



TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

| | |
|-----------------------------|---|
| Insulator: | Glass-filled polyester, UL 94V-0, blue color. |
| Contacts: | Precision-machined copper alloy with gold flash over nickel, or 0.76 microns [0.000030 inch] gold over nickel, or 1.27 microns [0.000050 inch] gold over nickel. Solder-coated terminations optional. |
| Mounting Screws: | Steel, zinc plated. |
| Push-on Fastener: | Spring-temper copper alloy, tin plated. |
| Float Mount Bushing: | Steel, zinc plated. |

ELECTRICAL CHARACTERISTICS:

| | |
|--|---|
| Contact Current Rating: | |
| Size 8 Contact: | 60 amperes, continuous. |
| Size 12 Contact: | 40 amperes, continuous. |
| Size 16 Contact: | 20 amperes, continuous. |
| Size 20 Contact: | 5 amperes. |
| | Temperature Rise Curves per IEC 512-3, Test 5a. See page 19 of this catalog for performance curves. |
| Initial Contact Resistance; maximum: | |
| Size 8 Contact: | 0.0005 ohms. |
| Size 12 Contact: | 0.001 ohms. |
| Size 16 Contact: | 0.0016 ohms. |
| Size 20 Contact: | 0.007 ohms. |
| | Per IEC 512-2, Test 2b. |
| Insulator Resistance: | 5 G ohms per IEC 512-2, Test 3a. |
| Voltage Proof: | 2000 V rms per IEC 512-2, Test 4a, Method C. |
| Hot Pluggable (50 Couplings per U.L. 1977, Paragraph 15): | |
| Size 8 Contact: | 250 VAC at 25 amperes. |
| Size 12 Contact: | 250 VAC at 25 amperes. |
| Creepage Distances: | Consult Technical Sales for information about your specific connector choice. |
| Clearance Distance: | Consult Technical Sales for information about your specific connector choice. |
| Working Voltage: | Consult Technical Sales for information about your specific connector choice. |

MECHANICAL CHARACTERISTICS:

| | |
|---|---|
| Blind Mating System: | Molded in guides allow for misalignment up to 7.62 mm [0.300 inch] |
| Polarization: | Provided by connector body design. |
| Removable Contacts: | Insert contact in rear face of insulator; release from front face of insulator. Female contacts feature "Closed Entry" design. |
| Removable Contact Retention in Connector Body: | |
| Size 8 Contact: | 67N [15 lbs.] per IEC 512-8, Test 15a. |
| Size 12 Contact: | 67N [15 lbs.] per IEC 512-8, Test 15a. |
| Size 16 Contact: | 67N [15 lbs.] per IEC 512-8, Test 15a. |
| Size 20 Contact: | 44N [10 lbs.] per IEC 512-8, Test 15a. |
| Fixed Contacts: | Printed board terminations, both straight and right angle (90°). Size 8, 12 and 16 female contacts feature "Closed Entry" design. Size 20 female contacts feature "Rugged Open Entry" design. |
| Fixed Contact Retention in Connector Body: | 44N [10 lbs.], minimum. |
| Resistance to Solder Heat: | 260°C [500°F] for 10 seconds duration per IEC 512-6, Test 12e, 25-watt soldering iron. |
| Sequential Contact Mating System: | Two level and three level systems featured. Consult Technical Sales for application assistance with contact sequencing. |
| Safety "Recessed in Insulator" Contacts: | Size 16 female contacts may be recessed 5.00 mm [0.197 inch] below the face of the female connector insulator per safety requirements. Consult Technical Sales for ordering information. |
| Compliant Press-Fit Terminations: | Size 8, 12, 16 and 20 contacts are available with Compliant Press-Fit Contact Terminations. Consult Technical Sales for electrical and mechanical characteristics. |
| Printed Board and Panel Mounting Holes: | Mounting holes provided in connector body for both printed board and panel mounting. Self-tapping screws or push-on fastener options are available. |
| Float Mount Shoulder Screw: | Provides up to 2.03 mm [0.080 inch] float. |
| Mechanical Operations: | |
| Systems 1, 2 & 7: | 200 couplings. |
| Systems 3, 4 & 5: | 250 couplings. |

CLIMATIC CHARACTERISTICS:

| | |
|-----------------------------|------------------|
| Working Temperature: | -55°C to +125°C. |
|-----------------------------|------------------|

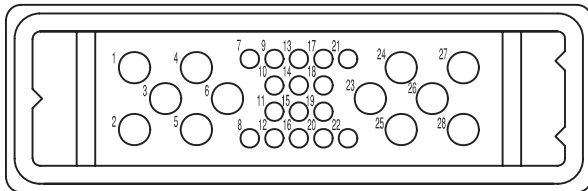
Recognized by various safety agencies.
Consult Technical Sales for updated list.



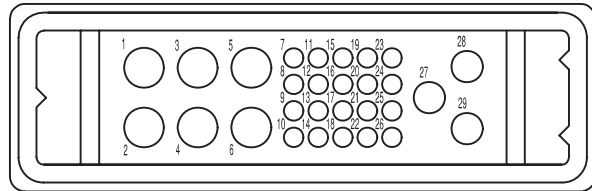
For RoHS options
see page 28.

CONNECTOR VARIANTS

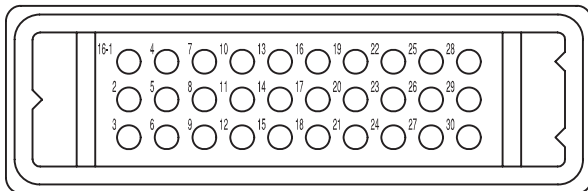
FACE VIEW OF MALE OR REAR VIEW OF FEMALE



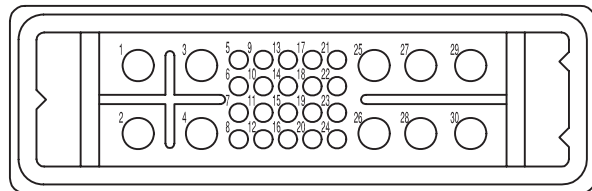
MIP28W12 VARIANT
12 Size 12 and 16 Size 20 Contacts



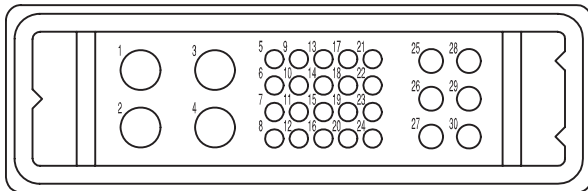
MIP29W9 VARIANT
6 Size 8, 3 Size 12, 20 Size 20 Contacts



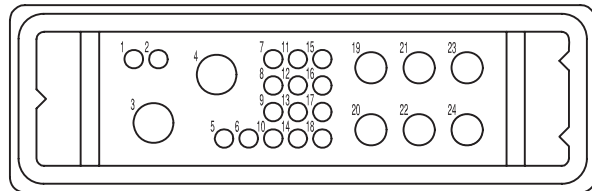
MIP30 VARIANT
30 Size 16 Contacts



MIP30WA10 VARIANT
10 Size 12 and 20 Size 20 Contacts



MIP30WB10 VARIANT
4 Size 8, 6 Size 16, 20 Size 20 Contacts



MIP24W8 VARIANT
2 Size 8
(See page 46 for high current or pages 45-48 for standard)
Size 12, 16 Size 20 Contacts
ONLY AVAILABLE FOR USE WITH CRIMP CONTACTS.

Refer to pages 7 & 8 for
Application Specific Arrangements

MIP SERIES

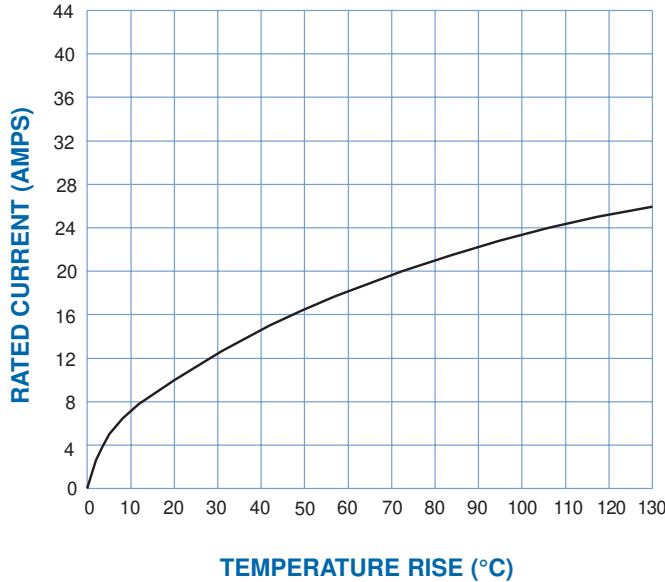


TEMPERATURE RISE CURVES AND CONNECTOR MATING DIMENSIONS

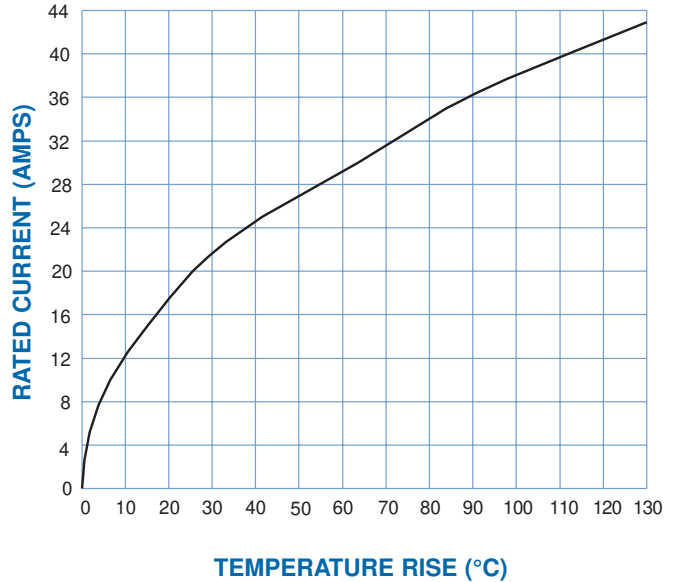
CONNECTOR TEMPERATURE RISE CURVES

Tested per IEC Publication 512-3, Test 5a

SIZE 16 CONTACTS



SIZE 12 CONTACTS



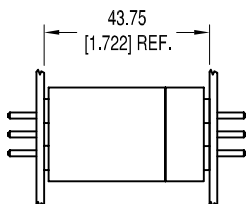
Above curve developed using MIP30M0000 and MIP30F0000 connectors with MC112N and FC112N2 contacts and 12 AWG wire. All contacts under load.

Above curve developed using MIP30WA10M0000 and MIP30WA10F0000 connectors and MC612N with FC612N2 contacts and 12 AWG wire. All contacts under load. Size 20 contact positions not filled and tested.

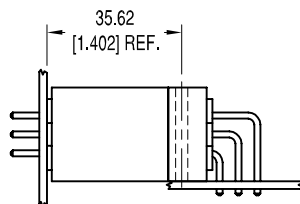
NOTE:

- 1) These temperature rise curves were developed using standard contact materials. High conductivity contact materials are available. These alternate materials allow for more favorable current carrying performance; consult Technical Sales for details.
- 2) Consult Technical Sales for Electrical and Mechanical characteristics of press-fit terminations.

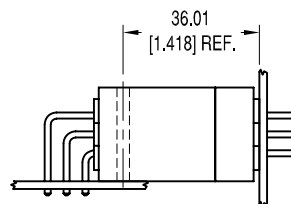
CONNECTOR MATING DIMENSIONS



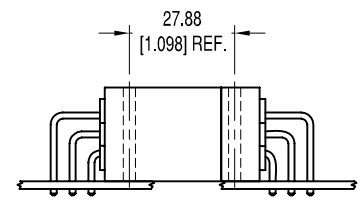
Straight Board Mount or Panel Mount Female to Straight Board Mount or Panel Mount Male.



Right Angle (90°) Board Mount Female to Straight Board Mount or Panel Mount Male.

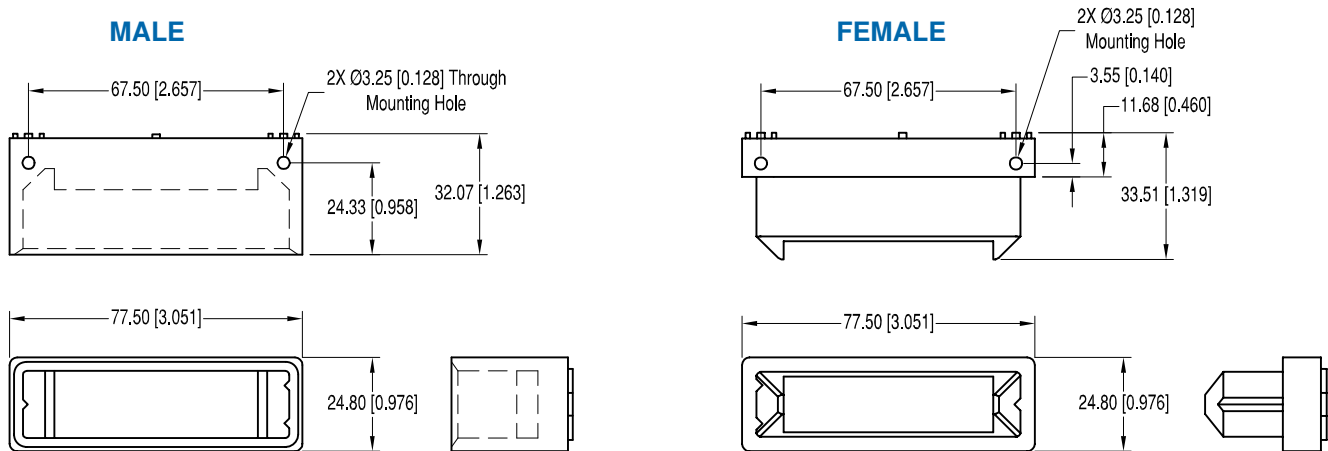


Straight Board Mount or Panel Mount Female to Right Angle (90°) Board Mount Male.



Right Angle (90°) Board Mount Female to Right Angle (90°) Board Mount Male.

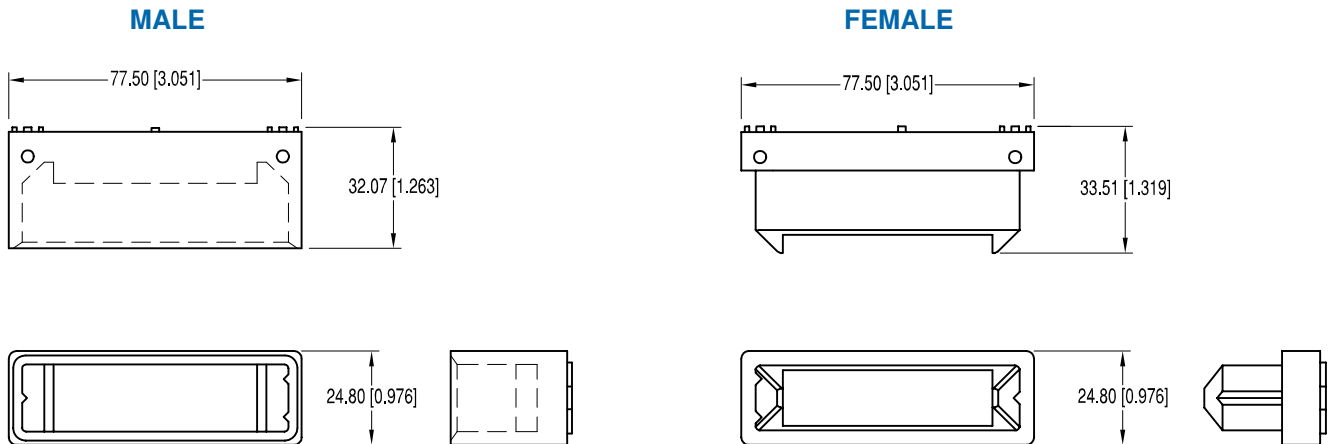
CONNECTOR OUTLINE DIMENSIONS FOR USE WITH CODE 0, 3, 32, 93, 4, 42, AND 63



CABLE CONNECTOR

FOR USE WITH SIZE 8, 12, 16 AND 20 REMOVABLE CONTACTS
CODE 0

CONTACTS ARE NOT SUPPLIED WITH CONNECTOR AND MUST BE ORDERED SEPARATELY



For information regarding size 8, 12, 16 and 20 removable contacts, see Removable Contact section, pages 41-48.

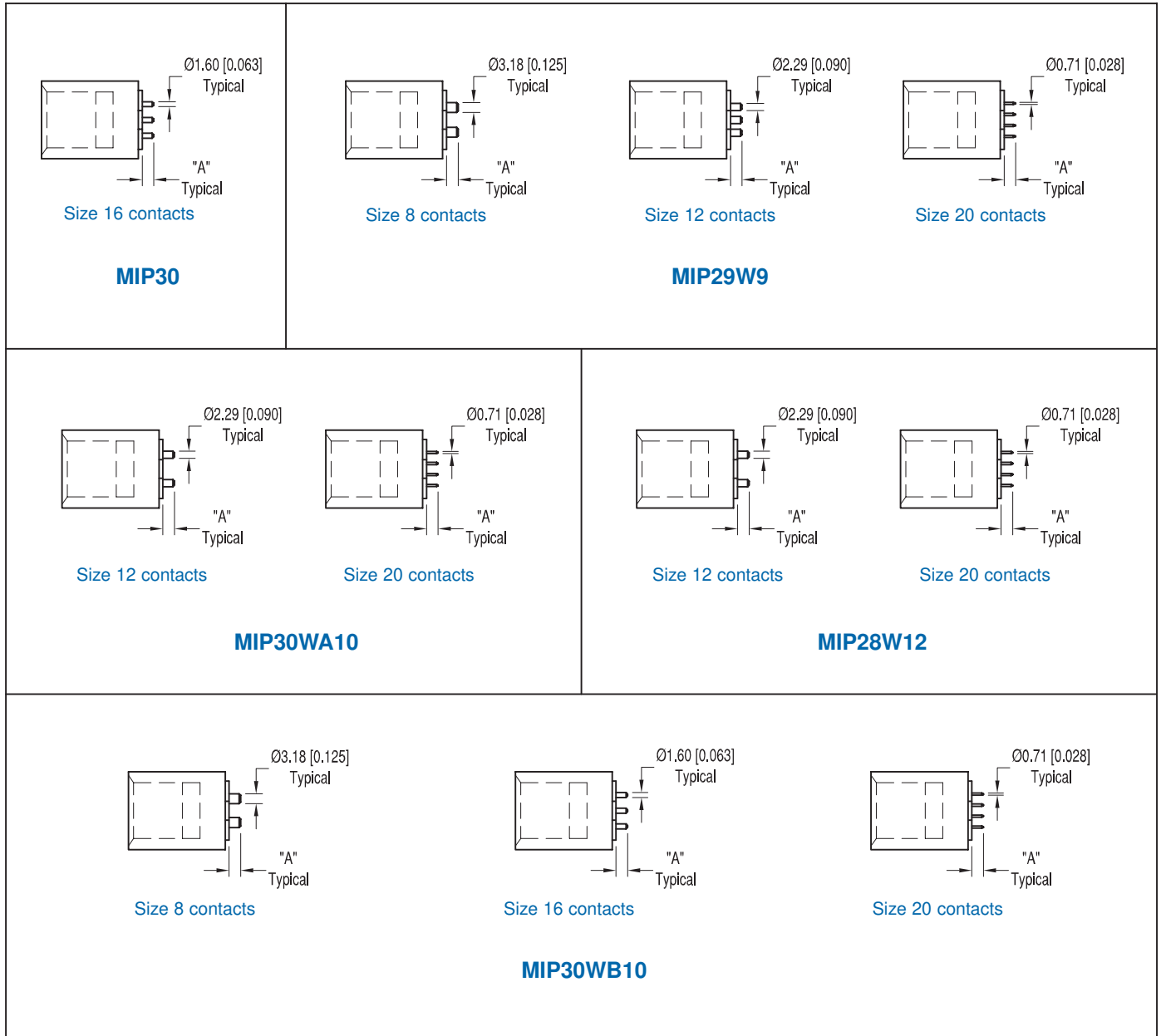


STRAIGHT SOLDER BOARD MOUNT CONNECTORS

CODE 3 AND CODE 32

MALE CONNECTOR SHOWN FOR REFERENCE ONLY

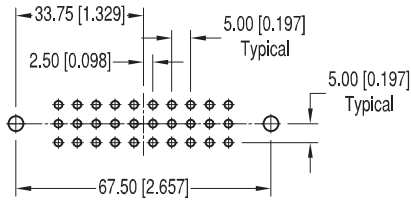
| CODE | "A" LENGTH |
|------|--------------|
| 3 | 3.70 [0.146] |
| 32 | 9.58 [0.377] |



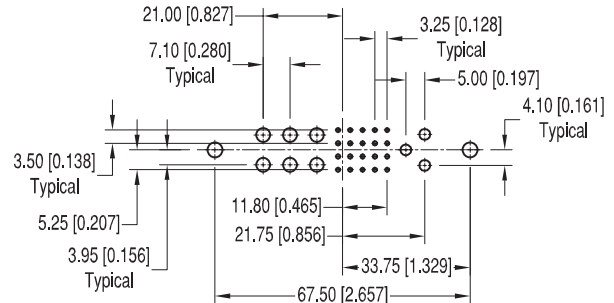
MIP SERIES

STRAIGHT SOLDER CONTACT HOLE PATTERNS

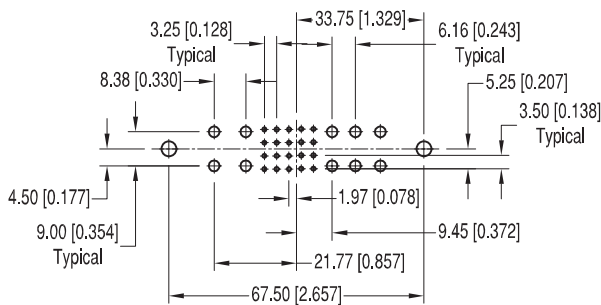
HOLE PATTERN SHOWN IS FOR MALE CONNECTOR
USE MIRROR IMAGE FOR FEMALE CONNECTOR



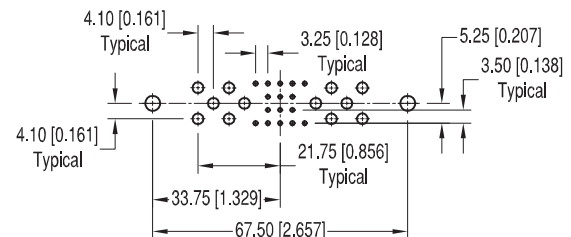
MIP30



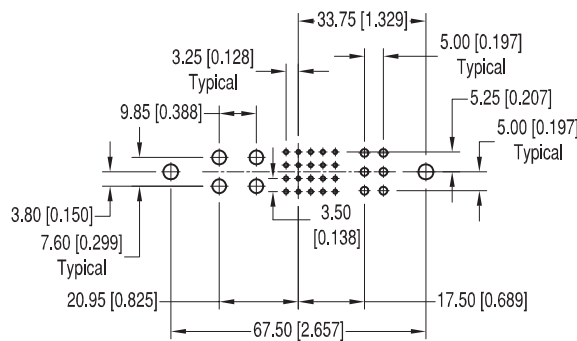
MIP29W9



MIP30WA10



MIP28W12



MIP30WB10

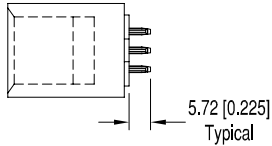
SUGGESTED PRINTED BOARD HOLE SIZES:

- Suggested $\phi 1.14$ [0.045] holes for size 20 straight contact holes.
- Suggested $\phi 2.11$ [0.083] holes for size 16 straight contact holes.
- Suggested $\phi 2.90$ [0.114] holes for size 12 straight contact holes.
- Suggested $\phi 3.68$ [0.145] holes for size 8 straight contact holes.
- Suggested $\phi 3.96 \pm 0.08$ [0.156 \pm 0.003] holes for connector mounting holes.



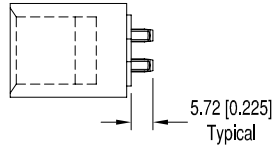
STRAIGHT COMPLIANT PRESS-FIT CONNECTORS CODE 93

MALE CONNECTOR SHOWN FOR REFERENCE ONLY

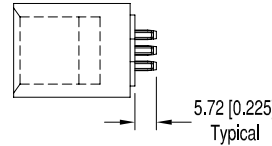


Size 16 contacts

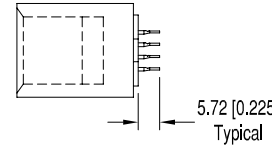
MIP30



Size 8 contacts

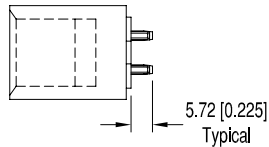


Size 12 contacts

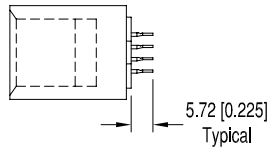


Size 20 contacts

MIP29W9

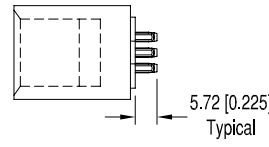


Size 12 contacts

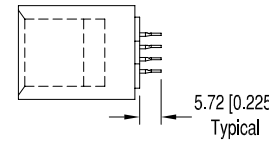


Size 20 contacts

MIP30WA10

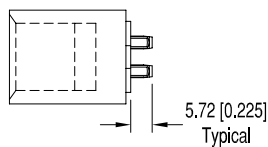


Size 12 contacts

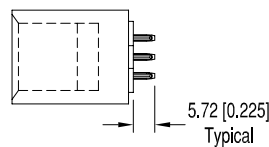


Size 20 contacts

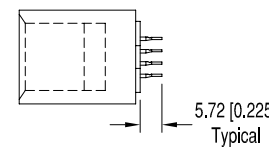
MIP28W12



Size 8 contacts



Size 16 contacts

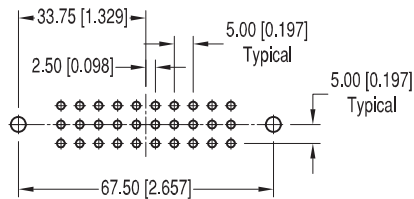


Size 20 contacts

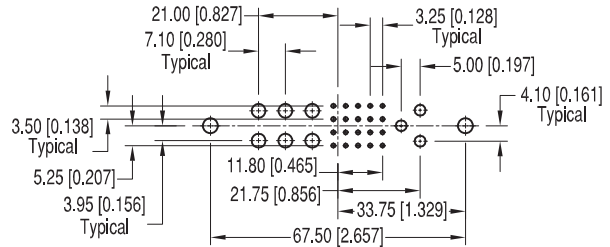
MIP30WB10

STRAIGHT COMPLIANT PRESS-FIT CONTACT HOLE PATTERNS

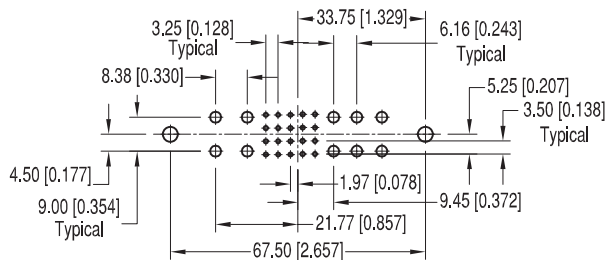
HOLE PATTERN SHOWN IS FOR MALE CONNECTOR; USE MIRROR IMAGE FOR FEMALE CONNECTOR



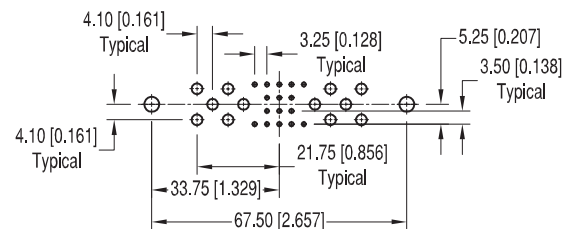
MIP30



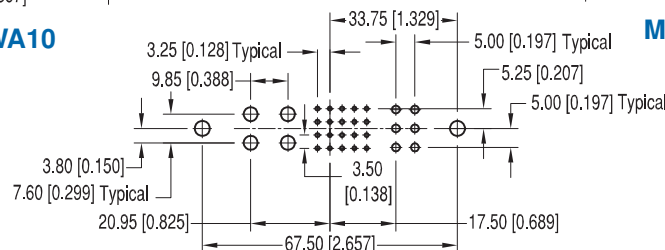
MIP29W9



MIP30WA10



MIP28W12



MIP30WB10

SUGGESTED PRINTED BOARD HOLE SIZES:

NOTE: See page 57 for suggested printed board drill hole sizes, recommended plating and finished hole sizes for compliant contact termination positions.

For press-fit connector installation tools, see pages 55-57.

For mounting screw options, see page 55.

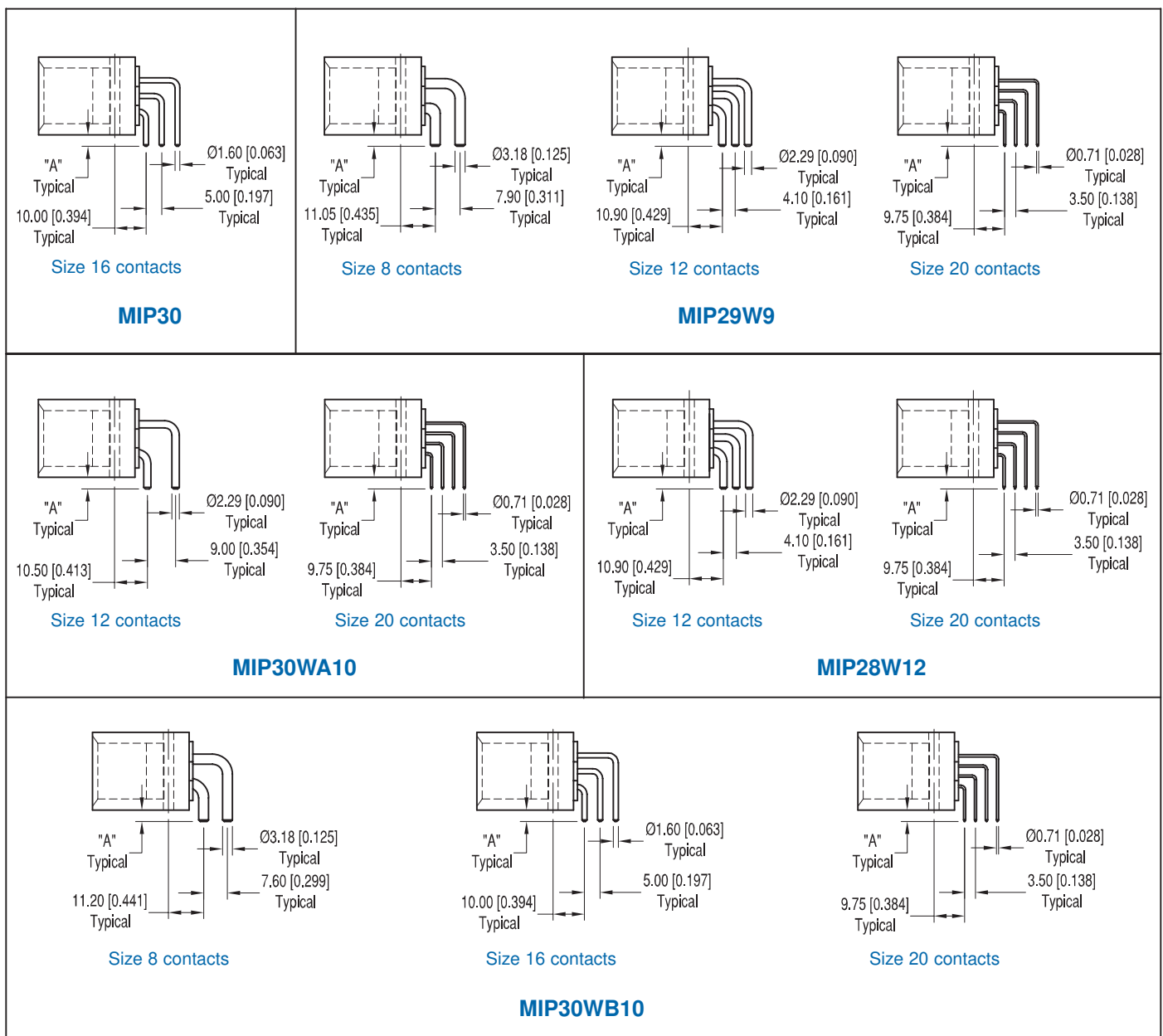


RIGHT ANGLE (90°) SOLDER BOARD MOUNT CONNECTORS

CODE 4 AND CODE 42

MALE CONNECTOR SHOWN FOR REFERENCE ONLY

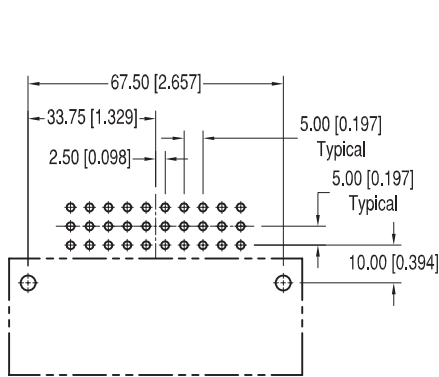
| CODE | "A" LENGTH |
|------|--------------|
| 4 | 3.70 [0.146] |
| 42 | 9.58 [0.377] |



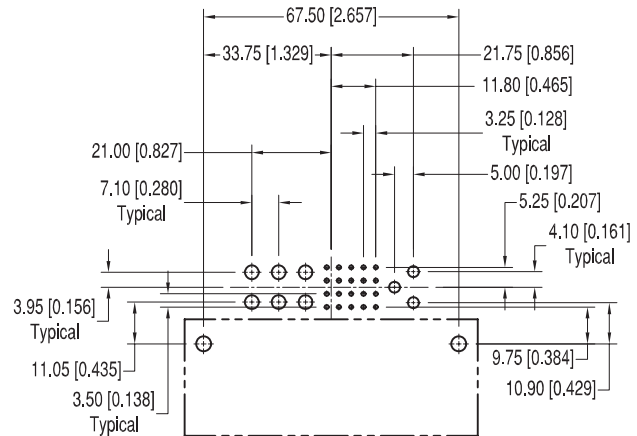
MIP SERIES

RIGHT ANGLE (90°) SOLDER CONTACT HOLE PATTERNS

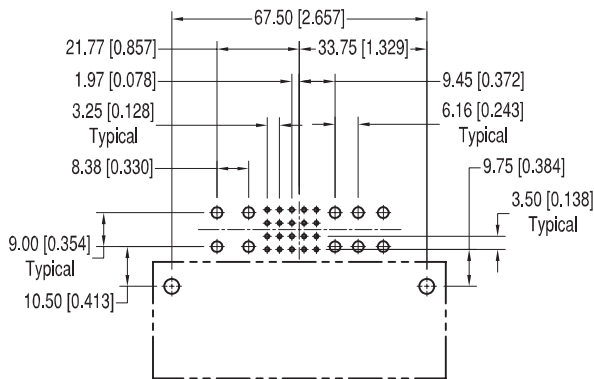
HOLE PATTERN SHOWN IS FOR MALE CONNECTOR
USE MIRROR IMAGE FOR FEMALE CONNECTOR



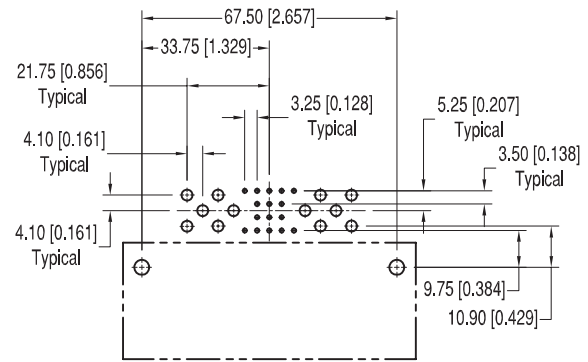
MIP30



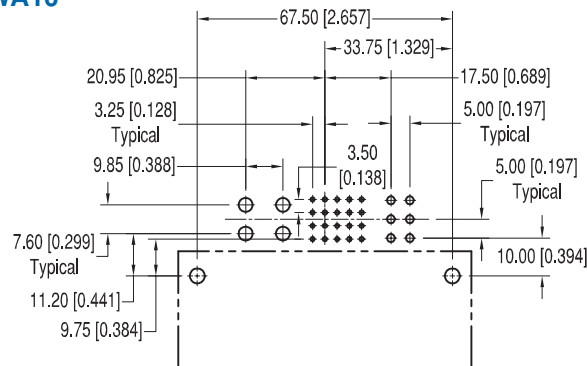
MIP29W9



MIP30WA10



MIP28W12



MIP30WB10

SUGGESTED PRINTED BOARD HOLE SIZES:

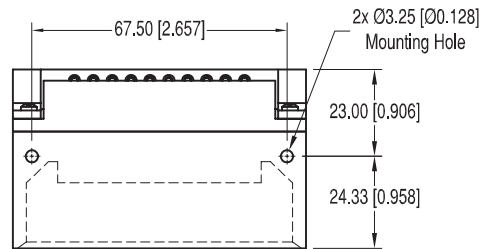
- Suggested $\phi 1.14$ [0.045] holes for size 20 contact holes.
- Suggested $\phi 2.11$ [0.083] holes for size 16 contact holes.
- Suggested $\phi 2.90$ [0.114] holes for size 12 contact holes.
- Suggested $\phi 3.68$ [0.145] holes for size 8 contact holes.
- Suggested $\phi 3.96 \pm 0.08$ [0.156 \pm 0.003] holes for connector mounting holes.



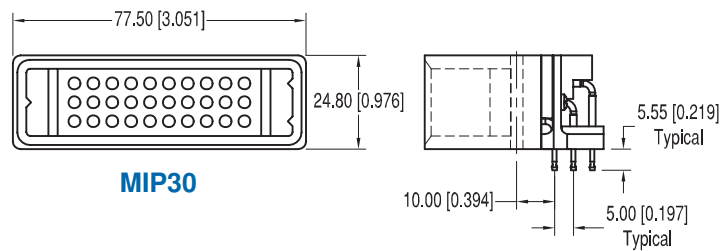
RIGHT ANGLE (90°) COMPLIANT PRESS-FIT BOARD MOUNT CONNECTORS

CODE 63

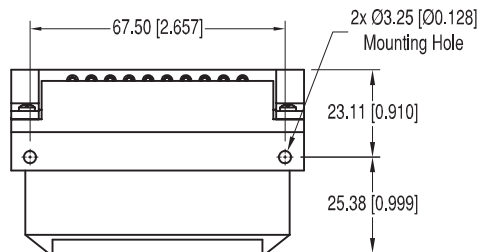
MALE AND FEMALE



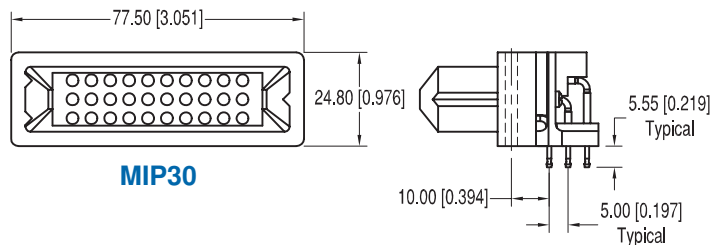
MALE



MIP30



FEMALE



MIP30

RIGHT ANGLE (90°) COMPLIANT PRESS-FIT CONTACT HOLE PATTERN

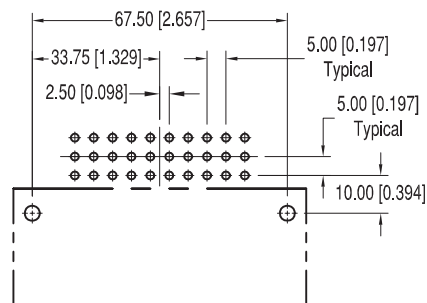
MALE AND FEMALE

SUGGESTED PRINTED BOARD HOLE SIZES:

NOTE: See page 57 for suggested printed board drill hole sizes, recommended plating and finished hole sizes for compliant contact termination positions.

For press-fit connector installation tools, see pages 55-57.

For mounting screw options, see page 55.



MIP30



ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 7

| STEP | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---------|-----|------|---|----|---|---|----|-----|---|
| EXAMPLE | MIP | 29W9 | F | 32 | 0 | 0 | A1 | /AA | — |

STEP 1 - BASIC SERIES

MIP - Mini-Infinity

STEP 2 - CONNECTOR VARIANTS

- 24W8 - 2 high performance size 8, 6 size 12 and 16 size 20 contacts. Only available for use with crimp contacts.
- 28W12 - 12 size 12 and 16 size 20 contacts
- 29W9 - 6 size 8, 3 size 12, and 20 size 20 contacts
- 30 - 30 size 16 contacts
- 30WA10 - 10 size 12 and 20 size 20 contacts
- 30WB10 - 4 size 8, 6 size 16, and 20 size 20 contacts

STEP 3 - CONNECTOR GENDER

- M - Male
- F - Female

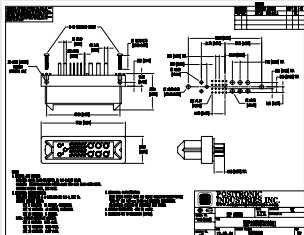
STEP 4 - CONTACT TERMINATION TYPE

- 0 - Order contacts separately for cable connectors for connection systems 2, 4 and 5. See pages 41-48.
- 3 - Solder, Straight Printed Board Mount with 3.70 [0.146] tail extension for connection systems 1 and 4.
- 32- Solder, Straight Printed Board Mount with 9.58 [0.377] tail extension for connection systems 1 and 4.
- 4 - Solder, Right Angle (90°) Printed Board Mount with 3.70 [0.146] tail extension for connection systems 1, 2, 3 and 7.
- 42- Solder, Right Angle (90°) Printed Board Mount with 9.58 [0.377] tail extension for connection systems 1, 2, 3 and 7.
- 63 - Press-Fit, Compliant Termination Right Angle (90°) Printed Board Mount for use with board thicknesses of 2.29 to 4.45 [0.090 to 0.175]. With cross bar. Connection systems 1, 2, 3 and 7. Available on connector variant 30 only.
- 93 - Press-Fit, Compliant Termination Straight Printed Board Mount for use with board thicknesses of 2.29 to 4.45 [0.090 to 0.175]. Connection systems 1 and 4.

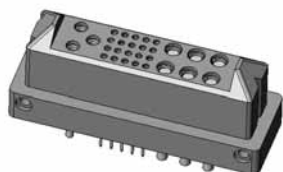
STEP 5 - MOUNTING STYLE

- 0 - None, mounting screws supplied with board mount connector.
- N - Push-on fasteners supplied installed on board mount connector. Not recommended for code 63 and 93.

NOTE: Once you have made a connector selection, contact Technical Sales if you would like to receive a drawing in DXF, PDF format or a 3-dimensional IGES file.



SK Drawing



3-dimensional model

STEP 9 - SPECIAL OPTIONS

CONTACT TECHNICAL SALES FOR SPECIAL OPTIONS

- Sequential Mating Systems
- Recessed Female Contacts
- Customer Specified Contact Arrangement
- Hot Plug (see below*)
- Other Customer Requirements

STEP 8 - ENVIRONMENTAL COMPLIANCE OPTIONS

/AA - Compliant per EU Directive 2002/95/EC (RoHS)



NOTE: If compliance to environmental legislation is not required, this step will not be used. Example: MIP29W9F3200A1

STEP 7 - CONTACT PLATING

- 0 - Crimp contacts ordered separately, see pages 41-48.
- A1 - Gold flash over nickel on mating end and termination end.
- A2 - Gold flash over nickel on mating end and 5.00µ [0.00020 inch] tin-lead solder coat on termination end. Not available with code 63 and 93 in Step 4.
- C1 - 0.76µ [0.000030 inch] gold over nickel on mating end and termination end.
- C2 - 0.76µ [0.000030 inch] gold over nickel on mating end and 5.00µ [0.00020 inch] tin-lead solder coat on termination end. Not available with code types 63 and 93 in Step 4.
- D1 - 1.27µ [0.000050 inch] gold over nickel on mating end and termination end.
- D2 - 1.27µ [0.000050 inch] gold over nickel on mating end and 5.00µ [0.00020 inch] tin-lead solder coat on termination end. Not available with code types 63 and 93 in Step 4.

STEP 6 - PANEL MOUNT

- 0 - None.
- 82 - Panel Mount 1.52 [0.060] panel thickness
- 83 - Panel Mount 2.28 [0.090] panel thickness

***Hot Plug Note:** If UL approval is required for a Hot Plug connector, HP must be added to the part number. This is to be prior to any special plating or MOS requirements.

Example part numbers:
MIP28W12M300A1-HP
MIP30WA10M400A1-HP-294.0