



PRODUCT SPECIFICATION

MICRO-FIT BMI FLOATING CONNECTOR SYSTEM

1.0 SCOPE

This Product Specification covers the 3.00 mm (.118 inch) centerline (pitch) connector system terminated with 20 to 30 AWG wire using crimp technology with tin plating.

2.0 PRODUCT DESCRIPTION

2.1 PRODUCT NAME AND SERIES NUMBERS

Micro-Fit Dual Row BMI Floating Receptacle: 44133	Female Crimp Terminal: 43030
Micro-Fit Dual Row BMI Panel Mount Plug: 44300	Male Crimp Terminal: 43031
Micro-Fit Dual Row BMI Receptacle: 44764 and 44769	
Micro-Fit Dual Row BMI Headers: 44428 and 44432	
Micro-Fit Dual Row BMI Vertical CPI Header : 45280	
Test Plug: 44242 (recommended for continuity testing only)	

2.2 DIMENSIONS, MATERIALS, PLATINGS AND MARKINGS

Crimp Terminals: Phosphor Bronze
 Receptacle and Plug: Polyester
 Headers: High Temp Nylon
 Pins: Brass, Modified Tin/Brass, Phosphor Bronze

2.3 SAFETY AGENCY APPROVALS

UL File Number:..... E29179
 CSA:..... LR19980
 TUV.....72081037

3.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS

Test Summary: TS-43045-001

4.0 RATINGS

4.1 SAFETY AGENCY RATINGS

Series	Agency Voltage Rating (AC RMS or DC)			Agency Current Rating (Single Circuit) (Amps)		
	UL	CSA	TUV	UL	CSA	TUV
44133	250	250	250	N/A	7	5
44300	250	250	250	N/A	7	5
44428	600	250	250	N/A	5	5
44432	250	250	250	N/A	5	5
44764	600	250	250	N/A	5	5
44769	250	250	250	N/A	5	5
45280	600	250	250	N/A	5	5

(Current ratings are maximum and may vary depending on wire size, circuit count, and end-use application. Further testing may be required in the end-use application.)

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4.2 CURRENT DERATING AND APPLICABLE WIRES

Current is dependent on connector size, contact material, plating, ambient temperature, printed circuit board characteristics and related factors. Actual current rating is application dependent and should be evaluated for each application.

AWG	Max. Outside Insulation Diameter
20	1.85 mm (.073 inch)
22	1.85 mm (.073 inch)
24	1.85 mm (.073 inch)
26	1.27 mm (.050 inch)
28	1.27 mm (.050 inch)
30	1.27 mm (.050 inch)

CURRENT DERATING REFERENCE INFORMATION

AWG	2-circuit		6-circuit		12-circuit		24-circuit	
	W-W	W-B	W-W	W-B	W-W	W-B	W-W	W-B
	Amps	Amps	Amps	Amps	Amps	Amps	Amps	Amps
20	6.5	7	5	* 5.5	4.5	* 5	* 4	4.5
22	5.5	* 6	* 4	* 4.5	* 3.5	* 4	* 3	* 3.5
24	5	5.5	4	* 4.5	3	* 3.5	* 2	* 3
26	4	4.5	3	* 4	2.5	* 3.5	* 1.5	2.5
28	3	* 4	* 2	* 3	* 2	* 3	* 1	* 2
30	3	3.5	2	* 3	2	* 2.5	* 1	1

- 1) Values are for REFERENCE ONLY.
- 2) Current deratings are based on not exceeding 30°C Temperature Rise.
- 3) PCB trace design can greatly affect temperature rise results in Wire-to-Board applications.
- 4) Data is for all circuits powered.
- 5) * indicates interpolated information.
- 6) **W-W**: Wire-to-Wire **W-B**: Wire-to-Board

4.3 CURRENT FOR TEST PLUG 44242

2.5 Amps Maximum (Pogo pin current capacity)
(Test plugs are for testing purposes only and not intended for continuous use.)

4.4 TEMPERATURE

Operating: -40°C to +105°C (Including Terminal Temperature Rise)
Nonoperating: -40°C to +105°C

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5.0 PERFORMANCE

5.1 ELECTRICAL REQUIREMENTS

DESCRIPTION	TEST CONDITION	REQUIREMENT
Contact Resistance (Low Level)	Mate connectors: apply a maximum voltage of 20 mV and a current of 100 mA.	10 milliohms MAXIMUM [initial]
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]
Insulation Resistance	Unmate & unmount connectors: apply a voltage of 500 VDC between adjacent terminals and between terminals to ground.	1000 Megohms MINIMUM
Dielectric Withstanding Voltage	Unmate connectors: apply a voltage of {two times the rated voltage plus 1000 volts} VAC for 1 minute between adjacent terminals and between terminals to ground.	No breakdown; current leakage < 5 mA
Capacitance	Measure between adjacent terminals at 1 MHz.	2 picofarads MAXIMUM
Temperature Rise (via Current Cycling)	Mate connectors: measure the temperature rise at the rated current after: 1) 96 hours (steady state) 2) 240 hours (45 minutes ON and 15 minutes OFF per hour) 3) 96 hours (steady state)	Temperature rise: +30°C MAXIMUM

5.2 MECHANICAL REQUIREMENTS

DESCRIPTION	TEST CONDITION	REQUIREMENT
Connector Mate and Unmate Forces	Mate and unmate connector (male to female) at a rate of 25 ± 6 mm (1 ± ¼ inch) per minute. (per circuit) (Gage dimensions in Section 7.0)	8.0 N (1.8 lbf) MAXIMUM insertion force & 3.7 N (0.8 lbf) MINIMUM withdrawal force
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.	24.5 N (5.5 lbf) MINIMUM retention force

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5.2 MECHANICAL REQUIREMENTS

DESCRIPTION	TEST CONDITION	REQUIREMENT
Pin Retention Force (in Header)	Axial pullout force on the terminal in the housing at a rate of 25 ± 6 mm (1 ± ¼ inch) per minute.	13.3 N (3.0 lbf) MINIMUM retention force
Terminal Insertion Force (into Housing)	Apply an axial insertion force on the terminal at a rate of 25 ± 6 mm (1 ± ¼ inch).	14.7 N (3.3 lbf) MAXIMUM insertion force
Durability	Mate connectors up to 30 cycles for tin or gold at a maximum rate of 10 cycles per minute prior to Environmental Tests.	10 milliohms MAXIMUM (change from initial)
Vibration (Random)	Mate connectors and vibrate per EIA 364-28, test condition VII.	10 milliohms MAXIMUM (change from initial) & Discontinuity < 1 microsecond
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).	10 milliohms MAXIMUM (change from initial) & Discontinuity < 1 microsecond
Wire Pullout Force (Axial) Wire to Terminal	Apply an axial pullout force on the wire at a rate of 25 ± 6 mm (1 ± ¼ inch).	20 Awg: 57.9 N (13.0 lbf) 22 Awg: 35.5 N (8.0 lbf) 24 Awg: 26.6 N (6.0 lbf) 26 Awg: 13.3 N (3.0 lbf) 28 Awg: 8.9 N (2.0 lbf) 30 Awg: 6.6 N (1.5 lbf) MINIMUM pullout force
Normal Force	Apply a perpendicular force.	2.7 N (0.6 lbf) MINIMUM
Panel Retention Forces	Insert and withdraw a connector at a rate of 25 ± 6 mm (1 ± ¼ inch) per minute.	200 N (45 lbf) MINIMUM withdrawal force
Fretting Corrosion (Hammer Shock)	Mate connectors: strike test platform at a rate of 10 cycles per minute with a 0.98 N (100 gram) hammer for 20,000 cycles.	10 milliohms MAXIMUM (change from initial)
Compliant Pin Insertion Force into PCB Hole (45280 Series)	Apply an axial insertion force on the terminal at a rate of 25 ± 6 mm (1 ± ¼ inch).	106.7 N (24 lbf) MAXIMUM Insertion force (Per Terminal)
Compliant Pin Retention Force in PCB Hole (45280 Series)	Apply an axial extraction force on the terminal at a rate of 25 ± 6 mm (1 ± ¼ inch).	35.6 N (8 lbf) MINIMUM Retention force (Per Terminal)

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5.3 ENVIRONMENTAL REQUIREMENTS

DESCRIPTION	TEST CONDITION	REQUIREMENT										
Fretting Corrosion (Thermal Shock)	Mate connectors: expose for 1,000 cycles between temperatures 25 and 85°C; dwell 0.5 hours at each temperature. {Note: Remove surface moisture and air dry for 1 hour prior to measurements; monitor low level contact resistance every 250 cycles.}	10 milliohms MAXIMUM (change from initial)										
Shock (Thermal)	Mate connectors; expose to 5 cycles of: <table border="1"> <thead> <tr> <th>Temperature °C</th> <th>Duration (Minutes)</th> </tr> </thead> <tbody> <tr> <td>-40 +0/-3</td> <td>30</td> </tr> <tr> <td>+25 ±10</td> <td>5 MAXIMUM</td> </tr> <tr> <td>+105 +3/-0</td> <td>30</td> </tr> <tr> <td>+25 ±10</td> <td>5 MAXIMUM</td> </tr> </tbody> </table>	Temperature °C	Duration (Minutes)	-40 +0/-3	30	+25 ±10	5 MAXIMUM	+105 +3/-0	30	+25 ±10	5 MAXIMUM	10 milliohms MAXIMUM (change from initial)
Temperature °C	Duration (Minutes)											
-40 +0/-3	30											
+25 ±10	5 MAXIMUM											
+105 +3/-0	30											
+25 ±10	5 MAXIMUM											
Thermal Aging	Mate connectors; expose to: 96 hours at 105 ± 2°C or 500 hours at 85 ± 2°C	10 milliohms MAXIMUM (change from initial)										
Humidity (Steady State)	Mate connectors: expose to a temperature of 85 ± 2°C with a relative humidity of 90-95% for 96 hours. Note: Remove surface moisture and air dry for 1 hour prior to measurements.	10 milliohms MAXIMUM (change from initial) & Dielectric Withstanding Voltage: No Breakdown at 500 VAC & Insulation Resistance: 1000 Megohms MINIMUM										
Humidity (Cyclic)	Mate connectors: cycle per EIA-364-31: 10 cycles at temperature 25 ± 3°C at 80 ± 5% relative humidity and 65 ± 3°C at 50 ± 5% relative humidity; dwell time of 1.0 hour; ramp time of 0.5 hours. {Note: Remove surface moisture and air dry for 1 hour prior to measurements.}	10 milliohms MAXIMUM (change from initial) & Dielectric Withstanding Voltage: No Breakdown at 500 VAC & Insulation Resistance: 1000 Megohms MINIMUM										

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5.3 ENVIRONMENTAL REQUIREMENTS

Solderability	Per SMES-152	Solder coverage: 95% MINIMUM (per SMES-152)
Solder Resistance	Dip connector terminal tails in solder: Solder Duration: 5 ± 0.5 seconds; Solder Temperature: 260°C MAX (This simulates a Wave Solder Process)	Visual: No Damage to insulator material
Cold Resistance	Mate connectors: Duration: 96 hours; Temperature: -40 ± 3°C	10 milliohms MAXIMUM (change from initial)
Corrosive Atmosphere: Flowing Mixed Gas (FMG)	Mate connectors: Test per EIA-364-65, method 2A	10 milliohms MAXIMUM (change from initial)

6.0 PACKAGING

Parts shall be packaged to protect against damage during handling, transit and storage per the packaging specifications listed below:

BMI Floating Receptacle: PK-44133-002
 BMI Panel Mount Plug: PK-44300-001, PK-44300-002
 BMI Receptacles: PK-44764-001, PK-44769-001
 BMI Headers: PK-44428-001, PK-44432-001
 BMI Vertical CPI Header: PK-44432-001

7.0 GAGES AND FIXTURES

It is recommended that test plugs (Series 44242) be used for continuity testing of receptacles. Standard mating parts should not be used for continuity testing.

NOTE: The use of unauthorized testing devices and/or probes with a Molex product may cause damage to and affect functionality of the Molex product, and such use may void any and all warranties, expressed or implied.

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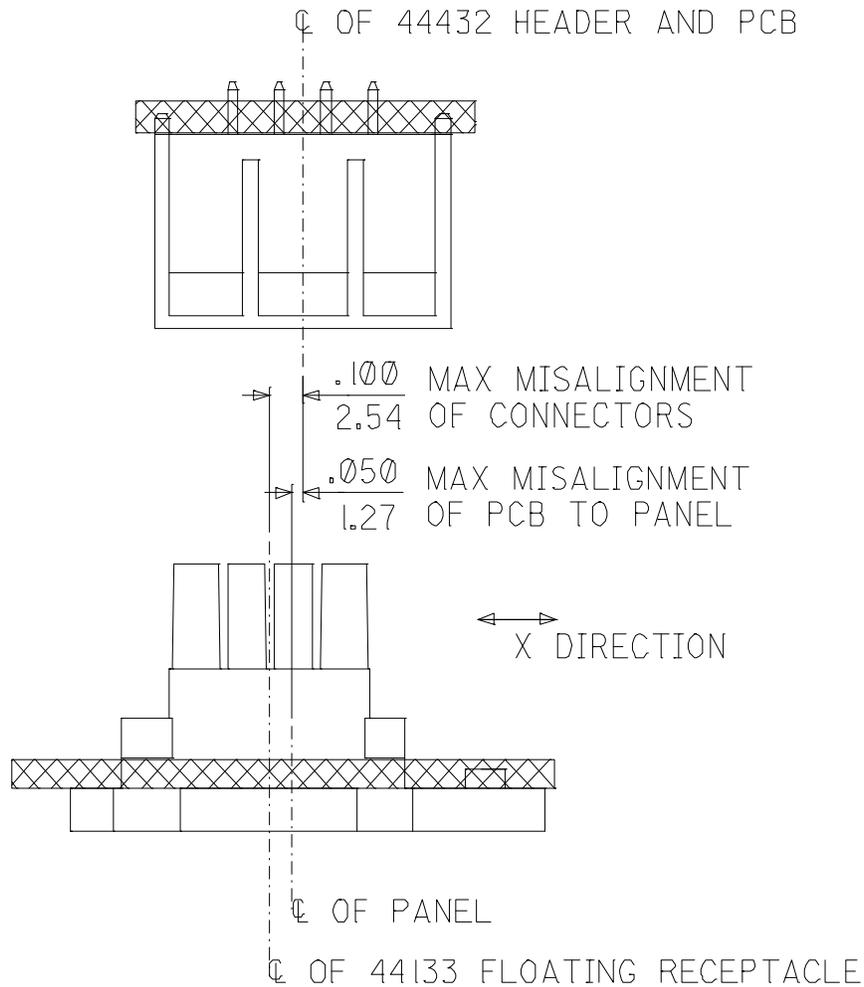


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8.0 APPLICATION INFORMATION

8.1 CONNECTOR ALIGNMENT

Misalignment applies to "X" and "Y" directions

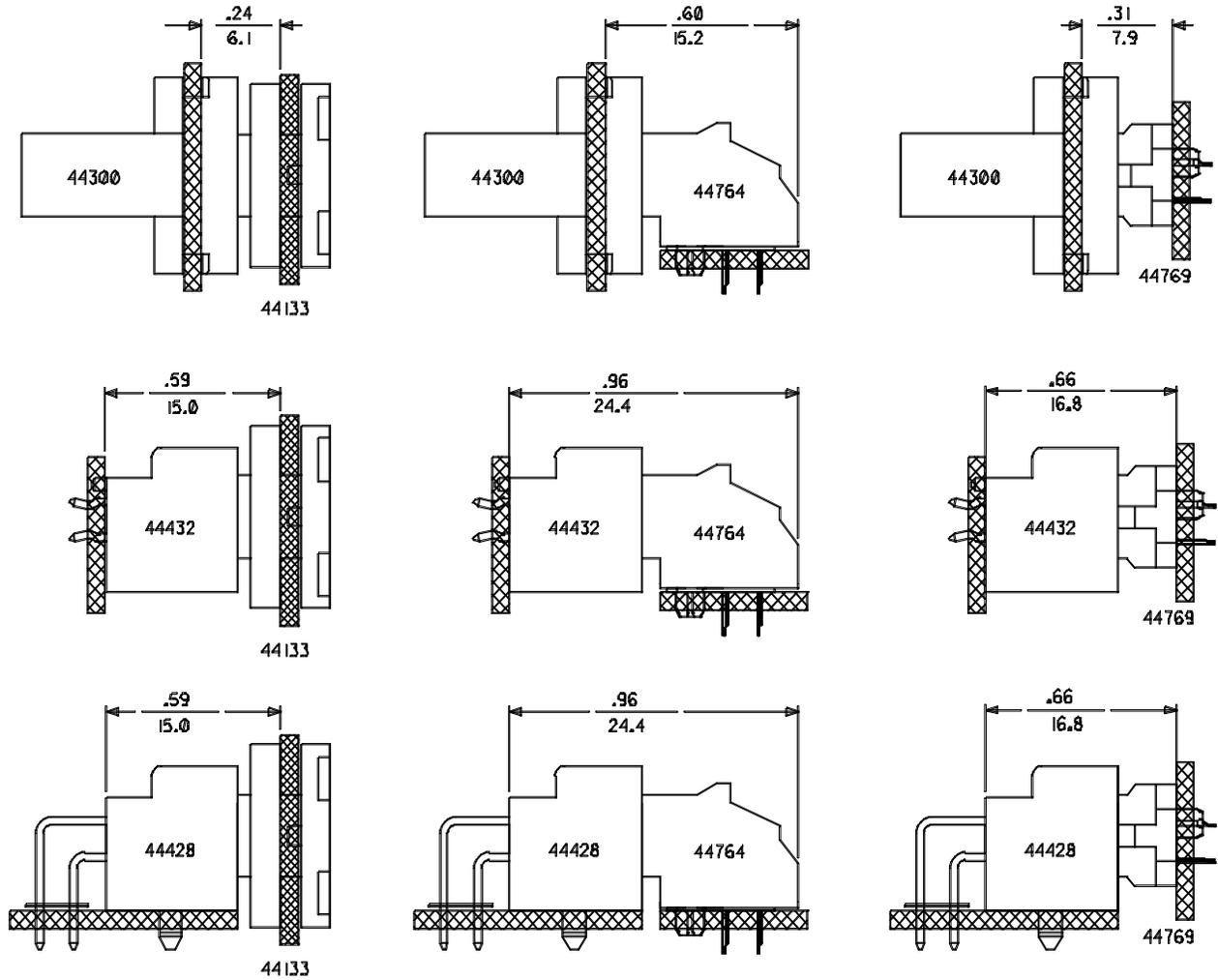


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8.2 Mated Dimensions (PARTS SHOWN FULLY MATED)



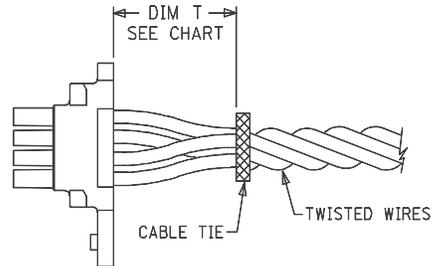
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8.3 TIE WRAP AND/OR WIRE TWISTING PLACEMENT

CKT Sizes	Dim T	Min.
2-8	.500	(12.70)
10-16	.750	(19.10)
18-24	1.000	(25.40)



The “T” dimension defines a “free” length of wire, or a length of wire that is not subject to significant bias by external factors such as a wire tie, wire twisting, or other means of bending or deforming of the wires that repositions them from their natural relaxed state or location where they enter the housing. Wires are to be dressed in such a manner to allow the terminals to float freely in the pocket.

8.4 CONTACT ENGAGEMENT FOR FULLY MATED COMPONENTS

Receptacle	Mated to Plug/ Header	Application	Contact Wipe
44133 Panel Mount Receptacle ⁽¹⁾	44300 Plug	Wire-to-Wire	.094 in/ (2.39 mm)
	44428 RA Header 44432 Vert Header 45280 CPI Header	Wire-to-Board	.072 in/ (1.82 mm)
	44764 Right Angle Receptacle Header	44300 Plug	Board-to-Wire
44428 RA Header 44432 Vert Header 45280 CPI Header		Board-to-Board	.068 in/ (1.73 mm)
44769 Vertical Receptacle Header		44300 Plug	Board-to-Wire
	44428 RA Header 44432 Vert Header 45280 CPI Header	Board-to-Board	.064 in/ (1.63 mm)

Note (1): Contact Wipe is based on 43030 female crimp terminal. If using 46235 female crimp terminal, reduce Contact Wipe by .005 in/(0.13 mm).

8.5 MATING VELOCITY

Blind Mate Interface connectors should not be mated together at excessive velocities. Depending on the specifics of the application, excessive mating speeds may not allow sufficient reaction time for the connectors to properly self align and this can cause damage to connector housings and terminals. Molex recommends mating speeds do not exceed 40 mm/sec (1.6 inch/sec) for proper mating.

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