



PRODUCT SPECIFICATION

MINI-FIT BMI CONNECTOR SYSTEM (WIRE TO PCB & PCB TO PCB)

1.0 SCOPE

This specification covers the 4.20 mm / (.165 in.) centerline (pitch) Mini-Fit BMI dual row connector system in wire to board and board to board applications.

2.0 PRODUCT DESCRIPTION

2.1 PRODUCT NAME AND PART NUMBER

<u>Product Name</u>	<u>Part Number</u>
Female Terminal	5556-****
Male Terminal	5558-****
Receptacle (dual row)	5557-****
BMI Receptacle Header (dual row)	42385-****
BMI Receptacle (dual row)	42474-****
BMI Vertical Header (dual row)	44068-****
BMI Right Angle Header (dual row)	43810-****
BMI Right Angle Header (dual row)	46244-****

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 1998

4.0 RATINGS

4.1 VOLTAGE RATINGS

UL / CSA 600 Volts AC (RMS) / DC

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

Brass terminals with Tin or Gold Plating

	Ckt. Size / Wire Awg.	2	4 - 6	7 - 10	12 - 24
Maximum Rated Current	16 Awg	9 Amperes	8 Amperes	7 Amperes	6 Amperes
	18 Awg	9 Amperes	8 Amperes	7 Amperes	6 Amperes
	20 Awg	7 Amperes	6 Amperes	5 Amperes	5 Amperes
	22 Awg	5 Amperes	4 Amperes	4 Amperes	4 Amperes
	24 Awg	4 Amperes	3 Amperes	3 Amperes	3 Amperes
	26 Awg	3 Amperes	2 Amperes	2 Amperes	2 Amperes
	28 Awg	2 Amperes	1 Amperes	1 Amperes	1 Amperes
Header to Header	Ckt. Size	2	4 - 6	7 - 10	12 - 24
	Current	9 Amperes	8 Amperes	7 Amperes	6 Amperes

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	5 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)

4.4 SOLDER PROCESS TEMPERATURE

Wave solder: 260 °C Maximum
 Reflow solder: 235 °C Maximum

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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.	10 mΩ max.
5.1.2	Insulation Resistance	Mate connectors, apply 500V DC between adjacent terminal or ground.	1000 MΩmin.
5.1.3	Dielectric Strength	Mate connectors, apply 1500V AC for 1 minute between adjacent terminal or ground.	No breakdown
5.1.4	Contact Resistance (rated)	Measure contact resistance at rated current.	10 mΩ max.
5.1.5	Contact Resistance on Crimp	Crimp the wire to the terminal, measure crimp resistance by dry circuit, 20mV max., 100mA	5.0 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 = 1.5 Kg Min. Withdrawal = 0.1 Kg
5.2.2	Connector Insertion and Withdrawal	Insert and withdraw a connector at a rate of 25 +/- 6 mm / minute	Max. Insertion = 1.5 Kg/ckt. Min. Withdrawal = 0.1 Kg/ckt.
5.2.3	Crimp Terminal Insertion Force	Insert the crimped terminal into the housing.	Max. Insertion = 1.5 Kg
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 = 3.0 Kg
5.2.5	Header Terminal Retention Force	Apply axial pull out force at a speed rate of 25 +/- 6 mm / minute on the terminal assembled in the housing.	Min. Retention = 0.5 Kg

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5.2 MECHANICAL PERFORMANCE (continued)

Section	Item	Test Condition	Requirement
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 +/- 6 mm / 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	PCB Engagement And Separation Forces	Engage and separate a connector at a rate of 25 +/- 6 mm (1 ± ¼ inch) per minute. (Applies to parts with PCB retention features only)	Press-Fit Insertion = 6 Kg. Max. Withdrawal = .5 Kg. Min.
			Metal Clip Insertion = 5 Kg. Max. Withdrawal = 1 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 = 16 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.	= 20 mΩ max.
5.2.11	Vibration	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 = 20 mΩ max. Discontinuity not greater than 1 μsecond
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

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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 = 20 mΩ max.
5.3.2	Thermal Shock	Mate connectors, expose to 10 cycles of: -55 +/-3 deg. C for 30 minutes +105 +/- 10 deg. C for 5 minutes max.	Appearance: No damage Contact Res. change = 20 mΩ max.
5.3.3	Thermal Aging	Mate connectors, expose to 96 hours at 105 +/- 2 deg. C	Appearance: No damage Contact Res. change = 20 mΩ max
5.3.4	Humidity (Steady State)	Mate connectors, expose to a temperature of 60 +/- 2 deg. 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.

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5.3 ENVIRONMENTAL PERFORMANCE (cont.)

Section	Item	Test Condition	Requirement
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 deg. C for 30 minutes +70 +3/-0 deg. C for 30 minutes	Appearance: No damage Contact Res. change = 20 mΩ max
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 = 30deg. C
5.3.7	Solderability	Per SMES-152	Solder coverage: 95% minimum (per SMES-152)
5.3.8	Solder Resistance	A) Wave Solder Process Dip connector terminal tails in solder; Solder Duration: 10 seconds MAX Solder Temperature: 260°C MAX Per ES-40000-5013 B) Convection Reflow Solder Process 235°C MAX Per ES-40000-5013	Visual: No damage to insulator material

6.0 PACKAGING

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

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