

MINI-SAS HD NEXT GENERATION SAS STORAGE INTERFACE

OVERVIEW

The Mini-SAS HD product is the next generation SAS storage interface addressing channel bandwidth requirements of 6Gb/s, 12Gb/s and 14Gb/s meeting or exceeding the respective SAS 2.1 and proposed SAS 3.0 specifications. The Mini-SAS HD product provides greater port density (11mm port-to-port) versus the existing Mini-SAS 2.0 product (19.01mm port-to-port).

FCI's Mini-SAS HD product is fully compliant to the SFF-8643 and SFF-8644 industry specifications. Internal and external connector configurations of the Mini-SAS HD product include 1X1 (4x), 1X2 (8x), and 1X4(16x) and enables 4x and 8x internal & external cable assembly solutions which include EEPROM communication.

The Mini-SAS HD profile design is PCI Express compatible and can be utilized in PCI Express architecture applications.



FEATURES & BENEFITS

- IMLA based board connector insures compliance to the SAS 2.1 & proposed 3.0 electrical performance criteria
- Internal and external board connector and cable assemblies provide end-to-end application solutions
- 1X1, 1X2 and 1X4 connector/cage assemblies offer product family design flexibility
- All board connectors and configurations are fully 6G and 12G compliant allowing for use of same part numbers when system speeds increase from 6G to 12G
- Metal cages on the external connector and cables provide 360° EMI shielding and replaces problematic EMC elastomeric gaskets
- Cable assemblies offered in 4x and 8x configurations
- Eye-of-the-needle connector and cage single step termination yields consistent application to the PCB
- The external cable strain relief results in an axial pull force in excess of 20lbs
- Cable latch design reduces cable insertion force and un-mating issues
- Pull tabs are available in multiple lengths in Pantone 279 color to meet many application needs
- Positive stop feature on the casting prevents external cable assembly mating over-travel

- Hybrid external cables (mini-SAS HD to mini-SAS) allow for backwards compatible cabling with legacy system hardware

TARGET MARKETS/APPLICATIONS

- Data
 - Servers
 - RAID systems
 - Storage racks
- External storage systems
 - SAS/SATA HBA interfaces
 - Direct-attached storage (DAS)
- Communications
 - Switches

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TECHNICAL INFORMATION

MATERIALS

- Board receptacle contact: Copper alloy
- Board receptacle housing: Thermoplastic high temperature UL94V-0
- Board receptacle plating: Gold over Nickel
- Plug paddle card: Copper/FR4 – Gold over Nickel plating

ELECTRICAL PERFORMANCE

- Impedance: 100 +/- 15Ω
- Voltage rating: 30 V AC (RMS)/DC max.
- Current rating: 0.5A max.

ENVIRONMENTAL

- Thermal shock (temperature cycling): conforms to EIA-364-32
- Temperature life (heat aging): conforms to EIA-364-17, 105°C for 500 hours
- Operating temperature range : -40°C to 80°C

MECHANICAL PERFORMANCE

- Durability: 250 cycles

SPECIFICATIONS

External Cable to Board Connector System

- Product Spec: GS-12-651
- Application Spec: GS-20-0327

Internal Cable to Board Connector System

- Product Spec: GS-12-650
- Application Spec: GS-20-0356

APPROVALS AND CERTIFICATIONS

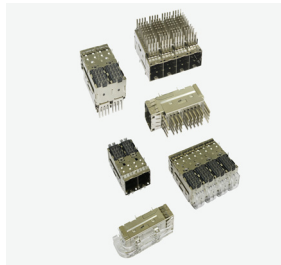
- RoHS conforms to EU directive 2002/95/EC
- UL Approval

PACKAGING

- Board receptacle: Tray
- Plug/Cable assembly: Bag



External Mini-SAS
HD Cables



External Mini-SAS
HD Connectors



Internal Mini-SAS
HD Connectors



Internal Mini-SAS
HD Cables



Internal Mini-SAS HD to
mini-SAS Right Angle
end Cables



Internal Mini-SAS HD to
mini-SAS Straight End
Cables

**▶ MINI – SAS HD NEXT GENERATION
SAS STORAGE INTERFACE**

PART NUMBERS EXTERNAL AND INTERNAL BOARD CONNECTORS

| Product Description | Signal Pairs | Part Numbers |
|---|--------------|--------------|
| Mini-SAS HD 1 X 1 External Assembly (6 & 12Gb/s per channel) | 8 Pairs | 10112626 |
| Mini-SAS HD 1 X 2 External Assembly (6 & 12Gb/s per channel) | 16 Pairs | 10112627 |
| Mini-SAS HD 1 X 4 External Assembly (6 & 12Gb/s per channel) | 32 Pairs | 10112628 |
| Mini-SAS HD 1 X 1 Internal Assembly (6 & 12Gb/s per channel) | 8 Pairs | 10112632 |
| Mini-SAS HD 1 X 2 Internal Assembly (6 & 12Gb/s per channel) | 16 Pairs | 10112633 |
| Mini-SAS HD 1 X 4 Internal Assembly (6 & 12Gb/s per channel) | 32 Pairs | 10112634 |
| Mini-SAS HD 1 X 1 External Assembly with Light Pipe (6 & 12 Gb/s per channel) | 8 Pairs | 10120960 |
| Mini-SAS HD 1 X 2 External Assembly with Light Pipe (6 & 12 Gb/s per channel) | 16 Pairs | 10120959 |
| Mini-SAS HD 1 X 4 External Assembly with Light Pipe (6 & 12 Gb/s per channel) | 32 Pairs | 10120728 |
| Mini-SAS HD 1 X 1 External Assembly with Heat Sink (6 & 12 Gb/s per channel) | 8 Pairs | 10112629 |
| Mini-SAS HD 1 X 2 External Assembly with Heat Sink (6 & 12 Gb/s per channel) | 16 Pairs | 10112630 |
| Mini-SAS HD 1 X 4 External Assembly with Heat Sink (6 & 12 Gb/s per channel) | 32 Pairs | 10112631 |
| Mini-SAS HD 1 X 1 Internal V/T Assembly (6 & 12 Gb/s per channel) | 8 Pairs | 10120666 |
| Mini-SAS HD 1 X 2 Internal V/T Assembly (6 & 12 Gb/s per channel) | 16 Pairs | 10120667 |

PART NUMBERS (EXTERNAL CABLE ASSEMBLIES)

SAS 2.1 (6 Gb/s per channel) cable assemblies

| Product Description | Signal Pairs | Part Numbers |
|---|--------------|--------------|
| Mini-SAS HD to mini-SAS HD passive external cable assembly - 4x configuration - SAS 2.1 (6Gb/s) compatible | 8 Pairs | 10112041 |
| Mini-SAS HD to mini-SAS passive external cable assembly - SAS 2.1 (6Gb/s) compatible - 4x configuration on mini-SAS HD end and universal keying on mini-SAS end | 8 Pairs | 10117771 |
| Mini-SAS HD to mini-SAS HD passive external cable assembly - 8x configuration - SAS 2.1 (6Gb/s) compatible | 16 Pairs | 10112359 |
| Mini-SAS HD to mini-SAS passive external cable assembly - SAS 2.1 (6Gb/s) compatible - 8x configuration on mini-SAS HD end and universal keying on mini-SAS end | 16 Pairs | 10117947 |

MINI – SAS HD NEXT GENERATION SAS STORAGE INTERFACE

Proposed SAS 3.0 (12 Gb/s per channel) cable assemblies

| Product Description | Signal Pairs | Part Numbers |
|--|--------------|--------------|
| Mini-SAS HD to mini-SAS HD passive external cable assembly - 4x configuration – proposed SAS 3.0 (12Gb/s) compatible | 8 Pairs | 10117949 |
| Mini-SAS HD to mini-SAS HD passive external cable assembly - 8x configuration – proposed SAS 3.0 (12Gb/s) compatible | 16 Pairs | 10117950 |

Enhanced (14Gb/s per channel) cable assemblies

| Product Description | Signal Pairs | Part Numbers |
|--|--------------|--------------|
| Mini-SAS HD to mini-SAS HD passive external cable assembly - 4x configuration – Enhanced (14Gb/s) compatible | 8 Pairs | 10120707 |

PART NUMBERS (INTERNAL CABLE ASSEMBLIES) WITH STANDARD MINI-SAS HD CABLE HOUSING

SAS 2.1 (6 Gb/s per channel) cable assemblies

| Product Description | Signal Pairs | Part Numbers |
|---|--------------|--------------|
| 4x Mini-SAS HD to 4x Mini-SAS HD passive internal cable assembly – Controller to Backplane – SAS2.1 (6Gb/s) compatible | 8 Pairs | 10119312 |
| 8x Mini-SAS HD to 8x Mini-SAS HD passive internal cable assembly – Controller to Backplane – SAS2.1 (6Gb/s) compatible | 16 Pairs | 10119577 |
| 4x Mini-SAS HD to 4x Mini-SAS HD passive internal cable assembly – Controller to Controller – SAS2.1 (6Gb/s) compatible | 8 Pairs | 10120086 |
| 8x Mini-SAS HD to 8x Mini-SAS HD passive internal cable assembly – Controller to Controller – SAS2.1 (6Gb/s) compatible | 16 Pairs | 10120088 |

Proposed SAS 3.0 (12 Gb/s per channel) cable assemblies

| Product Description | Signal Pairs | Part Numbers |
|--|--------------|--------------|
| 4x Mini-SAS HD to 4x Mini-SAS HD passive internal cable assembly – Controller to Backplane – SAS3.0 (12Gb/s) compatible | 8 Pairs | 10119217 |
| 8x Mini-SAS HD to 8x Mini-SAS HD passive internal cable assembly – Controller to Backplane – SAS3.0 (12Gb/s) compatible | 16 Pairs | 10119576 |
| 4x Mini-SAS HD to 4x Mini-SAS HD passive internal cable assembly – Controller to Controller – SAS3.0 (12Gb/s) compatible | 8 pairs | 10120087 |
| 8x Mini-SAS HD to 8x Mini-SAS HD passive internal cable assembly – Controller to Controller – SAS3.0 (12Gb/s) compatible | 16 pairs | 10120089 |

MINI – SAS HD NEXT GENERATION SAS STORAGE INTERFACE

WITH SHORT MINI–SAS HD CABLE HOUSING

SAS 2.1 (6 Gb/s per channel) cable assemblies

| Product Description | Signal Pairs | Part Numbers |
|---|--------------|--------------|
| Short 4x Mini-SAS HD to Short 4x Mini-SAS HD passive internal cable assembly – Controller to Backplane – SAS2.1 (6Gb/s) compatible | 8 Pairs | 10123417 |
| Short 8x Mini-SAS HD to Short 8x Mini-SAS HD passive internal cable assembly – Controller to Backplane – SAS2.1 (6Gb/s) compatible | 16 Pairs | 10127771 |
| Short 4x Mini-SAS HD to Short 4x Mini-SAS HD passive internal cable assembly – Controller to Controller – SAS2.1 (6Gb/s) compatible | 8 pairs | 10123416 |
| Short 8x Mini-SAS HD to Short 8x Mini-SAS HD passive internal cable assembly – Controller to Controller – SAS2.1 (6Gb/s) compatible | 16 pairs | 10127773 |

Proposed SAS 3.0 (12 Gb/s per channel) cable assemblies

| Product Description | Signal Pairs | Part Numbers |
|--|--------------|--------------|
| Short 4x Mini-SAS HD to Short 4x Mini-SAS HD passive internal cable assembly – Controller to Backplane – SAS3.0 (12Gb/s) compatible | 8 Pairs | 10122527 |
| Short 8x Mini-SAS HD to Short 8x Mini-SAS HD passive internal cable assembly – Controller to Backplane – SAS3.0 (12Gb/s) compatible | 16 Pairs | 10126495 |
| Short 4x Mini-SAS HD to Short 4x Mini-SAS HD passive internal cable assembly – Controller to Controller – SAS3.0 (12Gb/s) compatible | 8 pairs | 10122671 |
| Short 8x Mini-SAS HD to Short 8x Mini-SAS HD passive internal cable assembly – Controller to Controller – SAS3.0 (12Gb/s) compatible | 16 pairs | 10127772 |

MINI – SAS HD NEXT GENERATION SAS STORAGE INTERFACE

MINI-SAS HD TO MINI-SAS – WITH STANDARD HD CABLE HOUSING

Straight Cable exit on Mini-SAS end

| Product Description | Signal Pairs | Part Numbers |
|---|--------------|--------------|
| 4x Mini-SAS HD to Mini-SAS 36pin Straight type passive internal cable assembly – Controller to Backplane – SAS2.1 (6Gb/s) compatible | 8 Pairs | 10120612 |
| 4x Mini-SAS HD to Mini-SAS 36pin Straight type passive internal cable assembly – Controller to Controller – SAS2.1 (6Gb/s) compatible | 8 Pairs | 10124108 |

Right Angle Cable exit on Mini-SAS end

| Product Description | Signal Pairs | Part Numbers |
|--|--------------|--------------|
| 4x Mini-SAS HD to Mini-SAS 36pin Horizontal RA type passive internal cable assembly – Controller to Backplane – SAS2.1 (6Gb/s) compatible | 8 Pairs | 10123401 |
| 4x Mini-SAS HD to Mini-SAS 36pin Horizontal RA type passive internal cable assembly – Controller to Controller – SAS2.1 (6Gb/s) compatible | 8 Pairs | 10124110 |

MINI-SAS HD TO MINI-SAS – WITH SHORT HD CABLE HOUSING

Straight Cable exit on Mini-SAS end

| Product Description | Signal Pairs | Part Numbers |
|---|--------------|--------------|
| Short 4x Mini-SAS HD to Mini-SAS 36pin Straight type passive internal cable assembly – Controller to Backplane – SAS2.1 (6Gb/s) compatible | 8 Pairs | 10122526 |
| Short 4x Mini-SAS HD to Mini-SAS 36pin Straight type passive internal cable assembly – Controller to Controller – SAS2.1 (6Gb/s) compatible | 8 Pairs | 10124109 |

Right Angle Cable exit on Mini-SAS end

| Product Description | Signal Pairs | Part Numbers |
|--|--------------|--------------|
| Short 4x Mini-SAS HD to Mini-SAS 36pin Horizontal RA type passive internal cable assembly – Controller to Backplane – SAS2.1 (6Gb/s) compatible | 8 Pairs | 10123402 |
| Short 4x Mini-SAS HD to Mini-SAS 36pin Horizontal RA type passive internal cable assembly – Controller to Controller – SAS2.1 (6Gb/s) compatible | 8 Pairs | 10124111 |

INOMINSASHD0715EA4

Mouser Electronics

Authorized Distributor

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Amphenol:

[10112633-101LF](#) [10120667-101LF](#) [10112634-121LF](#) [10112632-121LF](#) [10112633-121LF](#)

FCI / Amphenol:

[10117771-3010LF](#) [10112359-2030LF](#) [10112359-2010LF](#) [10112041-3050LF](#) [10112041-2030LF](#) [10112634-101LF](#)
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