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SFF Committee

SFF-8670

Specification for

Multifunction 10 Gb/s 1X Shielded Connector (HSMIO)

Rev 0.5

Sept 28, 2014

Secretariat: SFF Committee

Abstract: This specification defines the mechanical specifications and general requirements of the HSMIO (High Speed Multifunction I/O) connector: a miniature shielded input/output connector supporting one differential channel (Tx and Rx) operating at data rates up to 10Gb/s, one low speed single ended lane and power. This connector is initially intended for use in phones, tablets, notebooks and desktop PCs.

This specification provides a common reference for systems manufacturers, system integrators and connector and cable manufacturers. This is an internal working specification of the SFF Committee, an industry ad hoc group.

This specification is made available for public review, and written comments are solicited from readers. Comments received will be considered for inclusion in future revisions of this specification.

The description of a connector in this specification does not assure that the specific component is actually available from a connector supplier. If such a connector is supplied, it must comply with this specification to achieve interoperability among suppliers.

Support: This specification is supported by the identified member companies of the SFF Committee.

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EXPRESSION OF SUPPORT BY MANUFACTURERS

The following member companies of the SFF Committee voted in favor of this industry specification.

All Best
Amphenol
EMC
FCI
Hewlett Packard
HGST
Luxshare-ICT
Molex
Sandisk
Shenzhen
TE Connectivity
Volex

The following member companies of the SFF Committee voted to abstain on this industry specification.

Applied Micro
Avago
Broadcom
Dell Computer
Finisar
Foxconn
IBM
JDS Uniphase
QLogic
Seagate
Sumitomo
Toshiba

Foreword

The development work on this specification was done by the SFF Committee, an industry group. The membership of the committee since its formation in August 1990 has included a mix of companies which are leaders across the industry.

When 2 1/2" diameter disk drives were introduced, there was no commonality on external dimensions e.g. physical size, mounting locations, connector type, connector location, between vendors.

The first use of these disk drives was in specific applications such as laptop portable computers and system integrators worked individually with vendors to develop the packaging. The result was wide diversity, and incompatibility.

The problems faced by integrators, device suppliers, and component suppliers led to the formation of the SFF Committee as an industry ad hoc group to address the marketing and engineering considerations of the emerging new technology.

During the development of the form factor definitions, other activities were suggested because participants in the SFF Committee faced more problems than the physical form factors of disk drives. In November 1992, the charter was expanded to address any issues of general interest and concern to the storage industry. The SFF Committee became a forum for resolving industry issues that are either not addressed by the standards process or need an immediate solution.

Those companies which have agreed to support a specification are identified in the first pages of each SFF Specification. Industry consensus is not an essential requirement to publish an SFF Specification because it is recognized that in an emerging product area, there is room for more than one approach. By making the documentation on competing proposals available, an integrator can examine the alternatives available and select the product that is felt to be most suitable.

SFF Committee meetings are held during T10 weeks (see www.t10.org), and Specific Subject Working Groups are held at the convenience of the participants. Material presented at SFF Committee meetings becomes public domain, and there are no restrictions on the open mailing of material presented at committee meetings.

Most of the specifications developed by the SFF Committee have either been incorporated into standards or adopted as standards by EIA (Electronic Industries Association), ANSI (American National Standards Institute) and IEC (International Electrotechnical Commission).

If you are interested in participating or wish to follow the activities of the SFF Committee, the signup for membership and/or documentation can be found at:
www.sffcommittee.com/ie/join.html

The complete list of SFF Specifications which have been completed or are currently being worked on by the SFF Committee can be found at:
<ftp://ftp.seagate.com/sff/SFF-8000.TXT>

If you wish to know more about the SFF Committee, the principles which guide the activities can be found at:
<ftp://ftp.seagate.com/sff/SFF-8032.TXT>

Suggestions for improvement of this specification will be welcome. They should be sent to the SFF Committee, 14426 Black Walnut Ct, Saratoga, CA 95070.

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Revision History:

Rev 0.5 - Updated Fig 4.1 to clarify the (2) 6.92 dimensions. Added Revision History page.

SFF Committee --

Multifunction 10 Gb/s 1x Shielded Connector (HSMIO)

1. Scope

This specification defines the terminology and mechanical requirements for a 5+4 and shielded cable plug and PCB mount receptacle connector system which is also designed to work with USB2.0 Micro B Plugs. Common use for this connector system would be anywhere a USB2.0 Micro B could be used. The mechanical dimensioning and signal assignments for the connector receptacle allows intermateability with the USB2.0 Micro B Plug

1.1 Application Specific Criteria

This connector shall meet the USB3.0 electrical performance requirements as defined by the USB3.0 specification. The Receptacle will intermate with the USB2.0 Micro B Plug.

Both USB3.0 and USB PD define respective requirements for the transmission of multi-gigabit signals and power delivery. When this connector is used in either of these applications, its performance shall meet the requirements of the appropriate standard.

2. References

2.1 Industry Documents

The following interface standards are relevant to this SFF Specifications.

USB2.0
USB3.0
USB PD

2.2 SFF Specifications

There are several projects active within the SFF Committee. The complete list of specifications which have been completed or are still being worked on are listed in the specification at <ftp://ftp.seagate.com/sff/SFF-8000.TXT>

2.3 Sources

Those who join the SFF Committee as an Observer or Member receive electronic copies of the minutes and SFF specifications (<http://www.sffcommittee.com/ie/join.html>).

Copies of ANSI standards may be purchased from the InterNational Committee for Information Technology Standards (<http://www.techstreet.com/incitsgate.tmp1>).

2.4 Conventions

The dimensioning conventions are described in ANSI-Y14.5M, Geometric Dimensioning and Tolerancing. All dimensions are in millimeters, which are the controlling dimensional units (if inches are supplied, they are for guidance only).

The ISO convention of numbering is used i.e., the thousands and higher multiples are separated by a space and a period is used as the decimal point. This is equivalent to the English/American convention of a comma and a period.

American	French	ISO
0.6	0,6	0.6
1,000	1 000	1 000
1,323,462.9	1 323 462,9	1 323 462.9

2.5 Definitions

For the purpose of SFF Specifications, the following definitions apply:

PD: Power Delivery

3. General Description

The Multifunction 10 Gb/s 1x Shielded Connector system offers USB3.0 signaling over an interface compatible with USB2.0 and is based on USB2.0 Micro B connector technology. This technology provides USB3.0 functionality over a widely adopted USB2.0 Micro B interface.

Figure 3-1 represents a typical receptacle configuration for this connector.

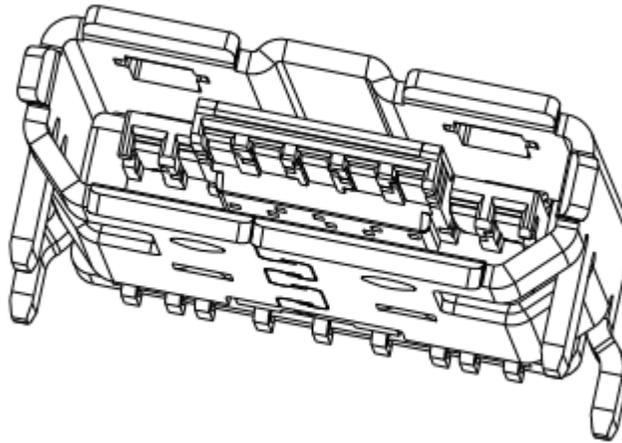


FIGURE 3-1 TYPICAL APPLICATION VIEW

4. Dimensional Requirements

For dimensions not shown here, refer back to the USB2.0 specification.

4.1 Receptacle Dimensions.

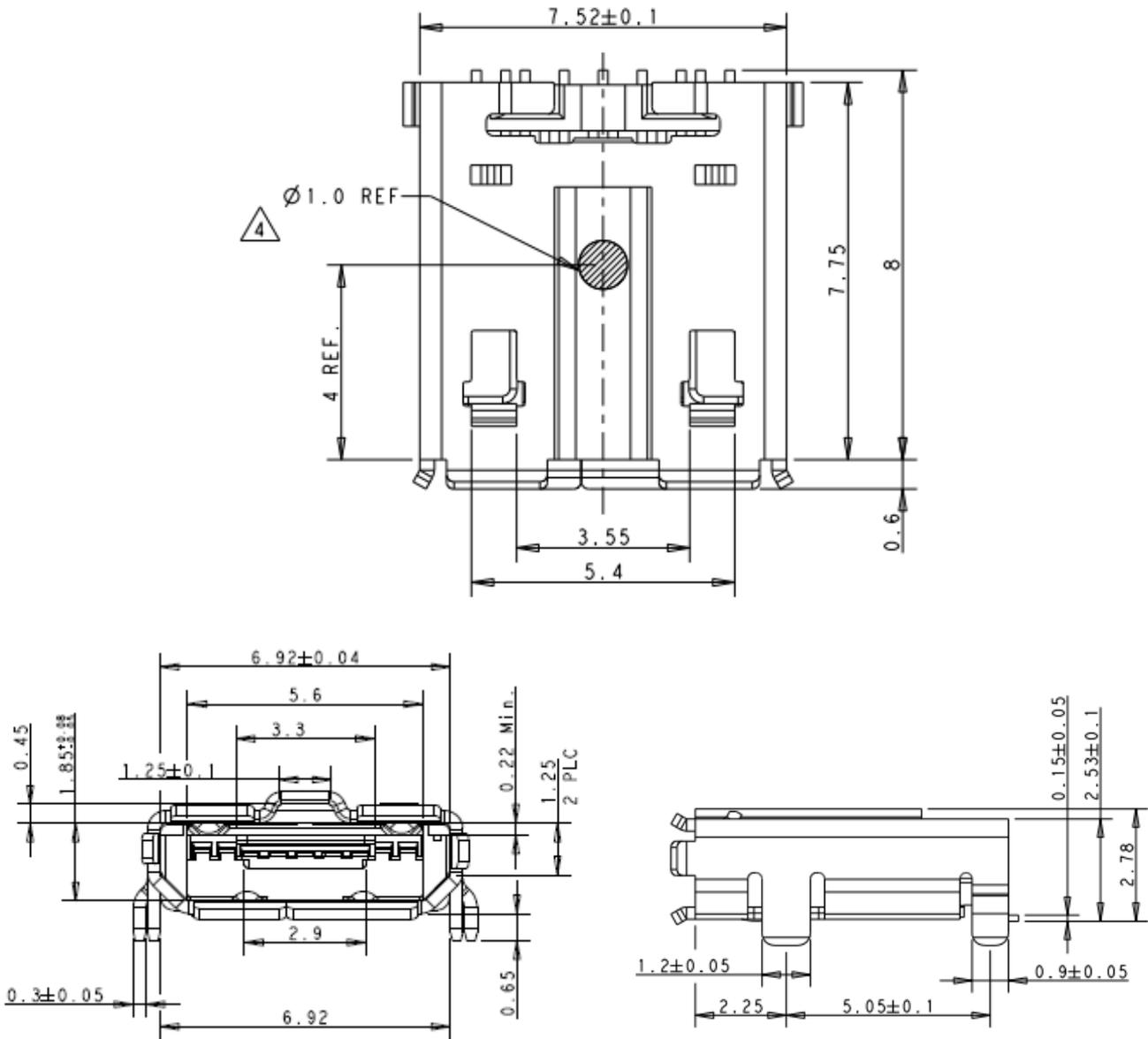


FIGURE 4-1 RECEPTACLE DIMENSIONS (1 OF 2)

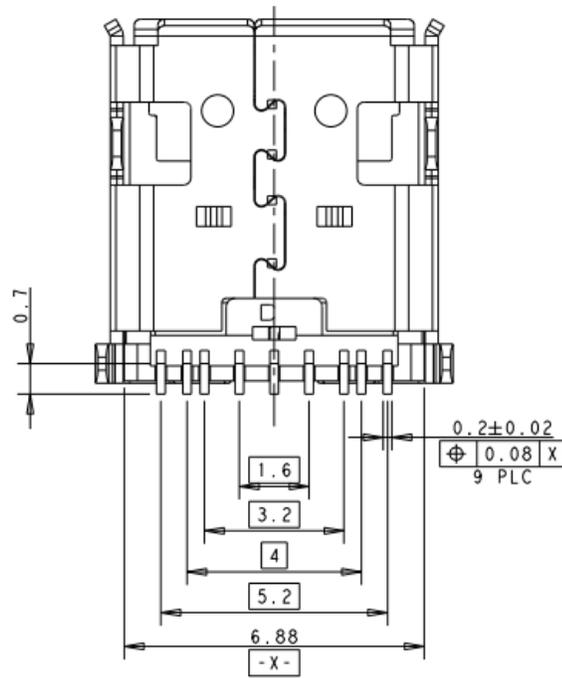
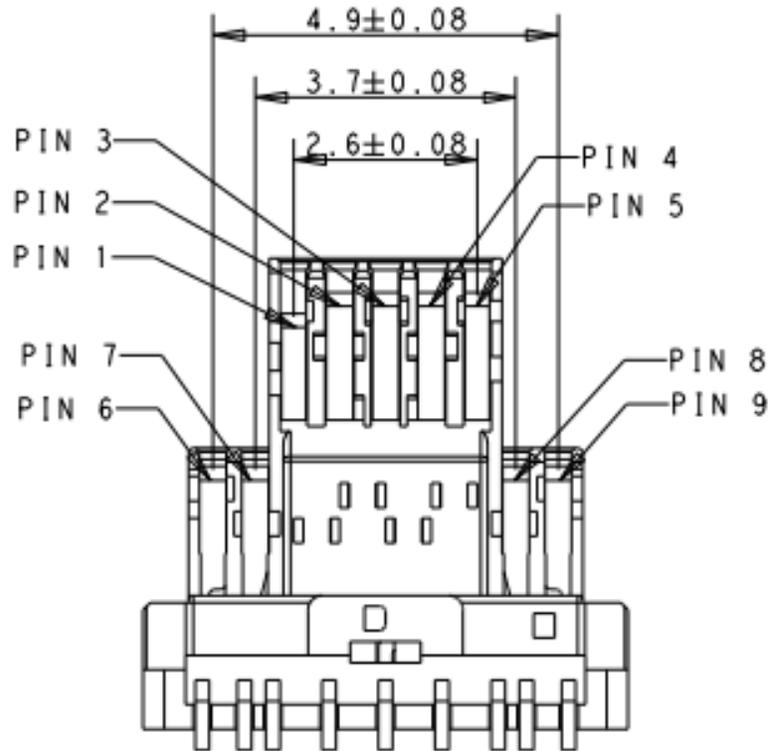


FIGURE 4-2 RECEPTACLE DIMENSIONS (2 OF 2)

4.2 Receptacle Interface Dimensions



BOTTOM VIEW WITHOUT SHELL

FIGURE 4-3 RECEPTACLE INTERFACE DIMENSIONS

4.3 Receptacle Footprint Dimensions

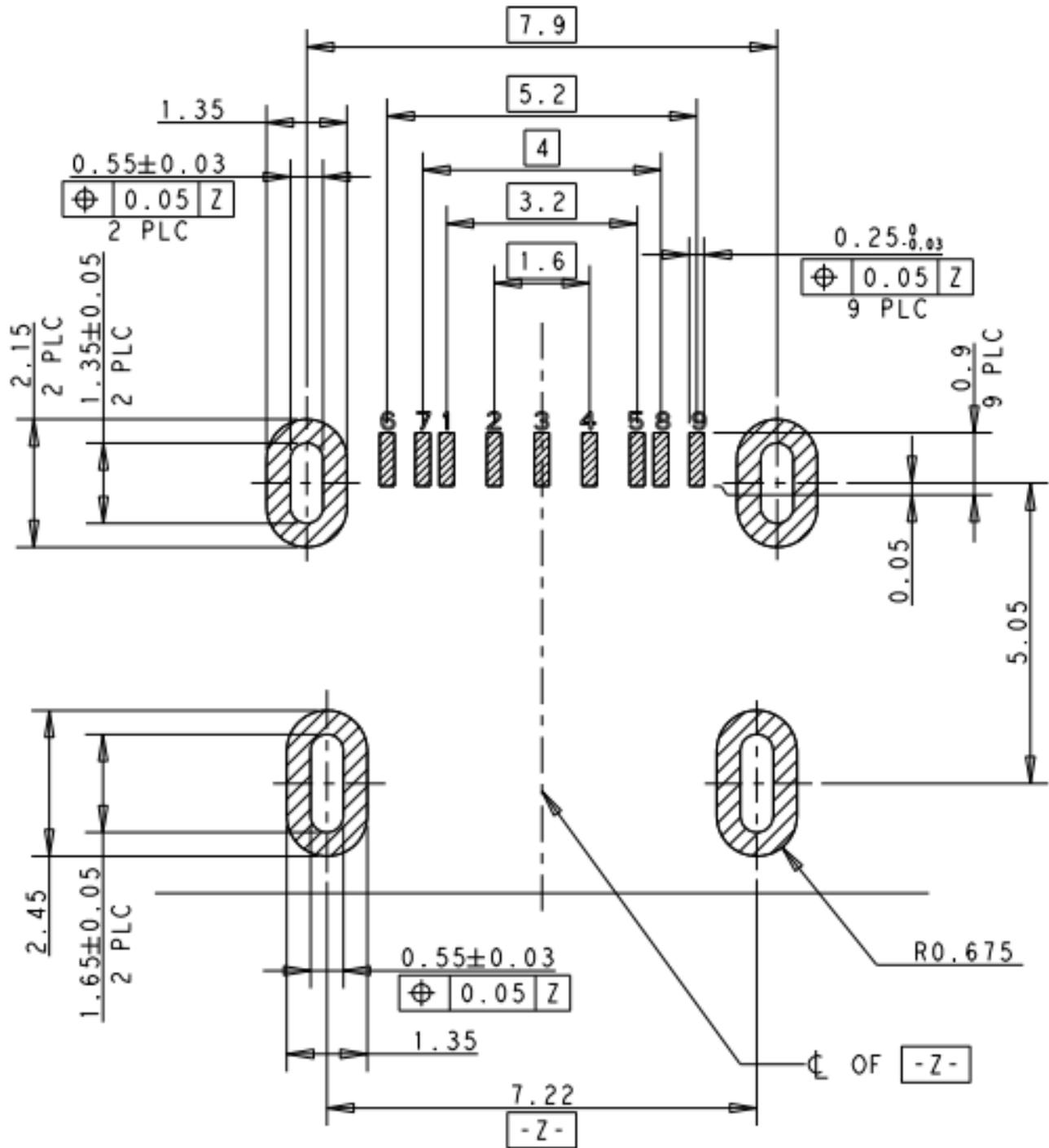


FIGURE 4-4 RECEPTACLE FOOTPRINT DIMENSIONS

4.4 Recommended Receptacle Pinout

TABLE 4-1 RECOMMENDED RECEPTACLE PINOUT

PIN 9	StdA_SSTX+
PIN 8	StdA_SSTX_
PIN 7	StdA_SSRX+
PIN 6	StdA_SSRX_
PIN 5	GND-uUSB
PIN 4	ID
PIN 3	D+
PIN 2	D-
PIN 1	VBUS
PIN NO.	SIGNAL NAME

4.5 Plug Dimensions

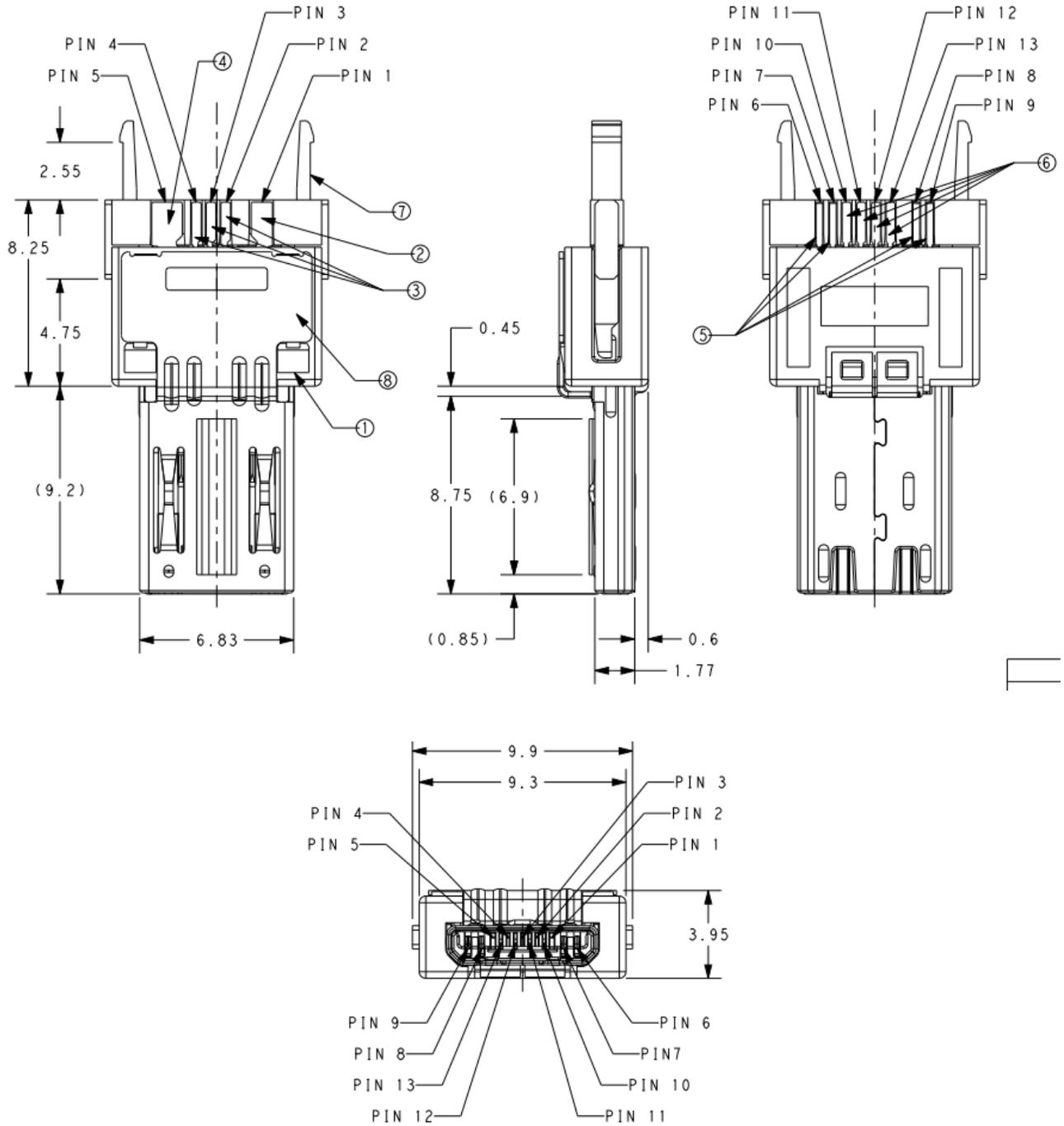


FIGURE 4-5 PLUG DIMENSIONS

4.6 Recommended Plug Pinout

TABLE 4-2 RECOMMENDED PLUG PINOUT

13	CONTROL - 4
12	CONTROL - 3
11	CONTROL - 2
10	CONTROL - 1
9	StdA_SSTX+
8	StdA_SSTX-
7	StdA_SSRX+
6	StdA_SSRX-
5	GND-uUSB
4	ID
3	D+
2	D-
1	VBUS
PIN NO.	SIGNEAL NAME

4.7 Plug Shell Dimensions

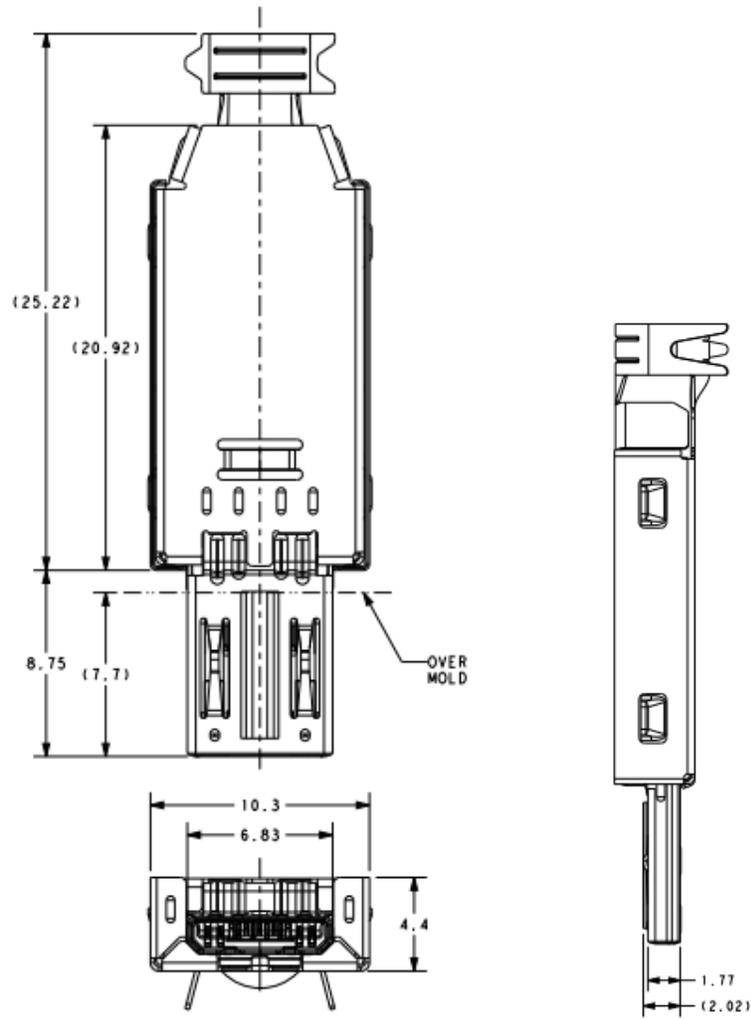


FIGURE 4-6 PLUG SHELL DIMENSIONS