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ELECTRONICS

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Jameco Part Number 881231

## FEATURES AND SPECIFICATIONS

### Features and Benefits

- Low profile design to accommodate height constraints
- 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: [5559](#), [5566](#) and [5569](#) single row connectors and [71233](#) right angle headers

Use With: [5556](#) or 44476 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: 0.05kg (0.11 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

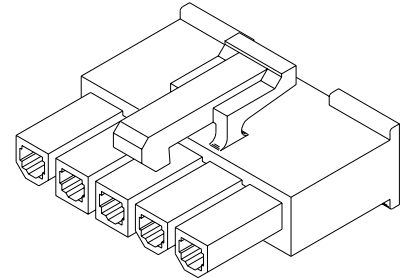
Operating Temperature: -40 to +105°C



## 4.20mm (.165") Pitch Mini-Fit, Jr.™ Receptacle

**5557**

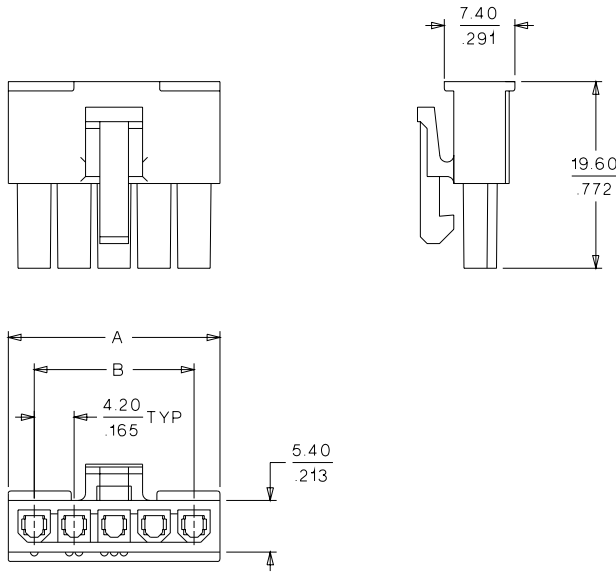
### Single Row



Power Connectors

F

## CATALOG DRAWING (FOR REFERENCE ONLY)



	Order No.
Polarizing Key	15-04-0211

## ORDERING INFORMATION AND DIMENSIONS

Circuits	Order No.		Dimension	
	94V-2	94V-0	A	B
3*	39-01-4030	39-01-4031	13.80 (.543)	8.40 (.331)
4	39-01-4040	39-01-4041	18.00 (.709)	12.60 (.496)
5	39-01-4050	39-01-4051	22.20 (.874)	16.80 (.661)

• US Standard Product, available through Molex franchised distributors

\* 3-circuit receptacle 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

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



# PRODUCT SPECIFICATION

## NGS

### 4.1 VOLTAGE

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

### 4.2 CURRENT AND APPLICABLE WIRES

<b>Maximum Insulation Diameter and Applicable Wire Gauges</b>	16 AWG: 3.10/. 122 MAXIMUM			
	18-24 AWG: 3.10/. 122 MAXIMUM			
<b>MAXIMUM CURRENT RATING (Amperes)</b>				
<div>Ckt. Size Wire</div>	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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4	Insulation Resistance	Mate connectors: apply a voltage of 500 VDC between adjacent terminals and between terminals to ground.	1000 Megohms MINIMUM
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## 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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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).	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.
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## 5.2 MECHANICAL REQUIREMENTS (continued)

7	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).	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 $25 \pm 6$ mm ( $1 \pm \frac{1}{4}$ 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 $25 \pm 6$ mm ( $1 \pm \frac{1}{4}$ 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 $105 \pm 2^\circ\text{C}$	20 milliohms MAXIMUM & Visual: No Damage
3	Humidity (Steady State)	Mate connectors: expose to a temperature of $60 \pm 2^\circ\text{C}$ 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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# PRODUCT SPECIFICATION

4	<b>Solderability</b>	Per SMES-152	Solder coverage: 95% MINIMUM (per SMES-152)
5	<b>Solder Resistance</b>	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	<b>Cold Resistance</b>	Mate connectors: Duration: 96 hours; Temperature: -40 ± 3°C	20 milliohms MAXIMUM Visual: No Damage
7	<b>Corrosive Atmosphere: Sulfur Dioxide Gas (SO<sub>2</sub>)</b>	Mate connectors: Duration: 24 hours exposure. Atmosphere: 50 parts per million (ppm) SO <sub>2</sub> 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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