HIGH-SPEED

BOARD-TO-BOARD & BACKPLANE

INTERCONNECT SOLUTIONS GUIDE

HIGH-SPEED
BOARD-TO-BOARD & BACKPLANE

Samtec offers the largest variety of high-speed board-to-board and backplane interconnects in the industry with full engineering support, online tools and an unmatched service attitude.

HIGH-SPEED PERFORMANCE

Speeds to 112 Gbps PAM4

More than 4.0 Tbps of aggregate bandwidth

Extremely low crosstalk to 40 GHz

APPLICATION FLEXIBILITY

10 – 3,000 positions

1 mm – 40 mm stack heights

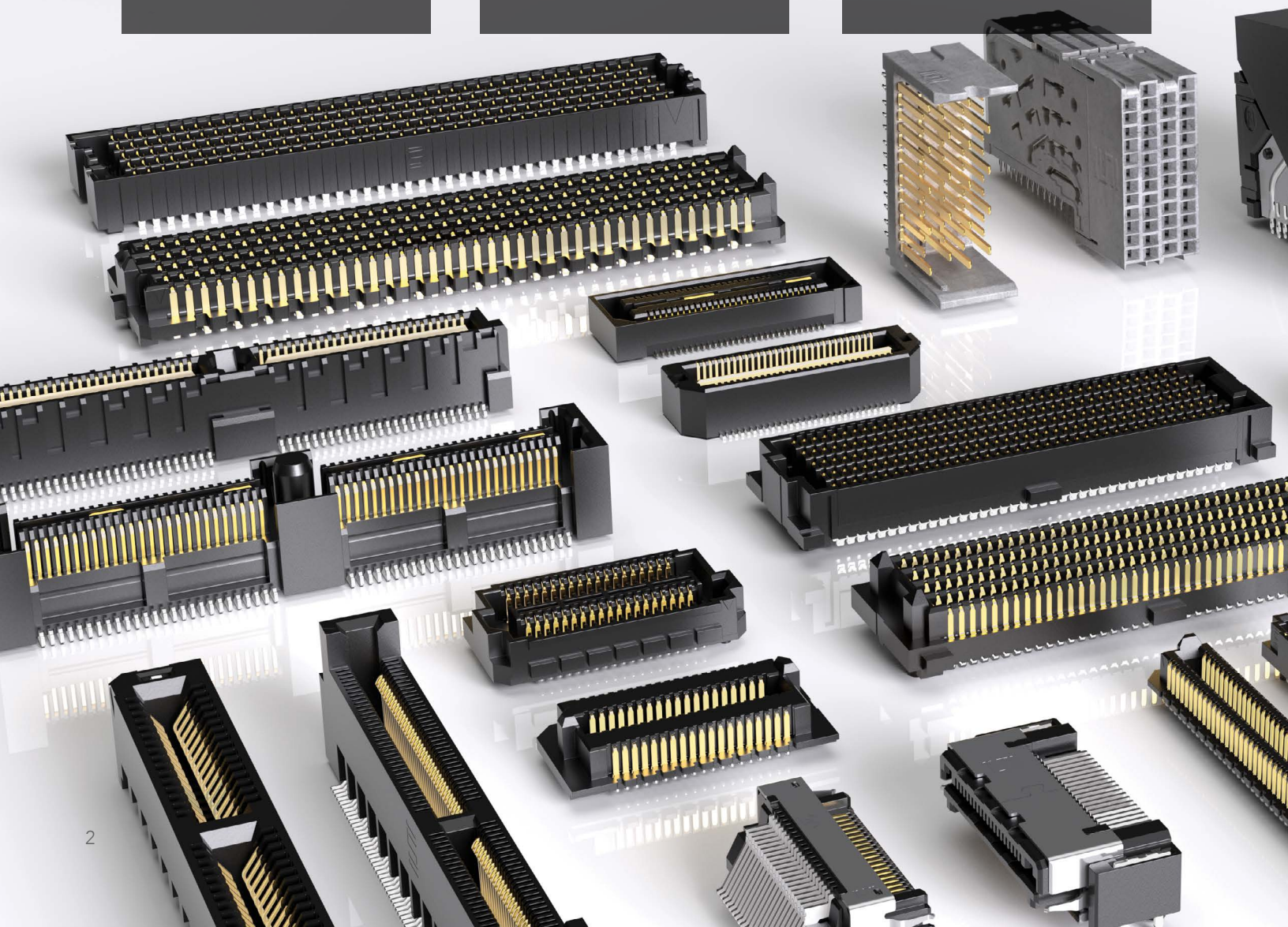
Vertical, right-angle, edge mount

SIGNAL INTEGRITY SUPPORT

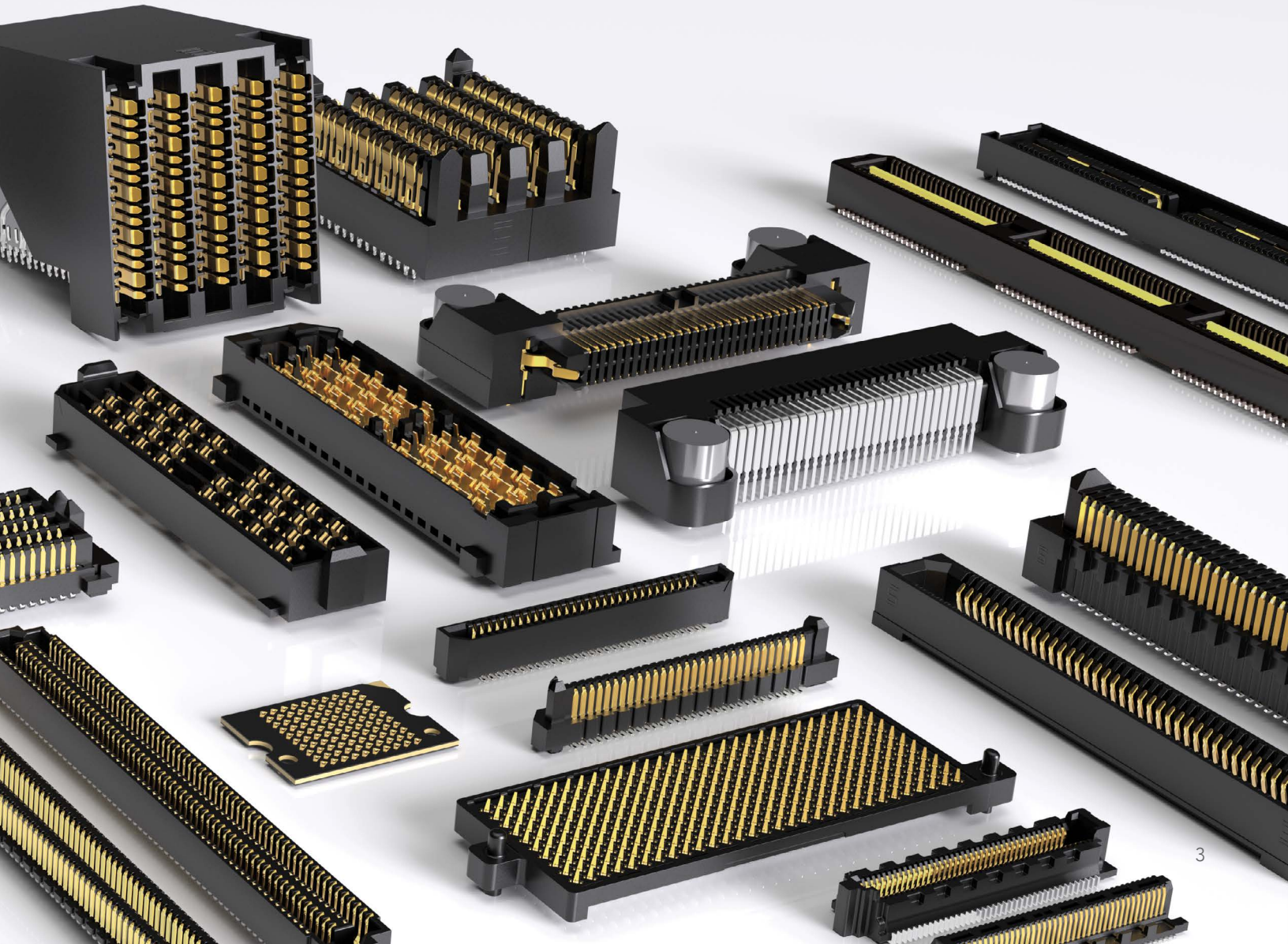
Free test reports, models, app notes, Break Out Region

Easy access to live EE support

Channelyzer® Online Tool

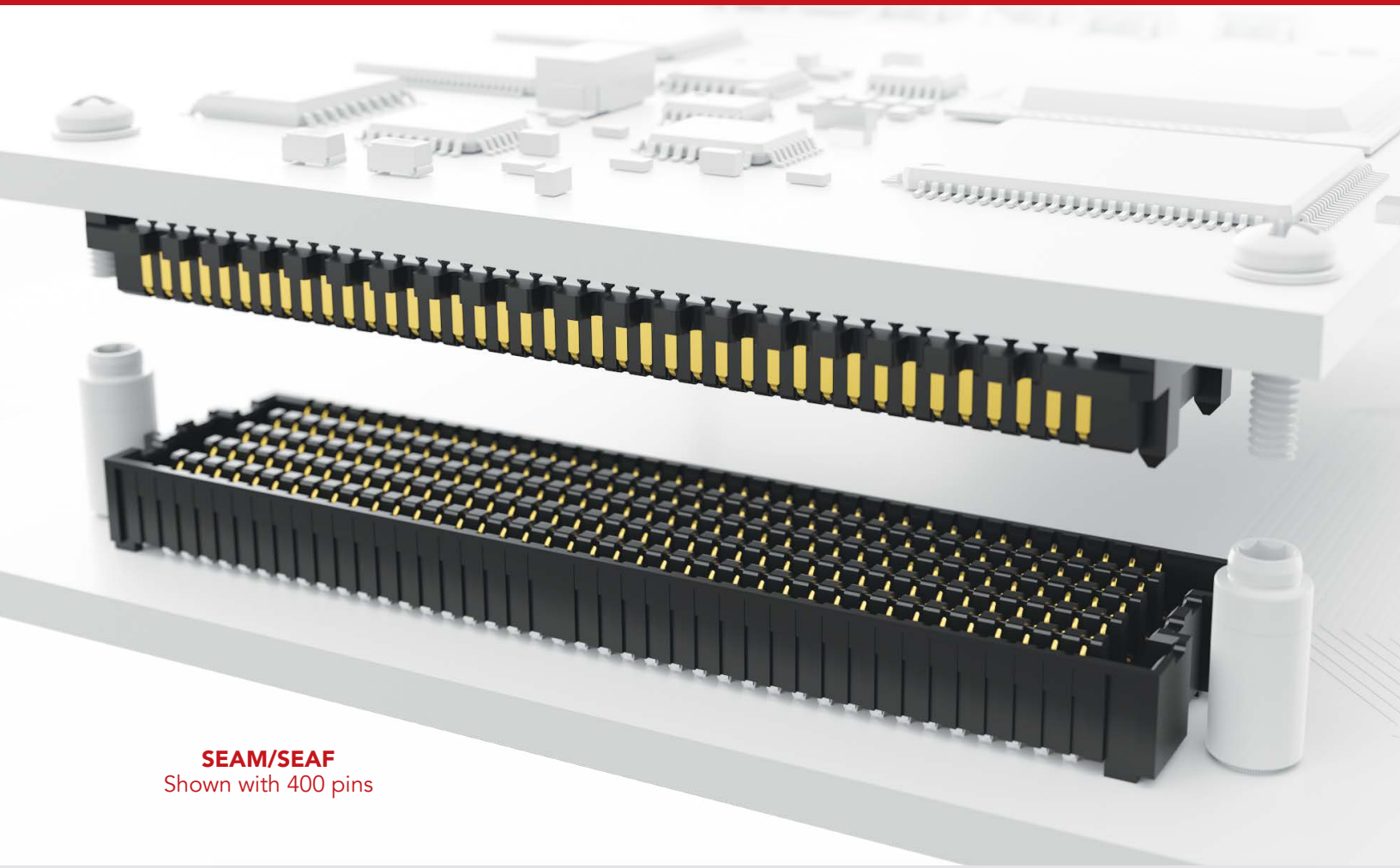


Learn more at **samtec.com**



HIGH-DENSITY ARRAYS

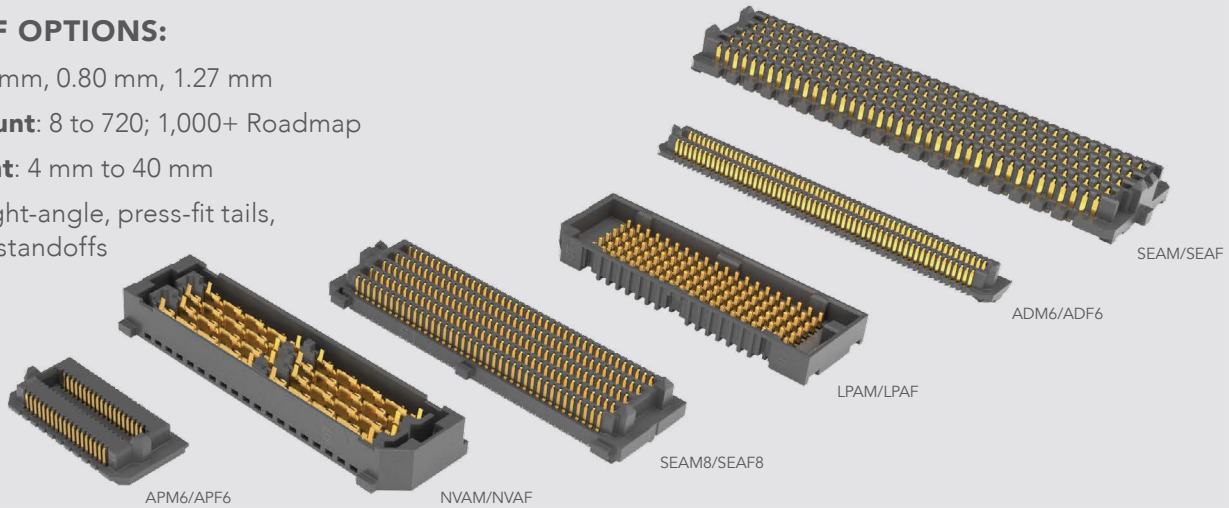
EXTREME PERFORMANCE • OPEN-PIN-FIELD • LOW PROFILE



SEAM/SEAF
Shown with 400 pins

VARIETY OF OPTIONS:

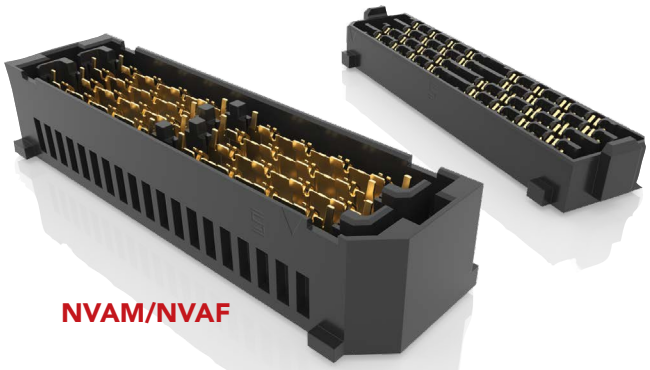
- **Pitch**: 0.635 mm, 0.80 mm, 1.27 mm
- **Pin/Pair Count**: 8 to 720; 1,000+ Roadmap
- **Stack Height**: 4 mm to 40 mm
- **Options**: Right-angle, press-fit tails, 85 Ω tuned, standoffs



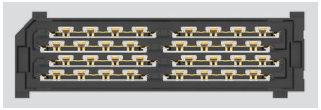
EXTREME PERFORMANCE ARRAYS

- 4.0 Tbps aggregate data rate - 9 IEEE 400G channels
- Two points of contact ensure a more reliable connection
- 112 fully shielded differential pairs per square inch
- Extremely low crosstalk (to 40 GHz) and incredibly tight impedance control
- Minimal variance in data rate as stack height increases
- Utilizes 40% less space with the same data throughput as compared to traditional arrays
- Terminal with latching available to mate with NovaRay® cable (NVAM-C)

NOVARAY® | NRZ 56 Gbps | PAM4 112 Gbps



NVAM/NVAF



NVAM Series; 32 pairs
(actual size shown)

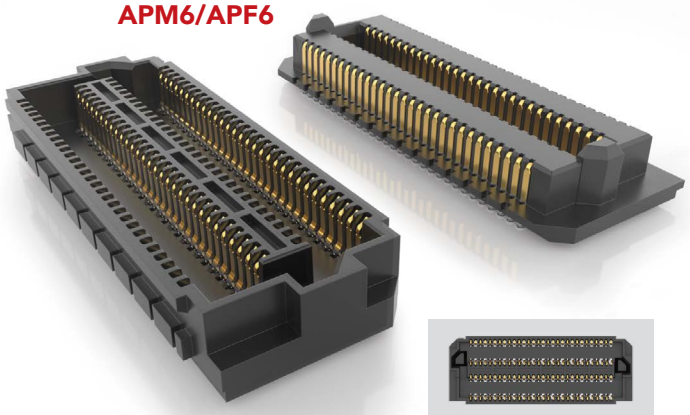
SureWare™ guide post standoff (GPSO) assists with "blind mate" and misalignment mitigation

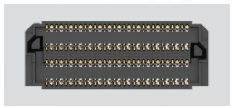
HIGH-PERFORMANCE ARRAYS

- Flexible open-pin-field and cost optimized, extreme performance solution
- Low-profile 5 mm stack height and up to 10 mm
- 0.635 mm pitch
- Four row design with up to 400 total pins; roadmap to 1,000+ pins
- Data rate compatible with PCIe® 5.0 and 100 GbE
- Right-angle connector and cable assembly in development

ACCELERATE®HP | NRZ 56 Gbps | PAM4 112 Gbps

APM6/APF6





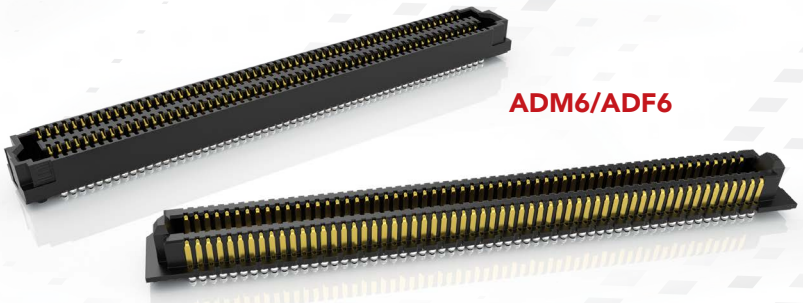
APF6 Series; 120 pins
(actual size shown)

HIGH-DENSITY SLIM BODY ARRAYS

- Up to 400 I/Os in a 4-row, open-pin-field design
- 0.635 mm pitch Edge Rate® contacts
- Low profile 5 mm stack height and slim 5 mm width
- PCIe® 5.0 capable
- Compatible with mPOWER® for a power/signal solution
- Right-angle and other stack heights in development (ADF6-RA)

ACCELERATE®HD | PAM4 56 Gbps

ADM6/ADF6

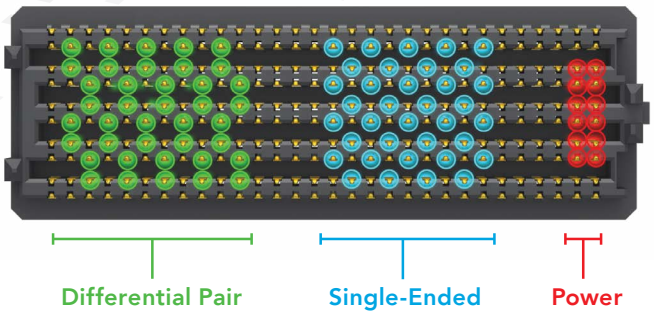


ADF6 Series; 400 pins
(actual size shown)

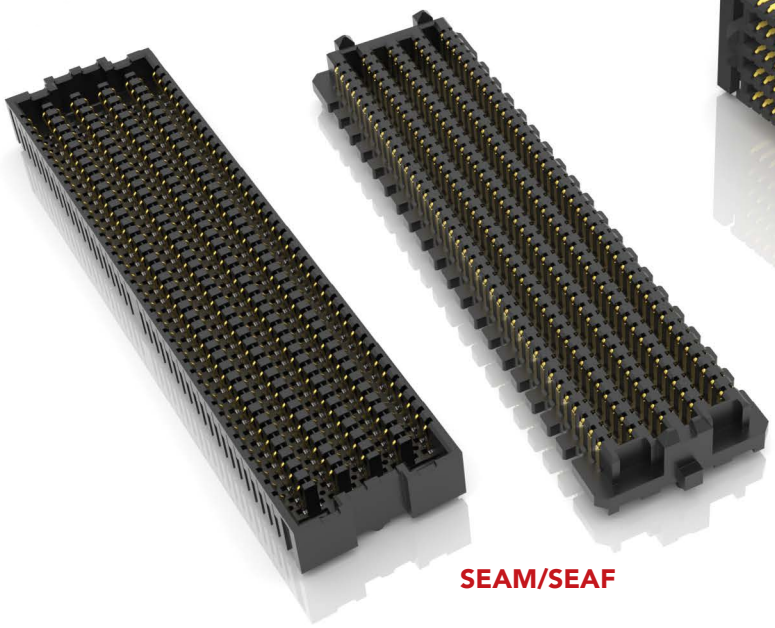
1.27 mm PITCH ARRAYS

- Maximum grounding and routing flexibility
- Up to 560 Edge Rate® contacts optimized for signal integrity performance
- 7 mm to 40 mm stack heights; right-angle available
- Supports high-speed protocols such as Ethernet, PCI Express®, Fibre Channel and InfiniBand™
- Standards: VITA and PISMO™ 2
- Compatible with mPOWER® (UMPT/UMPS) for power/signal flexibility

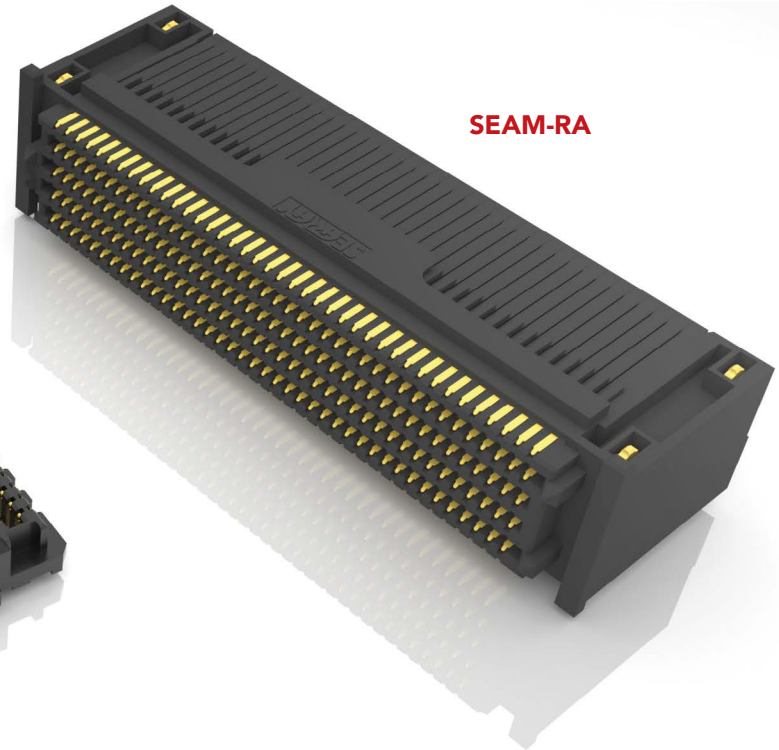
OPEN-PIN-FIELD FLEXIBILITY



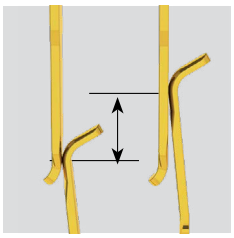
SEARAY™ NRZ 28 Gbps PAM4 56 Gbps



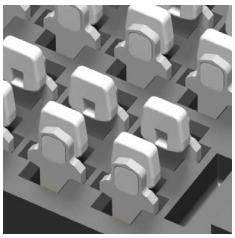
SEAM/SEAF



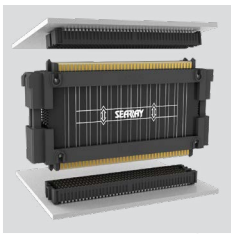
SEAM-RA



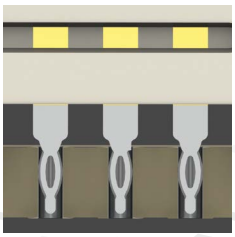
1.12 mm (.044") contact wipe



Solder charge terminations (IPC-A-610F & IPC J-STD-001F Class 3)



Elevated stack heights available (SEAR)



Press-fit tails available (SEAMP/SEAFP)

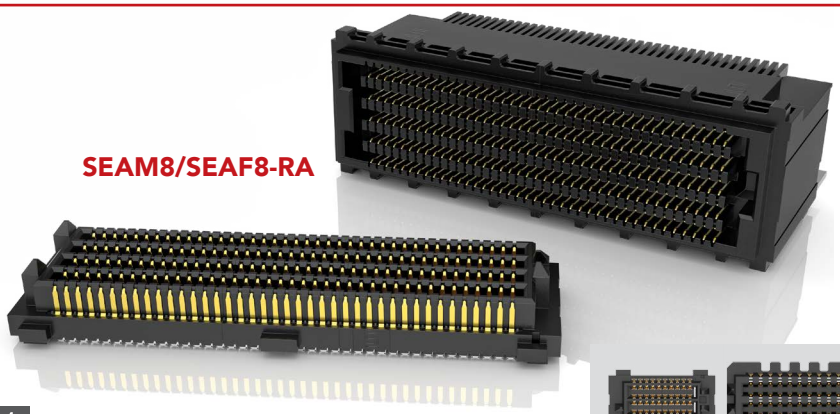
Jack screw standoffs (JSO)

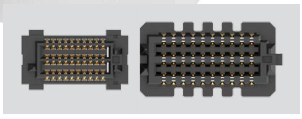
HIGH-DENSITY 0.80 mm PITCH ARRAYS

- 2x the density of 1.27 mm pitch arrays
- Up to 500 Edge Rate® contacts
- 7 mm and 10 mm stack heights
- Lower insertion/withdrawal forces
- Solder charge terminations for a secure connection to the board
- Compatible with mPOWER® for power/signal flexibility

SEARAY.8mm™ | NRZ 28 Gbps | PAM4 56 Gbps

SEAM8/SEAF8-RA





0.80 mm pitch vs. 1.27 mm pitch
(actual size shown; 60 pins)

LOW PROFILE ARRAYS

- Up to 400 total pins in 4, 6 or 8 rows
- 4 mm, 4.5 mm and 5 mm stack heights
- 1.27 mm pitch dual beam contacts
- Compatible with mPOWER® for power/signal flexibility
- Press-in or threaded standoffs available to assist with unmating (JSO)

LP ARRAY™ | NRZ 28 Gbps | PAM4 56 Gbps

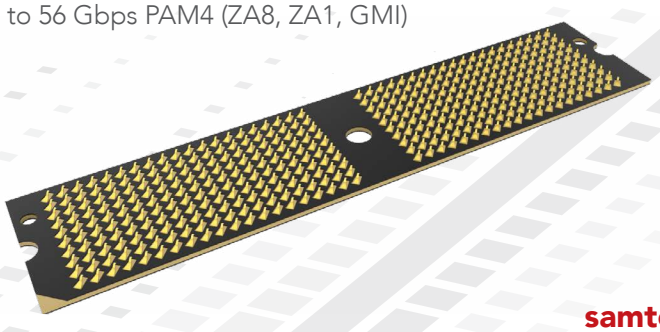
LPAM/LPAF

LPAM Series; 120 pins
(actual size shown)

ALSO AVAILABLE: HIGH-DENSITY SOLUTIONS

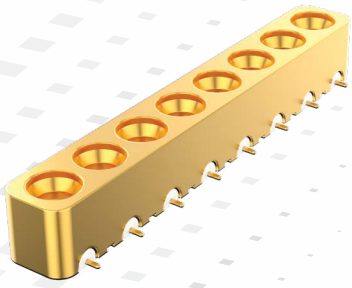
COMPRESSION INTERPOSERS

Body heights down to 1 mm and performance to 56 Gbps PAM4 (ZA8, ZA1, GMI)



PRECISION RF BOARD-TO-BOARD SOLUTIONS

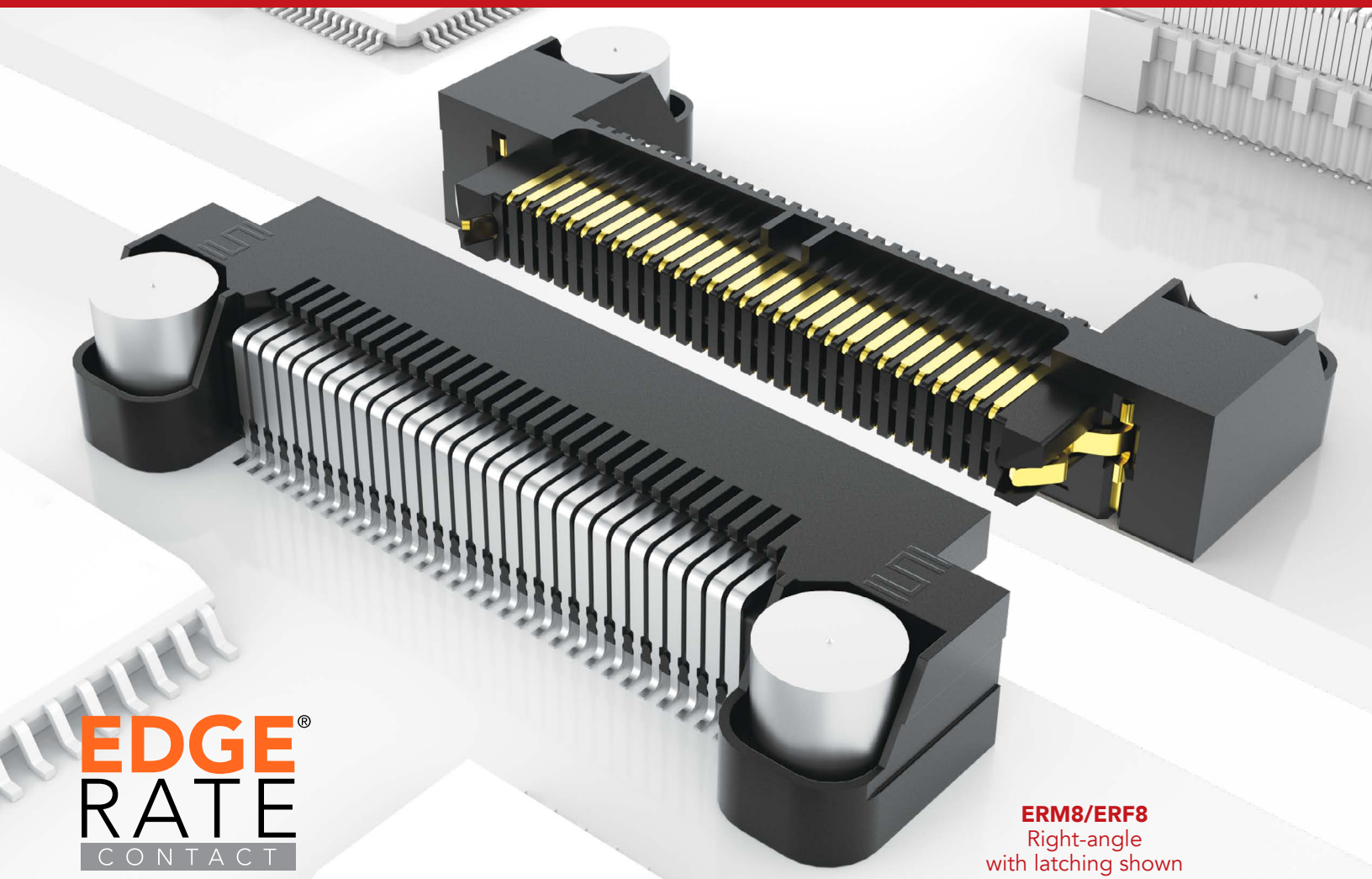
SMP, SMPM and Ganged SMPM with a push-on design for quick installation and frequency to 65 GHz (GPPC, GPPB, SMPM, PRFIA, SMP).



samtec.com/arrays

EDGE RATE® CONNECTOR STRIPS

OPTIMIZED FOR SPEED • HIGH CYCLES • INCREASED CONTACT WIPE



EDGE® RATE CONTACT

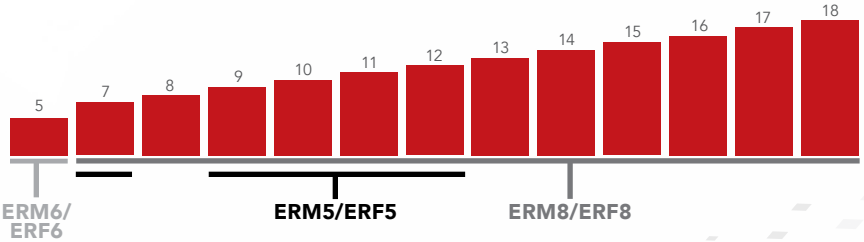
ERM8/ERF8
Right-angle
with latching shown

EDGE RATE® CONTACT SYSTEM:

- Smooth milled mating surface reduces wear and increases durability
- Lower insertion and withdrawal forces
- Robust when "zippered" during unmating
- Minimized parallel surface area reduces broadside coupling and crosstalk
- Designed, simulated and optimized for 50 Ω and 100 Ω systems

STACK HEIGHT FLEXIBILITY

(Actual size in mm)

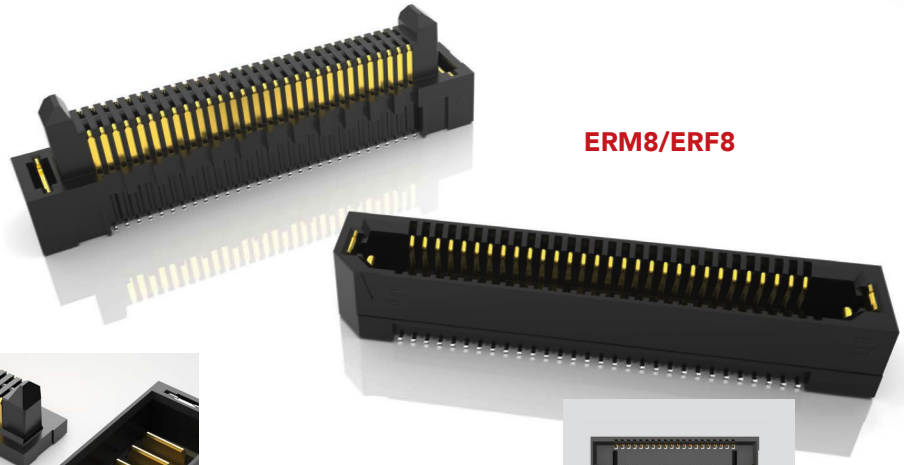


samtec.com/edgerate

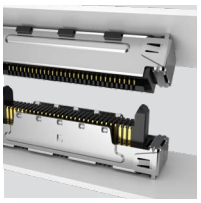
0.80 mm PITCH SYSTEM

- 1.5 mm contact wipe for a reliable connection
- Differential pair and hot swap options
- Stack heights from 7 mm to 18 mm
- Supports high-speed protocols including Ethernet and PCI Express®
- Right-angle and edge mount available

PAM4 56 Gbps

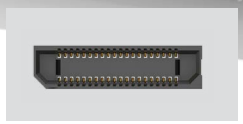


ERM8/ERF8



Rugged 360° shielding and metal latching options

Compatible with mPOWER® (UMPT/UMPS) for power/signal flexibility

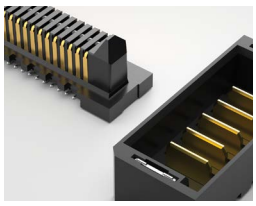


ERF8 Series; 40 pins (actual size shown)

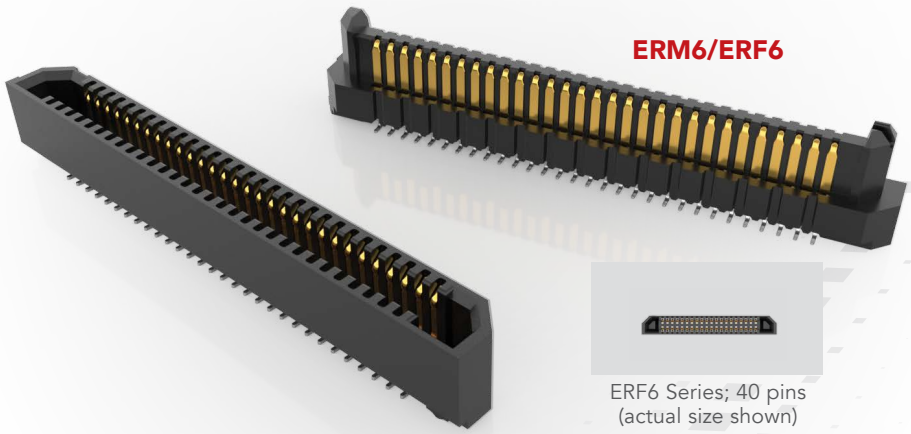
0.635 mm PITCH SYSTEM

- Extremely slim 2.5 mm body width
- Up to 120 positions in a 2-row design
- 5 mm low profile stack height

PAM4 56 Gbps



Compatible with mPOWER® (UMPT/UMPS) for power/signal flexibility



ERM6/ERF6

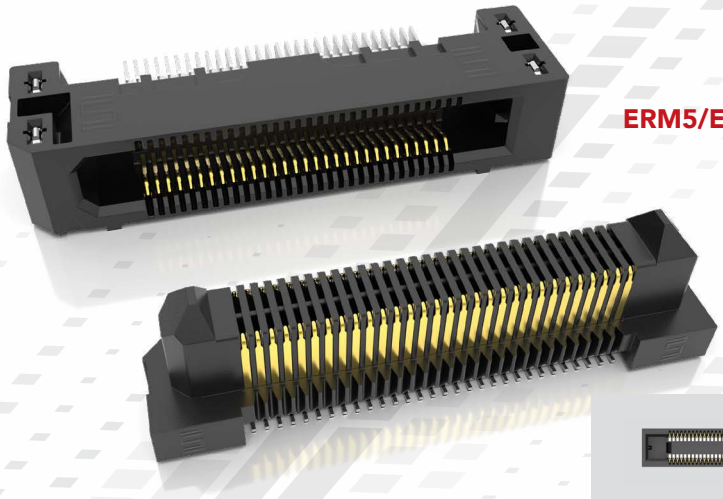
ERF6 Series; 40 pins (actual size shown)

0.50 mm PITCH SYSTEM

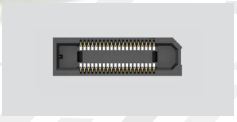
- 1.00 mm contact wipe
- Up to 40% PCB space savings with 0.50 mm pitch vs. 0.80 mm pitch
- Stack heights from 7 mm to 12 mm
- 20 to 150 total positions

28 Gbps

Compatible with mPOWER® (UMPT/UMPS) for power/signal flexibility



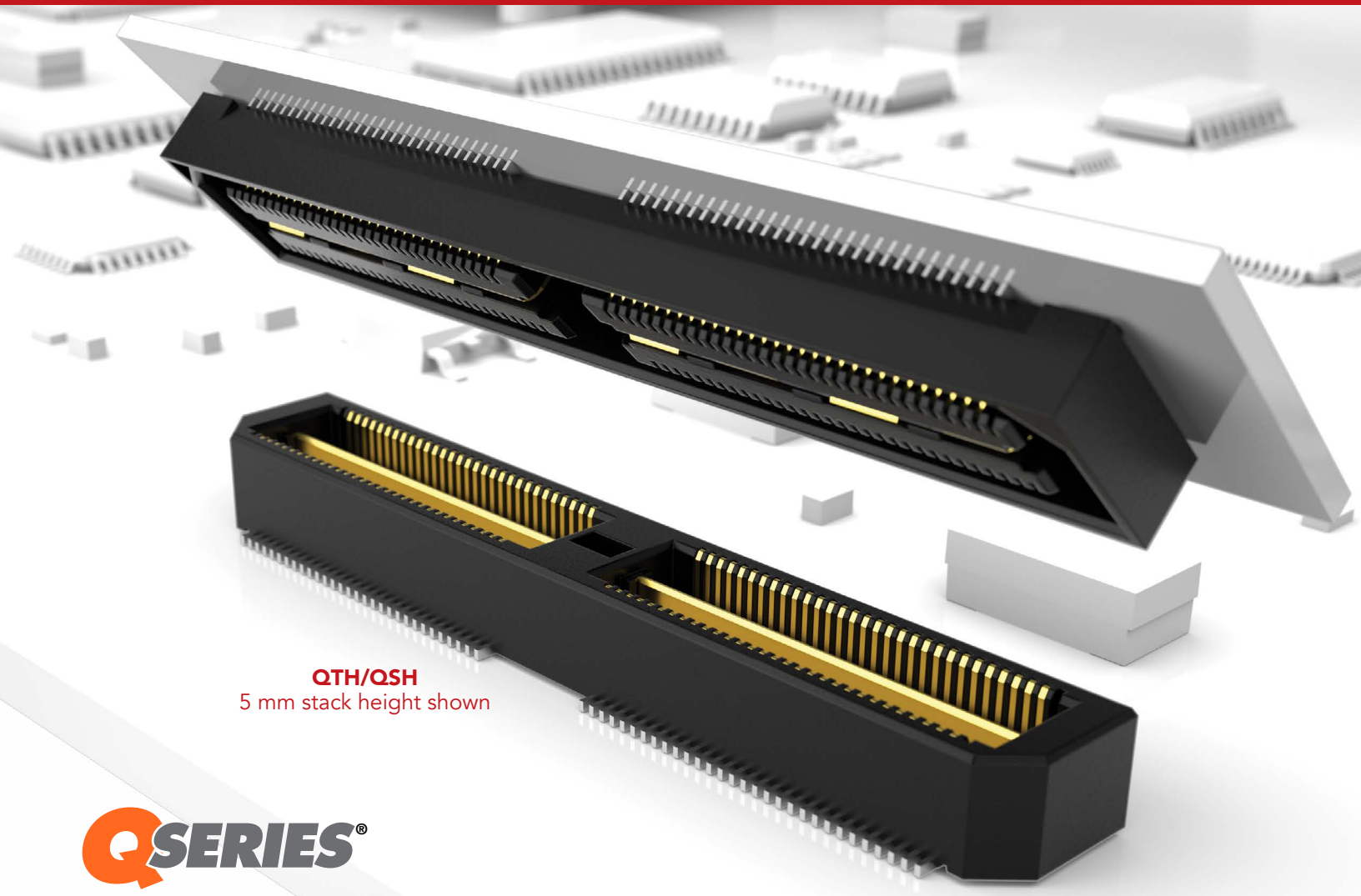
ERM5/ERF5-RA



ERF5 Series; 40 pins (actual size shown)

GROUND PLANE CONNECTORS

RELIABLE SI PERFORMANCE • LOW PROFILE • SLIM FOOTPRINT

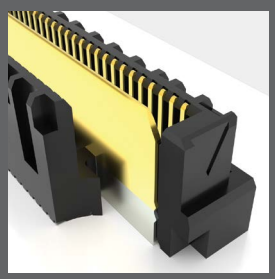


QTH/QSH
5 mm stack height shown

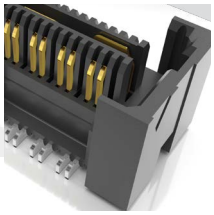
QSERIES®

INTEGRAL GROUND/POWER PLANE

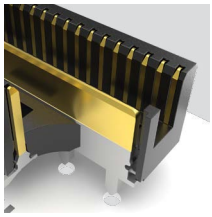
- Surface mount ground plane between two signal rows improves electrical performance
- Significantly reduces row-to-row crosstalk
- Integral metal plane for power to 25 Amps



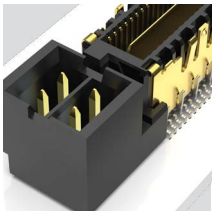
FEATURES



Differential pairs reduce noise



Mixed technology (MIT/MIS)



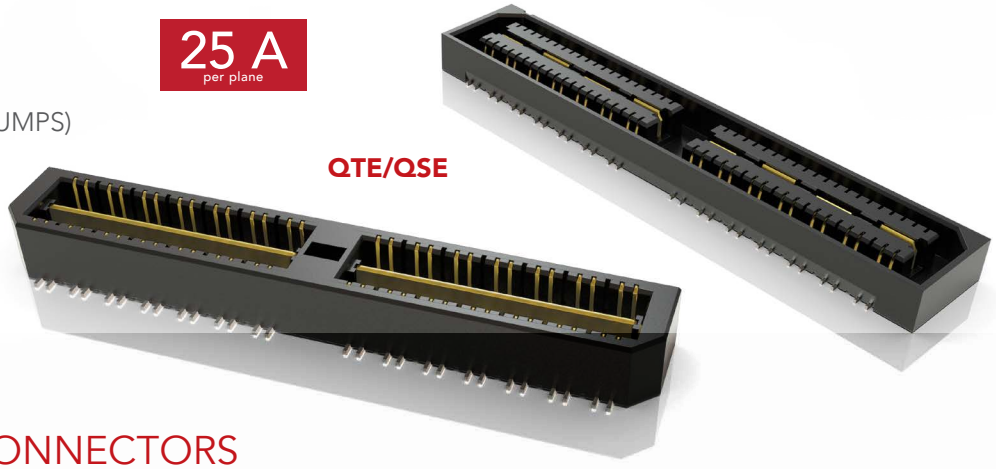
Options for power & retention

LOW PROFILE GROUND PLANE CONNECTORS

- 0.50 mm, 0.635 mm and 0.80 mm pitch
- 5 mm to 25 mm stack heights
- Integral ground/power plane
- Compatible with mPOWER® (UMPT/UMPS) for power/signal flexibility
- Differential pairs and edge mount options available

QSTRIP® | 28 Gbps

25 A per plane



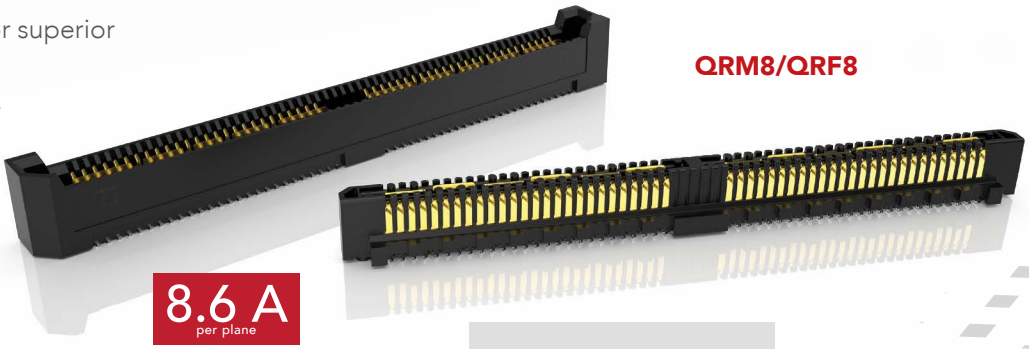
QTE/QSE

SLIM GROUND PLANE CONNECTORS

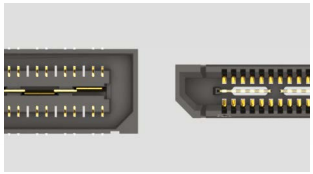
- 0.80 mm pitch and 1.20 mm contact wipe
- Edge Rate® contacts optimized for superior signal integrity performance
- Right-angle available for coplanar and perpendicular mating
- Compatible with mPOWER® (UMPT/UMPS) for power/signal flexibility

QRATE® | 28 Gbps

8.6 A per plane



QRM8/QRF8



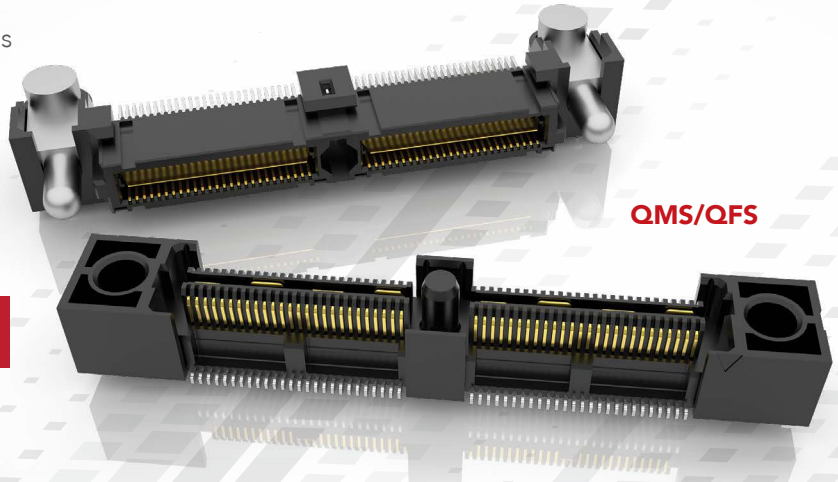
Slim 4.60 mm body width saves board space

RUGGED GROUND PLANE CONNECTORS

- 0.635 mm pitch
- Increased insertion depth for rugged applications
- Up to 156 signal pins/48 signal pairs standard
- Vertical, right-angle and edge mount
- Shielded systems available (QMSS/QFSS)
- Compatible with mPOWER® (UMPT/UMPS) for power/signal flexibility

Q2™ | 25 Gbps

15.7 A per plane



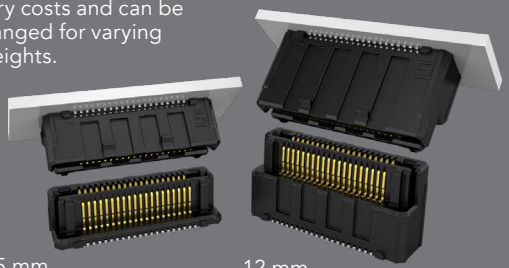
QMS/QFS

ULTRA MICRO INTERCONNECTS

SPACE SAVING DESIGNS • HERMAPHRODITIC • HIGH-DENSITY

LSHM
80 total
positions shown

Self-mating connectors reduce inventory costs and can be interchanged for varying stack heights.

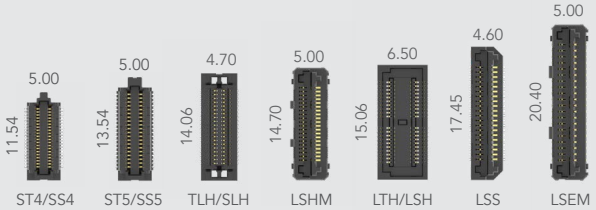


5 mm
stack height

12 mm
stack height

SLIM BODY DESIGNS - ACTUAL SIZE SHOWN

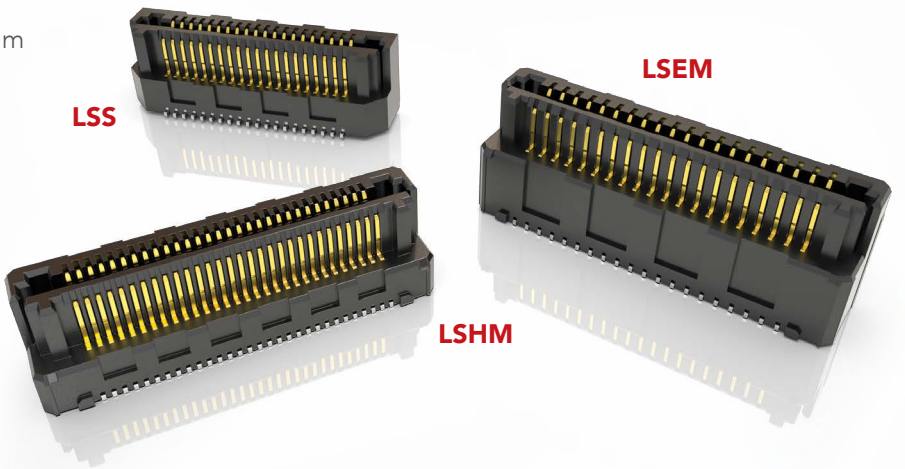
(40 total positions each)



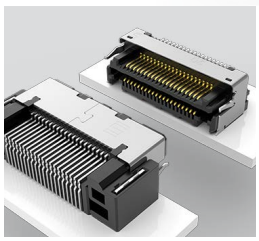
RUGGED HERMAPHRODITIC CONNECTORS

- Razor Beam™ contacts for high-speed and fine-pitch systems
- 0.50 mm, 0.635 mm and 0.80 mm pitch
- Ten stack height options from 5 mm to 12 mm
- 10 - 100 positions
- Right-angle available for perpendicular and coplanar applications

RAZOR™ BEAM SYSTEM | 25 Gbps



Razor Beam™ contacts for ultra low profile designs



Optional shielding for EMI protection (LSHM)

Jack screw standoffs (JSO) assist with unmating

MICRO BLADE & BEAM STRIPS

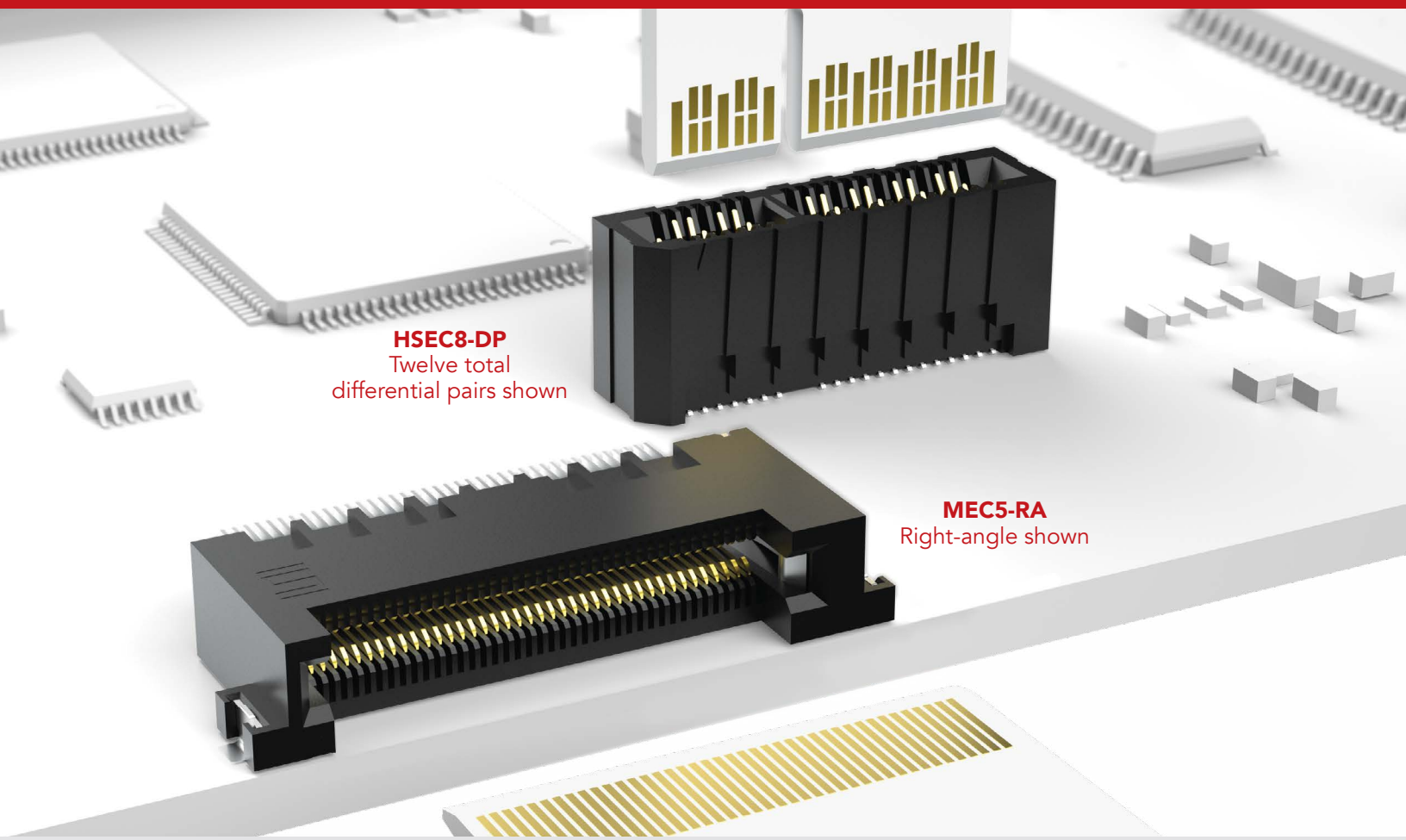
- Ultra-fine 0.40 mm and 0.50 mm pitch
- Low profile stack heights from 2 to 6 mm
- Slim body designs for increased PCB space savings
- 20 - 160 positions

PAM4 56 Gbps

Compatible with mPOWER® (UMPT/UMPS) for power/signal flexibility

EDGE CARD SYSTEMS

SPEEDS TO 56 Gbps • EDGE RATE® CONTACTS • VARIETY OF OPTIONS

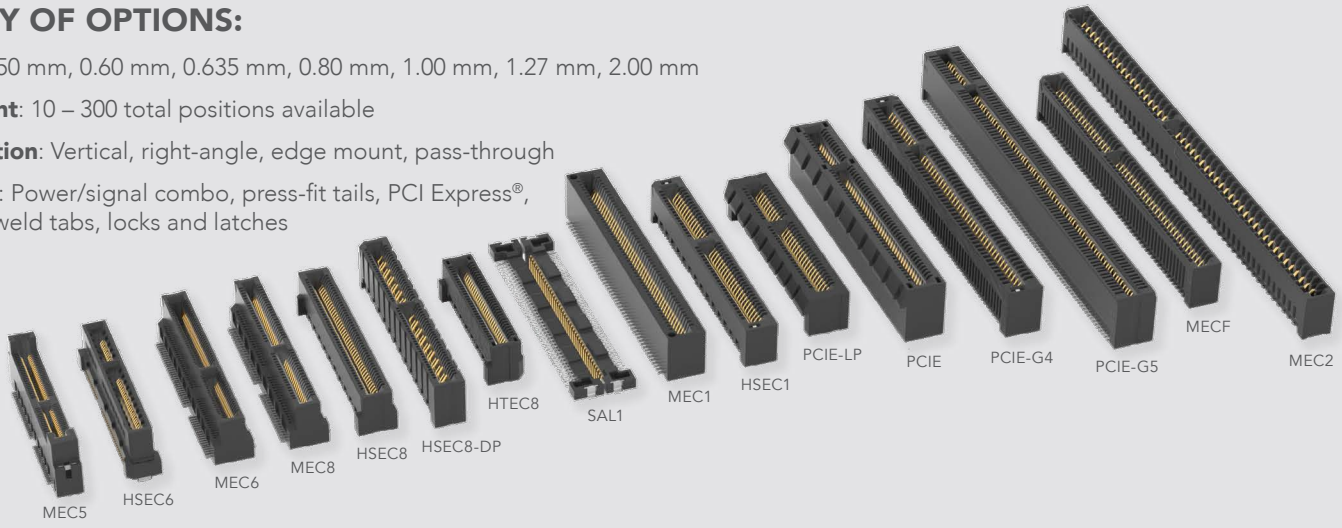


HSEC8-DP
Twelve total
differential pairs shown

MEC5-RA
Right-angle shown

VARIETY OF OPTIONS:

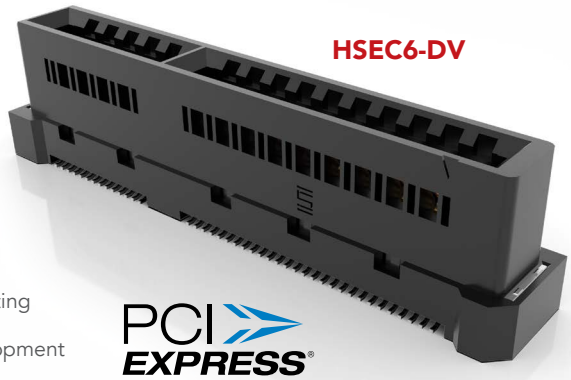
- **Pitch**: 0.50 mm, 0.60 mm, 0.635 mm, 0.80 mm, 1.00 mm, 1.27 mm, 2.00 mm
- **Pin Count**: 10 – 300 total positions available
- **Orientation**: Vertical, right-angle, edge mount, pass-through
- **Options**: Power/signal combo, press-fit tails, PCI Express®, rugged weld tabs, locks and latches



0.60 mm PITCH SOCKETS

- Differential pair Edge Rate® contacts
- Compliant to SFF-TA-1002: x4 (IC), x8 (2C), x16 (4C and 4C+)
- Mates with .062" (1.60 mm) thick cards
- PCI Express® 5.0 capable and Gen-Z™ compliant
- Right-angle in development

GEN Z



HSEC6-DV

GENERATE™ | PAM4 56 Gbps

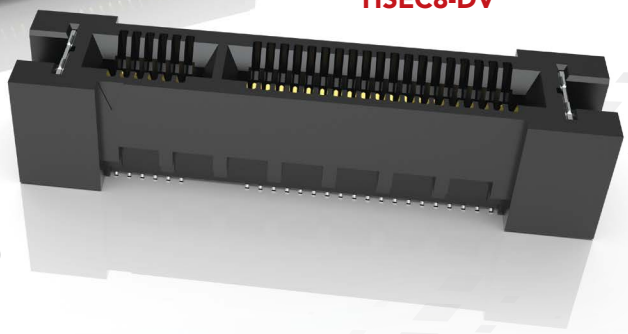
0.60 mm pitch mating high-speed cable assembly in development

PCI EXPRESS® 5.0 CAPABLE

0.80 mm PITCH SOCKETS

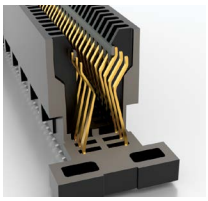
- Up to 200 high-speed Edge Rate® contacts
- Mates with .062" (1.60 mm) and .093" (2.36 mm) thick cards
- Power/signal combo (HSEC8-PV)
- PCI Express® 3.0/4.0 capable; 4.0/5.0 capable differential pair socket (HSEC8-DP)

HSEC8-EM



HSEC8-DV

GENERATE™ | PAM4 56 Gbps



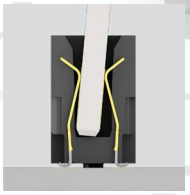
Rugged PCIe® 4.0 capable socket with tucked beam technology (HTEC8)

1.00 mm PITCH SOCKETS

- Edge Rate® contact system for decreased crosstalk
- 20 – 140 positions
- Mates with .062" (1.60 mm) thick cards
- PCI Express® 3.0/4.0 capable; 5.0 capable differential pair socket in development (HSEC1-DP)

HSEC1-DV

GENERATE™ | PAM4 56 Gbps



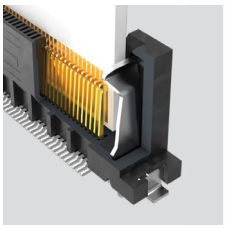
Custom designs can aid with misalignment in the X-Y axes

samtec.com/edgecard

EDGE CARD SYSTEMS

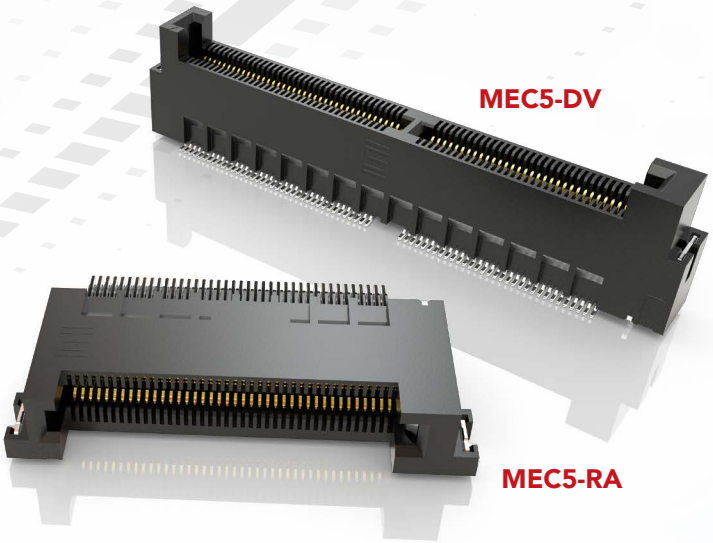
0.50 mm PITCH HIGH-SPEED, LOW-COST SOCKETS

- Justification beam enables use of standard PCB tolerance
- Up to 300 total I/Os
- PCIe® 4.0 capable
- Mates with .062" (1.60 mm) thick cards



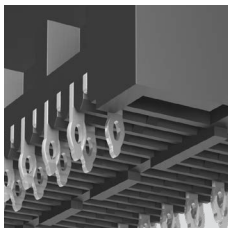
Beam ensures card and body are flush

PAM4 56 Gbps



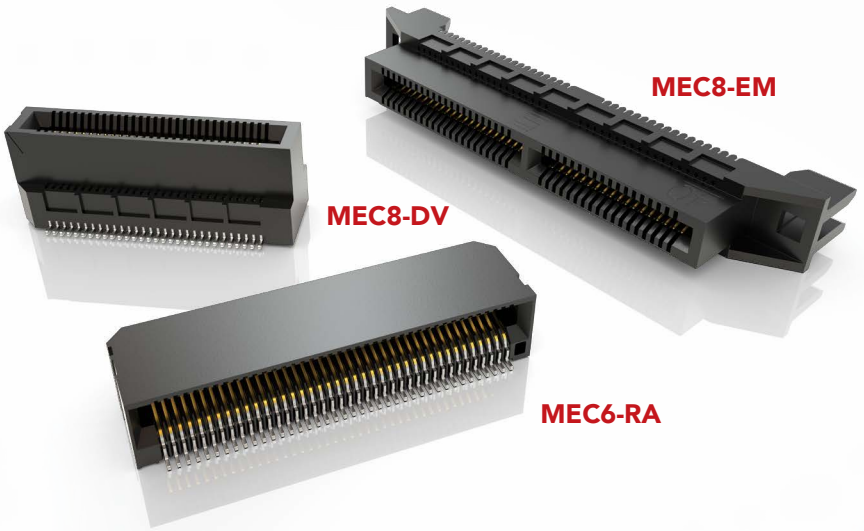
0.635 mm & 0.80 mm PITCH MICRO SOCKETS

- Up to 140 total I/Os
- Vertical and right-angle; edge mount (MEC8)
- Press-fit tails available (MEC8-VP)
- Mates with .062" (1.60 mm) thick cards



Staggered press-fit tails

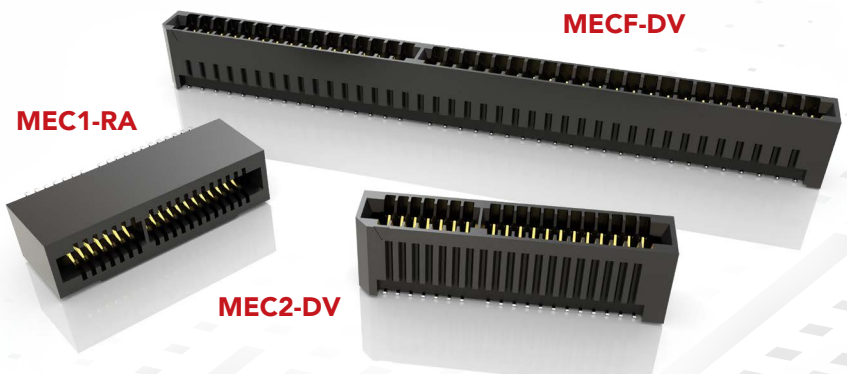
25 Gbps



1.00 mm, 1.27 mm & 2.00 mm PITCH SOCKETS

- Up to 140 total I/Os
- Right-angle and edge mount available (MEC1)
- Optional weld tabs, alignment pins and polarization
- Mates with .062" (1.60 mm) and .093" (2.36 mm) thick cards

25 Gbps

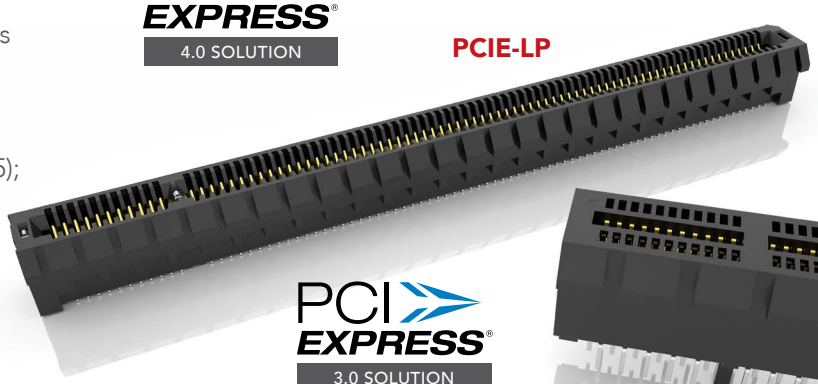


PCI EXPRESS® 3.0, 4.0 & 5.0 SOCKETS

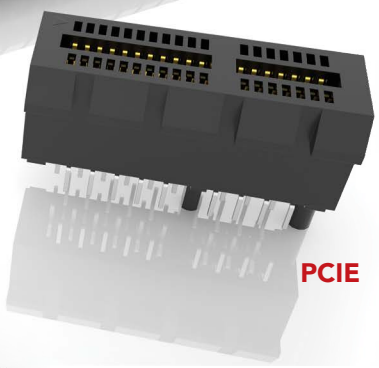
- 1.00 mm pitch in x1, x4, x8 or x16 link options
- PCIe® 3.0 solution (PCIE)
- PCIe® 4.0 low profile version for space savings (PCIE-LP); through-hole tails in development
- PCIe® 4.0 slim body connector (PCIE-G4)
- PCIe® 5.0 differential pair connector (PCIE-G5); design in today for future proof data rates
- Mates with .062" (1.60 mm) thick cards
- PCI Express® jumpers available

PCI EXPRESS® 4.0 SOLUTION

PCIE-LP



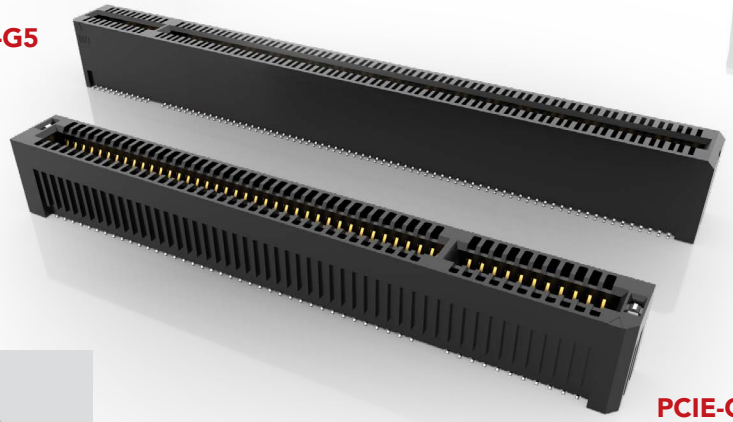
PCI EXPRESS® 3.0 SOLUTION



PCIE

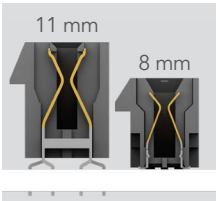
PCIE-G5

PCI EXPRESS® 4.0 SOLUTION



PCI EXPRESS® 5.0 SOLUTION

PCIE-G4



PCIE PCIE -LP

PCIe® 4.0 & 5.0 mating cable assembly in development

1.00 mm PITCH MICRO PLANE SOCKETS

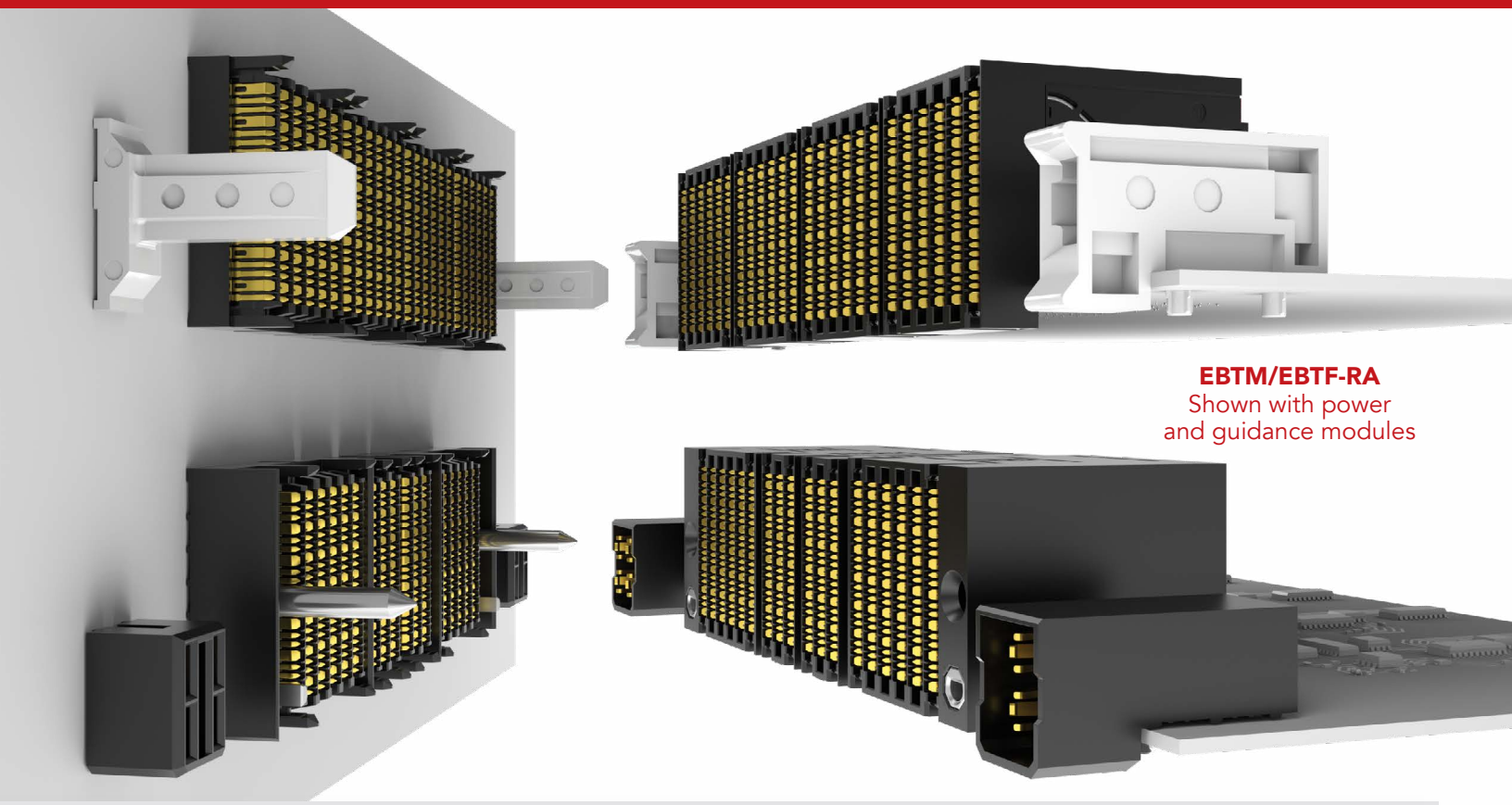
- 40 to 80 I/Os per pair
- Mounts in pairs on same or opposite sides for easy signal routing
- BeCu contacts with large deflection
- PCI Express® 3.0 capable
- Mounting flexibility for variable mating card thickness and pass-through applications

SAL1

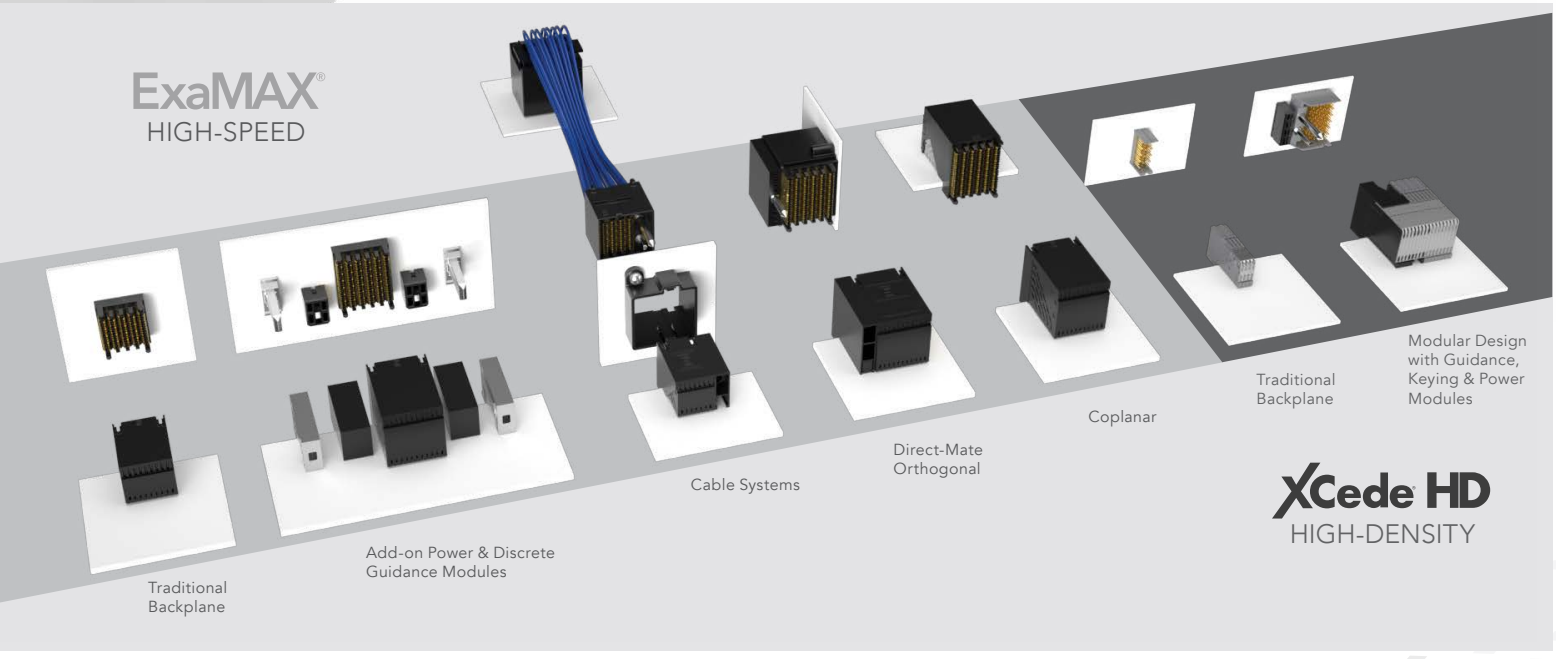
14 Gbps

HIGH-SPEED BACKPLANE SYSTEMS

HIGH-DENSITY • DESIGN FLEXIBILITY • HIGH RELIABILITY



EBTM/EBTF-RA
Shown with power
and guidance modules

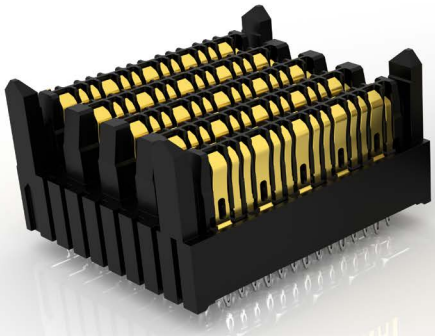


samtec.com/backplane

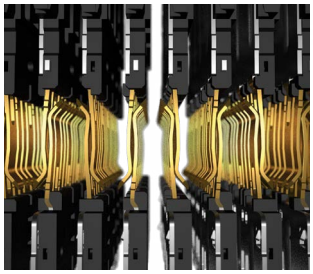
EXAMAX® HIGH-SPEED BACKPLANE

- Meets industry specifications such as PCI Express®, Intel OPI and VPI, SAS, SATA, Fibre Channel, InfiniBand™ and Ethernet
- Exceeds OIF CEI-28G-LR specification for 28 Gbps standards
- 24 - 72 pair designs (4 and 6 pairs; 6, 8, 10 and 12 columns)
- Wafer design increases isolation for reduced crosstalk
- Press-fit tails provide a reliable electrical connection
- Cable assemblies available (see pages 22 - 23)

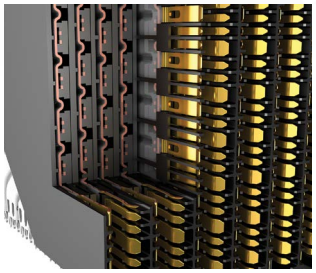
EBTM/EBTF-RA



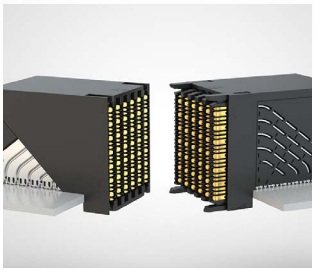
ExaMAX® | PAM4 56 Gbps



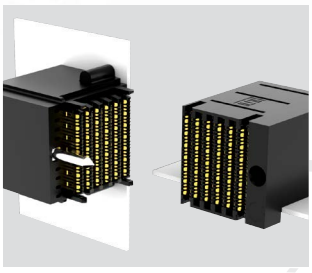
Two reliable points of contact



Staggered differential pair design with an embossed ground plane



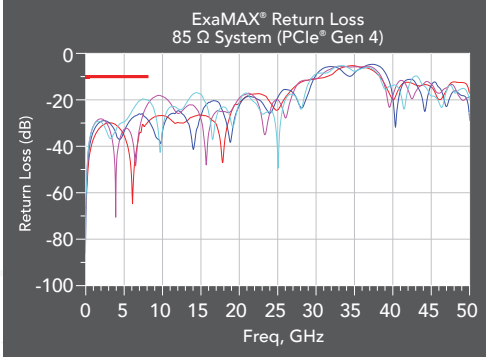
Coplanar available to bypass the midplane (EBTM-RA)

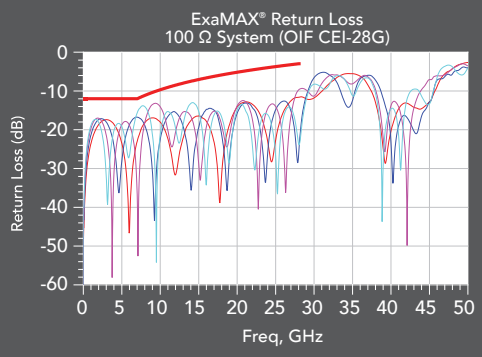


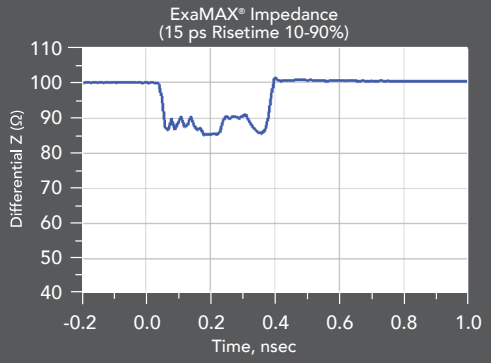
Direct-mate orthogonal (EBDM-RA) eliminates the midplane for a shorter signal path

PERFORMANCE CHARTS

ExaMAX® is engineered for 92 Ω impedance to address both 85 Ω and 100 Ω applications

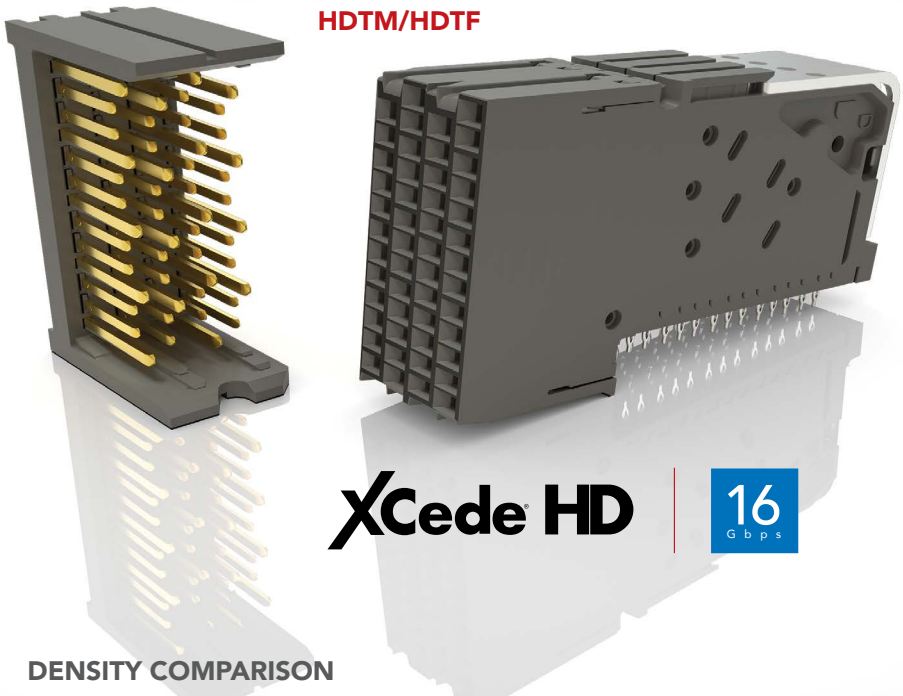




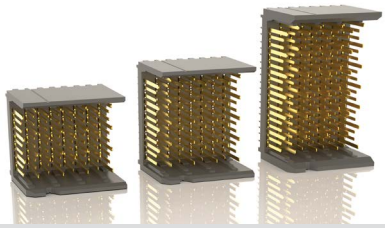


XCEDE® HD HIGH-DENSITY BACKPLANE

- Small form factor and modular design provides significant space-savings and flexibility
- High-performance system
- Up to 84 differential pairs per linear inch
- 3, 4 and 6-pair designs on 4, 6 and 8 columns
- Integrated power, guidance, keying and end walls available
- 85 Ω and 100 Ω options
- Combine any configuration of modules to create one integrated receptacle (BSP Series); corresponding terminal modules are individually mounted to the backplane

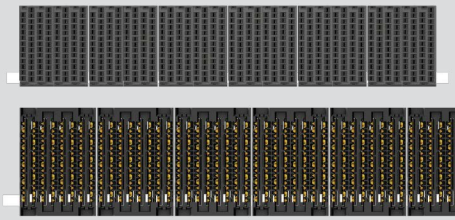


SMALL FORM FACTOR



3, 4 and 6-pair designs
(actual size shown with 8 columns)

DENSITY COMPARISON

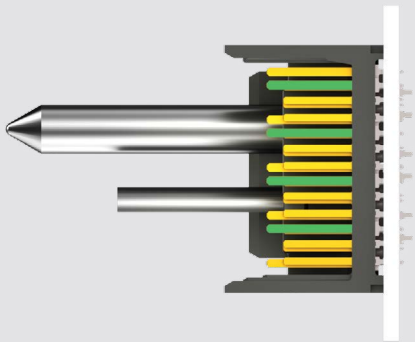


XCede® HD
Up to 84 pairs
per linear inch

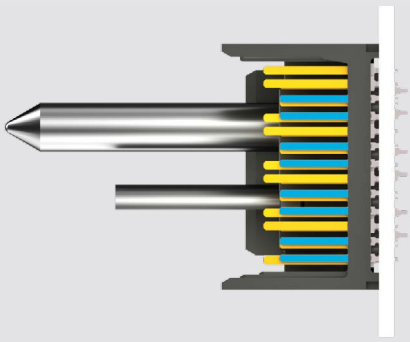
Traditional Backplane
Up to 76 pairs
per linear inch

(Both shown with six 4-pair, 8 column receptacles)

SIGNAL/GROUND PIN STAGING



Ground Pins
Ground pins mate before signal pin pairs for hot plugging, preventing system downtime



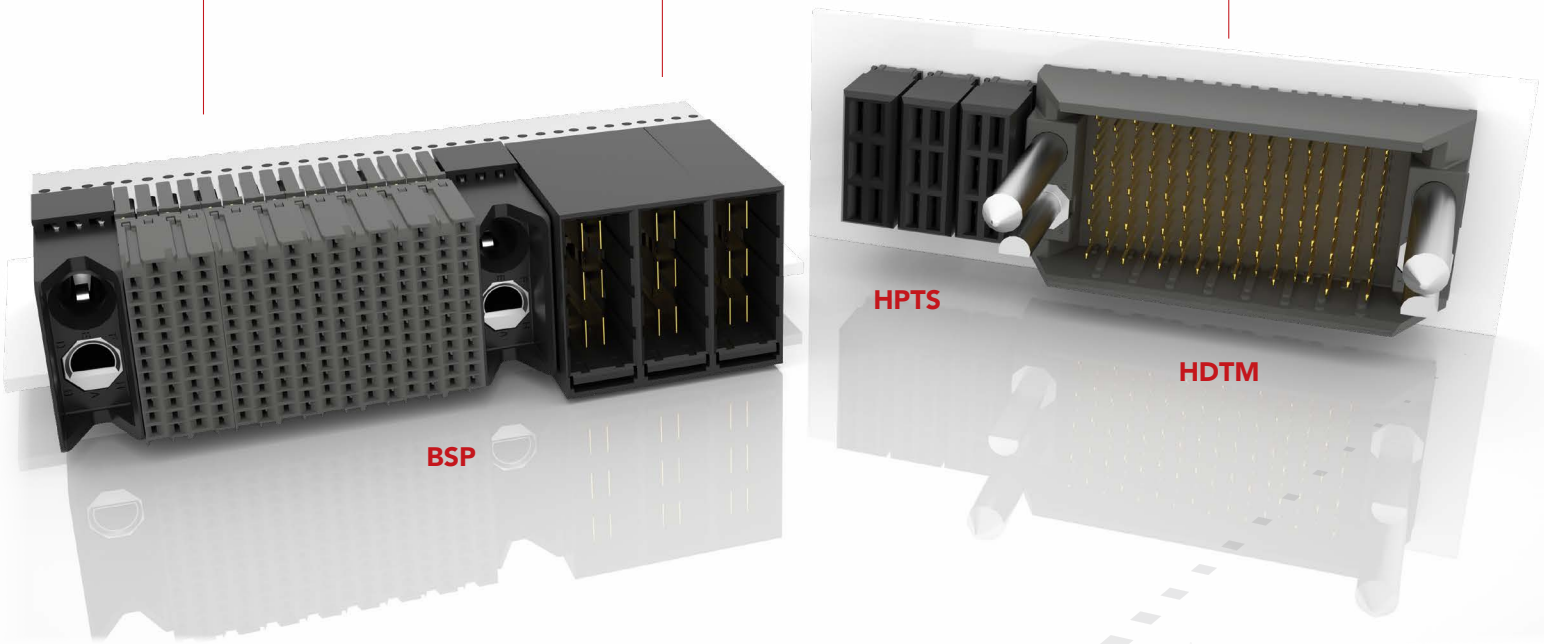
Signal Pins
Signal pin pairs achieve up to 3.00 mm contact wipe for a reliable connection

MODULAR DESIGN

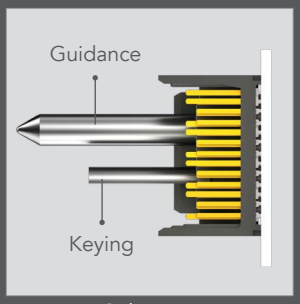
XCede® HD consists of signal, power and keying/guidance modules for incredible design flexibility. The modules can be customized in any configuration to meet specific application requirements. Contact HSBP@samtec.com for more information about building a full XCede® HD solution.

How to build a full solution:

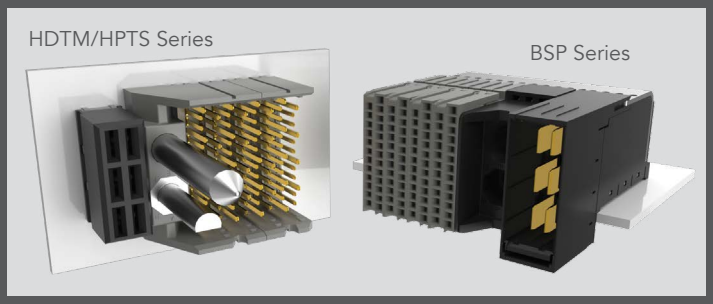
1. Right-angle modules can be built into a single customizable BSP
2. Build a BSP part by combining any number, in any configuration, of HDTFs, power and keying/guidance modules to create one receptacle
3. Header modules mount to the backplane individually, in any configuration of HDTM and HPTS Series

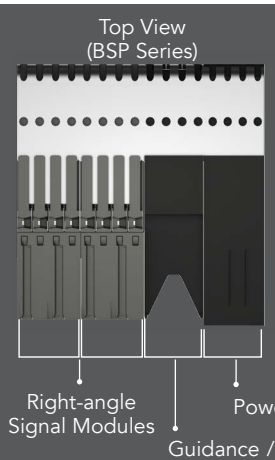


PRODUCT BREAKDOWN
(BSP Custom Configuration Shown)



Side View
(HDTM/HPTS Series)





HIGH-SPEED BACKPLANE SYSTEMS

EXAMAX® BACKPLANE CABLE ASSEMBLIES

- Utilizes Samtec's Eye Speed® ultra low skew twinax cable technology for improved signal integrity, increased flexibility and routability
- Highly customizable with modular flexibility
- Reduce costs due to lower layer counts
- 30 and 34 AWG
- Multiple end options available

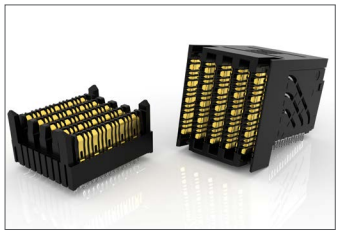
ExaMAX® | PAM4 112 Gbps

EBCF

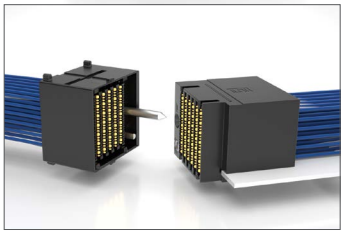
EBTM/ EBCL

DESIGN FLEXIBILITY

4 and 6 pairs;
4-16 columns



Intermateable with all ExaMAX® connectors

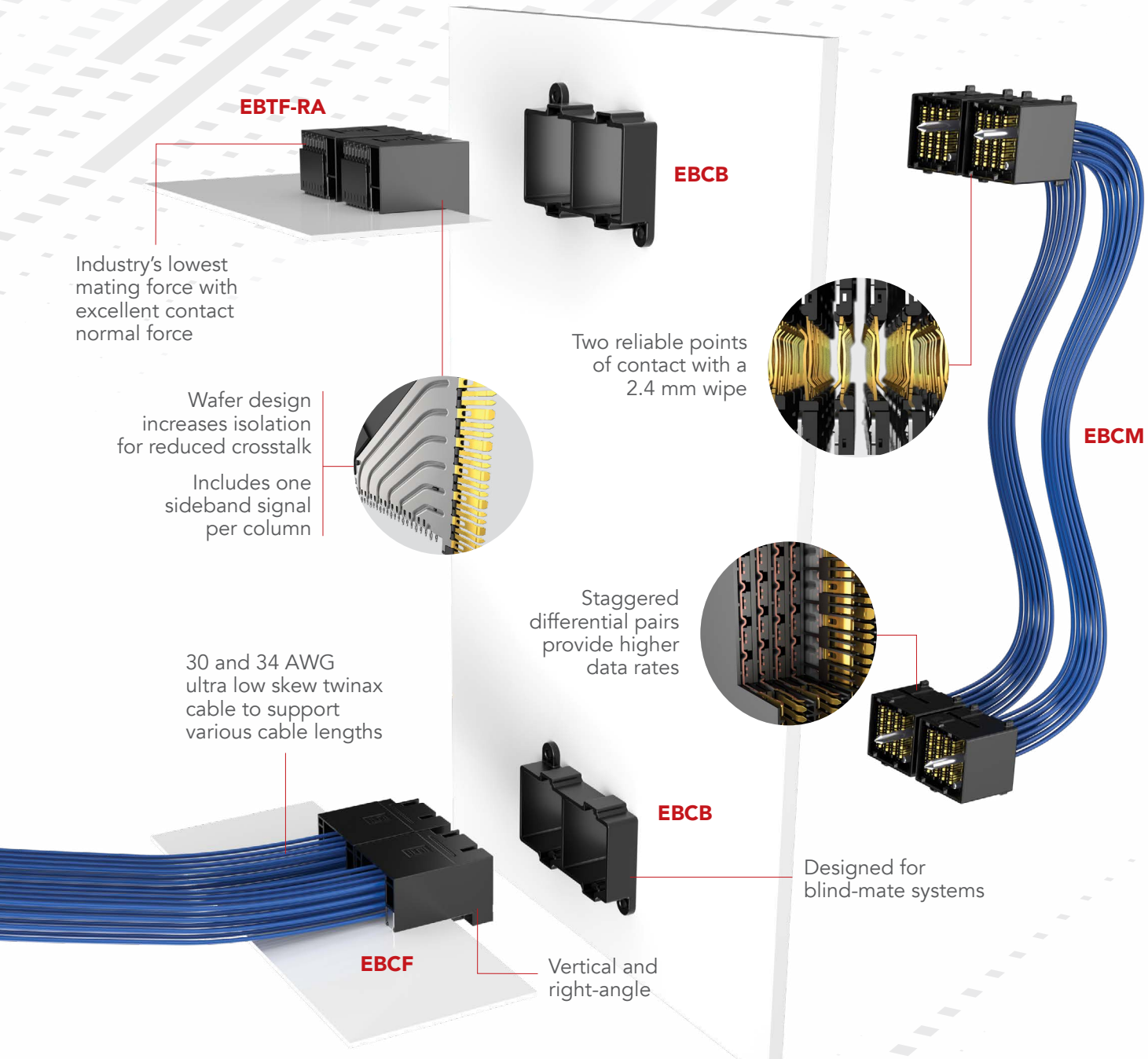


Integrated guidance and keying options

Cable-to-DMO
(Direct Mate Orthogonal)

HIGH-DENSITY APPLICATION

Increases architectural flexibility by overcoming the limitations of traditional connector-to-connector backplane

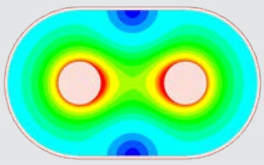


ULTRA LOW SKEW TWINAX CABLE

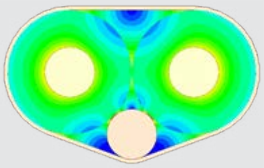
Samtec's Eye Speed® co-extruded twinax cable technology eliminates the performance limitations and inconsistencies of individually extruded dielectric twinax cabling, improving signal integrity, bandwidth and reach for high-performance system architectures.

- Ideal for 28-112+ Gbps applications
- Tight coupling between signal conductors
- Ultra low skew twinax < 3.5 ps/meter (intrapair)
- Improved signal integrity and eye pattern opening
- Improved bandwidth and reach

EYE® SPEED CABLE



✔ **Good** design coupling with Samtec's co-extruded ultra low skew twinax



✖ **Bad** design coupling with individually extruded conductors & drain wire

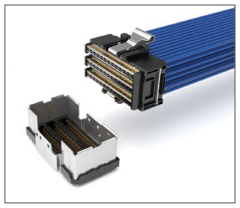
HIGH-SPEED CABLE ASSEMBLIES

EYE SPEED® COAX & TWINAX CABLE • MIX & MATCH

Samtec offers both sides of the system – high-speed connectors and mating cable assemblies.
This vertical integration allows for the ultimate combination of design flexibility and customer service.

HIGH-DENSITY ASSEMBLIES

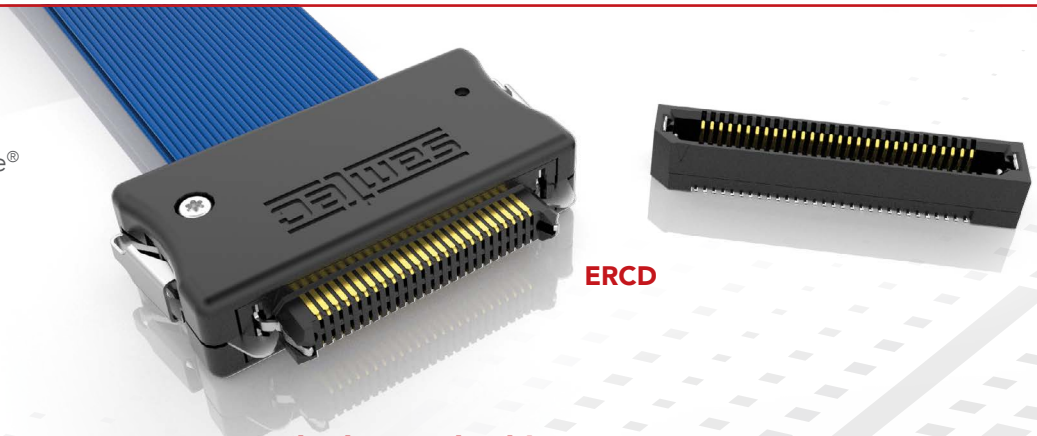
- NovaRay® up to 112 Gbps PAM4; 34 AWG ultra low skew twinax (NVAC/NVAM-C)
- AcceleRate® up to 56 Gbps PAM4; 34 AWG ultra low skew twinax (ARC6/ARF6)
- SEARAY™ up to 14 Gbps with 36 AWG coax or 34 AWG twinax cable (SEAC); mates with SEARAY™ connectors (page 6)
- SEARAY™ 0.80 mm up to 14 Gbps with 34 AWG coax cable (ESCA); mates with SEARAY™ 0.80 mm connectors (page 7)



AcceleRate® HP direct-to-chip package solution for up to 112 Gbps PAM4 (ARP6/APF6)

EDGE RATE® ASSEMBLIES

- Up to 14 Gbps
- 34 AWG coax (ERCD); 30 AWG twinax (ERDP)
- Mates with 0.80 mm Edge Rate® connectors (pages 8-9)

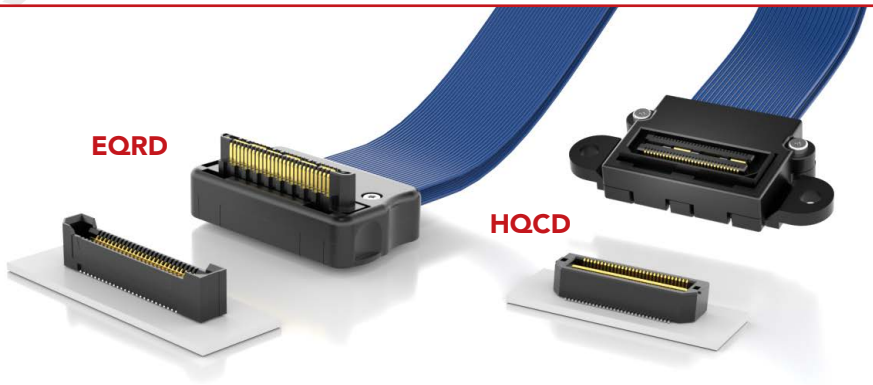


samtec.com/high-speed-cables

Q SERIES® ASSEMBLIES

- Integral power/ground plane
- Up to 14 Gbps
- 34 and 38 AWG coax; 30 AWG twinax
- 0.50 mm (HQCD/HQDP) and 0.80 mm pitch (EQCD/EQDP/EQRD)
- Mates with Q Series® connectors (pages 10-11)

QSERIES® | 14 Gbps



EDGE CARD ASSEMBLIES

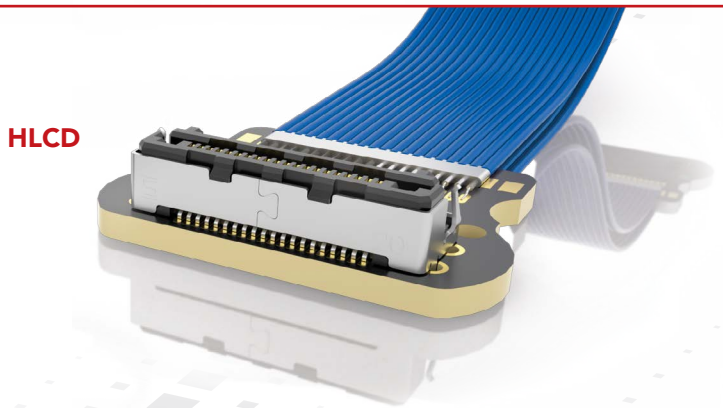
- Up to 14 Gbps
- 30 AWG twinax cable (ECDP)
- Mates with 0.80 mm pitch edge cards (page 15)

14 Gbps

ULTRA MICRO ASSEMBLIES

- Hermaphroditic Razor Beam™ coax assemblies with rugged shielding (HLCD)
- 38 AWG coax cable
- Mates with Razor Beam™ connectors (page 13)

RAZOR™ BEAM SYSTEM

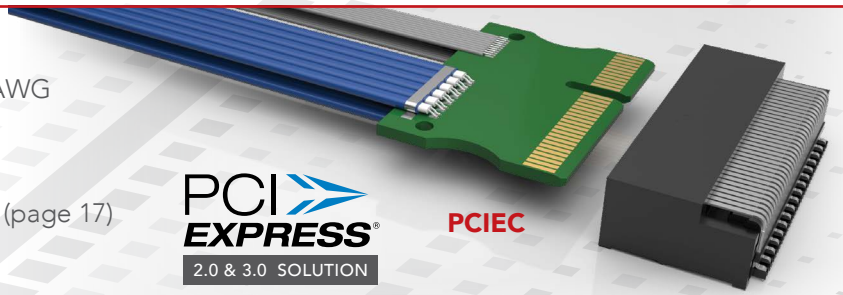


PCI EXPRESS® ASSEMBLIES

- Up to 14 Gbps
- 30 or 32 AWG twinax cable with 30 AWG insulated ribbon (PCIEC)
- PCIe® 2.0 and 3.0
- Mates with PCI Express® edge cards (page 17)

14 Gbps

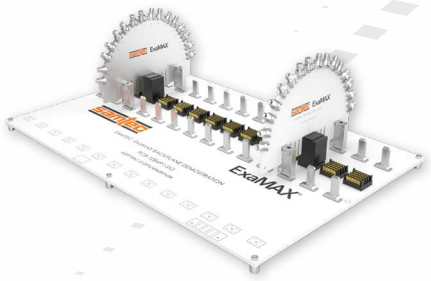
PCI EXPRESS® 2.0 & 3.0 SOLUTION



EVALUATION AND DEVELOPMENT KITS

SIMPLIFY THE DESIGN PROCESS • REDUCE TIME TO MARKET

SI EVALUATION KITS



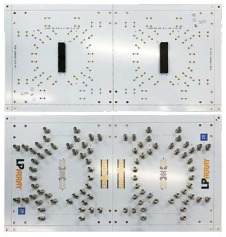
ExaMAX® High-Speed Backplane Traditional Connectors (EBTF-RA/EBTM)
REF-205463-01

Generate™ 0.60 mm Pitch High-Speed Edge Card (HSEC6-DV)
REF-213543-X.XX-XX

NovaRay® Extreme Density Arrays (NVAM/NVAF)
REF-212761-X.XX-XX

Generate™ Differential Pair Edge Card (HSEC8-DP)
REF-210637-X.XX-XX

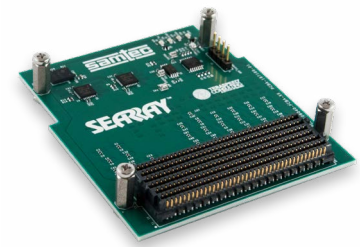
AcceleRate® HD High-Density Arrays (ADM6/ADF6)
REF-212056-X.XX-XXX



LP Array™ Low-Profile Arrays (LPAM/LPAF)
REF-200470-X.XX-X.XX-01

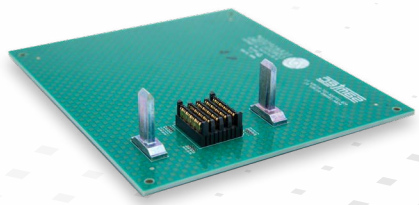
SEARAY™ High-Density Open-Pin-Field Arrays (SEAM/SEAF, SEAM-RA/SEAF-RA)
REF-219213-X.XX-01

FPGA KITS



FMC+ HSPC Loopback Card (Extender Card Available)
REF-197618-01

FMC+ HSPC / HSPCe Loopback Card (Extender Card Available)
REF-197693-01



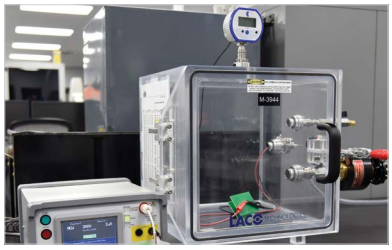
ExaMAX® Loopback Card for Xilinx® Virtex® UltraScale™ VCU110 Development Kit
REF-200748-01

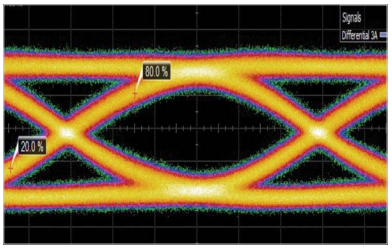
samtec.com/kits | kitsandboards@samtec.com

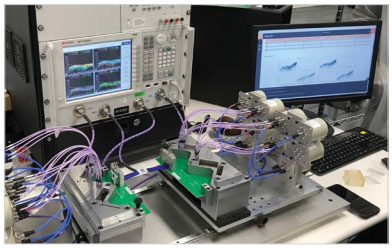
MODIFIED & CUSTOM SOLUTIONS

INDUSTRY-LEADING SUPPORT & EXPERTISE

- Full engineering, design and prototype support
- Design, simulation and processing assistance
- Dedicated Application Specific Product engineers and technicians
- Industry-leading Customer Service
- Quotes and samples turned around in 24 hours
- Flexible, quick-turn in-house manufacturing
- Customer specific testing - AS9102 FAIs available
- ITAR compliant with U.S. based manufacturing
- Contact the Application Specific Products Group at asp@samtec.com to discuss your application

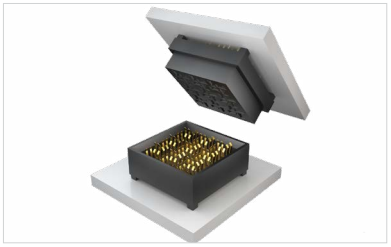


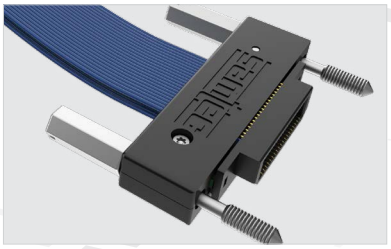


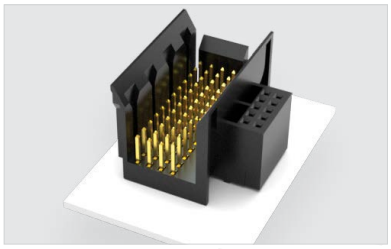


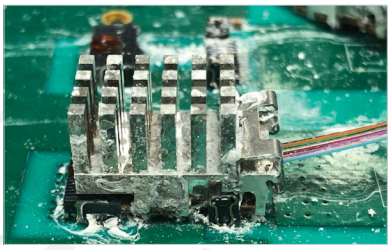
EXPRESS MODIFICATIONS & ENGINEERED CUSTOMS:

- Up to 50 µ" Gold and Tin Lead plating available
- Polarized positions
- Modified stack heights, latching and screw downs
- Modified contacts, bodies, stamping, plating, wiring, molding and much more
- Ruggedizing features including strain relief, plastic housings, screw downs, latches, locks, etc.
- Mix-and-match cable end options for application specific requirements
- Many non-cataloged cable standards available, including 75 Ω micro coax & high-density twinax solutions
- Solutions for Optics in extreme environments (in development): Samtec MIL-coat protected, salt-fog impenetrable, mitigation for tin whiskers, fungal resistant, extreme shock and vibration, full support for liquid immersion cooling









Contact the Application Specific Products Group at **asp@samtec.com** for express modifications or engineered customs.

ULTRA RUGGED TESTING & CAPABILITIES

SEVERE ENVIRONMENT • EXTENDED LIFE • DESIGN QUALIFICATION

SEVERE ENVIRONMENT TESTING

Severe Environment Testing (SET) is a Samtec initiative to test products beyond typical industry standards and specifications for performance confidence in rugged/harsh environment industries. These products undergo additional testing, inspired by military standards, to ensure they are more than suitable for military, space, automotive, industrial and other extreme applications.

SET qualified products are Commercial Off-the-Shelf (COTS) and modified COTS for incredible design flexibility to get solutions to market faster. Visit samtec.com/SET or contact SET@samtec.com for additional information and current available test results.

- Performance confidence
- Short lead-times
- Cost-effective
- Qualification Testing online
- No minimum order quantity
- Modified COTS built to Samtec's print

SET QUALIFIED PRODUCTS

SFM/TFM – Tiger Eye™ 1.27 mm Pitch Micro Rugged System

SEAF/SEAM – SEARAY™ High-Density Arrays

LSHM – Razor Beam™ Hermaphroditic Strips

SSM/TSM – .100" Pitch Square Post Header & Socket

FTSH/CLP – .050" Pitch Header & Socket

ERF8/ERM8 – Edge Rate® Rugged High-Speed Strips

S2M/T2M – Tiger Eye™ 2.00 mm Pitch Micro Rugged System

UMPS/UMPT – mPOWER® Ultra Micro Power Connectors

SEAF8/SEAM8 – SEARAY™ Ultra-High Density Arrays

Testing Now: Micro Mate™ and Tiger Eye™ Discrete Wire Systems, Micro Coax and Twinax Cable Assemblies and FireFly™ Copper Systems.

SET TESTING INCLUDES

- Mating/Unmating/Durability
- Mechanical Shock/Random Vibration/LLCR & Nanosecond Event Detection
- Temperature Cycling
- Non-Operating Class Temperature
- DWV at Altitude
- Electrostatic Discharge (ESD)

NASA

Samtec's SET products are approved for NASA Class D missions including LEO and GEO satellites, SmallSats, CubeSats and other space exploration applications.

Samtec also utilizes NASA outgassing data to determine if certain products meet NASA's ASTM E595-77/84/90 test requirements. Visit outgassing.nasa.gov for data.

EXTENDED LIFE PRODUCT™

E.L.P.™ products are tested to rigorous standards, which evaluate contact resistance in simulated storage and field conditions.

- 10 year Mixed Flowing Gas (MFG)
- High Mating Cycles (250 to 2,500)
- Certain plating and/or contact options will apply

For complete details about Samtec's E.L.P.™ program, a list of qualifying products and test results, please visit samtec.com/ELP or email the Customer Engineering Support Group at ASG@samtec.com

DESIGN QUALIFICATION TESTING

All Samtec series undergo Design Qualification Testing (DQT), which includes:

- Gas Tight
- Normal Force
- Thermal Aging
- Mating/Unmating/Durability
- IR/DWV
- Current Carrying Capacity (CCC)
- Mechanical Shock/Random Vibration/LLCR
- Mechanical Shock/Random Vibration/Event Detection

TESTING REFERENCE CHART

TEST	SET	E.L.P.™	DQT
Gas Tight	√*	√*	√
Normal Force	√*	√*	√
Thermal Aging	√*	√*	√
Mating / Unmating / Durability (240 Hrs)	√ (100% RH, 250 Cycles)	√* (90-98% RH, 100 Cycles)	√ (90-98% RH, 100 Cycles)
IR / DWV	√ (At Altitude of 70,000 Feet)	√*	√
CCC	√*	√*	√
Mechanical Shock / Random Vibration / LLCR & Nanosecond Event Detection	√ (40 G Peak, 11 ms, Half Sine & 12gRMS, 5 - 2,000 Hz, 1 Hr / Axis)	√* (100 G Peak, 6 ms, Half Sine & 7.56gRMS Avg, 2 Hr / Axis)	√ (100 G Peak, 6 ms, Half Sine & 7.56gRMS Avg, 2 Hr / Axis)
Temperature Cycling (500 Cycles)	√	N/A	N/A
Non-Operating Class Temperature	√	N/A	N/A
Electrostatic Discharge (ESD)	√	N/A	N/A
10 Year MFG (Mixed Flowing Gas)	N/A	√	N/A
Mating Cycles (250 to 2,500)	N/A	√	N/A

*Completed as part of initial Design Qualification Testing (DQT). E.L.P.™ and SET testing are performed in addition to DQT.

ALSO AVAILABLE - HIGH TEMPERATURE PLATING

Samtec has new plating options for high-temp ATE applications, to help get products up to 150 °C operating temperature. Contact SET@samtec.com for more information.

www.SAMTEC.com

Online Tools

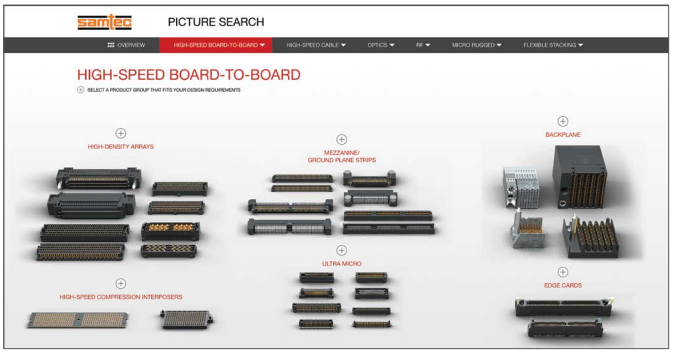
FIND, DESIGN & VALIDATE YOUR SOLUTION

Samtec has developed innovative search, design, and validation tools to help customers quickly and easily find the right solution. Whether you prefer to search by product name or characteristics, browse through pictures, or build an assembly by entering physical specifications, Samtec offers a tool to make your search easier than ever.

Picture Search

VISUALLY FIND YOUR SOLUTION

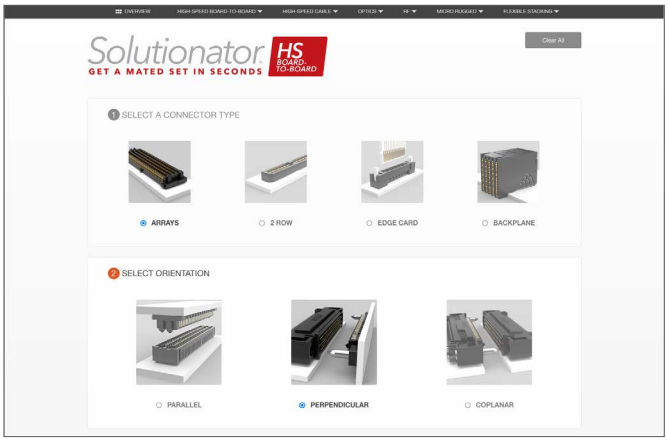
Browse through a highlight reel of Samtec's most popular products to find the ideal solution for your application, view specifications, check availability, order samples and more. To find your solution, visit **samtec.com/picturesearch**.



Solutionator HS BOARD-TO-BOARD

GET A MATED SET IN SECONDS

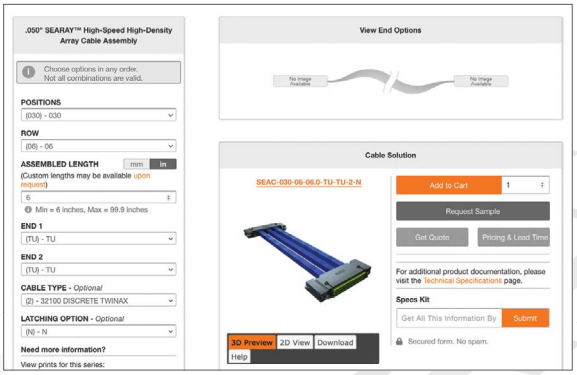
Quickly build mated connector sets using a wide variety of user-defined search parameters and filters, view specs and order samples all with one online design tool.
Visit **samtec.com/hsb2b-builder** to start building.



Solutionator HS CABLE

DESIGN IN A MINUTE

Input specific options to quickly build a complete high-speed cable assembly, view specs, prints, 3D models, and instantly request samples and quotes. Visit **samtec.com/cablebuilder**.



Samtec is committed to the continuous evolution of our award-winning website, providing customers with innovative design tools, technical resources and support needed to make **finding, designing and ordering** the right product as easy and streamlined as possible.

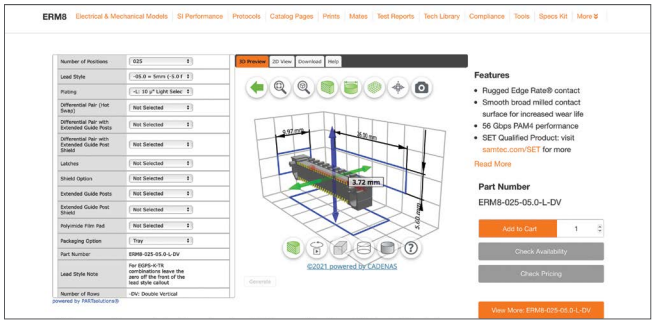
Downloads

3D MODELS, SPECS, PRINTS & MORE

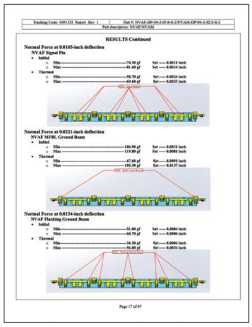
Samtec's extensive library of downloadable resources is unmatched in the industry. From 3D Models and Test Reports, Interconnect Symbols and Footprints, Product Videos, Design Guides, Specifications and so much more – Samtec offers immediate and unlimited access to all the documentation you need to select the right solution for your application. Visit **samtec.com** to start exploring.

3D Models

Quickly configure, preview and download models in more than 150 different formats, including AutoCad, Solid Edge, Inventor and many more.



Test Reports

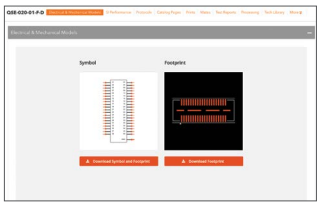


Samtec provides immediate access to a variety of testing and qualification reports for our products, including high-speed characterization, thermal, frequency and time domain, Extended Life Product™, Severe Environment Testing, and others.

10 YEAR MFG
EXTENDED LIFE PRODUCT
HIGH MATING CYCLES

SET
SEVERE ENVIRONMENT TESTED

PCB Footprint / eCAD Models

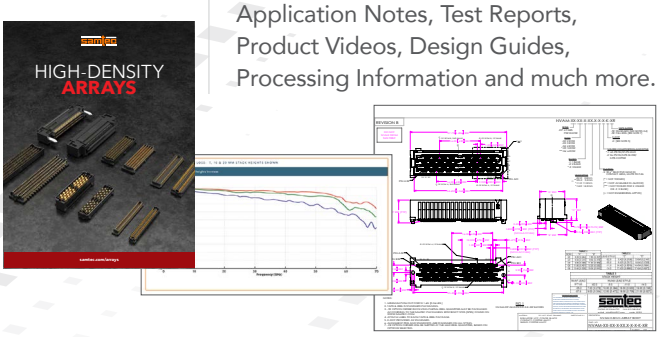


Instantly view, download and design with over 200,000 ready-to-use eCAD models.

These detailed models have been formatted to work with leading schematic captures and include accurate assembly, silkscreen and 3D features.

Technical Library

Samtec's online Technical Library contains a wealth of resources, including Prints & Specifications, White Papers, Application Notes, Test Reports, Product Videos, Design Guides, Processing Information and much more.



mySamtec™

account.samtec.com

Samtec's user-friendly eCommerce platform allows you to quickly and easily check product availability and pricing, as well as place and manage your orders online.

SUDDEN SERVICE®

Samtec's Sudden Service® provides unmatched global service, free access to data and industry leading tools, along with engineering support, to help you design, develop, test and deliver the best solution for any complex application.

GLOBAL OPERATIONS & SUPPORT NETWORK

MANUFACTURING
7 Global Manufacturing Locations

SUPPORT CENTERS
11 Global Support Locations

SALES LOCATIONS
125+ Regional Sales Representatives

AWARDING-WINNING SERVICE

#1 in Bishop's Customer Survey of the Electronic Connector Industry.

NORTH AMERICA
Bishop
#1
The Bishop Report
EUROPE • ASIA

Samtec has been consistently rated as the #1 connector company in North America, Europe and Asia. This is the highest overall rating in the Bishop & Associates' U.S., Europe and Asia Customer Surveys of the Electronic Connector Industry.

UNMATCHED LEAD-TIMES

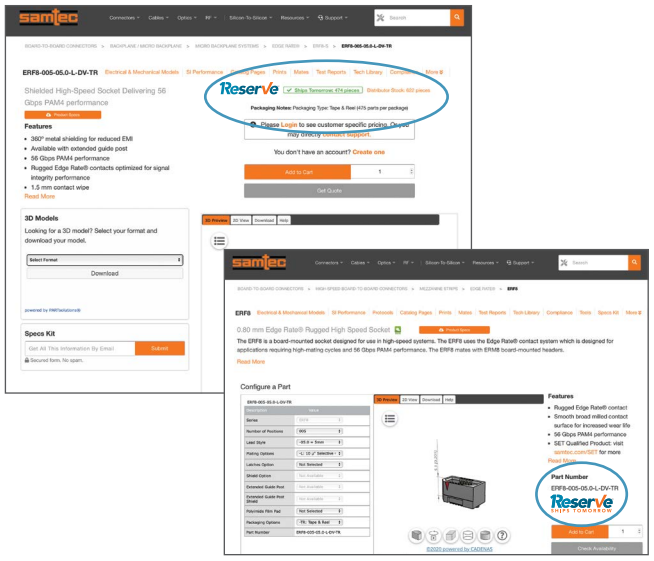
Innovative Programs & Systems Enable Deliveries in Days, Not Weeks.

ReserVe™ SHIPS TOMORROW

NEW!

This new designation allows customers to **quickly and easily identify availability of over 200,000 of Samtec's most popular connectors and cables – guaranteed to ship in 1-day.**

Look for the **Reserve** badge throughout **samtec.com** to quickly determine if your part number is eligible, along with current availability, quantity breaks and pricing. Hundreds of part numbers are being added daily!



24HOUR SUDDEN SAMPLE™

Free product samples, shipped in 24-hours or less have been a cornerstone of Samtec Sudden Service® since the company was founded. Visit **samtec.com** to quickly request your sample.

2DAYS WORLD DIRECT™

An innovative shipping program that **bridges the gap between manufacturing facilities and customers**, allowing for manufacturing flexibility without increased costs, and with even faster lead-times. Contact **ecustomerservice@samtec.com** to learn more.

24/7 WORLDWIDE ACCESS

Samtec is the Electronics Industry's Service & Technology Leader.

Technical Support

Signal Integrity Group: **sig@samtec.com**

Application Support Group: **asg@samtec.com**

Interconnect Processing Group: **ipg@samtec.com**

Supply Chain Support

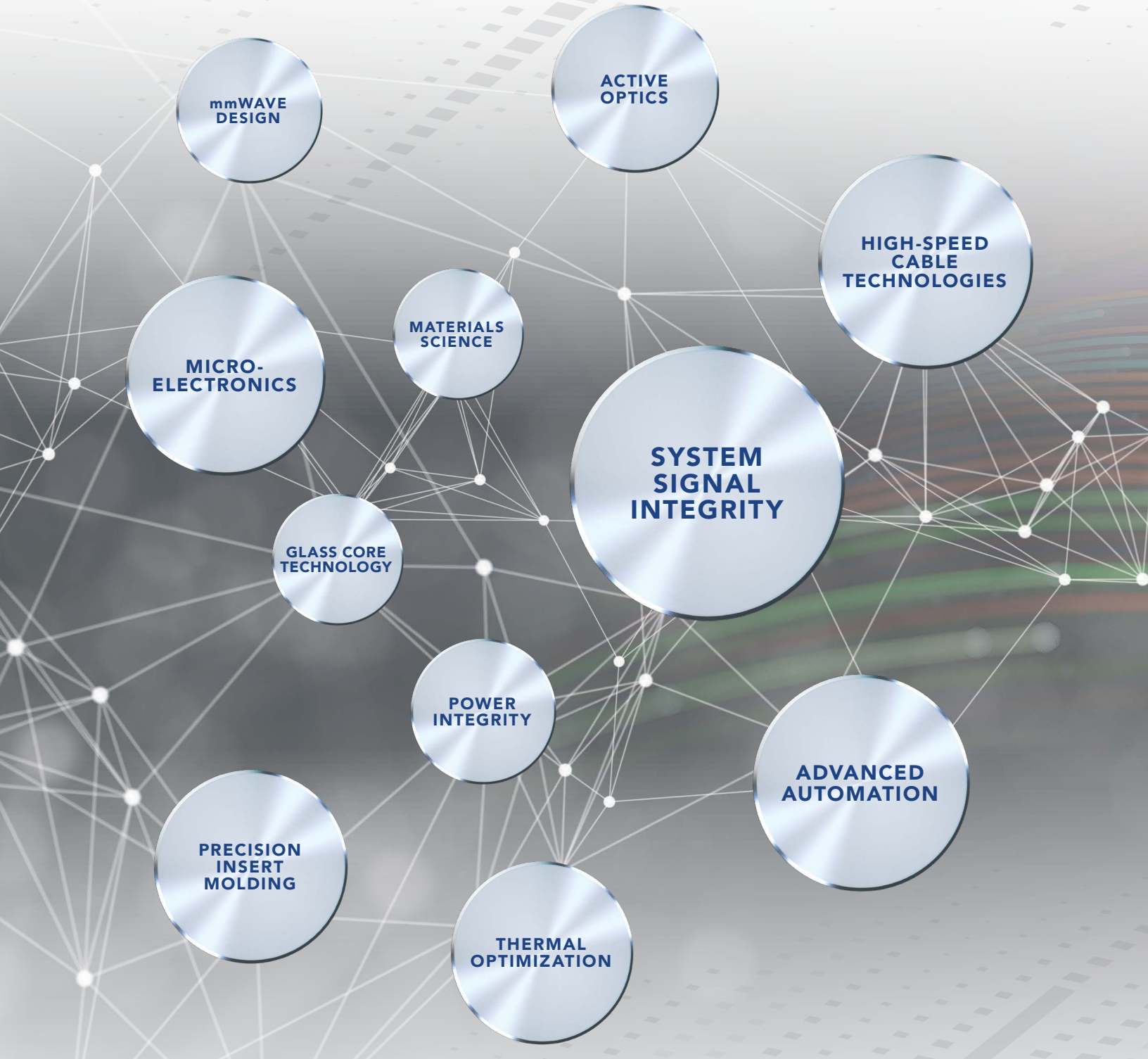
MySamtec™ Real-Time Account Access: **account.samtec.com**

Personal Account Managers & CSRs: **ecustomerservice@samtec.com**

Upfront, Aggressive 24-Hour Quotes: **pricing@samtec.com**

INTEGRATION LEADS TO

Samtec's integrated approach provides high-level design and development of advanced interconnect systems and **TECHNOLOGIES**, along with industry-leading expertise that allows us to offer effective strategies and support for **optimizing the entire signal channel of high-performance systems.**



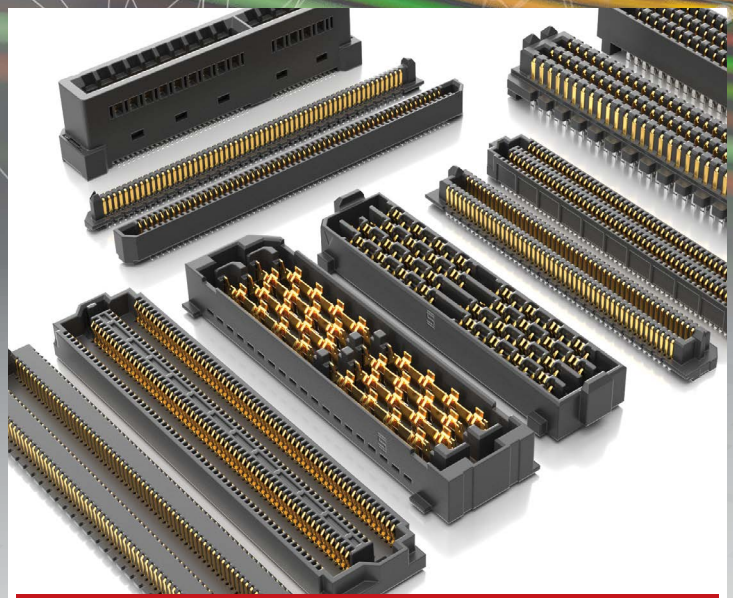
INNOVATION

Samtec is structured like no other company in the interconnect industry. We work in a fully integrated capacity that enables true collaboration and results in uniquely innovative **PRODUCTS** because **our technology teams are not limited by the boundaries of traditional business units.**

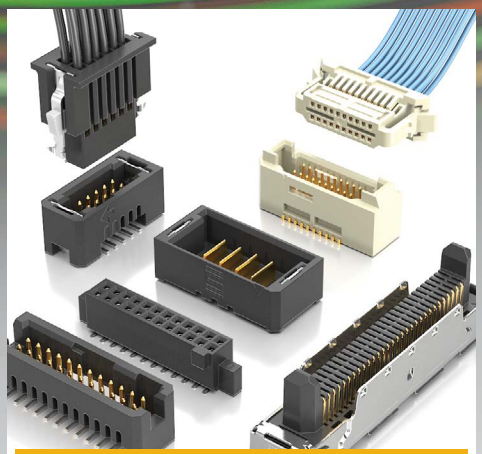
OPTICS

HIGH-SPEED CABLES

PRECISION RF



HIGH-SPEED / HIGH-DENSITY BOARD-TO-BOARD



MICRO RUGGED / POWER

samtec

SUDDEN SERVICE®

UNITED STATES • NORTHERN CALIFORNIA • SOUTHERN CALIFORNIA • SOUTH AMERICA • UNITED KINGDOM
GERMANY • FRANCE • ITALY • NORDIC/BALTIC • BENELUX • ISRAEL • INDIA • AUSTRALIA / NEW ZEALAND
SINGAPORE • JAPAN • CHINA • TAIWAN • HONG KONG • KOREA