ELECTRONICS

STORAGE INTERFACE CONNECTORS

SAS, SATA, SCA-2, MICRO SATA, SLIMLINE SATA, eSATA & iVDR

FCI: SETTING THE STANDARD FOR CONNECTORS

With operations in 30 countries, FCI is a leading manufacturer of connectors.
Our 13,000 employees are committed to providing customers with high-quality, innovative products for a wide range of consumer and industrial applications.

INTRODUCTION

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 commonly used in enterprise storage applications in servers and storage systems. FCI boards long been recognized as a leading supplier of device plugs to the HDD industry. This has brochure highlights FCI's complementary offering of receptacle connectors for use in the enterprise systems that employ Serial Attached SCSI (SAS), Serial ATA (SATA), or FibreChannel drives for data storage.

- The SAS connectors conform to SFF-8482 and enable the implementation of the Serial Attached SCSI hard disk drive interface. A SAS receptacle accepts either SAS or SATA drives, giving users the option of deploying higher-performance SAS drives for mission-critical applications or cost-effective SATA drives for bulk storage.

- The 22-position SATA connectors are used to extend the use of low-cost, high-capacity SATA drives to low-end enterprise storage applications in servers and storage systems. The SATA receptacle accepts a SATA drive, but is keyed to block the installation of a SAS drive.

- The SCA2 (Single Connect Attachment-2) connector system enables the hard disk drive to backplane interface for FibreChannel and SCSI. The 40-position backplane receptacles are designed to accept Fibre Channel drives, while 80-position receptacles accept SCSI drives. The interface is governed by SFF-8451 and SFF-8454.

In addition to providing the interface connectors for enterprise storage applications, FCI also offers slimline SATA connectors, micro SATA connectors, eSATA connectors and iVDR connectors.

- Slimline SATA connectors cater to Optical Disk Drive (ODD) application, specifically the 9.5mm and 12.7mm slimline drive.

- Micro SATA connectors are for 1.8" SATA drive form factor, to be used in mobile computers, set top boxes, games consoles or portable storage unit.

- eSATA connector enables the connection to an external storage at a significantly higher data rates than USB2 or 1394 cable connection.

- iVDR (Information Versatile Disk for Removable Usage) connector system provides connection between a host and iVDR media cartridge (either harddisk or solidstate drive).

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SERIAL-ATTACHED SCSI (SAS) CONNECTORS

DESCRIPTION

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. Staggered contact lengths provide sequential mating of contacts to enable hot plugging. Molded guide posts provide angled lead-in to compensate for connector misalignment, allowing the device plug and the receptacle to self align during the mating process. Most connectors also feature stamped retention clips that provide additional mechanical strength for robust PCB attachment. FCI also offers wide-base housing options on vertical backplane receptacles for even more stability.

The high-speed, serial interface is designed to support differential signaling, initially at speeds of 3 Gb/s and evolving to 6 Gb/s. A SAS receptacle accepts either SAS or SATA (Serial ATA) drives, giving the system manufacturer the option to plug either drive to a backplane. Because both technologies have similar electrical interfaces, users have the choice of deploying cost-effective SATA drives for bulk storage or higher-performance SAS drives for mission-critical applications.

FCI offers a wide range of SAS plug and receptacle connectors for enterprise applications. Vertical and right angle connector configurations provide options for use in servers, server or storage blades, storage backplanes, HDD carriers, and HDDs.

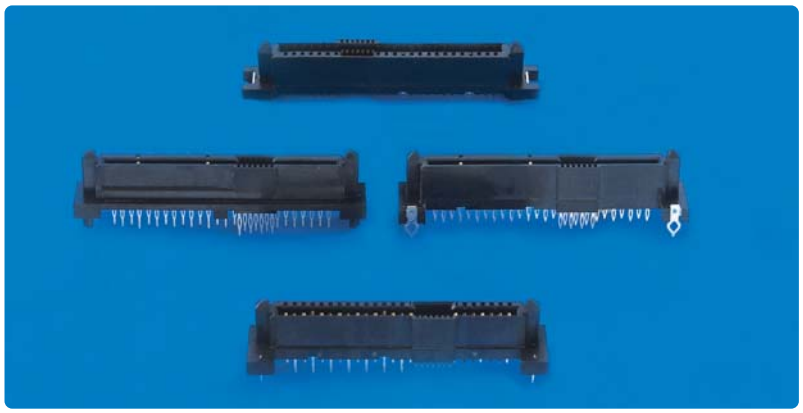
FEATURES & BENEFITS

- For high-speed serial storage interfaces of up to 6 Gb/s
- 29-position SAS connectors enable SFF-8482 HDD interface
- Provide dual signal ports (7 contacts/port) and 15 contacts for power
- SAS receptacles also accept SATA drives
- Designed to support hot-plugging and blind-mating of HDDs
- Connector retainers provide additional mechanical strength after soldering
- RoHS-compliant and compatible with lead-free processing temperatures

TARGET MARKETS / APPLICATIONS

- Data
  - Servers
  - Server and storage blades
  - External storage systems
  - HDDs
  - HDD carriers
- Communications
  - Processor and storage blades
  - Mezzanine cards
- Industrial, Instrumentation & Medical
  - Embedded system boards

SAS VERTICAL RECEPTACLES



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 the termination technique best suited to their design
- Wide-base housing options provide additional stability

Part Number	Termination Type			Other Features
	Power	Port 2	Port 1	
10039748-001LF*	thru-hole, staggered footprint			wide base with forklock retainers
10018182-001LF	thru-hole, in-line footprint			with forklock retainers
10038064-001LF*	press-fit, staggered footprint			wide base with molded posts and forklock/harpoon retainers
10045782-001LF	press-fit, staggered footprint			full-length, wide base with molded posts
10031077-003LF	press-fit, in-line footprint			with forklock/harpoon retainers
10036876-003LF*	thru-hole, staggered	SMT	signals: SMT grounds: thru-hole	wide base with molded posts and solder tab retainers, hybrid termination
10039845-001LF *	SMT			wide base with molded posts and solder tab retainers
10031567-001LF	SMT			with molded posts and SMT retainers
10038334-001LF	SMT			17.85mm extended height with molded posts and SMT retainers
10076579-002C-TRLF	SMT			wide base with molded posts and SMT retainers
10077259-002CLF	SMT			with molded posts and SMT retainers
10045665-001LF	thru-hole staggered footprint			wide base with molded posts and SMT retainers
10036312-001LF	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

Note: Above connector has variation in packaging type (tray or tape & reel) or retainers type. Please check customer print for details.

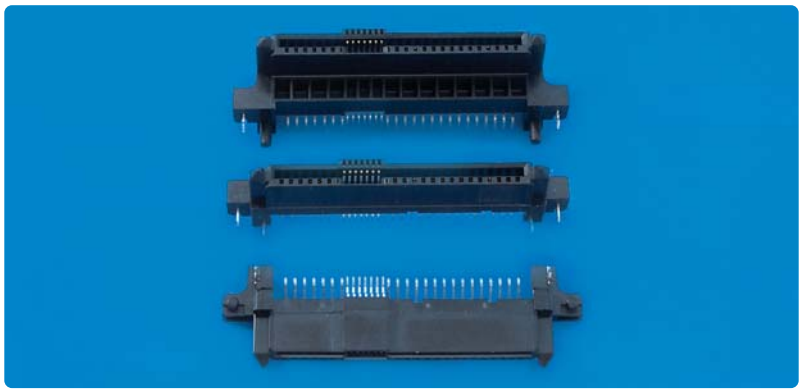
SAS HEADERS

FEATURES & BENEFITS

- Intended for interposer or port selector assemblies in removable HDD carriers
- Surface mount (SMT) termination
- Vertical connector positions the port selector PCB assembly perpendicular to the device plug on the HDD, which may be preferred with a 3.5-inch hard drive
- Right-angle connector allows the PCB assembly to be positioned in a plane that is parallel to the device plug on the HDD, which enables the use of a larger PCB within the smaller 2.5-inch drive form factor.

SAS Header Part Number	Orientation	Termination Type	Other Features	Remarks
10045105-001LF	vertical	SMT	rivet holes for PCB attachment	for interpose or drive carrier
10034524-001LF	right-angle	SMT	forklocks for PCB attachment port 1 (SATA) away from PCB	
10031193-001LF	vertical	SMT	SMT retainers	
10041724-001LF	vertical	SMT	SMT retainers	

SAS RIGHT-ANGLE RECEPTACLES



FEATURES & BENEFITS

- Address 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

Part Number	Termination Type	Offset from Surface of Carrier PCB*	Other Features
10044002-001LF	SMT	7.07mm	port 1 (SATA) toward PCB, with molded posts and forklocks for 1.6mm thick host PCB
10044002-002LF	SMT	7.07mm	port 1 (SATA) toward PCB, with molded posts and solder-tab retainers
10044002-003LF	SMT	7.07mm	port 1 (SATA) toward PCB, with molded posts and forklocks for 1.8-1.93mm thick host PCB
10044002-004LF	SMT	7.07mm	port 1 (SATA) toward PCB, with molded posts and longer forklocks for 1.8-2.2mm thick PCB
10035202-001LF	SMT	0.35mm	port 1 (SATA) away from PCB, with forklocks
10036587-001LF	SMT	0.93mm	port 1 (SATA) toward PCB, with solder-tab retainers

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

Note: Variation in packaging type available.
Please check customer print for details.

SAS DEVICE PLUGS

FCI is a major supplier of SAS device plugs to the HDD industry. As such, FCI has the capability to design and manufacture customized device plugs for specific hard disk drive applications, including combination headers that incorporate additional contacts for test or programming. Please contact your local sales representative or field application engineer for technical assistance.

TECHNICAL INFORMATION

MATERIALS

- Contact base metal: copper alloy
- Contact area finish: gold over nickel
- Solder area finish: tin over nickel
- Retainer clip base metal: copper alloy
- Retainer finish: tin over nickel
- Housing: high-temperature thermoplastic (UL 94V-0); color: black

ELECTRICAL PERFORMANCE

- Contact resistance: 30 mΩ maximum initial; 15 mΩ maximum change after test
- Current rating: 1.5A minimum per contact with temperature rise not exceeding 30°C

ENVIRONMENTAL

- Humidity: 96 hours at 40°C with 90-95% relative humidity. Per EIA 364-31, Method II, test condition A
- Temperature life: 85°C for 500 hours. Per EIA 364-17, test condition III, method A
- Thermal shock: 10 cycles between -55°C and +85°C. Per EIA 364-32, test condition I.
- Mixed flowing gas: expose 1/2 samples unmated for 7 days and then mated for 7 additional days; the other 1/2 samples are exposed mated for 14 days. Per EIA 364-65, class II A.

MECHANICAL PERFORMANCE

- Durability: 500 mating cycles *
- Mating force: 50N maximum
- Unmating force: 5N minimum

SPECIFICATIONS

- FCI product specification: GS-12-282
- SFF-8482 Specification for Unshielded Dual Port Serial Attachment Connector

APPROVALS AND CERTIFICATIONS

- UL

PACKAGING

- Tray
- Tube
- Tape-on-reel (available upon request)

* For higher durability cycling application, please contact FCI for alternatives.

** Please consult FCI for other feature and configuration.

SERIAL-ATA (SATA) CONNECTORS

DESCRIPTION

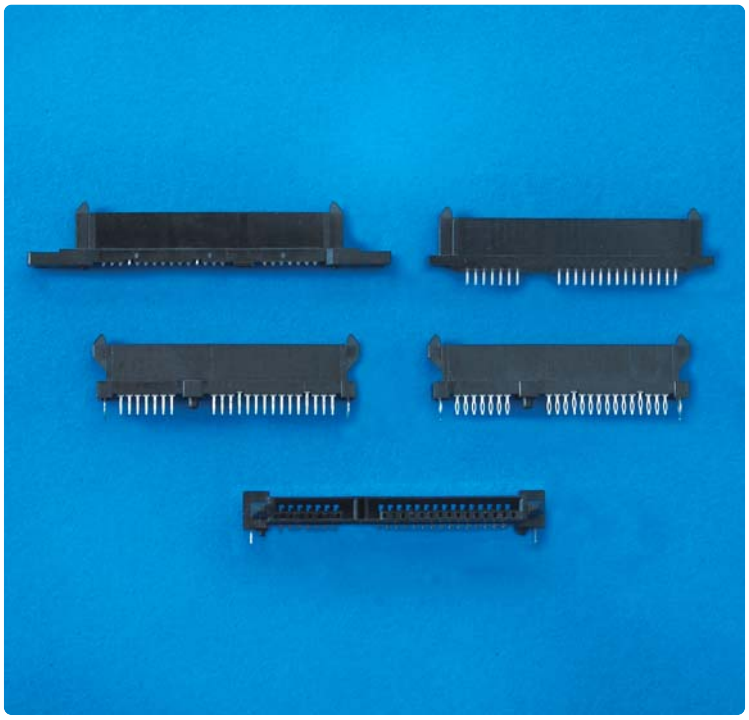
The 22-position, receptacle and plug connectors enable the implementation of the new high-speed, Serial ATA (SATA) hard disk drive (HDD) interface that is extending the use of low-cost, high-capacity SATA drives to low-end enterprise storage applications in servers and storage systems. The backplane receptacle accepts a SATA drive, but is keyed to block the installation of a Serial-Attached SCSI (SAS) drive.

The SATA connector system is designed for hot plugging and blind mating of HDDs. Staggered contact lengths provide sequential mating of contacts to enable hot plugging. Molded guide posts provide angled lead-in to compensate for connector misalignment, allowing the device plug and corresponding receptacle to self align during the mating process.

FCI offers options for through-hole solder, press fit, or surface-mount termination, allowing engineers to select the termination technique best suited to their backplane design and manufacturing process. Most backplane connectors also feature stamped retention clips that provide additional mechanical strength for robust PCB attachment.

The seven contacts that comprise the SATA port are designed to support differential signaling, initially at speeds of 1.5 Gb/s and evolving to 3.0 Gb/s. The power segment of the SATA backplane receptacle uses fifteen contacts to provide options for 3.3V, 5V or 12V power.

FCI offers a wide range of SATA plug and receptacle connector configurations. Vertical and right angle connector configurations provide options for use in servers, server or storage blades, storage backplanes, HDD carriers, and HDDs.



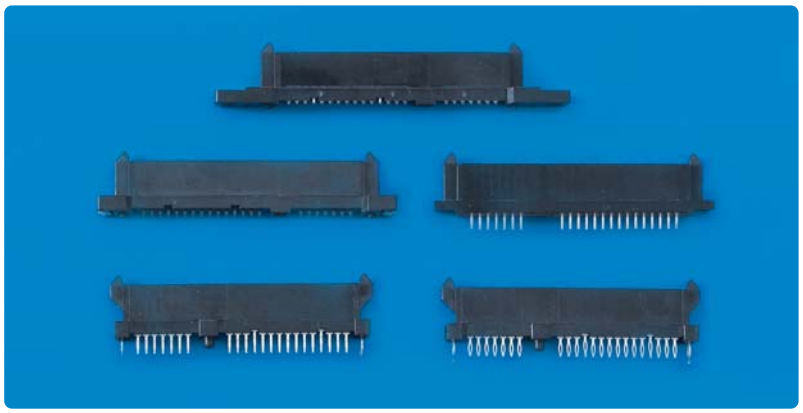
FEATURES & BENEFITS

- For high-speed Serial-ATA storage interface of up to 6 Gb/s.
- 22-position SATA connectors meet requirements of Serial ATA Specification
- Provides 7 contacts for signal port and 15 contacts for power
- Designed to support hot-plugging and blind-mating of HDDs
- Connector retainers provide additional mechanical strength after soldering
- RoHS-compliant and compatible with lead-free processing temperatures

TARGET MARKETS / APPLICATIONS

- Data
  - Notebook PCs
  - Servers
  - Server and storage blades
  - External storage systems
  - HDDs
  - HDD carriers
- Communications
  - Processor and storage blades
  - Mezzanine cards
- Industrial, Instrumentation & Medical
  - Embedded system boards
- Consumer
  - Audio/video storage

SATA VERTICAL RECEPTACLES



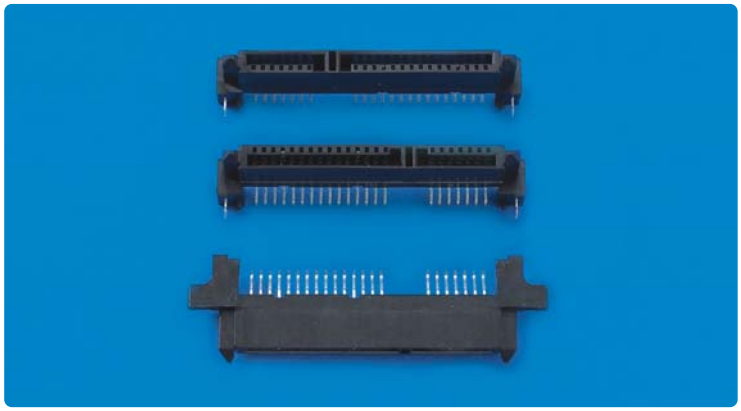
FEATURES & BENEFITS

- 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

Part Number	Termination Type		Other Features
	Power	Signals	
10017660-001LF	thru-hole, in-line		with forklock/harpoon retainers
10017660-002LF	thru-hole, staggered	thru-hole, in-line	with forklock/harpoon retainers
10022676-001LF	press-fit, in-line		with forklock/harpoon retainers
10022676-002LF	press-fit, staggered	press-fit, in-line	with forklock/harpoon retainers
10029065-001LF	SMT, in-line		with molded posts and solder tab retainers
10042140-001LF	SMT, in-line		with molded posts and solder tab retainers
10045103-001LF	SMT, in-line		8.15mm height, rivet for PCB attachment
10045103-002LF	SMT, in-line		8.45mm height, rivet for PCB attachment

Note: Variation available for packaging type 2 pick-up cap.
Please check drawings for details.

SATA RIGHT-ANGLE RECEPTACLES



FEATURES & BENEFITS

- Address server blade, storage blade, embedded systems, or HDD carrier applications.
- Surface mount (SMT) termination

Part Number	Termination Type	Offset from Surface of Carrier PCB*	Other Features
10031569-001LF	SMT	0.35mm	SATA port away from PCB, with molded posts and forklocks
10029364-001LF	SMT	2.67mm	SATA port toward PCB, with molded posts and forklocks
10034814-001LF	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.

SATA HEADERS

FEATURES & BENEFITS

- Application for interposer / optical disk drive
- Surface mount (SMT) termination

Part Number	Orientation	Termination Type		Other Features
		Power	Signals	
10039651-001LF	right-angle	SMT		with molded posts and forklocks
10052369-002LF	right angle	SMT		with molded post/forklock and latching (4-Wall)

SATA DEVICE PLUGS

FCI is a major supplier of SATA device plugs to the HDD industry. As such, FCI has the capability to design and manufacture customized device plugs for specific hard disk drive applications, including combination headers that incorporate additional contacts for test for programming. Please contact your local sales representative or fiedls application engineer for technical assistance.

TECHNICAL INFORMATION

MATERIALS

- Contact base metal: copper alloy
- Contact area finish: gold over nickel
- Solder area finish: tin over nickel
- Retainer clip base metal: copper alloy
- Retainer finish: tin over nickel
- Housing: high-temperature thermoplastic (UL 94V-0); color: black

ELECTRICAL PERFORMANCE

- Contact resistance: 30 mΩ maximum initial; 15 mΩ maximum change after test
- Current rating: 1.5A minimum per contact with temperature rise not exceeding 30°C

MECHANICAL PERFORMANCE

- Durability: 500 mating cycles
- Mating force: 45N maximum
- Unmating force: 10N minimum

SPECIFICATIONS

- FCI product specification: GS-12-194
- Serial ATA Specification from SATA-IO

ENVIRONMENTAL

- Humidity: 96 hours at 40°C with 90-95% relative humidity. Per EIA 364-31, Method II, test condition A
- Temperature life: 85°C for 500 hours. Per EIA 364-17, test condition III, method A
- Thermal shock: 10 cycles between -55°C and +85°C. Per EIA 364-32, test condition I.
- Mixed flowing gas: expose 1/2 samples unmated for 7 days and then mated for 7 additional days; the other 1/2 samples are exposed mated for 14 days. Per EIA 364-65, class II A.

CERTIFICATIONS & APPROVALS

- UL

PACKAGING

- Tray / Tube / Tape-on-reel (available upon request)

** Please consult FCI for other feature and configuration.

SCA-2 CONNECTOR SYSTEM

DESCRIPTION

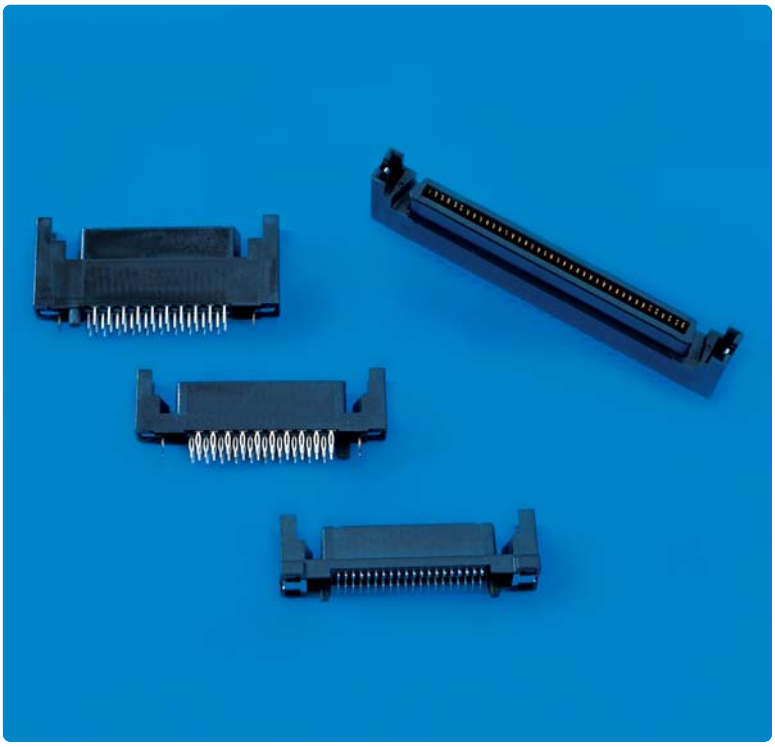
The SCA-2 (Single Connect Attachment-2) connector system consists of device plugs and vertical receptacles that enable the hard disk drive (HDD) to backplane interface in enterprise storage systems. The device plug resides on the HDD, while the receptacle is attached to the backplane. 40-position backplane receptacles are designed to accept Fibre Channel drives, while 80-position receptacles accept SCSI drives. The interface is governed by the Small Form Factor (SFF) standard SFF-8451.

Enhanced SCA-2 receptacle connectors also conform to the requirements of SFF-8454. Internal design enhancements and modified PCB terminations improve impedance and insertion loss and reduce crosstalk, which allow the connectors to operate at the speeds required by 4G and 8G Fibre Channel applications.

The SCA-2 connector interface utilizes high-reliability, dual-row, blade-on-beam contacts spaced on 1.27mm pitch. First-mate/last-break (FMLB) contacts provide sequential mating in accordance with SFF requirements. Robust alignment and polarization features at the drive interface allow blind-mating. Dual ESD contacts provide paths for static discharge protection.

Vertical backplane receptacles are available with 11.5mm and 17.5mm extended body heights with options for through-hole solder, press-fit, or surface-mount (SMT) board termination.

Available SCA-2 device plugs are designed for straddle-mount board termination.



Enhanced SCA-2

FEATURES & BENEFITS

- Meet requirements of SFF-8451 specification
- Options for through-hole solder, press-fit or SMT board termination
- Enhanced SMT receptacle meets requirements of SFF-8454 specification
- Enhanced version improves impedance and insertion loss profiles and reduces crosstalk
- Blade-on-beam contact design delivers high reliability
- Molded alignment and polarization features enable blind mating
- First-Mate-Last-Break (FMLB) contacts in accordance with SFF requirements
- ESD contacts provide static discharge paths to prevent damage
- Vertical receptacle range includes 11.5mm and 17.5mm body heights
- High temperature plastic suitable for wave or reflow soldering
- Lead-free and RoHS-compliant versions are available

TARGET MARKETS / APPLICATIONS

- Data
  - Storage backplanes
  - External storage systems
  - Servers
  - HDDs

TECHNICAL INFORMATION

MATERIALS

- Contact base metal: copper alloy
- Contact area finish: gold or GXT (gold flash over palladium-nickel alloy) over nickel
- Solder area finish: tin or tin-lead over nickel
- ESD contact base metal: copper alloy
- ESD contact finish: tin or tin-lead over nickel
- Housing: high-temperature thermoplastic (UL 94V-0); color: black

ELECTRICAL PERFORMANCE

- Contact resistance: 35mΩ maximum for signal contacts
- Current rating: 1A/contact minimum for 2 or 3 powered signal contact pairs with temperature rise not exceeding 30°C

MECHANICAL PERFORMANCE

- Durability: 500 mating cycles
- Mating force: 90g maximum per contact
- Unmating force: 15g minimum per contact

ENVIRONMENTAL

- Operating temperature range: -55°C to +105°C
- Humidity-temperature cycling: 10 cycles between 25°C and 65°C with 90-95% relative humidity during dwells. Per EIA 364-31, Method III, test condition B
- Temperature life: 105° C for 1000 hours. Per EIA 364-17, test condition 4
- Thermal shock: 5 cycles between -55°C and +105°C. Per EIA 364-32
- Mixed flowing gas: samples are exposed mated for 20 days. Per EIA 364-65, class II

SPECIFICATIONS

- FCI product specification: BUS-12-121
- SFF-8451 Specification for SCA-2 Unshielded Connectors
- SFF-8484 Specification for SCA-2 Enhanced HSS Signals

APPROVALS AND CERTIFICATIONS

- UL & CSA

PACKAGING

- Tray

PART NUMBERS

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	receptable	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	right-angle	N/A	straddle-mount	72547
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
SCSI	80	plug	right-angle	N/A	straddle-mount	71292

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

Use the base numbers to reference the product drawings at www.fci.com. The connector drawings provide detailed dimensions, describe available options for tail length and other product features, and the complete FCI part numbers.

** Please consult FCI for other feature and configuration.

eSATA CONNECTORS

DESCRIPTION

FCI's eSATA products are aimed at external storage applications that require a single-lane Serial ATA cable connection up to approximately two meters in length. The connectors comply with the Serial ATA Specification issued by the Serial ATA International Organization (SATA-IO).

A typical application is the connection between a desktop or mobile PC and an external storage drive, similar to existing USB or 1394 cable connections but at significantly higher data rates. The eSATA connectors support both Gen1 (1.5Gb/s) and Gen2 (3Gb/s) SATA data rates.

The available connector range includes individual eSATA connectors, 2-in-1 combination connector designs capable of accepting either an eSATA or a USB cable plug, and stacked configurations that provide a USB port in addition to a 2-in-1 eSATA/USB port.

FEATURES & BENEFITS

- Compliant with eSATA requirements in Serial ATA Specification
- Up to five times faster than USB2.0 or FireWire 400 external storage solutions
- Supports Gen 1 (1.5Gb/s) and Gen 2 (3Gb/s) data rates
- 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

TARGET MARKETS

- Desktop / Notebook PC
- Set top box
- Gaming equipment
- External portable storage
- USB related applications product/ equipment

APPLICATIONS

- External direct attached storage for notebooks, desktop, consumer electronics and entry servers

TECHNICAL INFORMATION

MATERIALS

- Housing
  - Glass filled LCP (UL94 V-0), Black
- Contact/ Shell
  - Brass
- Plating
  - Underplate finish: nickel
  - Contact area: gold
  - Solder area: tin
  - Shell: nickel over all

ELECTRICAL PERFORMANCE

- Insulation resistance
  - Initial 1000 MΩ minimum
  - After test 1000 MΩ minimum
- Current rating
  - 1.5 A per contact
- Contact resistance
  - Initial 30 mΩ maximum
  - After test 45 mΩ maximum
- Voltage rating
  - 12 V AC maximum

MECHANICAL PERFORMANCE

- Durability: 2500 cycles
  - Mating force: 40N maximum
  - Unmating force: 10N minimum
- Temperature range:
  - -40°C to +105°C

SPECIFICATIONS

- eSATA product specification: GS-12-386
- eSATA/USB combo product specification: GS-12-402

PACKAGING

- eSATA: tape-on-reel
- eSATA 2-in-1/USB: tray or tape-on-reel

PART NUMBERS

Description	Base Number
eSATA right-angle plug, through-hole solder	10067172
eSATA right-angle, upright plug, through-hole solder	10074141
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

** Please consult FCI for other feature and configuration.

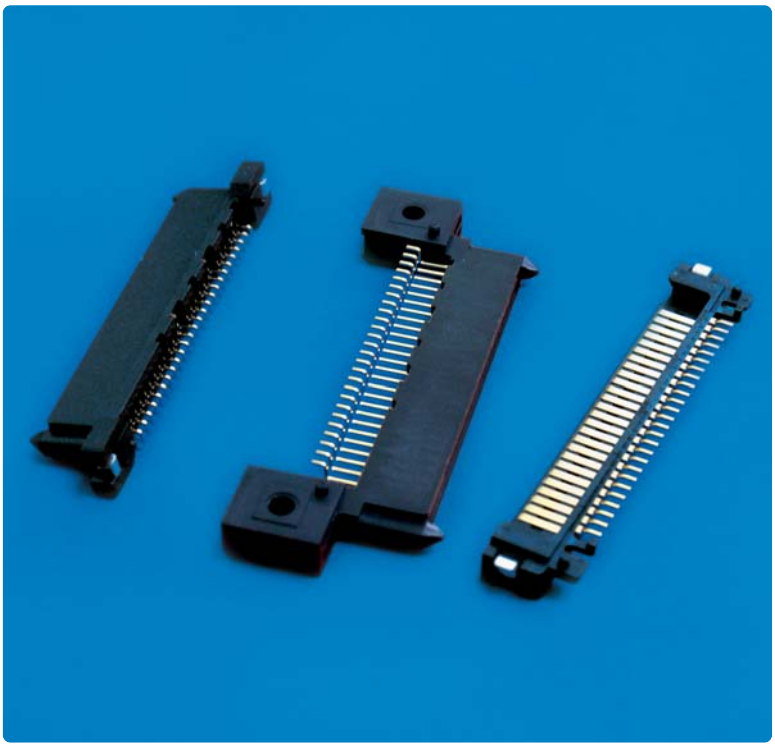
iVDR CONNECTORS (Information Versatile Disk for Removable usage)

DESCRIPTION

iVDR plug and receptacle connectors from FCI connect between a host system and an iVDR media cartridge, which may contain a hard disk drive or a solid state device. The iVDR is a new medium that provides the capability of sharing content, including movies, music and programs, over a variety of devices such as information appliances, home servers, video recorders, automobile A/V devices and personal computers. The electrical interface is based on Serial ATA for high-speed data transfer at 1.5 Gb/s. A low-insertion-force, blade-on-beam contact structure provides high durability and is rated for 10,000 mating cycles.

The iVDR Consortium, of which FCI is a board member, aims at the standardization of the next-generation large capacity data platform that can be used in applications from audio/visual devices to PC systems. Two specifications have been set for iVDR, one for a cartridge type designed for portability and the other for a built-in type which is mounted inside equipment. The cartridge type enables the transfer of content between equipment in homes, on vehicles, or in portable equipment. The built-in type easily increases the capacity of built-in hard disks of digital TVs or hard disk recorders. Both types enable large capacity recording and high speed random access.

iVDR is also capable of recording copyright-protected high-definition (HD) audio, video or image content. For protection of copyrighted content, SAFIA (Security Architecture for Intelligent Attachment) is used. Such iVDR are called iVDR-Secure.



FEATURES & BENEFITS

- Provide 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
- Cable assembly for iVDR is available for interfacing with SATA

TARGET MARKETS / APPLICATIONS

- iVDR Plug: Media cartridge, internal port termination, hard disk drive, solid state drive.
- iVDR Receptacle: Host application with iVDR interface, such as home recorder, Set-top box, PC, server, TV, automobile. Auto-loading mechanism at host applications.

TECHNICAL INFORMATION

MATERIALS

- Housing
  - High temperature thermoplastic (UL94 V-0)
- Contact
  - Copper alloy
- Plating
  - Under-plate: nickel
  - Over all: gold

ELECTRICAL PERFORMANCE

- Insulation resistance:
  - Initial 1000 MΩ minimum
  - After test 1000 MΩ minimum
- Current rating
  - AC/DC 1.5 A maximum (per contact)
- Contact resistance
  - Initial, 30 mΩ maximum
  - After test, increase 15 mΩ maximum
- Voltage rating
  - AC/DC 100 V

MECHANICAL PERFORMANCE

- Durability: 10,000 cycles
  - Mating force: 12.5N (1.27Kgf) maximum
  - Unmating force: 10N (1.02Kgf) maximum
    4.5N (0.46Kgf) minimum
- Operating temperature range:
  - 0°C to +65°C

SPECIFICATION

- Product specification: GS-12-346

APPROVALS AND CERTIFICATIONS

- iVDR Approved No.: iVDR-CN-04-0001
- iVDR Approved No.: iVDR-CN-04-0002
- iVDR Approved No.: iVDR-CN-06-0001

PACKAGING

- Tray

PART NUMBERS

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

** Please consult FCI for other feature and configuration.

MICRO SATA CONNECTORS

DESCRIPTION

Micro SATA connectors from FCI enable smaller 1.8" SATA drive form factors for hard disk drives (HDDs) or solid state drives (SSDs). The connectors comply with the Serial ATA Specification issued by the Serial ATA International Organization (SATA-IO) and facilitate the use of 1.8" SATA drives in mobile computers, set top boxes, game consoles, or portable storage units.

Micro SATA signal and power contacts are spaced on 1.27mm pitch. The signal segment of the internal micro SATA connector uses the same contact configuration as a standard SATA connector and supports Gen2 data rates of 3 Gb/s. Other connector features include 7+2 power pins with a power segment key, staggered contact lengths for hot-plug support, guide posts and slot openings to assure proper alignment during blind mating, as well as friction locks for cable applications. The plug connector fits 5mm or 8mm slim 1.8" form factor drives while the right-angle receptacle connector is used on host systems.

FEATURES & BENEFITS

- Compliant with Micro SATA requirements in Serial ATA Specification
- 16 contacts on 1.27mm pitch: 7 for signals and 7+2 for power
- Supports Gen 1 (1.5Gb/s) and Gen 2 (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

TARGET MARKETS / APPLICATIONS

- Data
  - Notebook PC
  - Sub-notebook PC
  - Portable storage (external drive)
- Consumer
  - Set top box
  - Gaming console
  - Audio / Video storage

TECHNICAL INFORMATION

MATERIALS

- Housing
  - Glass filled LCP (UL94 V-0), Black
- Contact – Signal/ Power
  - Brass (Plug)
  - Copper alloy (Receptacle)
- Soldering Tab – optional
  - Brass
- Plating
  - Underplate Finish: nickel
  - Contact area: gold

ELECTRICAL PERFORMANCE

- Insulation resistance
  - Initial 1000 M Ohm minimum
  - After test 1000 M Ohm minimum
- Current rating
  - 1.5 A per contact
- Contact resistance
  - Initial 30 mΩ maximum
  - After test 50 mΩ maximum
- Voltage rating
  - 100 V AC

MECHANICAL PERFORMANCE

- Durability: 500 cycles
  - Mating force: 45N Maximum
  - Unmating force: 10N Minimum
- Temperature range:
  - -40°C to +105°C

SPECIFICATION

- Product specification: GS-12-494

PACKAGING

- Trays

PART NUMBERS

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

** Please consult FCI for other feature and configuration.

SLIMLINE SATA CONNECTORS

DESCRIPTION

Slimline SATA connectors from FCI are designed to enable connection of a “slimline” form factor drive to the Serial ATA interface. The connectors comply with the Serial ATA Specification issued by the Serial ATA International Organization (SATA-IO) and are intended for use at the electrical interface to Optical Disk Drive (ODD) systems.

The specification specially supports 9.5mm and 12.7mm slimline drives, and the connector design accommodates a latching option for these drives. Some consideration was given to an anticipated 7mm drive height, but a latching option may not be accommodated.

The connector is 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. It is anticipated that a simple replacement of the PATA PC board with a SATA controller and connector in the present slimline drive designs may be possible.

The connector preserves the design of the signal portion of the present SATA connector and accommodates presently available SATA signal cables. Direct connect to a slimline SATA receptacle on a host board is also possible.

FEATURES & BENEFITS

- Compliant with Slimline SATA requirements in Serial ATA Specification
- Supports Gen 1 (1.5Gb/s) and Gen 2 (3Gb/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

TARGET MARKETS / APPLICATIONS

- Data
  - Desktop PC
  - Notebook PC
  - Optical disk drive (ODD)
- Consumer
  - Set top box
  - Gaming equipment
  - Optical disk drive (ODD)

TECHNICAL INFORMATION

MATERIALS

- Housing
  - Glass filled LCP (UL94 V-0), Black
- Contact - Signal / Power
  - Brass
- Soldering or screw-hole tabs
  - Brass
- Plating
  - Underplate Finish: nickel
  - Contact area: gold

MECHANICAL PERFORMANCE

- Durability: 500 cycles
  - Mating force:
    45N maximum for signal & power cable connector
    20N maximum for backplane connector
  - Unmating force:
    10N minimum up to 5 cycles and 8N minimum after 50 cycles for power connector
- Temperature range:
  - -40°C to +105°C

ELECTRICAL PERFORMANCE

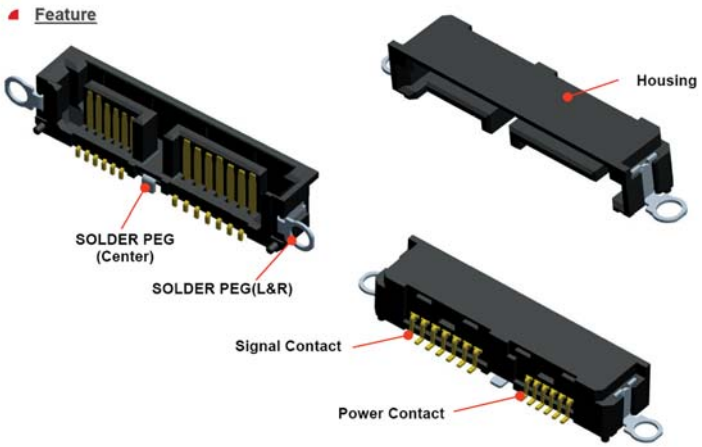
- Insulation resistance
  - Initial 1000 MΩ minimum
  - After test 1000 MΩ minimum
- Current rating
  - 1.5 A per contact
- Contact resistance
  - Initial 30 mΩ maximum
  - After test 45 mΩ maximum
- Voltage rating
  - 12 V AC Max

SPECIFICATION

- Product specification: GS-12-450
- Product specification (Japanese): GS-12-543

PACKAGING

- Tape & Reel



PART NUMBERS

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

** Please consult FCI for other feature and configuration.

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