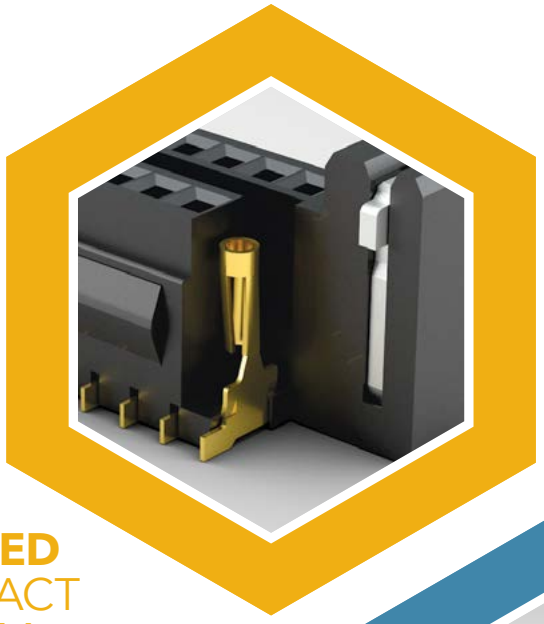
MICRO RUGGED

INTERCONNECT SOLUTIONS GUIDE

MICRO RUGGED
INTERCONNECT SOLUTIONS

Rugged contact systems, flexible power interconnects and rugged signal integrity create the foundation of Samtec's micro rugged solutions for high cycle, high speed, high power and harsh environment applications. Samtec's rugged products are offered in conjunction with full engineering support, online tools and a service attitude that is unmatched in the connector industry.

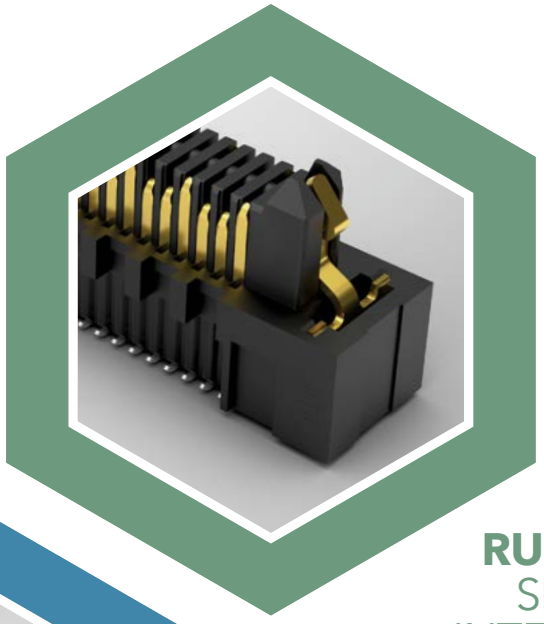


RUGGED CONTACT SYSTEM

1,000+
MATING CYCLES

TIGER EYE™
HEAT-TREATED
BeCu CONTACTS

MULTIPLE POINTS
OF CONTACT
FOR HIGH-RELIABILITY



RUGGED SIGNAL INTEGRITY

HIGH SPEEDS TO
56 Gbps PAM4

EDGE RATE®
CONTACT DESIGN
INCREASES WEAR LIFE

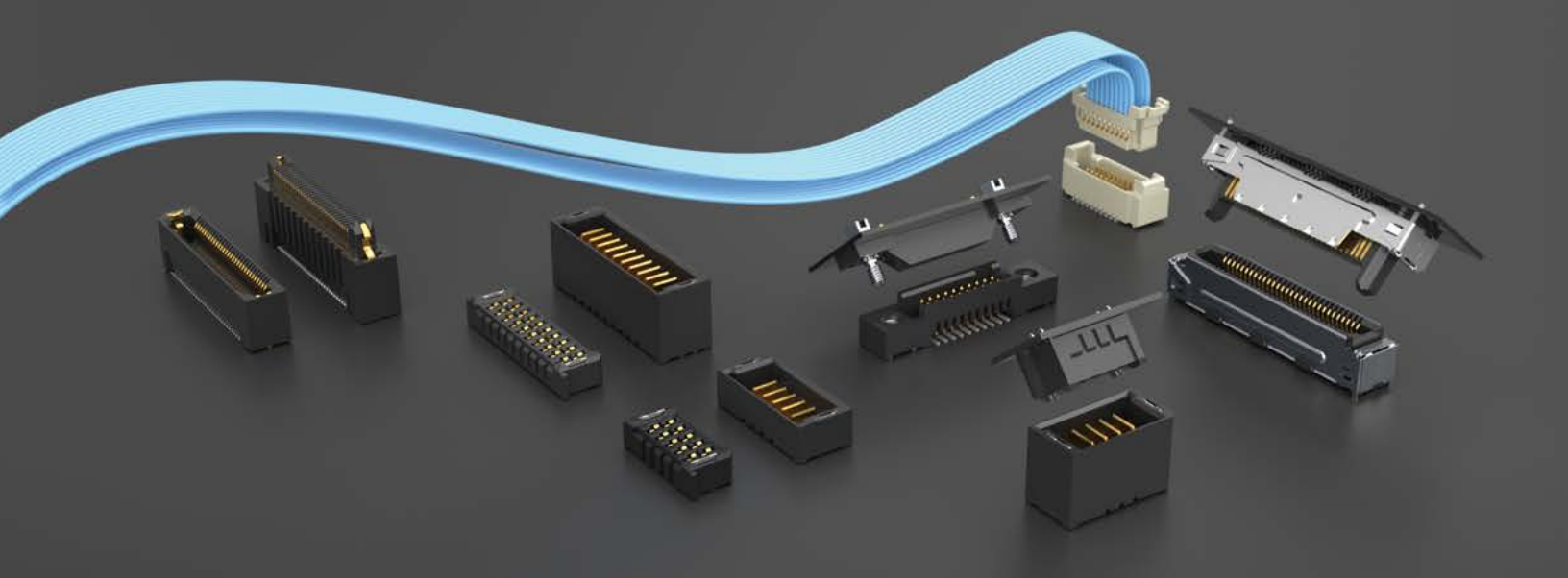
EXPERTISE IN
SIGNAL INTEGRITY
DESIGN & ANALYSIS

FLEX POWER

3 TO 60 AMPS

CONFIGURABILITY OF
POWER & SIGNAL

SPACE-SAVING FORM FACTOR



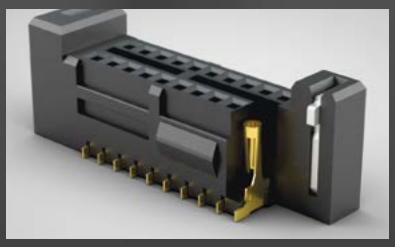
RUGGED CONTACT SYSTEMS

Tiger Eye™ contact system for high-reliability in rugged applications

1,000+ mating cycles

0.80 mm to 2.00 mm pitch

Board-to-board, discrete wire and IDC cable assemblies



4-7

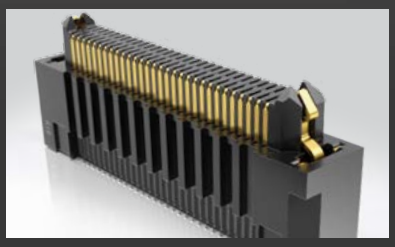
RUGGED SIGNAL INTEGRITY SYSTEMS

Edge Rate® contact system for rugged signal integrity performance

Performance to 56 Gbps PAM4

0.50 mm, 0.635 mm and 0.80 mm pitch

Edge card and ultra-micro connectors



8-11

FLEXIBLE POWER SYSTEMS

Ultra-micro power to 21 A and incredible design flexibility

Individually shrouded contacts

Small form factor, high power systems to 60 A

Board-to-board and cable assemblies

12-15

SEALED I/O SYSTEMS

IP67 and IP68 rated for dust and water

Variety of circular shell sizes with power, power/signal pinouts

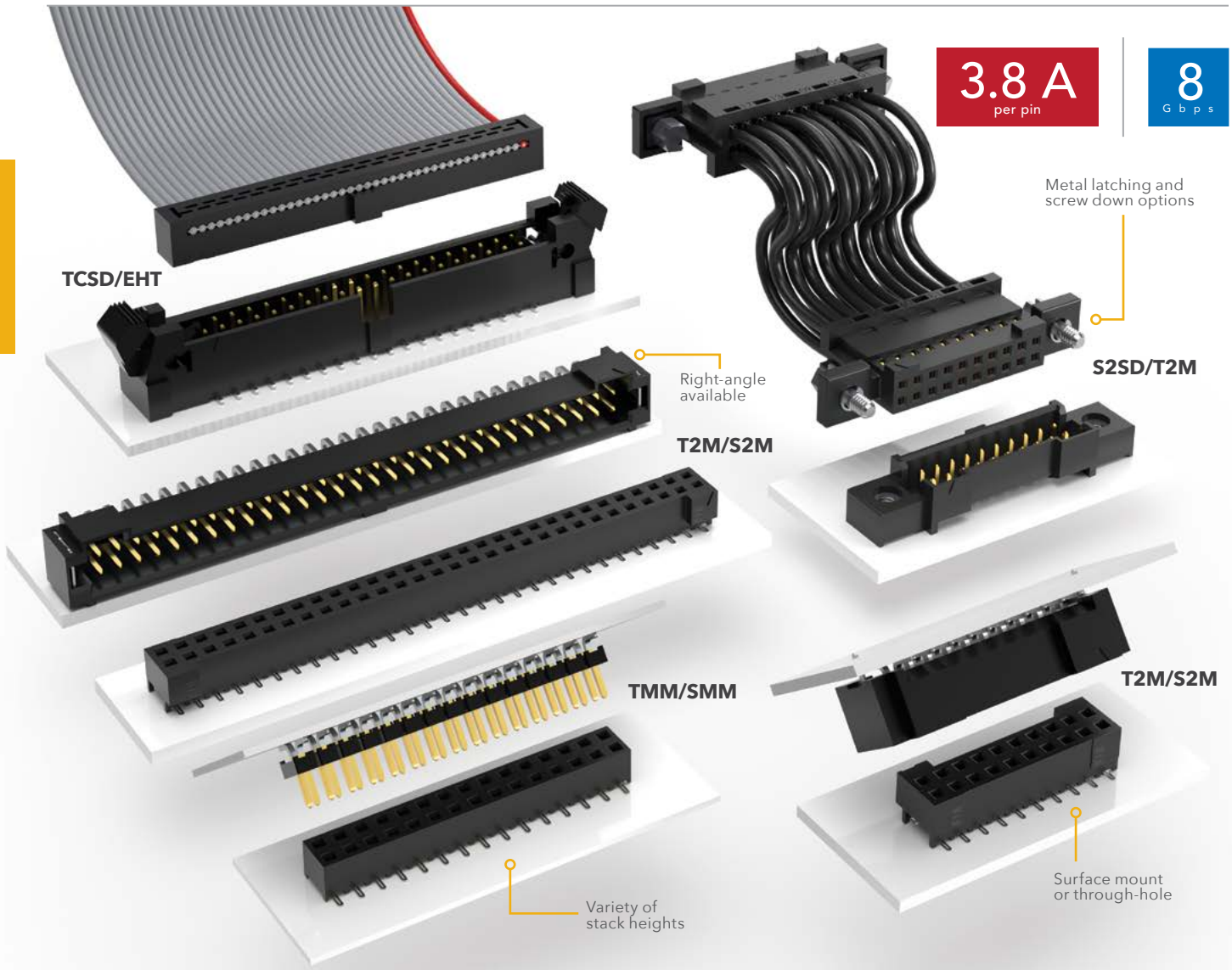
Rectangular designs for space savings

Rugged latching

16-17

RUGGED
TIGER EYE™ SYSTEMS

HIGH-RELIABILITY • MULTI-FINGER BeCu CONTACT • HIGH MATING CYCLES



2.00 mm PITCH TIGER EYE™

- **Tiger Eye™ is Samtec's most rugged contact system rated to 1,000+ mating cycles**
- Wide range of stack heights
- Right-angle mating headers available
- Optional screw downs, weld tabs and locking clips
- Discrete wire assemblies available in 24-30 AWG PVC or Teflon® wire; contact asp@samtec.com for custom solutions

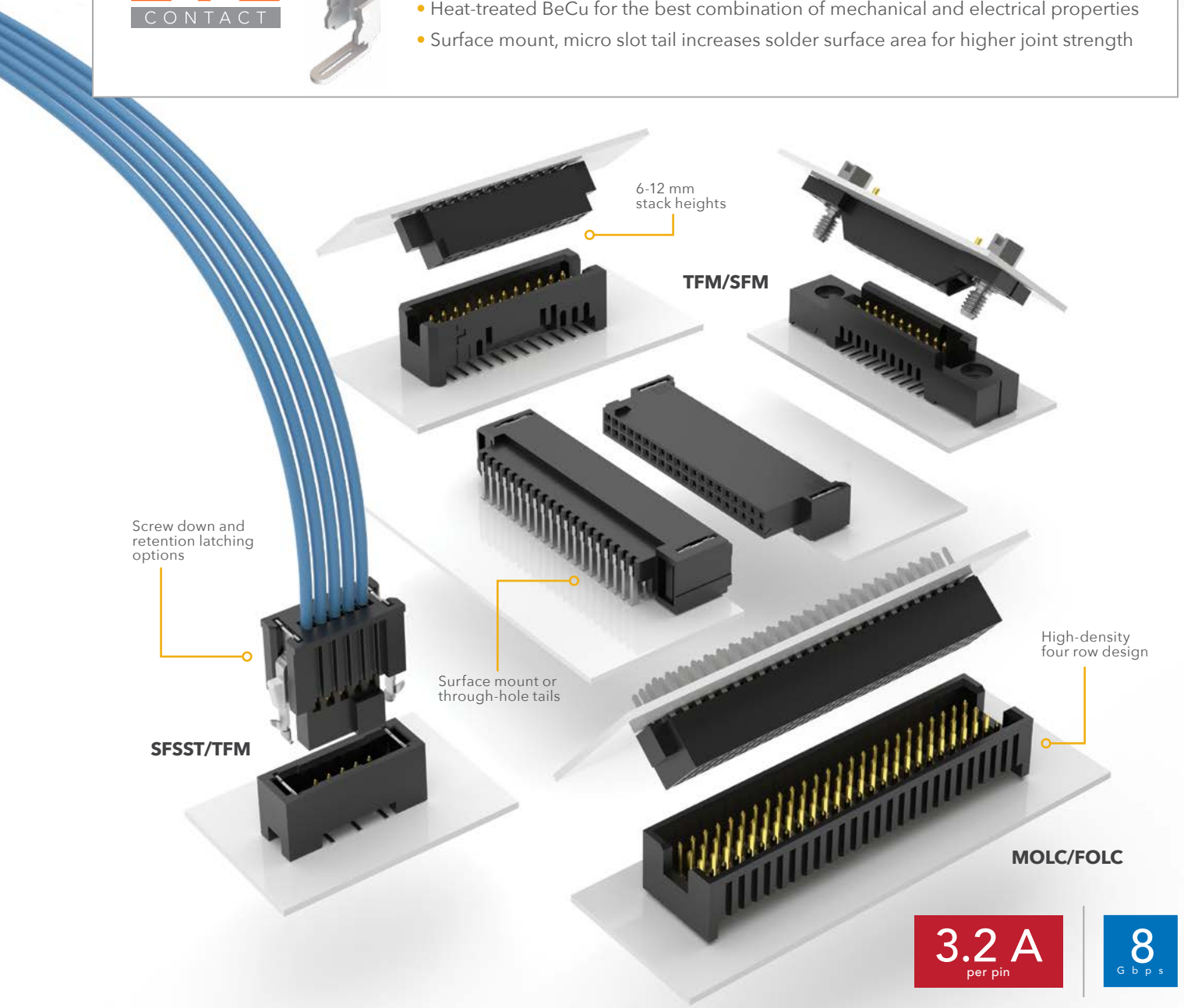
Optional strain relief
and variety of wiring options

Components (ISD2/CC81)
& tooling available:
samtec.com/tooling

TIGER™ EYE CONTACT

TIGER EYE™ CONTACT SYSTEM

- Multi-finger design with several points of contact for high-reliability
- Smooth, flat mating area increases mating cycles and lowers contact resistance
- Heat-treated BeCu for the best combination of mechanical and electrical properties
- Surface mount, micro slot tail increases solder surface area for higher joint strength



3.2 A per pin

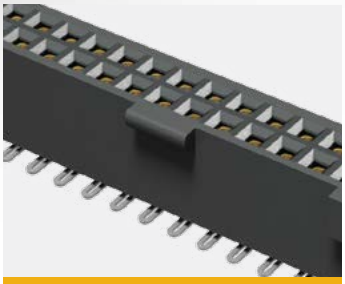
8 Gbps

1.27 mm PITCH TIGER EYE™

- Screw down, locking clip, friction latching and weld tab ruggedizing options
- Shrouded, polarized and keyed
- Discrete wire assemblies available in single or double row, 28 and 30 AWG PVC or Teflon® wire; contact asp@samtec.com for custom solutions
- Cable components (ISDF/CC03) and tooling available

Dupont™ Teflon® is a registered trademark of the E.I. du Pont de Nemours and Company or its affiliates.

IDC cable assemblies with rugged strain relief (FFSD/FFMD, FFTP/FMTP)



Locking for increased unmating force (SFML/TFML)

RUGGED
TIGER EYE™ SYSTEMS

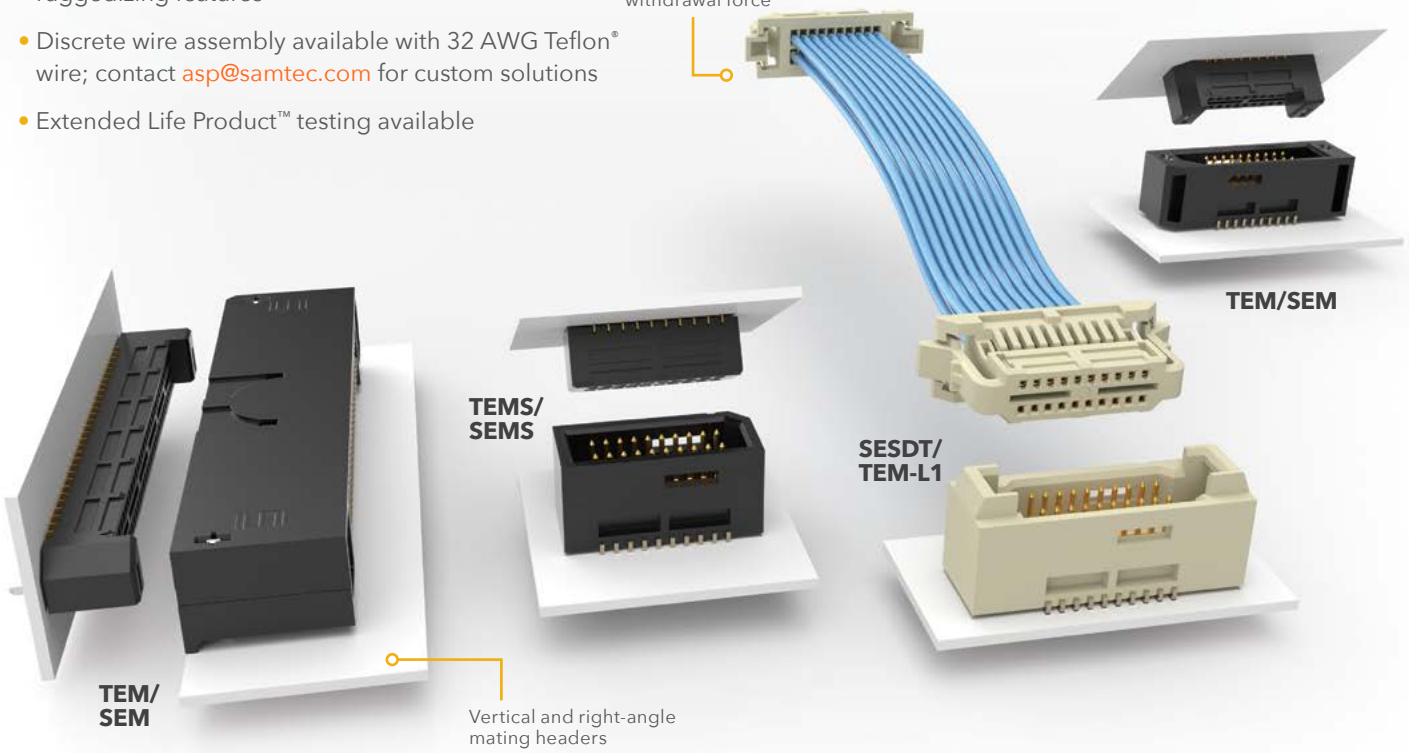
HIGH-RELIABILITY • MULTI-FINGER BeCu CONTACT • HIGH MATING CYCLES

0.80 mm PITCH TIGER EYE™

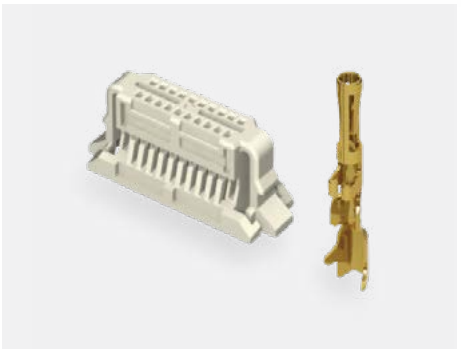
- Micro pitch and slim body for space-savings
- 6 mm, 7 mm and 10 mm stack heights
- Locking clip, alignment pins and weld tab ruggedizing features
- Discrete wire assembly available with 32 AWG Teflon® wire; contact asp@samtec.com for custom solutions
- Extended Life Product™ testing available

2.9 A per pin

8 Gbps



Locking for increased unmating force (SEML)

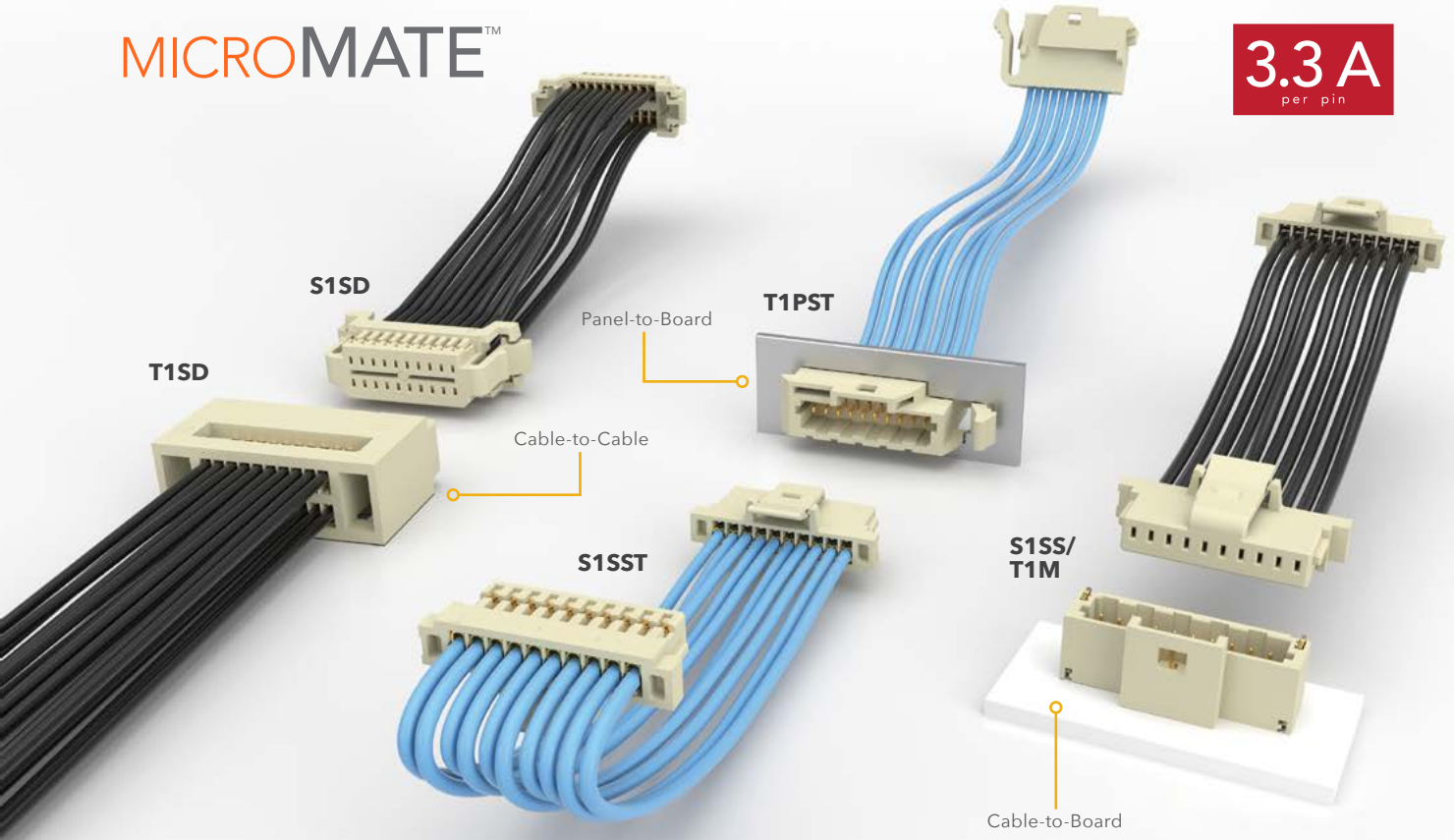


Components (ISDE/CC396) and tooling available: **samtec.com/tooling**

Compatible with UMPT/UMPS for power/signal flexibility

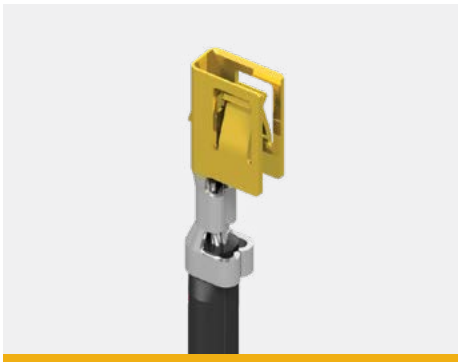
RUGGED MICRO MATE™ SYSTEMS

SPACE-SAVING • DESIGN FLEXIBILITY • HIGH-RELIABILITY



1.00 mm PITCH MICRO MATE™ SYSTEMS

- Crimp-style dual leaf contact system for reliable wire-to-board connection
- 28 and 30 AWG wire options in PVC or Teflon®
- Rugged positive latching for increased retention
- Socket or terminal, single or double row assemblies
- Vertical and right-angle mating headers



Dual leaf contact system for a reliable connection

Components (ISS1, ISD1/CC09; IST1, IDT1, ISP1, IDP1/TC37) and tooling available: **samtec.com/tooling**

Custom solutions available (twisted pair cable shown); contact **asp@samtec.com**

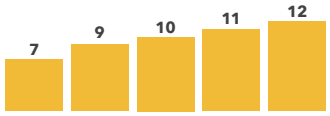
RUGGED SI EDGE RATE® SYSTEMS

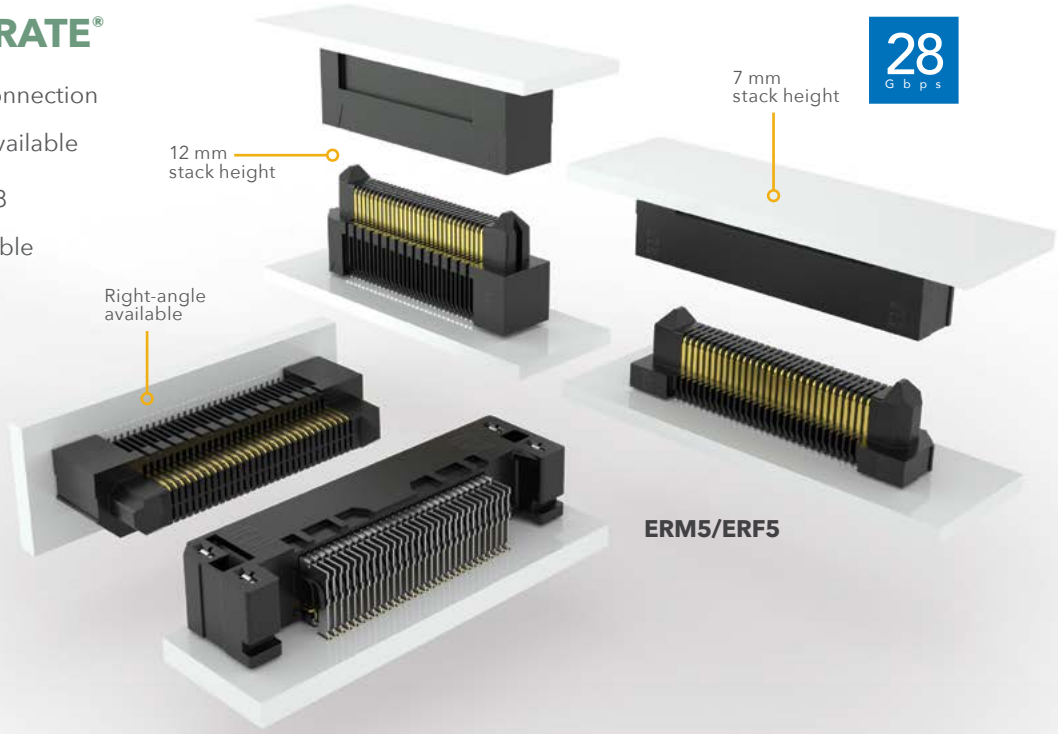
OPTIMIZED FOR SI PERFORMANCE • INCREASED CONTACT WIPE • HIGH CYCLES

0.50 mm PITCH EDGE RATE®

- 1.00 mm contact wipe for a reliable connection
- Rugged friction locks and weld tabs available
- Up to 40% PCB savings vs. ERM8/ERF8
- Compatible with UMPT/UMPS for flexible power/signal solutions

Stack Height Flexibility
(Actual Size in mm)

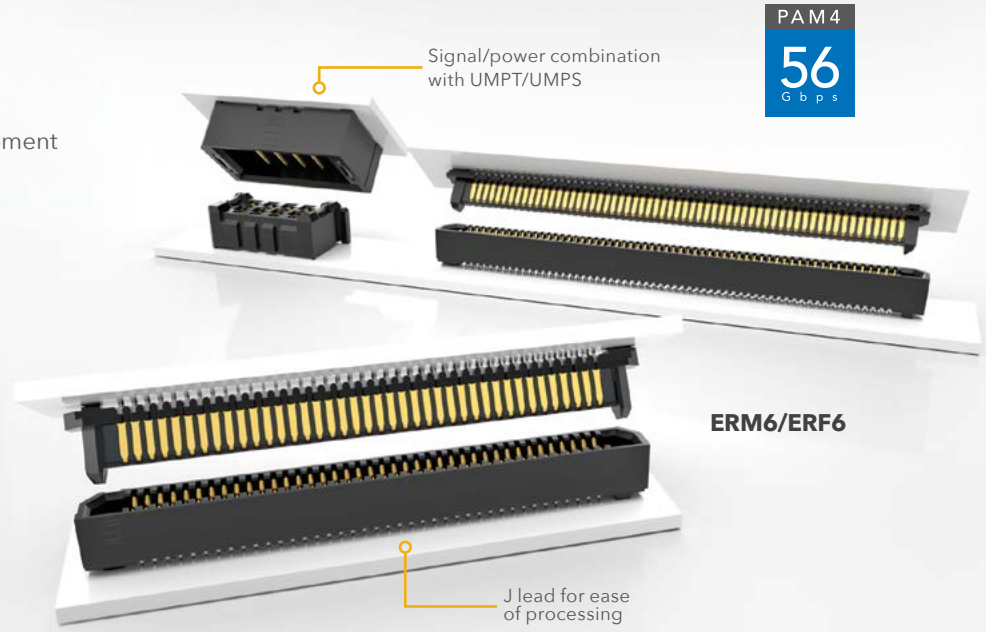




0.635 mm PITCH EDGE RATE®

- Extremely slim 2.5 mm body width
- Up to 120 positions in a 2-row design
- 5 mm stack height with others in development
- Compatible with UMPT/UMPS for flexible power/signal solutions

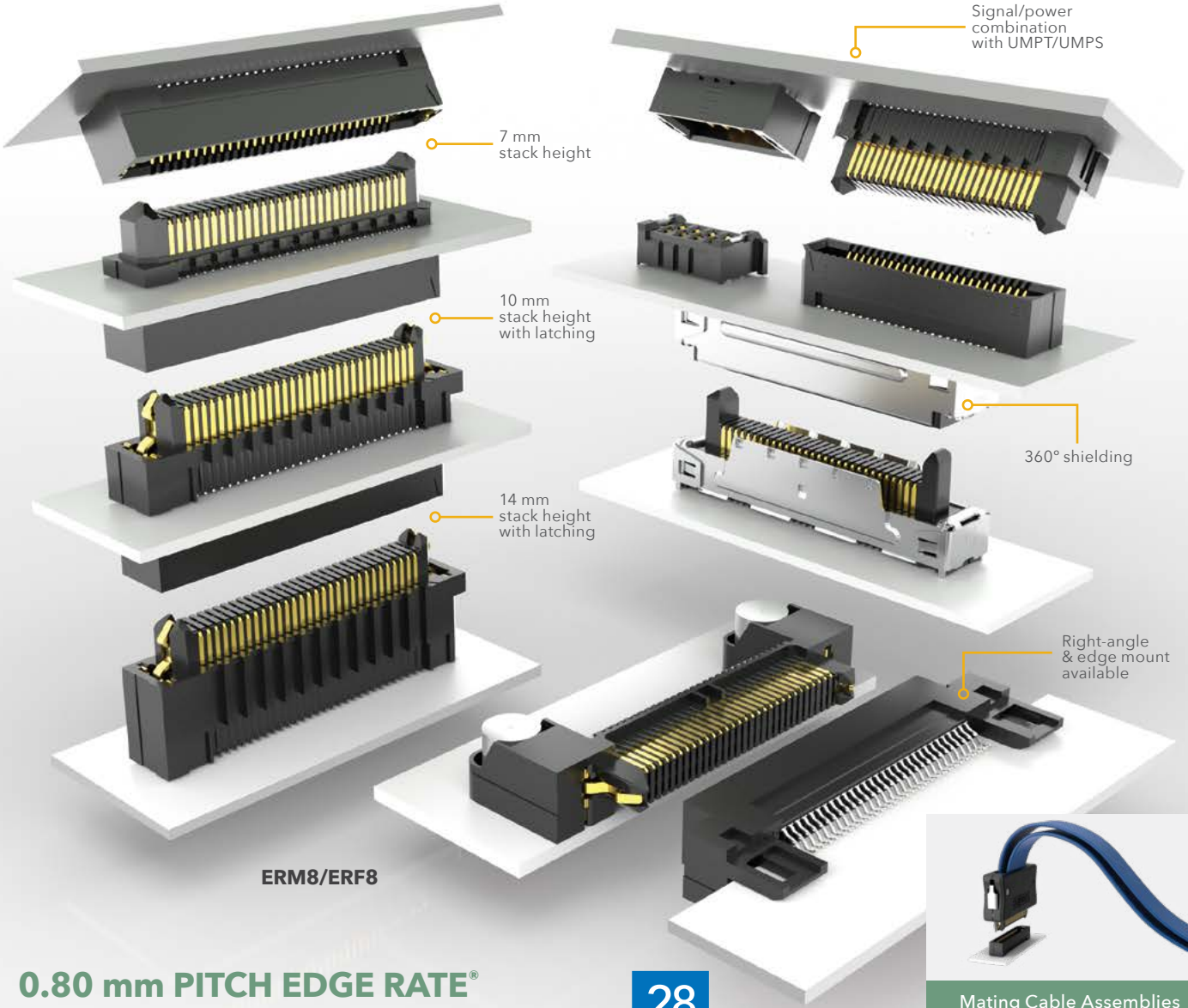
Sockets shown actual size at 40 total positions



EDGE® RATE CONTACT

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



ERM8/ERF8

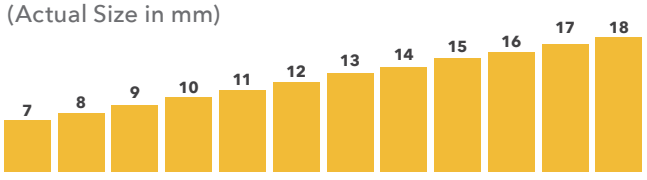
Mating Cable Assemblies (ERCD/ERDP Series)

0.80 mm PITCH EDGE RATE®

- 1.50 mm extended wipe
- Rugged metal latching for increased retention force
- 360° shielding option reduces EMI
- Compatible with UMPT/UMPS for flexible power/signal solutions
- Cost-effective metal solder lock in development for a more secure connection to the board

28 Gbps

Stack Height Flexibility
(Actual Size in mm)

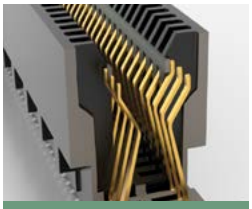


RUGGED SI EDGE CARD

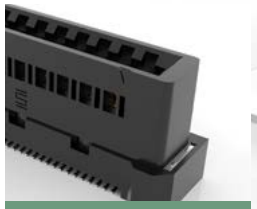
UP TO 56 Gbps PAM4 • CHOICE OF PITCH • EDGE RATE® CONTACTS

0.60 mm, 0.80 mm & 1.00 mm PITCH SYSTEMS

- High-speed Edge Rate® contact system
- Vertical, right-angle and edge mount
- Power/signal combo to 60 A per power bank
- 56 Gbps with differential pair (HSEC8-DP)
- Misalignment mitigation (HSEC1-DV)



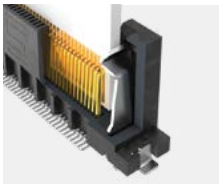
PCIe® Gen 4 rugged tucked beam technology (HTEC8)



Compliant to Gen Z™ and SFF-TA-1002 specifications (HSEC6)

HIGH-DENSITY EDGE CARD

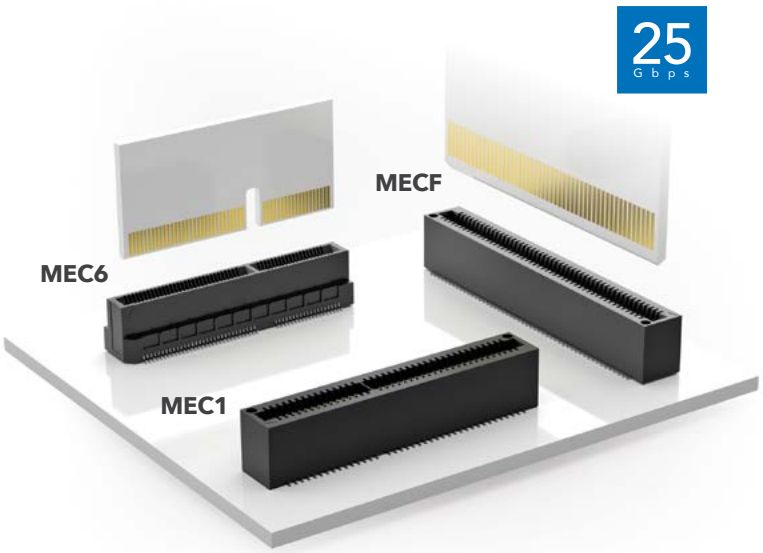
- Justification beam enables use of standard PCB tolerance
- 0.50 mm ultra-fine pitch with up to 300 total I/Os
- PCIe® Gen 4 compatible



Beam ensures card and body are flush

MICRO EDGE CARDS

- 0.635 mm, 0.80 mm, 1.00 mm, 1.27 mm and 2.00 mm pitch
- Optional rugged weld tabs, board locks and solder locks
- Solutions for 1.60 mm (.062") and 2.36 mm (.093") thick cards



RUGGED SI MICRO SYSTEMS

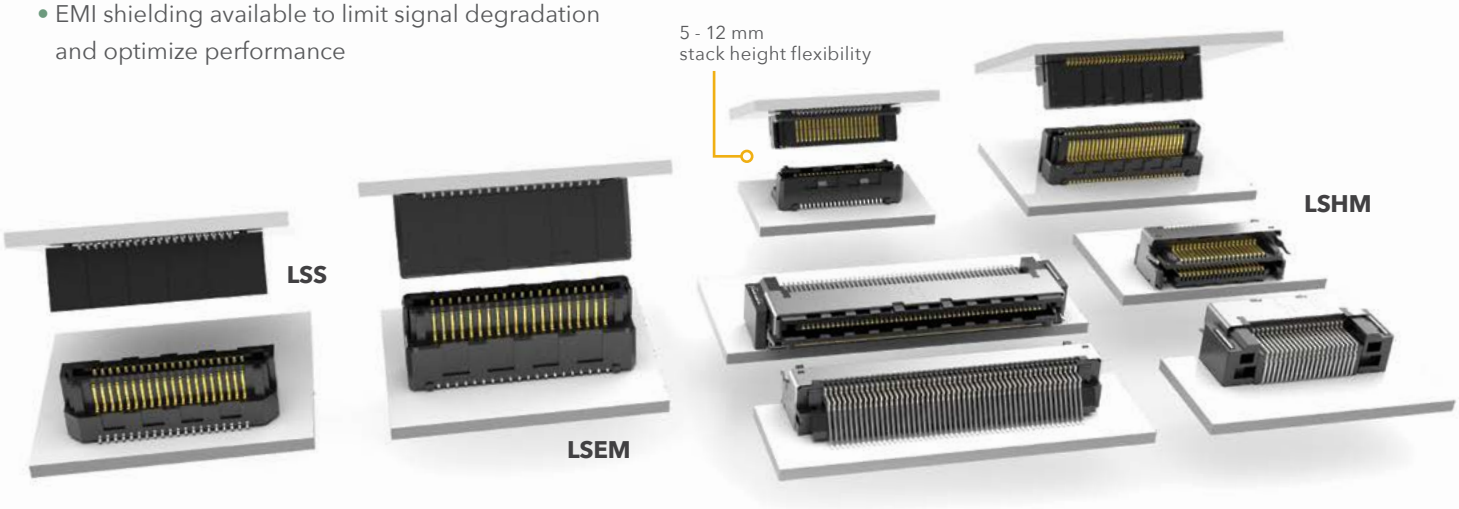
HIGH-DENSITY • HIGH-RETENTION CONTACTS • SLIM ROW-TO-ROW DESIGNS

HERMAPHRODITIC RAZOR BEAM™ INTERFACES

RAZOR™ BEAM SYSTEM

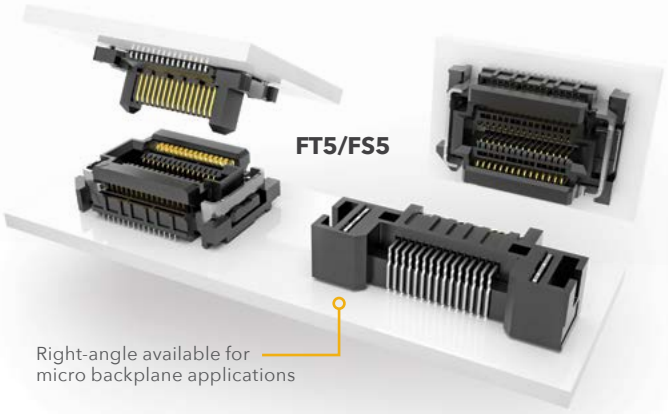
PAM4 56 Gbps

- High-retention, high-speed Razor Beam™ contacts
- 0.50 mm, 0.635 mm and 0.80 mm pitch
- EMI shielding available to limit signal degradation and optimize performance



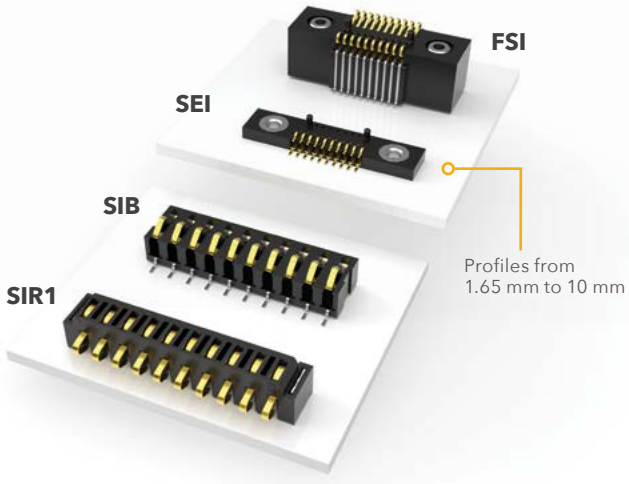
FLOATING CONNECTORS

- Provides 0.50 mm contact float in the X and Y axes to compensate for misalignment
- 5 mm and 7 mm stack heights
- Micro 0.50 mm pitch



ONE-PIECE INTERFACES

- Robust design and mechanical hold-downs for high-shock and vibration applications
- Optional rugged weld tabs and locking clips
- 1.00 mm, 1.27 mm and 2.54 mm pitch designs

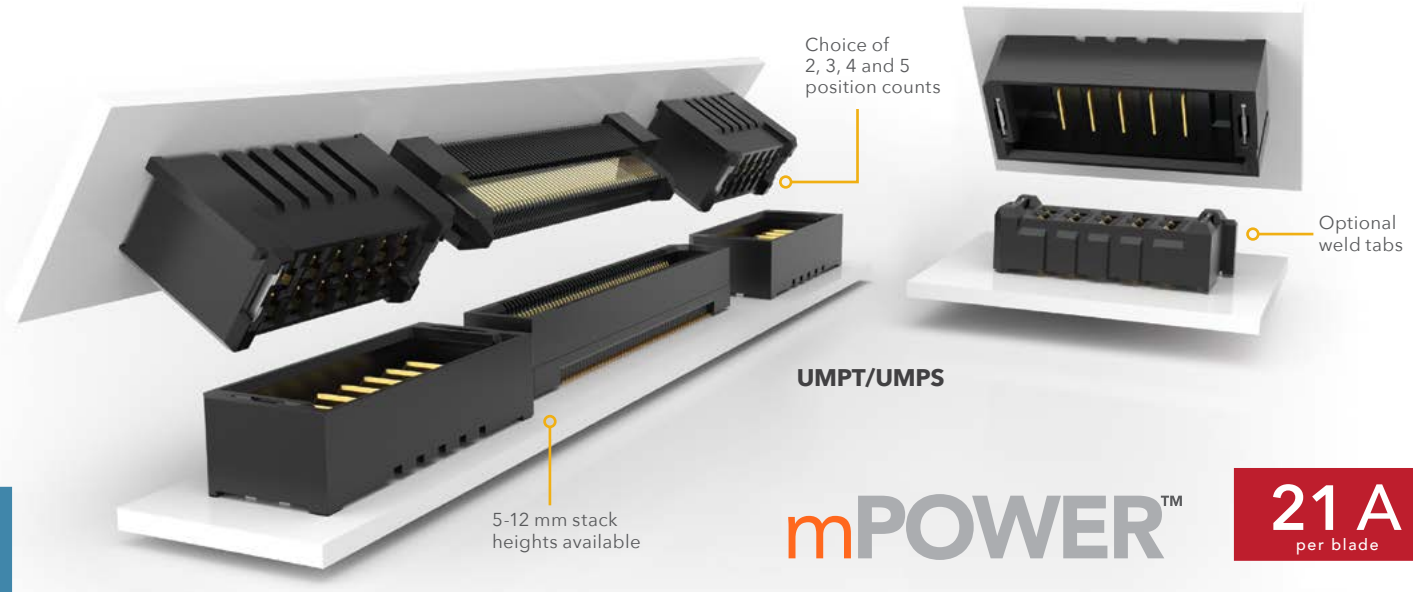


FLEXIBLE POWER
ULTRA MICRO POWER

21 A PER BLADE • MICRO 2.00 mm PITCH • DESIGN FLEXIBILITY

MICRO 2.00 mm PITCH

- Design flexibility as a power-only system or a two-piece system for power/signal applications
- Use with Samtec's high-speed connector systems for a unique power/signal system (see chart)
- Tin or 10 µ" Gold plated power blades; 30 µ" Gold plating available to meet specific regulations
- Standard creepage (2.20 mm) and clearance (1.65 mm)
- Selectively loading contacts achieves customer specific creepage and clearance requirements; contact asp@samtec.com



UMPT/UMPS compared to other small form factor power solutions

Terminals shown **actual size** at 4 positions


21 A/blade


21 A/blade

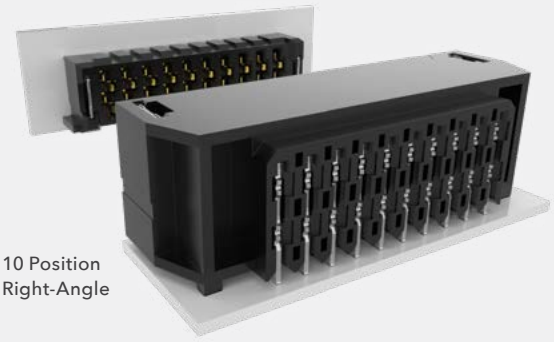
CURRENT RATING (PER CONTACT)		
PINS	-T	-G
1	17.2 A	21.5 A
2	14.7 A	17.6 A
3	13.1 A	16.8 A
4	13.0 A	15.6 A
5	12.9 A	15.4 A

SIGNAL CONNECTOR	MATED HEIGHT			
	5 mm	7 mm	10 mm	12 mm
ADM6/ADF6	X			
BTE/BSE, BTH/BSH, BTS/BSS	X			
ERM5/ERF5		X	X	X
ERM6/ERF6	X			
ERM8/ERF8		X	X	X
LPAM/LPAF	X			
QMS/QFS			X	
QRM8/QRF8		X	X	X
QTE/QSE, QTH/QSH, QTS/QSS	X			
SEAM/SEAF		X	X	X
SEAM8/SEAF8		X	X	
ST4/SS4, ST5/SS5	X			
TEM/SEM		X	X	

PRODUCT **ROADMAP**

Samtec now offers power simulation that can calculate temperature increase in the connector area; contact microruggedgroup@samtec.com for more details.

PHASE 2



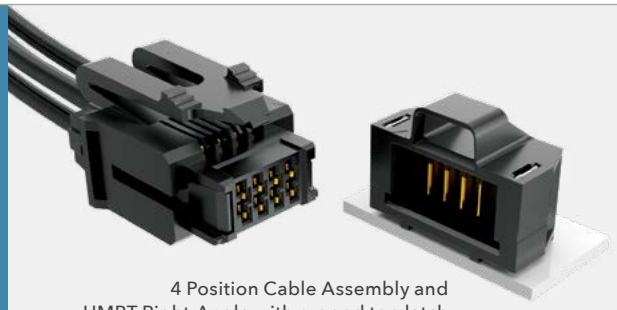
10 Position
Right-Angle

Right-Angle UMPT Series

POSITIONS
2, 3, 4, 5, 6, 7, 8, 9, 10

OPTIONS
Latch for mating with cable assembly

PHASE 3



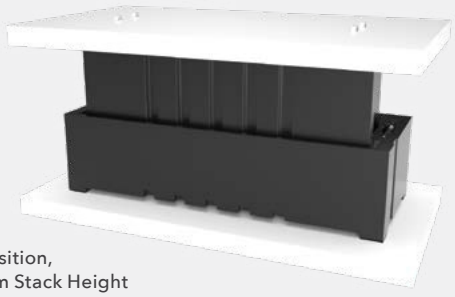
4 Position Cable Assembly and
UMPT Right-Angle with rugged top latch

Cable Assembly with Latch

POSITIONS
2, 3, 4, 5, 6, 7, 8, 9, 10

OPTIONS
Plastic top latch or metal side latches

PHASE 4



6 Position,
9 mm Stack Height

Vertical UMPT & UMPS Series

POSITIONS
6, 7, 8, 9, 10

STACK HEIGHTS
6, 8, 9, 11, 13, 14, 15, 16, 18, 20

IN DEVELOPMENT

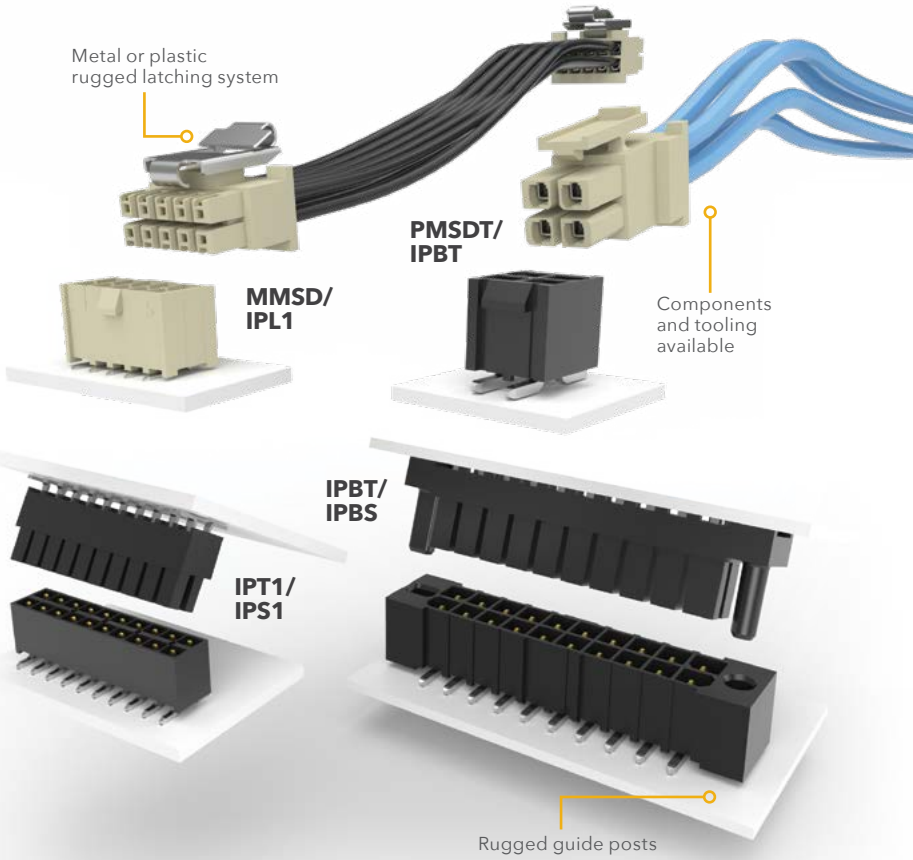
30 A Ultra Micro Power System in development for higher power in a compact design. Designed for flexibility as a power-only system, or as a two-piece power/signal system alongside Samtec's high-speed connectors. Initial options will include 2-5 position counts and 5, 7, 10 and 12 mm stack heights.

FLEXIBLE POWER
HIGH-POWER

SMALL FORM FACTORS • 10–60 A PER PIN/BLADE • INDIVIDUALLY SHROUDED CONTACTS

MINI MATE® & POWER MATE®

- Individually shrouded contacts for electrical and mechanical protection
- .100" (2.54 mm) and .165" (4.19 mm) pitch
- Discrete wire assemblies with 16-30 AWG PVC or Teflon® wire
- Selectively loading contacts achieves customer specific creepage and clearance requirements; contact asp@samtec.com

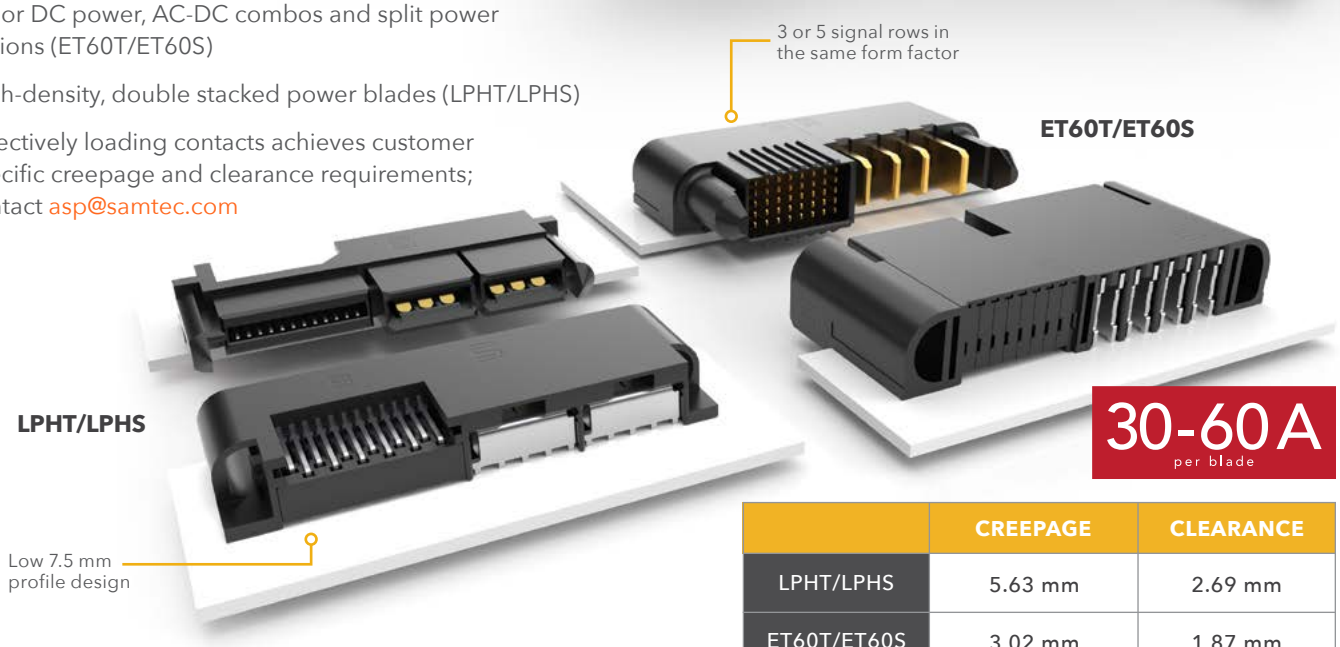


10.3 A per pin

	CREEPAGE	CLEARANCE
IPT1/IPS1 MMSS(T)/MMSD(T)	2.55 mm	1.91 mm
IPBT/IPBS PMSS(T)/PMSD(T)	4.27 mm	3.05 mm

EXTREME POWER

- AC or DC power, AC-DC combos and split power options (ET60T/ET60S)
- High-density, double stacked power blades (LPHT/LPHS)
- Selectively loading contacts achieves customer specific creepage and clearance requirements; contact asp@samtec.com



30-60 A per blade

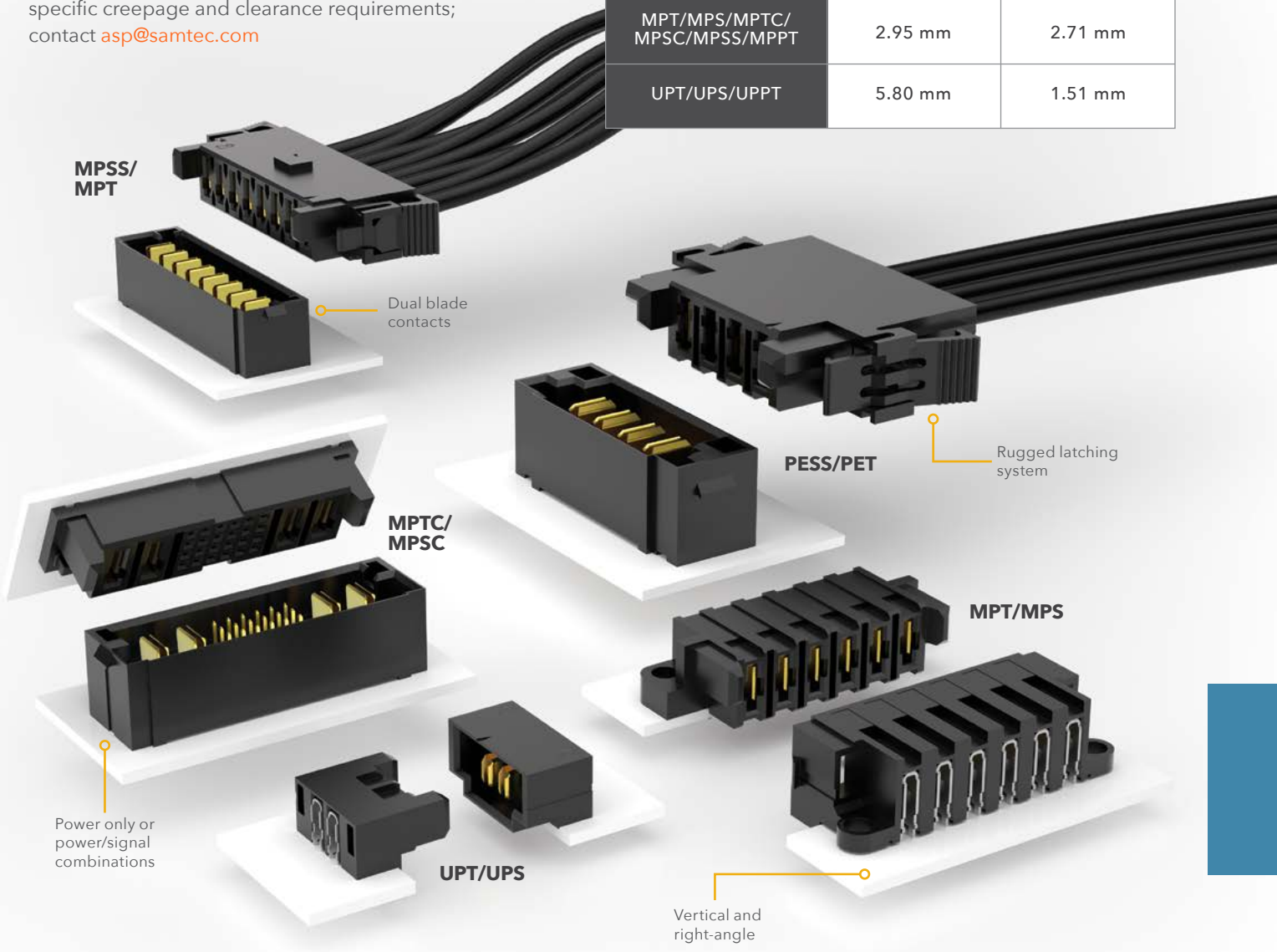
	CREEPAGE	CLEARANCE
LPHT/LPHS	5.63 mm	2.69 mm
ET60T/ET60S	3.02 mm	1.87 mm

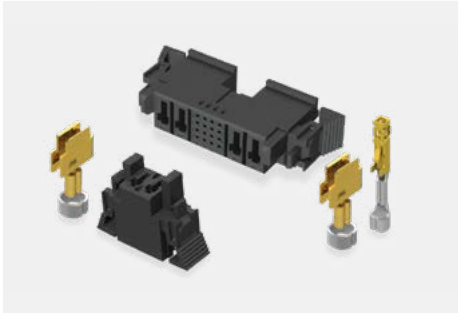
POWERSTRIP™ SYSTEM

20-60 A
per blade

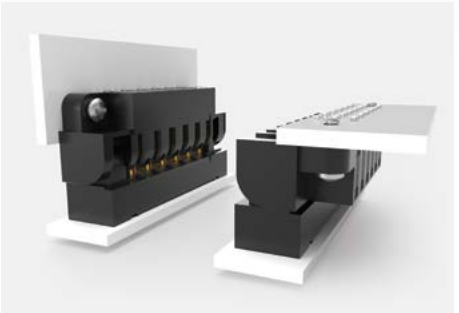
- 23.5 A/blade to 58.7 A/blade (1 blade powered)
- 5.00 mm and 6.35 mm pitch
- Discrete wire assemblies with 10-16 AWG wire
- Selectively loading contacts achieves customer specific creepage and clearance requirements; contact asp@samtec.com

	CREEPAGE	CLEARANCE
PET/PES/PETC/ PESC/PESS	3.66 mm	3.31 mm
MPT/MPS/MPTC/ MPSC/MPSS/MPPT	2.95 mm	2.71 mm
UPT/UPS/UPPT	5.80 mm	1.51 mm





Discrete wire components (IMS5,IMSC5/ CC46,CC81; IPS6/CC10) and tooling available: **samtec.com/tooling**



"Hinging" for 90° mating radius, ideal for blind mating (FMPT/FMPS)

Hermaphroditic power system with rugged screw downs (MPPT, UPPT)

SEALED I/O
ACCLIMATE™ SYSTEMS

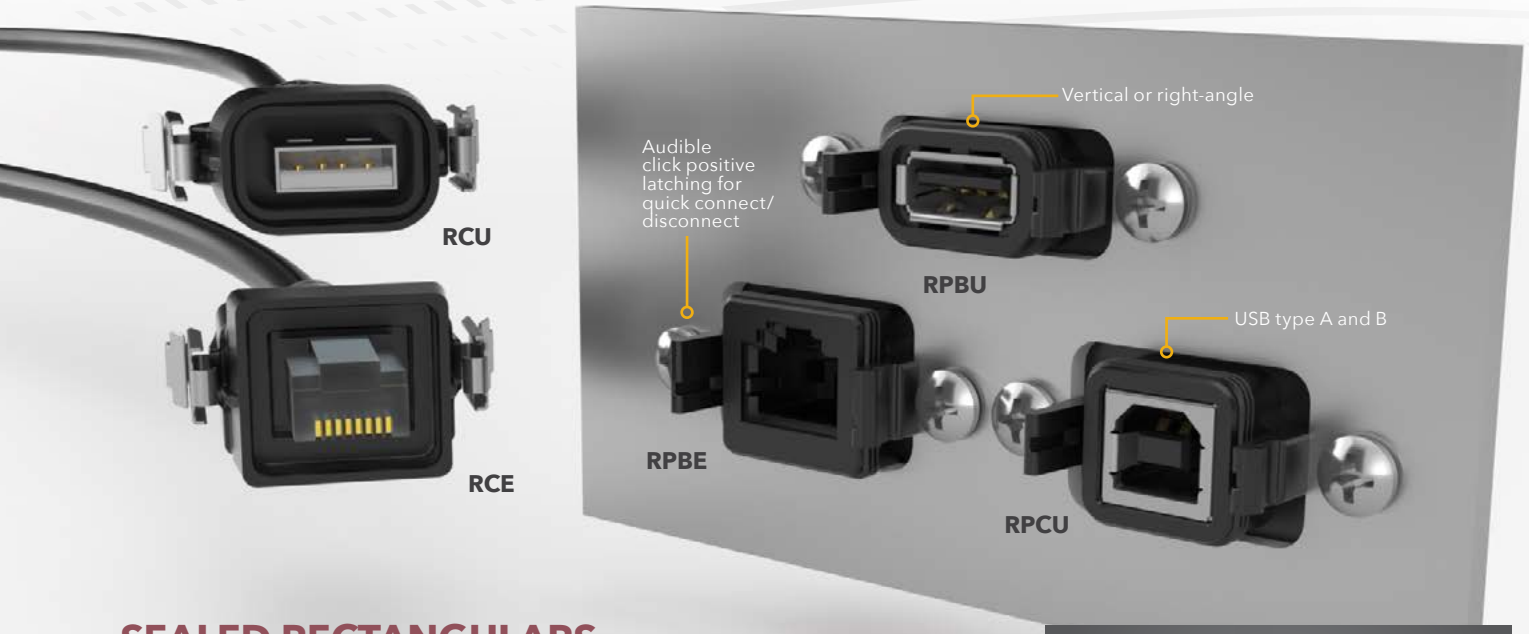
IP67 & IP68 • BAYONET/PUSH-PULL CIRCULARS • SPACE-SAVING RECTANGULARS

ACCLIMATE™

FLEXIBLE SEALED CIRCULAR SYSTEMS

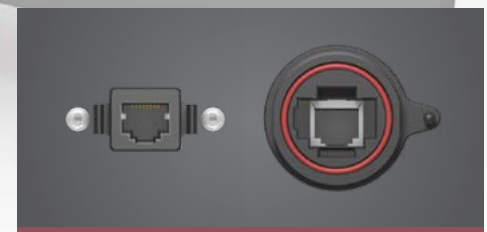
- Metal or plastic, 12 mm, 16 mm and 22 mm shells
- Flexible pin configuration, gender and panel interface termination
- Bayonet-style latching systems meet IP68 requirements
- Cost-effective crimp version available
- Mini push-pull latching system meets IP67 requirements for dust and waterproof sealing

Kitted components for efficient field assembly



SEALED RECTANGULARS

- Space saving design
- Meets IP68 requirements
- USB and Ethernet signal systems
- Rugged dust caps available
- 1 or 2-port vertical and right-angle panel mount sockets



25-45% panel area savings

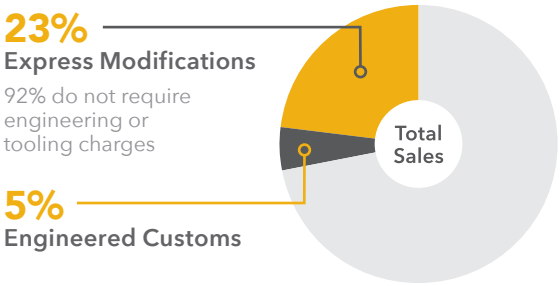
THREADED CIRCULARS

- Meets IP68 requirements for dust and waterproof sealing
- Rugged overmold design
- USB, Mini USB and Ethernet signal systems
- 10 and 17 shell sizes
- Rugged dust caps and panel-to-board termination available

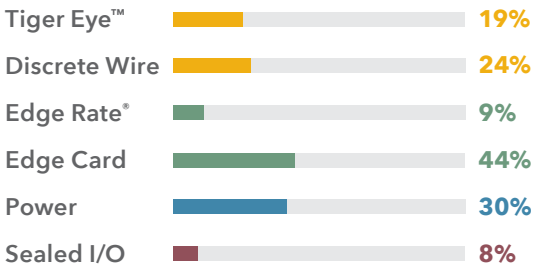
MODIFIED & CUSTOM SOLUTIONS

WILLINGNESS, SUPPORT & EXPERTISE

Customs and Modifications make up about 28% of Samtec's total sales



A substantial percentage of each Micro Rugged product segment is custom



INDUSTRY LEADING CUSTOMER SERVICE | **FLEXIBLE IN-HOUSE** MANUFACTURING | **SIGNAL INTEGRITY** EXPERTISE

FLEXIBLE RUGGED SOLUTIONS

- Full engineering, design and prototype support
- Design, simulation and processing assistance
- Quotes and samples turned around in 24 hours
- Dedicated Application Specific Product engineers and technicians
- Modified or custom options for board level connectors and cable assemblies including: contacts, bodies, stamping, plating, wiring, molding, ruggedizing features and much more

Express Modification
Standard PowerStrip™ cable with non-standard end 2 option

Engineered Custom
Multi-power staging, power/signal combo, header/socket combo, custom body

FLEXIBLE DISCRETE WIRE SOLUTIONS

- Variety of end 2 options
- Nylon woven sleeves
- Twisted pairs
- Heat shrink
- Color coding
- Selectively populated
- Barrel crimp
- Ring/spade lug terminal
- Break out
- Panel mount
- Sealed
- Harness style crimp

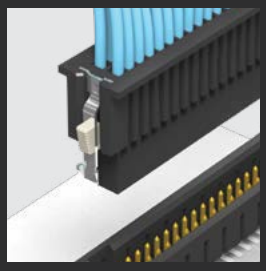
Contact Customer Engineering Support at **asp@samtec.com** for express modifications or engineered customs.

RUGGED FEATURES

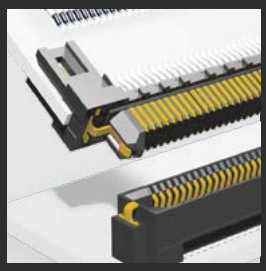
OPTIONS FOR HIGH-RELIABILITY, HIGH-RETENTION AND HIGH-CYCLE LIFE

RUGGEDIZING OPTIONS

JACK SCREWS
Ideal for high normal force, zippering and other rugged applications



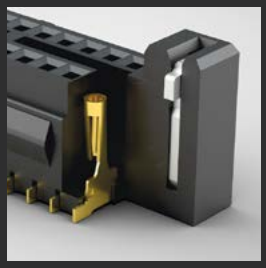
POSITIVE LATCHING
Manually activated latches increase unmating force by up to 200%



FRICTION LOCKS
Metal or plastic friction locks increase retention/withdrawal force

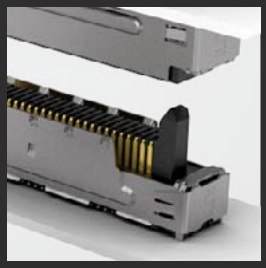
RETENTION PINS
Increase unmating force by up to 50%

BOARD LOCKS
Boards are mechanically locked together

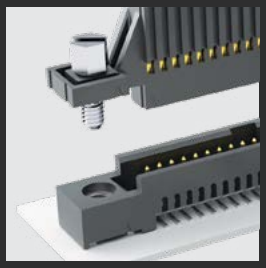


WELD TABS
Significantly increase sheer resistance of connector to PCB

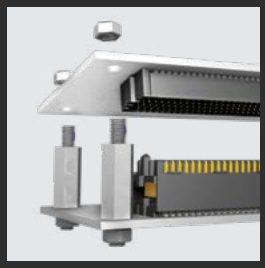
GUIDE POSTS
Easy and secure mating



SHIELDING
360° shielding reduces EMI



SCREW DOWNS
Secure mechanical attachment to the board



BOARD STANDOFFS
Precision machined standoffs for 5 mm to 25 mm board spacing

CONTACT SYSTEMS

TIGER EYE™
High-reliability
High Mating Cycles
Multi-finger Contact

TIGER CLAW™
Dual Wipe Contact
Pass-through Applications
Ultra-low Profile

BLADE & BEAM
Mating/Alignment "Friendly"
Cost-effective

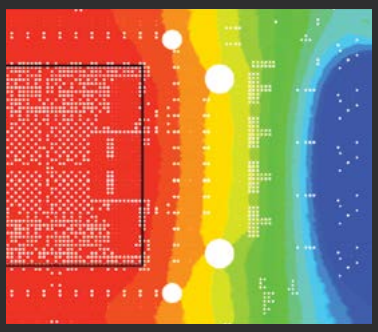
TIGER BEAM™
Best Cost
Reliable Performance
Post & Beam Contact

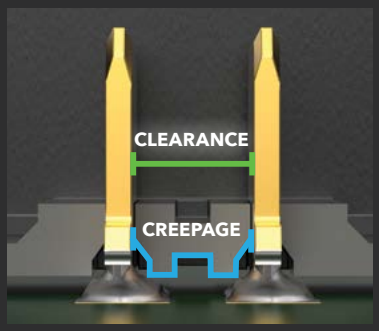
EDGE RATE®
Designed for Signal Integrity
Superior Impedance Control
Reduced Broadside Coupling

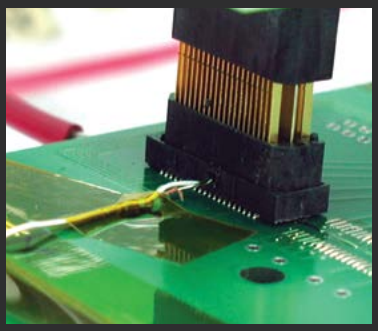
POWER INTEGRITY AND E.L.P.™

POWER INTEGRITY SERVICES

- Standard power test data, including current carrying capacity, working voltage, voltage drop and resistance, creepage and clearance, is available for select power systems
- Current Cycling Test Data, which demonstrates connector performance in realistic and common applications, is available for select series
- Power Integrity Guidelines are based on test data and proven design parameters, and are designed to help in connector selection and PCB design maximization
- Power Integrity Certified products undergo testing and additional requirements unique to Samtec. To be certified, products must pass Current Cycling Test EIA 365-55, have current carrying capacity, resistance vs. number of contacts data available and Power Integrity Guidelines developed
- Visit samtec.com/powerintegrity to learn more







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 on 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

PITCH	TYPE	CONTACT	SERIES*
0.50 mm	Q Series® Strip	Blade & Beam	QSH/QTH
	Basic Strip	Blade & Beam	BSH/BTH
0.635 mm	Q Series® Strip	Blade & Beam	QSS/QTS
	Basic Strip	Blade & Beam	BSS/BTS
0.80 mm	Edge Rate® Strip	Edge Rate®	ERF8/ERM8
	Edge Card	Edge Rate®	HSEC8
	Q Rate® Strip	Edge Rate®	QRM8/QRF8
	Q Series® Strip	Blade & Beam	QSE/QTE
	Basic Strip	Blade & Beam	BSE/BTE
	Strip	Tiger Eye™	SEM/TEM
1.00 mm	Strip	Tiger Claw™	CLM/FTMH
1.27 mm	SEARAY™ Array	Edge Rate®	SEAF/SEAM
	Strip	Tiger Eye™	SFM/TFM
	Strip	Tiger Claw™	CLP/FTSH
	Strip	Tiger Beam™	FLE/FTSH
2.00 mm	Strip	Tiger Eye™	SMM/TMM
	Strip	Tiger Claw™	CLT/TMMH
2.54 mm	Strip	Tiger Claw™	SSM/TSM
	Strip	Tiger Claw™	BCS/TSW

* Tested socket/terminal combination shown. Other mating headers also available. Contact Samtec if header design you need is not shown.

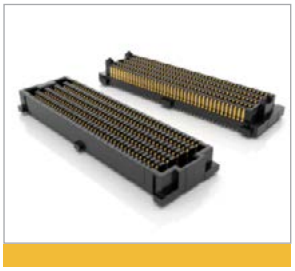
SEVERE ENVIRONMENT TESTING

Severe Environment Testing is a new Samtec initiative to test our products beyond typical industry standards and specifications, many set forth by common requirements for rugged industries. Several of our products undergo additional testing to ensure they are more than suitable for industrial, military, automotive and other extreme applications. Please visit **samtec.com/set** or contact **set@samtec.com** for more information and test results when available.

SET QUALIFIED PRODUCTS:

- Tiger Eye™ 1.27 mm Pitch Micro Rugged System (TFM/SFM)
- SEARAY™ 1.27 mm Pitch High-Density Arrays (SEAM/SEAF)
- SEARAY™ 0.80 mm Pitch Ultra-High Density Arrays (SEAM8/SEAF8)
- Razor Beam™ 0.50 mm Pitch Hermaphroditic Strips (LSHM)
- .100" Pitch Square Post Header and Socket (TSM/SSM)
- .050" Pitch Header and Socket (FTSH/CLP)
- Edge Rate® 0.80 mm Pitch Rugged High-Speed Strips (ERM8/ERF8)



PRODUCTS TO BE TESTED:

- Q Strip® 0.50 mm Pitch Low Profile Ground Plane Connectors (QTH/QSH)
- Q Rate® 0.80 mm Pitch Slim Body Ground Plane Connectors (QRM8/QRF8)
- Edge Rate® 0.80 mm Pitch Edge Card Socket (HSEC8)

TESTING INCLUDES:

MATING/UNMATING/DURABILITY: Measures the change in LLCR and mating/unmating after products have been cycled and exposed to various environmental conditions (100% relative humidity, 250 cycles).

MECHANICAL SHOCK/RANDOM VIBRATION/LLCR: Measures the product's ability to withstand a series of mechanical shocks and random vibration. LLCR is a before and after check for damage (40G Peak, 11 ms, Half Sine & 12gRMS, 5 – 2,000 Hz, 1 Hour/Axis).

MECHANICAL SHOCK/RANDOM VIBRATION/ NANOSECOND EVENT DETECTION: Measures the product's ability to withstand a series of mechanical shocks and vibrations. Event detection monitors continuity during testing (40G Peak, 11 ms, Half Sine & 12gRMS, 5 – 2,000 Hz, 1 Hour/Axis).

TEMPERATURE CYCLING: Evaluates the product's reliability through thermal fatigue by cycling through two temperature extremes (-65 °C to 125 °C, 30 minute dwell time at each extreme; 500 cycles).

NON-OPERATING CLASS TEMPERATURE: Determines the temperature range at which the product operates at peak level (-55 °C to 125 °C at 100 cycles and -65 °C to 125 °C at 100 cycles; 200 total cycles).

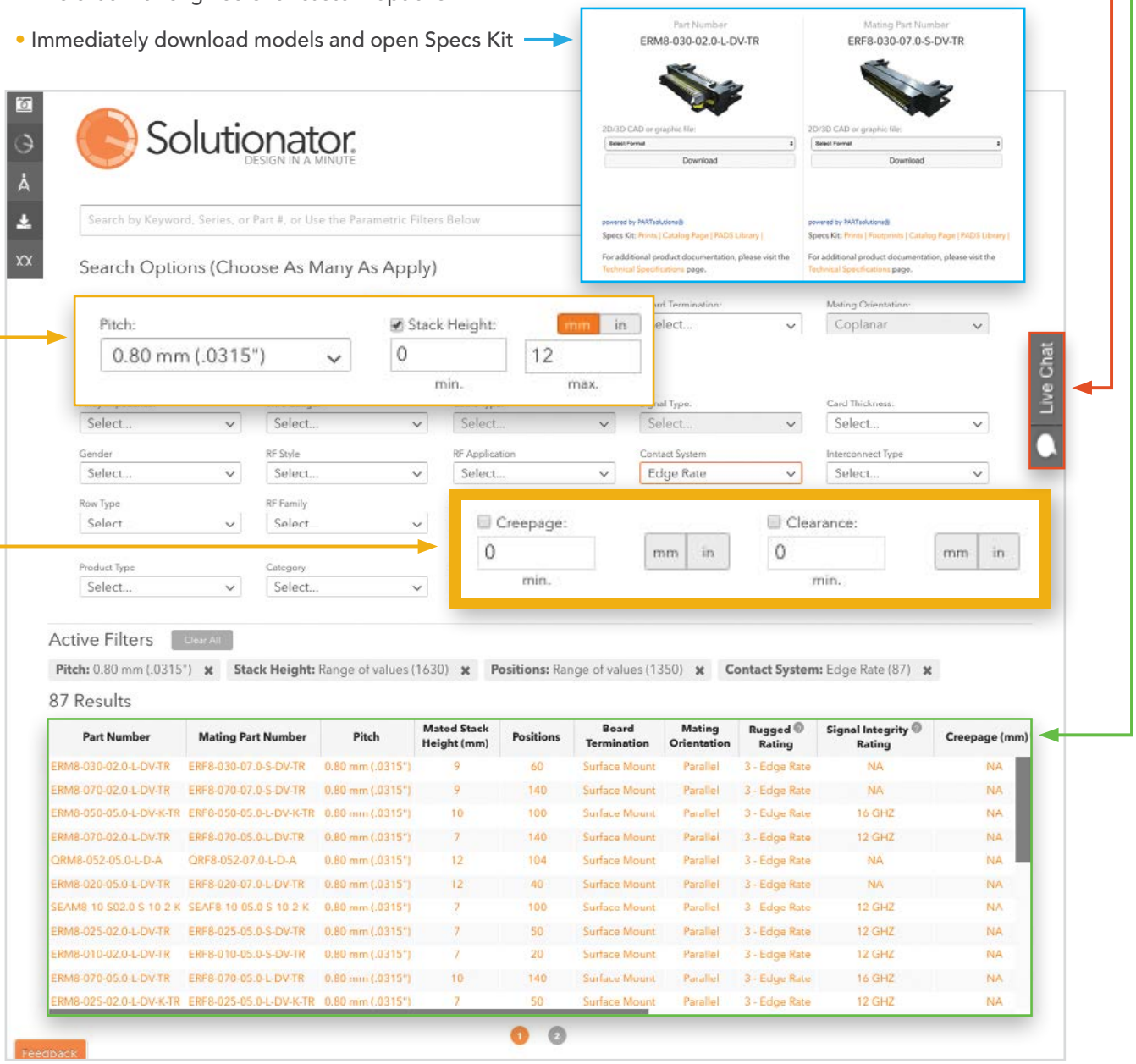
DWV AT ALTITUDE: Measures the peak voltage that a product can withstand before dielectric breakdown at high altitudes (70,000 feet).

ELECTROSTATIC DISCHARGE (ESD): Measures the level of electrostatic voltage the product can withstand (exposure to 5k, 10k and 15k Volts, repeated 10 times).

SOLUTIONATOR®

QUICKLY BUILD MATED SETS ONLINE

- Wide variety of search parameters and filters: creepage and clearance (power), pitch, stack height, etc.
- Easily sort results to find the right mated set
- Live chat with engineers for custom options
- Immediately download models and open Specs Kit



To build your mated set, visit **samtec.com/solutionator**

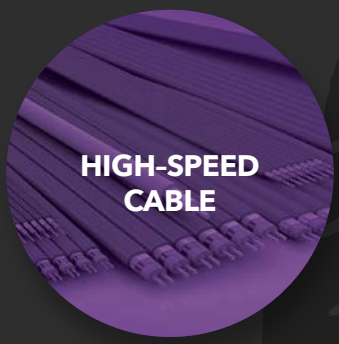
INTEGRATION LEADS TO INNOVATION

SAMTEC TECHNOLOGY CENTERS ENABLE COMPLETE SYSTEM OPTIMIZATION FROM SILICON-TO-SILICON™

Samtec's Technology Centers offer high-level design and development of advanced interconnect systems and technologies, along with industry-leading signal integrity expertise which allows us to provide effective strategies and technical support for optimizing the entire serial channel of high-performance systems.

Because Samtec's Technology Centers are not limited by the boundaries of traditional business units, we are able to work in a fully integrated capacity that enables true collaboration and innovation to support the demands of today, and the challenges of tomorrow.

High precision stamping, plating, molding and automated assembly



In-house R&D and manufacturing of precision extruded cable and assemblies

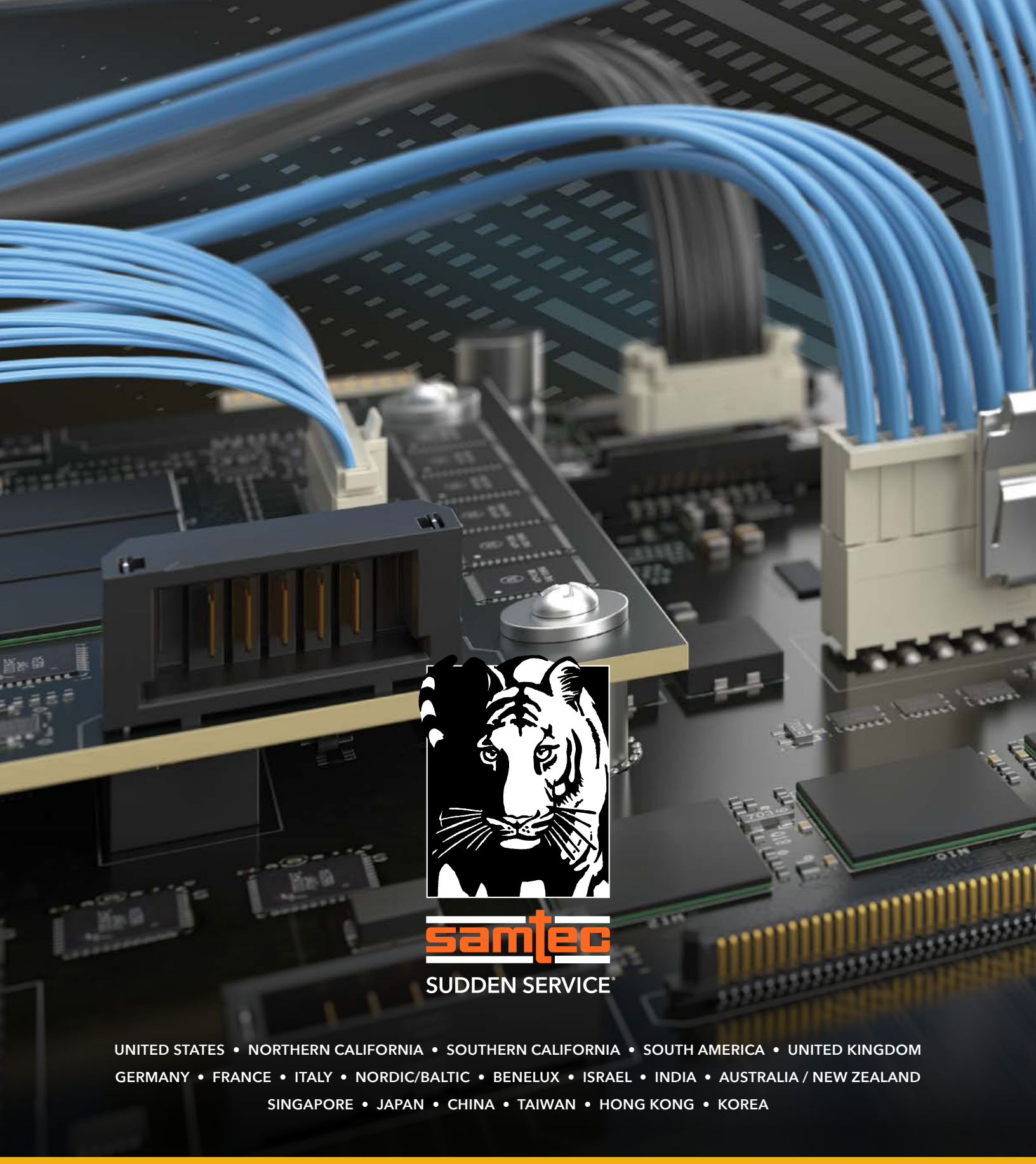
R&D, design, development and support of micro optical engines and assemblies

Full channel signal and power integrity analysis, testing and validation services

RF interconnect design and development expertise, with testing to 65 GHz

Advanced IC packaging design, support and manufacturing capabilities

samtec.com/**tech-centers**



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