIC Solutions
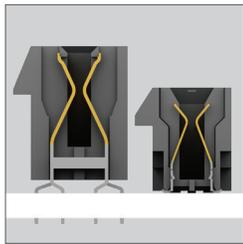
## PCI Express® EDGE CARD SOCKETS & CABLE ASSEMBLIES

PAM4 **56** Gbps

### 1.00 mm Pitch • x1 (36P), x4 (64P), x8 (98P), x16 (164P)

- PCIe® 3.0 Edge Card Connectors in vertical, right-angle and edge mount orientations (PCIE Series)
- PCIe® 4.0 Slim Edge Card Connector (PCIE-G4 Series)
- PCIe® 4.0 Low Profile Connector (PCIE-LP Series)
- PCIe® 5.0 Differential Pair Connector (PCIE-G5 Series)
- Also available: PCIe® 3.0 Jumper / Extension Cable Assemblies (PCIEC Series)
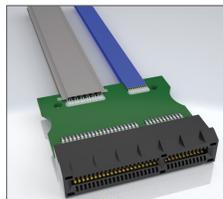
**PCIE-LP & PCIE**

PCI EXPRESS®

**8** Gbps  **16** Gbps  **32** Gbps

8 mm Low Profile Design
vs.
11 mm Standard Height
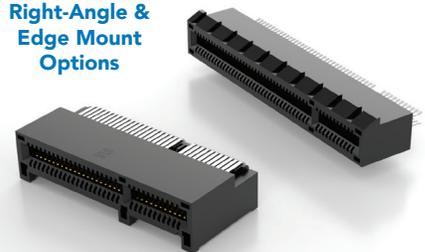
PCI Express® Jumpers for use as a Loop Back Extender, SerDes Physical Extender or as a physical extender for PCIe® card debug and analysis.
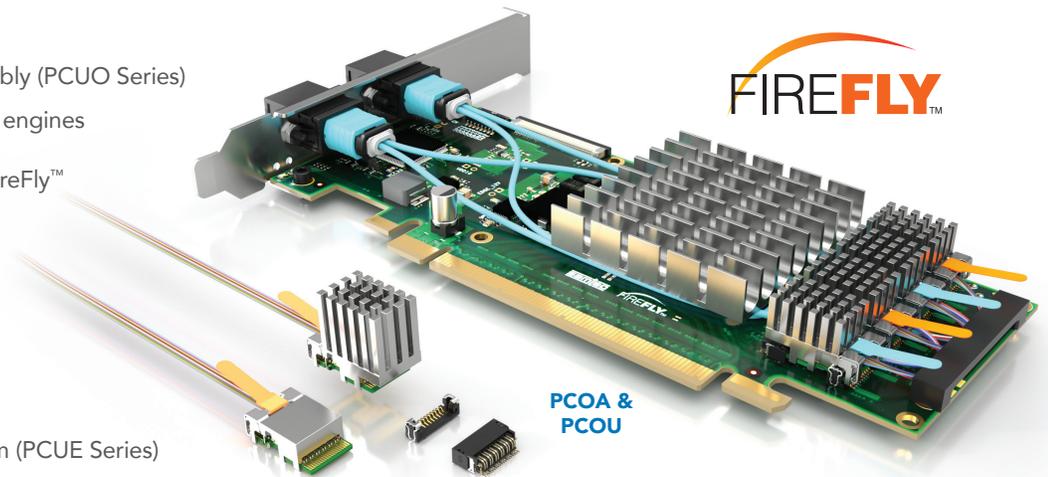
**Right-Angle & Edge Mount Options**

## PCI Express® OVER FIBER CABLE ASSEMBLIES

**8** Gbps

### Optical FireFly™ Systems

- PCIe® 3.0 & 4.0 Optical Cable Assembly (PCUO Series)
  - x4, x8 and x16 PCIe® micro optical engines

- PCIe® 3.0 & 4.0 Adaptor Card with FireFly™ Optical Cable System (PCOA Series)
  - x16, x8, dual x8, x4, dual x4 and quad x4 configurations
  - PCIe® x16 Edge Card Connector

### Copper FireFly™ Systems

- PCIe® 3.0 & 4.0 Copper Cable System (PCUE Series)
  - 34 AWG ultra low skew twinax ribbon cable
  - x4 duplex system

**FIREFLY™**

**PCOA & PCOU**

PCI EXPRESS®

**8** Gbps  **16** Gbps  **32** Gbps

# PCI Express® Capable Solutions
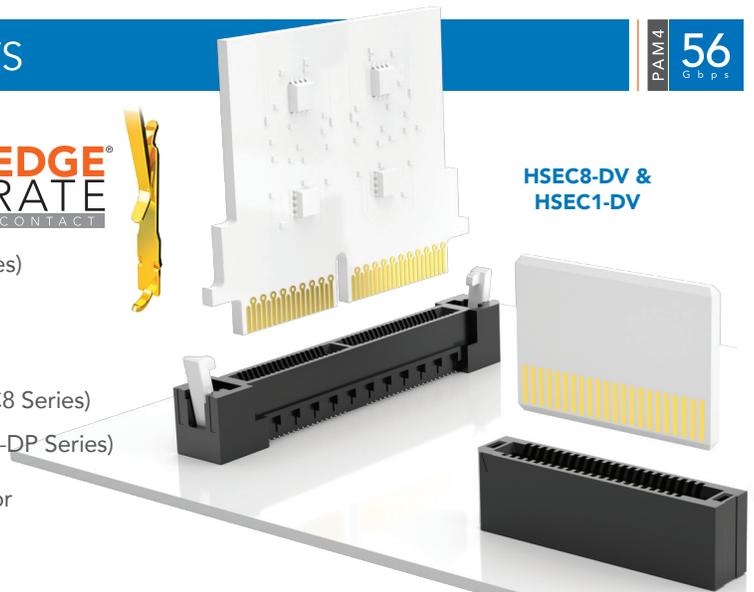
## HIGH-SPEED EDGE CARD SOCKETS

**PAM4 56** Gbps

### Choice of Pitches • Rugged Contact Systems

- PCIe® 4.0 Capable Mini Edge Card Connectors
  - 0.50 mm (.0197") Pitch
  - Right-angle (MEC5-RA Series) & vertical (MEC5-DV Series)

- PCIe® 3.0 & 4.0 Capable High-Speed Card Connectors
  - High-Speed Edge Rate® contacts on 0.80 mm pitch
  - Vertical, edge mount and right-angle orientations (HSEC8 Series)
  - PCIe® 4.0 & 5.0 Capable Differential Pair Socket (HSEC8-DP Series)

- PCIe® 3.0 & 4.0 Capable High-Speed Edge Card Connector
  - Edge Rate® contact system on 1.00 mm pitch
  - Vertical orientation (HSEC1-DV Series)
  - PCIe® 5.0 Capable Differential Pair Connector in development (HSEC1-DP)

EDGE RATE® CONTACT

**HSEC8-DV & HSEC1-DV**

## HIGH-SPEED MEZZANINE CONNECTORS & CABLE ASSEMBLIES

**28** Gbps

### Choice of Pitches • Integral Power / Ground Plane

- 0.50 mm & 0.80 mm pitch Q Strip® Ground Plane Connector Strips & Cable Assemblies
- 0.635 mm pitch Q2™ Rugged Differential Pair Ground Plane Header & Cable Assemblies
- 0.80 mm pitch Q Rate® Rugged, Slim Body Connector Strips & Cable Assemblies
- Visit **samtec.com/QSeries** for details

QSERIES®

**EQRD / QRF8**

**HQCD / QTH**

## RUGGED HIGH-SPEED CONNECTORS & CABLE ASSEMBLIES

**PAM4 56** Gbps

### Rugged Edge Rate® Contact System • 0.80 mm Pitch

- High-Speed Connector Strips (ERM8/ERF8 Series)
- Edge Card Twinax Cable Assembly (ECDP Series)
- Micro Coax & Twinax High-Speed Cable Assemblies (ERCD/ERDP Series)

EDGE RATE® CONTACT

**ERDP / ERF8**

## HIGH-SPEED / HIGH-DENSITY ARRAYS

**PAM4 56** Gbps

### Routing & Grounding Flexibility • Rugged Contact Systems

- SEARAY™ 0.50" pitch Open-Pin-Field Arrays (SEAM/SEAF Series)
- SEARAY™ 0.50" pitch Cable Assembly (SEAC Series)
- DP Array® .085" X .100" Differential Pair Array (DPAM/DPAF Series)

SEARAY™

**SEAC / SEAM**

samtec.com/PCIe

# Future-Proof 56+ Gbps PAM4 Solutions

In addition to products designed to support the latest PCIe® data rates, Samtec has a full line of ultra high-performance solutions engineered for 56 - 112 Gbps PAM4 speeds and beyond, providing future-proof design flexibility for the support of next generation PCI Express® technologies.
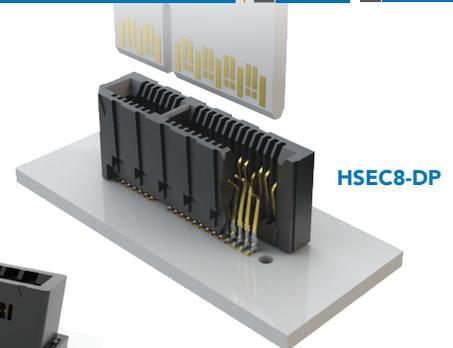
## NEXT GEN HIGH-SPEED EDGE CARD SOCKETS

**PAM4 56 Gbps** | **PAM4 112 Gbps**

### 0.80 mm Pitch Edge Rate® Differential Pair Connector

- Up to 56 Gbps PAM4 performance
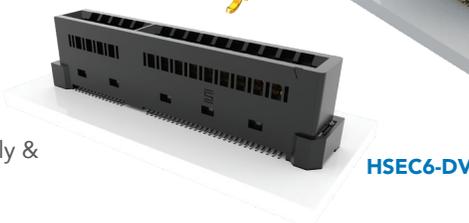- PCIe® 4.0 & 5.0 Capable (HSEC8-DP Series)

EDGE RATE® CONTACT

**HSEC8-DP**

### 0.60 mm Pitch Edge Rate® Differential Pair Connector

- Up to 56 Gbps PAM4 performance
- PCIe® 4.0 & 5.0 Capable (HSEC6-DV Series)
- Compliant to SFF-TA-1002: x4 (IC), x8 (2C), x16 (4C & 4C+)
- In Development: 0.60 mm pitch High-Speed Cable Assembly & Extreme Performance 112 Gbps PAM4 Connector

**HSEC6-DV**

## EXTREME PERFORMANCE / DENSITY ARRAYS

**PAM4 56 Gbps** | **PAM4 112 Gbps**

### NovaRay® Extreme Density & Performance Arrays

- 4.0 Tbps aggregate data rate - 9 IEEE 400G channels
- Mating 0.80 mm pitch socket cable assembly
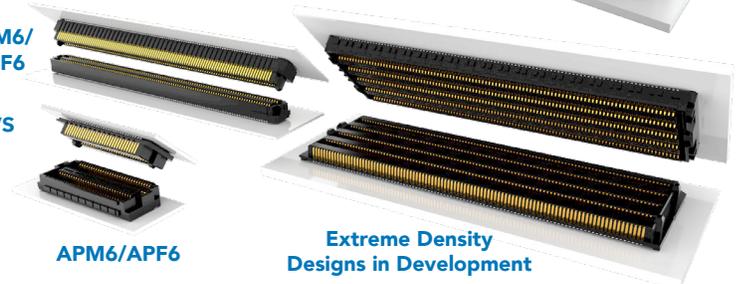- In Development: future-proof NovaRay® I/O Extreme Density Bulkhead Cable System

**NVAM/ NVAF**

### AcceleRate® HP High-Performance Open-Pin-Field Arrays

- 0.635 mm Pitch, four row design with up to 400 total pins; roadmap to 1,000+ pins
- Data rate capable with PCIe® 5.0 and 100 GbE
- In Development: mating cable assembly

**ADM6/ ADF6**

### AcceleRate® HD Ultra-Dense Open-Pin-Field Arrays

- 0.635 mm pitch Edge Rate® contacts; up to 400 I/Os
- Open-pin-field design for grounding and routing flexibility
- In Development: right-angle and additional stack heights

**APM6/APF6**

**Extreme Density Designs in Development**

## DIRECT CONNECT CABLE TO IC PACKAGE TECHNOLOGY

**PAM4 56 Gbps** | **PAM4 112 Gbps**

### Si-Fly™ Ultra-High Density Direct Connect to IC Package System

- In Development: Si-Fly™ technology eludes the BGA, routing signals directly from the silicon package through a long-reach cable
- Extreme channel performance enabling 25.6 TB aggregate with a path to 51.2 TB
- Visit **samtec.com/si-fly** for details