



# Storage Drive Interface Connectors

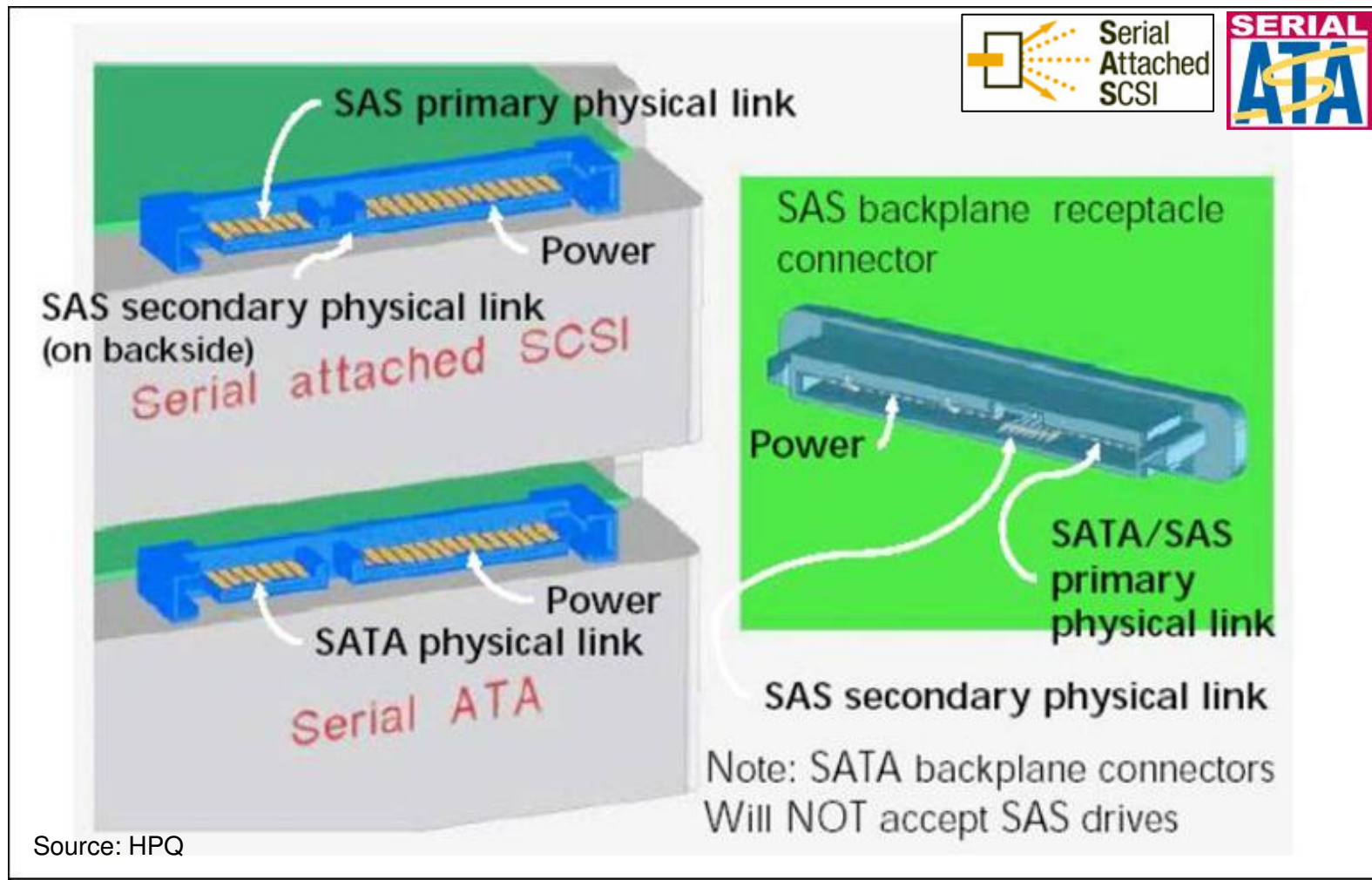
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- SAS Connectors, including 6 Gb/s
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- SAS/SATA Product Configurations
- Product Range
  - SCA2, eSATA, iVDR, Micro-SATA, Slimline SATA, SATA Cable
  - Product Range Summary
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- FCI offers a wide range of connector options to support the implementation of industry-standard interfaces between hard disk drives (HDDs) and the backplanes or drive carrier boards commonly used in enterprise storage applications in servers and storage systems
- FCI has long been recognized as a leading supplier of device plugs to the HDD industry, with many customized solutions.
- FCI offers receptacle connectors for use in the enterprise systems that employ Serial Attached SCSI (SAS), Serial ATA (SATA), or FibreChannel drives for data storage
- FCI also offers:
  - Slimline SATA connectors for optical disk drive interfaces
  - Micro SATA connectors for 1.8” Form Factor Drives being HDD or SSD (Solid State Drive)
  - eSATA connectors to enable high-speed cable connections between PCs and external SATA storage
  - connectors for use with iVDR (information Versatile Disk for Removable usage) audio/video media cartridges

# SAS & SATA - Interfaces

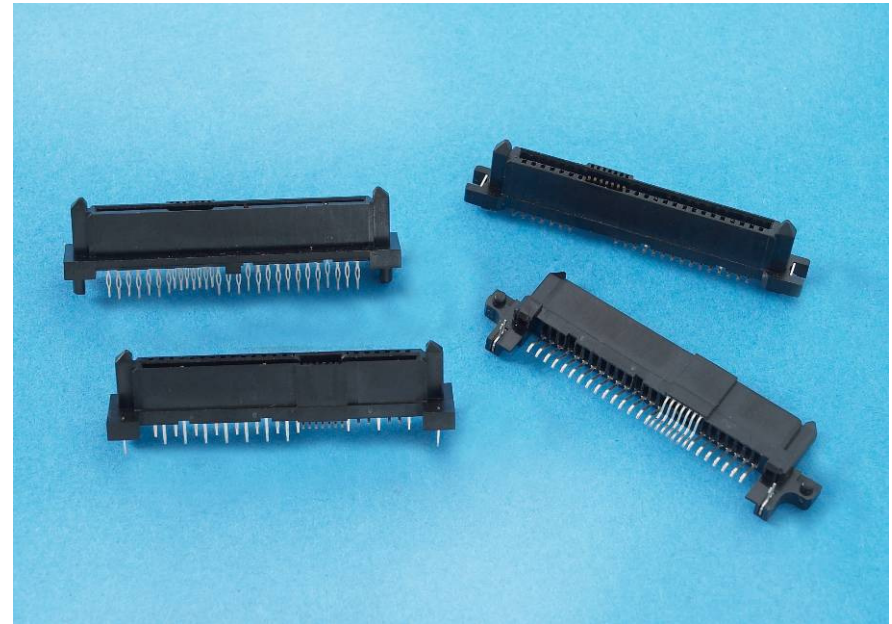


- NOTE: SAS backplane connectors will accept either SAS or SATA drives. SATA backplane connectors will NOT accept SAS drives

# Serial-Attached SCSI (SAS) Connectors



- The 29-position, SAS receptacle and plug connectors enable the implementation of the high-speed, Serial Attached SCSI (SAS) hard disk drive (HDD) interface that is replacing the SCSI drive connection in enterprise storage applications in servers and storage systems
- The SAS connector system is designed to support hot plugging and blind mating of HDDs
- The high-speed, serial interface is designed to support differential signaling.
- FCI's SAS is able to perform up to a data speed of 6 Gb/s  
*(Pls consult FCI on the connector selection).*

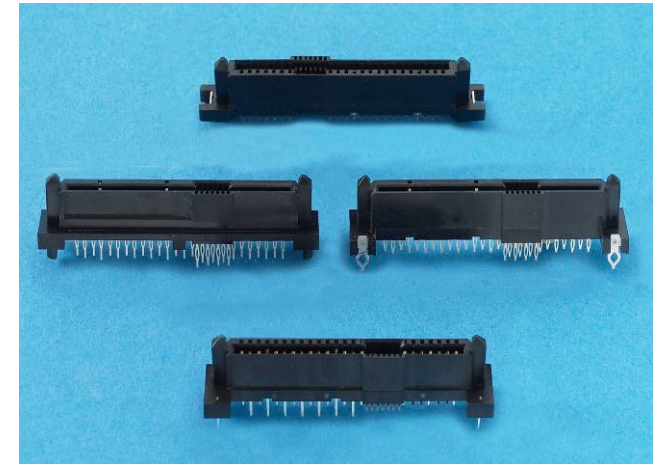


# 29P SAS Vertical Receptacle



## Features & Benefits

- Typically used for storage backplane or HDD carrier applications
- Options for through-hole solder, press fit, surface mount (SMT), or hybrid (combination of SMT and TM leads) termination allow engineers to select termination technique best suited to their design
- Wide-base housing options for additional stability



Base Number	Termination Type			Other Features
	Power	Port 2	Port 1	
10039748*	thru-hole, staggered footprint			wide base with forklock retainers
10018182* ✓	thru-hole, in-line footprint			with forklock retainers
10038064* ✓	press-fit, staggered footprint			wide base with molded posts and forklock/harpoon retainers
10045782* ✓	press-fit, staggered footprint			full-length, wide base with molded posts
10031077* ✓	press-fit, in-line footprint			with forklock/harpoon retainers
10036876* ✓	thru-hole, staggered	SMT	signals: SMT grounds: thru-hole	wide base with molded posts and forklock and solder tab retainers, hybrid termination
10039845* ✓	SMT			wide base with molded posts and forklock and solder tab retainers
10031567* ✓	SMT			with molded posts and SMT retainers
10036355* ✓	SMT			with molded posts and SMT retainers (open SAS pins)
10038334	SMT			17.85mm extended height with molded posts and SMT retainers
10076579* ✓	SMT			wide base with molded posts and SMT retainers
10077259* ✓	SMT			with molded posts and SMT retainers
10045665	thru-hole staggered footprint			wide base with molded posts and SMT retainers
10036312	thru-hole, in-line	SMT	signals: thru-hole in-line	wide base with molded posts and solder tab retainers, hybrid termination

\* connector mounts to PCB layout defined in SFF-8482 Specification

✓ Denotes connector is capable to meet up to 6 Gb/s data rate, depending on customer application & design optimisation.

Note: Above connector has variation in packaging type (tray or tape & reel) or retainers type.

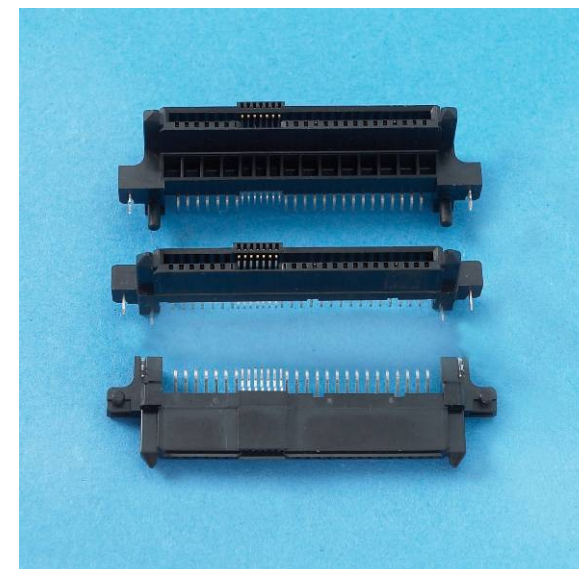
Please check customer print for details.

# 29P SAS Right-Angle Receptacle



## Features & Benefits

- For server blade, storage blade, embedded systems, or HDD carrier applications
- Surface mount (SMT) termination
- A receptacle with 7.07mm offset from the surface of the carrier board provides 4.7mm nominal clearance for components to be mounted beneath an installed 2.5" hard drive



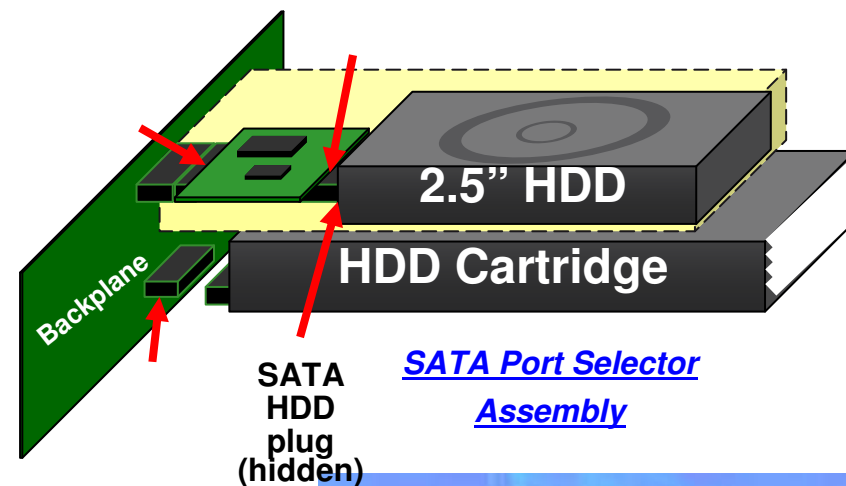
Base Number	Termination Type	Offset from Surface of Carrier PCB*	Other Features
10044002	SMT	7.07mm	Port 1 (SATA) toward PCB. 2 types of retention features - Forklock or solder tab retainers. Forklock options available for different PCB thickness.
10035202 ✓	SMT	0.35mm	port 1 (SATA) toward PCB forklocks
10036587 ✓	SMT	0.93mm	port 1 (SATA) toward PCB, solder tab retainers

\* Dimension measured from the PCB surface to the centerline of the molded guide posts on the receptacle connector.

✓ Denotes connector is capable to meet up to 6 Gb/s data rate, depending on customer application & design optimisation.

## Features & Benefits

- Intended for interposer or port selector assemblies in removable HDD carriers, or in SSD (Solid State Drive)
- Surface mount (SMT) termination
- Vertical / Right-angle orientation available.
  - Vertical preferred with a 3.5" HDD
  - Right-angle suitable for 2.5" HDD



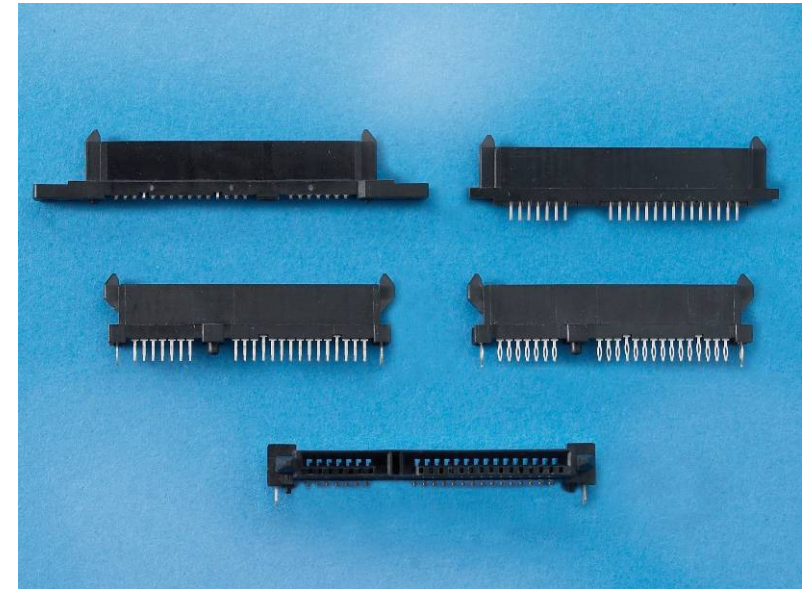
Base Number	Orientation	Termination Type	Other Features	Remarks
10045105	vertical	SMT	rivet holes for PCB attachment	for interposer / drive carrier in HDD or SSD application
10031193 ✓	vertical	SMT	SMT retainers	
10041724 ✓	vertical	SMT	SMT retainers	
10099439 ✓	right-angle	SMT	SMT retainers	
10098678 ✓	right-angle	SMT	SMT retainers with port 1 (SATA) away from PCB	
10034524 ✓	right-angle	SMT	forklocks for PCB attachment port 1 (SATA) away from PCB	

✓ Denotes connector is capable to meet up to 6 Gb/s data rate, depending on customer application & design optimisation.

# Serial-ATA (SATA) Connectors



- SATA connectors enable the implementation of high-speed, SATA hard disk drive (HDD) interface that is extending the use of low-cost, high-capacity SATA drives to low-end enterprise storage applications in servers and storage systems.
- Designed to support hot-plugging and blind-mating of HDDs.
- Provides 7 contacts for signal port and 15 contacts for power.
- Options for through-hole, press-fit or SMT termination
- Available in right-angle & vertical configuration.
- FCI's SATA is able to perform up to data speed of 6 Gb/s.  
*(Pls consult FCI on the connector selection)*

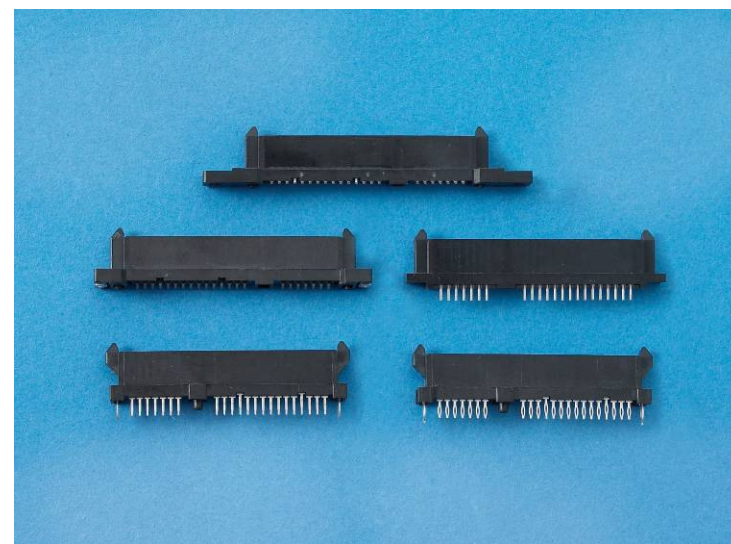


# SATA 22P Vertical Receptacle



## Features & Benefits

- Typically used for storage backplane or HDD carrier applications
- Options for through-hole solder, press fit, or surface mount (SMT) termination allow engineers to select the termination technique best suited to their design



Base Number	Termination Type	Other Features	
10017660 ✓	thru-hole, in-line	with forklock/harpoon retainers	2 layout option at power (15P) : in-line or staggered
10022676 ✓	press-fit, in-line	with forklock/harpoon retainers	2 layout option at power (15P) : in-line or staggered
10029065 ✓	SMT, in-line	with molded posts and solder tab retainers	
10042140 ✓	SMT, in-line	with molded posts and solder tab retainers	
10045103 ✓	SMT, in-line	rivet for PCB attachment	2 height options: 8.15 or 8.45mm

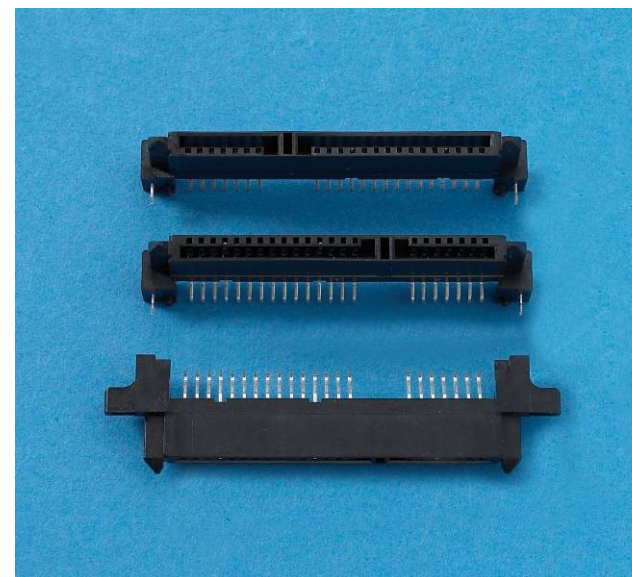
✓ Denotes connector is capable to meet up to 6 Gb/s data rate, depending on customer application & design optimisation.

# SATA 22P Right-Angle Receptacle



## Features & Benefits

- Address server blade, storage blade, embedded systems, or HDD carrier applications
- Surface mount (SMT) termination
- Molded posts for orientation
- Various height options available.



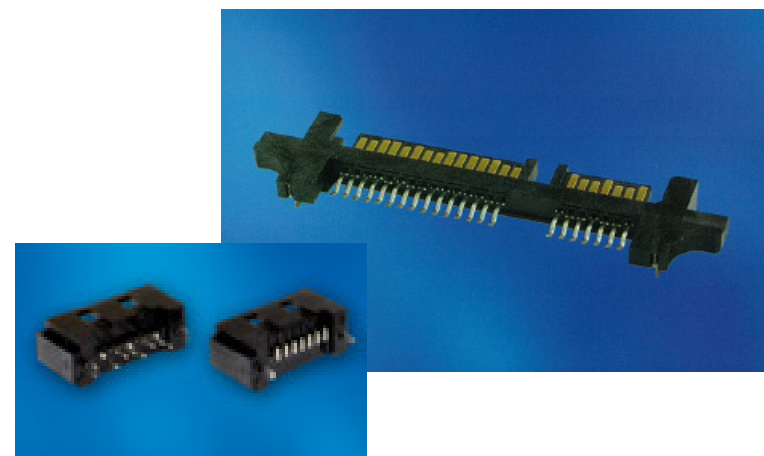
Base Number	Termination Type	Offset from Surface of Carrier PCB*	Other Features	
10031569	SMT	0.35mm	SATA port away from PCB	with molded posts and forklocks
10029364	SMT	2.67mm	SATA port toward PCB	with molded posts and forklocks
10034814	SMT	3.75mm	SATA away from PCB	with molded posts and forklocks

\* Dimension measured from the PCB surface to the centerline of the molded guide posts on the receptacle connector.

\*\* Please consult FCI for other feature and configuration.

## Features & Benefits

- Intended for HDD/ interposer assemblies/ SSD
- Surface mount (SMT) termination
- Forklocks or metal blade options
- Latching Wall options.



Base Number	Position	Termination Type	Orientation	Other Features
10039651	22	SMT	Right-Angle	with forklocks
10101788 ✓	22	SMT	Right-Angle	with solder tab retainers
59334	7	SMT	Vertical	With molded posts with options of metal clips or through-hole blade retainers.ck retainers
10035691	7	SMT	Vertical	4-Wall version with metal clip
59333	7	Through-Hole	Vertical	Options of metal clip or through-hole blade retainers.
10028860	7	Through-Hole	Vertical	Staggered layout with through-hole blade retainers.
10035690	7	Through-Hole	Vertical	3 or 4 wall options, with metal clip retainers.
59335	7	SMT	Right-Angle	With metal clip
10035692	7	SMT	Right-Angle	3-Wall version with metal clips.

✓ Denotes connector is capable to meet up to 6 Gb/s data rate, depending on customer application & design optimisation.

## Description

- Enable smaller 1.8" SATA drive form factors for Hard Disk Drives (HDDs) or Solid State Drives (SSDs)
- Facilitate the use of 1.8" SATA drives in mobile computers, set top boxes, game consoles or portable storage units



## Features & Benefits

- Compliant with Micro SATA requirements in Serial ATA Specifications
- 16 contacts on 1.27mm pitch: 7 for signals and 7+2 for power
- Supports up to 3Gb/s data rates
- High-durability design supports 500 mating cycles
- Designed to support hot-plugging and blind-mating
- Connector retainers provide additional mechanical strength after soldering
- RoHS-compliant and compatible with lead-free processing temperatures

Description	Base Number
Micro SATA Plug -straddle mount	10078287
Micro SATA Receptacle - through hole mount	10080211
Micro SATA Receptacle - surface-mount	10105229

\*\* Please consult FCI for other feature and configuration.

## ■ Description

- Designed to enable connection of a “slimline” form factor drive to the SATA interface
- Intended for use at the electrical interface to Optical Disk Drive (ODD) systems
- Designed to fit the established PATA (Parallel ATA) connector slimline design with almost no changes to the slimline drive case, media tray or internal mechanics

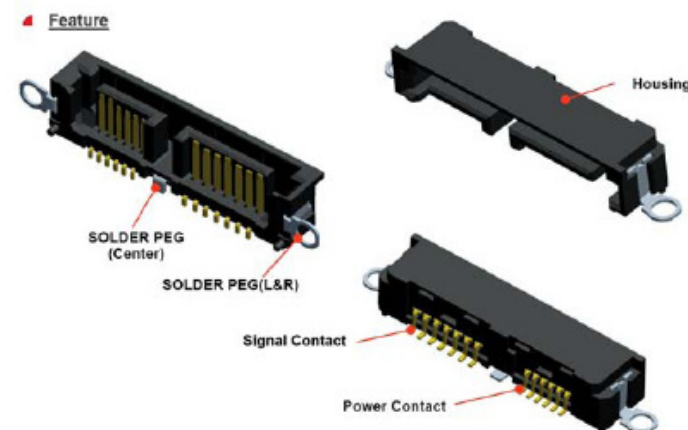


# SlimLine SATA



## Features & Benefits

- Compliant with Slimline SATA requirements in Serial ATA Specification
- Supports up to 3 Gb/s data rates
- 7 contacts on 1.27mm pitch for signals
- 6 contacts on 1mm pitch for 5V power delivery
- High-durability design supports 500 mating cycles
- Designed to support warm-plugging and blind-mating
- Connector retainers provide additional mechanical strength after soldering
- Options for screw attachment of plug connector
- RohS-compliant and compatible with lead-free processing temperatures



Description	Base Number
SMT right-angle plug with rounded screw-hole tabs	10085303
SMT right-angle plug with square screw-hole tabs	10085304
SMT right-angle plug with solder-tab retainers	10085305

## ■ Description

- Aimed at external storage applications that require a single-lane Serial ATA cable connection up to approximately two meters in length
- Typical application is the connection between a desktop or mobile PC and an external storage drive, similar to existing USB or 1384 cable connections but at significantly higher data rates

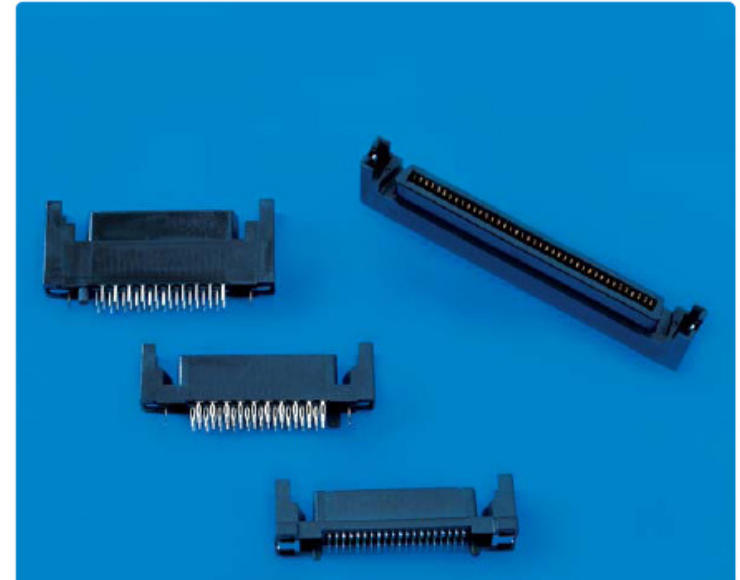


## ■ Features & Benefits

- **Compliant with eSATA requirements in Serial ATA Specification**
- **Up to 5 times faster than USB2.0 or FireWire 400 external storage solutions**
- **Supports Gen 1(1.5Gb/s) and Gen 2(3 Gb/s) data transfer rate**
- **Provide external data backup and protection at up to 3Gb/s data transfer rate**
- **High-durability design supports 2500 cycles**
- **RoHS-compliant and compatible with lead-free processing temperatures**
- **Available range includes eSATA, eSATA/USB (2-in-1), and eSATA/USB (2-in-1) + USB Combo types**

Description	Base Number
eSATA 2-in-1 right-angle plug, through-hole solder	10074703
eSATA 2-in-1 reversed right-angle plug, through-hole solder	10069848
USB over eSATA 2-in-1 right angle combo plug, reversed, through-hole solder	10081268

- SCA-2 (Single Connect Attachment-2) connector consists of device plugs and vertical receptacle that enable the hard disk drive to backplane interface in enterprise storage systems.
- SCA-2 connector interface utilizes high-reliability dual-row, blade-on-beam contacts spaced on 1.27mm pitch.
- Enhanced SCA-2 (P/N 10073037 & 10038339) version has an improved impedance and insertion loss profiles with reduced crosstalk, to meet up to 8G applications.
- 40P backplane receptacles accept Fibre Channel drives while 80P receptacles accept SCSI drives.



Enhanced SCA-2

## Features & Benefits

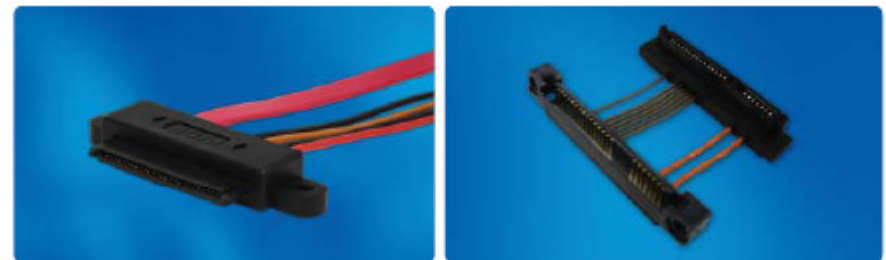
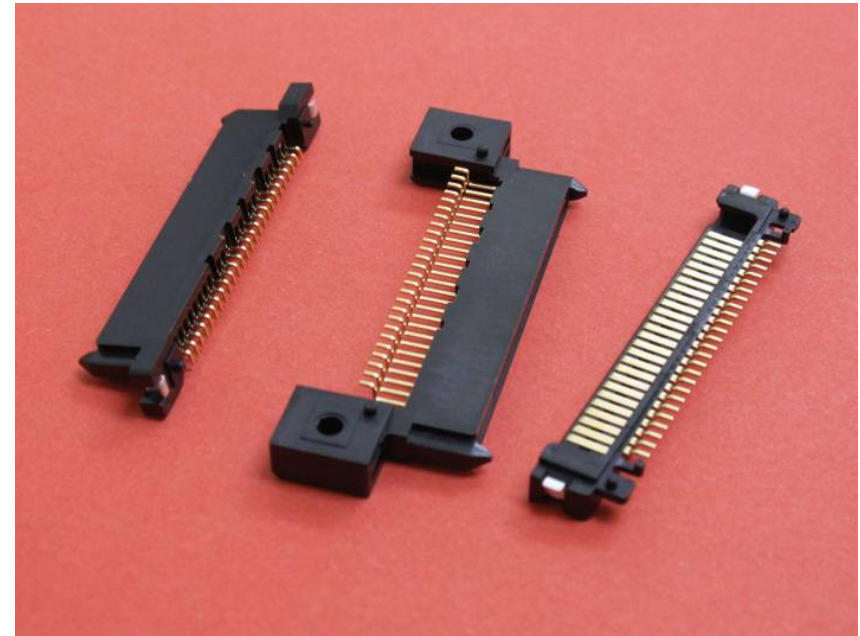
- Meet requirement of SFF-8451 / 8454 (for enhanced version) with First-mate-Last-Break contacts.
- Robust alignment and polarization features allow blind mating.
- Dual ESD contacts provide paths for static discharge protection.
- Options for through-hole, press-fit or SMT board termination.
- Available with 11.5mm and 17.5mm body heights.

HDD Interface	Number of Contacts	Connector Type	Orientation	Receptacle Body Height	Termination Type	Base Number
Fibre Channel	40	receptacle	vertical	11.5mm	through-hole solder	71781
Fibre Channel	40	receptacle	vertical	11.5mm	press-fit	87567
Fibre Channel	40	receptacle*	vertical	11.5mm	surface-mount	10038339 *
Fibre Channel	40	receptacle	vertical	17.5mm	surface-mount	10073037 *
Fibre Channel	40	receptacle	vertical	17.5mm	through-hole solder	72437
Fibre Channel	40	receptacle	vertical	17.5mm	press-fit	72443
Fibre Channel	40	plug	vertical	9,85mm	surface-mount	10095045 *
Fibre Channel	20	plug	right-angle	N/A	straddle-mount	72547
Fibre Channel/SCSI	40/80	plug	right-angle	N/A	straddle-mount	71292
SCSI	80	receptacle	vertical	11.5mm	through-hole solder	71780
SCSI	80	receptacle	vertical	11.5mm	press-fit	87566
SCSI	80	receptacle	vertical	17.5mm	through-hole solder	72436
SCSI	80	receptacle	vertical	17.5mm	press-fit	72442

Note: \* symbol designates enhanced SCA-2 receptacle for 4G or 8G Fibre Channel applications

## ■ Description

- **iVDR: Information Versatile Disk for Removable usage**
- **iVDR plug and receptacle connectors connect between a host system and an iVDR media cartridge, which may contain a hard disk drive or a solid state device**
- **Capable of recording copyright-protected high-definition (HD) audio, video or image content**
- **Cable assembly options available**  
*(Please consult FCI on cable solutions)*



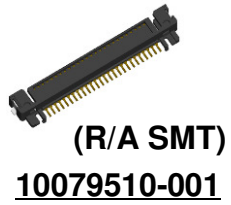
## Features & Benefits

- Provides 26 contacts in a single row on 1.27mm pitch
- Surface-mount design is RoHS-compliant and compatible with lead-free soldering temperatures
- Low insertion force for high durability: 10,000 mating cycles
- External dimensions match standard 22-position SATA connector
- The right-angle plug provides solder tabs for added retention
- Options for right-angle or vertical receptacle provide capability to install cartridges in either orientation to host board
- The right-angle receptacle features a fixed screw hole at each end while the vertical type features a solder tab retainer at each end

Description	Base Number
SMT right-angle receptacle with screw holes	10033998
SMT vertical receptacle with solder tab retainers	10034273
SMT right-angle plug with holddown	10079510
iVDR SATA adapter	10069461

\*\* Please consult FCI for other feature and configuration.

# iVDR Application



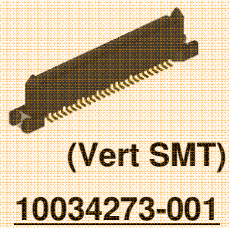
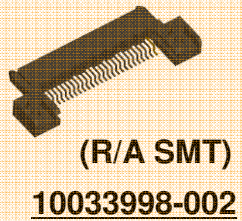
PLUG

Media Cartridge



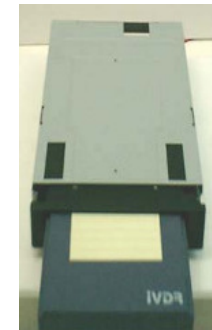
RECEPTACLE

Host application



RECEPTACLE

Loading Mechanism



# Storage Drive Connectors – Product Range



FCI offers a wide range of connector options to support the industry-standard interfaces between storage drives (HDD, SSD, ODD) and the backplanes, midplanes or drive carrier boards commonly used in storage applications in PCs, servers and storage systems.

[www.fciconnect.com/storageinterface](http://www.fciconnect.com/storageinterface)



## Serial Attached SCSI (SAS)

- ▲ 29 Pos Receptacle/Header
- ▲ Right-Angle or Vertical
- ▲ SMT/Press-Fit/Through-Hole
- ▲ Capable up to 6 Gb/s



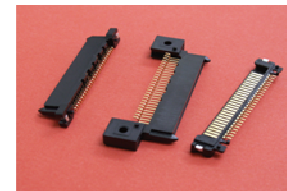
## Serial ATA (SATA)

- ▲ 22 Pos Receptacle/Header
- ▲ Right-Angle or Vertical
- ▲ SMT/Press-Fit/Through-Hole
- ▲ Capable up to 6 Gb/s



## Single Connect Attachment 2 (SCA-2)

- ▲ 40/80P Pos Receptacle/Header
- ▲ Fibre Channel or SCSI drives
- ▲ Capable up to 8.5 Gb/s



## Information Versatile Disk for Removable (iVDR)

- ▲ Plug & Receptacle
- ▲ Between host system & iVDR media (HDD/SSD)



## Slimline SATA

- ▲ 13 Pos Receptacle/Header
- ▲ Used for optical drive system.



## Micro-SATA

- ▲ 16 Pos Receptacle/Header
- ▲ Used for 1.8" SATA drive connection



## External SATA (e-SATA)

- ▲ eSATA or eSATA/USB
- ▲ For connection between PC & external SATA drive.



## Compression

- ▲ Single or Rec+Hdr available
- ▲ Used in HDD/board-to-board interface

- Product Brochures
- E-Catalogue in [www.fciconnect.com/storageinterface](http://www.fciconnect.com/storageinterface)
- Sample kit available
- Hyperlink to related product micro-sites :
  - [www.fciconnect.com/sas](http://www.fciconnect.com/sas)
  - [www.fciconnect.com/sata](http://www.fciconnect.com/sata)
  - [www.fciconnect.com/microsata](http://www.fciconnect.com/microsata)
  - [www.fciconnect.com/sca2](http://www.fciconnect.com/sca2)
  - [www.fciconnect.com/ivdr](http://www.fciconnect.com/ivdr)
  - [www.fciconnect.com/slimlinesata](http://www.fciconnect.com/slimlinesata)
  - [www.fciconnect.com/esata](http://www.fciconnect.com/esata)



Please contact our FCI sales for further assistance for connector selection.