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ELECTRONICS

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Jameco Part Number 881258

FEATURES AND SPECIFICATIONS

Features and Benefits

- Wire-to-wire plug for panel-mounted or free-hanging applications
- Available with and without panel mounting ears
- Positive housing locks to mate with Mini-Fit, Jr. receptacle
- Fully isolated terminals to protect contacts from damage
- Uses standard Mini-Fit series terminals

Reference Information

Product Specification: PS-5556-0001

Packaging: Tray or bag

UL File No.: E29179

CSA File No.: LR19980

TUV License No.: R75142

Mates With: [5557](#) single row receptacleUse With: [5558](#), [30490](#) or 44478 terminals

Designed In: Millimeters

Mechanical

Contact Insertion Force: 1.5kg max.

Contact Retention to Housing: 3.0kg min.

Wire Pull-Out Force: 9.0kg min.

Insertion Force to PCB: 5.0kg max.

Mating Force: 0.7kg (1.54 lb) max.

Unmating Force: 0.35kg (0.7 lb) min.

Normal Force: 200g min.

Durability: 30 cycles

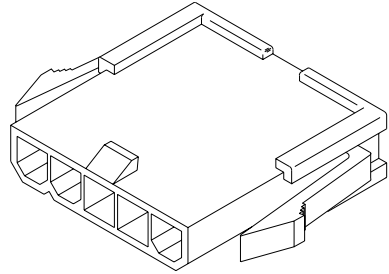
Physical

Housing: 6/6 nylon, UL 94V-2 or 94V-0

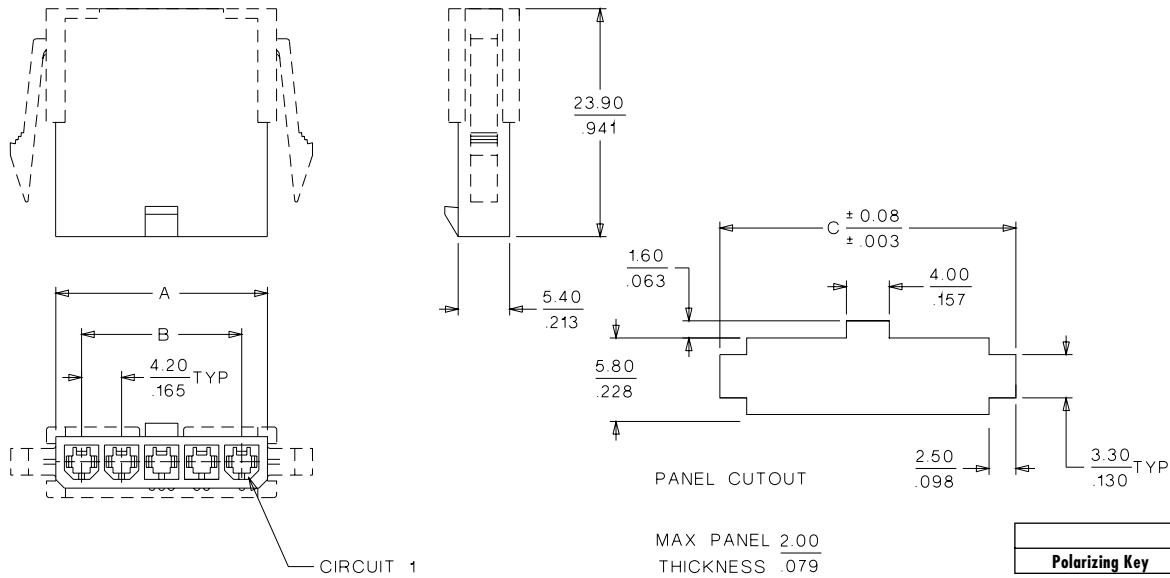
Contact: Brass or Phosphor Bronze

Plating: Tin, select Gold or overall Gold

Operating Temperature: -40 to +105°C


**4.20mm (.165") Pitch
Mini-Fit, Jr.™
Plug**
5559**Single Row, With and Without Panel Mount Ears**

CATALOG DRAWING (FOR REFERENCE ONLY)



ORDERING INFORMATION AND DIMENSIONS

| Circuits | Order No. | | | | Dimension | | |
|----------|--------------|--------------|--------------|--------------|--------------|--------------|---------------|
| | Panel Mount | | Free Hanging | | A | B | C |
| | 94V-2 | 94V-0 | 94V-2 | 94V-0 | | | |
| 3* | • 39-01-4032 | • 39-01-4033 | • 39-01-4036 | • 39-01-4037 | 13.80 (.543) | 8.40 (.331) | 19.20 (.756) |
| 4 | | | • 39-01-4046 | | 18.00 (.709) | 12.60 (.496) | 23.40 (.921) |
| 5 | • 39-01-4052 | • 39-01-4053 | • 39-01-4056 | • 39-01-4057 | 22.20 (.847) | 16.80 (.661) | 27.60 (1.087) |

* US Standard Product, available through Molex franchised distributors

* 3-circuit plug designed for first-mate/last-break applications



PRODUCT SPECIFICATION

MINI-FIT HCS (High Current System)

1.0 SCOPE

This Product Specification covers performance requirements for the MINI-FIT HCS 4.20 mm (.165 inch) centerline (pitch) printed circuit board (PCB) connector series with Tin or Gold plating, and The MINI-FIT HCS connector series terminated with 16 to 28 AWG wire using Crimp technology with Tin or Gold plating.

2.0 PRODUCT DESCRIPTION

2.1 PRODUCT NAME AND SERIES NUMBER (S)

| <u>PRODUCT NAME</u> | <u>PART NUMBER</u> |
|--|--------------------|
| Female Crimp Terminal (Mini-Fit HCS) | 44476-**** |
| Male Crimp Terminal (Mini-Fit HCS) | 44478-**** |
| Receptacle Housing (Mini-Fit Jr.) | 5557-**** |
| Receptacle Housing (Mini-Fit PTA) | 30067-**** |
| Receptacle Housing (Mini-Fit BMI) | 42474-**** |
| Receptacle Header Assembly (Mini-Fit BMI) | 44475-**** |
| Plug Housing (Mini-Fit Jr.) | 5559-**** |
| Plug Housing (Mini-Fit TPA) | 30068-**** |
| Plug Housing (Mini-Fit BMI) | 42475-**** |
| Vertical Header Assembly (Mini-Fit HCS) | 44472-**** |
| Vertical Header Assembly (Mini-Fit TPA) | 44473-**** |
| Vertical Header Assembly (Mini-Fit (BMI) | 44474-**** |
| Vertical Header Assembly (Mini-Fit SMC) | 44068-**** |
| Right Angle Header Assembly (Mini-Fit Jr.) | 5569-**** |
| Right Angle Header Assembly (Mini-Fit TPA) | 30070-**** |
| Right Angle Header Assembly (Mini-Fit BMI) | 42404-**** |
| Right Angle Header Assembly (Mini-Fit SMC) | 43810-**** |

Mating the Mini-Fit receptacles to Mini-Fit plugs or Mini-Fit headers using 44476 or 44478 terminals allow it to qualify as a Mini-Fit HCS system.

2.2 DIMENSIONS, MATERIALS, PLATINGS AND MARKINGS

See the appropriate sales drawings for the information on dimensions, materials, platings and markings.

2.3 SAFETY AGENCY APPROVALS

UL File #E29179
CSA Certificate #LR 19980
TUV Certificate #R75142-8

3.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS

See sales drawings and the other sections of this specification for the necessary referenced documents and specifications

| | | | |
|--|--|---|---|
| REVISION: D | ECR/ECN INFORMATION: <u>EC No:</u> UCP2003-2604 <u>DATE:</u> 2003 / 06 / 12 | TITLE: PRODUCT SPECIFICATION FOR MINI-FIT HCS CONNECTOR SYSTEM | SHEET No. 1 of 5 |
| DOCUMENT NUMBER: PS-44476-001 | CREATED / REVISED BY: C.STEWART | CHECKED BY: Y. MARGULIS | APPROVED BY: Y. MARGULIS |



PRODUCT SPECIFICATION

NGS

4.1 VOLTAGE

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

4.2 CURRENT AND APPLICABLE WIRES

| | | | | |
|---|-------------------------------|-------|--------|---------|
| Maximum Insulation Diameter and Applicable Wire Gauges | 16 AWG: 3.10/. 122 MAXIMUM | | | |
| | 18-24 AWG: 3.10/. 122 MAXIMUM | | | |
| MAXIMUM CURRENT RATING (Amperes) | | | | |
| Ckt. Size Wire | 2 & 3 | 4 - 6 | 7 - 10 | 12 - 24 |
| AWG #16 | 12 | 11 | 10 | 9 |
| AWG #18 | 12 | 11 | 10 | 9 |
| AWG #20 | 9 | 9 | 8 | 8 |

4.3 TEMPERATURE

Operating: * - 40°C to + 105°C

Nonoperating: - 40°C to + 105°C

**Including 30°C terminal temperature at rated current*

4.0 PERFORMANCE

5.1 ELECTRICAL REQUIREMENTS

| ITEM | DESCRIPTION | TEST CONDITION | REQUIREMENT |
|------|---|--|--------------------------------------|
| 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 MAXIMUM [initial] |
| 2 | Contact Resistance @ Rated Current | Mate connectors: apply a maximum voltage of 20 mV at rated current. | 10 milliohms MAXIMUM [initial] |
| 3 | Contact Resistance of Wire Termination (Low Level) | Terminate the applicable wire to the terminal and measure wire using a voltage of 20 mV and a current of 100 mA. | 5 milliohms MAXIMUM [initial] |

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PRODUCT SPECIFICATION

| | | | |
|----------|------------------------------|---|-------------------------|
| 4 | Insulation Resistance | Mate connectors: apply a voltage of 500 VDC between adjacent terminals and between terminals to ground. | 1000 Megohms MINIMUM |
|----------|------------------------------|---|-------------------------|

5.1 ELECTRICAL REQUIREMENTS (continued)

| ITEM | DESCRIPTION | TEST CONDITION | REQUIREMENT |
|----------|---|--|---|
| 5 | Dielectric Withstanding Voltage | Mate connectors: apply a voltage of 1500 VAC for 1 minute between adjacent terminals and between terminals to ground. | No breakdown. Current leakage < 5 mA |
| 6 | 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: +30°C MAXIMUM |

5.2 MECHANICAL REQUIREMENTS

| ITEM | DESCRIPTION | TEST CONDITION | REQUIREMENT |
|----------|--|--|---|
| 1 | Terminal Mate and Unmate Forces | Insert and withdraw terminal (male to female) at a rate of 25 ± 6 mm (1 ± ¼ inch) per minute. | 14.7 N (3.30 lbf) MAXIMUM insertion force & 1.0 N (0.02 lbf) MINIMUM withdrawal force |
| 2 | 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 |
| 3 | Durability | Mate connectors up to 30 cycles at a maximum rate of 10 cycles per minute prior to Environmental Tests. | 20 milliohms MAXIMUM |
| 4 | Vibration (Random) | Mate connectors and vibrate per EIA 364-28, test condition VII. | 10 milliohms MAXIMUM (change from initial) & Discontinuity < 1 microsecond |
| 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 & Discontinuity < 1 microsecond |

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| DOCUMENT NUMBER: PS-44476-001 | | CREATED / REVISED BY: C.STEWART | CHECKED BY: Y. MARGULIS |
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PRODUCT SPECIFICATION

| | | | |
|----------|-----------------------------------|---|---|
| 6 | Wire Pullout Force (Axial) | Apply an axial pullout force on the wire at a rate of 25 ± 6 mm (1 ± ¼ inch). | 16 Awg = 88.0 N (19.8 lbf) Min. 18 Awg = 88.0 N (19.8 lbf) Min. 20 Awg = 59.0 N (13.3 lbf) Min. 22 Awg = 39.0 N (8.78 lbf) Min. 24 Awg = 29.0 N (6.52 lbf) Min. 26 Awg = 19.0 N (4.27 lbf) Min. 28 Awg = 9.80 N (2.20 lbf) Min. |
|----------|-----------------------------------|---|---|

5.2 MECHANICAL REQUIREMENTS (continued)

| | | | |
|-----------|--|---|--|
| 7 | Terminal Insertion Force (into Housing) | Apply an axial insertion force on the terminal at a rate of 25 ± 6 mm (1 ± ¼ inch). | 15.0 N (3.37 lbf) MAXIMUM insertion force |
| 8 | Normal Force | Apply a perpendicular force. | 0.49 N (50 grams) MINIMUM [Gold (noble) plating] OR 1.47 N (150 grams) MINIMUM [Tin (non-noble) plating] |
| 9 | PCB Engagement and Separation Forces | Engage and separate a connector at a rate of 25 ± 6 mm (1 ± ¼ inch) per minute. | 49.0 N (11.0 lbf) MAXIMUM insertion force & 10.0 N (2.24 lbf) MINIMUM withdrawal force |
| 10 | Panel Insertion and Withdrawal Forces | Insert and withdraw a connector at a rate of 25 ± 6 mm (1 ± ¼ inch) per minute. | 225 N (50.7 lbf) MAXIMUM insertion force & 157 N (35.3 lbf) MINIMUM withdrawal force |

5.3 ENVIRONMENTAL REQUIREMENTS

| ITEM | DESCRIPTION | TEST CONDITION | REQUIREMENT |
|----------|--------------------------------|---|---|
| 1 | Thermal Shock | Mate connectors: expose for 5 cycles between temperatures -55 and 105°C; dwell 0.5 hours at each temperature. | 20 milliohms MAXIMUM Visual: No Damage Dielectric Strength per 5.1.5 Insulation Resistance per 5.1.4 |
| 2 | Thermal Aging | Mate connectors; expose to: 96 hours at 105 ± 2°C | 20 milliohms MAXIMUM & Visual: No Damage |
| 3 | Humidity (Steady State) | Mate connectors: expose to a temperature of 60 ± 2°C with a relative humidity of 90-95% for 96 hours. | 20 milliohms MAXIMUM Dielectric Strength per 5.1.5 Insulation Resistance per 5.1.4 Visual: No Damage |

| | | | |
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| DOCUMENT NUMBER: | CREATED / REVISED BY: | CHECKED BY: | APPROVED BY: |
| PS-44476-001 | C.STEWART | Y. MARGULIS | Y. MARGULIS |



PRODUCT SPECIFICATION

| | | | |
|---|------------------------------|---|---|
| 4 | Solderability | Per SMES-152 | Solder coverage: 95% MINIMUM (per SMES-152) |
| 5 | Solder Resistance | Dip connector terminal tails in solder: Solder Duration: 5 ± 0.5 seconds; Solder Temperature: 235 ± 5°C | Visual: No Damage to insulator material |

5.3 ENVIRONMENTAL REQUIREMENTS (continued)

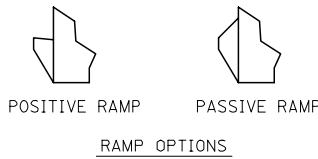
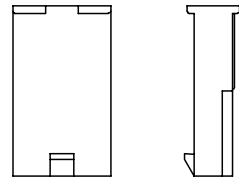
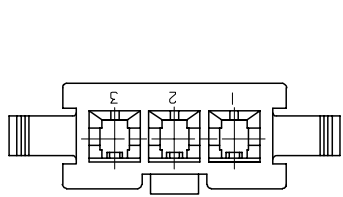
| ITEM | DESCRIPTION | TEST CONDITION | REQUIREMENT |
|------|--|---|---|
| 6 | Cold Resistance | Mate connectors: Duration: 96 hours; Temperature: -40 ± 3°C | 20 milliohms MAXIMUM Visual: No Damage |
| 7 | Corrosive Atmosphere: Sulfur Dioxide Gas (SO₂) | Mate connectors: Duration: 24 hours exposure. Atmosphere: 50 parts per million (ppm) SO ₂ Gas. Temperature: 40 ± 3°C | 20 milliohms MAXIMUM Visual: No damage |

5.0 PACKAGING

Parts shall be packaged to protect against damage during handling, transit and storage.

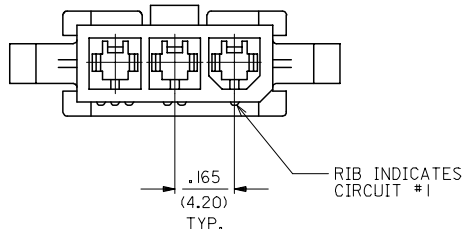
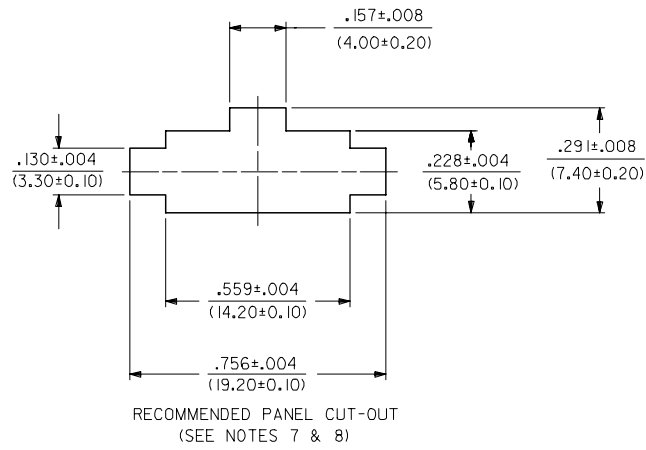
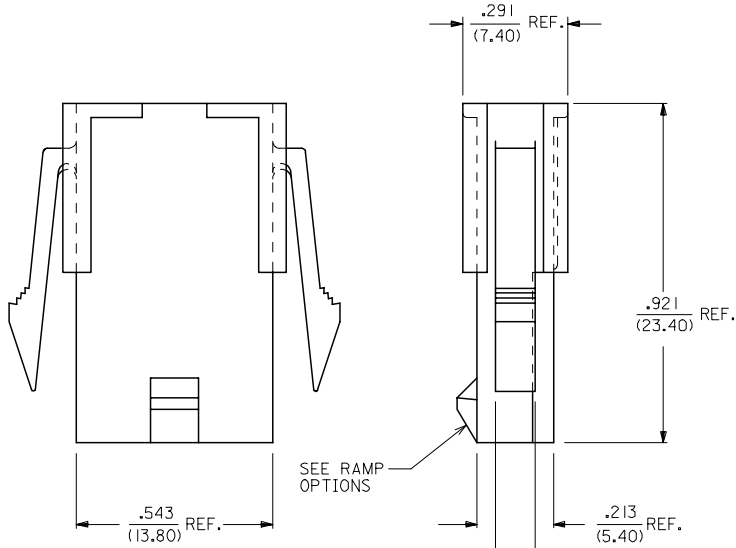
| | | | |
|---|---|--|------------------------------------|
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| DOCUMENT NUMBER: PS-44476-001 | CREATED / REVISED BY: C.STEWART | CHECKED BY: Y. MARGULIS | APPROVED BY: Y. MARGULIS |

13 12 11 10 9 8 7 6 5 4 3 2 1

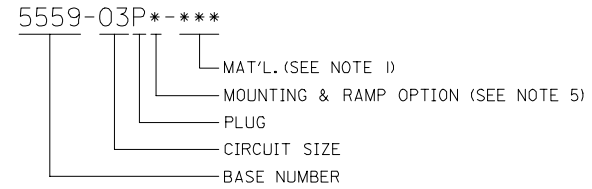


5559-03P3-***
WITHOUT MOUNTING EARS

| PART NO. | ENG. NO. | CKT. NO. | MOUNT OPTION | MAT'L. | RAMP OPTION |
|------------|---------------|----------|--------------|--------|-------------|
| 39-01-4032 | 5559-03P2 | 3 | 2 | BLANK | POSITIVE |
| 39-01-4033 | 5559-03P2-2IO | 3 | 2 | 2IO | POSITIVE |
| 39-01-4036 | 5559-03P3 | 3 | 3 | BLANK | POSITIVE |
| 39-01-4037 | 5559-03P3-2IO | 3 | 3 | 2IO | POSITIVE |
| 39-01-6030 | 5559-03P2-BL | 3 | 2 | BL | POSITIVE |
| 39-01-6031 | 5559-03P3-BL | 3 | 3 | BL | POSITIVE |
| 50-29-0088 | 5559-03P4 | 3 | 4 | BLANK | PASSIVE |
| 50-29-0089 | 5559-03P5 | 3 | 5 | BLANK | PASSIVE |
| 50-29-0091 | 5559-03P4-2IO | 3 | 4 | 2IO | PASSIVE |
| 50-29-0092 | 5559-03P5-2IO | 3 | 5 | 2IO | PASSIVE |
| 50-29-0093 | 5559-03P4-BL | 3 | 4 | BL | PASSIVE |
| 50-29-0094 | 5559-03P5-BL | 3 | 5 | BL | PASSIVE |



LEGEND



- NOTES:
- MATERIAL; BLANK=NYLON 6/6, UL 94V-2, COLOR: NATURAL.
2IO=NYLON 6/6, UL 94V-0, COLOR: NATURAL.
BL=NYLON 6/6, UL 94V-2, COLOR: DYED BLACK.
 - THIS PART IS FOR USE WITH MOLEX MALE TERMINAL NO. 5558-*.
3. THIS PART MATES WITH RECEPTACLE NO 5557.
 - PART IS DESIGNED IN METRIC.
 - MOUNTING & RAMP OPTION: 2 = WITH EARS, WITH POSITIVE RAMP
3 = WITHOUT EARS, WITH POSITIVE RAMP
4 = WITH EARS, WITH PASSIVE RAMP
5 = WITHOUT EARS, WITH PASSIVE RAMP
 - PRODUCT SPECIFICATION: PS-5556-001
 - PANEL MOUNT VERSION IS FOR USE WITH .031/.079/(0.80/2.00) THICK PANELS.
 - PANEL SHOULD BE PUNCHED IN THE DIRECTION OF CONNECTOR INSERTION.

| DELETED 225 MATL. EC NO: UCP2005-0704 DRWNLSTEWART 2004/11/11 CHKDMARGULIS 2004/11/15 APPR: YMARGULLI 2004/11/15 | QUALITY SYMBOLS | GENERAL TOLERANCES (UNLESS SPECIFIED) <table border="1"> <tr><th colspan="2">mm</th><th colspan="2">INCH</th></tr> <tr><td>4 PLACES</td><td>± .---</td><td>± .---</td><td>± .---</td></tr> <tr><td>3 PLACES</td><td>± .---</td><td>± .010</td><td>± .---</td></tr> <tr><td>2 PLACES</td><td>± 0.25</td><td>± .015</td><td>± .---</td></tr> <tr><td>1 PLACE</td><td>± 0.38</td><td>± .---</td><td>± .---</td></tr> </table> ANGULAR ±1/2° | mm | | INCH | | 4 PLACES | ± .--- | ± .--- | ± .--- | 3 PLACES | ± .--- | ± .010 | ± .--- | 2 PLACES | ± 0.25 | ± .015 | ± .--- | 1 PLACE | ± 0.38 | ± .--- | ± .--- | DIMENSION STYLE IN/MM | SCALE 4:1 | DESIGN UNITS INCH | THIRD ANGLE PROJECTION |
|--|--|---|--------------------------------------|--|--------------------|--|----------|--------|--------|--------|----------|--------|--------|--------|----------|--------|--------|--------|---------|--------|--------|--------|--------------------------|--------------|----------------------|------------------------|
| | mm | | INCH | | | | | | | | | | | | | | | | | | | | | | | |
| 4 PLACES | ± .--- | ± .--- | ± .--- | | | | | | | | | | | | | | | | | | | | | | | |
| 3 PLACES | ± .--- | ± .010 | ± .--- | | | | | | | | | | | | | | | | | | | | | | | |
| 2 PLACES | ± 0.25 | ± .015 | ± .--- | | | | | | | | | | | | | | | | | | | | | | | |
| 1 PLACE | ± 0.38 | ± .--- | ± .--- | | | | | | | | | | | | | | | | | | | | | | | |
| DRAWN BY: GEP DATE: 7/11/90 CHECKED BY: RJJ DATE: 7/11/90 APPROVED BY: RAS DATE: 7/11/90 | MATERIAL NO. SD-5559-03P* DOCUMENT NO. SD-5559-03P* SHEET NO. 1 OF 1 | | MINI-FIT JR. SERIES, 3 CKT. PLUG. | | MOLEX INCORPORATED | | | | | | | | | | | | | | | | | | | | | |

12 11 10 9 8 7 6 5 4 3 2 1