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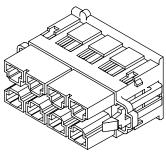
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Jameco Part Number 1300697

# 10.00mm (.393") Pitch Mini-Fit Sr.™ **Receptacle and TPA Clip**

43914/43980

**Dual Row** 



#### **Features and Benefits**

- High current
- Fully polarized
- Positive locks
- Low engagement force
- Wire-to-wire, wire-to-board (vertical only)
- Mandatory 43980 Series Terminal Position Assurance (TPA) clip, order separately

#### **Reference Information**

Product Specification: PS-42815-001

Packaging: Bag UL File No.: E29179 CSA File No.: LR19980 TUV License No: R9751144

Mates With: 43938 plug housing and 43915 header Use With: 42815 female terminal and 43980 Terminal

Position Assurance (TPA) clip **Designed In: Millimeters** 

Dual Row Receptacles		TPA Clip	
Circuits	Order No.	Circuits	Order No.
6	<u>43914-1101</u>	6	<u>43980-1001</u>
8	<u>43914-1102</u>	8	<u>43980-1002</u>
10	<u>43914-1103</u>	10	<u>43980-1003</u>
12	<u>43914-1104</u>	12	<u>43980-1004</u>
14	43914-1105	14	43980-1005

**Electrical** 

Voltage: 600V Current: 43.0A max\*

Insulation Resistance: 1000 Megohms min. Dielectric withstanding voltage: 2200V

#### Mechanical

Contact Insertion Force: 29.4N max. Contact Retention to Housing: 98.1N min.

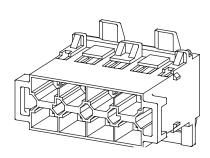
Housing: Polyester, UL 94V-0 Operating Temperature: -40 to +105°C

\*Depending on circuit size, wire gauge and PCB. Please refer to product specification.

# 10.00mm (.393") Pitch Mini-Fit Sr.™ Plug and TPA Clip

43938/43980

**Dual Row Panel Mount** 



#### **Features and Benefits**

- High current
- Fully polarized
- Positive locks
- Low engagement force
- Wire-to-wire
- Mandatory 43980 Series Terminal Position Assurance (TPA) clip, order separately

#### **Reference Information**

Product Specification: PS-42815-001

Packaging: Bag UL File No.: E29179 CSA File No.: LR19980 TUV License No: R9751144

Mates With: 43914 Receptacle housing

Use With: 42817 male terminal and 43980 Terminal

Position Assurance (TPA) clip **Designed In: Millimeters** 

#### **Electrical**

Voltage: 600V Current: 43.0A max\*

Insulation Resistance: 1000 Megohms min. Dielectric withstanding voltage: 2200V

Contact Insertion Force: 29.4N max. Contact Retention to Housing: 98.1N min.

#### **Physical**

Housing: Polyester, UL 94V-0 Operating Temperature: -40 to +105°C \*Depending on circuit size and wire gauge. Please refer to product specification.

Dual Row Plug		TPA	Clip
Circuits	Order No.	Circuits	Order No.
6	<u>43938-2101</u>	6	<u>43980-1001</u>
8	<u>43938-2102</u>	8	<u>43980-1002</u>
10	<u>43938-2103</u>	10	<u>43980-1003</u>
12	<u>43938-2104</u>	12	<u>43980-1004</u>
14	43938-2105	14	43980-1005

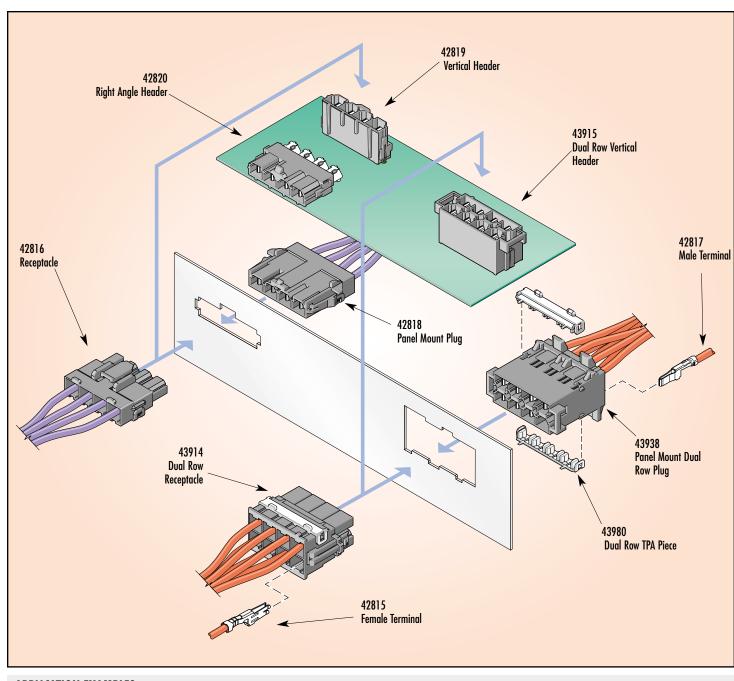


- Wire-to-Wire (Free hanging and panel mount)
- Wire-to-Board
- Mandatory Terminal Position Assurance (TPA) Piece
- Voltage: 600V
- Current: 50.0A Max.\*
- Temperature: -40 to +105°C

	molex®10.00mm (.393") Pitch Mini-Fit, Sr.™	
s°C		
C:va		

	Series	Description	Mates With/ Use With	Material	Circuits/ Wire Gauge	Features and Benefits
Terminals						
	42817	Male Terminal	Mates with 42815 Terminal Used in 42818 and 43938 Housings	Tin or Select Gold Plated		
	42815	Female Terminal	Mates with 42817 Terminal and PCB Header Terminal Used in 42816 and 43914 Housings	Conner Alloy AWG		Low insertion force design for greater ease in mating
Single Row Housin	gs					
	42816	Receptacle Housing	42818, 42819, 42820	Black Polyester,	2, 3, 4, 5, and 6	<ul> <li>TPA (Terminal Position Assurance) piece attached to housing to prevent terminal backouts</li> <li>Positive latch guards against accidental disengagement of housings</li> <li>Polarized housing assures proper mating</li> <li>Used in wire-to-wire and wire-to-board applications</li> </ul>
	42818	Plug Housing	42816	UL 94V-0	Circuits	<ul> <li>TPA (Terminal Position Assurance) clip attached to housing must be used at all times to prevent terminal backouts</li> <li>Used in wire-to-wire applications (Panel Mount or Free Hanging) only</li> </ul>
Single Row PC Boo	Single Row PC Board Headers					
	42819	Vertical Header	42816	UL 94V-0 ' 2, 3, 4, 5 and 6	2, 3, 4, 5 and 6 Gircuits Accommodates 1.57, 2.36, 3.18 and	■ SMC (Surface Mount Compatible) ■ Metal fork locks for secure retention to PC Board
Charles & Charle	42820	Right Angle Header	42816			Accommodates 1.57, 2.36, 3.18 and 6.35mm (.062, .093, .125 and .250") thick PC Boards
Dual Row Housing	s					
	43914	Receptacle Housing	43938, 43915	Black Polyester,	6, 8, 10, 12	<ul> <li>Mandatory TPA (Terminal Position Assurance) piece (43980 Series) sold separately</li> <li>Positive latch guards against accidental disengagement of housings</li> <li>Polarized housing assures proper mating</li> <li>Used in wire-to-wire or wire-to-board applications</li> </ul>
	43938	Plug Housing	43914	UL 94V-0 and 14 Circuits		<ul> <li>Mandatory TPA (Terminal Position Assurance) piece (43980 Series) sold separately</li> <li>Used in wire-to-wire applications (Panel Mount or Free Hanging)</li> </ul>
Dual Row TPA (Ter	minal P	osition Assu	rance Piece)			
	43980	TPA	Must Use With 43914, 43938	White Polyester, UL 94V-0	6, 8, 10, 12 and 14 Circuits	<ul> <li>Virtually eliminates terminal back out.</li> <li>White color for easy activation identification</li> </ul>
Dual Row Vertical	PC Boar	d Header				
	43915	Vertical Header	43914	Housing: Black Glass-filled 4/6 Nylon, UL 94V-0 Terminals: Tin or Select Gold Plated Copper Alloy	6, 8, 10, 12 and 14 Circuits	<ul> <li>SMC (Surface Mount Compatible)</li> <li>Metal fork locks for secure retention to PC Board</li> <li>Accommodates 1.57, 2.36, 3.18 and 6.35mm (.062, .093, .125 and .250")</li> <li>Thick PC Boards</li> </ul>





#### **APPLICATION EXAMPLES**



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### MINI-FIT SR. SERIES

#### 1.0 SCOPE

This specification covers the 10.00 mm / (.394 in.) centerline tin and gold plated connector series, single and dual row versions in wire to wire and wire to printed circuit board applications. This product performance is optimized for stranded tinned wire termination.

#### 2.0 PRODUCT DESCRIPTION

#### 2.1 PRODUCT NAME AND PART NUMBER

Product Name	Part Number
Female Terminal	42815-****
Male Terminal	42817-***
Receptacle (single row)	42816-****
Plug (single row)	42818-***
Vertical Header (single row)	42819-****
Right Angle Header (single row)	42820-****
Receptacle (dual row)	43914-***
TPA (dual row)	43980-****
Vertical Header (dual row)	43915-****
Panel Mount Plug (dual row)	43938-***

#### 2.2 DIMENSIONS, MATERIALS PLATINGS & MARKINGS.

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

#### 3.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS

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

3.1 Agency Approvals

UL File #E29179

CSA Certificate #LR 19980-555

TUV Certificate #R 9751144, #R 9950481

#### 4.0 RATINGS

#### 4.1 VOLTAGE RATINGS

IEC 950 250 Volts AC (RMS) / DC UL / CSA 600 Volts AC (RMS) / DC

TUV 250 Volts AC

REVISION:	ECR/ECN INFORMATION:	TITLE:			SHEET No.
16	EC No: UCP2007-0850	PRODUCT S	PECIFICATION FO	OR MINI-	<b>1</b> of <b>8</b>
DATE: 2006 / 10 / 05		FIT SR. (	CONNECTOR SYS	TEM	1 01 6
DOCUMENT NUMBER:		CREATED / REVISED BY:	CHECKED BY:	APPRO\	/ED BY:
PS-42815-001		M. CARRANZA	J. COMERCI	J. COM	MERCI
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#### 4.2 CURRENT RATINGS

Rating is established based on MIL-W-5088 max. current capacity guidelines for copper conductors and test data summary TS-42815-001 section 5.3.7. Test data is based on 30 deg. C temperature rise using tin-plated terminals and UL 1015 tin stranded wire.

Single Row Product (tested to 30degC max. rise)

_	2ckt. W to W	2ckt. W to PCB**	6ckt W to	6ckt. W to
			W	PCB**
16 AWG	13A	13A	13A	13A
14 AWG	17A	17A	17A	17A
12 AWG	23A	23A	23A	23A
10 AWG	33A	33A	33A	33A
8 AWG	50A	48A	45A	37A
12AWG	40A	40A		
Double Crimp	(20A per wire)	(20A per wire)		

Note: CSA ratings are as follows; 12AWG = 23A max., 10AWG = 30A max. TUV ratings are as follows; 12AWG = 23A max., 10AWG = 33A max. \*\*PCB trace design may greatly effect temperature rise results.

Dual Row Product (tested to 30degC max. rise)

	6ckt. W to W	6ckt. W to PCB**	14ckt W to W	14ckt. W to PCB**
16 AWG	13A	13A	13A	12A
14 AWG	17A	17A	17A	16A
12 AWG	23A	23A	23A	22A
10 AWG	32A	31A	29A	28A
8 AWG	43A	37A	38A	36A

<sup>\*\*</sup>PCB trace design may greatly affect temperature rise results.

#### 4.3 TEMPERATURES

Operating: -40 Degrees C to +105 Degrees C Non-operating: -40 Degrees C to +105 Degrees C

(Including 30 degrees C terminal temperature at full current)

REVISION:	ECR/ECN INFORMATION:	TITLE:			SHEET No.	
16	EC No: UCP2007-0850	PRODUCT S	PRODUCT SPECIFICATION FOR MINI-		. 2 of 8	
10	DATE: 2006 / 10 / 05	FIT SR. (	<b>2</b> 01 <b>0</b>			
DOCUMENT NUMBER:		CREATED / REVISED BY:	CHECKED BY:	APPRO\	/ED BY:	
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### 5.0 PERFORMANCE

### 5.1 ELECTRICAL PERFORMANCE

Section	Item	Test Condition	Requirement
5.1.1	Initial Contact Resistance (low level)	Mate connectors, measure by dry circuit, 20mV max., 100mA. Wire resistance shall be removed from the measured value.	1.5 mOhm max. (tin) 1.0 mOhm max. (gold)
5.1.2	Insulation Resistance	Mate connectors, apply 500V DC between adjacent terminal or ground.	1000 M Ohm min.
5.1.3	Dielectric Strength	Mate connectors, apply 2200V AC for 1 minute between adjacent terminal or ground.	No breakdown
5.1.4	Contact Resistance (rated)	Measure contact resistance at rated current.	1.5 mOhm max. (tin) 1.0 mOhm max. (gold)
5.1.5	Contact Resistance on Crimp	Crimp the wire to the terminal, measure crimp resistance by dry circuit, 20mV max., 100mA	1.0 mOhm max.

REVISION:	ECR/ECN INFORMATION:	TITLE:			SHEET No.
16	EC No: UCP2007-0850	PRODUCT S	SPECIFICATION FO	OR MINI-	3 of 8
10	DATE: 2006 / 10 / 05	FIT SR. (	CONNECTOR SYS	TEM	3 01 0
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### 5.2 MECHANICAL PERFORMANCE

Section	Item	Test Condition	Requirement
5.2.1	Contact Insertion and Withdrawal	Insert and withdraw a contact at a speed rate of 25 +/- 6mm / minute	Max. Insertion = 3Kg Min. Withdrawal = 0.5Kg
5.2.2	Connector Insertion and Withdrawal	Insert and withdraw a connector at a rate of 25 +/-6mm / minute	Max. Insertion = 3.0Kg/ckt. Min. Withdrawal = 0.5Kg/ckt.
5.2.3	Terminal Insertion Force	Insert the crimped terminal into the housing.	Max. Insertion = 7.0Kg
5.2.4	Crimp Terminal Retention Force	Apply axial pull out force at a speed rate of 25 +/- 6mm / minute on the terminal assembled in the housing and with the TPA cover installed.	Min. Retention = 10Kg
5.2.5	Header Terminal Retention Force	Apply axial pull out force at a speed rate of 25 +/- 6mm / minute on the terminal assembled in the housing.	Min. Retention = 2.0Kg
5.2.6	Wire Pull Out Force	Mount the crimped terminal, apply an axial pull out force on the wire at a speed rate of 25 +/- 6mm / minute.	16AWG = 14Kg 14AWG = 23Kg 12AWG = 31Kg 10AWG = 36Kg 8AWG = 40Kg
5.2.7	Normal Force	Apply a perpendicular force at a speed rate of 25 +/- 6mm / minute.	200 g min.
5.2.8	PCB Insertion and Withdrawal Force	Apply force perpendicular to the housing at a speed rate of 25 +/- 6mm minute as shown.	Insertion = 2Kg max. Withdrawal = 1Kg min.
5.2.9	Panel Insertion & Withdrawal	Insert and withdraw a connector at a speed rate of 25 +/- 6mm / minute	Insertion = 5Kg max. Withdrawal = 10Kg min.

REVISION:	ECR/ECN INFORMATION:	TITLE:			SHEET No.
16	EC No: UCP2007-0850	PRODUCT S	SPECIFICATION FO	OR MINI-	<b>4</b> of <b>8</b>
	DATE: 2006 / 10 / 05	FIT SR. (	CONNECTOR SYS	TEM	400
DOCUMENT NUMBER:		CREATED / REVISED BY:	CHECKED BY:	APPRO\	/ED BY:
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# 5.2 MEACHANICAL PERFORMANCE (continued)

Section	Item	Test Condition	Requirement
5.2.10	Latch Yield Strength (only 43914 receptacle w/ 43938 plug)	Insert and withdraw connector housings (30 times) and pull apart at a speed rate of 25 +/- 6mm / minute	Yield = 7.0Kg min.
5.2.10A	Latch Yield Strength (all other)	Insert and withdraw connector housings (30 times) and pull apart at a speed rate of 25 +/- 6mm / minute	Yield = 10.0Kg min.
5.2.11	Durability (tin)	Insert and withdraw connectors (30 times) at a maximum rate of 10 cycles per minute prior to environmental tests.	Contact Res. change = 1.0mOhm max.
5.2.11A	Durability (gold)	Insert and withdraw connectors (100 times) at a maximum rate of 10 cycles per minute prior to environmental tests.	Contact Res. change = 1.0mOhm max.
5.2.12	Vibration without lubrication (tin) <b>Not</b> <b>Recommended</b>	(30 times) at a maximum rate of 10 cycles per minute prior to environmental tests.	Contact Res change =. 4.0mOhm max Discontinuity not greater than 1 microsecond
5.2.12A	Vibration with lubrication (tin) (Nyogel 760G)	Amplitude: 1.50 mm peak to peak Sweep: 10-50-10 Hz in one minute Duration: 2 hours in each X-Y-Z axis.	Contact Res change =. 1.0mOhm max Discontinuity not greater than 1 microsecond
5.2.12B	Vibration without lubrication (gold)	Amplitude: 1.50 mm peak to peak Sweep: 10-55-10 Hz in one minute Duration: 2 hours in each X-Y-Z axis.	Contact Res change =. 1.0mOhm max Discontinuity not greater than 1 microsecond
5.2.13	Mechanical Shock	Sweep: 10-50-10 Hz in one minute Duration: 2 hours in each X-Y-Z axis.	Contact Res. change = 1.0mOhm max. Discontinuity not greater than 1 microsecond

REVISION:	ECR/ECN INFORMATION:	TITLE:			SHEET No.
16	EC No: UCP2007-0850	PRODUCT S	SPECIFICATION FO	OR MINI-	<b>5</b> of <b>8</b>
10	DATE: 2006 / 10 / 05	FIT SR. 0	CONNECTOR SYS	TEM	3016
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### 5.3 ENVIRONMENTAL PERFORMANCE

Section	Item	Test Condition	Requirement
5.3.1	Cold Resistance	-40 +/- 3 degrees C for 96 hrs.	Appearance: No damage Contact Res. change = 1.0mOhm max.
5.3.2	Thermal Shock	Mate connectors, expose to 25 cycles of: -40 +0/-3 deg. C for 30 minutes +25 +/- 10 deg. C for 5 minutes max. +105 +3/-0 deg. C for 30 minutes +25 +/- 10 deg. C for 5 minutes max.	Appearance: No damage  Contact Res. change = 1.0mOhm max.
5.3.3	Thermal Aging	Mate connectors, expose to 240 hours at 105 +/- 2 deg. C	Appearance: No damage  Contact Res. change = 1.0mOhm max
5.3.4	Humidity (Steady State)	Mate connectors, expose to a temperature of 40 +/- 2 deg. C with a relative humidity of 90% to 95% for 96 hours.	Appearance: No damage Contact Res. change = 1.0mOhm max Dielectric withstanding voltage: No breakdown Insul. res: 1000M Ohm min.
5.3.5	Humidity (cyclic) without lubrication Not Recommended	Mate connectors, expose to 25 cycles at 90% to 95% relative humidity with a transition time of 2.5 hrs. between extremes. +25 +/- 10 deg. C for 5 minutes max. +65 +3/-0 deg. C for 30 minutes	Appearance: No damage  Contact Res. change = 2.0mOhm max  Dielectric withstanding voltage: No breakdown  Insul. res: 1000M Ohm min.

REVISION:	ECR/ECN INFORMATION:	TITLE:			SHEET No.
16	EC No: UCP2007-0850	PRODUCT S	PECIFICATION FO	OR MINI-	<b>6</b> of <b>8</b>
10	DATE: 2006 / 10 / 05	FIT SR. (	CONNECTOR SYS	TEM	000
DOCUMENT NUMBER:		CREATED / REVISED BY:	CHECKED BY:	APPRO\	/ED BY:
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# 5.3 ENVIRONMENTAL PERFORMANCE (cont.)

Section	Item	Test Condition	Requirement
5.3.6	Immunity to Fretting Corrosion	Mate connectors, expose to 500 cycles with a max. transition time of 5 minutes between extremes.	Appearance: No damage
	without lubrication. (tin) Not Recommended	+25 +/- 10 deg. C for 30 minutes +70 +3/-0 deg. C for 30 minutes	Contact Res. change = 4.0mOhm max
5.3.6A	Immunity to Fretting Corrosion with	Mate connectors, expose to 500 cycles with a max. transition time of 5 minutes between extremes.	Appearance: No damage
	lubrication. (tin) (Nyogel 760G)	+25 +/- 10 deg. C for 30 minutes +70 +3/-0 deg. C for 30 minutes	Contact Res. change = 1.0mOhm max
5.3.7	Temp. Rise & Current Cycling	Mate the connectors and measure the temperature rise at the rated current for 96 hrs., 45 minutes ON and 15 minutes OFF for 240 hrs., and an additional 96 hrs. of steady-state current.	Max. Temp. Rise = 30deg. C Per EIA 364 and CSA requirement
5.3.8	Solderability**	Solder time: 3 +/- 5 seconds Solder temp.: 260 +/- 5 deg. C	95% of the immersed area must show no voids or pin holes.
5.3.9	IR Process Resistance	245 +/- 3 deg. C for 4 minutes, allow to cool to room temperature, repeat for 3 cycles.  (To deter blistering of housing, parts should be baked for a minimum of 24 hours at 125 +5/-0 deg. C)	Appearance: No damage  Dimensional: Conformance to sales drawing requirements.
5.3.10	Resistance to Solder**	Solder time: 3 +/- 0.5 seconds Solder temp.: 260 +/- deg. C	Appearance: No damage

<sup>\*\*</sup>NOTE: This product is compatible with lead-free hand soldering temperatures.

REVISION:	ECR/ECN INFORMATION:	TITLE:			SHEET No.
16	EC No: UCP2007-0850	PRODUCT S	SPECIFICATION FO	OR MINI-	<b>7</b> of <b>8</b>
10	DATE: 2006 / 10 / 05	FIT SR.	CONNECTOR SYS	TEM	1016
DOCUMENT NUMBER:		CREATED / REVISED BY:	CHECKED BY:	APPRO\	/ED BY:
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# 5.3 ENVIRONMENTAL PERFORMANCE (cont.)

Section	Item	Test Condition	Requirement
5.3.11	Resistance to Solvents	Solvent: flourinert FC-70 (3M Corp.) Solvent temp: Boiling temp. Immersion time: 120 +/- 5 seconds  Solvent: Alpha 1003 (Alpha Metal) Solvent: Isopropyl Alcohol Solvent Temp.: Boiling temp. Immersion time: 240 +/- 5 seconds  Repeat in solvent 5 times. Rinse with deionized water between	Appearance: No damage
		cycles.	

REVISION:	ECR/ECN INFORMATION:	<u>                                    </u>	IILE:		SHEET No.
16	EC No: UCP2007-0850	PRODUCT S	PECIFICATION FO	OR MINI-	<b>8</b> of <b>8</b>
	DATE: 2006 / 10 / 05	FIT SR. C	FIT SR. CONNECTOR SYSTEM		
DOCUMENT NUMBER:		CREATED / REVISED BY:	CHECKED BY:	APPRO\	/ED BY:
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