SFF specifications are available at http://www.snia.org/sff/specifications

SFF-8654

Specification for

0.6mm 4/8X Unshielded I/O Connector

Rev 1.2 April 27, 2018

Secretariat: SFF TA TWG

Abstract: This specification defines the mechanical specifications and general performance requirements for the 0.6mm unshielded I/O connector that is designed for use in high speed serial interconnect applications. One such use is as an 8 lane receptacle and mating cable plug for internal SAS connections.

This specification provides a common reference for systems manufacturers, system integrators, and suppliers.

This specification is made available for public review, and written comments are solicited from readers. Comments received by the members 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 connector suppliers. If such a connector is supplied, it must comply with this specification to achieve interoperability between suppliers.

POINTS OF CONTACT:

Paul Coddington
Amphenol High Speed Interconnects
20 Valley Street
Endicott, NY 13760

607-754-4444
paul.coddington@amphenol-highspeed.com

Chairman SFF TA TWG
Email: SFF-Chair@snia.org

Intellectual Property

The user's attention is called to the possibility that implementation of this Specification may require use of an invention covered by patent rights. By distribution of this specification, no position is taken with respect to the validity of a claim or claims or of any patent rights in connection therewith. This specification is considered SNIA Architecture and is covered by the SNIA IP Policy and as a result goes through a request for disclosure when it is published. Additional information can be found at the following locations:

- Results of IP Disclosures: http://www.snia.org/sffdisclosures
- SNIA IP Policy: http://www.snia.org/ippolicy

Update History

Rev 0.1 April 29, 2014
- Initial release

Rev 0.2 April 30, 2014
- Some editing of fonts to make them consistent.

Rev 0.3 November 5, 2014
- Added Update History.
- Added “/4” to the document title in all locations throughout the document.
- Updated TABLE OF CONTENTS and lists of FIGURES and TABLES.
- Added SFF-9400 to section 2.1 Industry Documents.
- Added the four lane, 38 position, 4X text to the section 1. Scope.
- Added “8X” to existing applicable Figures and Tables in sections 3, 5, and 6.
- Added new “4X” Figures and text in section 3. General Description.
- Replaced the Cable Signal Assignment figure in section 3.1 with test referring to SFF-9400 instead for the appropriate information.
- Changed dimensions A01 and B01. Deleted dimension C14 and changed dimension C15 to become the new C14 dimension. Changed tolerances for dimensions A01, A02, B01, B02, C01, C02, and C06. Modified the descriptions for dimensions A01, A02, A03, B01, B02, and B03.
- Replaced Figure 5-5 with a drawing image rotated for easier reading and added the missing view, DETAIL A.

Rev 0.4 January 23, 2015
- Added a new updated Figure 3-4.
- Added Figure 3-6 4X Plug & 4X Receptacle Pin Assignments.
- In 4.2, added “Projected drawing views, where applicable, are shown in third-angle orthographic projection.”
- In 5.1 and in 5.2, added “8X”.
- In Table 5-1, modified dimension C01 and changed dimension A03 to a Reference dimension.
- In Table 5-2, modified dimension C01 and changed dimension B03 to a Reference dimension. Modified the description of B14 and modified dimension B22.
- Replaced Figure 5-5 with one rotated for portrait viewing.
- In Table 5-3, modified dimension C01 and its description.
- Added Section 5.3 along with Figure 5-6 and Table 5-4.
- Added Section 5.4 along with Figures 5-7 & 5-8, Table 5-5, Figures 5-9 & 5-10, and Table 5-6.
- Added Section 5.5 along with Figure 5-11 and Table 5-7.
- In 6.1 and in 6.2, added “8X”.
- Replaced Figure 6-1 and added new Figures 6-2 & 6-3 and replaced Table 6-1. Added Figures 6-4, 6-5, & 6-6. Added new Table 6-2.
- The old Figure 6-2 is now Figure 6-7 and the image was updated.
- Added Figures 6-8, 6-9, & 6-10.
- The old Table 6-2 is now Table 6-3 and the entire Table was replaced.
- Added Figures 6-11, 6-12, & 6-13. Added new Table 6-4.

- The old Figure 6-3 is now Figure 6-14 and the image was updated.
- The old Table 6-3 is now Table 6-5 and the entire Table was replaced.
- The old Figure 6-4 is now Figure 6-15 and the image was updated.
- The old Table 6-4 is now Table 6-6 and the entire Table was replaced.
- Added Section 6.3 along with Figures 6-16, 6-17, & 6-18 and Table 6-7. Also, added Figures 6-19, 6-20, & 6-21 and Table 6-8. Added Figures 6-22, 6-23, 6-24, 6-25, & 6-26 and Table 6-9. Added Figures 6-27, 6-28, & 6-29 and Table 6-10.
- Added Section 6.4 along with Figure 6-30, Table 6-11, Figure 6-31, and Table 6-12.

Rev 1.0 July 18, 2015

- The speed characteristics and electrical considerations were removed in order to create SFF-8655.

Rev 1.1 December 3, 2015

- In Table 7-3, modified Mating Force and Un-mating Force parameters and requirements. Also added Latch Plug Retention Force and Contact Normal Force parameters, requirements, and test conditions.

Rev 1.1.1 August 17, 2017

- Updated the document template to include the new SNIA elements.
- Updated Section 2.1 Industry Documents and Section 2.4 Definitions.
- Added SFF-9402 to Section 3.1 Signal Assignments.
- In Section 4.1 Datums, added Figure 4-1 and Figure 4-2 and updated Table 4-1.
- In Section 5.1, replaced Figure 5-1, Figure 5-2, Figure 5-3, and Figure 5-4 and updated Table 5-1 and Table 5-2.
- In Section 5.2, updated Figure 5-5 to show Basic dimensions in rectangles. Updated Dimensions C07, C09, & C10, and several Descriptions in Table 5-3.
- Removed Section 5.3 Stamped Metal Latch for 8X and 4X Plugs (including Figure 5-6 and Table 5-4). Any required latch dimensions were included in the 8X and 4X plug figures and tables. Renumbered previous Sections 5.4 and 5.5 to be the new Sections 5.3 and 5.4. Renumbered the remaining Section 5 Figures and Tables accordingly.
- Replaced Figure 5-6 (was Figure 5-7) and Figure 5-7 (was Figure 5-8), and updated Table 5-4 (was Table 5-5).
- Replaced Figure 5-8 (was Figure 5-9) and Figure 5-9 (was Figure 5-10), and updated Table 5-5 (was Table 5-6).
- Replaced Figure 5-10 (was Figure 5-11) and updated Table 5-6 (was Table 5-7) including values of Dimensions F07, F09, & F10, and several dimension Descriptions.
- In Section 6.1, replaced Figure 6-1, Figure 6-2, and Figure 6-3 and updated Table 6-1. Removed Figure 6-4, Figure 6-5, Figure 6-6, and Table 6-2. Any required 8x right angle latch shroud dimensions are included in the 8x right angle connector assembly figures and table. Renumbered remaining figures and tables accordingly. Replaced Figure 6-4 (was Figure 6-7), Figure 6-5 (was Figure 6-8), Figure 6-6 (was Figure 6-9), and Figure 6-7 (was Figure 6-10) and updated Table 6-2 (was Table 6-3). Removed Figure 6-11, Figure 6-12, Figure 6-13, and Table 6-4. Any required 8x vertical latch shroud dimensions are included in the 8x vertical connector assembly figures and table. Renumbered remaining figures and tables accordingly.
- In Section 6.2, replaced Figure 6-8 (was Figure 6-14) and updated Table 6-3 (was Table 6-5). Also, replaced Figure 6-9 (was Figure 6-15) and updated Table 6-4 (was Table 6-6).
- In Section 6.3, replaced Figure 6-10 (was Figure 6-16), Figure 6-11 (was Figure 6-17), and Figure 6-12 (was Figure 6-18) and updated Table 6-5 (was Table 6-7). Removed Figure 6-19, Figure 6-20, Figure 6-21, and Table 6-8. Any required 4x right angle latch shroud dimensions are included in the 4x right angle connector assembly figures and table. Renumbered remaining figures and tables accordingly. Replaced Figure 6-13 (was Figure 6-22 and Figure 6-23), Figure 6-14 (was Figure 6-24), Figure 6-15 (was Figure 6-25), and Figure 6-16 (was Figure 6-26) and updated Table 6-6 (was Table 6-9). Removed Figure 6-27,

Figure 6-28, Figure 6-29, and Table 6-10. Any required 4x vertical latch shroud dimensions are included in the 4x vertical connector assembly figures and table. Renumbered remaining figures and tables accordingly.
- In Section 6.4, replaced Figure 6-17 (was Figure 6-30) and updated Table 6-7 (was Table 6-11). Also, replaced Figure 6-18 (was Figure 6-31) and updated Table 6-8 (was Table 6-12).

Rev 1.1.2 March 02, 2018
- Updated various email addresses and web addresses to hyperlinks.
- Updated Intellectual Property paragraph to accommodate current SNIA IP Disclosure policy.
- Updated the Foreword section per recent changes to Specification Template.
- Updated link to SFF-8000 in the Foreword and in Section 2.2.
- Updated the documents referenced in Section 2.1.
- Moved all receptacle connector footprints to an informative appendix at the end of the specification and renumbered the remaining sections, figures, and tables accordingly.
- Updated SNIA Copyright date in Footer to 2018.
- In Table 7-2, changed EIA-364-6 to EIA-364-23 and added some clarifications for the Dielectric Withstanding Voltage test.

Rev 1.2 April 27, 2018
- Published following an Approval Ballot ending on March 30, 2018 and a Majority Ballot ending on April 27, 2018 in order to complete the comment resolution process.

Foreword

The development work on this specification was done by the SNIA SFF TWG, an industry group. Since its formation as the SFF Committee in August 1990, the membership 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, or connector location, between vendors. The SFF Committee provided a forum for system integrators and vendors to define the form factor of disk drives.

During their definition, other activities were suggested because participants in SFF faced more challenges than the form factors. 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.

In July 2016, the SFF Committee transitioned to SNIA (Storage Networking Industry Association), as a TA (Technology Affiliate) TWG (Technical Work Group).

Industry consensus is not a requirement to publish a 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 meets during the T10 (see www.t10.org) and T11 (see www.t11.org) weeks, and SSWGs (Specific Subject Working Groups) are held at the convenience of the participants.

Many of the specifications developed by SFF have either been incorporated into standards or adopted as standards by ANSI, EIA, JEDEC and SAE.

For those who wish to participate in the activities of the SFF TWG, the signup for membership can be found at:
http://www.snia.org/sff/join

The complete list of SFF Specifications which have been completed or are currently being worked on by the SFF Committee is contained in the document SFF-8000 which can be found at:
http://www.snia.org/sff/specifications

Suggestions for improvement of this specification will be welcome, they should be submitted to:
http://www.snia.org/feedback

TABLE OF CONTENTS

1. Scope 8
1.1 Application Specific Criteria 8
1.2 Copyright 8
1.3 Disclaimer 8

2. References 9
2.1 Industry Documents 9
2.2 Sources 9
2.3 Conventions 9
2.4 Definitions 10

3. General Description 13
3.1 Signal Assignments 16
3.2 Pin Assignments 16

4. Mechanical Specifications 18
4.1 Datums 18
4.2 General Tolerances 19

5. Plug Requirements 20
5.1 8X Plug Configurations 20
5.2 8X Plug Paddle Card 26
5.3 4X Plug Configurations 27
5.4 4X Plug Paddle Card 33

6. Receptacle Connector Requirements 34
6.1 8X Receptacle Connector Configurations 34
6.2 4X Receptacle Connector Configurations 42

7. Performance Requirements 50
7.1 EIA 364 TS-1000 Requirements 50
7.2 Electrical Performance Requirements 51
7.3 Mechanical Performance Requirements 51
7.4 Environmental Performance Requirements 51

A. Informative Appendix 52
A.1 8X Receptacle Connector Footprints 52
A.2 4X Receptacle Connector Footprints 54

FIGURES

Figure 2-1 Mating side Gender Definition 11
Figure 2-2 Direction of Mating 12
Figure 2-3 Direction of Contact 12
Figure 3-1 Typical 8X Application View 13
Figure 3-2 Alternative 8X Application View 14
Figure 3-3 Typical 4X Application View 14
Figure 3-4 Alternative 4X Application View 15
Figure 3-5 8X Plug & 8X Receptacle Pin Assignments 16
Figure 3-6 4X Plug & 4X Receptacle Pin Assignments 17
Figure 4-1 Common Datums for Straight Plugs & Right Angle Receptacles 18
Figure 4-2 Common Datums For Right Angle Plugs & Vertical Receptacles 19
Figure 5-1 8X Straight Plug 20
Figure 5-2 8X Straight Plug (2) 21
Figure 5-3 8X Right Angle Plug 23
Figure 5-4 8X Right Angle Plug (2) 24
Figure 5-5 8X Plug Paddle Card 26

Figure 5-6 4X Straight Plug 27
Figure 5-7 4X Straight Plug (2) 28
Figure 5-8 4X Right Angle Plug 30
Figure 5-9 4X Right Angle Plug (2) 31
Figure 5-10 4X Plug Paddle Card Dimensions 33
Figure 6-1 8X Right Angle Connector with Latch Retention 34
Figure 6-2 8X Right Angle Connector with Latch Retention (2) 35
Figure 6-3 8X Right Angle Connector with Latch Retention (3) 36
Figure 6-4 8X Straight Vertical Connector with Latch Retention 38
Figure 6-5 8X Straight Vertical Connector with Latch Retention (2) 39
Figure 6-6 8X Straight Vertical Connector with Latch Retention (3) 39
Figure 6-7 8X Straight Vertical Connector with Latch Retention (4) 40
Figure 6-8 4X Right Angle Connector with Latch Retention 42
Figure 6-9 4X Right Angle Connector with Latch Retention (2) 43
Figure 6-10 4X Right Angle Connector with Latch Retention (3) 44
Figure 6-11 4X Straight Vertical Connector with Latch Retention 46
Figure 6-12 4X Straight Vertical Connector with Latch Retention (2) 47
Figure 6-13 4X Straight Vertical Connector with Latch Retention (3) 48
Figure 6-14 4X Straight Vertical Connector with Latch Retention (4) 49

Figure: A-1 8X Right Angle Receptacle Connector Footprint 52
Figure: A-2 8X Straight Vertical Receptacle Connector Footprint 53
Figure: A-3 4X Right Angle Receptacle Connector Footprint 54
Figure: A-4 4X Straight Vertical Receptacle Connector Footprint 55

TABLES

Table 4-1 Table of Common Datums 19
Table 5-1 Free 8X Straight Plug Cable Connector Dimensions 22
Table 5-2 Free 8X Right Angle Plug Cable Connector Dimensions 25
Table 5-3 8X Plug Paddle Card Dimensions 26
Table 5-4 Free 4X Straight Plug Cable Connector Dimensions 29
Table 5-5 Free 4X Right Angle Plug Cable Connector Dimensions 32
Table 5-6 4X Paddle Card Dimensions 33
Table 6-1 8X Right Angle Receptacle Connector Dimensions 37
Table 6-2 8X Straight Vertical Receptacle Connector Dimensions 41
Table 6-3 4X Right Angle Connector with Latch Retention Dimensions 45
Table 6-4 4X Straight Vertical Receptacle Connector Dimensions 50
Table 7-2 Electrical Requirements And Test Conditions 51
Table 7-3 Mechanical Requirements And Test Conditions 51
Table 7-4 Environmental Requirements And Test Conditions 51

Table: A-1 8X Right Angle Receptacle Footprint Dimensions 52
Table: A-2 8X Straight Vertical Receptacle Connector Dimensions 53
Table: A-3 4X Right Angle Receptacle Connector Footprint Dimensions 54
Table: A-4 4X Straight Vertical Receptacle Connector Footprint Dimensions 55

Scope

This specification defines the terminology and mechanical requirements for an eight lane or a four lane, high speed unshielded I/O connector, the mating unshielded cable plug, and the latching requirements for them based upon the 74 position and the 38 position 0.6mm pitch unshielded I/O connector interface defined herein.

1.1 Application Specific Criteria

This connector interface is capable of meeting the high speed internal I/O electrical performance requirements of T10 SAS. The connector design is ribbon cable friendly and supports blade and mainstream server designs.

1.2 Copyright

1.3 Disclaimer

The information contained in this publication is subject to change without notice. The SNIA makes no warranty of any kind with regard to this specification, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. The SNIA shall not be liable for errors contained herein or for incidental or consequential damages in connection with the furnishing, performance, or use of this specification.

Suggestions for revisions should be directed to http://www.snia.org/feedback/

2. References

2.1 Industry Documents

- ANSI INCITS 519 Serial Attached SCSI - 3 (SAS-3)
- ANSI INCITS 534 Serial Attached SCSI - 4 (SAS-4)
- ASME Y14.5 Dimensioning and Tolerancing
- EIA-364-1000 Environmental Test Methodology for Assessing the Performance of Electrical Connectors and Sockets Used in Controlled Environment Applications
- EIA-364-04 Normal Force Test Procedure for Electrical Connectors
- EIA-364-13 Mating and Unmating Forces Test Procedure for Electrical Connectors
- EIA-364-20 Withstanding Voltage Test Procedure for Electrical Connectors
- EIA-364-21 Insulation Resistance Test Procedure for Electrical Connectors
- EIA-364-23 Low Level Contact Resistance Test Procedure for Electrical Connectors
- EIA-364-27 Mechanical Shock Test Procedure for Electrical Connectors
- EIA-364-28 Vibration Test Procedure for Electrical Connectors and Sockets
- EIA-364-98 Housing Locking Mechanism Strength Test Procedure for Electrical Connectors
- IPC-A-610 Acceptability of Electronic Assemblies
- SFF-8000 SFF TA TWG Documents
- SFF-8410 High Speed Serial Testing for Copper Links
- SFF-9400 Universal 4/8X Pinouts
- SFF-9402 Universal Multi-Protocol Cables for SAS/PCIe

2.2 Sources

There are several projects active within the SFF TWG. The complete list of specifications which have been completed or are still being worked on is contained in the document SFF-8000 which can be found at http://www.snia.org/sff/specifications.

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

2.3 Conventions

The dimensioning conventions are described in ANSI-Y14.5, 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

2.4 Definitions

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

Advanced grounding contacts: Connector contacts that mate first and break last and are capable of carrying power ground return currents and performing electrostatic discharge. Other terms sometimes used to describe these features are: grounding pins, ESD contacts, grounding contacts, static drain, and pre-grounding contacts.

Alignment guides: Connector features that preposition insulators prior to electrical contact. Other terms sometimes used to describe these features are: guide pins, guide posts, blind mating features, mating features, alignment features, and mating guides

Board Termination Technologies: Surface mount single row, surface mount dual row, through hole, hybrid, straddle mount, pressfit.

Cable Termination: The attachment of wires to the termination side of a connector. Schemes commonly used in the industry are IDC (Insulation Displacement Contact), IDT (Insulation Displacement Termination), wire slots, solder, weld, crimp, braise, etc.

Contact mating sequence: Order of electrical contact during mating/unmating process. Other terms sometimes used to describe this feature are: contact sequencing, contact positioning, mate first/break last, EMLB (early mate late break) staggered contacts, and long pin / short pin.

Fixed: Used to describe the gender of the mating side of the connector that accepts its mate upon mating. This gender is frequently, but not always, associated with the common terminology "receptacle". Other terms commonly used are "female" and "socket connector". The term "fixed" is adopted from EIA standard terminology as the gender that most commonly exists on the fixed end of a connection, for example, on the board or bulkhead side. In this specification "fixed" is specifically used to describe the mating side gender illustrated in Figure 2-1.

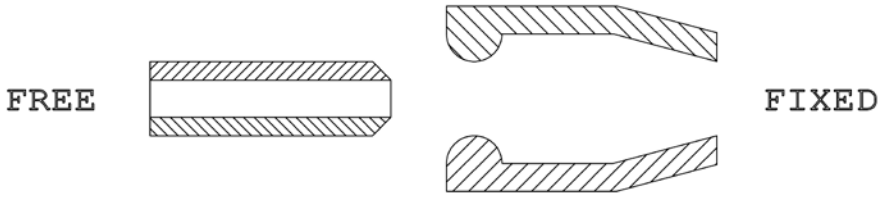
Fixed Board: A connector that uses a fixed gender mating side and a termination side suitable for any of the printed circuit board termination technologies.

Free: Used to describe the gender of the mating side of the connector that penetrates its mate upon mating. This gender is frequently, but not always, associated with the common terminology "plug". Other terms commonly used are "male" and "pin connector". The term "free" is adopted from EIA standard terminology as the gender that most commonly exists on the free end of a connection, for example, on the cable side. In this specification "free" is specifically used to describe the mating side gender illustrated in Figure 2-1.

Free Board: A connector that uses a free gender mating side and a termination side suitable for any of the printed circuit board termination technologies

Height: Distance from board surface to farthest overall connector feature

Mating side: The side of the connector that joins and separates from the mating side of a connector of opposite gender. Other terms commonly used in the industry are mating interface, separable interface, and mating face.



Note: The fixed gender is used on the device side except in the case of wire termination.

FIGURE 2-1 MATING SIDE GENDER DEFINITION

Offset: An alignment shift from the center line of the connector

Optional: This term describes features which are not required by the SFF Specification. However, if any feature defined by the SFF Specification is implemented, it shall be done in the same way as defined by the Specification. Describing a feature as optional in the text is done to assist the reader. If there is a conflict between text and tables on a feature described as optional, the table shall be accepted as being correct.

Reserved: Where this term is used for defining the signal on a connector pin its actual function is set aside for future standardization. It is not available for vendor specific use. Where this term is used for bits, bytes, fields and code values; the bits, bytes, fields and code values are set aside for future standardization. The default value shall be zero. The originator is required to define a Reserved field or bit as zero, but the receiver should not check Reserved fields or bits for zero.

Right Angle: A connector design for use with printed circuit board assembly technology where the mating direction is parallel to the plane of the printed circuit board

Single sided termination: A cable termination assembly style and a connector design style where only one side of the connector is accessible when attaching wires. This style frequently has IDC termination points that point in the same direction.

Straight: A connector design for use with printed circuit board assembly technology where the mating direction is perpendicular to the plane of the printed circuit board

Surface mount: A connector design and a printed circuit board design style where the connector termination points do not penetrate the printed circuit board and are subsequently soldered to the printed circuit board

Termination side: The side of the connector opposite the mating side that is used for permanently attaching conductors to the connector. Due to pin numbering differences between mating side genders the termination side shall always be specified in conjunction with a mating side of a specific gender. Other terms commonly used in the industry are: back end, non-mating side, footprint, pc board side, and post side

Through hole: A connector design and a printed circuit board design style where the connector termination points penetrates the printed circuit board and are subsequently soldered to the printed circuit board.

Wipe (Contact Location): The contact location has two components: direction of mating and direction of contact pitch. In the direction of mating, the Fixed contact location must be a minimum of 0.05 mm from either end of the Free contact mating interface after mating and latching.

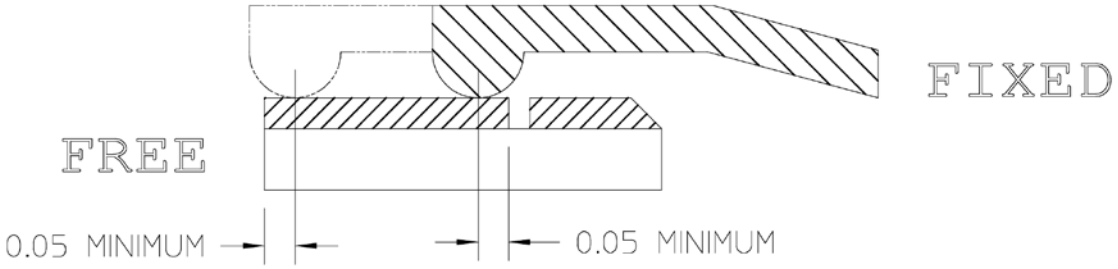


FIGURE 2-2 DIRECTION OF MATING

In the direction of contact pitch, the Fixed contact shall have no less than 50% of the available mating width in contact with the Free contact and there shall be a minimum clearance to the adjacent Free contact. The minimum clearance to the adjacent Free contact shall be 0.075 mm for interfaces with a pitch of at least 0.70 mm. For pitches less than 0.70 mm, the minimum clearance should be reviewed on a case by case basis to insure that a shorting condition does not exist.

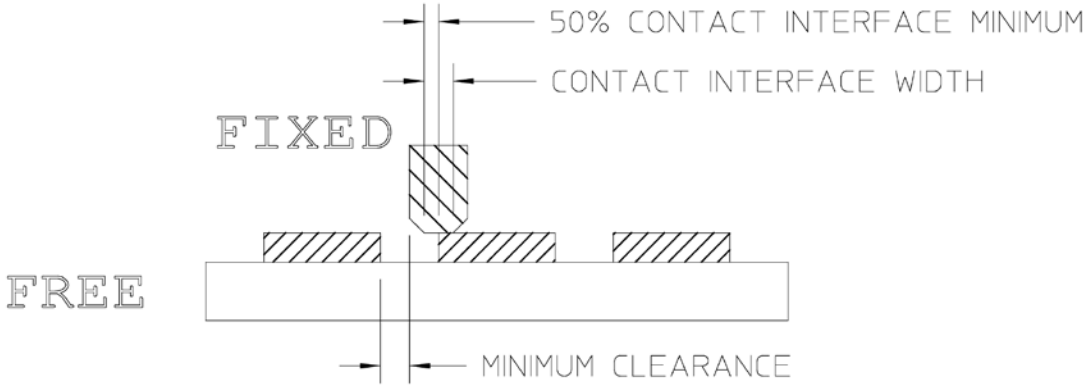


FIGURE 2-3 DIRECTION OF CONTACT

3. General Description

The connector system specification defines a right angle receptacle connector (fixed) and a straight receptacle connector (fixed), the mating plug assembly (free) which can be a straight plug version or a right angle plug version, and the latching mechanism.

The design of this connector system reduces the footprint and form factor, and improves signal integrity, especially NEXT and FEXT performance. The mating plug is designed to work with ribbon type cables and provide easy routing of cables and better air flow for cooling in typical blade and mainstream server designs.

Figure 3-1 below represents a typical 8X straight plug to right angle receptacle configuration of this connector system.

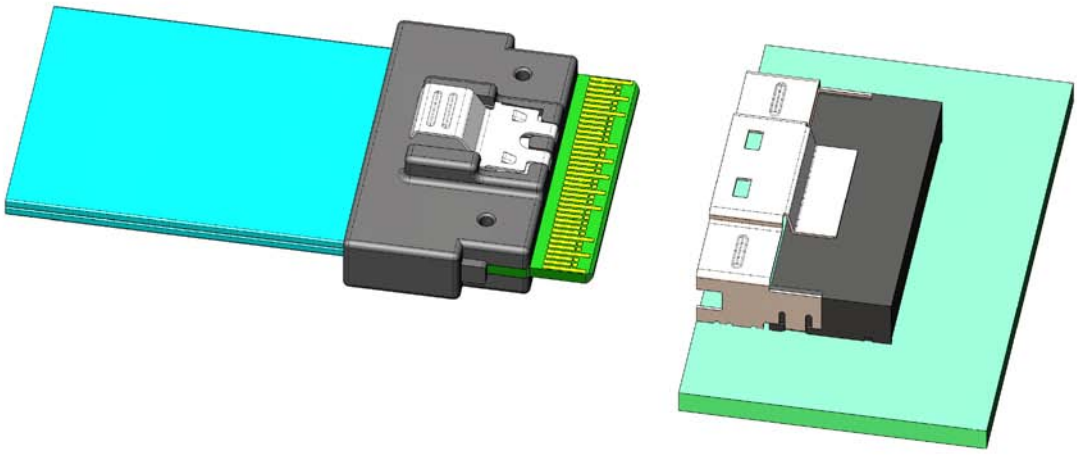


FIGURE 3-1 TYPICAL 8X APPLICATION VIEW

Figure 3-2 below represents an alternative application view consisting of an 8X right angle plug to straight or vertical receptacle configuration of this connector system.

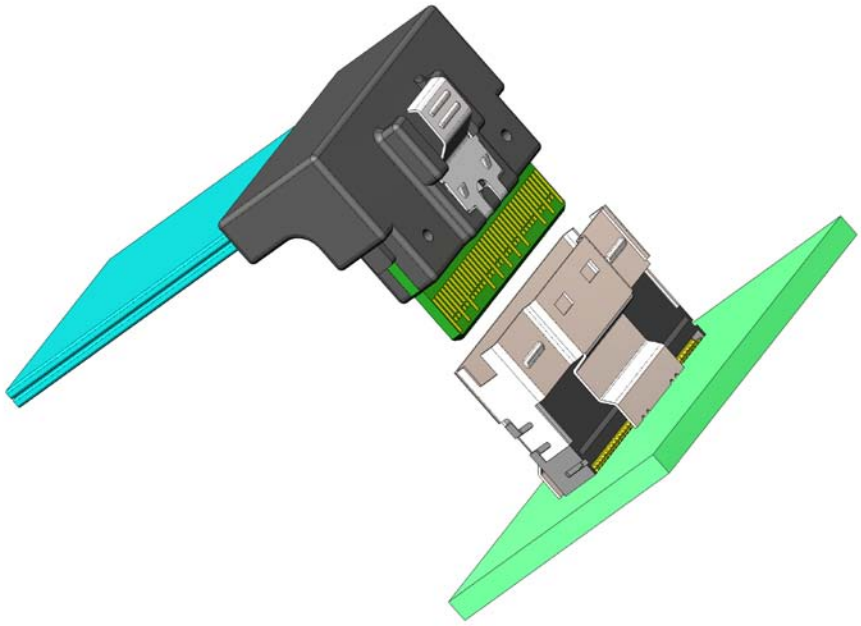


FIGURE 3-2 ALTERNATIVE 8X APPLICATION VIEW

Figure 3-3 Typical 4X Application View below represents a typical 4X straight plug to right angle receptacle configuration of this connector system.

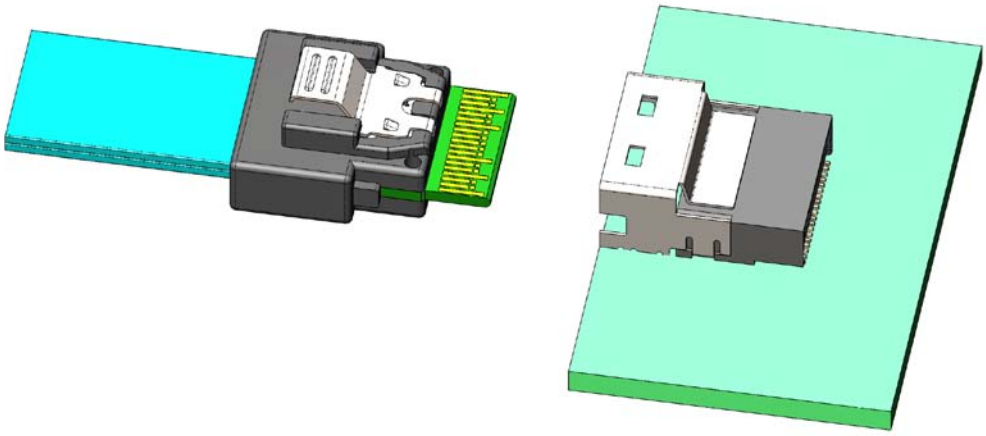


FIGURE 3-3 TYPICAL 4X APPLICATION VIEW

Figure 3-4 Alternative 4X Application View below represents an alternative application view consisting of an 4X right angle plug to straight or vertical receptacle configuration of this connector system.

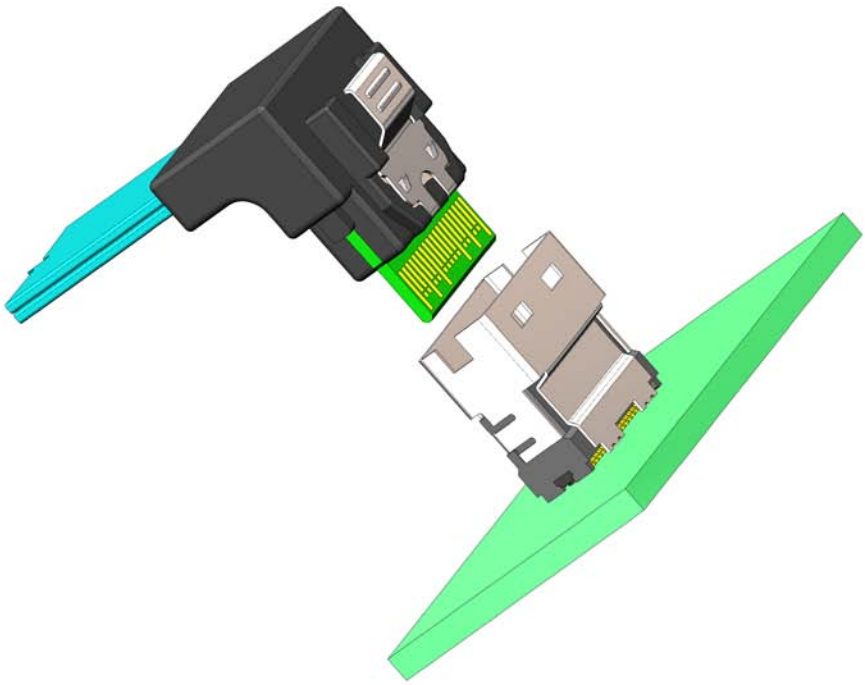
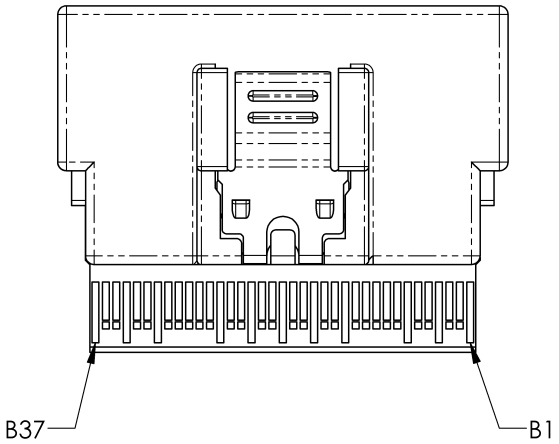


FIGURE 3-4 ALTERNATIVE 4X APPLICATION VIEW

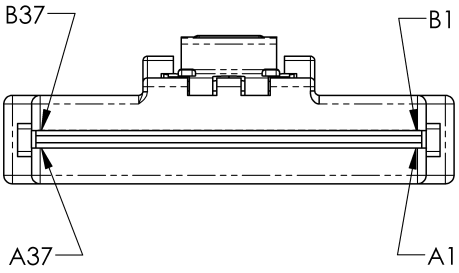
3.1 Signal Assignments

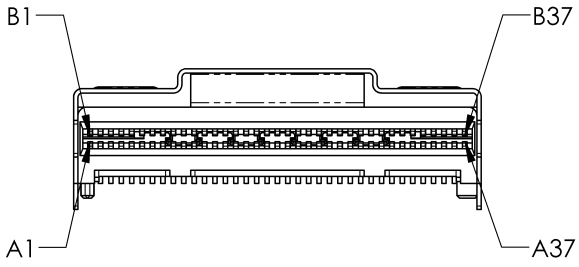
Refer to documents SFF-9400 and SFF-9402 for the possible pinout signal assignments for both the 74 position (8X version) and the 38 position (4X version) cable and connector pinouts.

3.2 Pin Assignments

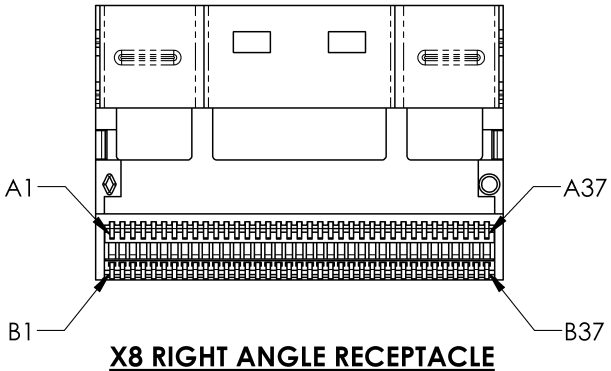


X8 PLUG



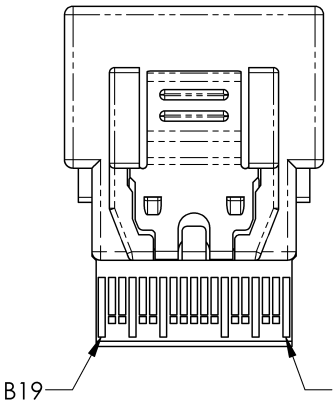


X8 RECEPTACLE
MATING INTERFACE

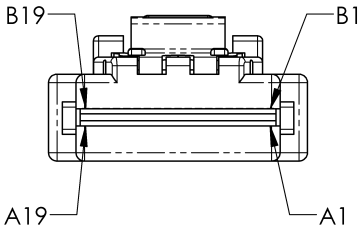


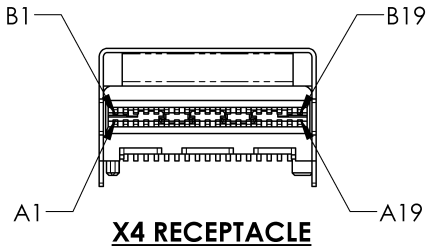
X8 RIGHT ANGLE RECEPTACLE
BOARD MOUNT INTERFACE

FIGURE 3-5 8X PLUG & 8X RECEPTACLE PIN ASSIGNMENTS

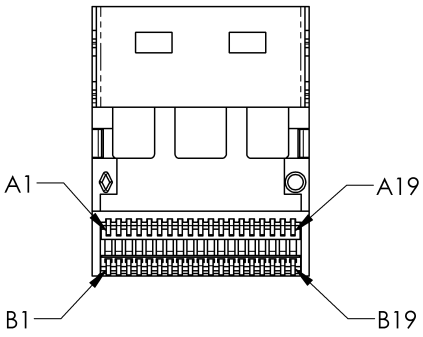


X4 PLUG





X4 RECEPTACLE
MATING INTERFACE



X4 RIGHT ANGLE RECEPTACLE
BOARD MOUNT INTERFACE

FIGURE 3-6 4X PLUG & 4X RECEPTACLE PIN ASSIGNMENTS

4. Mechanical Specifications

4.1 Datums

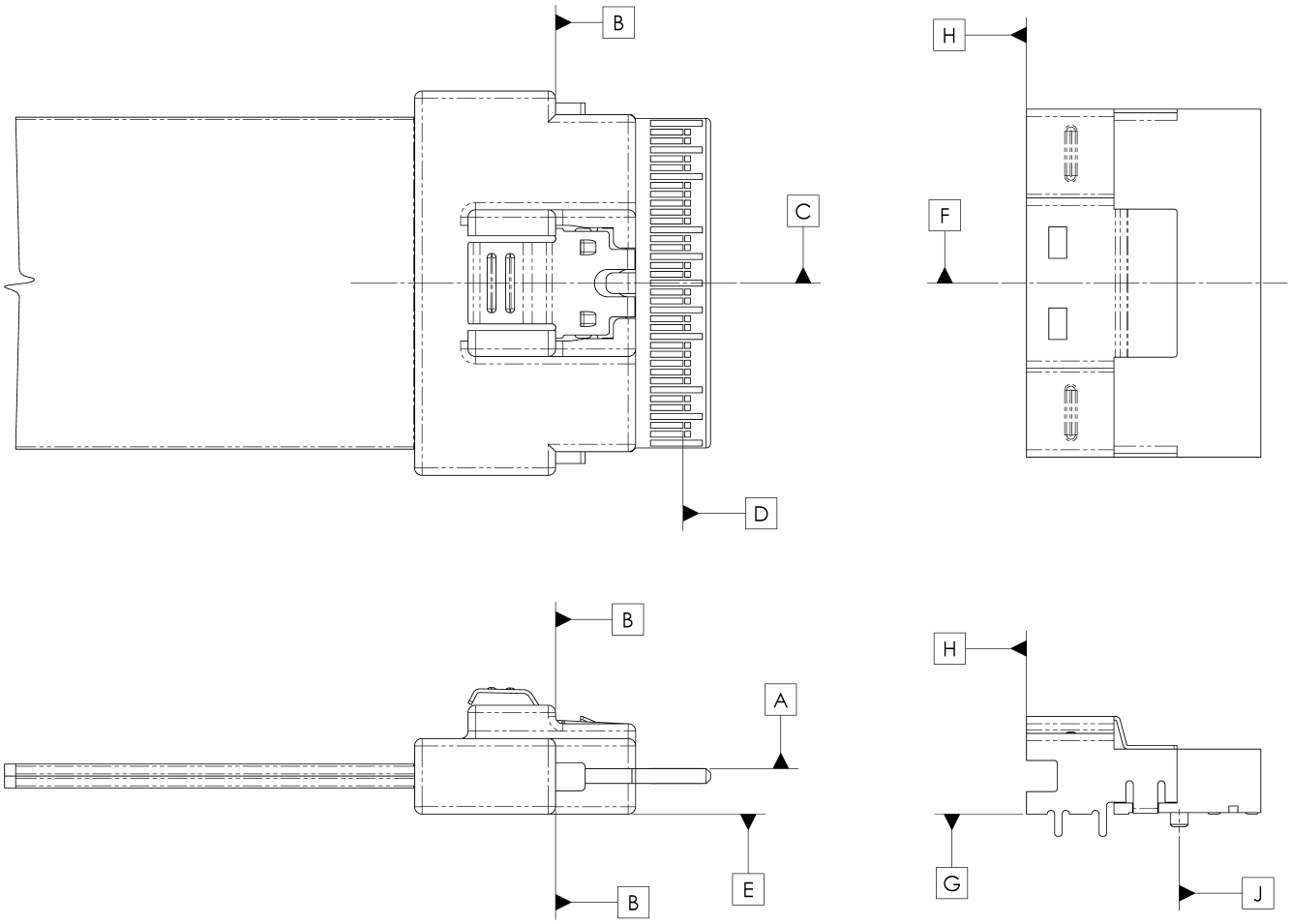


FIGURE 4-1 COMMON DATUMS FOR STRAIGHT PLUGS & RIGHT ANGLE RECEPTACLES

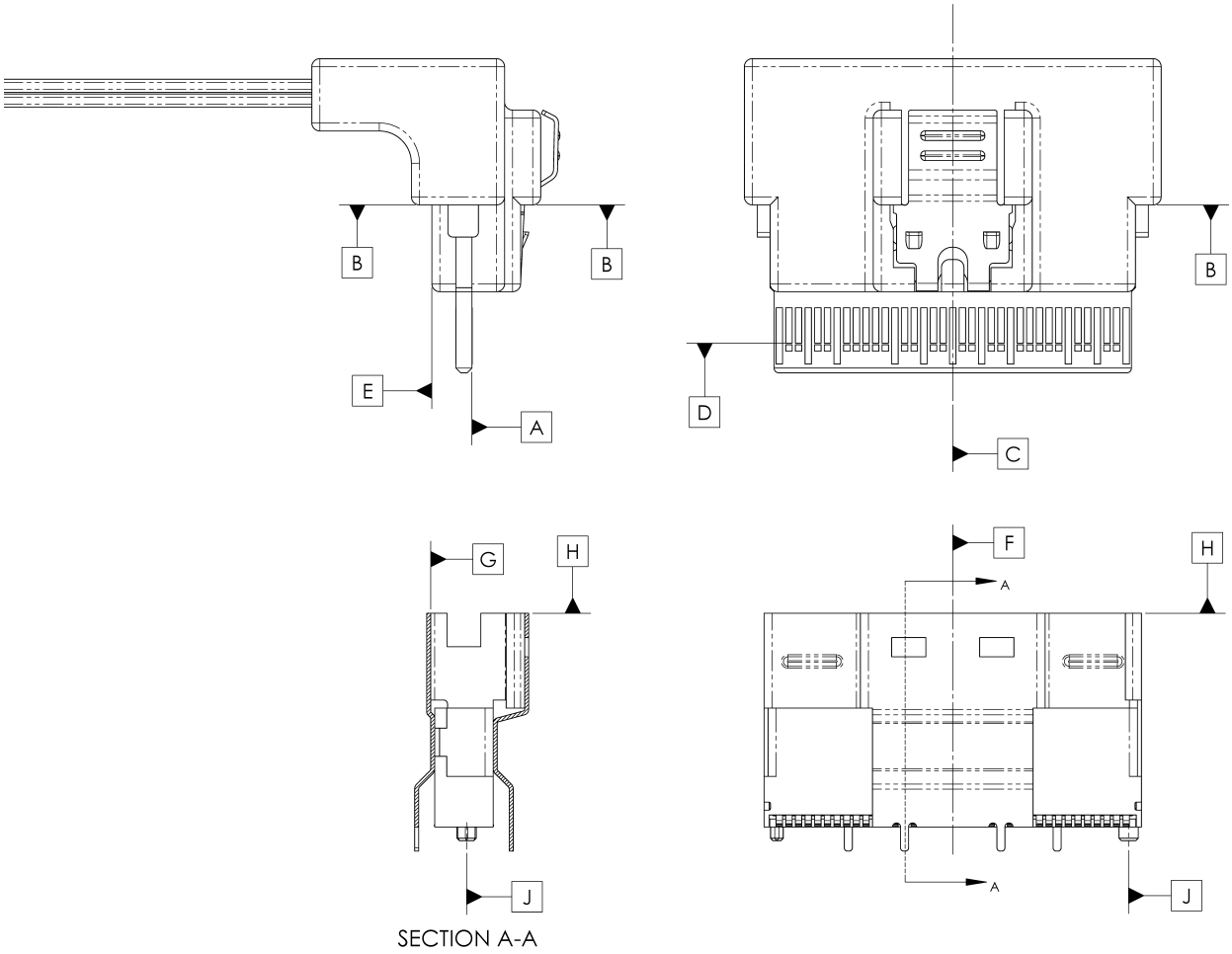


FIGURE 4-2 COMMON DATUMS FOR RIGHT ANGLE PLUGS & VERTICAL RECEPTACLES

TABLE 4-1 TABLE OF COMMON DATUMS

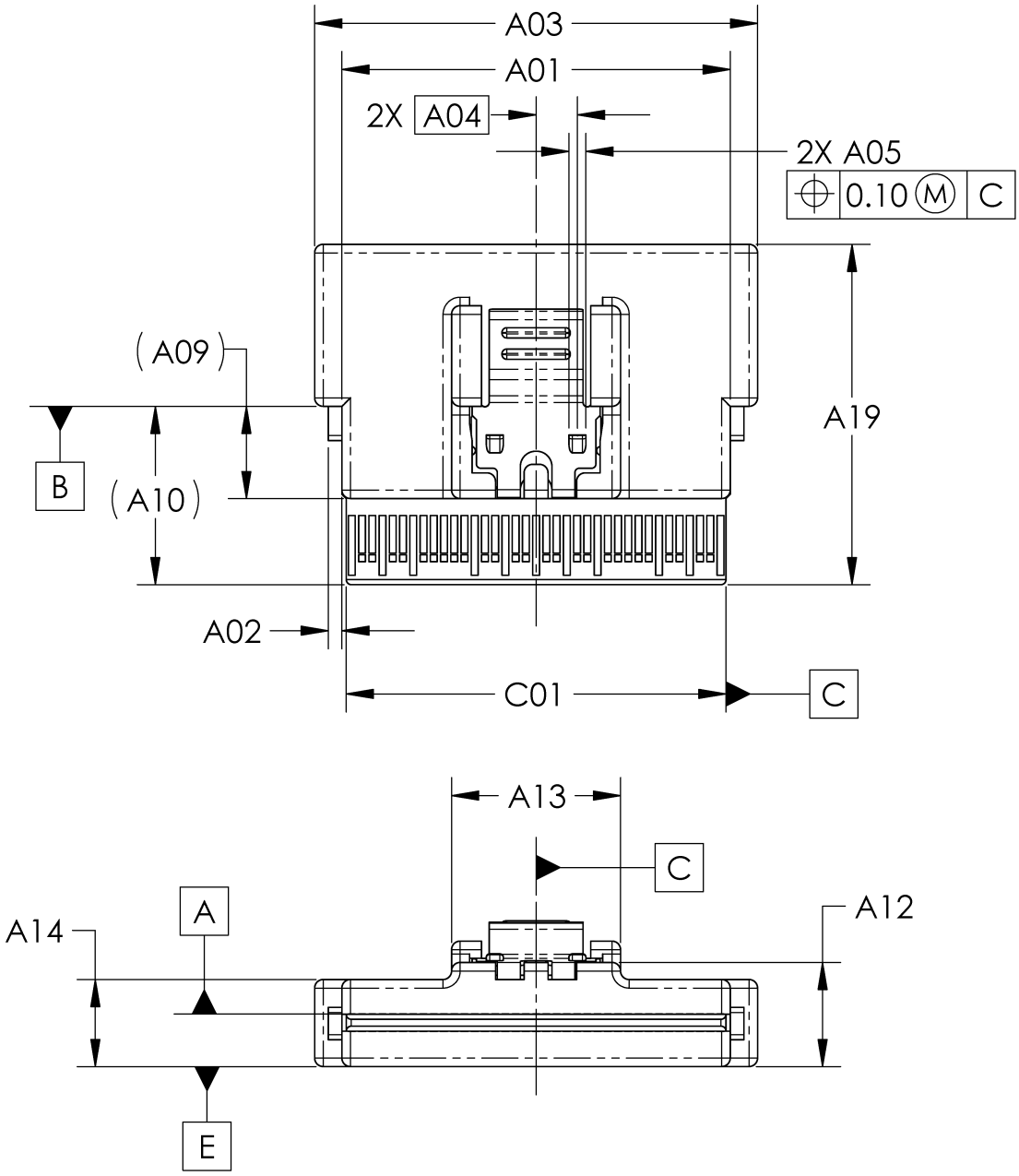
Datum	Description
A	Top Surface of Paddle Card
B	Free (Plug) Cable Connector Stop
C	Centerline of the Paddle Card / Mating Interface Centerline
D	Leading Edge of Third Mate Contacts on Paddle Card
E	Bottom Surface of Plug Overmolding
F	Centerline of the Receptacle / Mating Interface Centerline
G	Receptacle Surface Fitting with the Plug's Bottom Surface
H	Free (Plug) Cable Connector Stop (Surface on the Fixed (Receptacle) Connector)
J	Centerline of the Receptacle's Peg
K	Centerline of PCB Footprint Locating Hole (right)
L	Centerline of PCB Footprint Locating Hole (left)

4.2 General Tolerances

Unless otherwise specified, the units of all linear dimensions are in millimeters (mm). Width dimensions, where applicable, are centered relative to Datum C or Datum F. Projected drawing views, where applicable, are shown in third-angle orthographic projection.

5. Plug Requirements

5.1 8X Plug Configurations



A DATUM 'A' - TOP SURFACE OF PADDLE CARD

B DATUM 'B' - FREE (PLUG) CABLE CONNECTOR STOP

C DATUM 'C' - PADDLE CARD / MATING INTERFACE CENTERLINE

E DATUM 'E' - BOTTOM OF PLUG OVERMOLDING

FIGURE 5-1 8X STRAIGHT PLUG

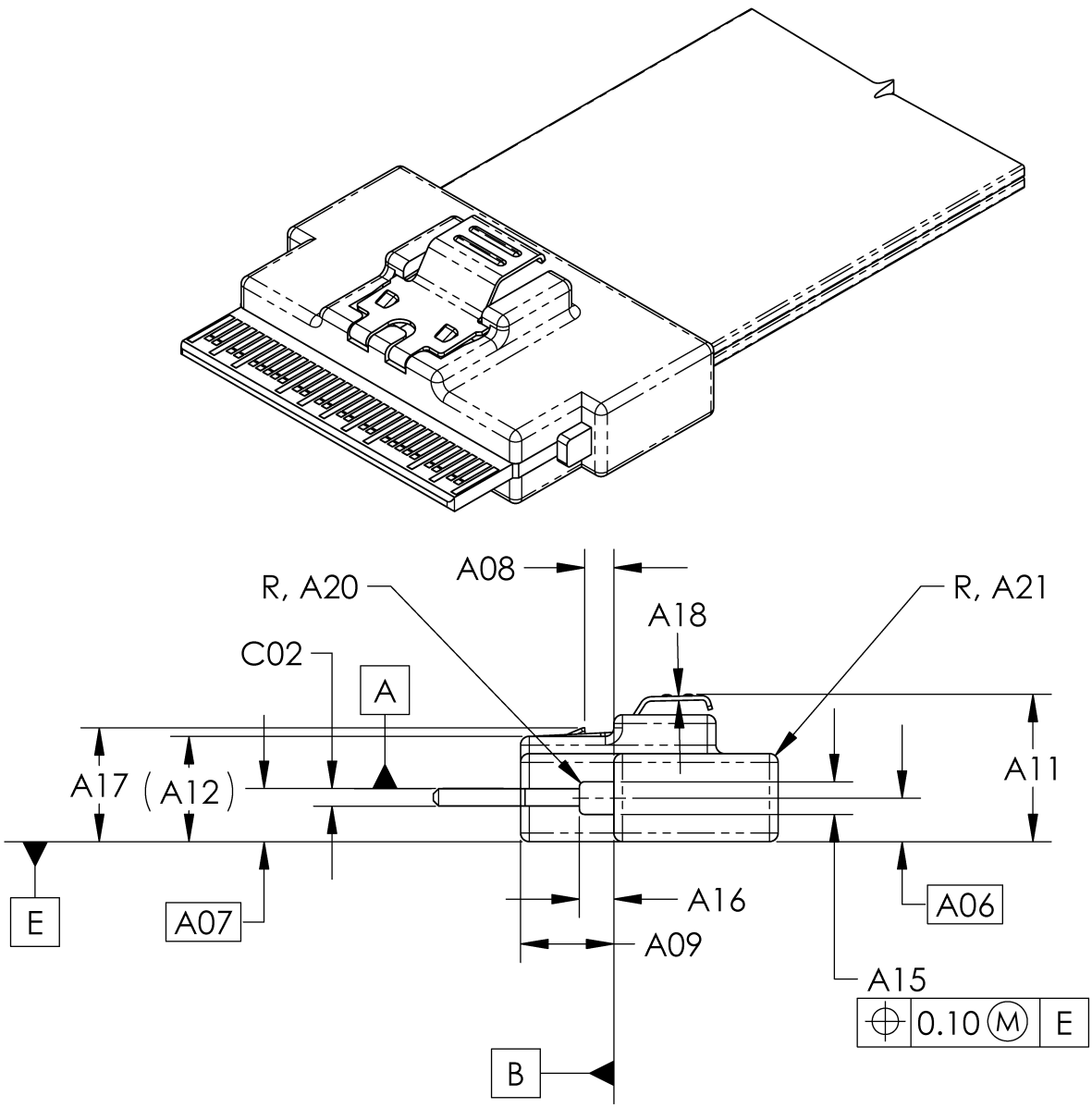
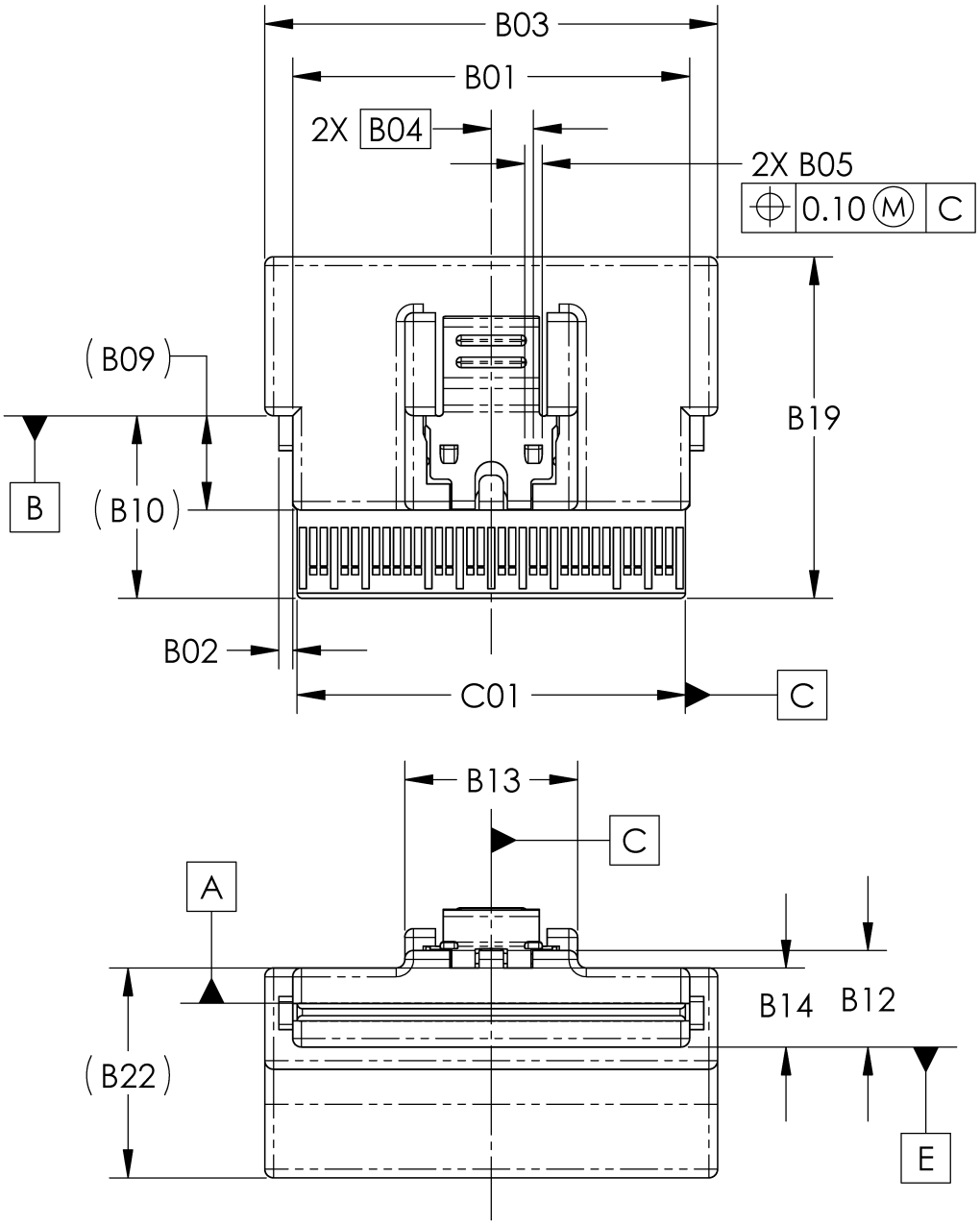


FIGURE 5-2 8X STRAIGHT PLUG (2)

TABLE 5-1 FREE 8X STRAIGHT PLUG CABLE CONNECTOR DIMENSIONS

Designator	Description	Dimension (mm)	Tolerance
C01	Interface Width	22.40	+/- 0.05
C02	Paddle Card Thickness	1.00	+/- 0.08
A01	Plug Body Front Width	22.95	+0 / -0.15
A02	Anti-Rotation Rib Height	0.80	Minimum
A03	Plug Body Rear Width	25.95 *	REF.
A04	Plug Datum C to Latch Tab Centers	2.42	Basic
A05	Latch Tab Width	1.00	+/- 0.10
A06	Datum E to Anti-Rotation Rib Centerline	2.52	Basic
A07	Datum E to Top Surface of Paddle Card (Datum A)	3.07	Basic
A08	Plug Datum B to Latch Tab	1.70	+/- 0.10
A09	Plug Datum B to Body Front Surface	5.40	+/- 0.10
A10	Plug Datum B to Edge of Paddle Card	10.45	+/- 0.15
A11	Datum E to Latch	9.00	Maximum
A12	Datum E to Plug Key Surface	6.30	+/- 0.05
A13	Latch and Plug Key Body Width	9.90	+/- 0.15
A14	Plug Body Thickness	5.10	+/- 0.10
A15	Anti-Rotation Rib Width	2.00	+/- 0.05
A16	Datum B to End of Anti-Rotation Rib	2.00	+/- 0.05
A17	Datum E to Latch Tab Height (when free)	6.70	Minimum
A17	Datum E to Latch Tab Height (for release)	6.40	Maximum
A18	Latch Tab Thickness	0.25	+/- 0.05
A19	Plug Length	19.95	REF.
A20	Radius	0.30	REF.
A21	Radius	0.50	REF.

* - Dimension A03 may vary to accommodate various wire AWG sizes. A particular Plug Body Rear Width may limit which wire AWG sizes can be used with that particular size.



A DATUM 'A' - TOP SURFACE OF PADDLE CARD

B DATUM 'B' - FREE (PLUG) CABLE CONNECTOR STOP

C DATUM 'C' - PADDLE CARD / MATING INTERFACE CENTERLINE

E DATUM 'E' - BOTTOM OF PLUG OVERMOLDING

FIGURE 5-3 8X RIGHT ANGLE PLUG

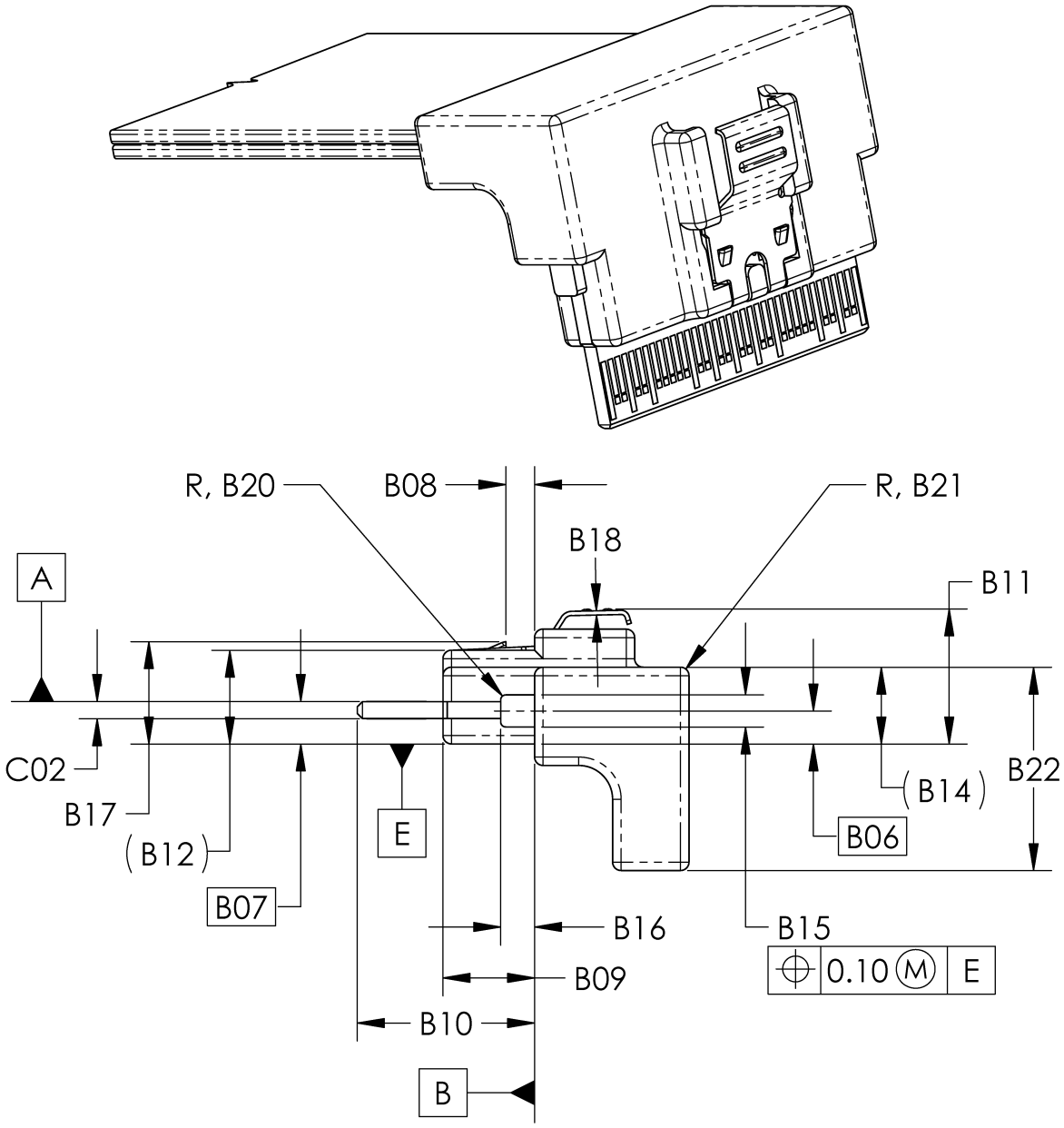


FIGURE 5-4 8X RIGHT ANGLE PLUG (2)

TABLE 5-2 FREE 8X RIGHT ANGLE PLUG CABLE CONNECTOR DIMENSIONS

Designator	Description	Dimension (mm)	Tolerance
C01	Interface Width	22.40	+/- 0.05
C02	Paddle Card Thickness	1.00	+/- 0.08
B01	Plug Body Front Width	22.95	+0 / -0.15
B02	Anti-Rotation Rib Height	0.80	Minimum
B03	Plug Body Rear Width	25.95 *	REF.
B04	Plug Datum C to Latch Tab Centers	2.42	Basic
B05	Latch Tab Width	1.00	+/- 0.10
B06	Datum E to Anti-Rotation Rib Centerline	2.52	Basic
B07	Datum E to Top Surface of Paddle Card (Datum A)	3.07	Basic
B08	Plug Datum B to Latch Tab	1.70	+/- 0.10
B09	Plug Datum B to Body Front Surface	5.40	+/- 0.10
B10	Plug Datum B to Edge of Paddle Card	10.45	+/- 0.15
B11	Datum E to Latch	9.00	Maximum
B12	Datum E to Plug Key Surface	6.30	+/- 0.05
B13	Latch and Plug Key Body Width	9.90	+/- 0.15
B14	Plug Body Thickness (at Mating End)	5.10	+/- 0.10
B15	Anti-Rotation Rib Width	2.00	+/- 0.05
B16	Datum B to End of Anti-Rotation Rib	2.00	+/- 0.05
B17	Datum E to Latch Tab Height (when free)	6.70	Minimum
B17	Datum E to Latch Tab Height (for release)	6.40	Maximum
B18	Latch Tab Thickness	0.25	+/- 0.05
B19	Plug Length (mating direction)	19.55	REF.
B20	Radius	0.30	REF.
B21	Radius	0.50	REF.
B22	Plug Length (cable direction)	12.00	REF.

* - Dimension B03 may vary to accommodate various wire AWG sizes. A particular Plug Body Rear Width may limit which wire AWG sizes can be used with that particular size.

5.2 8X Plug Paddle Card

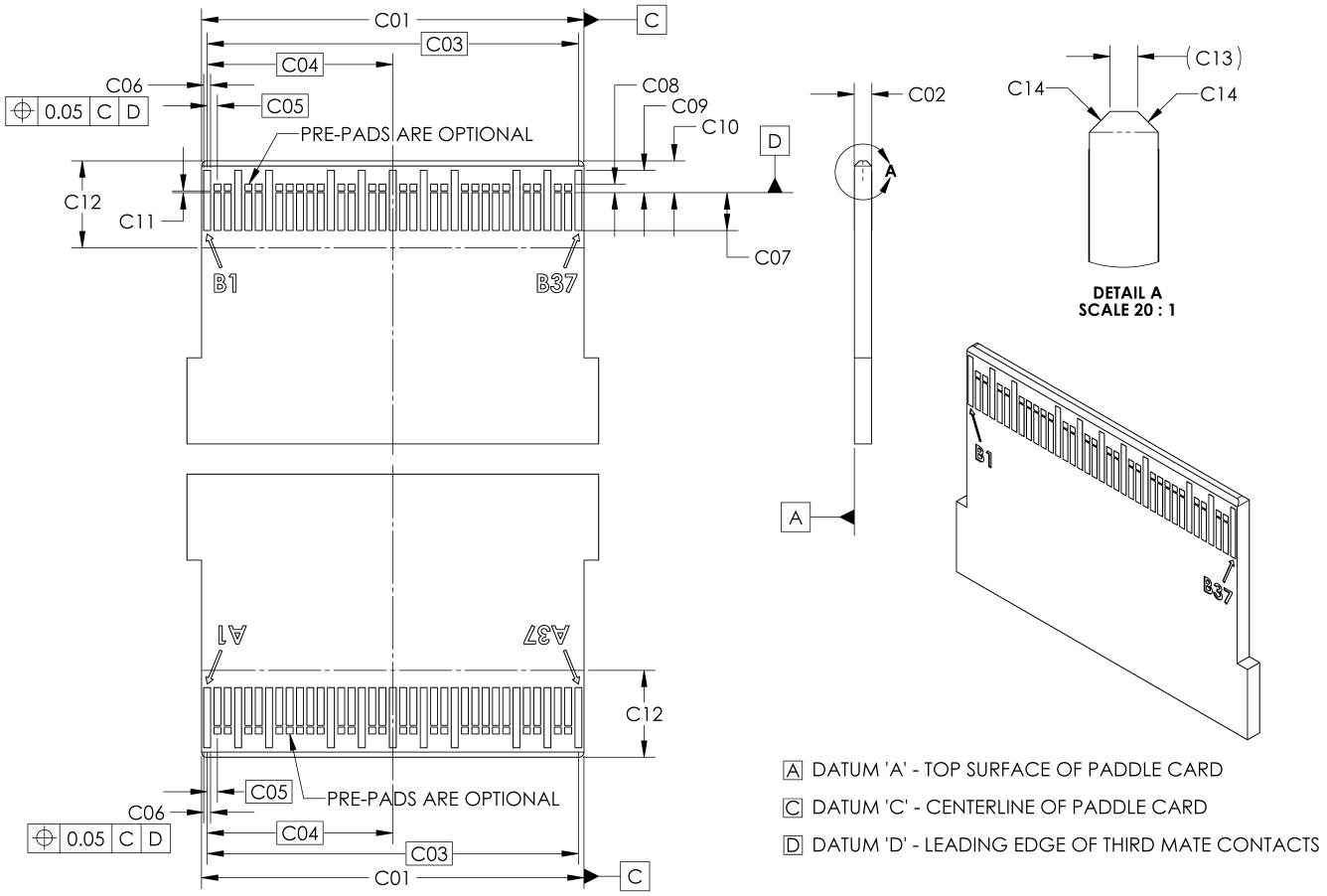
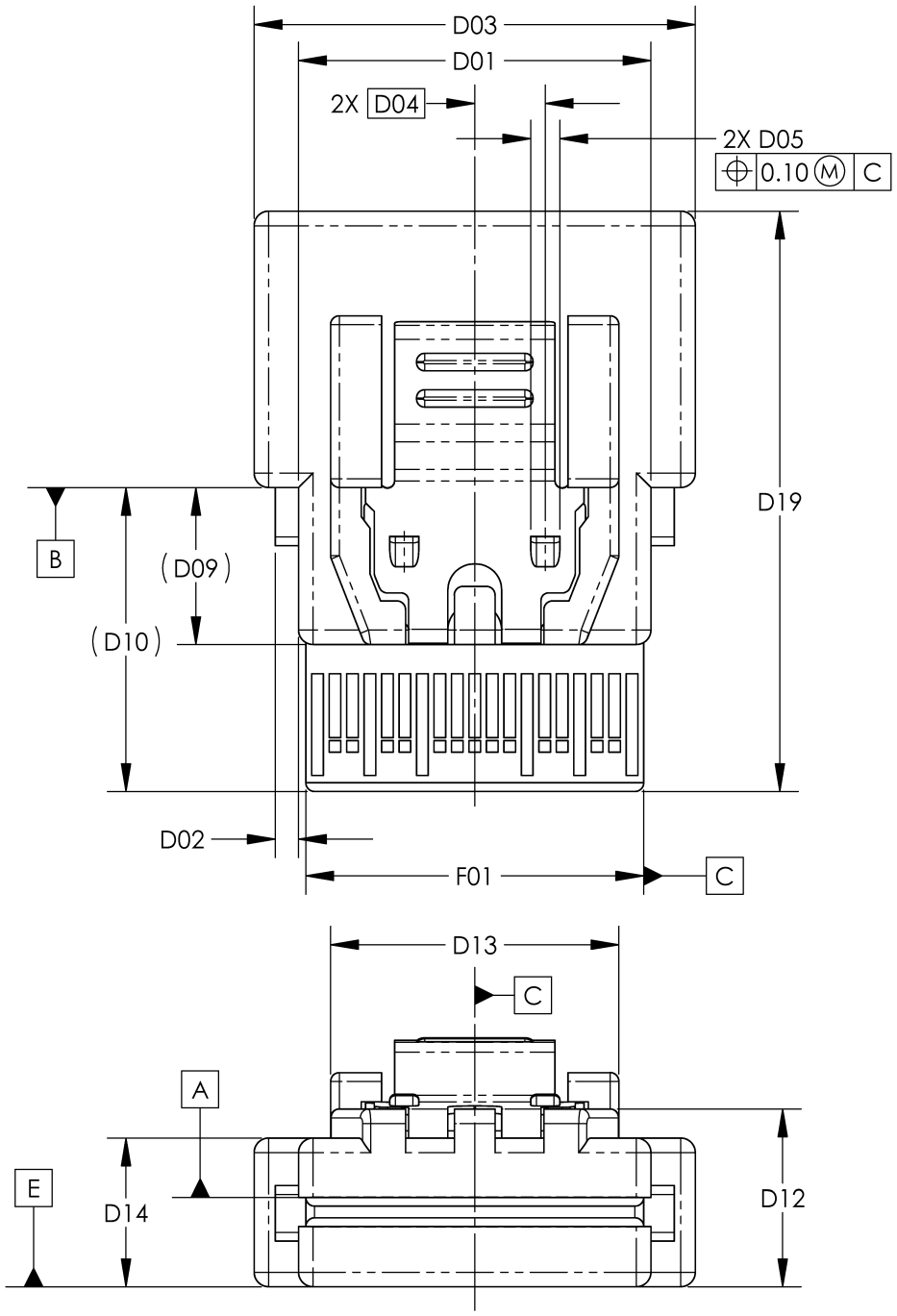


FIGURE 5-5 8X PLUG PADDLE CARD

TABLE 5-3 8X PLUG PADDLE CARD DIMENSIONS

Designator	Description	Dimension (mm)	Tolerance
C01	Interface Width	22.40	+/- 0.05
C02	Paddle Card Thickness	1.00	+/- 0.08
C03	First to Last Pad Centers	21.60	Basic
C04	Datum C (Card Center) to Outer Pad Center	10.80	Basic
C05	Pad Center to Pad Center (Pitch)	0.60	Basic
C06	Pad Width	0.40	+/- 0.025
C07	Pad Length - Third Mate Pad	2.30	Minimum
C08	Datum D (Third Mate) to Second Mate	0.50	+/- 0.05
C09	Datum D (Third Mate) to First Mate	1.20	+/- 0.05
C10	Datum D (Third Mate) to Card Edge	1.75	+/- 0.10
C11	Datum D (Third Mate) to Second Mate Pad Gap	0.10	+/- 0.05
C12	Component Keep Out Area	5.05	Minimum
C13	Lead-in Flat	0.40	REF.
C14	Lead-in Chamfers ×45 degrees	0.30	+/- 0.05

5.3 4X Plug Configurations



A DATUM 'A' - TOP SURFACE OF PADDLE CARD

B DATUM 'B' - FREE (PLUG) CABLE CONNECTOR STOP

C DATUM 'C' - PADDLE CARD / MATING INTERFACE CENTERLINE

E DATUM 'E' - BOTTOM SURFACE OF PLUG OVERMOLDING

FIGURE 5-6 4X STRAIGHT PLUG

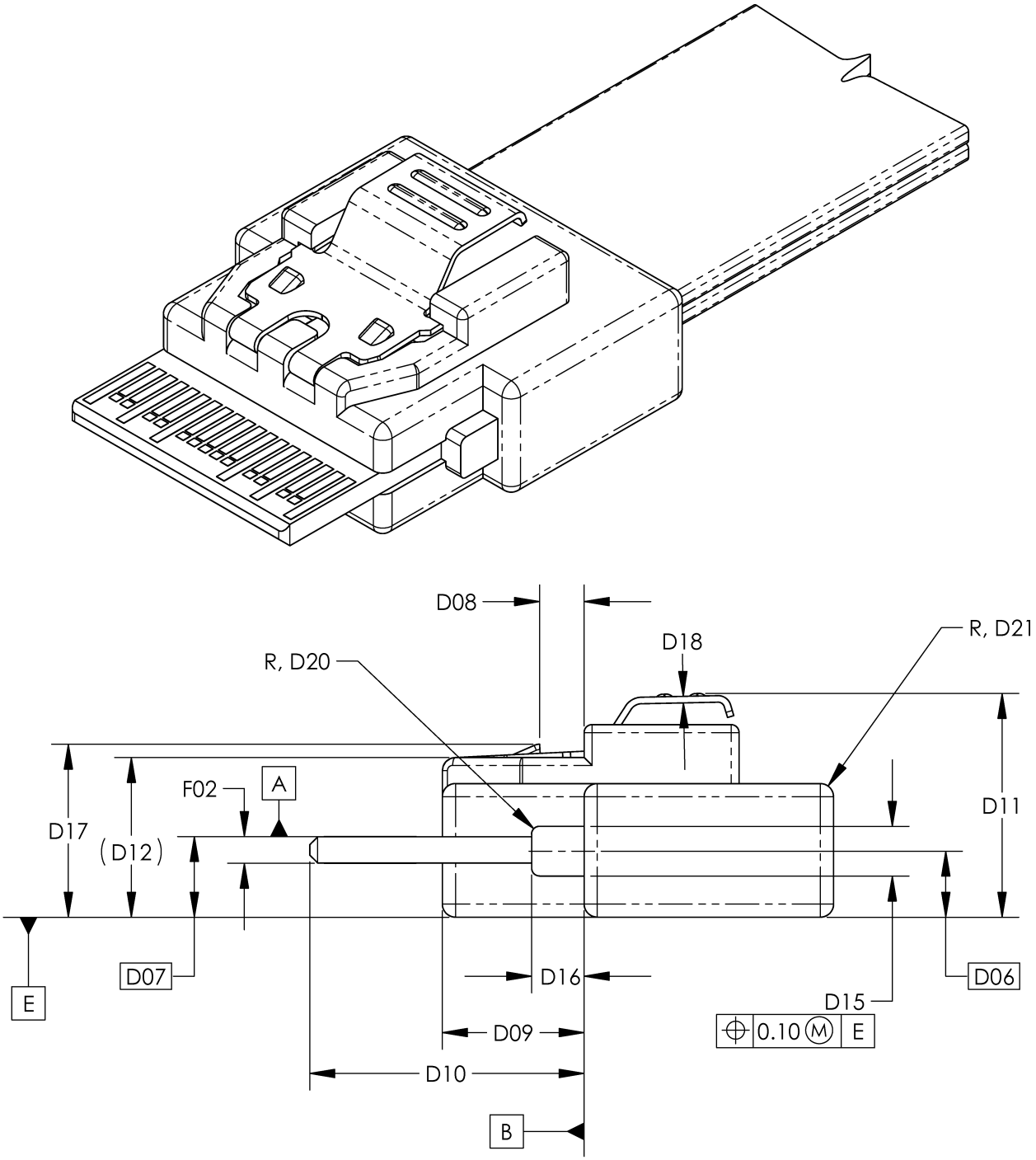
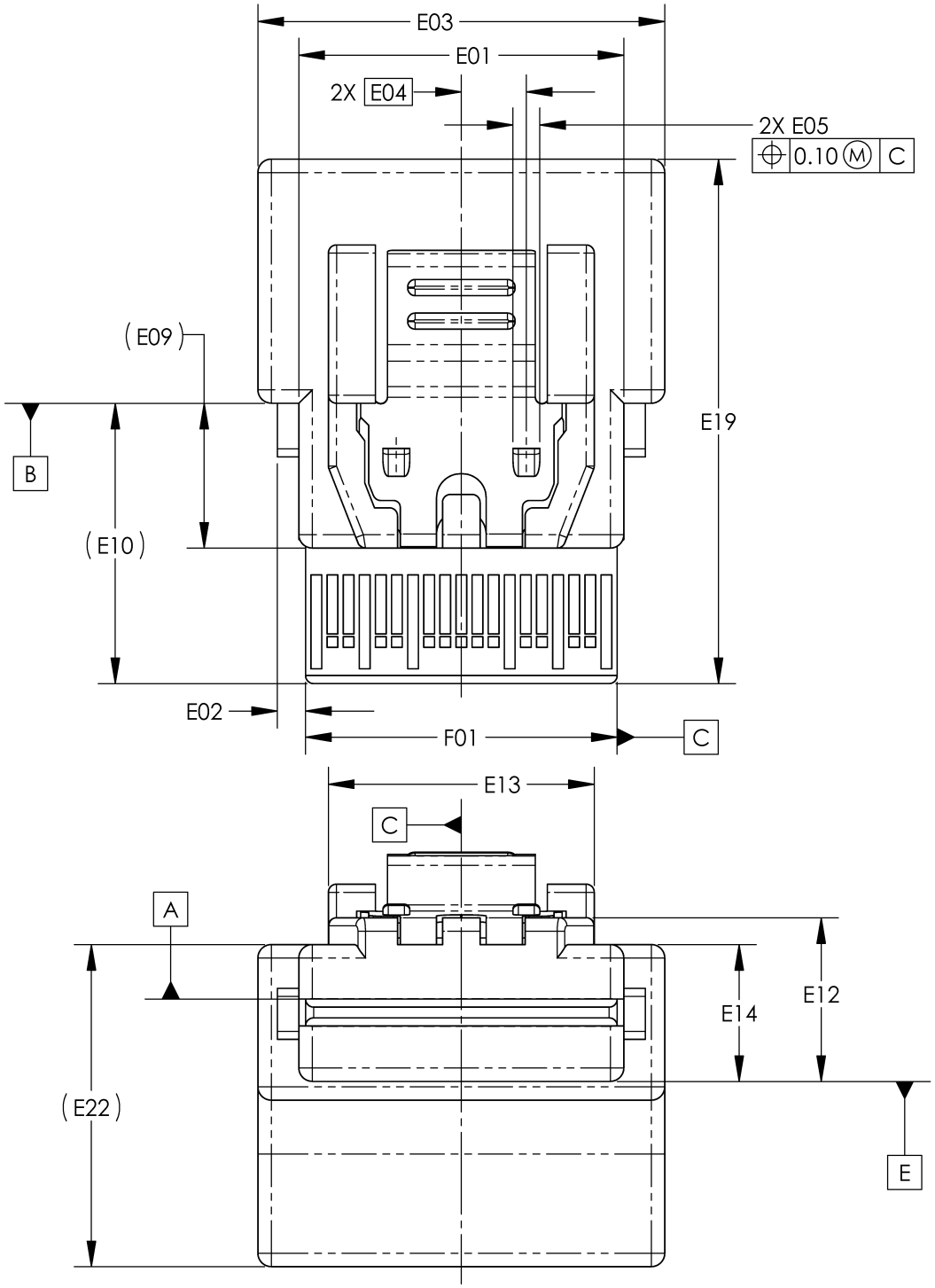


FIGURE 5-7 4X STRAIGHT PLUG (2)

TABLE 5-4 FREE 4X STRAIGHT PLUG CABLE CONNECTOR DIMENSIONS

Designator	Description	Dimension (mm)	Tolerance
F01	Interface Width	11.60	+/- 0.05
F02	Paddle Card Thickness	1.00	+/- 0.08
D01	Plug Body Front Width	12.15	+0 / -0.15
D02	Plug Stop Height	0.80	Minimum
D03	Plug Body Rear Width	15.15 *	REF.
D04	Plug Datum C to Latch Tab Centers	2.42	Basic
D05	Latch Tab Width	1.00	+/- 0.10
D06	Datum E to Anti-Rotation Rib Centerline	2.52	Basic
D07	Datum E to Top Surface of Paddle Card (Datum A)	3.07	Basic
D08	Plug Datum B to Latch Tab	1.70	+/- 0.10
D09	Plug Datum B to Body Front Surface	5.40	+/- 0.10
D10	Plug Datum B to Mating Edge of Paddle Card	10.45	+/- 0.15
D11	Datum E to Latch	9.00	Maximum
D12	Datum E to Plug Key Surface	6.30	+/- 0.05
D13	Latch and Plug Key Body Width	9.90	+/- 0.15
D14	Plug Body Thickness	5.10	+/- 0.10
D15	Anti-Rotation Rib Width	2.00	+/- 0.05
D16	Datum B to End of Anti-Rotation Rib	2.00	+/- 0.05
D17	Datum E to Latch Tab Height (when free)	6.70	Minimum
D17	Datum E to Latch Tab Height (for release)	6.40	Maximum
D18	Latch Tab Thickness	0.25	+/- 0.05
D19	Plug Length	19.95	REF.
D20	Radius	0.30	REF.
D21	Radius	0.50	REF.

* - Dimension D03 may vary to accommodate various wire AWG sizes. A particular Plug Body Rear Width may limit which wire AWG sizes can be used with that particular size. In addition, in order to fit 4 plugs side-by-side along the narrow edge of a typical size PCIe card, dimension D03 must be limited to 13.15 mm maximum.



A DATUM 'A' - TOP SURFACE OF PADDLE CARD

B DATUM 'B' - FREE (PLUG) CABLE CONNECTOR STOP

C DATUM 'C' - PADDLE CARD / MATING INTERFACE CENTERLINE

E DATUM 'E' - BOTTOM SURFACE OF PLUG OVERMOLDING

FIGURE 5-8 4X RIGHT ANGLE PLUG

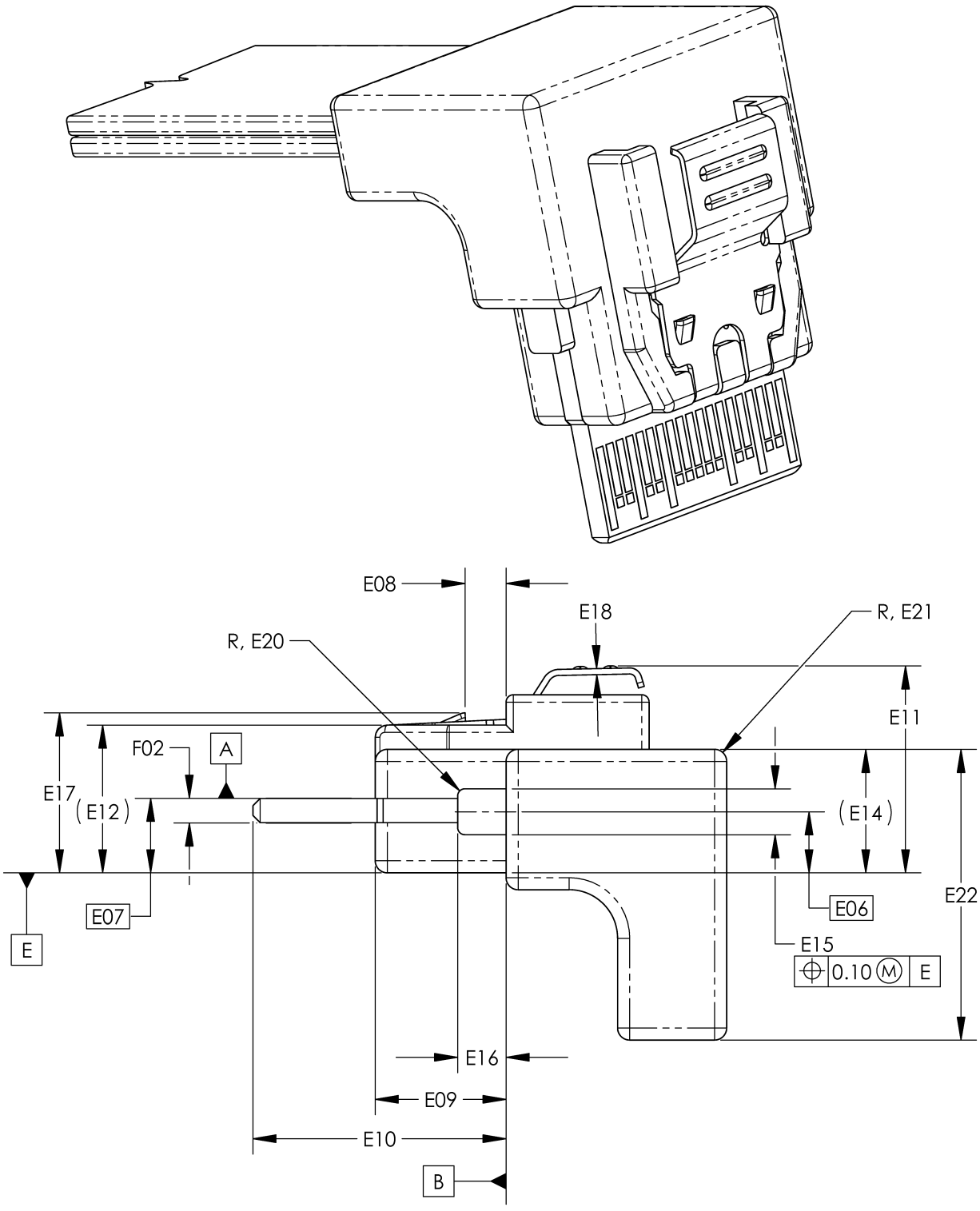


FIGURE 5-9 4X RIGHT ANGLE PLUG (2)

TABLE 5-5 FREE 4X RIGHT ANGLE PLUG CABLE CONNECTOR DIMENSIONS

Designator	Description	Dimension (mm)	Tolerance
F01	Interface Width	11.60	+/- 0.05
F02	Paddle Card Thickness	1.00	+/- 0.08
E01	Plug Body Front Width	12.15	+0 / -0.15
E02	Anti-Rotation Rib Height	0.80	Minimum
E03	Plug Body Rear Width	15.15 *	REF.
E04	Plug Datum C to Latch Tab Centers	2.42	Basic
E05	Latch Tab Width	1.00	+/- 0.10
E06	Datum E to Anti-Rotation Rib Centerline	2.52	Basic
E07	Datum E to Top Surface of Paddle Card (Datum A)	3.07	Basic
E08	Plug Datum B to Latch Tab	1.70	+/- 0.10
E09	Plug Datum B to Body Front Surface	5.40	+/- 0.10
E10	Plug Datum B to Mating Edge of Paddle Card	10.45	+/- 0.15
E11	Datum E to Latch	9.00	Maximum
E12	Datum E to Plug Key Surface	6.30	+/- 0.05
E13	Latch and Plug Key Body Width	9.90	+/- 0.15
E14	Plug Body Thickness	5.10	+/- 0.10
E15	Anti-Rotation Rib Width	2.00	+/- 0.05
E16	Datum B to End of Anti-Rotation Rib	2.00	+/- 0.05
E17	Datum E to Latch Tab Height (when free)	6.70	Minimum
E17	Datum E to Latch Tab Height (for release)	6.40	Maximum
E18	Latch Tab Thickness	0.25	+/- 0.05
E19	Plug Length (mating direction)	19.55	REF.
E20	Radius	0.30	REF.
E21	Radius	0.50	REF.
E22	Plug Length (cable direction)	12.00	REF.

* - Dimension E03 may vary to accommodate various wire AWG sizes. A particular Plug Body Rear Width may limit which wire AWG sizes can be used with that particular size. In addition, in order to fit 4 plugs side-by-side along the narrow edge of a typical size PCIe card, dimension E03 must be limited to 13.15 mm maximum.

5.4 4X Plug Paddle Card

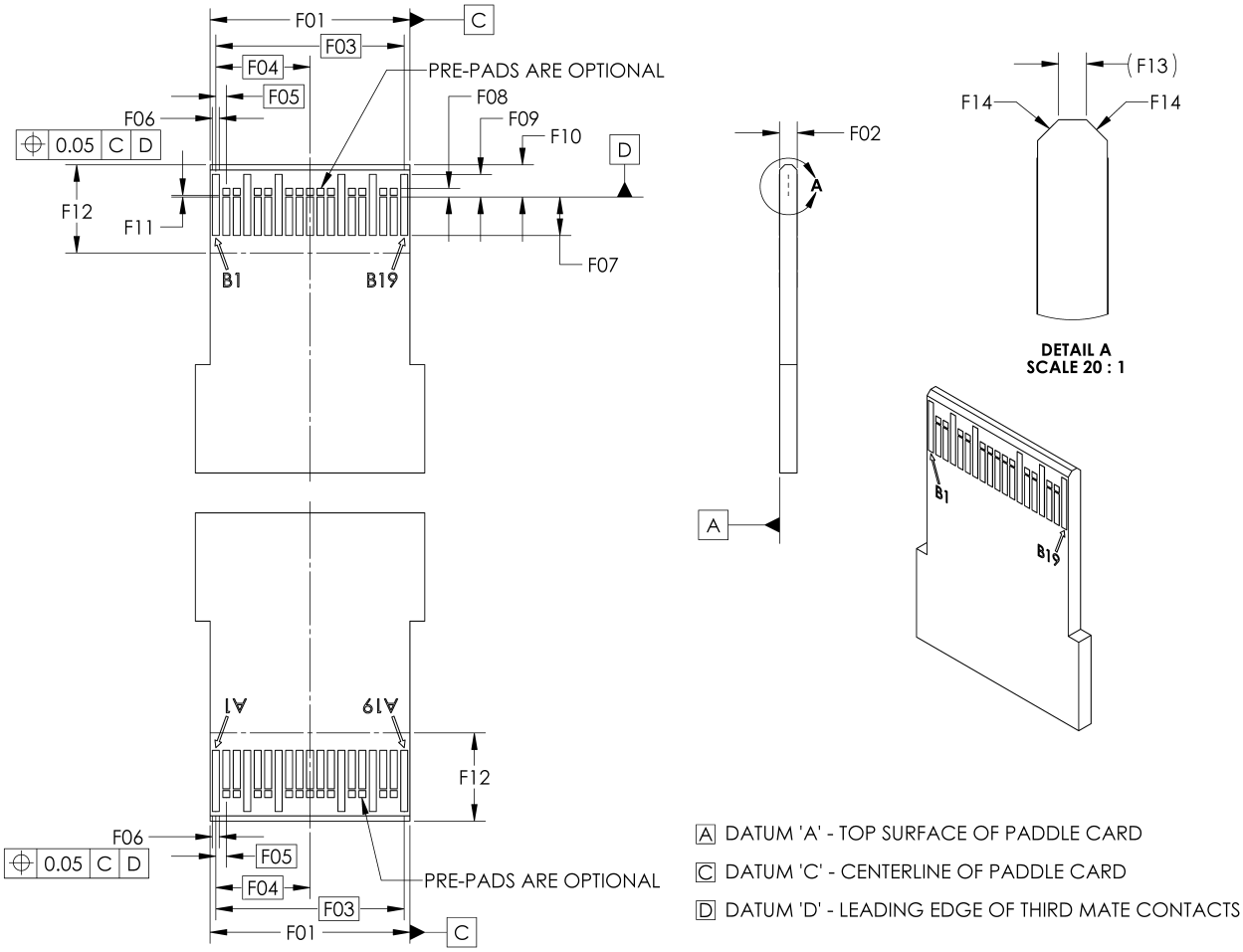


FIGURE 5-10 4X PLUG PADDLE CARD DIMENSIONS

TABLE 5-6 4X PADDLE CARD DIMENSIONS

Designator	Description	Dimension (mm)	Tolerance
F01	Paddle Card Width	11.60	+/- 0.05
F02	Paddle Card thickness	1.00	+/- 0.08
F03	First to Last Pad Center	10.80	Basic
F04	Datum C (Card Center) to Outer Pad Center	5.40	Basic
F05	Pad Center to Pad Center (Pitch)	0.60	Basic
F06	Pad Width	0.40	+/- 0.025
F07	Pad length - Third Mate Pads	2.30	Minimum
F08	Datum D (Third Mate) to Second Mate	0.50	+/- 0.05
F09	Datum D (Third Mate) to First Mate	1.20	+/- 0.05
F10	Datum D (Third Mate) to Card Edge	1.75	+/- 0.10
F11	Datum D (Third Mate) to Second Mate Pad Gap	0.10	+/- 0.05
F12	Component keep Out Area	5.05	Minimum
F13	Lead-in Flat	0.40	REF.
F14	Lead-in Chamfers ×45 degrees	0.30	+/- 0.05

6. Receptacle Connector Requirements

6.1 8X Receptacle Connector Configurations

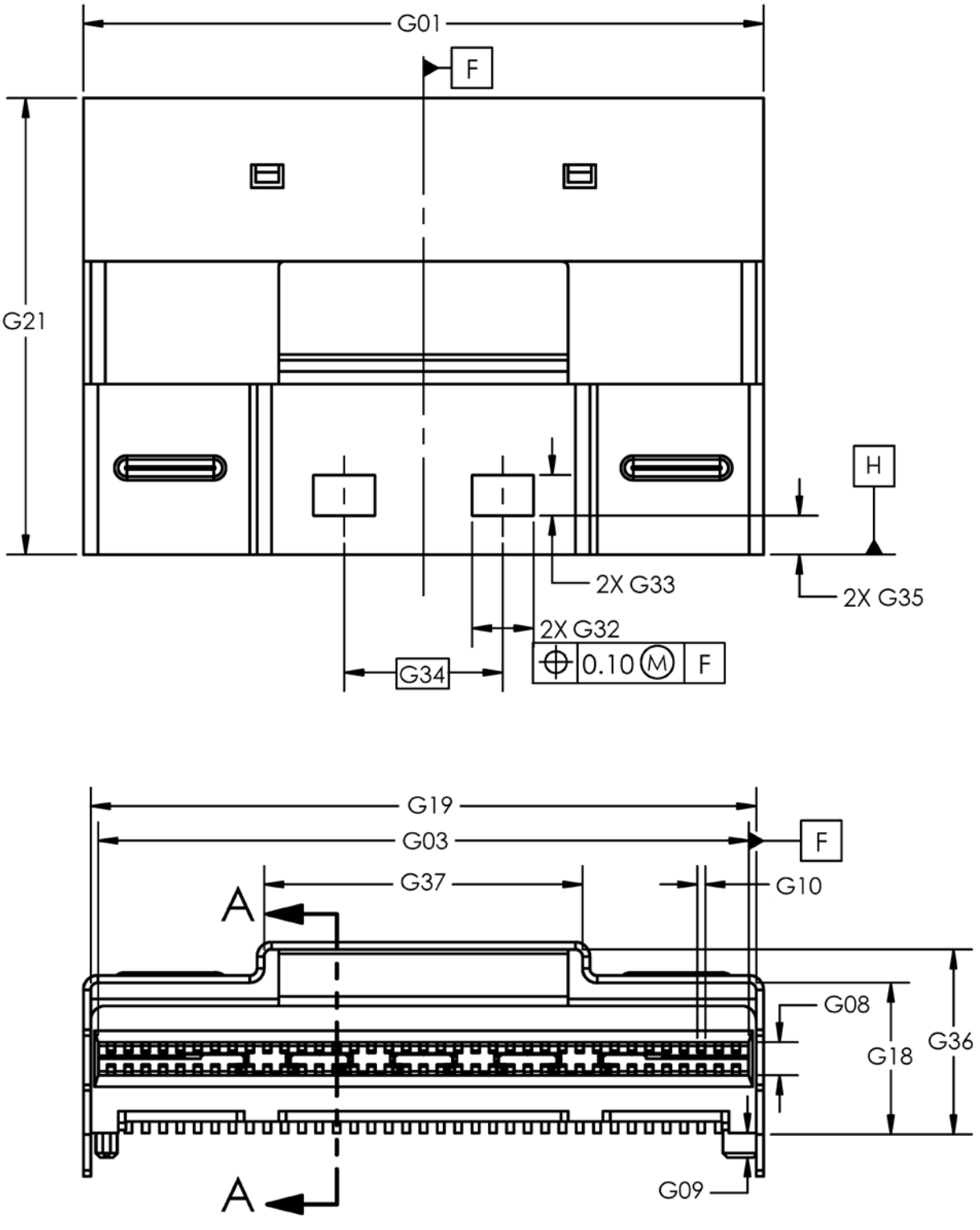


FIGURE 6-1 8X RIGHT ANGLE CONNECTOR WITH LATCH RETENTION

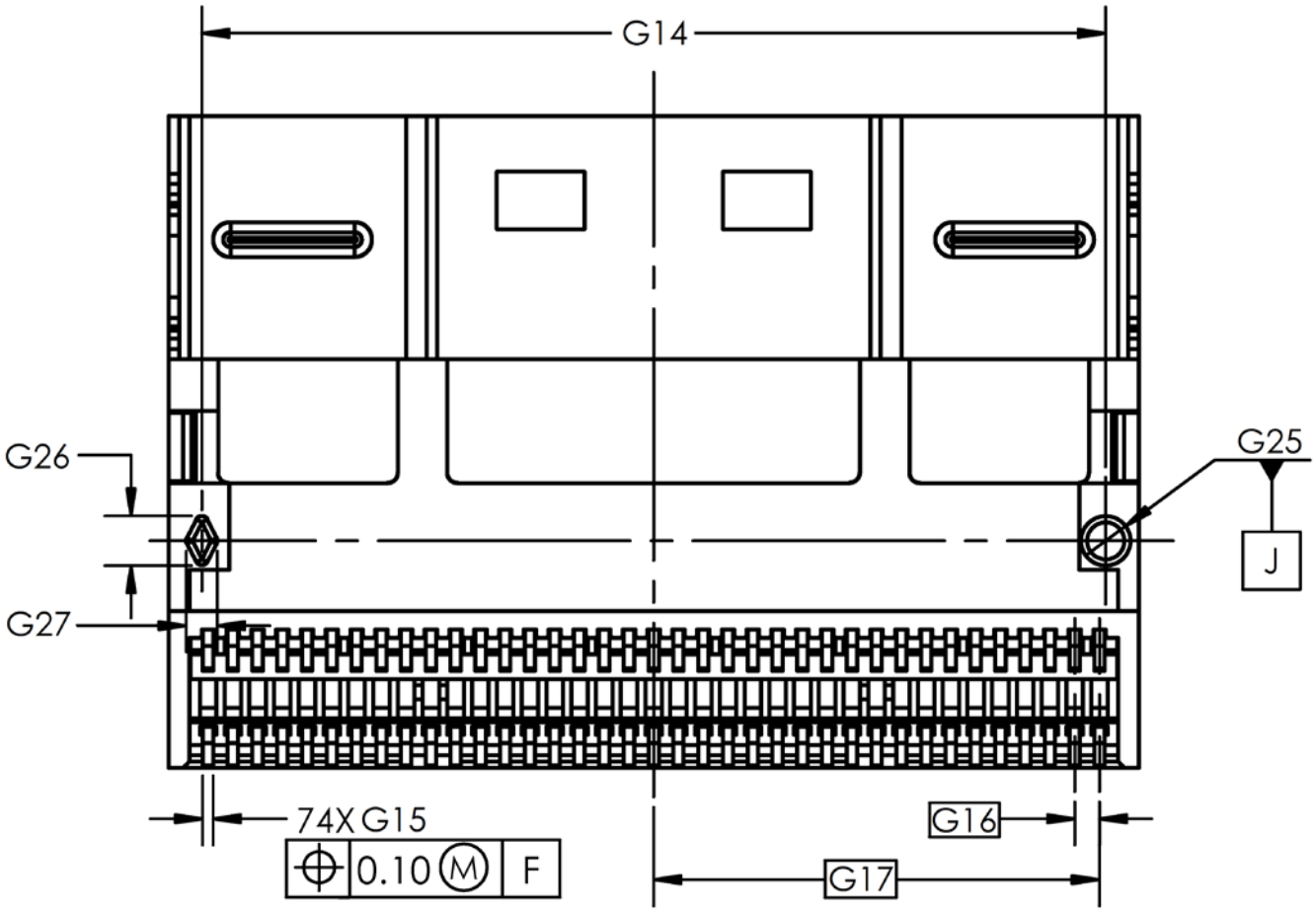
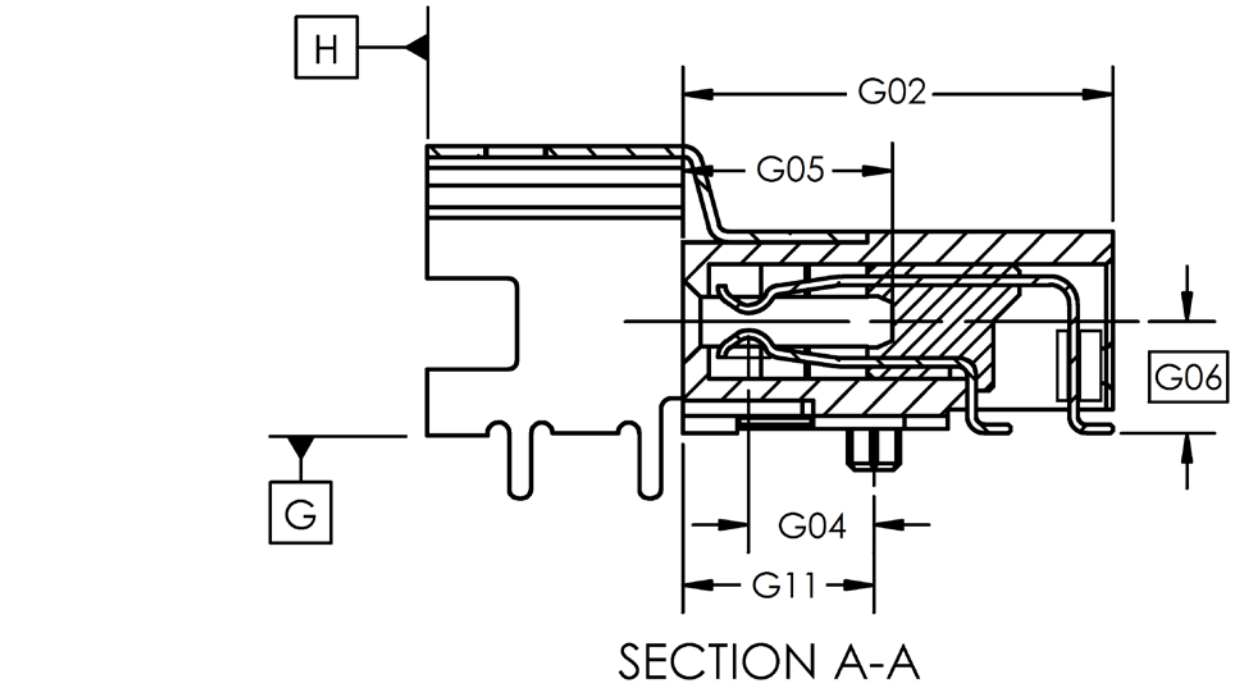


FIGURE 6-2 8X RIGHT ANGLE CONNECTOR WITH LATCH RETENTION (2)



SECTION A-A

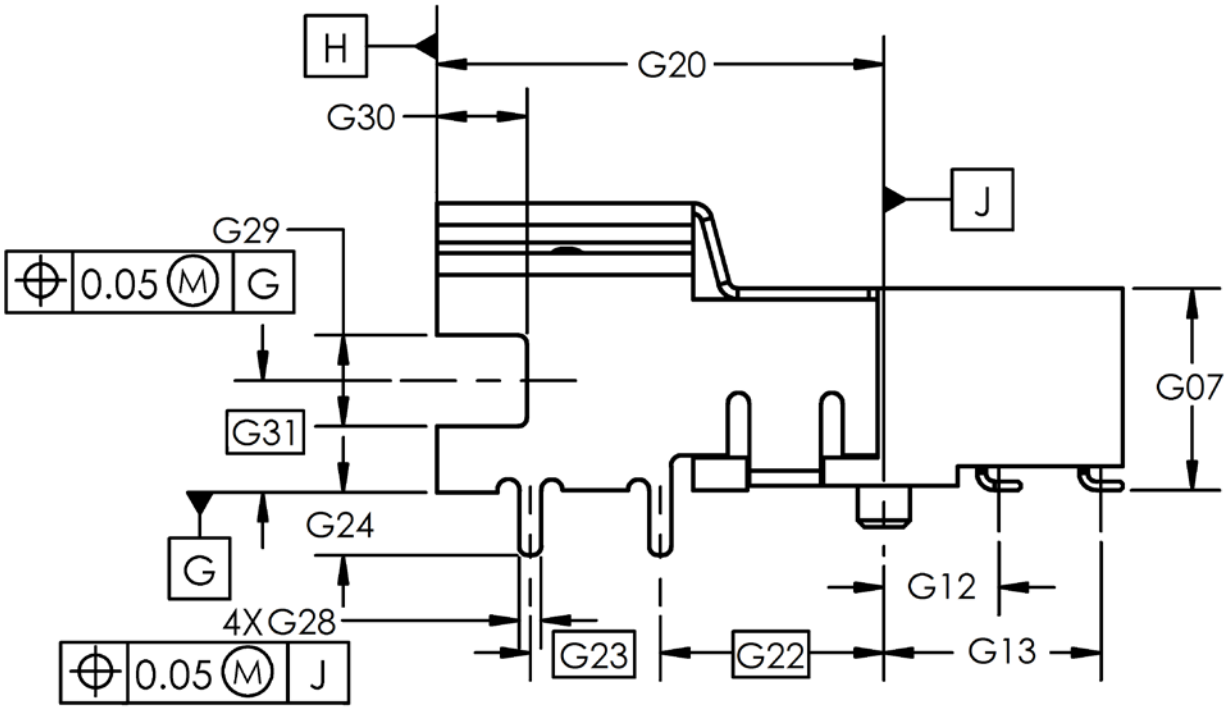


FIGURE 6-3 8X RIGHT ANGLE CONNECTOR WITH LATCH RETENTION (3)

TABLE 6-1 8X RIGHT ANGLE RECEPTACLE CONNECTOR DIMENSIONS

Designator	Description	Dimension (mm)	Tolerance
G01	Receptacle Width	23.50	+/- 0.10
G02	Receptacle Length	9.90	+/- 0.10
G03	Card Slot Width	22.48	+/- 0.03
G04	Datum J (Peg) to Contact Centerline	3.00	+/- 0.15
G05	Card Slot Depth	4.70	MIN
G06	Datum G (PCB) to Mating Card Slot Centerline	2.62	Basic
G07	Receptacle Height from PCB	5.25	MAX
G08	Card Slot Height	1.14	MIN
G09	Peg length	1.00	+/- 0.10
G10	Contact Zone	0.385	MAX
G11	Receptacle Front Face to Datum J (Peg)	4.40	+/- 0.05
G12	Datum J (Peg) to Row A	2.70	+/- 0.10
G13	Datum J (Peg) to Row B	5.05	+/- 0.10
G14	Datum J (Peg) to Diamond Peg	21.90	+/- 0.05
G15	Contact's Solder Tail Width	0.25	+/- 0.05
G16	Contact Pitch	0.60	Basic
G17	Datum F (Centerline) to Last Contact	10.80	Basic
G18	Latch Shroud Inner Height	5.25	+/- 0.05
G19	Latch Shroud Inner Width	23.00	+0.08/-0.02
G20	Latch Shroud Mating Face (Plug Stop, Datum H) to Receptacle Peg (Datum J)	10.30	+/- 0.15
G21	Overall Receptacle and Latch Shroud Assembly Length	15.80	+/- 0.10
G22	Datum J (Peg) to First Latch Shroud Solder Pin	5.15	Basic
G23	First Latch Shroud Solder Pin to Second Pin	3.00	Basic
G24	Latch Shroud Solder Pin Height	1.40	MIN
G25	Peg Diameter	1.20	+/- 0.03
G26	Diamond Peg Long Width	1.20	+/- 0.03
G27	Diamond Peg Short Width	0.75	+/- 0.05
G28	Latch Shroud Solder Pin Width	0.45	+/- 0.05
G29	Anti-Rotation Rib Slot Width	2.15	+/- 0.05
G30	Anti-Rotation Rib Slot Depth	2.08	+/- 0.05
G31	Anti-Rotation Rib Slot Location	2.57	Basic
G32	Latch Slot Width	2.13	+/- 0.10
G33	Latch Slot Length	1.40	+0.10/-0.00
G34	Latch Slot Spacing	5.48	Basic
G35	Latch Slot to Datum H (Latch Shroud Mating Face, Plug Stop)	1.35	+/- 0.05
G36	Latch Shroud Inner Height at Center Latching Bracket	6.40	+/- 0.10
G37	Latch Shroud Inner Width at Center Latching Bracket	11.00	+/- 0.10

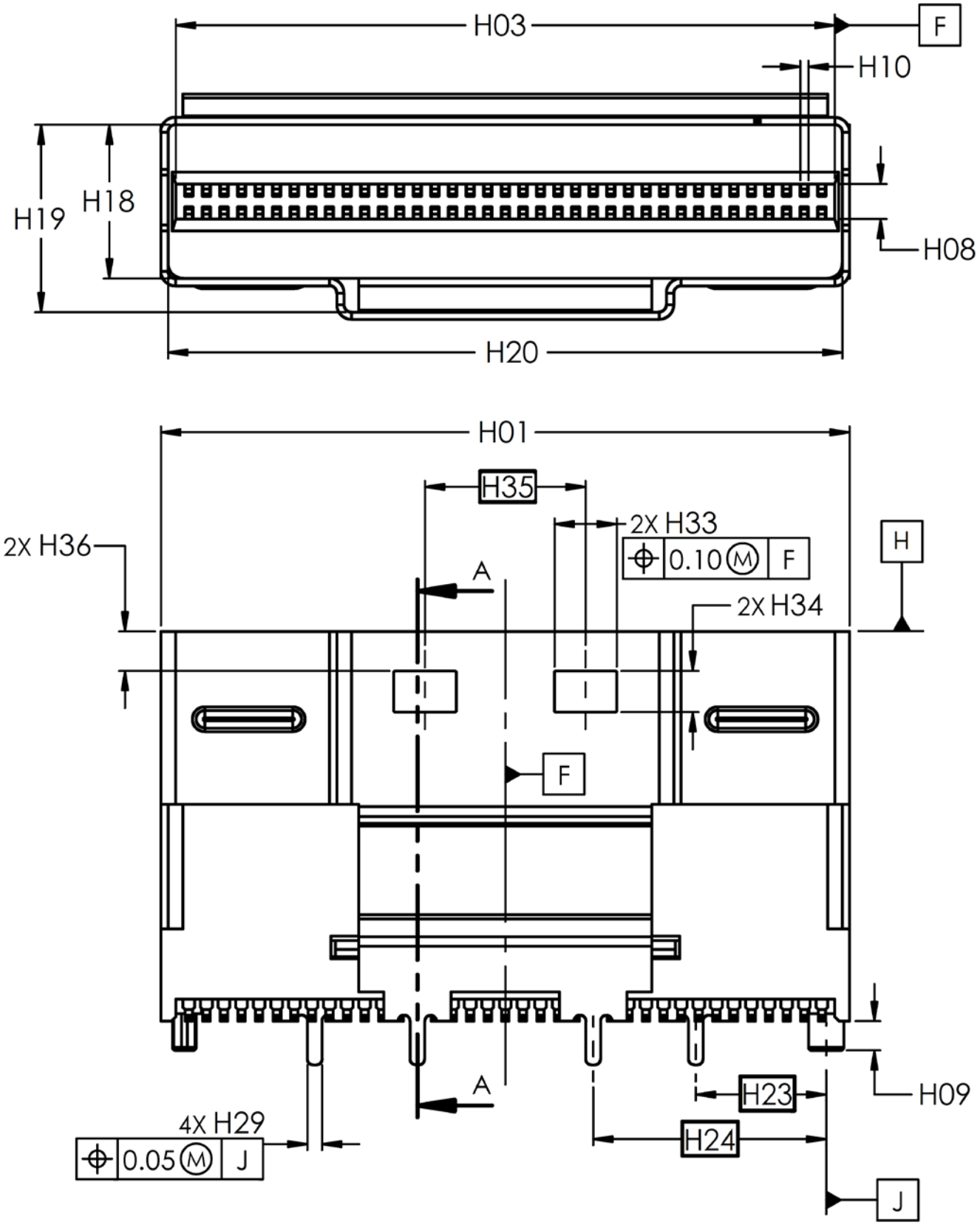


FIGURE 6-4 8X STRAIGHT VERTICAL CONNECTOR WITH LATCH RETENTION

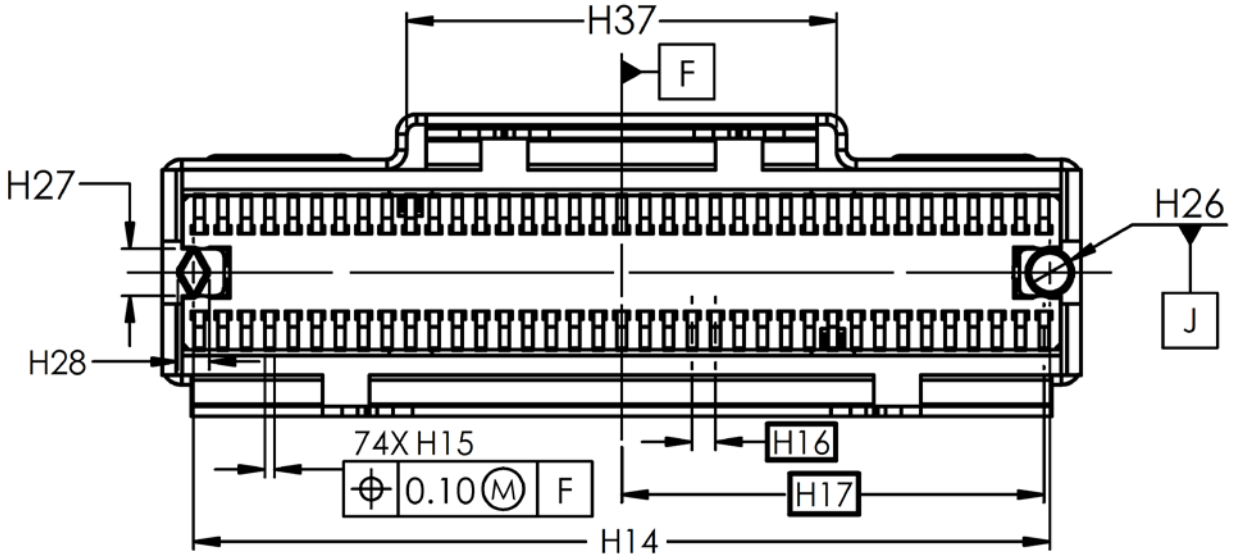


FIGURE 6-5 8X STRAIGHT VERTICAL CONNECTOR WITH LATCH RETENTION (2)

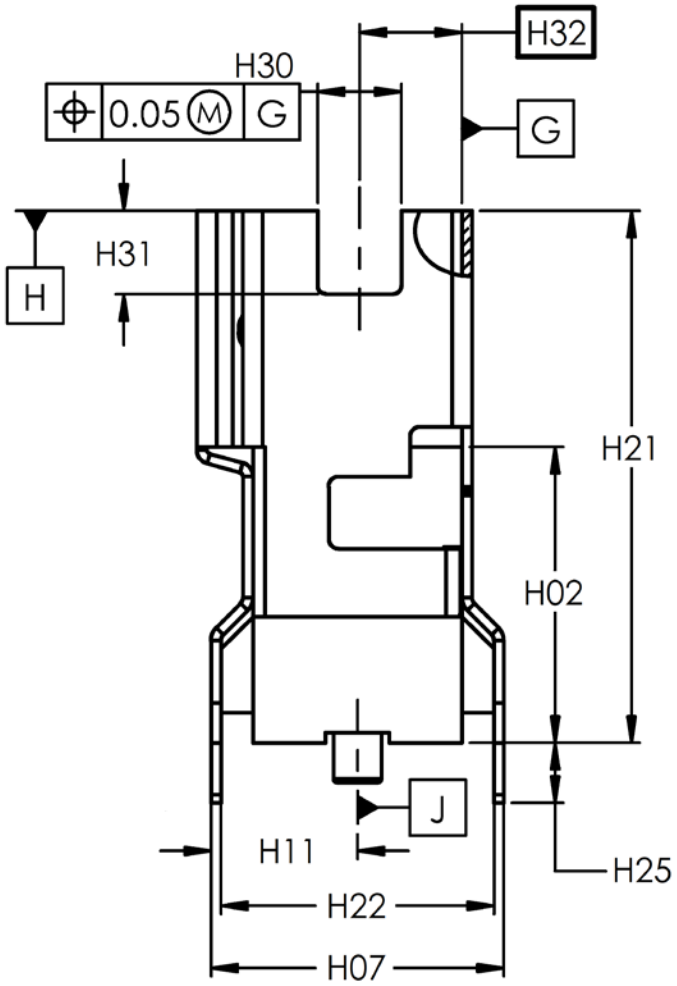


FIGURE 6-6 8X STRAIGHT VERTICAL CONNECTOR WITH LATCH RETENTION (3)

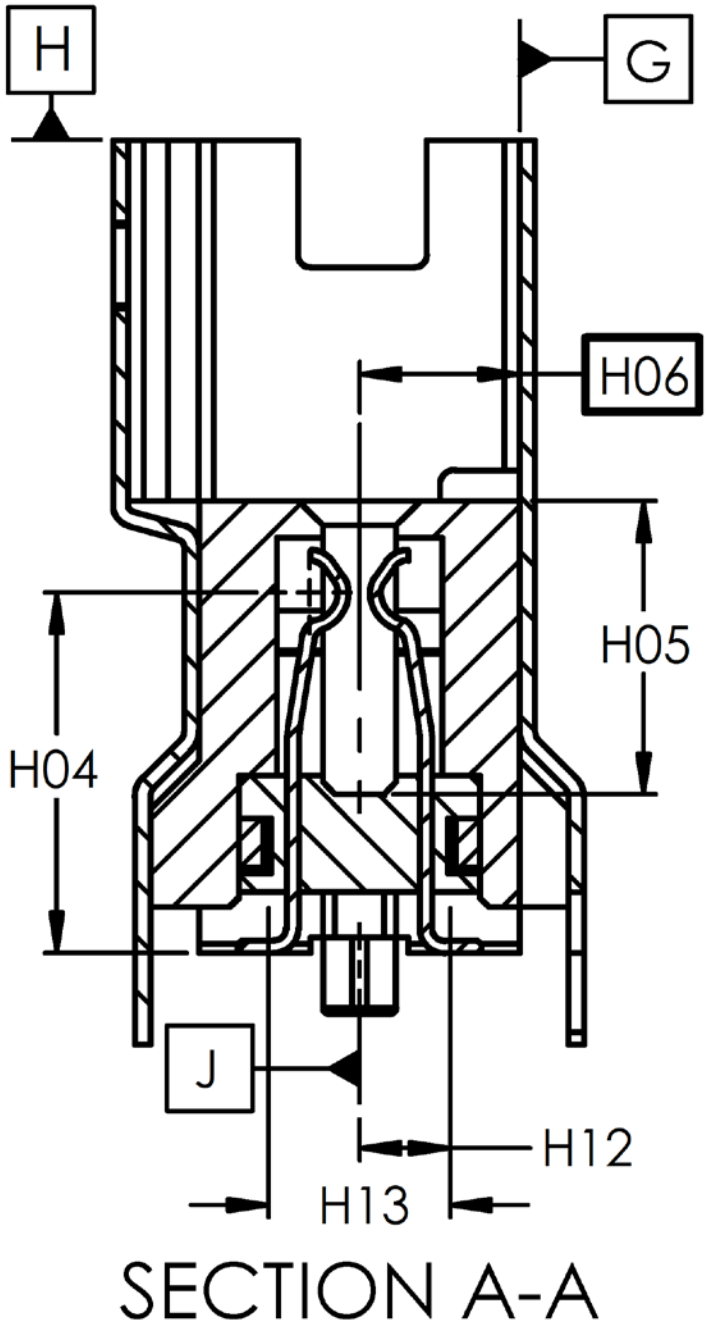


FIGURE 6-7 8X STRAIGHT VERTICAL CONNECTOR WITH LATCH RETENTION (4)

TABLE 6-2 8X STRAIGHT VERTICAL RECEPTACLE CONNECTOR DIMENSIONS

Designator	Description	Dimension (mm)	Tolerance
H01	Receptacle Width	23.50	+/- 0.10
H02	Receptacle Height from PCB	7.40	+/- 0.10
H03	Card Slot Width	22.48	+/- 0.03
H04	PCB to Contact Centerline	5.90	+/- 0.10
H05	Card Slot Depth	4.70	MIN
H06	Datum G to Mating Card Slot Centerline	2.62	Basic
H07	Latch Shroud and Receptacle Thickness at Base	7.34	+/- 0.10
H08	Card Slot Height	1.14	MIN
H09	Peg length	1.00	+/- 0.10
H10	Contact Zone	0.385	MAX
H11	Shroud Front Face at Base to Datum J (Peg)	3.67	+/- 0.08
H12	Datum J (Peg) to Row A	1.49	+/- 0.10
H13	Row A to Row B	2.98	+/- 0.10
H14	Datum J (Peg) to Diamond Peg	21.90	+/- 0.05
H15	Contact’s Solder Tail Width	0.25	+/- 0.05
H16	Contact Pitch	0.60	Basic
H17	Datum F (Centerline) to Last Contact	10.80	Basic
H18	Latch Shroud Inner Height	5.25	+/- 0.10
H19	Latch Shroud Inner Height at Latching Bracket	6.40	+/- 0.10
H20	Latch Shroud Inner Width	23.00	+0.08/-0.02
H21	Latch Shroud Height from PCB	13.30	+/- 0.10
H22	Latch Shroud Solder Pin to Solder Pin Inner Space at Base	6.84	REF
H23	Datum J (Peg) to First Latch Shroud Solder Pin	4.45	Basic
H24	Datum J (Peg) to Second Latch Shroud Solder Pin	7.95	Basic
H25	Latch Shroud Solder Pin Height	1.40	MIN
H26	Peg Diameter	1.20	+/- 0.03
H27	Diamond Peg Long Width	1.20	+/- 0.03
H28	Diamond Peg Short Width	0.75	+/- 0.05
H29	Latch Shroud Solder Pin Width	0.45	+/- 0.05
H30	Anti-Rotation Rib Slot Width	2.15	+/- 0.05
H31	Anti-Rotation Rib Slot Depth	2.08	+/- 0.05
H32	Anti-Rotation Rib Slot Location from Latch Shroud Inner Wall (Datum G)	2.57	Basic
H33	Latch Slot Width	2.13	+/- 0.10
H34	Latch Slot Length	1.40	+0.10/-0.00
H35	Latch Slot Spacing	5.48	Basic
H36	Latch Slot to Datum H (Latch Shroud Mating Face, Plug Stop)	1.35	+/- 0.05
H37	Latch Shroud Inner Width at Center Latching Bracket	11.00	+/- 0.10

6.2 4X Receptacle Connector Configurations

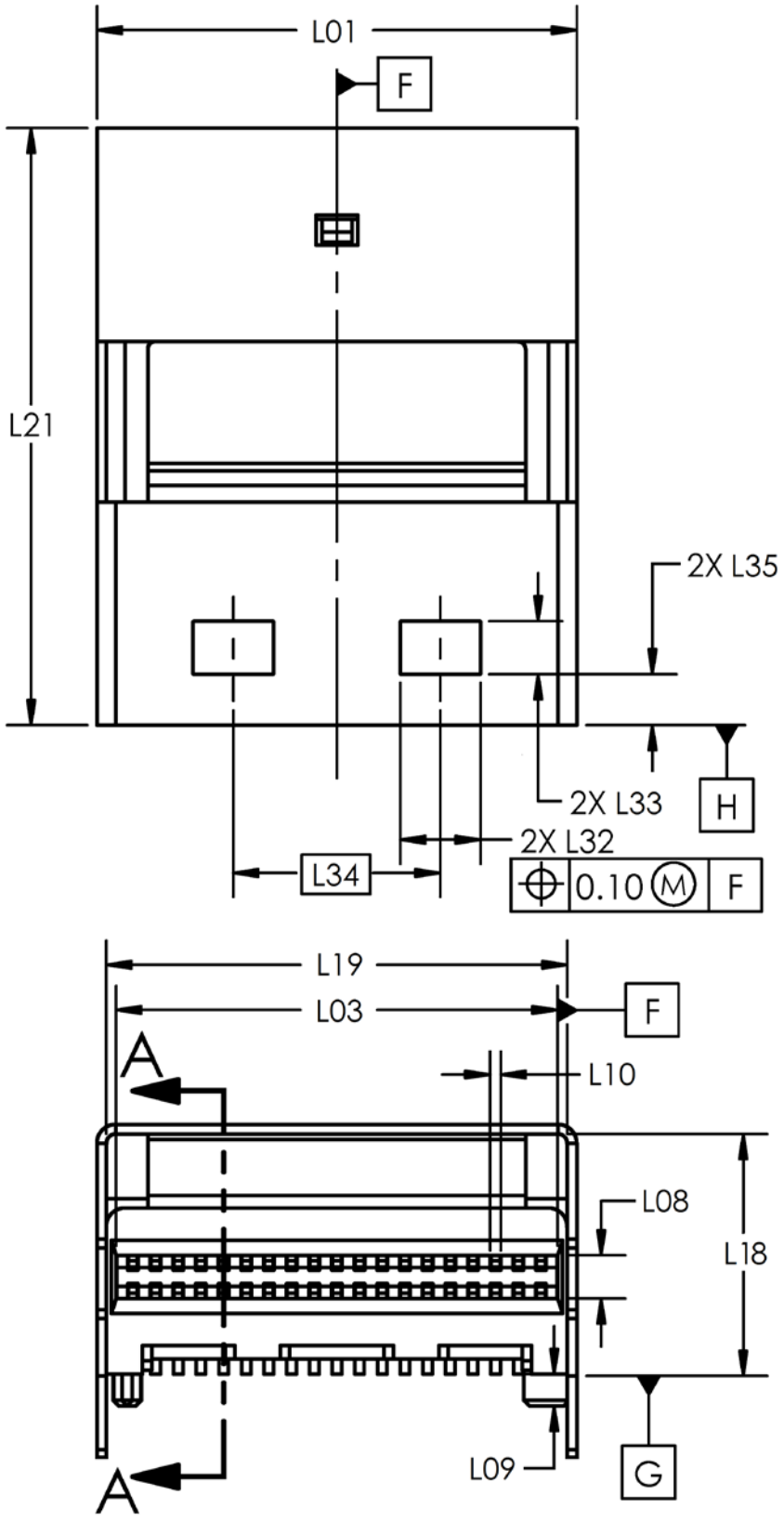


FIGURE 6-8 4X RIGHT ANGLE CONNECTOR WITH LATCH RETENTION

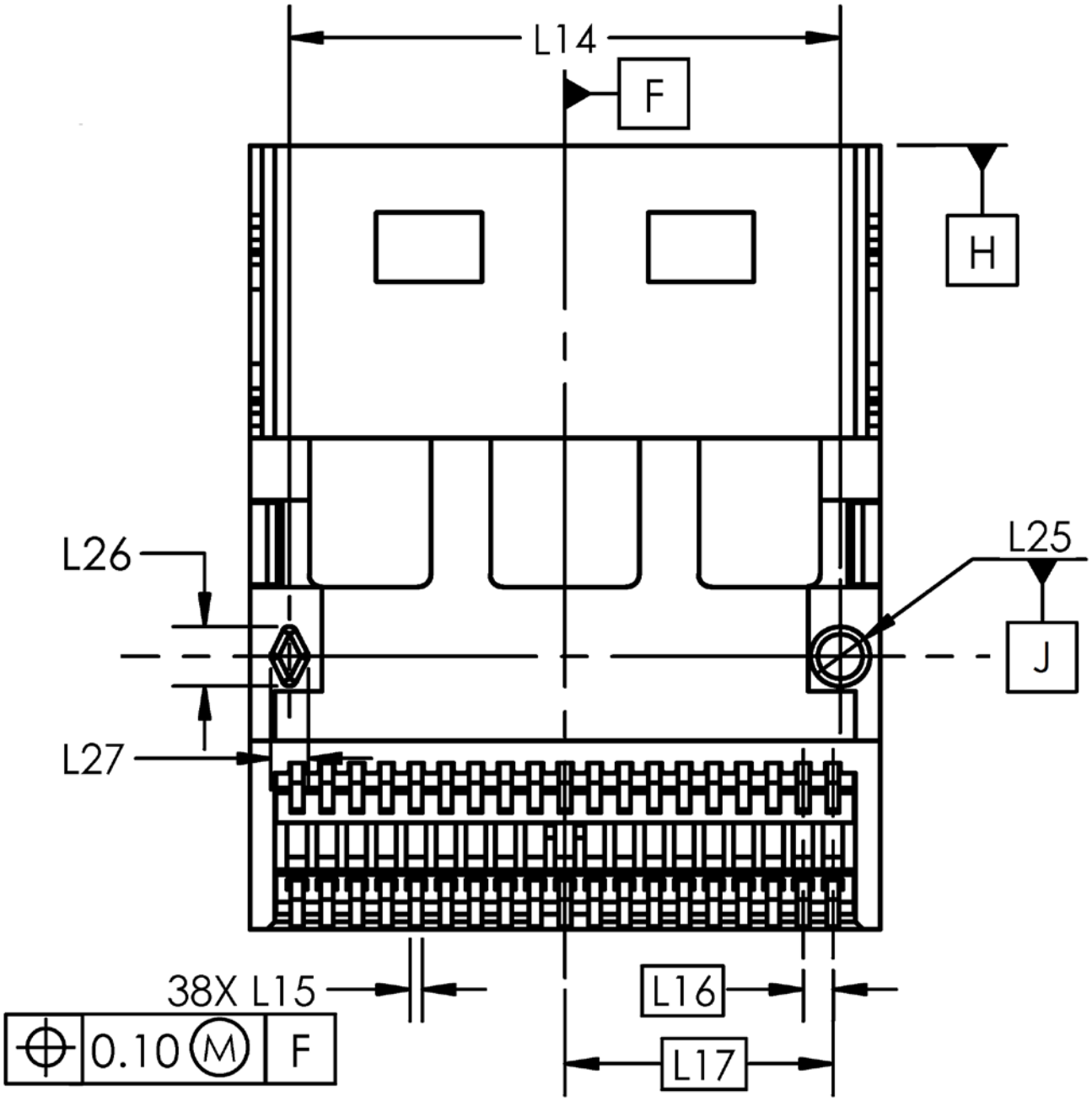
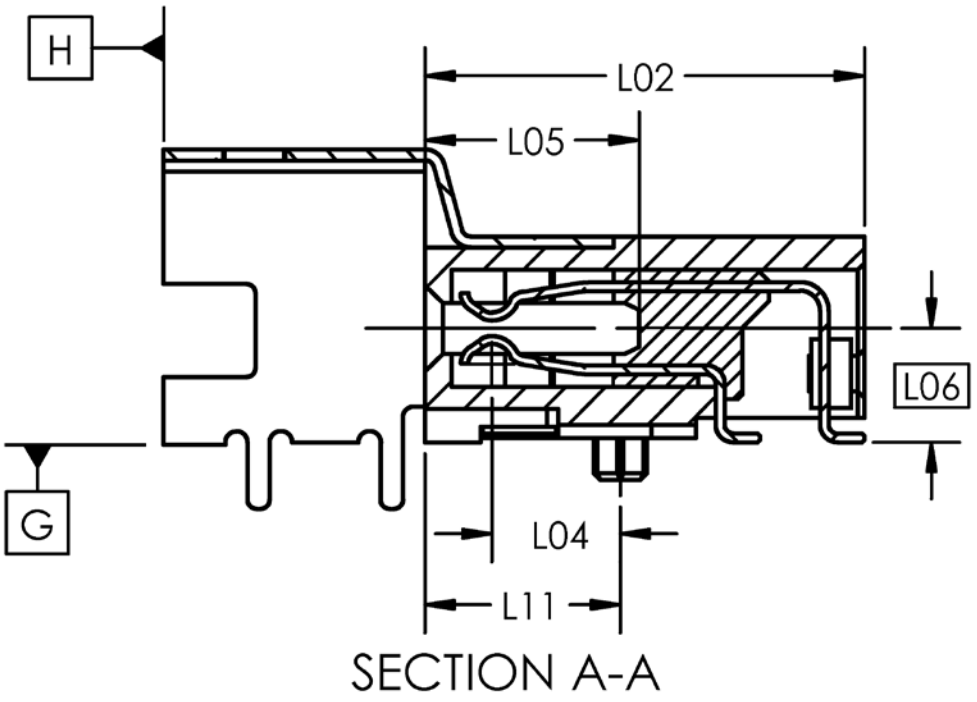


FIGURE 6-9 4X RIGHT ANGLE CONNECTOR WITH LATCH RETENTION (2)



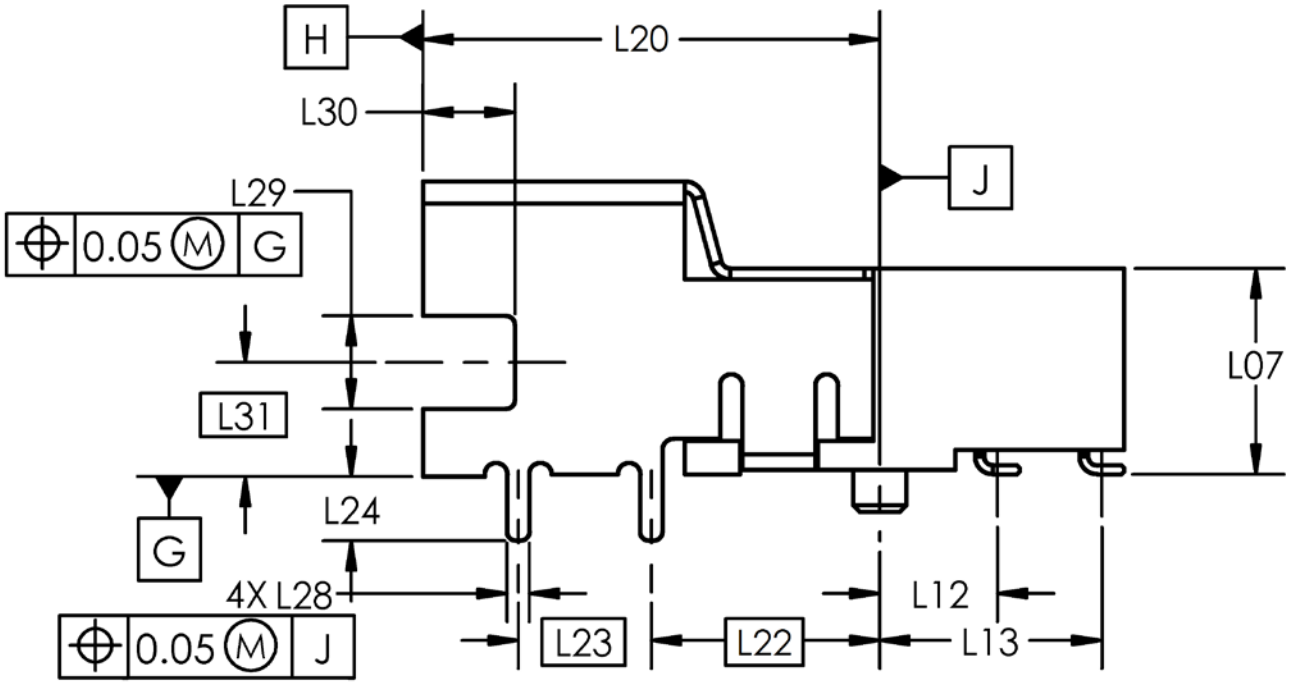


FIGURE 6-10 4X RIGHT ANGLE CONNECTOR WITH LATCH RETENTION (3)

TABLE 6-3 4X RIGHT ANGLE CONNECTOR WITH LATCH RETENTION DIMENSIONS

Designator	Description	Dimension (mm)	Tolerance
L01	Receptacle Width	12.70	+/- 0.10
L02	Receptacle Length	9.90	+/- 0.10
L03	Card Slot Width	11.68	+/- 0.03
L04	Datum J (Peg) to Contact Centerline	2.90	+/- 0.075
L05	Card Slot Depth	4.70	MIN
L06	Datum G (PCB) to Mating Card Slot Centerline	2.57	Basic
L07	Receptacle Height from PCB	5.25	MAX
L08	Card Slot Height	1.14	MIN
L09	Peg length	0.85	+/- 0.10
L10	Contact Zone	0.385	MAX
L11	Receptacle Front Face to Datum J (Peg)	4.40	+/- 0.05
L12	Datum J (Peg) to Row A	2.70	+/- 0.10
L13	Datum J (Peg) to Row B	5.05	+/- 0.10
L14	Datum J (Peg) to Diamond Peg	11.10	+/- 0.05
L15	Contact's Solder Tail Width	0.25	+/- 0.05
L16	Contact Pitch	0.60	Basic
L17	Datum F (Centerline) to Last Contact	5.40	Basic
L18	Latch Shroud Inner Height	6.40	+/- 0.10
L19	Latch Shroud Inner Width	12.20	+0.08/-0.02
L20	Latch Shroud Mating Face (Plug Stop, Datum H) to Receptacle Peg (Datum J)	10.30	+/- 0.15
L21	Overall Receptacle and Latch Shroud Assembly Length	15.80	REF
L22	Datum J (Peg) to First Latch Shroud Solder Pin	5.15	Basic
L23	First Latch Shroud Solder Pin to Second Pin	3.00	Basic
L24	Latch Shroud Solder Pin Height	1.40	MIN
L25	Peg Diameter	1.20	+/- 0.03
L26	Diamond Peg Long Width	1.20	+/- 0.03
L27	Diamond Peg Short Width	0.75	+/- 0.05
L28	Latch Shroud Solder Pin Width	0.45	+/- 0.05
L29	Anti-Rotation Rib Slot Width	2.15	+/- 0.05
L30	Anti-Rotation Rib Slot Depth	2.08	+/- 0.05
L31	Anti-Rotation Rib Slot Location	2.57	Basic
L32	Latch Slot Width	2.13	+/- 0.10
L33	Latch Slot Length	1.40	+0.10/-0.00
L34	Latch Slot Spacing	5.48	Basic
L35	Latch Slot to Datum H (Latch Shroud Mating Face, Plug Stop)	1.35	+/- 0.05

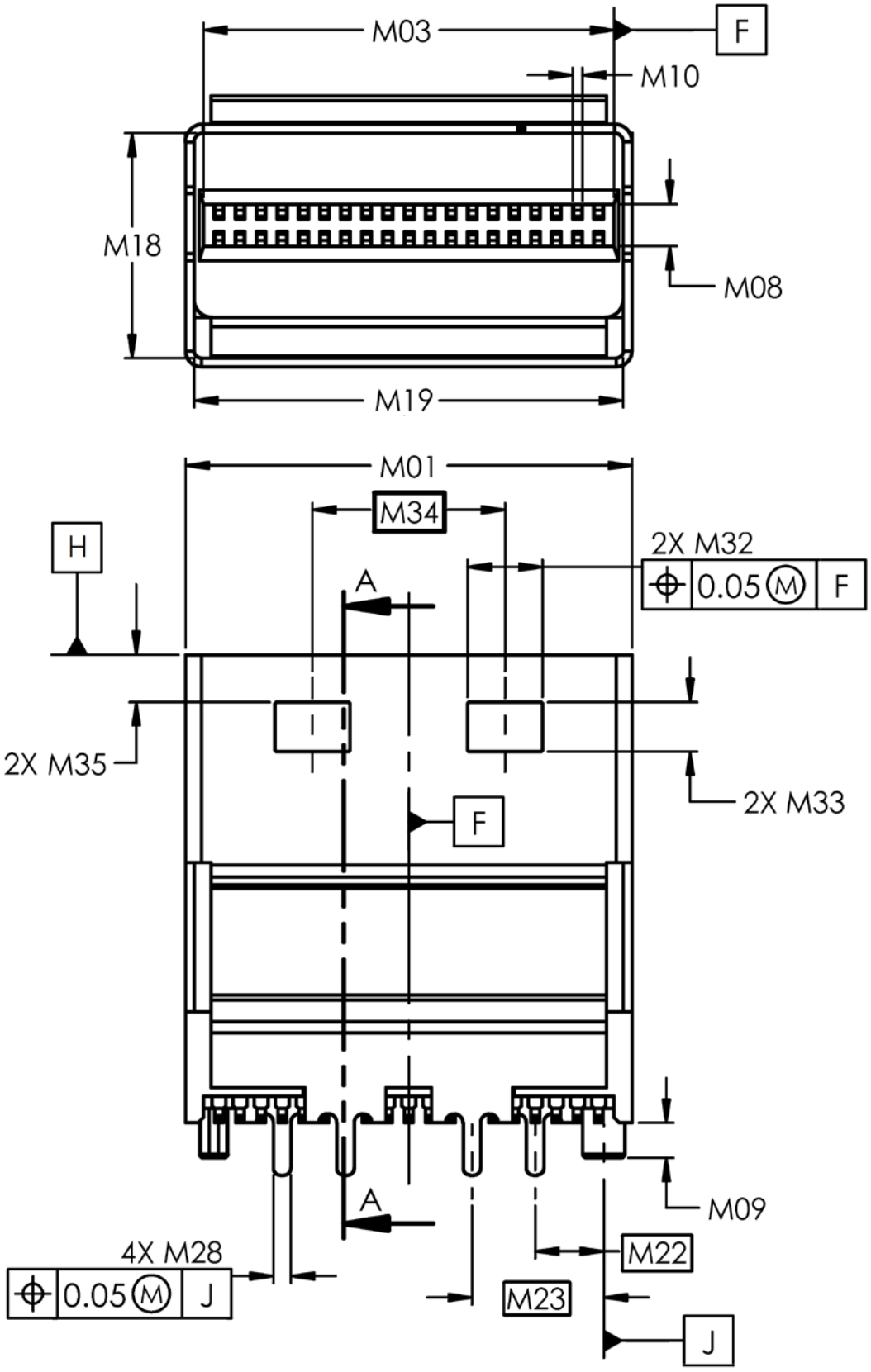


FIGURE 6-11 4X STRAIGHT VERTICAL CONNECTOR WITH LATCH RETENTION

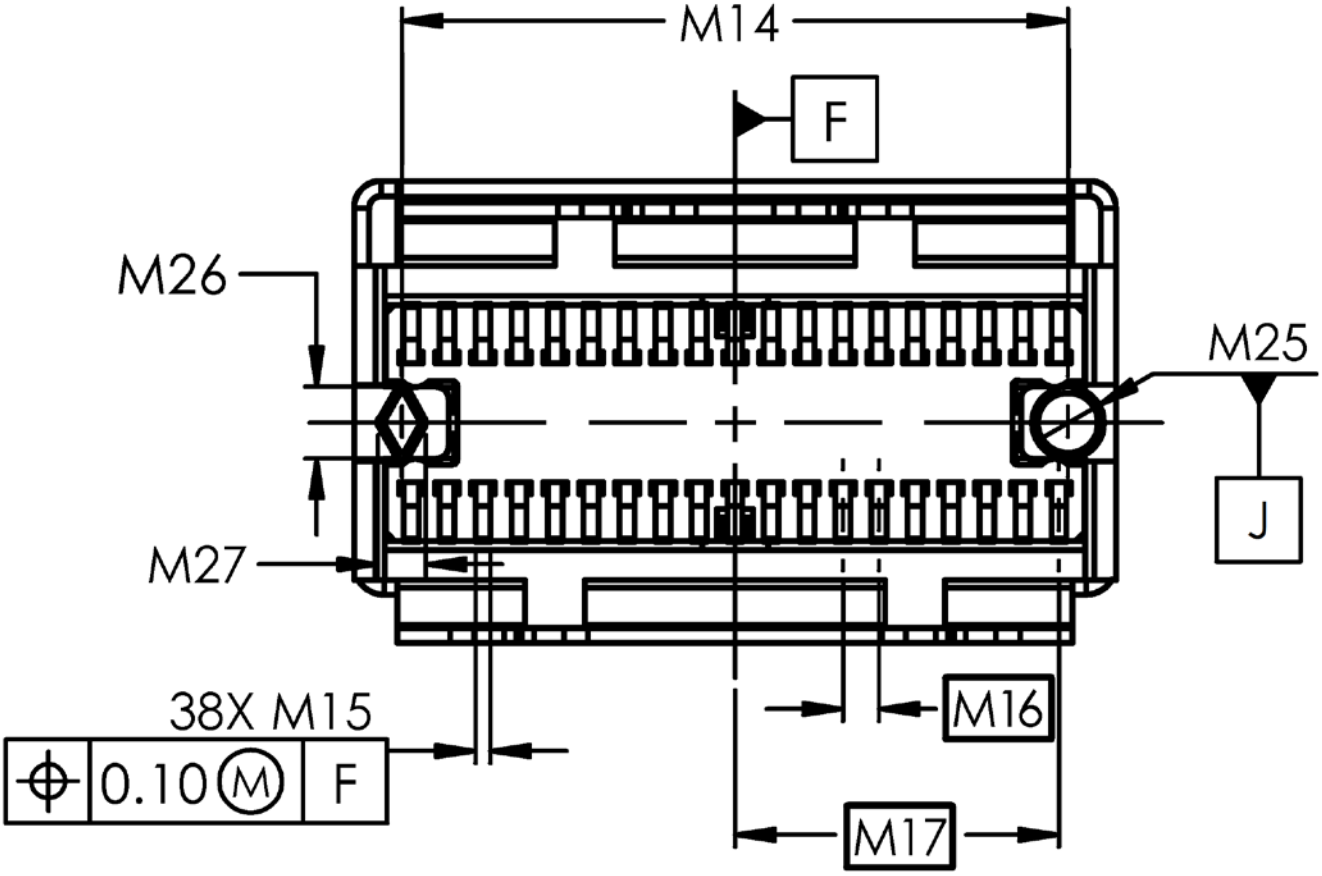


FIGURE 6-12 4X STRAIGHT VERTICAL CONNECTOR WITH LATCH RETENTION (2)

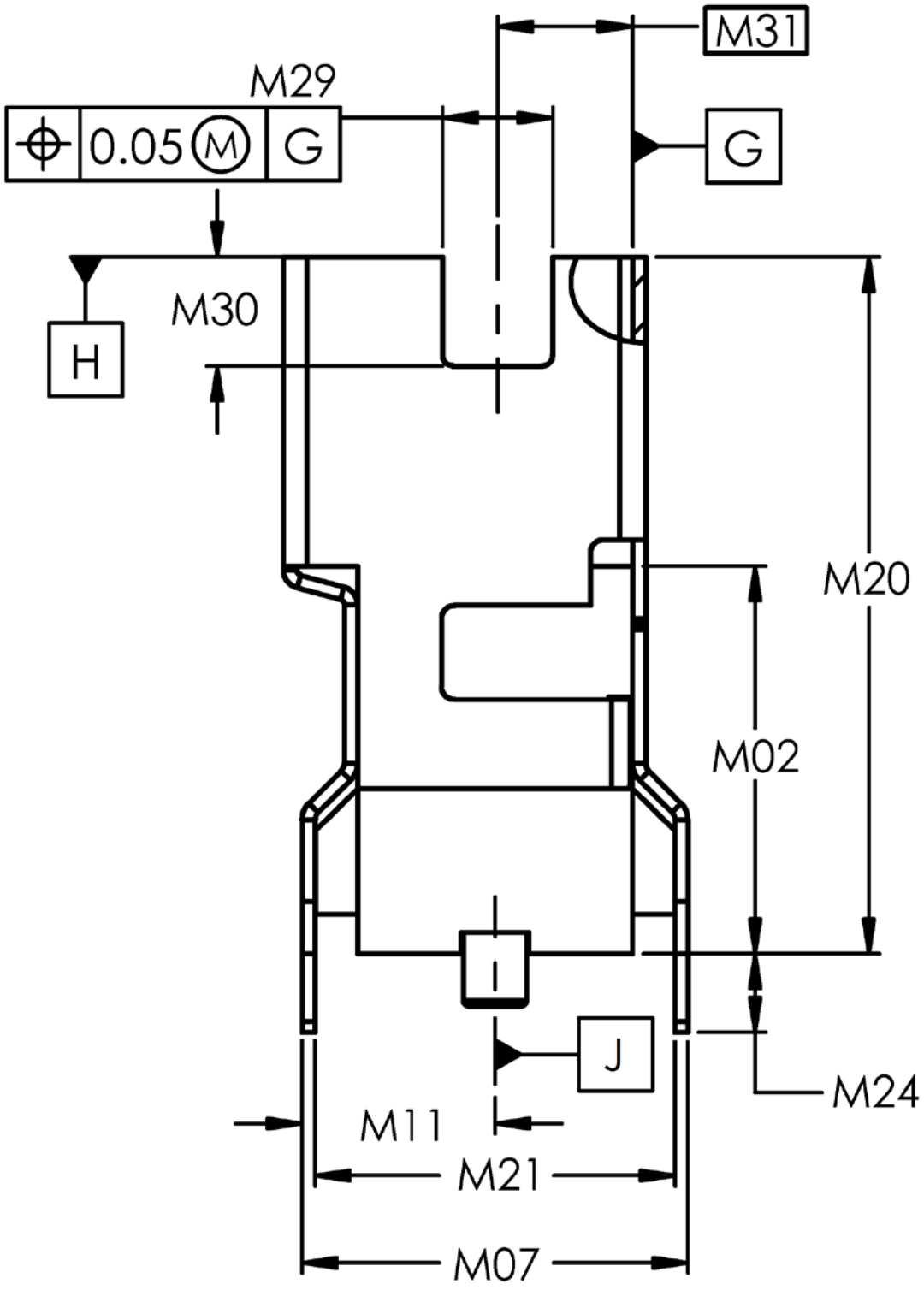


FIGURE 6-13 4X STRAIGHT VERTICAL CONNECTOR WITH LATCH RETENTION (3)

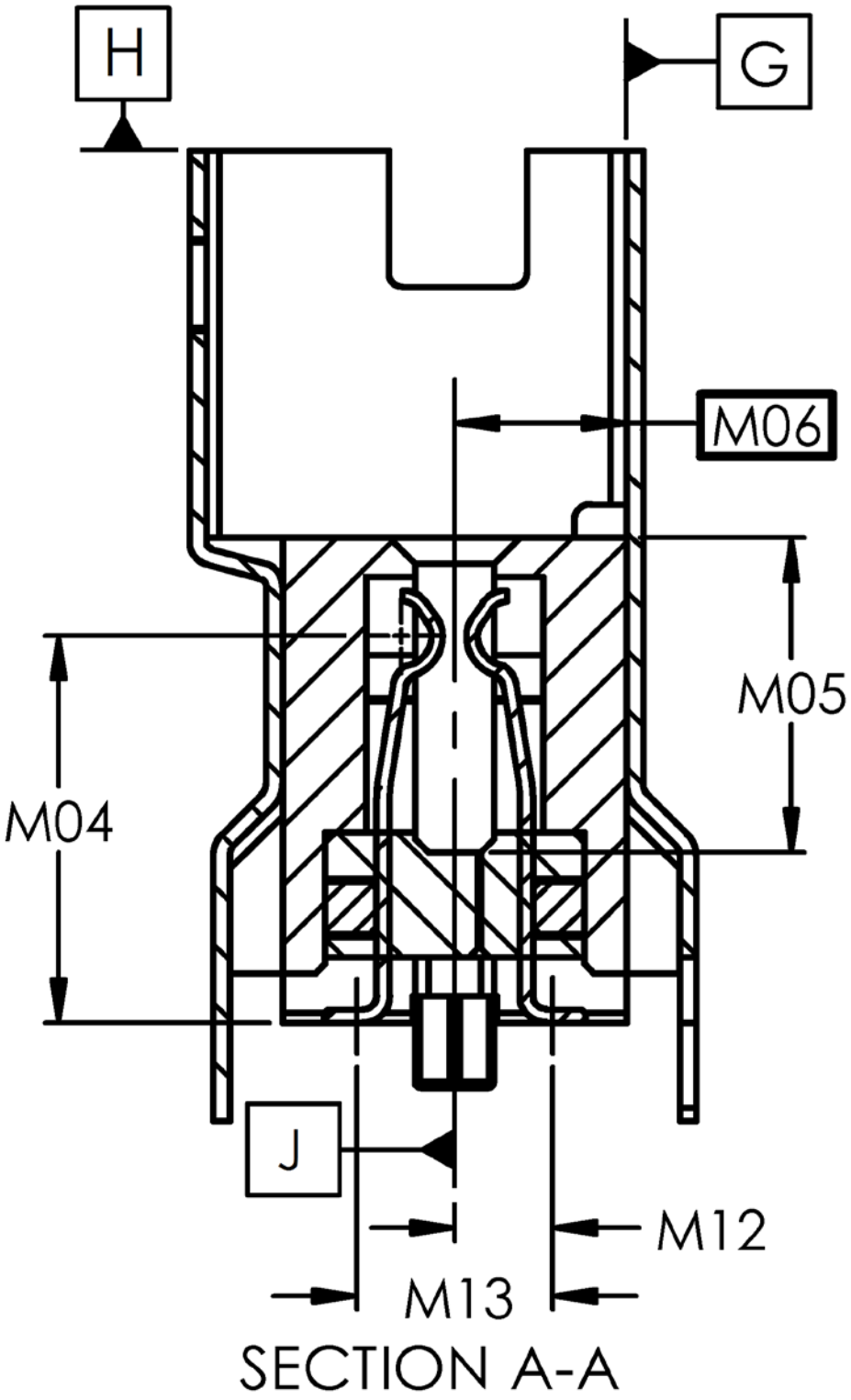


FIGURE 6-14 4X STRAIGHT VERTICAL CONNECTOR WITH LATCH RETENTION (4)

TABLE 6-4 4X STRAIGHT VERTICAL RECEPTACLE CONNECTOR DIMENSIONS

Designator	Description	Dimension (mm)	Tolerance
M01	Receptacle Width	12.70	+/- 0.10
M02	Receptacle Height from PCB	7.40	+/- 0.10
M03	Card Slot Width	11.68	+/- 0.03
M04	PCB to Contact Centerline	5.90	+/- 0.10
M05	Card Slot Depth	4.70	MIN
M06	Datum G to Mating Card Slot Centerline	2.62	Basic
M07	Latch Shroud and Receptacle Thickness at Base	5.24	+/- 0.05
M08	Card Slot Height	1.14	MIN
M09	Peg length	1.00	+/- 0.10
M10	Contact Zone	0.385	MAX
M11	Shroud Front Face at Base to Datum J (Peg)	3.67	+/- 0.04
M12	Datum J (Peg) to Row A	1.49	+/- 0.10
M13	Row A to Row B	2.98	+/- 0.10
M14	Datum J (Peg) to Diamond Peg	11.10	+/- 0.05
M15	Contact’s Solder Tail Width	0.25	+/- 0.05
M16	Contact Pitch	0.60	Basic
M17	Datum F (Centerline) to Last Contact	5.40	Basic
M18	Latch Shroud Inner Height	6.40	+/- 0.10
M19	Latch Shroud Inner Width	12.20	+0.08/-0.02
M20	Latch Shroud Height from PCB	13.30	+/- 0.10
M21	Latch Shroud and Receptacle Thickness at Base	7.34	+/- 0.15
M22	Datum J (Peg) to First Latch Shroud Solder Pin	1.80	Basic
M23	Datum J (Peg) to Second Latch Shroud Solder Pin	3.60	Basic
M24	Latch Shroud Solder Pin Height	1.50	+/- 0.10
M25	Peg Diameter	1.20	+/- 0.03
M26	Diamond Peg Long Width	1.20	+/- 0.03
M27	Diamond Peg Short Width	0.75	+/- 0.05
M28	Latch Shroud Solder Pin Width	0.45	+/- 0.05
M29	Anti-Rotation Rib Slot Width	2.15	+/- 0.05
M30	Anti-Rotation Rib Slot Depth	2.08	+/- 0.05
M31	Anti-Rotation Rib Slot Location from Latch Shroud Inner Wall (Datum G)	2.57	Basic
M32	Latch Slot Width	2.13	+/- 0.10
M33	Latch Slot Length	1.40	+0.10/-0.00
M34	Latch Slot Spacing	5.48	Basic
M35	Latch Slot to Datum H (Latch Shroud Mating Face, Plug Stop)	1.35	+/- 0.05

7. Performance Requirements

7.1 EIA 364 TS-1000 Requirements

This specification conforms to the test sequences as defined in EIA 364 TS-1000.

TABLE 7-1 EIA 364 TS-1000 REQUIREMENTS

Parameter	Requirement
Rated Durability Cycles	250
Field Life (3, 5, 7, or 10 years)	10 years

Field Temperature (57, 60, 65, 75, or 85C)	65C degrees
Test Group 4 Option	1B
Plating Type (Precious / Non-Precious)	Precious
Surface Treatment (Lubricated or Non-Lubricated)	Manufacturer to specify

7.2 Electrical Performance Requirements

TABLE 7-2 ELECTRICAL REQUIREMENTS AND TEST CONDITIONS

Parameter	Requirement	Test/Conditions
Current	0.5 A/contact	
Voltage	30 V AC/contact	
Low Level Contact Resistance	20 milliohms maximum for signal contacts (initial)	EIA 364-23: 320 mV DC, 10 mA
Insulation Resistance	1e3 MegaOhm minimum between adjacent contacts	EIA 364-21: 100 V DC
Dielectric Withstanding Voltage	No defect between adjacent contacts (Method B) and 1 mA max leakage current	EIA-364-20: Method B, 300 V DC for 1 minute hold

7.3 Mechanical Performance Requirements

TABLE 7-3 MECHANICAL REQUIREMENTS AND TEST CONDITIONS

Parameter	Requirement	Test/Conditions
Mating Force (with Latch Feature Disabled)	x4 version: 21 N maximum x8 version: 31 N maximum	EIA 364-13
Un-mating Force (with Latch Feature Disabled)	x4 version: 18 N maximum x8 version: 24 N maximum	EIA 364-13
Latched Plug Retention Force	50 N minimum	EIA 364-98
Contact Normal Force	0.343 N minimum [35g minimum]	EIA-364-04
Vibration	No damage No discontinuity longer than 1 microsecond allowed 20 milliohms maximum change from initial (baseline) contact resistance	EIA 364-28
Mechanical Shock	No damage 20 milliohms maximum change from initial (baseline) contact resistance	EIA 364-27

7.4 Environmental Performance Requirements

TABLE 7-4 ENVIRONMENTAL REQUIREMENTS AND TEST CONDITIONS

Parameter	Requirement	Test/Conditions
Storage Temperature	-20C to +85C degrees	
Humidity	80% RH Maximum	

A. Informative Appendix

This appendix contains various recommended informative footprints.

A.1 8X Receptacle Connector Footprints

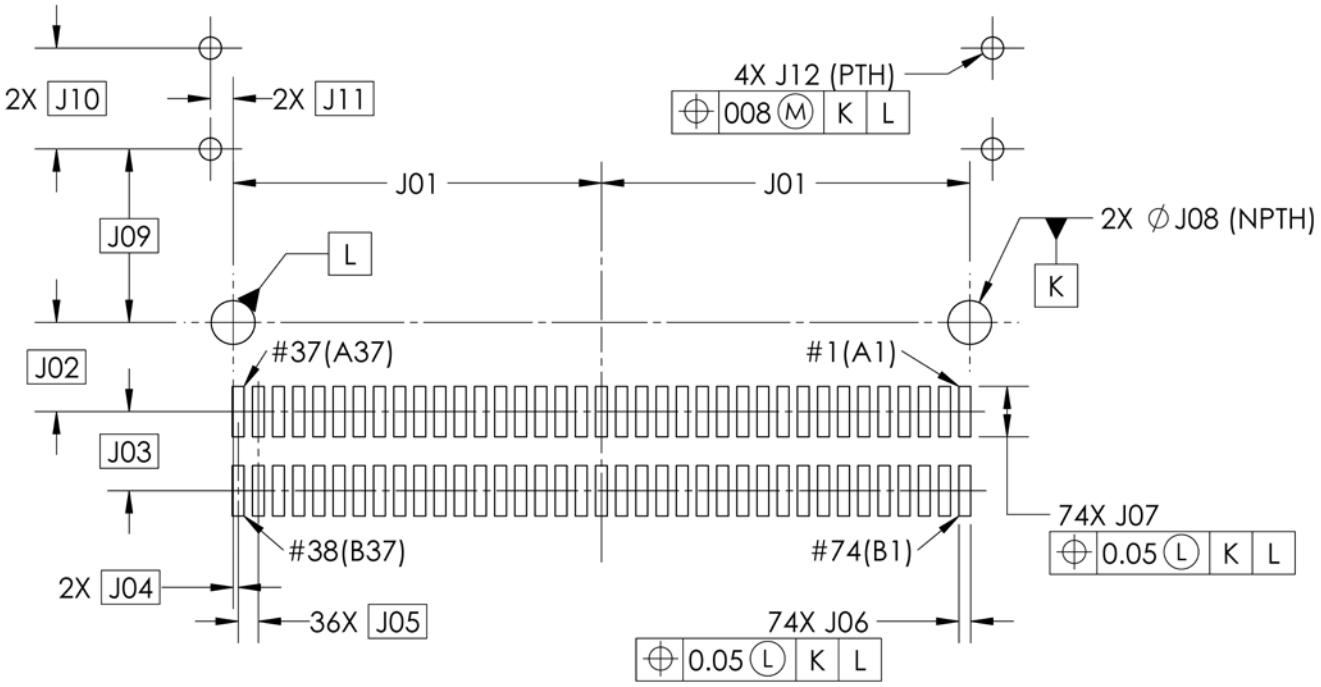


FIGURE: A-1 8X RIGHT ANGLE RECEPTACLE CONNECTOR FOOTPRINT

TABLE: A-1 8X RIGHT ANGLE RECEPTACLE FOOTPRINT DIMENSIONS

Designator	Description	Dimension (mm)	Tolerance
J01	Locating Hole (Datum K & Datum L) to Footprint Centerline	10.95	+/- 0.025
J02	Locating Hole (Datum K or Datum L) to Row A Centerline	2.70	Basic
J03	Row A Centerline to Row B Centerline	2.35	Basic
J04	Locating Hole (Datum L) to Outer Pad Center	0.15	Basic
J05	Pad Pitch	0.60	Basic
J06	Pad Width	0.35	+/- 0.03
J07	Pad Length	1.30	+/- 0.03
J08	Locating Hole Diameter	1.30	+/- 0.05
J09	Locating Hole (Datum K or Datum L) to First Solder Pin Hole	5.15	Basic
J10	First Solder Pin Hole to Second Solder Pin Hole	3.00	Basic
J11	Locating Hole (Datum K or Datum L) to Solder Pin Holes	0.68	Basic
J12	Solder Pin Hole Diameter	0.66	+/- 0.05

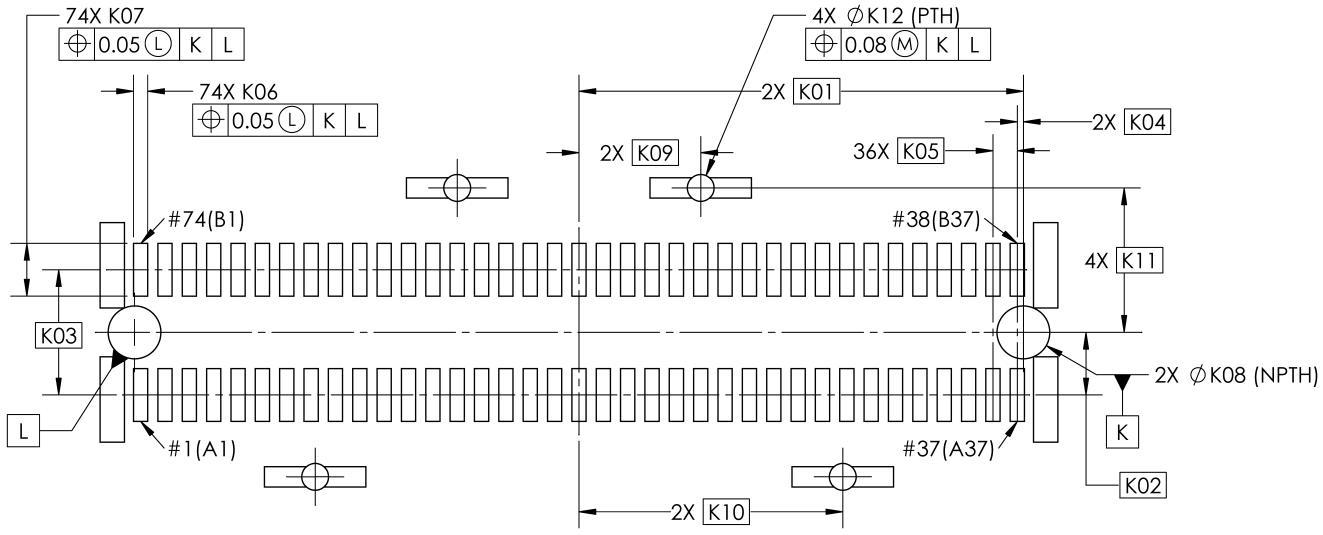


FIGURE: A-2 8X STRAIGHT VERTICAL RECEPTACLE CONNECTOR FOOTPRINT

TABLE: A-2 8X STRAIGHT VERTICAL RECEPTACLE CONNECTOR DIMENSIONS

Designator	Description	Dimension (mm)	Tolerance
K01	Locating Hole (Datum K & Datum L) to Footprint Centerline	10.95	+/- 0.025
K02	Locating Hole (Datum K or Datum L) to Row A Centerline	1.54	Basic
K03	Row A Centerline to Row B Centerline	3.08	Basic
K04	Locating Hole (Datum K or Datum L) to Outer Pad Center	0.15	Basic
K05	Pad Pitch	0.60	Basic
K06	Pad Width	0.35	+/- 0.03
K07	Pad Length	1.30	+/- 0.03
K08	Locating Hole Diameter	1.30	+/- 0.05
K09	Footprint Centerline to First Solder Pin Hole	3.00	Basic
K10	Footprint Centerline to Second Pin Hole	6.50	Basic
K11	Locating Hole (Datum K or Datum L) to Solder Pin Holes	3.55	Basic
K12	Solder Pin Hole Diameter	0.66	+/- 0.05

A.2 4X Receptacle Connector Footprints

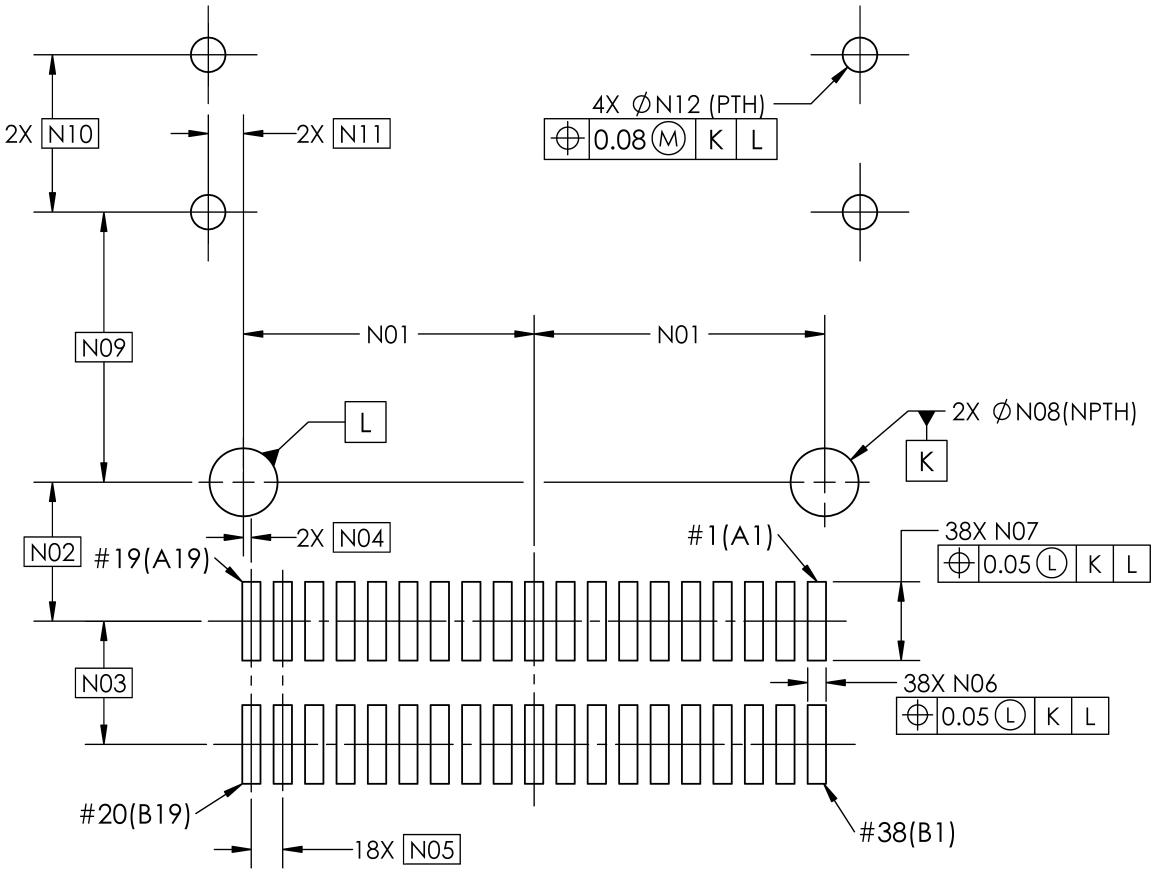


FIGURE: A-3 4X RIGHT ANGLE RECEPTACLE CONNECTOR FOOTPRINT

TABLE: A-3 4X RIGHT ANGLE RECEPTACLE CONNECTOR FOOTPRINT DIMENSIONS

Designator	Description	Dimension (mm)	Tolerance
N01	Locating Hole Datum K & Datum L) to Footprint Centerline	5.55	+/- 0.025
N02	Locating Hole (Datum K or Datum L) to Row A Centerline	2.70	Basic
N03	Row A Centerline to Row B Centerline	2.35	Basic
N04	Locating Hole (Datum L) to Outer Pad Center	0.15	Basic
N05	Pad Pitch	0.60	Basic
N06	Pad Width	0.35	+/- 0.03
N07	Pad Length	1.30	+/- 0.03
N08	Locating Hole Diameter	1.30	+/- 0.05
N09	Locating Hole (Datum L or Datum K) to First Solder Pin Hole	5.15	Basic
N10	First Solder Pin Hole to Second Pin Hole	3.00	Basic
N11	Locating Hole (Datum L or Datum K) to Solder Pin Holes	0.68	Basic
N12	Solder Pin Hole Diameter	0.66	+/- 0.05

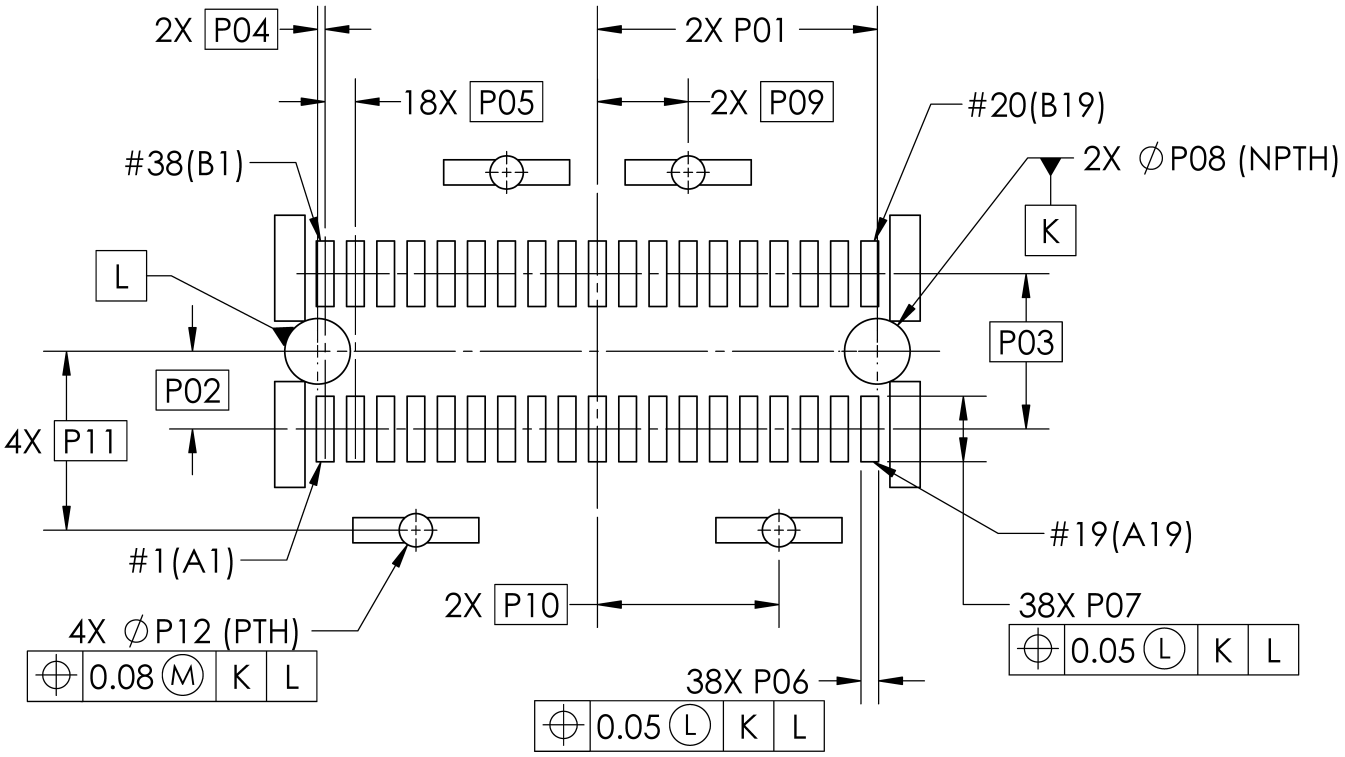


FIGURE: A-4 4X STRAIGHT VERTICAL RECEPTACLE CONNECTOR FOOTPRINT

TABLE: A-4 4X STRAIGHT VERTICAL RECEPTACLE CONNECTOR FOOTPRINT DIMENSIONS

Designator	Description	Dimension (mm)	Tolerance
P01	Locating Hole (Datum K & Datum L) to Footprint Centerline	5.55	+/- 0.025
P02	Locating Hole (Datum K or Datum L) to Row A Centerline	1.54	Basic
P03	Row A Centerline to Row B Centerline	3.08	Basic
P04	Locating Hole (Datum K or Datum L) to Outer Pad Center	0.15	Basic
P05	Pad Pitch	0.60	Basic
P06	Pad Width	0.35	+/- 0.03
P07	Pad Length	1.30	+/- 0.03
P08	Locating Hole Diameter	1.30	+/- 0.05
P09	Footprint Centerline to First Solder Pin Hole	1.80	Basic
P10	Footprint Centerline to Second Solder Pin Hole	3.60	Basic
P11	Locating Hole (Datum K or Datum L) to Solder Pin Holes	3.55	Basic
P12	Solder Pin Hole Diameter	0.66	+/- 0.05