PRODUCT SPECIFICATION

MINI-FIT JR. CONNECTOR SYSTEM
COMPLIANT PIN INTERFACE (CPI)
(WIRE TO PCB & PCB TO PCB)

1.0 SCOPE

This specification covers the 4.20 mm / (.165 in.) centerline (pitch) Mini-Fit Jr. Compliant Pin Interface (Mini-Fit CPI™) dual row connector system in wire to board and board to board applications.

2.0 PRODUCT DESCRIPTION

2.1 PRODUCT NAME AND PART NUMBER

Product Name	Part Number
Female Terminal	5556-****
Receptacle (dual row)	5557-****
BMI Receptacle Header (dual row)	42385-****
BMI Receptacle (dual row)	42474-****
CPI Vertical Header	43879-****

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

4.0 RATINGS

4.1 VOLTAGE RATINGS

UL / CSA 600 VOLTS AC (RMS) / DC

4.2 CURRENT RATINGS

(tested to 30deg.C max. rise above ambient)

Brass or Phosphor Bronze terminals with Tin or Gold Plating

	Ckt. Size / Wire Awg.	2	4 - 6	7 - 10	12 - 24
Maximum Rated Current	16 Awg	8 Amperes	7 Amperes	6 Amperes	5 Amperes
	18 Awg	8 Amperes	7 Amperes	6 Amperes	5 Amperes
	20 Awg	6 Amperes	5 Amperes	4 Amperes	4 Amperes
	22 Awg	4 Amperes	3 Amperes	3 Amperes	3 Amperes
	24 Awg	3 Amperes	2 Amperes	2 Amperes	2 Amperes
	26 Awg	2 Amperes	1 Amperes	1 Amperes	1 Amperes
	28 Awg	1 Amperes	1 Amperes	1 Amperes	1 Amperes
Header to Header	Ckt. Size	2	4 - 6	7 - 10	12 - 24
	Current	8 Amperes	7 Amperes	6 Amperes	6 Amperes

4.3 TEMPERATURES

Operating:* -40 Degrees C to +105 Degrees C

Nonoperating: -40 Degrees C to +105 Degrees C

*(Including 30 degrees C terminal temperature at full current)

Note: The Mini-Fit CPI™ connector system was not designed or tested for either current sharing or hot plugging (mating and unmating of live circuits). Use of this connector system in these types of applications is not recommended and is not within the scope of this product specification.

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.	10 mΩ max.
5.1.2	Insulation Resistance	Mate connectors, apply 500V AC for 1 minute adjacent terminal or ground.	1000 MΩ min.
5.1.3	Dielectric Strength	Mate connectors, apply 1500V AC for 1 minute between adjacent terminal or ground.	No breakdown.
5.1.4	Compliant Pin Interface Resistance	Insert individual Compliant Pin terminal into printed circuit board.	1.0 mΩ max.

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± 6 mm / Minute	Max. Insertion = 1.5Kg. Min. Withdrawal = .01Kg.
5.2.2	Connector Insertion and Withdrawal	Insert and withdraw a connector at a rate of 25± 6 mm / Minute	Max. Insertion = 1.5Kg/ckt. Min. Withdrawal = 0.1Kg/ckt.
5.2.3	Crimp Terminal Insertion Force	Insert the crimped terminal into the housing	Max. Insertion = 1.5Kg
5.2.4	Crimp Terminal Retention Force	Apply axial pull out force at a speed rate of 25± 6 mm/minute on the terminal assembled in the housing and with the TPA cover installed.	Min. Retention = 3.0Kg
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 = 1.0Kg
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.	16 Awg = 9.0 Kg Min. 18 Awg = 9.0 Kg Min. 20 Awg – 6.0 Kg Min. 22 Awg = 4.0 Kg Min. 24 Awg = 3.0 Kg Min. 26 Awg = 2.0 Kg Min. 28 Awg = 1.0 Kg Min.
5.2.7	Normal Force	Apply a perpendicular force at a speed rate of 25± 6 mm / minute.	150 g min.
5.2.8	Compliant Pin Insertion and Retention Force	Insert Compliant Pin terminal at a speed rate of 25± 6 mm / minute into printed circuit board.	Insertion = 20 Kg max. Withdrawal = 2 Kg min.
5.2.9	Panel Insertion & Withdrawal	Insert and withdraw a connector at a speed rate of 25± 6 mm / minute	Insertion = 23 Kg max. Withdrawal = 12 Kg min.
5.2.10	Durability	Insert and withdraw connectors (30 times) at a maximum rate of 10 cycles per minute prior to environmental tests.	Contact Res. Change = 20 mΩ max.
5.2.11	Vibration	Amplitude: 1.50 mm peak to peak Sweep: 10-50-10 Hz in one minute	Contact Res. Change = 20 MΩ max.

		Duration: 2 hours in each X-Y-Z axis.	Discontinuity not greater than 1 μsecond.

5.2 MECHANICAL PERFORMANCE (continued)

Section	Item	Test Condition	Requirement
5.2.12	Mechanical Shock	50 G's with three saw tooth wave form shocks in each X-Y-Z axis	Contact Res. Change = 20 mΩ max. Discontinuity not greater than 1 μsecond

5.3 ENVIRONMENTAL PERFORMANCE

Section	Item	Test Condition	Requirement
5.3.1	Cold Resistance	-40± -3°C for 96 hrs.	Appearance: No damage Contact Res. Change =20mΩ max.
5.3.2	Thermal Shock	Mate connectors, expose to 10 cycles of: -55 +0-3°C for 30 minutes +105± 10°C for 5 minutes max.	Appearance: No damage Contact Res. Change =20mΩ max.
5.3.3	Thermal Aging	Mate connectors, expose to 240 hours at 1-5 ±2°C	Appearance: No damage Contact Res. Change =1.0 mΩ max.
5.3.4	Humidity (Steady State)	Mate connectors, expose to a temperature of 60±2°C with a relative humidity of 90% to 95% for 96 hours.	Appearance: No damage Contact Res. Change = 20 mΩ max. Dielectric withstanding voltage: No breakdown Insul res. 1000MΩ min
5.3.5	Immunity to Fretting Corrosion	Mate connectors, expose to 500 cycles with a max. transition time of 5 minutes between extremes. +25±10°C for 30 minutes +70+3/-0°C for 30 minutes	Appearance: No damage Contact Res. Change: =20mΩ max.

5.3 ENVIRONMENTAL PERFORMANCE (cont.)

Section	Item	Test Condition	Requirement
5.3.6	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 = 30°C above ambient.

6.0 PACKAGING

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