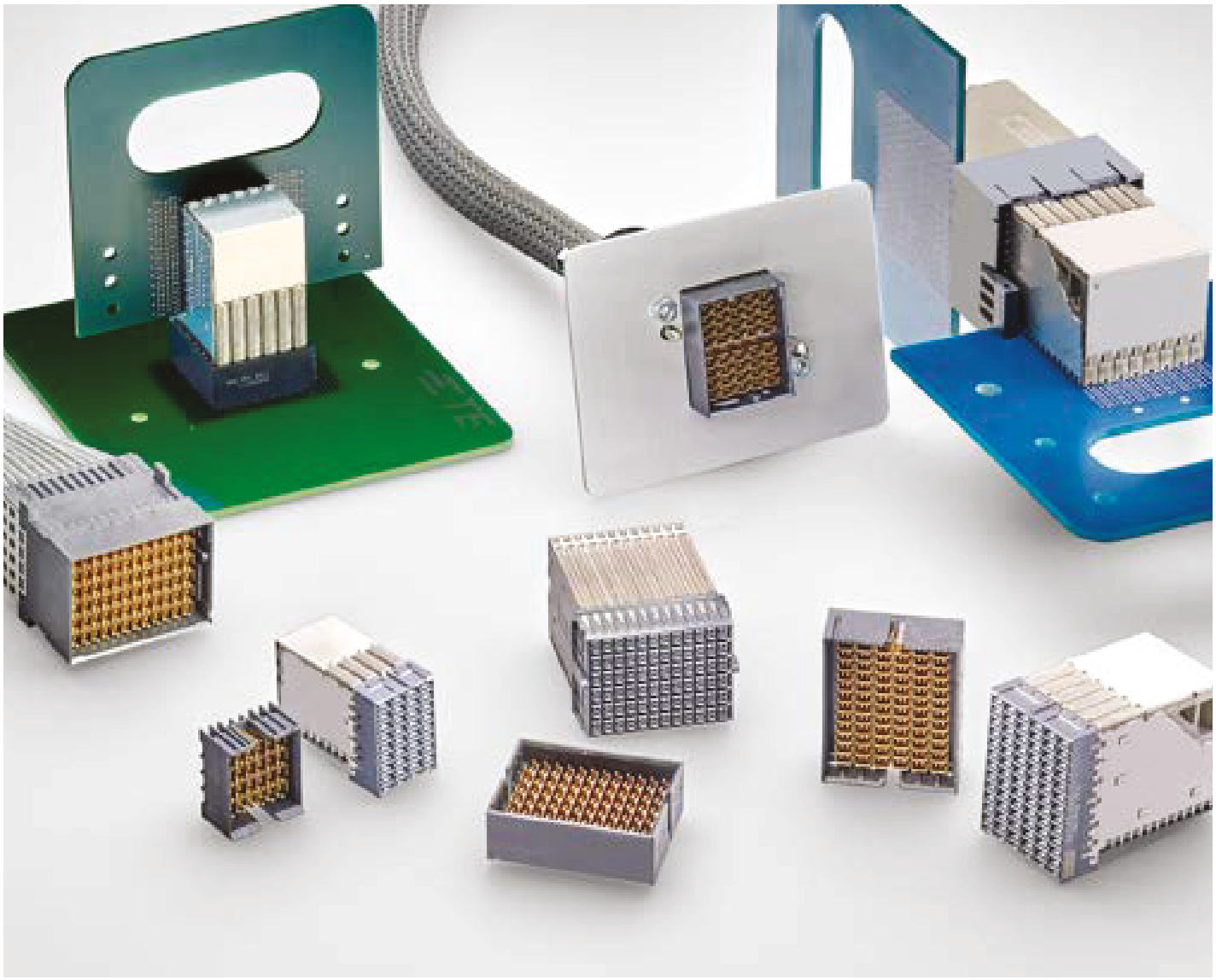


# HIGH-SPEED BACKPLANE INTERCONNECT SOLUTIONS

## QUICK REFERENCE GUIDE

The emergence of faster data rates and decreasing signal rise times requires better performing, high-speed connectors. TE Connectivity's (TE) broad portfolio of high speed backplane connectors provides system designers the flexibility they require to solve their specific performance challenges.

## INDUSTRY APPLICATIONS

- **Servers**
  - Blade Servers, Rack Mount and Mainframe Stackable, Carrier Grade, Core, Edge, and Metro Ethernet
- **Switches**
  - Stackable Switches, Carrier Grade, Core, Edge, and Metro Ethernet
- **Routers**
  - Edge Routers, Core, Enterprise Class, Carrier Ethernet, BRAS, and Multi-Service Edge

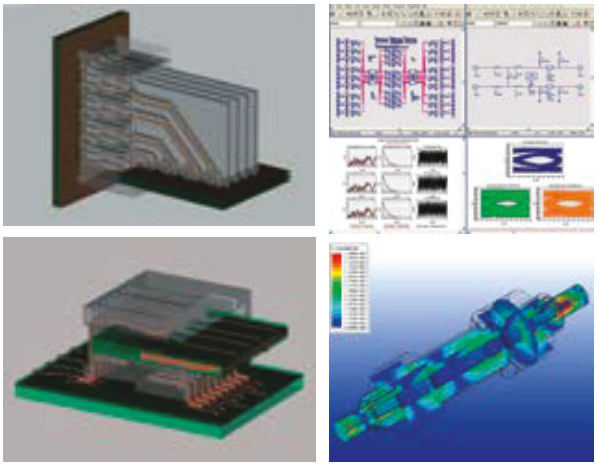
## SIGNAL INTEGRITY AT TE

TE Connectivity develops high-performance connectors by applying system-level signal integrity design expertise to each high-speed product. Our modeling and simulation skills are highly developed with global expertise in the U.S., Europe, and Asia. Our global presence places simulation, modeling, and system layout experts near to the customer.

## MODELING AND SIMULATION

At TE the design process starts with signal integrity. Signal integrity engineers use sophisticated 3D tools to provide accurate connector and footprint via pattern performance prior to production. TE Connectivity has the tools and the expertise to get the right solution for our customers.

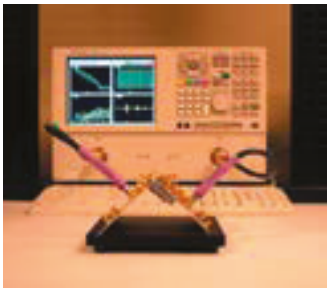
- Ansys HFSS and CST Microwave Studio Full-wave 3D tools
- Both connector and footprint via pattern(s) analyzed before production
- S-parameter and SPICE analysis
- Sophisticated ADS and MATLAB system analysis



## TEST CAPABILITY

With measurement capabilities beyond 12.5 Gbps and 50 GHz, TE can characterize and provide detailed measurements for its products. Cutting-edge measurement calibration techniques and board design enable accurate de-embedding of test fixtures. TE has also teamed with numerous silicon companies to provide active device measurements that can be invaluable to assure the successful implementation of a design.

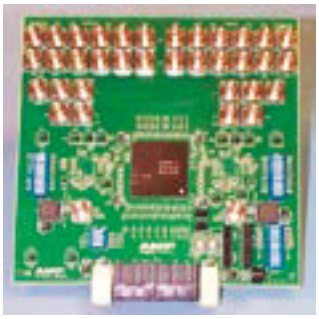
- Advanced calibration techniques de-embed fixture
- Frequency domain to 50 GHz
- Time domain eye pattern/BERT to 12.5 Gbps
- Active silicon testing – multiple vendors 2 – 10+ Gbps
- Both system and “connector-only” boards

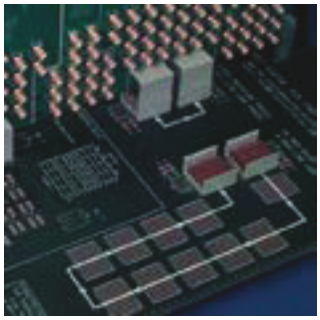


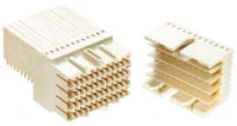
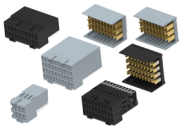
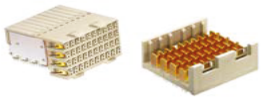
## CUSTOMER SUPPORT AND TOOLS

From test boards to simulation models, TE provides a library of tools that help you successfully implement your system. Requests can be easily made through our signal integrity website: www.te.com/documentation/electrical-models

- Ansys HFSS and CST Microwave Studio Full-wave 3D tools
- Both connector and footprint via pattern(s) analyzed before production
- S-parameter and SPICE analysis
- Sophisticated ADS and MATLAB system analysis
- Measurement based S-parameter connector models (64+ ports)
- Modeling based S-parameter connector models (64+ ports)
- Footprint via pattern S-parameter and SPICE models
- SPICE connector models
- Connector evaluation test boards
- System test boards

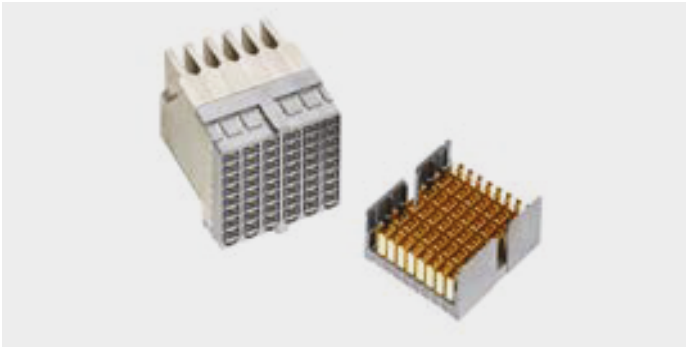




| | DATA RATE | | | | | |
|---|---|---|---|---|---|---|
| | 3-6 GBPS | 6-10 GBPS | 10-15 GBPS | 15-20 GBPS | 20-25 GBPS | 25+ GBPS |
|  | STRADA Whisper Connector | | | | | |
|  | IMPACT Connector | | | | | |
|  | Z-PACK TinMan 100 Ohm and 85 Ohm Connector | | | | | |
|  | Z-PACK Slim UHD Common Speed Connector | Z-PACK Slim UHD High Speed Connector | | | | |
|  | Z-PACK HM-ZD Connector | | | Z-PACK HM-ZD+ Connector | HM-eZD+ (20-25 Gbps) | HM-eZD++ (up to 56 Gbps) |
|  | MULTIGIG RT Connector | | | | | |
|  | Z-PACK H53 Connector | | | | | |

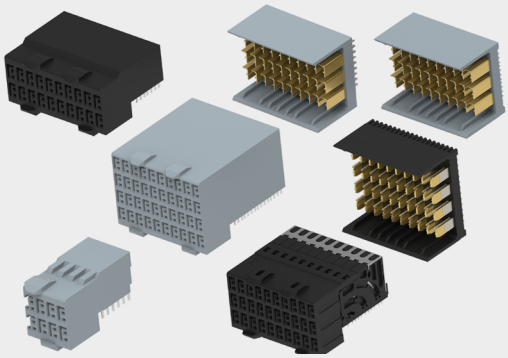
## STRADA WHISPER CONNECTORS

- Up to 112 Gbps performance
- Density up to 20 differential pairs per cm (52 DP per in)
- Available in 4, 6, and 8 pairs/column, supporting card-pitch of 16.4mm (.64”), 20.4mm (.8”), and 25.4mm (1”) respectively
- Website: www.te.com/products/stradawhisper



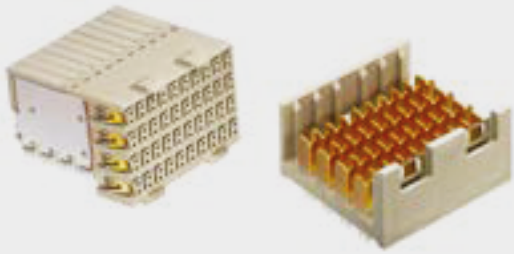
## Z-PACK HM-ZD AND HM-eZD CONNECTORS

- Headers and receptacles of different data rate versions are compatible with each other
- Compliant with Advanced Telecommunications computing Architecture (ATCA) and provides a variety of traditional and co-planar options, with density up to 40DP/inch
- Integrated pre-alignment features and polarization built into a robust mating design, with robust ground shields promoting mechanical durability
- The latest Z-PACK HM-eZD++ connectors support data rates of up to 56 Gbps, and better electrical performance
- EZD++ connectors have smaller plated thru-hole size (minimum 0.31mm for signal pin, 0.36mm for ground pin), allows for better design flexibility, and better high frequency performance.
- Website: https://www.te.com/en/plp/hm-zd/X2826.html



## Z-PACK HS3 CONNECTORS

- Up to 6.25 Gbps performance
- Density up to 40 high speed signal lines (20 DP) per cm board space, in 25.4mm (1”) slot-pitch
- Available in 2 versions: six row and ten row, respectively fitting 20.32mm (0.8”) and 25.40mm (1”) slot-pitches
- High-speed connector designed for both single ended and differential signals
- Website: http://hs3.te.com

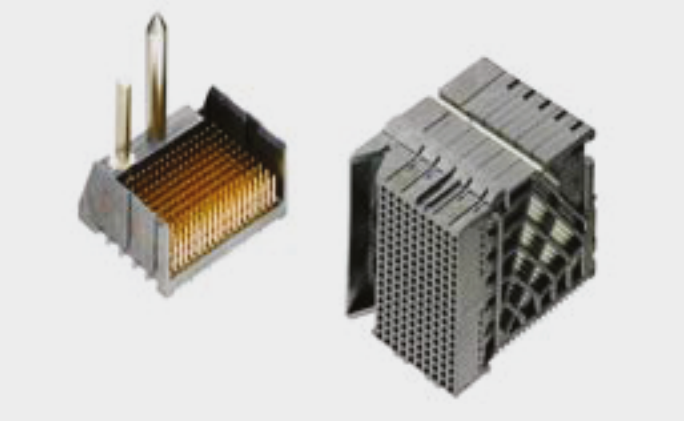


## MULTIGIG RT CONNECTORS

- Up to 6.25 Gbps performance
- Density available in 2 versions per tier: 0.8” and 1”, respectively fitting 20.32mm (0.8”) and 25.4mm (1”) slot-pitches
- Backplane connector system specified in VME standards: VXS (VITA 41) & VPX (VITA 46)
- Pinless backplane connector utilizes a PCB construction which allows the connector system to have extreme flexibility. 100 Ohm differential, 50 Ohm single ended, open pin field, and power wafers can be mixed within one connector module
- Website: http://www.multigigrt.com

## IMPACT CONNECTORS

- up to 20 Gbps performance
- Density up to 32 high speed differential pairs per cm (80 DP per inch)
- Modular system: 2, 3, 4, 5, 6 pair/ column available. 6 through 20 columns offered in increments of 2 columns
- Website: www.te.com/products/Impact



## Z-PACK TinMan 100 OHM AND 85 OHM CONNECTORS

- Up to 12.5 Gbps performance in a cost-effective design
- Density up to  32 high speed differential pairs per cm (80 DP per inch); 6 through 18 columns available
- Modular system: 3, 4, 5, 6, and 8-16 pairs/column, respectively fitting 16.25mm (.625”), 20.32mm (0.8”) and 25.4mm (1”) slot-pitch
- 85 ohm impedance version for QPCIe and Intel QPI standards, and other 85 Ohm system applications
- Multiple configurations available: Traditional, Co-Planar, and Mezzanine
- Website: http://www.te.com/ZPackTinMan

## Z-PACK SLIM UHD CONNECTORS

- 2 versions available: CS (Common Speed) 3.5 Gbps and HS (High Speed) 12.5 Gb/s with scalability to 20 Gb/s
- High density - 55 signal lines per $cm^2$/70 pairs per inch (8 contacts per column, 12 columns per module)
- Low profile - 7.85mm height
- Flexible pin assignments
- Accompanying 5-position power connector available for additional options
- Website: http://www.te.com/products/zpackuhd

## TE TECHNICAL SUPPORT CENTER

| | |
|---|---|
| USA | +1 (800) 522-6752 |
| Canada | +1 (905) 475-6222 |
| Mexico | +52 (0) 55-1106-0800 |
| Latin/S. America | +54 (0) 11-4733-2200 |
| Germany | +49 (0) 6251-133-1999 |
| UK | +44 (0) 800-267666 |
| France | +33 (0) 1-3420-8686 |
| Netherlands | +31 (0) 73-6246-999 |
| China | +86 (0) 400-820-6015 |

Part numbers in this brochure are RoHS Compliant*, unless marked otherwise.

## Connect With Us

We make it easy to connect with our experts and are ready to provide all the support you need.
Visit **te.com/support** to chat with a Product Information Specialist.

## te.com



Published 11-24