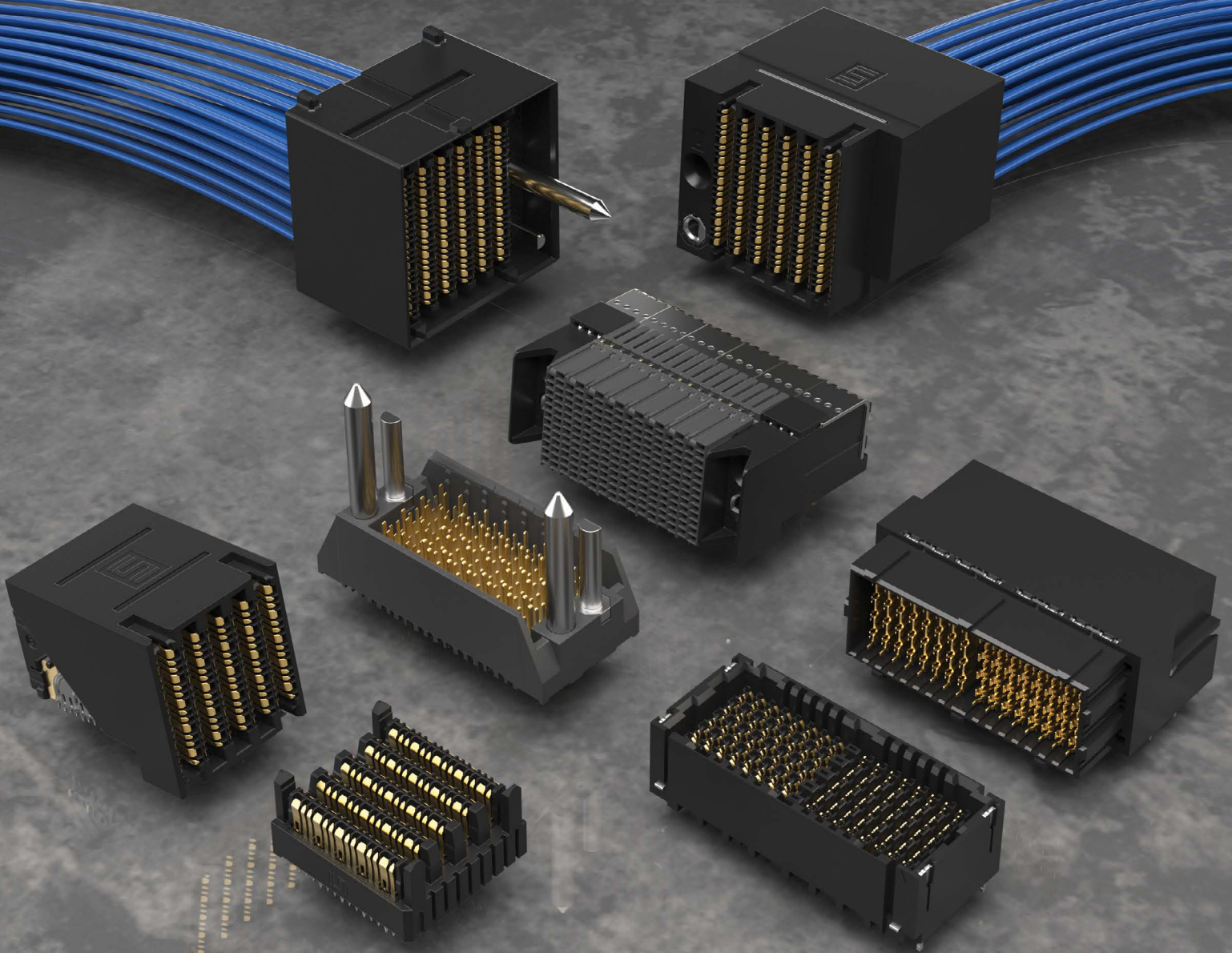
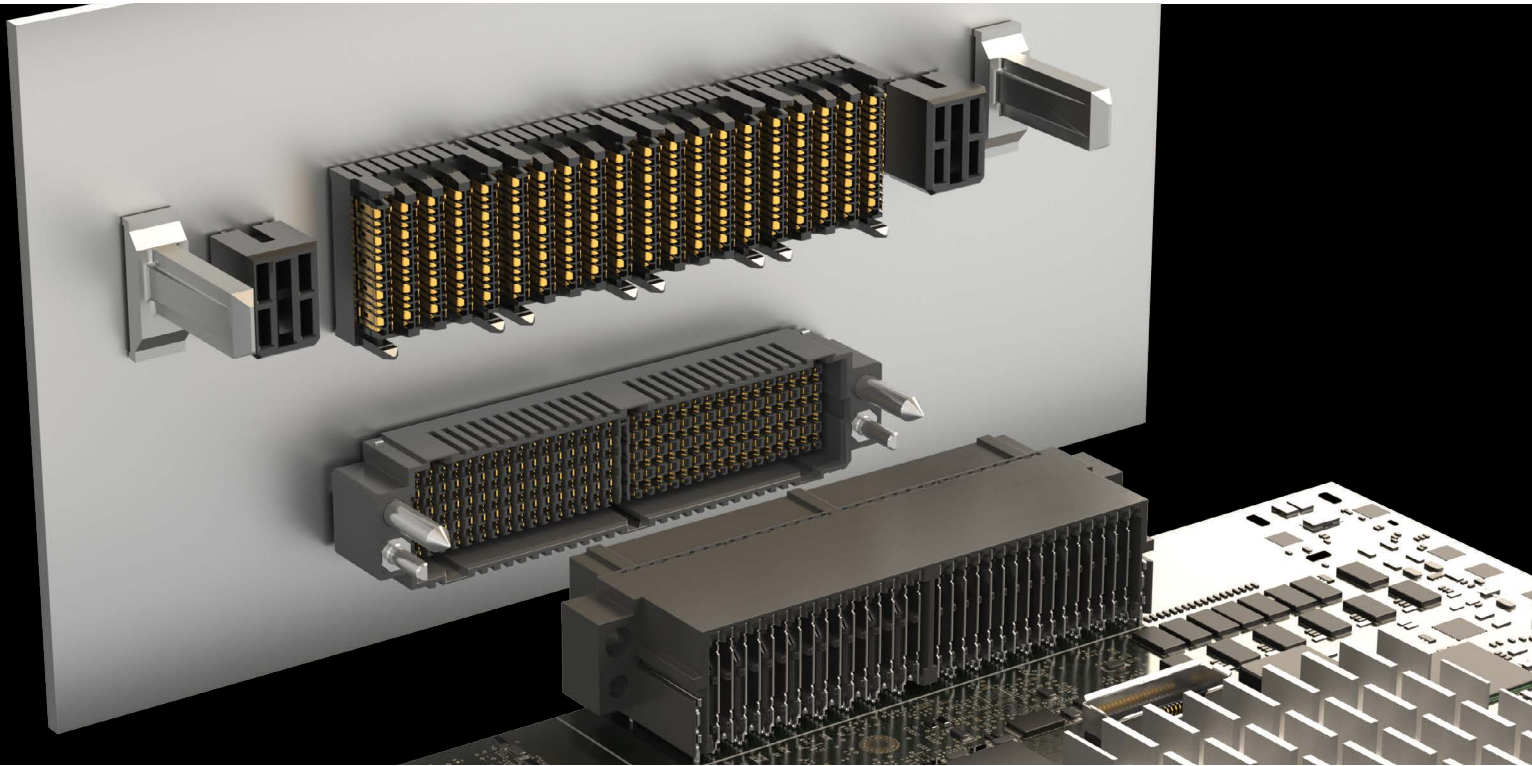




# HIGH-SPEED BACKPLANE SYSTEMS



# HIGH-SPEED BACKPLANE SYSTEMS



## NOVARAY® MICRO RUGGED BACKPLANE

- Ultra high-density with up to 128 differential pairs in a single connector
- Offset footprint for optimal signal integrity
- Reliable two points of contact for stub free mating
- Configurable signal banks for design flexibility
- NovaRay® wafer design eliminates intra-pair skew while large continuous ground blades between and surrounding the differential pairs removes resonances
- Optional guidance and keying supports blind mate applications

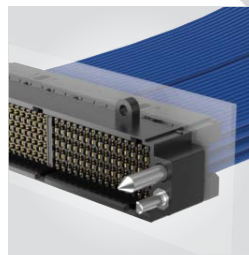
NOVARAY®

PAM4  
112  
Gbps

NVBF/NVBM-RA



Precision insert molded contact system with 2.50 mm wipe



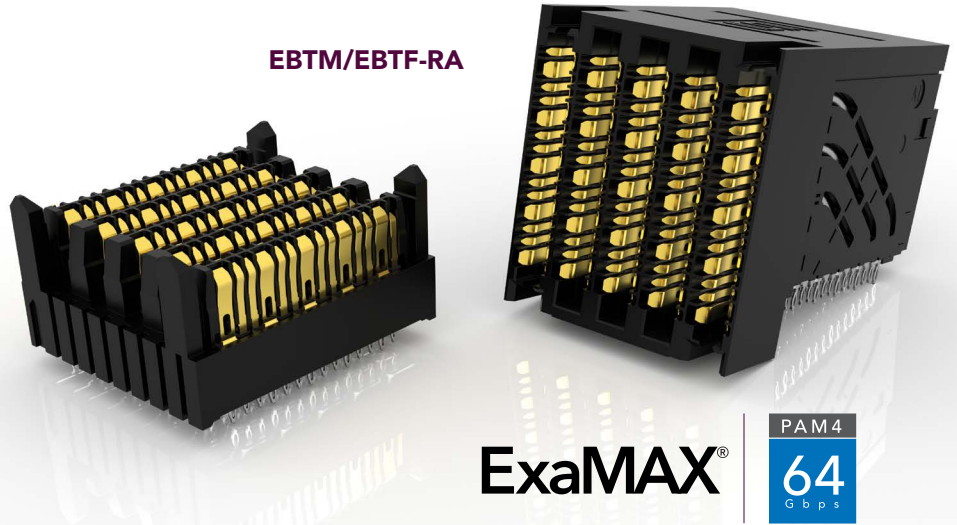
IN DEVELOPMENT:  
Flyover® cable assembly  
for extended signal reach



## EXAMAX® HIGH-SPEED BACKPLANE

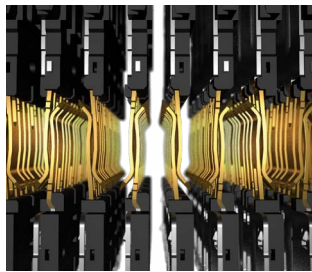
- Meets industry specifications such as PCI Express®, Intel OPI and VPI, SAS, SATA, Fibre Channel, InfiniBand™ and Ethernet
- PCIe® 6.0/CXL® 3.1 capable
- Exceeds OIF CEI-28G-LR specification for 28 Gbps standards
- 24 - 72 pair designs (4 and 6 pairs; 6, 8, 10 and 12 columns)
- Wafer design increases isolation for reduced crosstalk
- Press-fit tails provide a reliable electrical connection
- Add-on power and discrete guidance modules available
- Cable assemblies available

EBTM/EBTF-RA

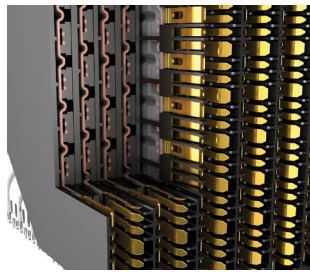


ExaMAX®

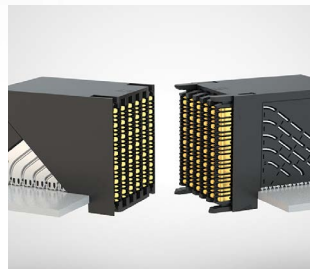
PAM 4  
64  
Gbps



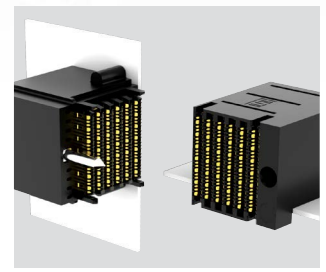
Two reliable points of contact



Staggered differential pair design with an embossed ground plane



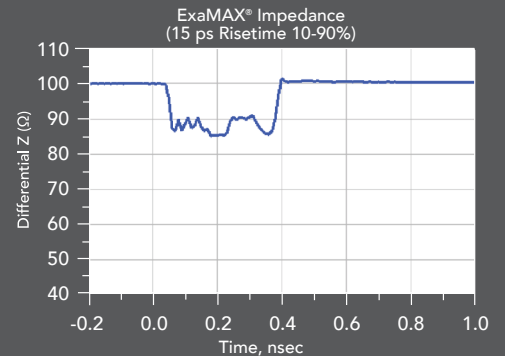
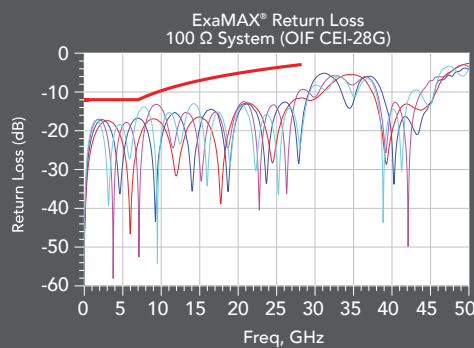
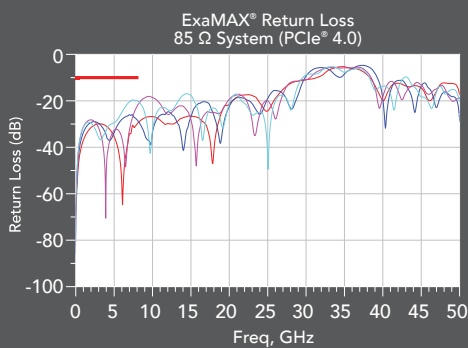
Coplanar available to bypass the midplane (EBTM-RA)



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

### PERFORMANCE CHARTS

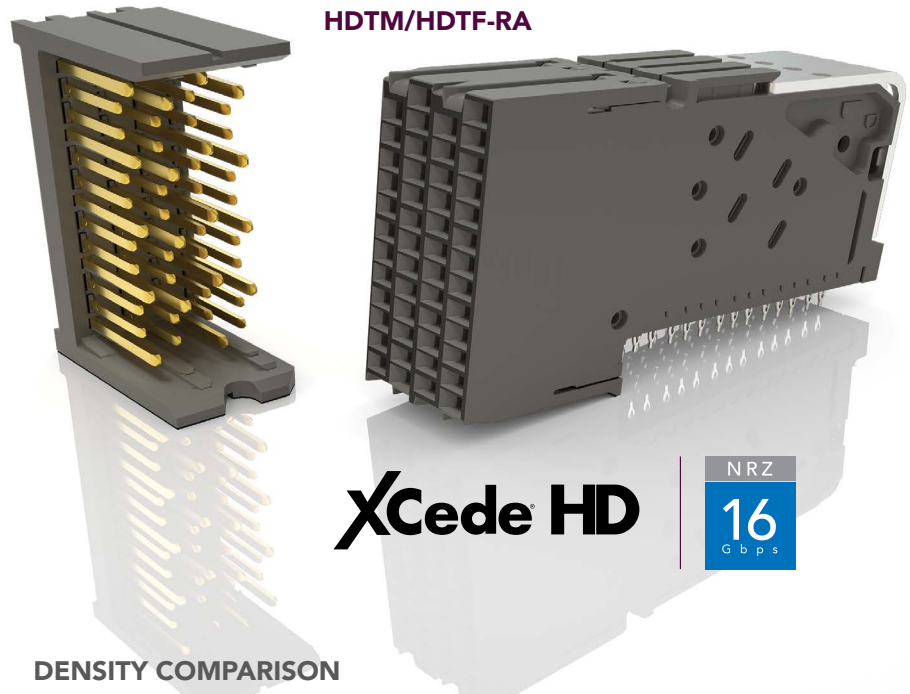
ExaMAX® is engineered for 92 Ω impedance to address both 85 Ω and 100 Ω applications



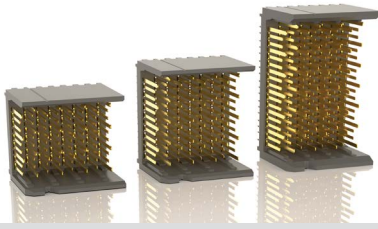


## XCEDE® HD HIGH-DENSITY BACKPLANE

- 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 side walls available
- 85  $\Omega$  and 100  $\Omega$  options
- Combine any configuration of modules to create one integrated receptacle (BSP Series); corresponding terminal modules are individually mounted to the backplane
- Press-fit extraction and insertion tools available; visit [samtec.com/tooling](http://samtec.com/tooling)

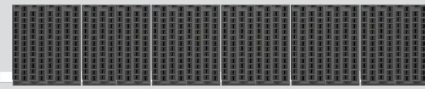


### SMALL FORM FACTOR



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

### DENSITY COMPARISON



#### Xcede® HD

Up to 84 pairs  
per linear inch

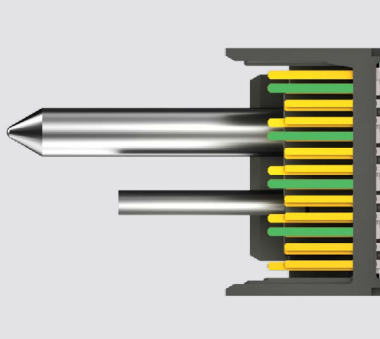


#### Traditional Backplane

Up to 76 pairs  
per linear inch

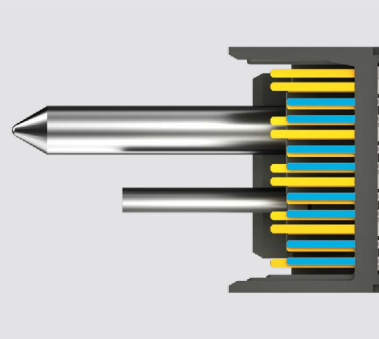
(Both shown with six 4-pair, 8 column receptacles)

### SIGNAL/GROUND PIN STAGING



#### Ground Pins

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



#### Signal Pins

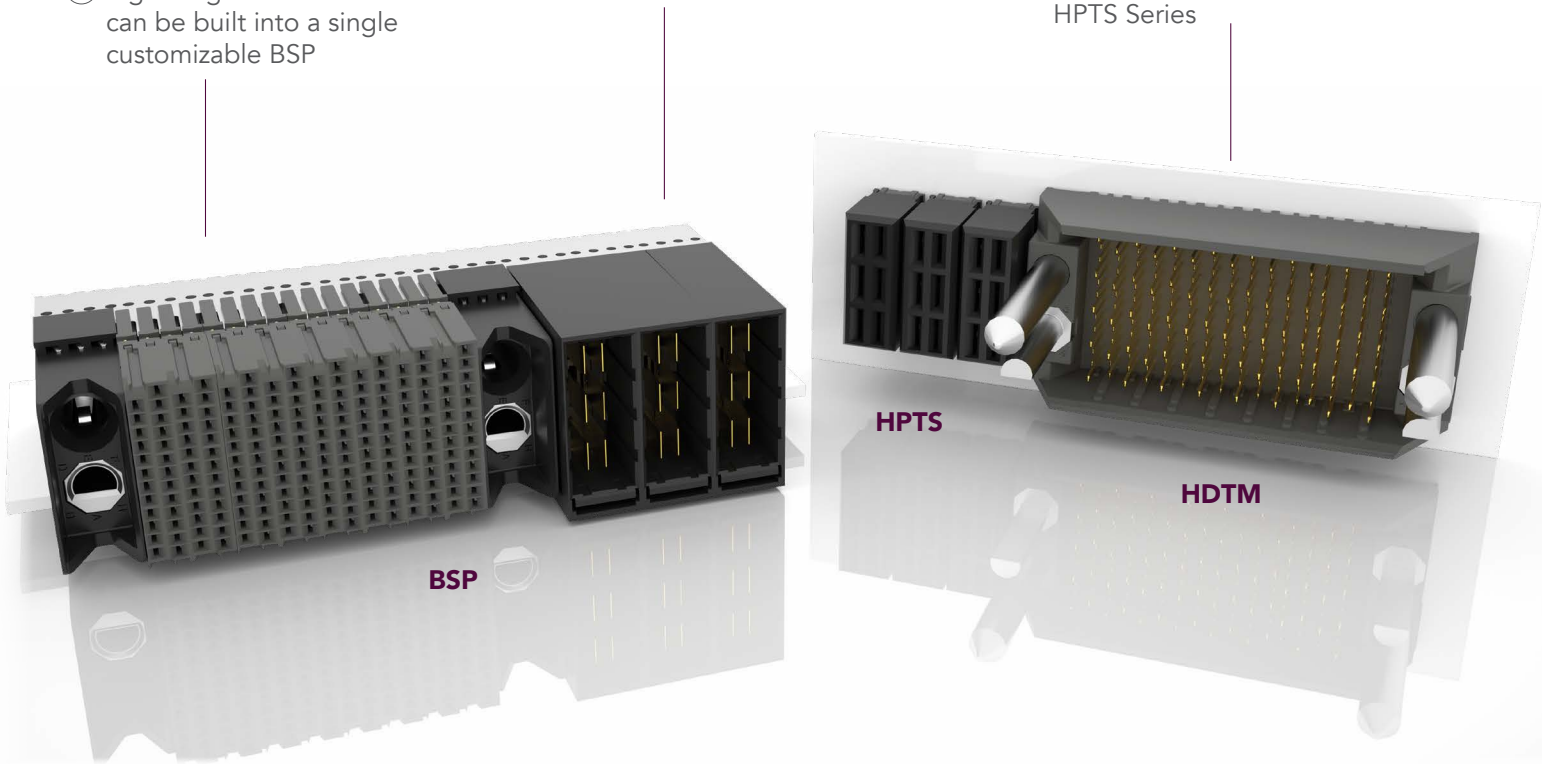
Signal pin pairs achieve up  
to 3.00 mm contact wipe  
for a reliable connection

## 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](mailto:HSBP@samtec.com) for more information about building a full XCede® HD solution.

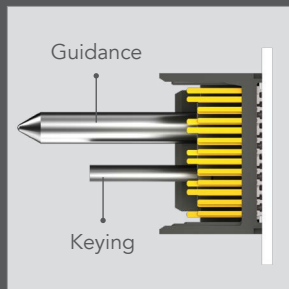
### How to build a full solution:

- 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

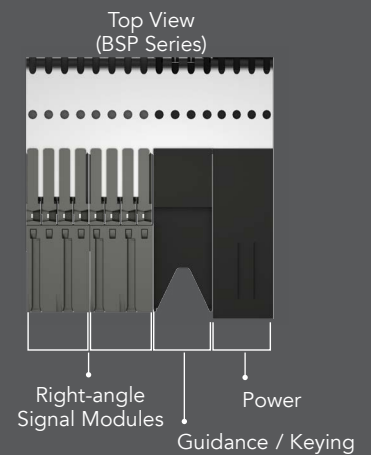
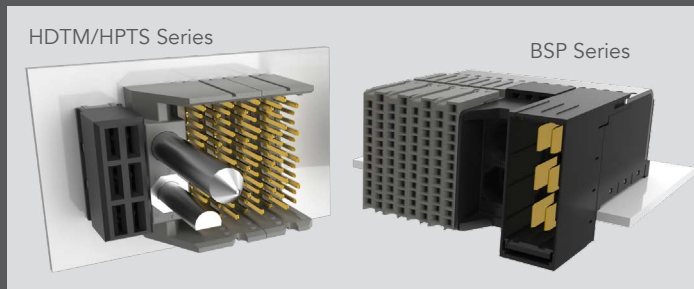


XCede® is a registered trademark of Amphenol Corporation.

### PRODUCT BREAKDOWN (BSP Custom Configuration Shown)



Side View  
(HDTM/HPTS Series)



Top View  
(BSP Series)

Right-angle  
Signal Modules

Power  
Guidance / Keying





## EXAMAX® BACKPLANE CABLE ASSEMBLIES

- Utilizes Samtec's Eye Speed® ultra low skew twinax cable technology for improved signal integrity, increased flexibility and routability
- PCIe® 6.0/CXL® 3.1 capable
- Highly customizable with modular flexibility
- Reduce costs due to lower layer counts
- 4 and 6 pairs; 4-16 columns
- 30 and 34 AWG
- Multiple end 2 options available
- Integrated guidance and keying options
- Cable-to-DMO (Direct Mate Orthogonal) available

**ExaMAX®**

PAM4  
**112**  
Gbps

**EBTM/  
EBCL**



**EBCF**

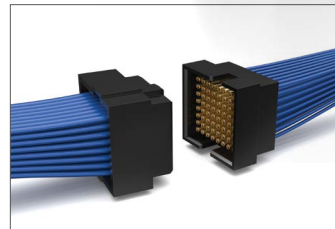
### ALSO AVAILABLE



Roadmap: 8 pairs for greater design flexibility



ExaMAX® I/O cable systems also available (EBCE/EBTC)

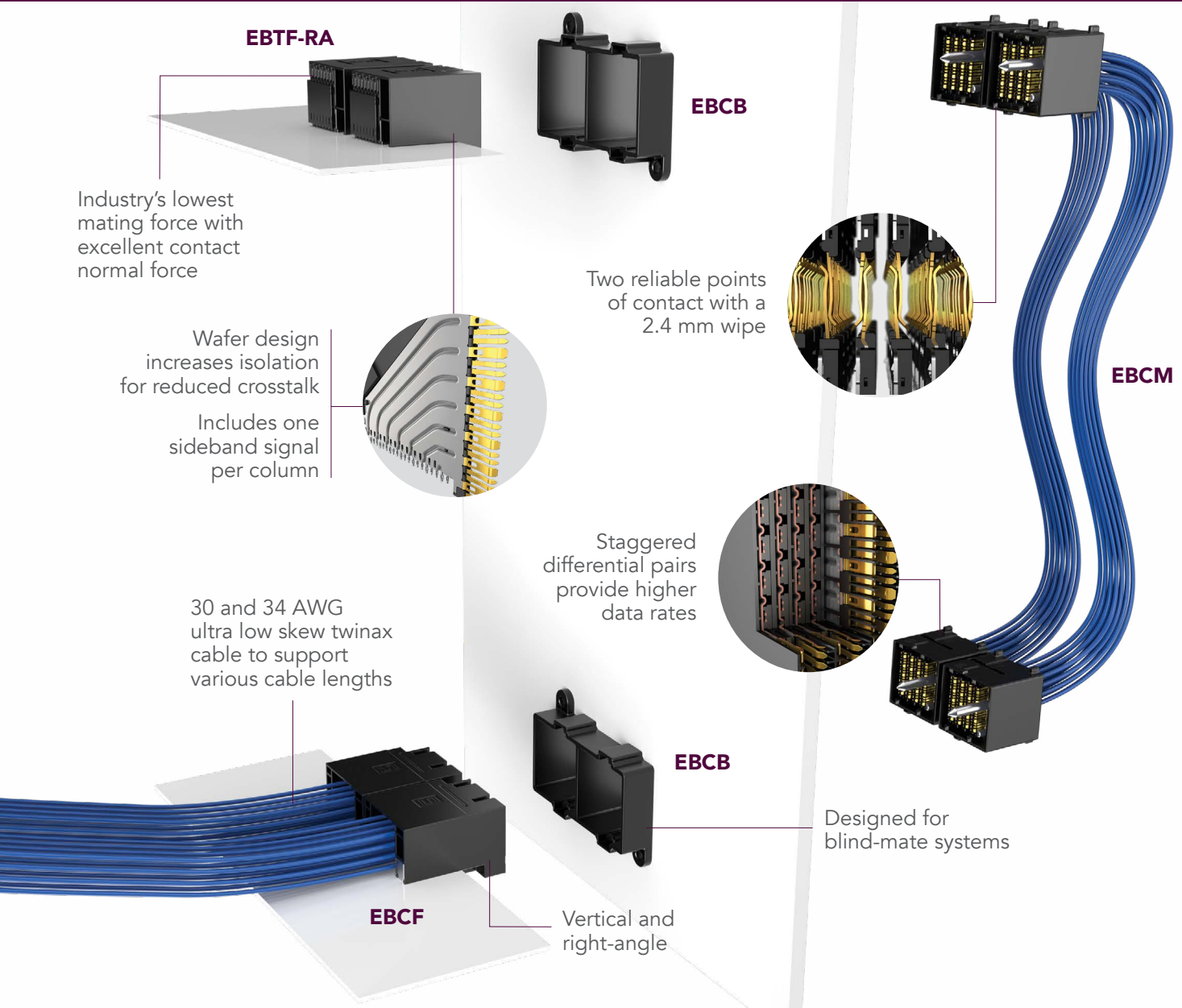


In Development: 224 Gbps PAM4 SiFly™ Backplane with Eye Speed® AIR™ hyper low skew twinax

### HIGH-DENSITY APPLICATION



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

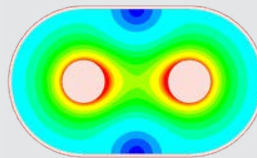


## ULTRA LOW SKEW TWINAX CABLE

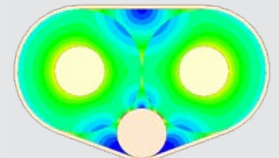
Samtec's Eye Speed® co-extruded twinax cable technology eliminates the performance limitations and inconsistencies of individually extruded dielectric twinax cabling, improving signal integrity, bandwidth and reach for high-performance system architectures.

- 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<sup>®</sup>  
SPEED  
CABLE**



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



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



**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

[samtec.com/backplane](https://samtec.com/backplane)