
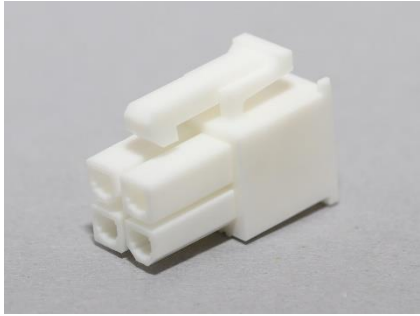




# MINI-FIT JR.

## WIRE TO WIRE & WIRE TO BOARD CONNECTOR SYSTEM

| Female Crimp Terminal   | Dual Row Receptacle Housing   |
|---|---|
|  |  |
| Series: <a href="#">5556</a>  | Series: <a href="#">5557</a> , <a href="#">46992</a>                                |

| Male Crimp Terminal   | Dual Row Panel Mount Plug Housing  |
|---|--|
|  |  |
| Series: <a href="#">5558</a>  | Series: <a href="#">5559</a> , <a href="#">46993</a>                                 |

[MOLEX MINI-FIT JR. WEB PAGE](#)

[TABLE OF CONTENTS](#)



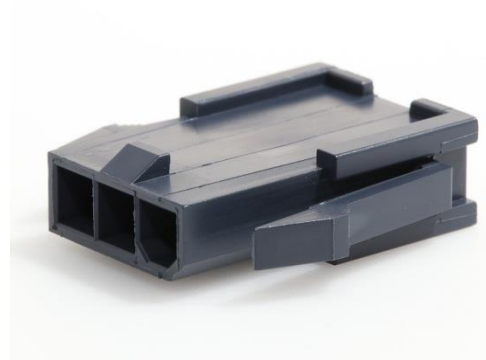
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|--|---|--|-----------------------|-------------------|----------------|----------------|
| REVISION:  | ECM INFORMATION:                                | TITLE:   |                       |                   |                | SHEET No.      |
| <b>G2</b>  | EC No: <b>649117</b><br>DATE: <b>2020/11/12</b> | <b>PRODUCT SPECIFICATION<br/>MINI-FIT JR. CONNECTOR SYSTEM</b> |                       |                   |                | <b>1 of 23</b> |
| DOCUMENT NUMBER:                                   | DOC TYPE:                                       | DOC PART:  | CREATED / REVISED BY: | CHECKED BY:       | APPROVED BY:   |                |
| <b>PS-5556-001</b>                                 | <b>PS</b>                                       | <b>001</b>   | <b>KCHIKKANNA</b>     | <b>KCHIKKANNA</b> | <b>ISHWARG</b> |                |
| <small>TEMPLATE FILENAME: 1703070003 REV A</small> |   |  |                       |                   |                |                |

### Single Row Receptacle



Series: [46994](#), [5557](#)

### Single Row Panel Mount Plug Housing



Series: [172646](#), [5559](#)

### Single Row Right Angle Header



Series: [172648](#), [5569](#)

### Single Row Vertical Header





Series: [172647](#), [5566](#)

[MOLEX MINI-FIT JR. WEB PAGE](#)

[TABLE OF CONTENTS](#)



|  |   |  |  |                                  |                                |  |                             |
|--|---|--|--|----------------------------------|--------------------------------|--|-----------------------------|
| REVISION:<br><b>G2</b>                 | ECM INFORMATION:<br>EC No: 649117<br>DATE: 2020/11/12 | TITLE:<br><b>PRODUCT SPECIFICATION<br/>MINI-FIT JR. CONNECTOR SYSTEM</b> |  |                                  |                                |  | SHEET No.<br><b>2 of 23</b> |
| DOCUMENT NUMBER:<br><b>PS-5556-001</b> | DOC TYPE:<br><b>PS</b>                                | DOC PART:<br><b>001</b>  | CREATED / REVISED BY:<br><b>KCHIKKANNA</b> | CHECKED BY:<br><b>KCHIKKANNA</b> | APPROVED BY:<br><b>ISHWARG</b> |  |                             |
| TEMPLATE FILENAME: 1703070003 REV A    |   |  |  |                                  |                                |  |                             |

| Dual Row Right Angle Header   | Dual Row Vertical Header   |
|---|--|
|  |  |
| Series: <a href="#">5569</a> , <a href="#">172448</a>                             | Series: <a href="#">172447</a> , <a href="#">5566</a>                              |

[MOLEX MINI-FIT JR. WEB PAGE](#)

[TABLE OF CONTENTS](#)



|  |   |   |  |                                  |                                |                             |
|--|---|---|--|----------------------------------|--------------------------------|-----------------------------|
| REVISION:<br><b>G2</b>                 | ECM INFORMATION:<br>EC No: <b>649117</b><br>DATE: <b>2020/11/12</b> | TITLE:<br><b>PRODUCT SPECIFICATION<br/>         MINI-FIT JR. CONNECTOR SYSTEM</b> |  |                                  |                                | SHEET No.<br><b>3 of 23</b> |
| DOCUMENT NUMBER:<br><b>PS-5556-001</b> | DOC TYPE:<br><b>PS</b>  | DOC PART:<br><b>001</b>   | CREATED / REVISED BY:<br><b>KCHIKKANNA</b> | CHECKED BY:<br><b>KCHIKKANNA</b> | APPROVED BY:<br><b>ISHWARG</b> |                             |
| TEMPLATE FILENAME: 1703070003 REV A    |   |   |  |                                  |                                |                             |

## Table of Contents

| <u>ITEM</u>  | <u>PAGE</u> |
|--|-------------|
| 1.0 SCOPE .....  | 5           |
| 2.0 PRODUCT DESCRIPTION .....                              | 5           |
| 2.1 PRODUCT NAME AND SERIES NUMBER (S)* .....              | 5           |
| 2.2 DIMENSIONS, MATERIALS, PLATING AND MARKINGS .....      | 5           |
| 2.3 ENVIRONMENTAL CONFORMANCE .....                        | 6           |
| 2.4 SAFETY AGENCY APPROVALS .....                          | 6           |
| 3.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS .....          | 6           |
| 3.1 MOLEX DOCUMENTS .....                                  | 6           |
| 3.2 INDUSTRY DOCUMENTS .....                               | 7           |
| 4.0 ELECTRICAL PERFORMANCE RATINGS .....                   | 7           |
| 4.1 VOLTAGE* .....   | 7           |
| 4.2 APPLICABLE WIRES .....                                 | 7           |
| 4.2.1 APPLICABLE TERMINALS FOR DUAL WIRE TERMINATION ..... | 7           |
| 4.3 MAXIMUM CURRENT RATING** .....                         | 8           |
| 4.4 TEMPERATURE .....                                      | 9           |
| 4.5 DURABILITY .....                                       | 9           |
| 4.6 GLOW WIRE .....  | 9           |
| 5.0 QUALIFICATION .....                                    | 9           |
| 6.0 PERFORMANCE – WIRE TO WIRE CONNECTION .....            | 10          |
| 6.1 ELECTRICAL PERFORMANCE .....                           | 10          |
| 6.2 MECHANICAL PERFORMANCE .....                           | 11          |
| 6.3 ENVIRONMENTAL PERFORMANCE .....                        | 13          |
| 7.0 PERFORMANCE - WIRE TO BOARD CONNECTION .....           | 14          |
| 7.1 ELECTRICAL REQUIREMENTS .....                          | 14          |
| 7.2 MECHANICAL REQUIREMENTS .....                          | 15          |
| 7.3 ENVIRONMENTAL REQUIREMENTS .....                       | 17          |
| 8.0 TEST SEQUENCE GROUPS .....                             | 18          |
| 9.0 SOLDER INFORMATION .....                               | 20          |
| 9.1 SOLDER PROCESS TEMPERATURES .....                      | 20          |
| 9.2 MAXIMUM WAVE SOLDER TEMPERATURE .....                  | 20          |
| 10.0 PACKAGING .....                                       | 21          |
| 11.0 GAGES AND FIXTURES .....                              | 21          |
| 12.0 CABLE TIE AND/OR WIRE TWIST LOCATION .....            | 22          |
| 13.0 POLARIZATION AND KEYING OPTIONS .....                 | 23          |

[MOLEX MINI-FIT JR. WEB PAGE](#)

[TABLE OF CONTENTS](#)



|  |   |  |  |                                  |                                |                             |
|--|---|--|--|----------------------------------|--------------------------------|-----------------------------|
| REVISION:<br><b>G2</b>                 | ECM INFORMATION:<br>EC No: <b>649117</b><br>DATE: <b>2020/11/12</b> | TITLE:<br><b>PRODUCT SPECIFICATION<br/>MINI-FIT JR. CONNECTOR SYSTEM</b> |  |                                  |                                | SHEET No.<br><b>4 of 23</b> |
| DOCUMENT NUMBER:<br><b>PS-5556-001</b> | DOC TYPE:<br><b>PS</b>  | DOC PART:<br><b>001</b>  | CREATED / REVISED BY:<br><b>KCHIKKANNA</b> | CHECKED BY:<br><b>KCHIKKANNA</b> | APPROVED BY:<br><b>ISHWARG</b> |                             |
| TEMPLATE FILENAME: 1703070003 REV A    |   |  |  |                                  |                                |                             |

## 1.0 SCOPE

This Product Specification covers performance requirements for the MINI-FIT JR. 4.20 mm (.165 inch) centerline (pitch) wire to board and wire to wire connector system terminated with 16 to 28 AWG standard, copper wire using Crimp technology with Tin or 30µ" Gold plating.

## 2.0 PRODUCT DESCRIPTION

### 2.1 PRODUCT NAME AND SERIES NUMBER (S)\*

**Table 1 – WIRE-TO-WIRE**

| Description           | Series Number                  | UL (600V) | CSA (600V) | IEC (250V) | Primary Product Specification |
|-----------------------|--------------------------------|-----------|------------|------------|-------------------------------|
| Female Crimp Terminal | <a href="#">5556</a>           | n/a       | n/a        | Yes        | <a href="#">PS-5556-001</a>   |
| Receptacle Housing    | <a href="#">5557</a>           | Yes       | Yes        | Yes        | <a href="#">PS-5556-001</a>   |
| Male Crimp Terminal   | <a href="#">5558</a>           | n/a       | n/a        | Yes        | <a href="#">PS-5556-001</a>   |
| Plug Housing          | <a href="#">5559</a>           | Yes       | Yes        | Yes        | <a href="#">PS-5556-001</a>   |
| Plug Housing          | <a href="#">45776</a>          | Yes       | Yes        | Yes        | <a href="#">PS-5556-001</a>   |
| Receptacle Housing    | <a href="#">46992 / 46994</a>  | Yes       | Yes        | Yes        | <a href="#">PS-5556-001</a>   |
| Plug housing          | <a href="#">46993 / 172646</a> | Yes       | Yes        | Yes        | <a href="#">PS-5556-001</a>   |

**Table 2 – WIRE-TO-BOARD**

| Description           | Series Number                   | UL (600V) | CSA (600V) | IEC (250V) | Primary Product Specification |
|-----------------------|---------------------------------|-----------|------------|------------|-------------------------------|
| Female Crimp Terminal | <a href="#">5556</a>            | n/a       | n/a        | Yes        | <a href="#">PS-5556-001</a>   |
| Receptacle Housing    | <a href="#">5557</a>            | Yes       | Yes        | Yes        | <a href="#">PS-5556-001</a>   |
| Vertical Header       | <a href="#">5566</a>            | Yes       | Yes        | Yes        | <a href="#">PS-5556-001</a>   |
| Right Angle Header    | <a href="#">5569</a>            | Yes       | Yes        | Yes        | <a href="#">PS-5556-001</a>   |
| Receptacle Housing    | <a href="#">46992 / 46994</a>   | Yes       | Yes        | Yes        | <a href="#">PS-5556-001</a>   |
| Vertical Header       | <a href="#">172447 / 172647</a> | Yes       | Yes        | Yes        | <a href="#">PS-5556-001</a>   |
| Right Angle Header    | <a href="#">172448 / 172648</a> | Yes       | Yes        | Yes        | <a href="#">PS-5556-001</a>   |

\*Other products conforming to this specification are noted on the individual drawing

### 2.2 DIMENSIONS, MATERIALS, PLATING AND MARKINGS

Dimensions & Plating: See individual sales drawings

[MOLEX MINI-FIT JR. WEB PAGE](#)

[TABLE OF CONTENTS](#)



|  |   |  |  |
|--|---|--|--|
| REVISION:<br><b>G2</b>                 | ECM INFORMATION:<br>EC No: 649117<br>DATE: 2020/11/12 | TITLE:<br><b>PRODUCT SPECIFICATION<br/>MINI-FIT JR. CONNECTOR SYSTEM</b> | SHEET No.<br><b>5 of 23</b>                |
| DOCUMENT NUMBER:<br><b>PS-5556-001</b> | DOC TYPE:<br><b>PS</b>                                | DOC PART:<br><b>001</b>  | CREATED / REVISED BY:<br><b>KCHIKKANNA</b> |
|  |   | CHECKED BY:<br><b>KCHIKKANNA</b>   | APPROVED BY:<br><b>ISHWARG</b>             |
| TEMPLATE FILENAME: 1703070003 REV A    |   |  |  |

## 2.3 ENVIRONMENTAL CONFORMANCE

To find product compliance information:

- a. [Go to molex.com](http://molex.com)
- b. Enter the part number in the search field.
- c. At the bottom of the page go to “Environmental” to see compliance status.

## 2.4 SAFETY AGENCY APPROVALS

UL File: E29179  
 CSA Certificate: LR 19980  
 IEC 61984 Certification:



Tested to and found in compliance with IEC 61984. NRTL type examination certificate available upon request. Contact Molex Safety team for questions regarding certification on specific part numbers.

Note: Safety agency approval is granted for the connector assembled with its associated terminals. The approval is documented in the agency file/license by the series number of the housing only. The terminal series number will not appear in the agency file/license as a stand-alone approved product. As a result, only the housings may bear the agency certification mark. Please note that even though the housings are marked as approved product, the safety agency approval does not apply if any terminals are installed other than those established for use with the product.

## 3.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS

### 3.1 MOLEX DOCUMENTS

See series specific sales drawings and the other sections of this specifications for the necessary referenced documents and specifications. For Application Tooling refer to the specific terminal part number page in Molex Website.

- [Mini-Fit Jr. Test Summary TS—5556-002-001](#)
- [Mini-Fit Jr. Dual Wire Termination Test Summary 55560010-TS](#)
- [Mini-Fit Jr. Appearance Specification AS-5557-001](#)
- [Molex Quality Crimping Handbook Order No. 63800-0029](#)
- [Molex Solderability Specification SMES-152](#)
- [Molex Heat Resistance Specification AS-40000-5013](#)
- [Molex Moisture Technical Advisory AS-45499-001](#)
- [Molex Package Handling Specification 454990100-PK](#)
- ATS – Application Tooling Specification\*

\*Application Tooling Specification for terminals is not provided in this document. ATS for terminals available from respective terminal part number page in Molex.com

[MOLEX MINI-FIT JR. WEB PAGE](#)

[TABLE OF CONTENTS](#)



|  |   |  |  |                                  |                                |
|--|---|--|--|----------------------------------|--------------------------------|
| REVISION:<br><b>G2</b>                 | ECM INFORMATION:<br>EC No: <b>649117</b><br>DATE: <b>2020/11/12</b> | TITLE:<br><b>PRODUCT SPECIFICATION<br/>MINI-FIT JR. CONNECTOR SYSTEM</b> | SHEET No.<br><b>6 of 23</b>                |                                  |                                |
| DOCUMENT NUMBER:<br><b>PS-5556-001</b> | DOC TYPE:<br><b>PS</b>  | DOC PART:<br><b>001</b>  | CREATED / REVISED BY:<br><b>KCHIKKANNA</b> | CHECKED BY:<br><b>KCHIKKANNA</b> | APPROVED BY:<br><b>ISHWARG</b> |
| TEMPLATE FILENAME: 1703070003 REV A    |   |  |  |                                  |                                |

### 3.2 INDUSTRY DOCUMENTS

EIA-364-1000.01  
 UL 1977  
 CSA C22.2 No. 182.3-M1987  
 IEC 61984

### 4.0 ELECTRICAL PERFORMANCE RATINGS

#### 4.1 VOLTAGE\*

600 Volts AC (RMS) or 600 Volts DC max.

\* Voltage rating based on UL 1977. Maximum voltage allowed may vary dependent upon “End Use Application”. Refer to the applicable end use standard for additional information on Voltage, Creepage and Clearance requirements.

#### 4.2 APPLICABLE WIRES

|                         | Applicable Wire Gauges                 | Maximum Insulation Diameter   |
|-------------------------|--|---|
| Single Wire Termination | Stranded Copper 16 AWG                 | 3.15 mm / 0.124 Inches  |
|                         | Stranded Copper 18-24 AWG              | 3.10 mm / 0.122 Inches  |
|                         | Stranded Copper 22-28 AWG              | 1.80 mm / 0.071 Inches  |
| Dual Wire Termination   | Stranded Copper 18-22 AWG <sup>1</sup> | 1.75 mm / 0.069 Inches per wire<br>3.4 mm / 0.134 Inches cumulative |

#### 4.2.1 APPLICABLE TERMINALS FOR DUAL WIRE TERMINATION<sup>1</sup>

| Terminal Crimp Size<br>Single Wire | Dual Wire Termination<br>Wire Gauges                           |
|------------------------------------|--|
| 16 AWG                             | 18 AWG with 22 AWG<br>20 AWG with 22 AWG<br>20 AWG with 20 AWG |
| 18-24 AWG                          | 22 AWG with 22 AWG   |

<sup>1</sup> See specific terminal ATS on Molex.com for allowable dual-wire configurations.

[MOLEX MINI-FIT JR. WEB PAGE](#)

[TABLE OF CONTENTS](#)



|  |   |  |  |                                  |                                |                             |
|--|---|--|--|----------------------------------|--------------------------------|-----------------------------|
| REVISION:<br><b>G2</b>                 | ECM INFORMATION:<br>EC No: 649117<br>DATE: 2020/11/12 | TITLE:<br><b>PRODUCT SPECIFICATION<br/>MINI-FIT JR. CONNECTOR SYSTEM</b> |  |                                  |                                | SHEET No.<br><b>7 of 23</b> |
| DOCUMENT NUMBER:<br><b>PS-5556-001</b> | DOC TYPE:<br><b>PS</b>                                | DOC PART:<br><b>001</b>  | CREATED / REVISED BY:<br><b>KCHIKKANNA</b> | CHECKED BY:<br><b>KCHIKKANNA</b> | APPROVED BY:<br><b>ISHWARG</b> |                             |
| TEMPLATE FILENAME: 1703070003 REV A    |   |  |  |                                  |                                |                             |

## 4.3 MAXIMUM CURRENT RATING\*\*

| Table 3 – MAXIMUM CURRENT RATING (Amperes)<br>Wire-to-Wire and Wire-to-Board |       |       |        |         |                               |       |       |        |         |
|--|-------|-------|--------|---------|-------------------------------|-------|-------|--------|---------|
| Brass  |       |       |        |         | Phosphor Bronze               |       |       |        |         |
| Ckt.Size<br>Wire <sup>2</sup>  | 2 & 3 | 4 - 6 | 7 - 10 | 12 - 24 | Ckt.Size<br>Wire <sup>2</sup> | 2 & 3 | 4 - 6 | 7 - 10 | 12 - 24 |
| AWG#16   | 9     | 8     | 7      | 6       | AWG#16                        | 8     | 7     | 6      | 5       |
| AWG#18   | 9     | 8     | 7      | 6       | AWG#18                        | 8     | 7     | 6      | 5       |
| AWG#20   | 7     | 6     | 5      | 5       | AWG#20                        | 6     | 5     | 4      | 4       |
| AWG#22   | 5     | 4     | 4      | 4       | AWG#22                        | 4     | 3     | 3      | 3       |
| AWG#24   | 4     | 3     | 3      | 3       | AWG#24                        | 3     | 2     | 2      | 2       |
| AWG#26   | 3     | 2     | 2      | 2       | AWG#26                        | 2     | 1     | 1      | 1       |
| AWG#28   | 2     | 1     | 1      | 1       | AWG#28                        | 1     | 1     | 1      | 1       |

Note: PCB trace design may greatly affect temperature rise results in Wire-to-Board Applications.

*\*\*Current rating is application dependent and may be affected by the wire rating such as listed in UL-60950-1. Each application should be evaluated by the end user for compliance to specific safety agency requirements. The ratings listed in the chart above are per Molex test method based on a 30°C maximum temperature rise over ambient temperature and are provided as a guideline. Appropriate de-rating is required based on circuit size, ambient temperature, copper trace size on the PCB, gross heating from adjacent modules/components and other factors that influence connector performance. Wire size, insulation thickness, stranding, tin coated or bare copper, wire length & crimp quality are other factors that influence current rating.*

<sup>2</sup> Current rating for dual-wire termination dictated by the largest single wire terminated in connection.

[MOLEX MINI-FIT JR. WEB PAGE](#)

[TABLE OF CONTENTS](#)

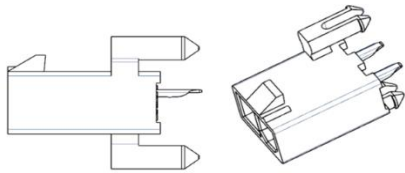


|  |   |  |  |                                  |                                |
|--|---|--|--|----------------------------------|--------------------------------|
| REVISION:<br><b>G2</b>                 | ECM INFORMATION:<br>EC No: <b>649117</b><br>DATE: <b>2020/11/12</b> | TITLE:<br><b>PRODUCT SPECIFICATION<br/>MINI-FIT JR. CONNECTOR SYSTEM</b> | SHEET No.<br><b>8 of 23</b>                |                                  |                                |
| DOCUMENT NUMBER:<br><b>PS-5556-001</b> | DOC TYPE:<br><b>PS</b>  | DOC PART:<br><b>001</b>  | CREATED / REVISED BY:<br><b>KCHIKKANNA</b> | CHECKED BY:<br><b>KCHIKKANNA</b> | APPROVED BY:<br><b>ISHWARG</b> |
| TEMPLATE FILENAME: 1703070003 REV A    |   |  |  |                                  |                                |

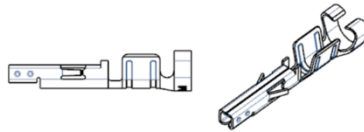


## 4.4 TEMPERATURE

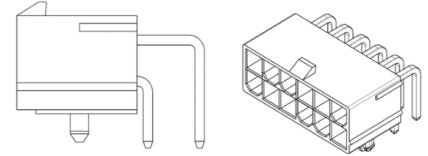
|               | Terminal Type  |                 |                 |
|---------------|----------------|-----------------|-----------------|
|               | Formed - Brass | Solid - Brass   | Phos Bronze     |
| Operating: *  | -40°C to +80°C | -40°C to +105°C | -40°C to +105°C |
| Nonoperating: | -40°C to +80°C | -40°C to +105°C | -40°C to +105°C |



Example header with "formed" terminals



Example "formed" crimp terminals



Example header with "solid" terminals

Field Temperature and Field Life: 65° C for 3 years

Note: Temperature life test (section 6.3, 7.3 item 2) and ratings are based on the assumption that the contact spends its entire field life at the rated maximum field temperature (based on EIA-364-1000, table 8)

\*Temperature values include 30°C terminal temperature rise at maximum rated current

## 4.5 DURABILITY

Tin plated: 30 mating cycles  
Gold plated: 30 mating cycles

## 4.6 GLOW WIRE

The following series are glow wire capable: 46992, 46993, 46994, 172646, 172447, 172448, 172648, 45776, 5566. Representative samples were tested and found compliant with EN 60695-2-11-2001 / IEC 60695-2-11-2000 Glow Wire Test Methods for End-Products. These were additionally investigated for compliance with EN 60335-1 / IEC 60335-1 750C / 2 sec with no flaming. VDE Test report available upon request.

## 5.0 QUALIFICATION

Laboratory conditions and sample selection are in accordance with EIA-364-1000.

[MOLEX MINI-FIT JR. WEB PAGE](#)

[TABLE OF CONTENTS](#)



|  |   |  |  |                                  |                                |
|--|---|--|--|----------------------------------|--------------------------------|
| REVISION:<br><b>G2</b>                 | ECM INFORMATION:<br>EC No: <b>649117</b><br>DATE: <b>2020/11/12</b> | TITLE:<br><b>PRODUCT SPECIFICATION<br/>MINI-FIT JR. CONNECTOR SYSTEM</b> | SHEET No.<br><b>9 of 23</b>                |                                  |                                |
| DOCUMENT NUMBER:<br><b>PS-5556-001</b> | DOC TYPE:<br><b>PS</b>  | DOC PART:<br><b>001</b>  | CREATED / REVISED BY:<br><b>KCHIKKANNA</b> | CHECKED BY:<br><b>KCHIKKANNA</b> | APPROVED BY:<br><b>ISHWARG</b> |
| TEMPLATE FILENAME: 1703070003 REV A    |   |  |  |                                  |                                |

## 6.0 PERFORMANCE – WIRE TO WIRE CONNECTION

### 6.1 ELECTRICAL PERFORMANCE

| ITEM  | DESCRIPTION                            | TEST CONDITION   | REQUIREMENT                             |
|-------|--|--|---|
| 6.1.1 | Initial Contact Resistance (Low Level) | Mate connectors: apply a maximum voltage of 20 mV and a current of 100 mA<br>Wire resistance and traces shall be removed from the measured value.  | 10 milliohms<br>MAXIMUM<br>[initial]    |
| 6.1.2 | Insulation Resistance                  | Mate connectors: apply a voltage of 500 VDC between adjacent terminals and between terminals to ground.  | 1000 Megohms<br>MINIMUM                 |
| 6.1.3 | Dielectric Withstanding Voltage        | Mate connectors: apply a voltage of 2200 VAC for 1 minute between adjacent terminals and between terminals to ground.  | No breakdown.<br>Current leakage < 5 mA |
| 6.1.4 | Temperature Rise (via Current Cycling) | Mate Connectors. Measure the temperature rise at the rated current after 96 Hours, during current cycling (45 Minutes ON and 15 minutes OFF per Hour) for 240 Hours, and after final 96-hour steady state. | Temperature rise:<br>+30°C MAXIMUM      |

[MOLEX MINI-FIT JR. WEB PAGE](#)

[TABLE OF CONTENTS](#)



|  |   |  |  |
|--|---|--|--|
| REVISION:<br><b>G2</b>                 | ECM INFORMATION:<br>EC No: <b>649117</b><br>DATE: <b>2020/11/12</b> | TITLE:<br><b>PRODUCT SPECIFICATION<br/>MINI-FIT JR. CONNECTOR SYSTEM</b> | SHEET No.<br><b>10 of 23</b>               |
| DOCUMENT NUMBER:<br><b>PS-5556-001</b> | DOC TYPE:<br><b>PS</b>  | DOC PART:<br><b>001</b>  | CREATED / REVISED BY:<br><b>KCHIKKANNA</b> |
|  |   | CHECKED BY:<br><b>KCHIKKANNA</b>   | APPROVED BY:<br><b>ISHWARG</b>             |
| TEMPLATE FILENAME: 1703070003 REV A    |   |  |  |

## 6.2 MECHANICAL PERFORMANCE

| ITEM  | DESCRIPTION                                 | TEST CONDITION  | REQUIREMENT  |
|-------|---|---|--|
| 6.2.1 | Terminal Mate and Unmate Forces Per Circuit | Insert and withdraw terminal (male to female) at a rate of $25 \pm 6$ mm ( $1 \pm \frac{1}{4}$ inch) per minute with latch disabled.  | 14.7 N (3.30 lbf) MAXIMUM insertion force and 0.5 N (0.11 lbf) MINIMUM withdrawal force  |
| 6.2.2 | Crimp Terminal Retention Force (in Housing) | Axial pullout force on the terminal in the housing at a rate of $25 \pm 6$ mm ( $1 \pm \frac{1}{4}$ inch) per minute.   | 30 N (6.74 lbf) MINIMUM retention force  |
| 6.2.3 | Durability                                  | Mate connectors up to 30 cycles at a maximum rate of 10 cycles per minute Based on mated pairs of $30\mu$ " Au or $100\mu$ " tin at the contact interface.  | 20 milliohms maximum (change from initial)   |
| 6.2.4 | Vibration (Random)                          | Mate connectors and vibrate per EIA 364-28, test condition VII, letter D. Test Duration: 15 minutes in each axis.   | 20 milliohms MAXIMUM (change from initial) and Discontinuity < 1 microsecond   |
| 6.2.5 | Shock (Mechanical)                          | Mate connectors and shock at 50 g's with $\frac{1}{2}$ sine wave (11 milliseconds) shocks in the $\pm X$ , $\pm Y$ , $\pm Z$ axes, (18 shocks total).   | 20 milliohms MAXIMUM (change from initial) and Discontinuity < 1 microsecond   |
| 6.2.6 | Wire Pullout Force (Axial)                  | Apply an axial pullout force on the wire at a rate of $25 \pm 6$ mm ( $1 \pm \frac{1}{4}$ inch) per minute without influence from the insulation crimp. Wire pullout force is applicator dependent. Refer to relevant Molex Applicator Tooling specification. | 16 Awg = 68.4 N (15.4 lbf) Min.<br>18 Awg = 88.0 N (19.8 lbf) Min.<br>20 Awg = 58.7 N (13.2 lbf) Min.<br>22 Awg = 39.1 N (8.8 lbf) Min.<br>24 Awg = 29.3 N (6.6 lbf) Min.<br>26 Awg = 19.6 N (4.4 lbf) Min.<br>28 Awg = 9.8 N (2.2 lbf) Min. |

[MOLEX MINI-FIT JR. WEB PAGE](#)

[TABLE OF CONTENTS](#)



|  |   |  |  |
|--|---|--|--|
| REVISION:<br><b>G2</b>                 | ECM INFORMATION:<br>EC No: <b>649117</b><br>DATE: <b>2020/11/12</b> | TITLE:<br><b>PRODUCT SPECIFICATION<br/>MINI-FIT JR. CONNECTOR SYSTEM</b> | SHEET No.<br><b>11 of 23</b>               |
| DOCUMENT NUMBER:<br><b>PS-5556-001</b> | DOC TYPE:<br><b>PS</b>  | DOC PART:<br><b>001</b>  | CREATED / REVISED BY:<br><b>KCHIKKANNA</b> |
|  |   | CHECKED BY:<br><b>KCHIKKANNA</b>   | APPROVED BY:<br><b>ISHWARG</b>             |
| TEMPLATE FILENAME: 1703070003 REV A    |   |  |  |

## 6.2 MECHANICAL PERFORMANCE CONTINUED

| ITEM   | DESCRIPTION  | TEST CONDITION  | REQUIREMENT   |
|--------|--|---|---|
| 6.2.7  | Crimp Terminal Insertion Force (into Housing)                      | Apply an axial insertion force on the terminal at a rate of $25 \pm 6$ mm ( $1 \pm \frac{1}{4}$ inch) per minute.   | 15.0 N (3.37 lbf)<br>MAXIMUM insertion force  |
| 6.2.8  | Normal Force   | Apply a perpendicular force to contacts.  | Sn<br>1.47 N (150 grams)<br>MINIMUM   |
|        |  |   | Au<br>0.49 N (50 grams)<br>MINIMUM  |
| 6.2.9  | Panel Insertion and Withdrawal Forces (5559, 46993, 172646 Series) | Insert and withdraw a connector at a rate of $25 \pm 6$ mm ( $1 \pm \frac{1}{4}$ inch) per minute. Applies only to plugs with panel retention features.   | 225 N (50.7 lbf)<br>MAXIMUM insertion force and<br>Dual Row: 157 N (35.3 lbf)<br>Single Row: 133 N (29.9 lbf)<br>MINIMUM withdrawal force |
| 6.2.10 | Panel Insertion and Withdrawal Forces (45776 Series)               | Insert and withdraw a connector at a rate of $25 \pm 6$ mm ( $1 \pm \frac{1}{4}$ inch) per minute.  | 225 N (50.7 lbf)<br>MAXIMUM insertion force and<br>133 N (29.9 lbf) MINIMUM withdrawal force  |
| 6.2.11 | Thumb latch Operation Force  | Depress latch at a speed rate of $25 \pm 6$ mm ( $1 \pm \frac{1}{4}$ inch) per minute.  | 22.2 N (5.0 lbf) MAXIMUM  |
| 6.2.12 | Thumb latch Yield Strength   | Mate loaded connectors fully. Pull connectors apart at a speed rate of $25 \pm 6$ mm ( $1 \pm \frac{1}{4}$ inch) per minute. (after 1 <sup>st</sup> mate) | 68 N (15.3 lbf)<br>MINIMUM  |

[MOLEX MINI-FIT JR. WEB PAGE](#)

[TABLE OF CONTENTS](#)



|  |   |  |  |
|--|---|--|--|
| REVISION:<br><b>G2</b>                 | ECM INFORMATION:<br>EC No: <b>649117</b><br>DATE: <b>2020/11/12</b> | TITLE:<br><b>PRODUCT SPECIFICATION<br/>MINI-FIT JR. CONNECTOR SYSTEM</b> | SHEET No.<br><b>12 of 23</b>               |
| DOCUMENT NUMBER:<br><b>PS-5556-001</b> | DOC TYPE:<br><b>PS</b>  | DOC PART:<br><b>001</b>  | CREATED / REVISED BY:<br><b>KCHIKKANNA</b> |
|  |   | CHECKED BY:<br><b>KCHIKKANNA</b>   | APPROVED BY:<br><b>ISHWARG</b>             |
| TEMPLATE FILENAME: 1703070003 REV A    |   |  |  |

## 6.3 ENVIRONMENTAL PERFORMANCE

| ITEM  | DESCRIPTION                     | TEST CONDITION  | REQUIREMENT   |
|-------|---------------------------------|---|---|
| 6.3.1 | Thermal Shock                   | Mate Connectors: Expose for 5 Cycles between temperatures -55 °C and 105 °C; Dwell 0.5 Hours at each temperature.   | 20 milliohms MAXIMUM (change from initial)<br>Visual: No Damage<br>Dielectric Strength per 6.1.3 except 1500VAC test voltage<br>Insulation Resistance per 6.1.2 |
| 6.3.2 | Thermal Aging                   | Mate connectors; expose to: 96 hours at 105 ± 2°C   | 20 milliohms MAXIMUM (change from initial) and<br>Visual: No Damage   |
| 6.3.3 | Humidity (Steady State)         | Mate connectors: expose to a temperature of 60 ± 2°C with a relative humidity of 90-95% for 96 hours. Remove surface moisture and air dry for 1 hour prior to measurements. | 20 milliohms MAXIMUM<br>Visual: No Damage<br>Dielectric Strength per 6.1.3 except 1500VAC test voltage<br>Insulation Resistance per 6.1.2                       |
| 6.3.4 | Cold Resistance                 | Mate connectors:<br>Duration: 96 hours;<br>Temperature: -40 ± 3°C   | 20 milliohms MAXIMUM (change from initial) and<br>Visual: No Damage   |
| 6.3.5 | Mixed Flowing Gas               | EIA-364-65 with Class IIa Gas concentrations 10 days mated (30µ" Gold plated only)  | 20 milliohms MAXIMUM (change from initial) and<br>Visual: No Damage   |
| 6.3.6 | Cyclic Temperature and Humidity | Mate connectors: expose to 24 cycles from 25 °C / 80% RH to 65 °C / 50% RH ramp time: 0.5hr dwell time: 1hr<br>Per EIA-364-1000   | 20 milliohms MAXIMUM (change from initial) and<br>Visual: No Damage   |

[MOLEX MINI-FIT JR. WEB PAGE](#)

[TABLE OF CONTENTS](#)



|  |   |  |  |
|--|---|--|--|
| REVISION:<br><b>G2</b>                 | ECM INFORMATION:<br>EC No: <b>649117</b><br>DATE: <b>2020/11/12</b> | TITLE:<br><b>PRODUCT SPECIFICATION<br/>MINI-FIT JR. CONNECTOR SYSTEM</b> | SHEET No.<br><b>13 of 23</b>               |
| DOCUMENT NUMBER:<br><b>PS-5556-001</b> | DOC TYPE:<br><b>PS</b>  | DOC PART:<br><b>001</b>  | CREATED / REVISED BY:<br><b>KCHIKKANNA</b> |
|  |   | CHECKED BY:<br><b>KCHIKKANNA</b>   | APPROVED BY:<br><b>ISHWARG</b>             |
| TEMPLATE FILENAME: 1703070003 REV A    |   |  |  |

## 7.0 PERFORMANCE - WIRE TO BOARD CONNECTION

### 7.1 ELECTRICAL REQUIREMENTS

| ITEM  | DESCRIPTION                            | TEST CONDITION   | REQUIREMENT                             |
|-------|--|--|---|
| 7.1.1 | Contact Resistance (Low Level)         | Mate connectors: apply a maximum voltage of 20 mV and a current of 100 mA. Wire resistance shall be removed from the measured value.   | 10 milliohms<br>MAXIMUM<br>[initial]    |
| 7.1.2 | Insulation Resistance                  | Mate connectors: apply a voltage of 500 VDC between adjacent terminals and between terminals to ground.  | 1000 Megohms<br>MINIMUM                 |
| 7.1.3 | Dielectric Withstanding Voltage        | Mate connectors: apply a voltage of 2200 VAC for 1 minute between adjacent terminals and between terminals to ground.  | No breakdown.<br>Current leakage < 5 mA |
| 7.1.4 | Temperature Rise (via Current Cycling) | Mate connectors. Measure the temperature rise at the rated current after 96 hours, during current cycling (45 minutes ON and 15 minutes OFF per hour) for 240 hours, and after final 96-hour steady state. | Temperature rise:<br>+30°C MAXIMUM      |

[MOLEX MINI-FIT JR. WEB PAGE](#)

[TABLE OF CONTENTS](#)



|  |   |  |  |
|--|---|--|--|
| REVISION:<br><b>G2</b>                 | ECM INFORMATION:<br>EC No: <b>649117</b><br>DATE: <b>2020/11/12</b> | TITLE:<br><b>PRODUCT SPECIFICATION<br/>MINI-FIT JR. CONNECTOR SYSTEM</b> | SHEET No.<br><b>14 of 23</b>               |
| DOCUMENT NUMBER:<br><b>PS-5556-001</b> | DOC TYPE:<br><b>PS</b>  | DOC PART:<br><b>001</b>  | CREATED / REVISED BY:<br><b>KCHIKKANNA</b> |
|  |   | CHECKED BY:<br><b>KCHIKKANNA</b>   | APPROVED BY:<br><b>ISHWARG</b>             |
| TEMPLATE FILENAME: 1703070003 REV A    |   |  |  |

## 7.2 MECHANICAL REQUIREMENTS

| ITEM  | DESCRIPTION                                   | TEST CONDITION  | REQUIREMENT  |
|-------|---|---|--|
| 7.2.1 | Terminal Mate and Unmate Forces Per Circuit   | Insert and withdraw terminal (male to female) at a rate of 25 ± 6 mm (1 ± ¼ inch) per minute with latch disabled.   | 14.7 N (3.30 lbf) MAXIMUM insertion force and 0.5 N (0.11 lbf) MINIMUM withdrawal force  |
| 7.2.2 | Crimp Terminal Retention Force (in Housing)   | Axial pullout force on the terminal in the housing at a rate of 25 ± 6 mm (1 ± ¼ inch) per minute.  | 30 N (6.74 lbf) MINIMUM retention force  |
| 7.2.3 | Durability                                    | Mate connectors up to 30 cycles at a maximum rate of 10 cycles per minute Based on mated pairs of 30µ" Au or 50µ" tin at the contact interface  | 20 milliohms maximum (change from initial)   |
| 7.2.4 | Vibration (Random)                            | Mate connectors and vibrate per EIA 364-28, test condition VII, letter D. Test Duration: 15 minutes in each axis.   | 20 milliohms MAXIMUM (change from initial) and Discontinuity < 1 microsecond   |
| 7.2.5 | Shock (Mechanical)                            | Mate connectors and shock at 50 g's with ½ sine wave (11 milliseconds) shocks in the ±X, ±Y, ±Z axes, (18 shocks total).  | 20 milliohms MAXIMUM (change from initial) and Discontinuity < 1 microsecond   |
| 7.2.6 | Wire Pullout Force (Axial)                    | Apply an axial pullout force on the wire at a rate of 25 ± 6 mm (1 ± ¼ inch) per minute without influence from the insulation crimp. Wire pullout force is applicator dependent. Refer to relevant Molex Application Tooling specification. | 16 Awg = 68.4 N (15.4 lbf) Min.<br>18 Awg = 88.0 N (19.8 lbf) Min.<br>20 Awg = 58.7 N (13.2 lbf) Min.<br>22 Awg = 39.1 N (8.8 lbf) Min.<br>24 Awg = 29.3 N (6.6 lbf) Min.<br>26 Awg = 19.6 N (4.4 lbf) Min.<br>28 Awg = 9.8 N (2.2 lbf) Min. |
| 7.2.7 | Crimp Terminal Insertion Force (into Housing) | Apply an axial insertion force on the terminal at a rate of 25 ± 6 mm (1 ± ¼ inch) per minute.  | 15.0 N (3.37 lbf) MAXIMUM insertion force  |

[MOLEX MINI-FIT JR. WEB PAGE](#)

[TABLE OF CONTENTS](#)



|  |   |  |  |
|--|---|--|--|
| REVISION:<br><b>G2</b>                 | ECM INFORMATION:<br>EC No: <b>649117</b><br>DATE: <b>2020/11/12</b> | TITLE:<br><b>PRODUCT SPECIFICATION<br/>MINI-FIT JR. CONNECTOR SYSTEM</b> | SHEET No.<br><b>15 of 23</b>               |
| DOCUMENT NUMBER:<br><b>PS-5556-001</b> | DOC TYPE:<br><b>PS</b>  | DOC PART:<br><b>001</b>  | CREATED / REVISED BY:<br><b>KCHIKKANNA</b> |
|  |   | CHECKED BY:<br><b>KCHIKKANNA</b>   | APPROVED BY:<br><b>ISHWARG</b>             |
| TEMPLATE FILENAME: 1703070003 REV A    |   |  |  |

## 7.2 MECHANICAL PERFORMANCE CONTINUED

| ITEM   | DESCRIPTION  | TEST CONDITION   | REQUIREMENT   |                               |
|--------|--|--|---|-------------------------------|
|        |  |  |   |                               |
| 7.2.8  | Normal Force   | Apply a perpendicular force to contacts.   | Sn  | 1.47 N (150 grams)<br>MINIMUM |
|        |  |  | Au  | 0.49 N (50 grams)<br>MINIMUM  |
| 7.2.9  | Solid PC Tail Header Pin Retention Force (in housing)<br>(5569, 172448, 172648 Series) | Apply axial push force on the terminal in the housing at a rate of 25 ± 6mm (1 ± ¼ inch) per minute.   | 9.81 N (2.20 lbf) MINIMUM RETENTION FORCE   |                               |
| 7.2.10 | Stamped PC Tail Terminal Retention Force (in housing)<br>(5566, 172447, 172647 Series) | Apply axial push force on the terminal in the housing at a rate of 25 ± 6mm (1 ± ¼ inch) per minute.   | 9.81 N (2.20 lbf) MINIMUM RETENTION FORCE   |                               |
| 7.2.11 | Thumb latch Operation Force  | Depress latch at a speed rate of 25 ± 6 mm (1 ± ¼ inch) per minute.  | 22.2 N (5.0 lbf) MAXIMUM  |                               |
| 7.2.12 | Thumb latch Yield Strength   | Mate loaded connectors fully. Pull connectors apart at a speed rate of 25 ± 6 mm (1 ± ¼ inch) per minute. (after 1 <sup>st</sup> mate)   | 68 N (15.3 lbf) MINIMUM   |                               |
| 7.2.13 | PCB Engagement Forces  | Engage a connector at a rate of 25 ± 6 mm (1 ± ¼ inch) per minute. Applies to parts with PCB retention features only with PCB holes at nominal diameter and location. Values will vary with PCB material, PCB fabrication, and peg type. | For 5569, 172448, 172648:<br>26.7 to 66.7 N<br>(6.0 to 15.0 lbf)<br>For 5566, 172447, 172647:<br>4.4 to 44.5 N<br>(1.0 TO 10.0 lbf)<br>Typical insertion force per peg.<br>For Reference ONLY |                               |

[MOLEX MINI-FIT JR. WEB PAGE](#)

[TABLE OF CONTENTS](#)



|  |   |  |  |
|--|---|--|--|
| REVISION:<br><b>G2</b>                 | ECM INFORMATION:<br>EC No: <b>649117</b><br>DATE: <b>2020/11/12</b> | TITLE:<br><b>PRODUCT SPECIFICATION<br/>MINI-FIT JR. CONNECTOR SYSTEM</b> | SHEET No.<br><b>16 of 23</b>               |
| DOCUMENT NUMBER:<br><b>PS-5556-001</b> | DOC TYPE:<br><b>PS</b>  | DOC PART:<br><b>001</b>  | CREATED / REVISED BY:<br><b>KCHIKKANNA</b> |
|  |   | CHECKED BY:<br><b>KCHIKKANNA</b>   | APPROVED BY:<br><b>ISHWARG</b>             |
| TEMPLATE FILENAME: 1703070003 REV A    |   |  |  |



## 7.3 ENVIRONMENTAL REQUIREMENTS

| ITEM  | DESCRIPTION                     | TEST CONDITION  | REQUIREMENT   |
|-------|---------------------------------|---|---|
| 7.3.1 | Thermal Shock                   | Mate connectors: expose for 5 cycles<br>Between temperatures -55 °C and 105 °C;<br>Dwell 0.5 hours at each temperature.   | 20 milliohms MAXIMUM (change from initial)<br>Visual: No Damage<br>Dielectric Strength per 6.1.3 except 1500VAC test voltage<br>Insulation Resistance per 6.1.2 |
| 7.3.2 | Thermal Aging                   | Mate connectors; expose to:<br>96 hours at 105 ± 2°C  | 20 milliohms MAXIMUM (change from initial) and<br>Visual: No Damage   |
| 7.3.3 | Humidity (Steady State)         | Mate connectors: expose to a temperature of 60 ± 2°C with a relative humidity of 90-95% for 96 hours. Remove surface moisture and air dry for 1 hour prior to measurements. | 20 milliohms MAXIMUM (change from initial)<br>Visual: No Damage<br>Dielectric Strength per 6.1.3 except 1500VAC test voltage<br>Insulation Resistance per 6.1.2 |
| 7.3.4 | Solderability Dip Test          | Per Molex Test Method: SMES-152   | Solder area shall have minimum of 95% solder coverage   |
| 7.3.5 | Wave Solder Resistance          | Dip connector terminals tail in solder:<br>Solder Duration: 5 ± 0.5 seconds;<br>Solder Temperature: Use maximum solder temperature from 9.2                                 | Visual:<br>No Damage to insulator housing material  |
| 7.3.6 | Cold Resistance                 | Mate connectors:<br>Duration; 96 hours;<br>Temperature: -40 ± 3°C   | 20 milliohms MAXIMUM (change from initial) and<br>Visual: No Damage   |
| 7.3.7 | Mixed Flowing Gas               | EIA-364-65 with Class IIa Gas concentrations 10 days mated (30µ" Gold plated only)  | 20 milliohms MAXIMUM (change from initial) and<br>Visual: No Damage   |
| 7.3.8 | Cyclic Temperature and Humidity | Mate connectors: expose to 24 cycles from 25 °C / 80% RH to 65 °C / 50% RH ramp time: 0.5hr dwell time: 1hr<br>Per EIA-364-1000   | 20 milliohms MAXIMUM (change from initial) and<br>Visual: No Damage   |

[MOLEX MINI-FIT JR. WEB PAGE](#)

[TABLE OF CONTENTS](#)



|  |   |  |  |
|--|---|--|--|
| REVISION:<br><b>G2</b>                 | ECM INFORMATION:<br>EC No: <b>649117</b><br>DATE: <b>2020/11/12</b> | TITLE:<br><b>PRODUCT SPECIFICATION<br/>MINI-FIT JR. CONNECTOR SYSTEM</b> | SHEET No.<br><b>17 of 23</b>               |
| DOCUMENT NUMBER:<br><b>PS-5556-001</b> | DOC TYPE:<br><b>PS</b>  | DOC PART:<br><b>001</b>  | CREATED / REVISED BY:<br><b>KCHIKKANNA</b> |
|  |   | CHECKED BY:<br><b>KCHIKKANNA</b>   | APPROVED BY:<br><b>ISHWARG</b>             |
| TEMPLATE FILENAME: 1703070003 REV A    |   |  |  |

## 8.0 TEST SEQUENCE GROUPS

Reliability Test Sequences Based on EIA 364-1000

| Group I<br>Temperature Life  | Group II<br>Thermal Shock  | Group III<br>Vibration   | Group IV<br>Mixed Flowing gas<br>(Gold plated only) | Group VII<br>Durability                  |
|--|--|--|---|--|
| Initial Contact Resistance<br>EIA-364-23                                   | Initial Contact Resistance<br>EIA-364-23                                   | Initial Contact Resistance<br>EIA-364-23                                   | Initial Contact Resistance<br>EIA-364-23            | DWV<br>EIA-364-20                        |
| Durability<br>Tin plated: 5 cycles<br>Gold plated: 20 cycles<br>EIA-364-09 | Durability<br>Tin plated: 5 cycles<br>Gold plated: 20 cycles<br>EIA-364-09 | Durability<br>Tin plated: 5 cycles<br>Gold plated: 20 cycles<br>EIA-364-09 | Durability<br>20 cycles<br>EIA-364-09               | Initial Contact Resistance<br>EIA-364-23 |
| Low Level Contact Resistance   | Low Level Contact Resistance   | Low Level Contact Resistance   | Temperature Life (preconditioning)                  | Durability                               |
| Thermal Aging  | Thermal Shock  | Thermal Aging Pre-condition  | Low Level Contact Resistance                        | Low Level Contact Resistance             |
| Low Level Contact Resistance   | Low Level Contact Resistance   | Low Level Contact Resistance   | Mixed Flowing Gas                                   | DWV<br>EIA-364-20                        |
| Reseating 3 cycles   | Cyclic Temperature and Humidity<br>EIA-364-31                              | Random Vibration<br>EIA-364-28<br>Condition VIID                           | Low Level Contact Resistance                        |  |
| Low Level Contact Resistance   | Low Level Contact Resistance   | Low Level Contact Resistance   | Thermal Disturbance                                 |  |
|  | Reseating 3 cycles   |  | Low Level Contact Resistance                        |  |
|  | Low Level Contact Resistance   |  | Reseating   |  |
|  |  |  | Low Level Contact Resistance                        |  |

[MOLEX MINI-FIT JR. WEB PAGE](#)

[TABLE OF CONTENTS](#)



|  |   |  |  |
|--|---|--|--|
| REVISION:<br><b>G2</b>                 | ECM INFORMATION:<br>EC No: <b>649117</b><br>DATE: <b>2020/11/12</b> | TITLE:<br><b>PRODUCT SPECIFICATION<br/>MINI-FIT JR. CONNECTOR SYSTEM</b> | SHEET No.<br><b>18 of 23</b>               |
| DOCUMENT NUMBER:<br><b>PS-5556-001</b> | DOC TYPE:<br><b>PS</b>  | DOC PART:<br><b>001</b>  | CREATED / REVISED BY:<br><b>KCHIKKANNA</b> |
|  |   | CHECKED BY:<br><b>KCHIKKANNA</b>   | APPROVED BY:<br><b>ISHWARG</b>             |
| TEMPLATE FILENAME: 1703070003 REV A    |   |  |  |

**Individual Tests**

Terminal Mating / Unmating Force Per Circuit

Crimp Terminal Retention Force (In Housing)

Wire Pullout Force (Axial)

Crimp Terminal Insertion Force (Into Housing)

Normal Force

Thumb Latch operation Force

Panel insertion & Withdrawal Forces

Thumb Latch Yield Strength

Solder PC Tail Header retention Force

Stamped PC Tail Terminal Retention Force into Housing

PCB Engagement Forces

Temperature Rise

T-Rise Profiling

Steady State Temperature Rise

[MOLEX MINI-FIT JR. WEB PAGE](#)

[TABLE OF CONTENTS](#)



|  |   |  |  |                                  |                                |                              |
|--|---|--|--|----------------------------------|--------------------------------|------------------------------|
| REVISION:<br><b>G2</b>                 | ECM INFORMATION:<br>EC No: <b>649117</b><br>DATE: <b>2020/11/12</b> | TITLE:<br><b>PRODUCT SPECIFICATION<br/>MINI-FIT JR. CONNECTOR SYSTEM</b> |  |                                  |                                | SHEET No.<br><b>19 of 23</b> |
| DOCUMENT NUMBER:<br><b>PS-5556-001</b> | DOC TYPE:<br><b>PS</b>  | DOC PART:<br><b>001</b>  | CREATED / REVISED BY:<br><b>KCHIKKANNA</b> | CHECKED BY:<br><b>KCHIKKANNA</b> | APPROVED BY:<br><b>ISHWARG</b> |                              |
| TEMPLATE FILENAME: 1703070003 REV A    |   |  |  |                                  |                                |                              |

## 9.0 SOLDER INFORMATION

These specifications establish standard solderability test methods used to evaluate a products ability to accept molten solder. Solder Process Temperatures and Reflow Solder Profiles will vary based on application, equipment, solder paste, PCB thickness etc.

### 9.1 SOLDER PROCESS TEMPERATURES

Wave Solder: See Section 9.2  
 Reflow Solder: Not Rated

[Molex Solderability Specification SMES-152](#)  
[\(Click Here\)](#)

### 9.2 MAXIMUM WAVE SOLDER TEMPERATURE

| Header Type  | Plating Type          |                        |                 |
|--|-----------------------|------------------------|-----------------|
|  | Matte Tin over Nickel | Bright Tin over Nickel | Tin over Copper |
| With Mounting Pegs   | 240°C                 | 240°C                  | 240°C           |
| Without Mounting Pegs  | 260°C                 | 240°C                  | 240°C           |
| Glow Wire with Pegs<br>Series: 172447<br>172447 172448<br>172648 | 220°C                 | N/A                    | N/A             |

[MOLEX MINI-FIT JR. WEB PAGE](#)

[TABLE OF CONTENTS](#)



|  |   |  |  |
|--|---|--|--|
| REVISION:<br><b>G2</b>                 | ECM INFORMATION:<br>EC No: 649117<br>DATE: 2020/11/12 | TITLE:<br><b>PRODUCT SPECIFICATION<br/>MINI-FIT JR. CONNECTOR SYSTEM</b> | SHEET No.<br><b>20 of 23</b>               |
| DOCUMENT NUMBER:<br><b>PS-5556-001</b> | DOC TYPE:<br><b>PS</b>                                | DOC PART:<br><b>001</b>  | CREATED / REVISED BY:<br><b>KCHIKKANNA</b> |
|  |   | CHECKED BY:<br><b>KCHIKKANNA</b>   | APPROVED BY:<br><b>ISHWARG</b>             |
| TEMPLATE FILENAME: 1703070003 REV A    |   |  |  |

## 10.0 PACKAGING

Parts shall be packaged to protect against damage during normal handling, transit and storage. For specific part packaging details, refer to the packaging specification called out on the applicable product sales drawing. Nylon parts should remain in their original packaging until ready for use to prevent moisture loss or gain. Nylon will absorb moisture which causes dimensions to increase. Excess moisture gain can result in dimensions exceeding specification. See AS-45499-001

## 11.0 GAGES AND FIXTURES

It is recommended that test plugs (Series 44281) be used for continuity testing of receptacles. Standard mating parts should not be used for harness testing.

NOTE: The use of unauthorized testing devices and/or probes with a Molex product may cause damage to and affect functionality of the Molex product, and such use may void any and all warranties, expressed or implied.

[MOLEX MINI-FIT JR. WEB PAGE](#)

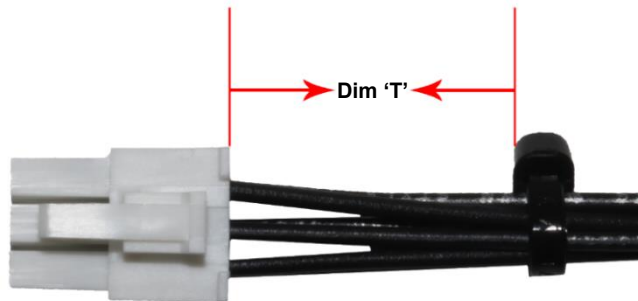
[TABLE OF CONTENTS](#)



|  |   |  |  |                                  |                                |                              |
|--|---|--|--|----------------------------------|--------------------------------|------------------------------|
| REVISION:<br><b>G2</b>                 | ECM INFORMATION:<br>EC No: <b>649117</b><br>DATE: <b>2020/11/12</b> | TITLE:<br><b>PRODUCT SPECIFICATION<br/>MINI-FIT JR. CONNECTOR SYSTEM</b> |  |                                  |                                | SHEET No.<br><b>21 of 23</b> |
| DOCUMENT NUMBER:<br><b>PS-5556-001</b> | DOC TYPE:<br><b>PS</b>  | DOC PART:<br><b>001</b>  | CREATED / REVISED BY:<br><b>KCHIKKANNA</b> | CHECKED BY:<br><b>KCHIKKANNA</b> | APPROVED BY:<br><b>ISHWARG</b> |                              |
| TEMPLATE FILENAME: 1703070003 REV A    |   |  |  |                                  |                                |                              |

## 12.0 CABLE TIE AND/OR WIRE TWIST LOCATION

| Circuit Sizes |            | Dimension T Minimum |
|---------------|------------|---------------------|
| Dual Row      | Single Row |                     |
| 2-6           | 2-3        | .50" (12.7 mm)      |
| 8             | 4          | .75" (19.1 mm)      |
| 10-12         | 5-6        | 1.00" (25.4 mm)     |
| 14-16         | 7-8        | 1.25" (31.75 mm)    |
| 18-20         | 9-10       | 1.50" (38.09 mm)    |
| 22-24         | 11-12      | 1.75" (44.45 mm)    |



**Note :**

The "T" dimension defines a "free" length of wire, or a length of wire that is not subject to significant bias by external factors such as a wire tie, wire twisting, or other means of bending or deforming of the wires that repositions them from their natural relaxed state or location where they enter the housing. Wires are to be dressed in such a manner to allow the terminals to float freely in the pocket. This dimension is general recommendation and may need to be adjusted for different wire gauges and wire type and insulation thickness and insulation material.

[MOLEX MINI-FIT JR. WEB PAGE](#)

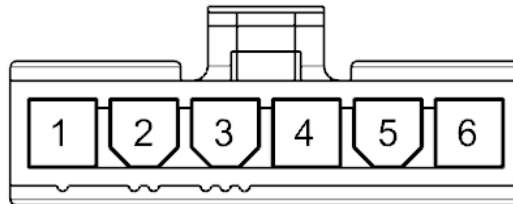
[TABLE OF CONTENTS](#)



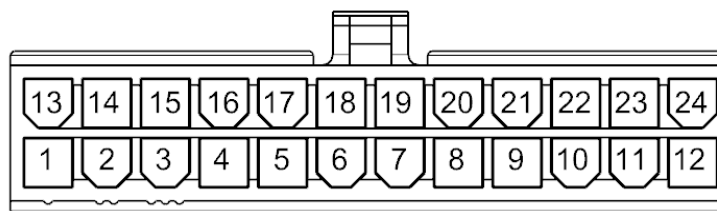
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| REVISION:<br><b>G2</b>                 | ECM INFORMATION:<br>EC No: 649117<br>DATE: 2020/11/12 | TITLE:<br><b>PRODUCT SPECIFICATION<br/>MINI-FIT JR. CONNECTOR SYSTEM</b> | SHEET No.<br><b>22 of 23</b>               |                                  |                                |
| DOCUMENT NUMBER:<br><b>PS-5556-001</b> | DOC TYPE:<br><b>PS</b>                                | DOC PART:<br><b>001</b>  | CREATED / REVISED BY:<br><b>KCHIKKANNA</b> | CHECKED BY:<br><b>KCHIKKANNA</b> | APPROVED BY:<br><b>ISHWARG</b> |
| TEMPLATE FILENAME: 1703070003 REV A    |   |  |  |                                  |                                |

**13.0 POLARIZATION AND KEYING OPTIONS**

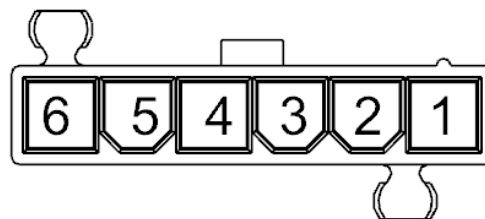
**13.1 Single Row Receptacle (Series: [46994](#) , [5557](#))**



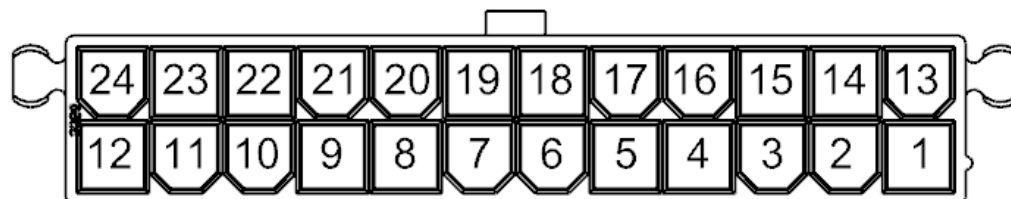
**13.2 Dual Row Receptacle (Series: [5557](#) , [46992](#))**



**13.3 Single Row Header / Plug (Series: [172647](#) , [5566](#))**



**13.4 Dual Row Header / Plug (Series: [5566](#) , [172447](#))**



[MOLEX MINI-FIT JR. WEB PAGE](#)

[TABLE OF CONTENTS](#)



|  |   |  |  |
|--|---|--|--|
| REVISION:<br><b>G2</b>                 | ECM INFORMATION:<br>EC No: 649117<br>DATE: 2020/11/12 | TITLE:<br><b>PRODUCT SPECIFICATION<br/>MINI-FIT JR. CONNECTOR SYSTEM</b> | SHEET No.<br><b>23 of 23</b>               |
| DOCUMENT NUMBER:<br><b>PS-5556-001</b> | DOC TYPE:<br><b>PS</b>                                | DOC PART:<br><b>001</b>  | CREATED / REVISED BY:<br><b>KCHIKKANNA</b> |
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| TEMPLATE FILENAME: 1703070003 REV A    |   |  |  |