


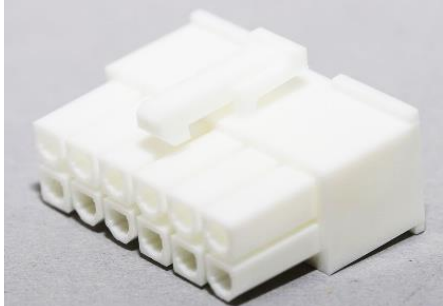


MINI-FIT PLUS HCS™ INTERCONNECT SYSTEM

| Female Crimp Terminal | Male Crimp Terminal |
|---|--|
|  |  |
| Series: 45750 | Series: 46012 |

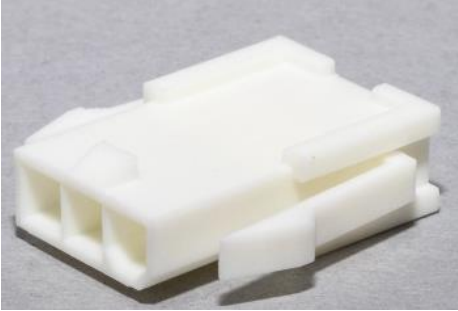

| Receptacle Housing (Single Row) | Receptacle Housing (Dual Row) |
|--|---|
|  |  |
| Series: 5557 | Series: 5557 |


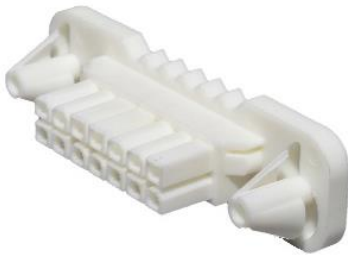
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| Plug Housing (Single Row) | Plug Housing (Dual Row) |
|---|--|
|  |  |
| Series: 5559 | Series: 5559 |

| Panel Mount BMI Plug Housing | Panel Mount Receptacle Housing |
|--|---|
|  |  |
| Series: 42475 | Series: 42474 |



| Panel Mount Receptacle Housing Slide-and-Lock |
|---|
|  |
| Series: 44516 |



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| | |
|---|--|
| Vertical BMI SMC Header | Vertical PCB Receptacle header |
|  |  |
| Series: 44068 | Series: 46010 |

| | |
|--|---|
| Vertical Header Single Row | Vertical Header Dual Row |
|  |  |
| Series: 46014 | Series: 46015 |



| | |
|---|--|
| Vertical BMI Header | Vertical SMC Header |
|  |  |
| Series: 46011 | Series : 87427 |



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| Right Angle Header (Single Row) | Right Angle Header (Dual Row) |
|---|--|
|  |  |
| Series: 5569 | Series: 5569 |

| Right Angle Header, 40 Ckt | Right Angle SMC Header |
|--|---|
|  |  |
| Series: 43973 | Series: 87427 |

| Right Angle BMI Header | Right Angle BMI SMC Header |
|---|--|
|  |  |
| Series: 42404 | Series: 43810 |

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1.0 SCOPE

This Product Specification covers the electrical, mechanical and environmental performance requirements for the **Mini-Fit Plus HCS™** (High Current System) in 4.20 mm (.165 inch) pitch. The **Mini-Fit Plus HCS™** uses contacts stamped in High Performance Alloy for increased current carrying capacity, while maintaining properties at elevated operating temperatures. Options are available in Wire-Wire, Wire-Panel, Wire-Board, Panel-Panel, Panel-Board, and Board-Board configurations in Tin and Gold-plated systems. Crimp terminals accept 16 to 24 AWG stranded wire.

2.0 PRODUCT DESCRIPTION

2.1 DESCRIPTION, SERIES NUMBERS, AND LINKS

| DESCRIPTION | SERIES NUMBER | PRIMARY PRODUCT SPECIFICATION |
|--|-----------------------|-------------------------------|
| Female Crimp Terminal | 45750 | PS-45750-001 |
| Male Crimp Terminal | 46012 | PS-45750-001 |
| Receptacle Housing | 5557 | PS-5556-001 |
| Plug Housing | 5559 | PS-5556-001 |
| Panel Mount BMI Plug Housing | 42475 | PS-5556-002 |
| Foam-In-Plug Housing | 45776 | PS-5556-001 |
| Panel Mount Receptacle Housing | 42474 | PS-5556-002 |
| Panel Mount Receptacle Hsg 40 Ckt | 43974 | PS-43759-0001 |
| Panel Mount Receptacle Housing, Slide-and-Lock | 44516 | PS-5556-002 |
| TPA Receptacle Housing | 30067 | PS-5556-003 |
| Panel Mount TPA Plug Housing | 30068 | PS-5556-003 |
| Vertical BMI SMC Header, solid pin | 44068 | PS-43810-001 |
| Vertical PCB Receptacle Header | 46010 | PS-45750-001 |
| Vertical BMI Header | 46011 | PS-45750-001 |
| Vertical Header, single row | 46014 | PS-45750-001 |
| Vertical Header, dual row | 46015 | PS-45750-001 |
| RTC Hi-Temp Vertical Header in LCP | 46207 | PS-5556-004 |

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| DESCRIPTION | SERIES NUMBER | PRIMARY PRODUCT SPECIFICATION |
|---|------------------------|-------------------------------|
| Vertical Header, Single Row | 172676 | PS-45750-001 |
| Vertical Header, Dual Row | 172675 | PS-45750-001 |
| Vertical SMC Header | 87427 | PS-87427-0001 |
| Right Angle Header | 5569 | PS-5556-001 |
| Right Angle Header with press-fit mounting pegs in LCP | 5569 | PS-5556-004 |
| Right Angle TPA Header with mounting flanges | 30070 | PS-5556-003 |
| Right Angle BMI Header | 42404 | PS-5556-002 |
| Right Angle BMI SMC Header | 43810 | PS-43810-001 |
| Right Angle Header, 40 Ckt | 43973 | PS-43759-0001 |
| Right Angle Header | 46991 | PS-5556-004 |
| Right Angle SMC Header | 87427 | PS-87427-0001 |

2.2 DIMENSIONS, MATERIALS, PLATING AND MARKINGS

See sales drawings for details on dimensions, materials and platings.

2.3 ENVIRONMENTAL CONFORMANCE

To find product compliance information:

- [Go to molex.com](#)
- Enter the part number in the search field.
- At the bottom of the page go to "Environmental" to see compliance status.

2.4 SAFETY AGENCY APPROVAL

UL File: E29179
 CSA Certificate : LR19980
 IEC Certificate¹ : IEC 61984

¹ IEC certificate applies to the following series only: 5557, 5559, 42475, 42474, 30067, 30068, 5569, 30070, 42404, 46991

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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.

[Mini-Fit Plus HCS Maximum Temperature Test Summary 457500003-TS-000](#)

[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 can be available from respective terminal part number page in Molex.com.

3.2 INDUSTRY DOCUMENTS

EIA-364-1000

CSA STD. C22.2 NO.182.3-M1987

UL 60950-1

UL 1977

IEC / EN 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

| WIRE GAUGE | INSULATION DIAMETER |
|-----------------------------|--|
| 16 AWG, Stranded, Copper | 1.80 - 3.15 millimeters / .071 - .124 inches |
| 18-20 AWG, Stranded, Copper | 1.65 - 2.95 millimeters / .065 - .116 inches |
| 22-24 AWG, Stranded, Copper | 1.22 – 2.38 millimeters / .048 - .094 inches |

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4.3 MAXIMUM CURRENT RATING**

| WIRE-TO-WIRE | | | | | | | | | |
|--------------|--------------------------|--------|------|------------------------|-------|------|--------|------------|------------|
| Wire Size | Single Row Circuit Sizes | | | Dual Row Circuit Sizes | | | | | |
| | 3 | 4 | 5 | 2 | 4 | 6, 8 | 10, 12 | 14, 16, 18 | 20, 22, 24 |
| 16 AWG | 13 A | 12.5 A | 12 A | 13 A | 12 A | 11 A | 10.5 A | 10 A | 9.5 A |
| 18 AWG | 11 A | 10.5 A | 10 A | 11 A | 10 A | 9 A | 8.5 A | 8 A | 7.5 A |
| 20 AWG | 9.5 A | 9 A | 9 A | 9.5 A | 8.5 A | 8 A | 7.5 A | 7 A | 6.5 A |

| WIRE-TO-BOARD | | | | | | | | | |
|---------------|--------------------------|-------|--------|------------------------|--------|-------|--------|------------|------------|
| Wire Size | Single Row Circuit Sizes | | | Dual Row Circuit Sizes | | | | | |
| | 3 | 4 | 5 | 2 | 4 | 6, 8 | 10, 12 | 14, 16, 18 | 20, 22, 24 |
| 16 AWG | 12.5 A | 12 A | 11.5 A | 12.5 A | 11.5 A | 10 A | 9 A | 8.5 A | 8.0 A |
| 18 AWG | 10.5 A | 10 A | 9.5 A | 10.5 A | 9.5 A | 8.5 A | 8 A | 7.5 A | 7 A |
| 20 AWG | 9 A | 8.5 A | 8.5 A | 9 A | 8 A | 7 A | 6.5 A | 6 A | 5.5 A |

| BOARD-TO-BOARD | | | | | |
|------------------------|------|-------|--------|------------|------------|
| Dual Row Circuit Sizes | | | | | |
| 2 | 4 | 6, 8 | 10, 12 | 14, 16, 18 | 20, 22, 24 |
| 11.5 A | 11 A | 9.5 A | 8 A | 6.5 A | 5 A |

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

***Ratings shown represent MAXIMUM current carrying capacity of a fully loaded connector with all circuits powered. Ratings are based on a 30°C maximum temperature rise limit over ambient (room temperature). Testing conducted with tinned copper conductor stranded wire. Above charts are intended as a guideline. Current rating is application dependent. Appropriate de-rating is required depending on factors such as higher ambient temperature, smaller copper weight of PCB traces, gross heating from adjacent modules or components and other factors that influence connector performance.*

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4.4 TEMPERATURE RATING

Minimum temperature (operating* and non-operating): - 40°C
 Maximum temperature² (operating* and non-operating):

| Housing Type | Terminal Type | |
|--------------------------------|--------------------|------------|
| | Select Gold Plated | Tin Plated |
| Glow Wire Capable ³ | 125°C | 105°C |
| RTC Header ⁴ | 125°C | |
| Standard Nylon | 105°C | |

*Operating values include 30 °c temperature rise at rated current

Field Temperature and Field Life: 65 °C for 10 years (based on EIA-364-1000, table 8)

Note: Temperature life test duration (section 6.3 item 1) is based on assumption that the contact spends its entire life at the rated field maximum temperature (based on EIA-364-1000, table 8)

4.5 DURABILITY

Tin plated: 100 mating cycles
 Gold plated: 250 mating cycles

Durability ratings established as tested per Durability Test Procedures described by EIA-364-09C and meet requirements for low level contact resistance and DWV as prescribed per EIA-364-1000 Test Sequence Group 7.

4.6 GLOW WIRE SERIES

The following series are glow capable: 46992, 46993, 46994, 172646, 172648, 172675, 172676, 46207, 46991. 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

² UL approval of product usage above 105°C pending

³ See section 4.6 for applicable series

⁴ See section 2.1 for applicable series

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6.0 PERFORMANCE

6.1 ELECTRICAL PERFORMANCE

| ITEM | DESCRIPTION | TEST CONDITION | REQUIREMENT |
|-------|--|---|---|
| 6.1.1 | Initial Contact Resistance (Low Level) | EIA-364-23: 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 mΩ Maximum Initial resistance for each test sequence. Resistance measurements for subsequent tests are the Maximum change from Initial as specified. |
| 6.1.2 | Insulation Resistance | Mate connectors: apply a voltage of 500 VDC between adjacent terminals and between terminals to ground. | 1000 Megohms MINIMUM |
| 6.1.3 | Dielectric Withstanding Voltage | EIA-364-20: Apply a voltage of 2200 VAC for 1 minute between adjacent contacts. | No breakdown. Current leakage < 5 mA |
| 6.1.4 | Temperature Rise (via Current Cycling) | EIA-364-70 (Temperature Rise) & EIA-364-55 (Current Cycling): Measure the T-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: +30 °C MAXIMUM |

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6.2 MECHANICAL PERFORMANCE

| ITEM | DESCRIPTION | TEST CONDITION | REQUIREMENT |
|-------|---|--|---|
| 6.2.1 | Terminal Mate / Unmate Forces Per Circuit for: Wire – Wire; Wire – Board (formed pin header); and Wire – Board (solid pin header) | Mate and unmate female to male crimp terminal or female terminal to header at a rate of 25 ± 6 mm ($1 \pm \frac{1}{4}$ inch) per minute. Testing to be conducted with individual (single) circuit. Measure and record the maximum mate and unmate forces with latch disabled. | Tin, W-W & W-B (formed pin): Mate : 15.6 N (3.50 lbf) MAX. Unmate : 13.8N (3.10 lbf) MAX. |
| | | | Gold, W-W & W-B (formed pin): Mate : 4.9 N (1.10 lbf) MAX. Unmate : 4.0 N (0.91 lbf) MAX. |
| | | | Tin, W-B (solid pin): Mate : 13.3 N (3.0 lbf) MAX. Unmate : 11.0 N (2.47 lbf) MAX. |
| | | | Gold, W-B (solid pin): Mate : 3.4 N (0.77 lbf) MAX. Unmate : 2.8 N (0.63 lbf) MAX. |
| 6.2.2 | Normal Force | Apply a perpendicular force simultaneously to each beam until the desired total deflection is achieved. Return to original size, then deflect beams a second time and measure normal force. | 3.5 N (360 g) MINIMUM (Reference Only) |
| 6.2.3 | Durability | Per EIA-364-09 C, mate connectors 100 cycles for tin plated product, 250 cycles for gold plated product at a maximum rate of 10 cycles per minute based on mated pairs of 30μ " Au or 100μ " tin at the contact interface. | 10 m Ω Max. chg. from Initial; Visual: No Damage |
| 6.2.4 | Durability (preconditioning) | Mate connectors by hand, 20 cycles for tin plated product, 50 cycles for gold as required prior to environmental test sequence as indicated. | Visual: no damage |
| 6.2.5 | Reseating | Unmate / mate connectors by hand three cycles. | Visual: no damage |

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6.2 MECHANICAL PERFORMANCE CONTINUED

| ITEM | DESCRIPTION | TEST CONDITION | REQUIREMENT |
|--------|---|--|---|
| 6.2.6 | Vibration (Random) | Mate connectors and vibrate per EIA 364-28, test condition VII, letter D. Test Duration: 15 minutes in each axis. | 10 mΩ Max. chg. from Initial; Discontinuity < 1 microsecond |
| 6.2.7 | Crimp Terminal Insertion Force (into housing) | Apply an axial insertion force on the terminal at a rate of 25 ± 6 mm (1 ± ¼ inches). | 15.0 N (3.37 lbf) MAXIMUM insertion force |
| 6.2.8 | 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 |
| 6.2.9 | Wire Crimp Retention | 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 Applicator Tooling specification. | 16 Awg = 68.4 N (15.4 lbf) Min. 18 Awg = 68.4 N (15.4 lbf) Min. 20 Awg = 58.7 N (13.2 lbf) Min. |
| 6.2.10 | Thumb Latch Operation Force | Depress latch at a rate of 25 ± 6mm (1 ± ¼ inches) per minute. | 22.2 N (5.0 lbf) MAXIMUM. |
| 6.2.11 | Thumb Latch Yield Strength | Mate loaded connectors fully. Pull connectors apart at a rate of 25 ± 6 mm (1 ± ¼ inch) per minute. (after 1 st mate) | 68 N (15.3 lbf) MINIMUM. |
| 6.2.12 | Solid PC Tail Header Pin Retention Force (in housing) (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 |
| 6.2.13 | Stamped PC Tail Terminal Retention Force (in housing) (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 |
| 6.2.14 | 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: 26.7 to 66.7 N (6.0 to 15.0 lbf) For 5566, 172447, 172647: 4.4 to 44.5 N (1.0 to 10.0 lbf) Typical insertion force per peg. For reference only |

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6.3 ENVIRONMENTAL PERFORMANCE

| ITEM | TEST | TEST PROCEDURE | REQUIREMENT |
|-------|--|---|--|
| 6.3.1 | Temperature Life Group 1 | Per EIA-364-17, method A: mate connectors. Expose tin plated terminals to 240 hours at 105 ± 2 °C. Expose gold plated terminals to 1000 hours at 125 ± 2 °C (see 457500003-TS). | 10 mΩ Max. chg. from Initial; Visual: No Damage |
| 6.3.2 | Temperature Life (preconditioning) Group 3 | Per EIA-364-17, method A: mate connectors and expose to 120 hours at 105 ± 2 °C. | 10 mΩ Max. chg. from Initial; Visual: No Damage |
| 6.3.3 | Thermal Shock | Per EIA-364-32, method A, test condition I, test duration A-4: mate connectors and expose for 10 cycles between -55 °C and 105 °C; dwell 0.5 hours at each temperature. | 10 mΩ Max. chg. from Initial; Visual: No Damage Dielectric Strength per 6.1.3 Insulation Resistance per 6.1.2 |
| 6.3.4 | Cyclic Temperature & Humidity | Per EIA-364-31, method III w/o conditioning, initial measurements, cold shock and vibration. Cycle mated connectors between 25 °C ± 3 °C @ $80\% \pm 3\%$ RH and 65 °C ± 3 °C @ $50\% \pm 3$ RH. Ramp time: 0.5 hr; dwell time: 1 hr. Perform 24 cycles. Remove surface moisture and air dry for 1 hour prior to measurements | 10 mΩ Max. chg. from Initial; Visual: No Damage |
| 6.3.5 | Solderability | Molex Test Method: Per SMES-152 | Solder coverage: 95% MINIMUM |
| 6.3.6 | Reflow Solder Resistance (46991, 46207 Series) | Convection reflow solder process 260 °C Maximum per AS-40000-5013 | Visual: No Damage |
| 6.3.7 | Wave Solder Resistance | Dip connector terminals tail in solder: Solder Duration: 5 ± 0.5 seconds; Solder Temperature: Use maximum solder temperature from Section 8.1 | Visual: No Damage to insulator housing material |

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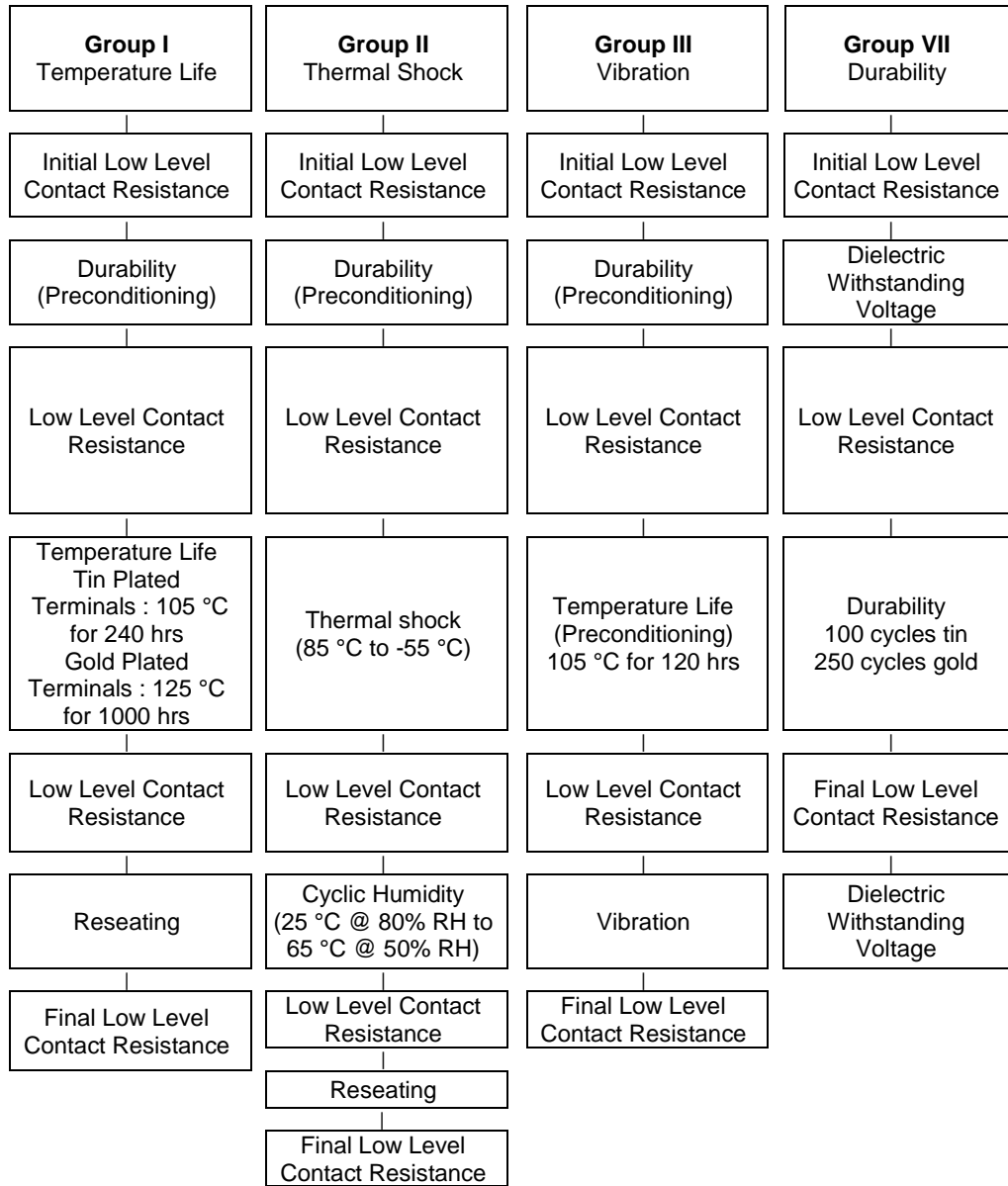
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| | | CHECKED BY: DSTEIER | APPROVED BY: FSMITH |
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7.0 TEST SEQUENCE GROUPS

Reliability test sequences as per EIA-364-1000



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| TEMPLATE FILENAME: 1703070003 REV A | | | |

Individual Tests

Terminal Mate & Unmate Forces per circuit

Crimp Terminal Insertion Force

Crimp Terminal Retention Force

Solid PC Tail Header Pin Retention Force

Wire Crimp Retention

Normal Force

PCB Engagement forces

Thumb latch Operation Force

Stamped PC Tail Retention Force

Thumb latch Yield Strength

Temperature Rise Test

T-Rise Profiling

Steady State Temperature Rise

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8.0 SOLDER INFORMATION

8.1 SOLDER PROCESS TEMPERATURES

*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.

| Header Type | Plating Type | | | |
|--|-------------------------|-----------------------|------------------------|-----------------|
| | Select Gold over Nickel | Matte Tin over Nickel | Bright Tin over Nickel | Tin over Copper |
| With Molded Pegs | 240 °C | 240 °C | 240 °C | 240 °C |
| Without Molded Pegs | 260 °C | 260 °C | 240 °C | 240 °C |
| RTC & SMC Headers: 44068, 43810, 46207, 46991, 87427 | 260 °C | 260 °C | 240 °C | 240 °C |
| Glow Wire with Pegs Series: 172675, 172676 | 220 °C | 220 °C | N/A | N/A |

[Molex Solderability Specification SMES-152](#)

[\(Click Here\)](#)

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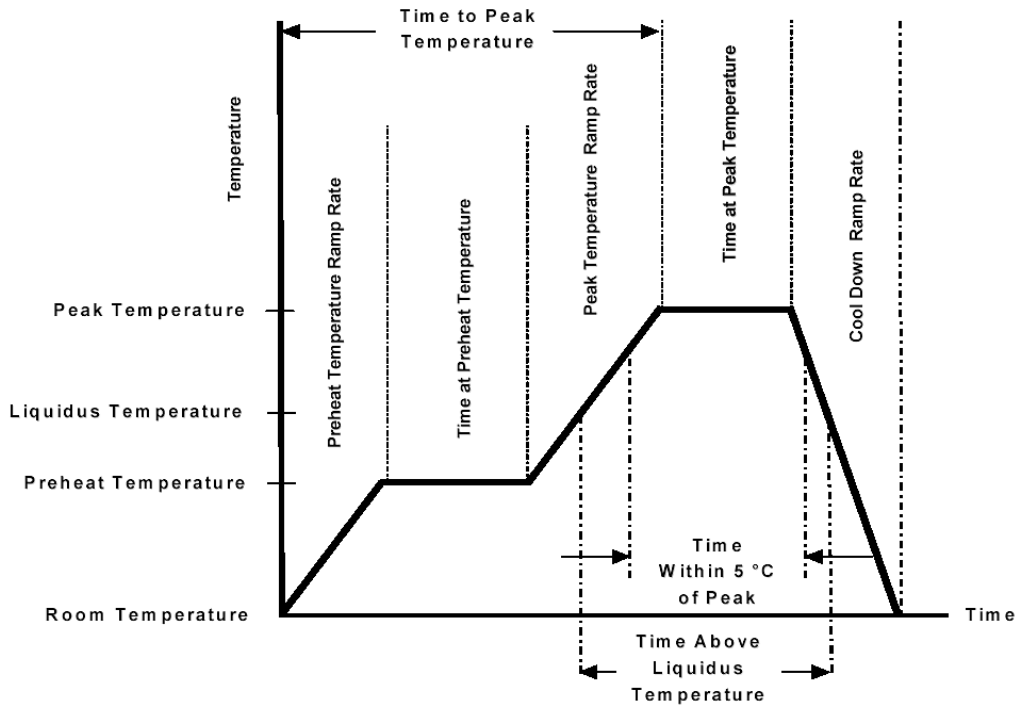


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8.2 REFLOW SOLDERING PROFILE

(This profile is per AS-40000-5013 and is provided as a guideline only. Please see notes for additional information)

[Molex Connector Heat Resistance Specification AS-40000-5013 \(Click Here\)](#)



| Description | Requirement |
|----------------------------|------------------------|
| Average Ramp Rate | 3°C/sec Max |
| Preheat Temperature | 150°C Min to 200°C Max |
| Preheat Time | 60 to 180 sec |
| Ramp to Peak | 3°C/sec Max |
| Time over Liquidus (217°C) | 60 to 150 sec |
| Peak Temperature | 260 +0/-5°C |
| Time within 5°C of Peak | 20 to 40 sec |
| Ramp - Cool Down | 6°C/sec Max |
| Time 25°C to Peak | 8 min Max |

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9.0 PACKAGING

Parts shall be packaged to protect against damage during normal handling, transit and storage. Refer Molex.com specific part number webpage to get the exact packaging document for that item.

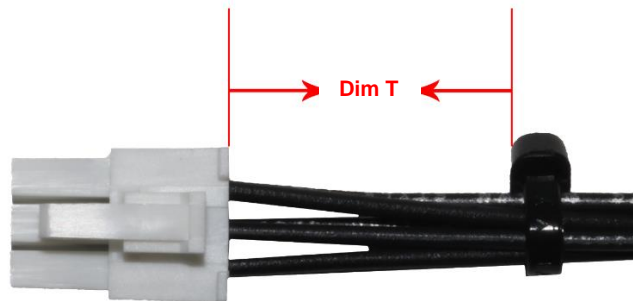
10.0 GAGES AND FIXTURES

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.

11.0 CABLE TIE AND/OR WIRE TWIST LOCATION

| Circuit Sizes | | Dimension T Min. |
|---------------|------------|------------------|
| Dual Row | Single Row | |
| 2-6 | 2-3 | 0.50" (12.7 mm) |
| 8 | 4 | 0.75" (19.1 mm) |
| 10-12 | 5-6 | 1.00" (25.40 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) |



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.

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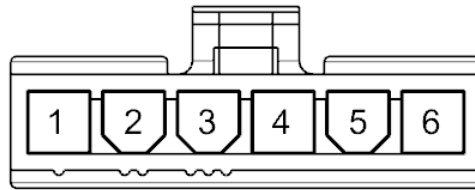
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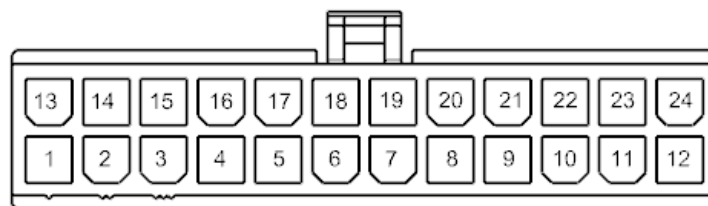
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12.0 POLARIZATION AND KEYING OPTIONS

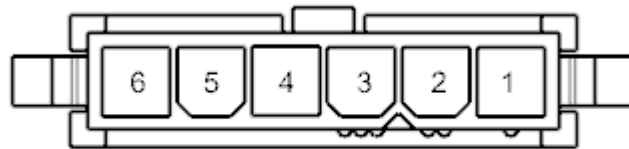
12.1 Single Row Receptacle (Series: [5557](#))



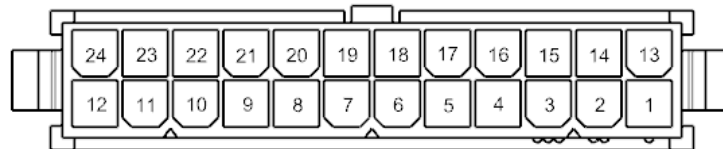
12.2 Dual Row Receptacle (Series: [5557](#))



12.3 Plug Housing Single row (Series: [5559](#))



12.4 Plug Housing Dual row (Series: [5559](#))



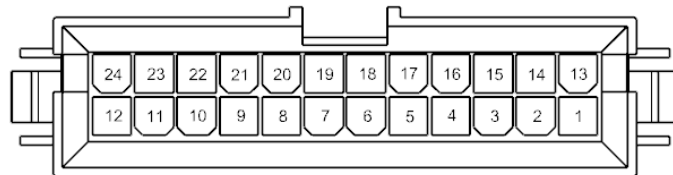
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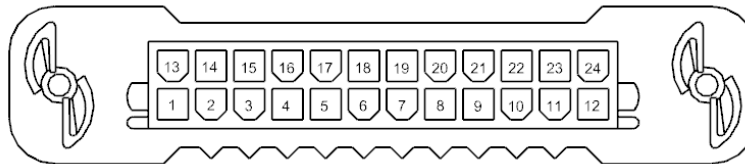


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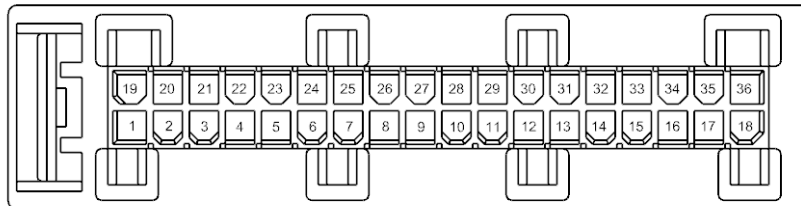
12.5 Panel Mount BMI Plug Housing (Series: [42475](#))



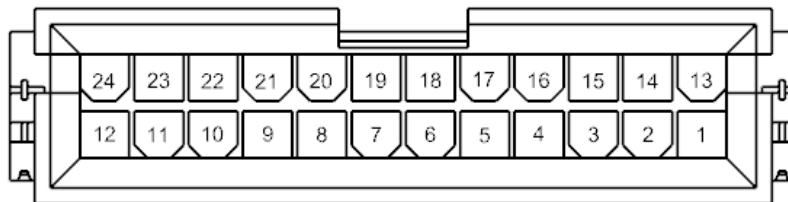
12.6 Panel Mount Receptacle Housing (Series: [42474](#))



12.7 Panel Mount Receptacle Housing Slide-and-Lock (Series: [44516](#))



12.8 Vertical BMI SMC Header (Series: [44068](#))



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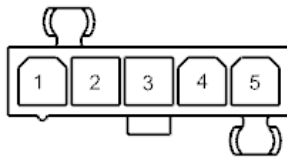


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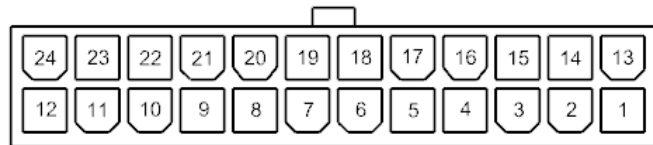
12.9 Vertical PCB Receptacle header (Series: [46010](#))



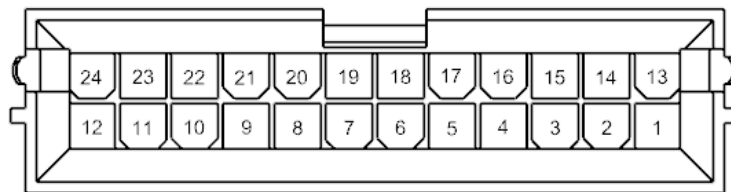
12.10 Vertical Header Single Row (Series: [46014](#))



12.11 Vertical Header Dual Row (Series: [46015](#))



12.12 Vertical BMI Header (Series: [46011](#))



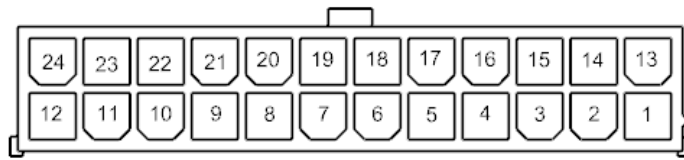
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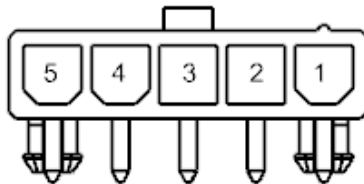


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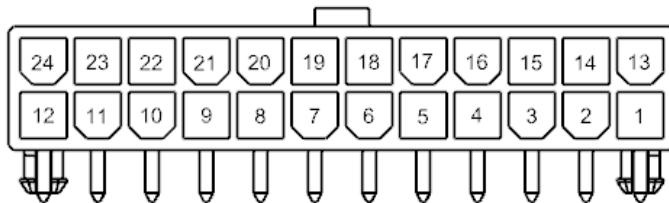
12.13 Vertical SMC Header (Series: [87427](#))



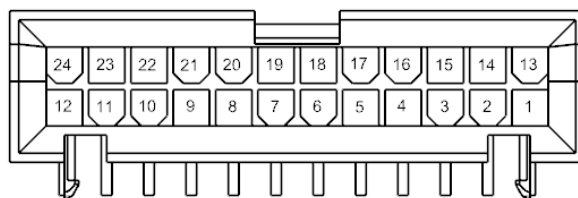
12.14 Right Angle Header Single Row (Series: [5569](#))



12.15 Right Angle Header Dual Row (Series: [5569](#))



12.16 Right Angle BMI Header (Series: [42404](#))



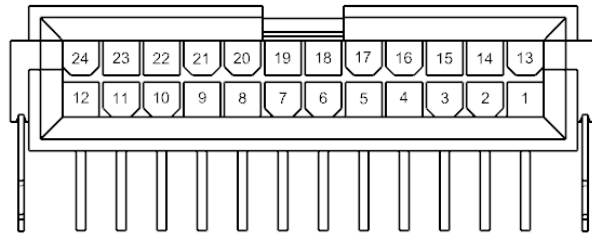
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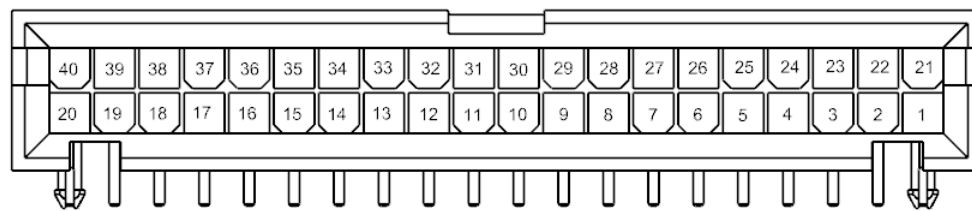


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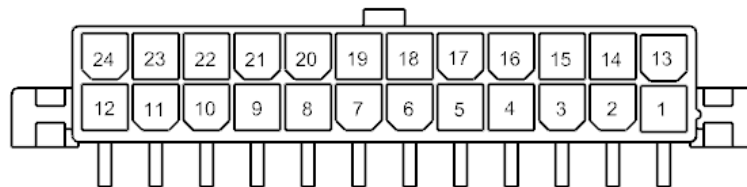
12.17 Right Angle BMI SMC Header (Series: [43810](#))



12.18 Right Angle Header, 40 Ckt (Series: [43973](#))



12.19 Right Angle SMC Header (Series: [87427](#))



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