

# SLIVER INTERNAL CABLED INTERCONNECT SOLUTION

## Connectors and Cable Assemblies

Due to the latest high speed demands in networking equipment, TE Connectivity (TE) has developed a portfolio of Sliver internal cabled and card edge interconnects, including versions for SFF-TA-1002 that is one of the most flexible and highest performing solutions in the market. Sliver products can be used across many applications, data rates and protocols including PCI Express, SAS and Ethernet.

With a proven 0.6mm contact pitch, Sliver products are high density, allowing you to fit more inside the enclosure while still enabling ease of routing. The contact leadframes are highly modular, enabling an increased number of lanes in a connector in a short lead time. TE provides a highly robust metal housing design on the cable connector with an active latch in the plug, providing additional connection security.

This new technology simplifies design and helps lower overall costs by eliminating the need for re-timers and more costly lower-loss PCB materials while reaching speeds up to 56 Gbps with the use of TE high speed cable.

### Markets

- Data center & Networking Equipment
  - Servers
  - Switches
  - Routers
  - High Performance Computing (HPC)
  - Storage Devices
  - Wireless Base Stations and Radios

### Applications

- Internal Cabled Solutions
  - Chip to Chip
  - Chip to I/O
  - Chip to Backplane
  - Board to Board
- PCB Card Edge (BTB) solutions
- Supports Ethernet, PCIe, SAS, SATA, InfiniBand, and other custom protocols

# Sliver Internal Cabled Interconnect Solution

## Ultimate flexibility in applications, data rates and protocols

Vertical and right angle connector and cable solutions provide a flexible solution set in addition to allowing for both cabled and card edge interconnect designs.

With a flexible pinout arrangement, multiple mounting and mating options, and the support of present and future data rate protocols, the Sliver interconnect solution provides a variety of configuration options to address your application needs.

## Free up design space

The 0.6mm contact pitch is up to 30% denser than most existing solutions, allowing you to fit more inside the box.

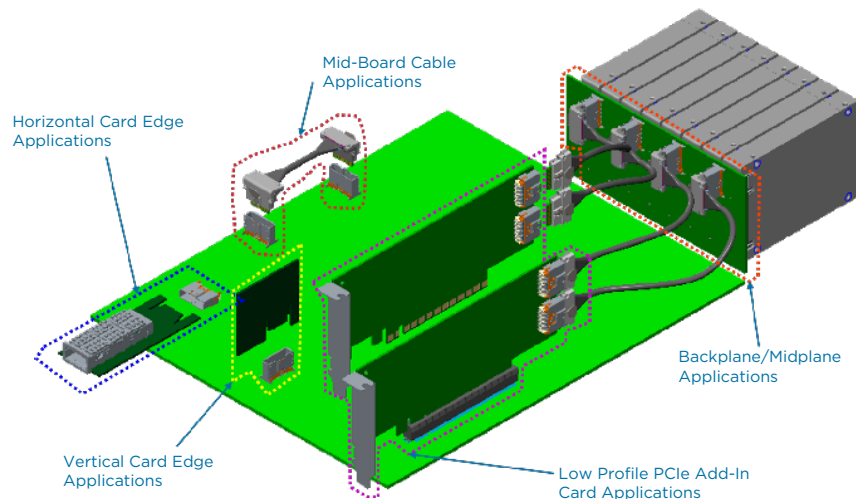
## Reliable connections

The Sliver interconnect solution provides a robust connector housing design while an active latch provides additional connection security for data critical applications.

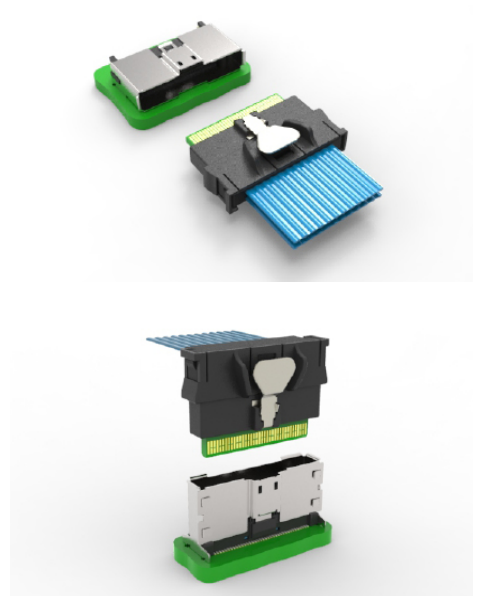
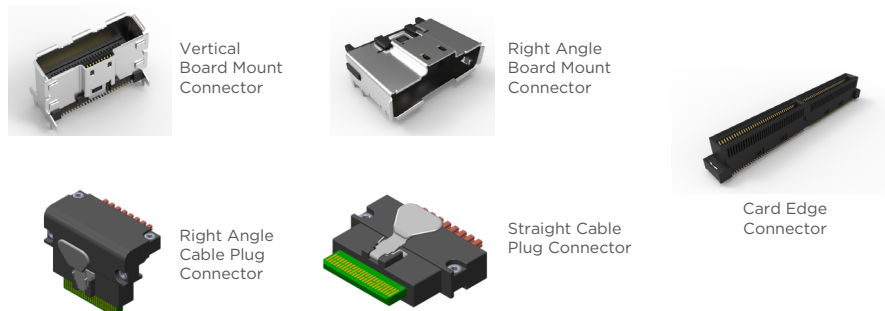
## Lower design costs

Sliver connector and cable assemblies can lower overall costs by eliminating the need for re-timers and more costly lower loss PCB materials.

## Application design flexibility



TE's Sliver interconnect solution consists of:



## Key Features

- 0.6mm pitch SMT connector design includes robust metal housing
- 12G and 25G high speed, low-loss 30/33AWG cable
- Vertical, right angle, lateral and card edge configurations with active latch
- Supports 85 and 100 ohm impedance applications
- Flexible pinout arrangement allows for mix of differential signal pairs and low speed single-ended sidebands
- Flexible mounting and mating arrangements:
  - Cabled interconnects
  - Card edge interconnects
  - Vertical to right-angle, vertical to straight, right-angle to right-angle, and right-angle to straight receptacle-to-plug mating
- Platform developed to be scalable in x4/x8 increments
  - Sliver: 50p (x8), 74p (x12), 124p (x20)
  - Sliver for SFF-TA-1002: 28p (x4), 56p (x4), 84p (x8), 140p (x16)
- Supports present and future bandwidth needs without requiring requalification and redesign

# Sliver Internal Cabled Interconnect Solution

## Part Number Details

### Connectors

Part Description	TE Part Numbers		
	50 Position	74 Position	124 Position
Vertical PCB Connector	<a href="#">2292096-1</a>	<a href="#">2324787-1</a>	TBD
Right Angle PCB Connector	<a href="#">2292055-1</a>	<a href="#">2292069-1</a>	<a href="#">2323321-1</a>
<b>148 Position</b>			
Vertical PCB Card Edge Connector	<a href="#">2297117-2</a>		
Right Angle PCB Card Edge Connector	<a href="#">2331498-1</a>		

### Plug Kits

Part Description	TE Part Numbers		
	50 Position	74 Position	124 Position
Straight Plug Kit	<a href="#">2317815-1</a>	<a href="#">2317823-1</a>	<a href="#">2339107-1</a>

### Cable Assemblies

Part Description	Data Rate	Impedance	Bulk Cable	TE Part Numbers					
				50 Position		74 Position		124 Position	
				0.5 Meter	1 Meter	0.5 Meter	1 Meter	0.5 Meter	1 Meter
Straight Cable Plug	25G	85	Discrete pairs	<a href="#">2821742-1</a>	<a href="#">2821742-2</a>	<a href="#">2821376-1</a>	<a href="#">2821376-2</a>	-	-
Right Angle Plug	25G	85	Discrete pairs	<a href="#">2821743-1</a>	<a href="#">2821743-2</a>	<a href="#">2821745-1</a>	<a href="#">2821745-2</a>	-	-
Straight-Right Angle Plugs	25G	85	Discrete pairs	<a href="#">2821744-1</a>	<a href="#">2821744-2</a>	<a href="#">2821746-1</a>	<a href="#">2821746-2</a>	-	-
Straight Cable Plug	25G	100	Discrete pairs	<a href="#">2821750-1</a>	<a href="#">2821750-2</a>	<a href="#">2821756-1</a>	<a href="#">2821756-2</a>	-	-
Right Angle Plug	25G	100	Discrete pairs	<a href="#">2821751-1</a>	<a href="#">2821751-2</a>	<a href="#">2821757-1</a>	<a href="#">2821757-2</a>	-	-
Straight-Right Angle Plugs	25G	100	Discrete pairs	<a href="#">2821752-1</a>	<a href="#">2821752-2</a>	<a href="#">2821758-1</a>	<a href="#">2821758-2</a>	-	-
Straight Cable Plug	12G	85	Ribbon	<a href="#">2820397-1</a>	<a href="#">2820397-2</a>	<a href="#">2820396-1</a>	<a href="#">2820396-2</a>	-	-
Right Angle Plug	12G	85	Ribbon	<a href="#">2820399-1</a>	<a href="#">2820399-2</a>	<a href="#">2821385-1</a>	<a href="#">2821385-2</a>	-	-
Straight-Right Angle Plugs*	12G	85	Ribbon	<a href="#">2821638-1</a>	<a href="#">2821638-2</a>	<a href="#">2821639-1</a>	<a href="#">2821639-2</a>	-	-
Straight Cable Plug	12G	100	Ribbon	<a href="#">2821747-1</a>	<a href="#">2821747-2</a>	<a href="#">2821753-1</a>	<a href="#">2821753-2</a>	-	-
Right Angle Plug	12G	100	Ribbon	<a href="#">2821748-1</a>	<a href="#">2821748-2</a>	<a href="#">2821754-1</a>	<a href="#">2821754-2</a>	-	-
Straight-Right Angle Plugs	12G	100	Ribbon	<a href="#">2821749-1</a>	<a href="#">2821749-2</a>	<a href="#">2821755-1</a>	<a href="#">2821755-2</a>	-	-
Straight Cable Plug	12G	85	Discrete pairs	-	-	-	-	<a href="#">2324305-1</a>	<a href="#">2324305-2</a>

\*Discrete pairs are optional for 12G platform

Contact your TE representative about custom cable assembly configurations.

## Sliver Interconnects for SFF-TA-1002

### NEW Sliver interconnect portfolio for SFF-TA-1002

The SFF-TA-1002 standard defines vertical, right angle, straddle mount and orthogonal connectors for servers and storage devices and has been adopted by several industry standards groups including COBO, Gen-Z, EDSFF and the Open Compute Project (OCP).

### Highest performing card edge connector for SFF-TA-1002

Our Sliver connectors have been adopted as the standard into SFF-TA-1002. The SFF-TA-1002 pinout supports EDSFF, PCIe, OCP NIC and other standards.

### Cable assemblies with push button and pull tab features

Sliver cable assemblies with push button and pull tab features can be connected with SFF-TA-1002 receptacles. The pull tab cable assemblies are able to easily unlatch plugs from receptacles in high-speed cabled interconnects applications where there is not enough space to allow a finger in. They are interoperable with SFF-TA-1002 standard receptacles and can meet PCIe Gen 5 signal integrity requirement. These products are available in straight and right angle mating options.

### Standardized designs

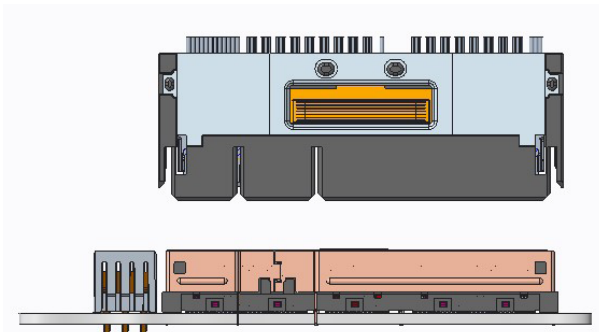
Enable easy design in and multi-sourcing by consolidating fragmented pinouts and speeds.

### Supports high speed and density for next-generation silicon

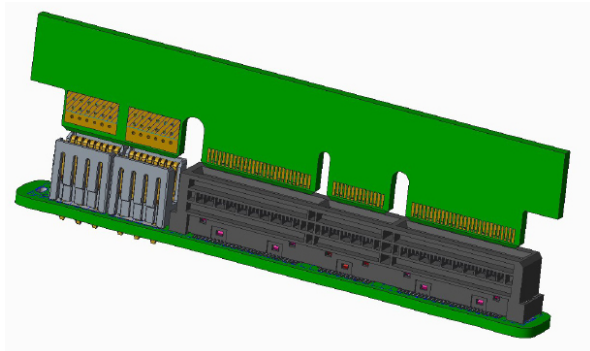
Sliver connectors for SFF-TA-1002 support high speeds through PCIe Gen 5, with a roadmap to 112G. They also support next-generation silicon PCIe lane counts where current products begin to max out.

### Sliver Power Module

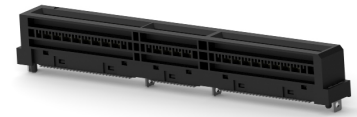
The Sliver power module can be used with any SFF-TA-1002 vertical connector. This follows the same interface as EDSFF and can be used with a card edge or cable receptacle.



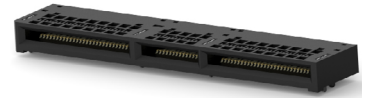
Sliver Power Module shown with Cabled Receptacle



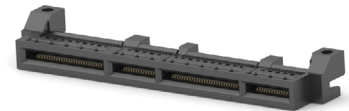
Sliver Power Module shown with Card Edge



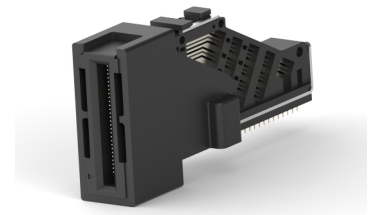
Sliver for SFF-TA-1002  
Vertical Connector



Sliver for SFF-TA-1002  
Right Angle Connector



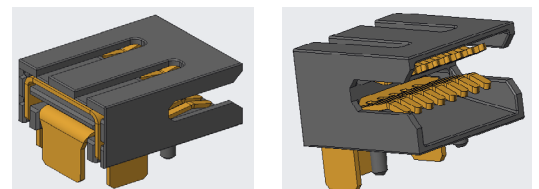
Sliver for SFF-TA-1002  
Straddle Mount Connector



Sliver for SFF-TA-1002  
Orthogonal Connector



Sliver Pull Tab Cable  
Assembly for SFF-TA-1002  
Receptacle



Right Angle Power Module

## Sliver Interconnects for SFF-TA-1002

### Part Number Details

#### Card Edge Receptacles

Part Description	Orientation	Standard	TE Part Numbers					
			56 Position	84 Position	140 Position	168 Position	196 Position	280 Position
Card Edge Receptacle	Vertical	SFF-TA-1002	<a href="#">2327679-1</a>	<a href="#">2327678-1</a>	<a href="#">2327677-1</a>	-	-	-
Card Edge Receptacle + Power	Vertical	N/A	-	-	<a href="#">2338718-1</a>	-	-	-
Card Edge Receptacle	Vertical	N/A	-	-	-	<a href="#">2333799-1</a>	-	-
Card Edge Receptacle	Vertical	SFF Derivative	-	-	-	-	2348234-1	2338461-1
Card Edge Receptacle	Right Angle	SFF-TA-1002	<a href="#">2327672-1</a>	<a href="#">2327671-1</a>	<a href="#">2327670-1</a>	<a href="#">2336568-1</a>	-	-
Card Edge Receptacle 1x1 SMT	Orthogonal	SFF-TA-1002, EDSFF	2329207-1	2329208-1	-	-	-	-
Card Edge Receptacle 1x4 SMT	Orthogonal	SFF-TA-1002, EDSFF	2339205-1	2339211-1	-	-	-	-
Card Edge Receptacle 1x1 PF	Orthogonal	SFF-TA-1002, EDSFF	<a href="#">2334227-1</a>	TBD	-	-	-	-
Card Edge Receptacle 1x4 PF	Orthogonal	SFF-TA-1002, EDSFF	2343147-1	TBD	-	-	-	-
Card Edge Receptacle, 1.57mm Host PCB	Straddle	SFF-TA-1002, OCP NIC 3.0	-	<a href="#">2340326-1</a>	<a href="#">2340324-1</a>	<a href="#">2340321-1</a>	-	-
Card Edge Receptacle, 1.57mm Host PCB	Straddle	N/A	<a href="#">2340331-1</a>	-	-	-	-	-
Card Edge Receptacle, 1.93mm Host PCB	Straddle	SFF-TA-1002, OCP NIC 3.0	-	-	<a href="#">1-2340324-2</a>	<a href="#">1-2340321-2</a>	-	-
Card Edge Receptacle, 2.36mm Host PCB	Straddle	SFF-TA-1002, OCP NIC 3.0	-	-	<a href="#">2-2340324-1</a>	<a href="#">2-2340321-1</a>	-	-

#### Receptacles for Cable Assemblies

Part Description	Orientation	Standard	TE Part Numbers			
			28 Position	56 Position	84 Position	140 Position
Receptacle for Cable Assembly	Vertical	SFF-TA-1002	-	<a href="#">2332141-1</a>	<a href="#">2331813-1</a>	<a href="#">2332139-1</a>
Receptacle for Cable Assembly	Right Angle	SFF-TA-1002	-	<a href="#">2332208-1</a>	<a href="#">2331814-1</a>	<a href="#">2332205-1</a>
Receptacle for Cable Assembly	Right Angle	SFF Derivative	<a href="#">2345808-1</a>	-	-	-

#### Card Edge Power

Part Description	Orientation	Standard	TE Part Numbers
50 AMP Card Edge Assembly - Open Wall	Vertical	SFF Derivative	<a href="#">2344604-1</a>
50 AMP Card Edge Assembly	Right Angle	SFF Derivative	<a href="#">2351970-1</a>
50 AMP Card Edge Assembly - One End Wall	Vertical	SFF Derivative	<a href="#">2345506-1</a>
4C High Power Card Edge Assembly	Vertical	SFF Derivative	<a href="#">2338718-1</a>

## Sliver Internal Cabled Interconnect Solution

### Sliver Cable Assemblies

### TE Part Numbers- Push Button Cable Assemblies

Part Description	Impedance	Wire Size	56 Position		84 Position		140 Position	
			0.5 Meter	1.0 Meter	0.5 Meter	1.0 Meter	0.5 Meter	1.0 Meter
Straight to Straight Cable	85	33 AWG	<a href="#">2340872-1</a>	<a href="#">2340872-2</a>	<a href="#">2340783-1</a>	<a href="#">2340783-2</a>	<a href="#">2340879-1</a>	<a href="#">2340879-2</a>
Straight to R/A Cable	85	33 AWG	<a href="#">2340873-1</a>	<a href="#">2340873-2</a>	<a href="#">2340930-1</a>	<a href="#">2340930-2</a>	<a href="#">2340880-1</a>	<a href="#">2340880-2</a>
R/A to R/A Cable	85	33 AWG	<a href="#">2340874-1</a>	<a href="#">2340874-2</a>	<a href="#">2340789-1</a>	<a href="#">2340789-2</a>	<a href="#">2340881-1</a>	<a href="#">2340881-2</a>
Lateral to Lateral Cable	85	33 AWG	<a href="#">2343284-1</a>	<a href="#">2343284-2</a>	<a href="#">2343286-1</a>	<a href="#">2343286-2</a>	<a href="#">2343288-1</a>	<a href="#">2343288-2</a>
Straight to Straight Cable	85	30 AWG	<a href="#">2340876-1</a>	<a href="#">2340876-2</a>	<a href="#">2340861-1</a>	<a href="#">2340861-2</a>	<a href="#">2340882-1</a>	<a href="#">2340882-2</a>
Straight to R/A Cable	85	30 AWG	<a href="#">2340877-1</a>	<a href="#">2340877-2</a>	<a href="#">2340863-1</a>	<a href="#">2340863-2</a>	<a href="#">2340884-1</a>	<a href="#">2340884-2</a>
R/A to R/A Cable	85	30 AWG	<a href="#">2340878-1</a>	<a href="#">2340878-2</a>	<a href="#">2340865-1</a>	<a href="#">2340865-2</a>	<a href="#">2340885-1</a>	<a href="#">2340885-2</a>
Straight to Straight Cable	100	33 AWG	<a href="#">2349831-1</a>	<a href="#">2349831-2</a>	<a href="#">2349835-1</a>	<a href="#">2349835-2</a>	<a href="#">2349841-1</a>	<a href="#">2349841-2</a>
Straight to R/A Cable	100	33 AWG	<a href="#">2349832-1</a>	<a href="#">2349832-2</a>	<a href="#">2349838-1</a>	<a href="#">2349838-2</a>	<a href="#">2349842-1</a>	<a href="#">2349842-2</a>
R/A to R/A Cable	100	33 AWG	<a href="#">2349833-1</a>	<a href="#">2349833-2</a>	<a href="#">2349839-1</a>	<a href="#">2349839-2</a>	<a href="#">2349843-1</a>	<a href="#">2349843-2</a>
Lateral to Lateral Cable	100	33 AWG	<a href="#">2349834-1</a>	<a href="#">2349834-2</a>	<a href="#">2349840-1</a>	<a href="#">2349840-2</a>	<a href="#">2349844-1</a>	<a href="#">2349844-2</a>

All cable assemblies can be used for SFF-TA-1002 receptacles.

### TE Part Numbers- Pull Tab Cable Assemblies

Part Description	Impedance	Wire Size	56 Position		84 Position		140 Position	
			0.5 Meter	1.0 Meter	0.5 Meter	1.0 Meter	0.5 Meter	1.0 Meter
Straight to Straight Cable	85	33 AWG	<a href="#">2361330-1</a>	<a href="#">2361330-2</a>	<a href="#">2361341-1</a>	<a href="#">2361341-2</a>	<a href="#">2361352-1</a>	<a href="#">2361352-2</a>
Straight to R/A Cable	85	33 AWG	<a href="#">2361332-1</a>	<a href="#">2361332-2</a>	<a href="#">2361343-1</a>	<a href="#">2361343-2</a>	<a href="#">2361354-1</a>	<a href="#">2361354-2</a>
R/A to R/A Cable	85	33 AWG	<a href="#">2361334-1</a>	<a href="#">2361334-2</a>	<a href="#">2361345-1</a>	<a href="#">2361345-2</a>	<a href="#">2361356-1</a>	<a href="#">2361356-2</a>
Lateral to Lateral Cable	85	33 AWG	<a href="#">2361336-1</a>	<a href="#">2361336-2</a>	<a href="#">2361347-1</a>	<a href="#">2361347-2</a>	<a href="#">2361358-1</a>	<a href="#">2361358-2</a>
Straight to Straight Cable	85	30 AWG	<a href="#">2361331-1</a>	<a href="#">2361331-2</a>	<a href="#">2361342-1</a>	<a href="#">2361342-2</a>	<a href="#">2361353-1</a>	<a href="#">2361353-2</a>
Straight to R/A Cable	85	30 AWG	<a href="#">2361333-1</a>	<a href="#">2361333-2</a>	<a href="#">2361344-1</a>	<a href="#">2361344-2</a>	<a href="#">2361355-1</a>	<a href="#">2361355-2</a>
R/A to R/A Cable	85	30 AWG	<a href="#">2361335-1</a>	<a href="#">2361335-2</a>	<a href="#">2361346-1</a>	<a href="#">2361346-2</a>	<a href="#">2361357-1</a>	<a href="#">2361357-2</a>
Straight to Straight Cable	100	33 AWG	<a href="#">2361337-1</a>	<a href="#">2361337-2</a>	<a href="#">2361348-1</a>	<a href="#">2361348-2</a>	<a href="#">2361359-1</a>	<a href="#">2361359-2</a>
Straight to R/A Cable	100	33 AWG	<a href="#">2361338-1</a>	<a href="#">2361338-2</a>	<a href="#">2361349-1</a>	<a href="#">2361349-2</a>	<a href="#">2361360-1</a>	<a href="#">2361360-2</a>
R/A to R/A Cable	100	33 AWG	<a href="#">2361339-1</a>	<a href="#">2361339-2</a>	<a href="#">2361350-1</a>	<a href="#">2361350-2</a>	<a href="#">2361361-1</a>	<a href="#">2361361-2</a>
Lateral to Lateral Cable	100	33 AWG	<a href="#">2361340-1</a>	<a href="#">2361340-2</a>	<a href="#">2361351-1</a>	<a href="#">2361351-2</a>	<a href="#">2361362-1</a>	<a href="#">2361362-2</a>

All cable assemblies can be used for SFF-TA-1002 receptacles.

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