PRODUCT SPECIFICATION

MICRO-FIT SINGLE ROW CONNECTOR SYSTEM

1.0 SCOPE

This Product Specification covers the 3.00 mm (.118 inch) centerline (pitch) square pin headers when mated with either printed circuit board (PCB) connector or connectors terminated with 20 to 30 AWG wire using crimp technology.

2.0 PRODUCT DESCRIPTION

2.1 PRODUCT NAME AND SERIES NUMBERS

Receptacle: 43645
TPA Receptacle: 171850
TPA Plug: 200875
Plug: 43640
Headers: 43650
Test Plug: 44242 (recommended for continuity testing only)
Female Crimp Terminal: 43030
Male Crimp Terminal: 43031
Other products conforming to this specification are noted on the individual drawings.

2.2 DIMENSIONS, MATERIALS, PLATINGS AND MARKINGS

Housings: Receptacle and Plug - Polyester, Nylon; Headers - LCP
Crimp Terminals: Phosphor Bronze
Pins: Brass

2.3 SAFETY AGENCY APPROVALS

UL File Number: E29179
CSA: LR19980
*IEC 61984 Certification: Tested to and found in compliance with IEC 61984. NRTL type examination certificate available from Molex upon requ*est. Contact Molex Safety Agency team for questions regarding certification on specific part numbers."

3.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS

Test Summary: TS-43045-001
Application Spec: AS-45499-001 (moisturizing nylon parts)

4.0 RATINGS

4.1 SAFETY AGENCY RATINGS

	Agency Voltage Rating (AC RMS or DC)			Agency Current Rating (Single Circuit) (Amps)		
Series	UL	CSA	IEC	UL	CSA	IEC
43640	250	250	250	5	7	5
200875	250	250	pending	5	7	pending
43645	600	250	250	5	7	5
43650	600	250	250	5	5	5
171850	600	250	pending	5	5	pending

(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.)

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

1) Values are for REFERENCE ONLY.
2) Current de-ratings 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

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. (Does not include wire resistance)	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)	8.0 N (1.8 lbf) MAXIMUM insertion force & 2.4 N (0.5 lbf) MINIMUM withdrawal force
Crimp 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
Crimp Terminal Insertion Force (into Housing)	Apply an axial insertion force on the terminal at a rate of 25 ± 6 mm (1 ± ¼ inch) per minute.	14.7 N (3.3 lbf) MAXIMUM insertion force
Durability	Mate connectors up to 30 cycles at a maximum rate of 10 cycles per minute	20 milliohms MAXIMUM (change from initial)
Vibration (Random)	Mate connectors and vibrate per EIA 364-28, test condition VII, Letter D. Test Duration: 15 minutes each axis.	20 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).	20 milliohms MAXIMUM (change from initial]) & Discontinuity < 1 microsecond
Wire Pullout Force (Axial)	Apply an axial pullout force on the wire at a rate of 25 ± 6 mm (1 ± ¼ inch) per minute.	MINIMUM pullout force 20 awg: 57.8 N (13.0 lbf) 22 awg: 35.6 N (8.0 lbf) 24 awg: 22.2 N (5.0 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)
Normal Force	Apply a perpendicular force.	2.7 N (0.6 lbf) MINIMUM
Pin to Header Retention	Apply axial push force to pin at a rate of 25 ± 6 mm (1 ± ¼ inch) per minute.	13.7 N (3.1 lbf) MINIMUM pushout force
Thumb Latch to Ramp Yield Strength	Full mate and then Unmate the connectors at a rate of 25 ± 6 mm (1 ± ¼ inch) per minute.	68.4 N (15.4 lbf) MINIMUM Yield Strength

5.3 ENVIRONMENTAL REQUIREMENTS

DESCRIPTION	TEST CONDITION	REQUIREMENT
Thermal Aging	Mate connectors; expose to: 240 hours at 105 ± 2°C OR 500 hours at 85 ± 2°C	20 milliohms MAXIMUM (change from initial)
Humidity (Steady State)	Mate connectors: expose to a temperature of 40 ± 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.	20 milliohms MAXIMUM (change from initial) & Dielectric Withstanding Voltage: No Breakdown at 500 VAC & Insulation Resistance: 1000 Megohms MINIMUM
Solderability	Per SMES-152	Solder coverage: 95% MINIMUM (per SMES-152)
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** 260°C MAX Per ES-40000-5013	Visual: No Damage to insulator material
Cold Resistance	Mate connectors: Duration: 96 hours; Temperature: -40 ± 3°C	20 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:

Receptacle, TPA Receptacle and Plug: Bulk Packaged
Headers: PK-70873-0321, PK-70873-0811, PK-70873-07**

7.0 GAGES AND FIXTURES

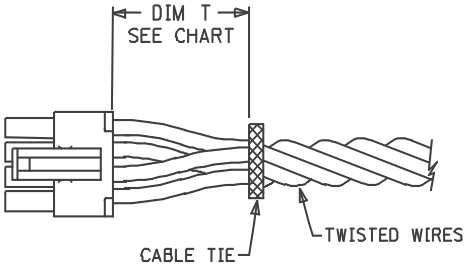
It is recommended that test plugs (Series 44242) be used for continuity testing of receptacles. Standard mating parts should not be used for harness testing.

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.

8.0 OTHER INFORMATION

8.1 CABLE TIE AND OR WIRE TWIST LOCATION

CKT Sizes	Dim T Min.
2-4	.500 (12.70)
5-8	.750 (19.10)
9-12	1.000 (25.40)



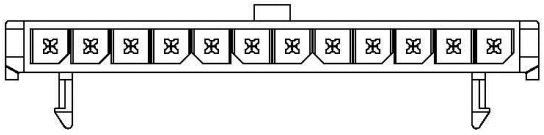
The “T” dimension defines a “free” length of wire, or a length of wire that is not subject to significant bias by external factors such as a wire tie, wire twisting, or other means of bending or deforming of the wires that repositions them from their natural relaxed state or location where they enter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

8.2 CONTACT ENGAGEMENT (WIPE) FOR FULLY MATED NOMINAL COMPONENTS (FOR REFERENCE ONLY)

Receptacle	Mated to Plug/ Header	Application	Contact Wipe (nominal)
43645 Receptacle (1)	43640 Plug	Wire-to-Wire	0.083 in/(2.11 mm)
	43650 Header	Wire-to-Board	0.069 in/(1.75mm)
171850 TPA Receptacle (1)	43640 Plug	Wire-to-Wire	0.072 in/(1.84mm)
	43650 Header	Wire-to-Board	0.063 in/(1.60mm)
	200875 TPA Plug	Wire-to-Wire	0.068 in/(1.72mm)

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).

8.3 STANDARD POLARIZATION FOR HEADERS AND PLUGS (HEADERS ARE SHOWN)



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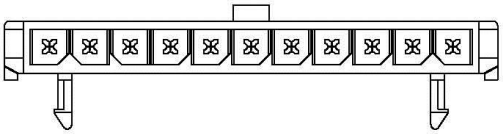

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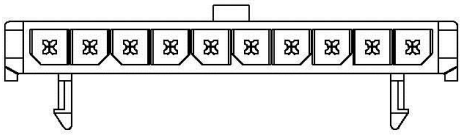

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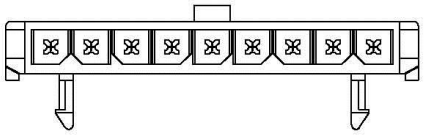

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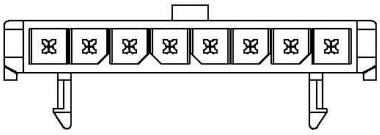

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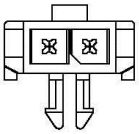

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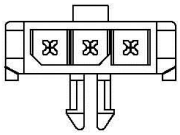

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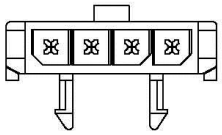

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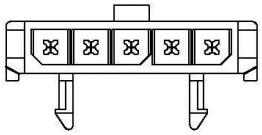

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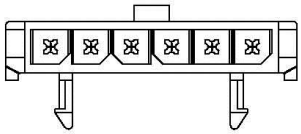

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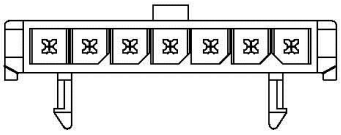
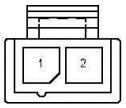


7-CKT.

8.4 STANDARD POLARIZATION FOR RECEPTACLES



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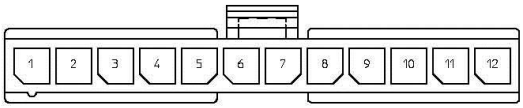

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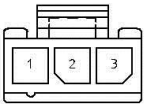

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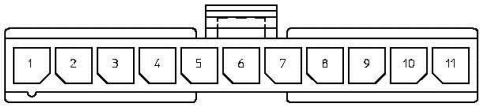

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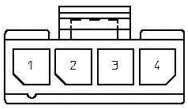

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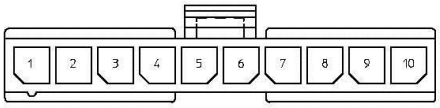

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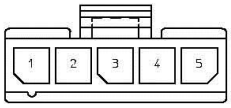

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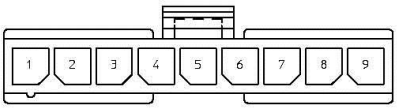

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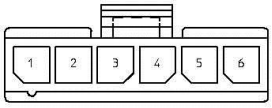

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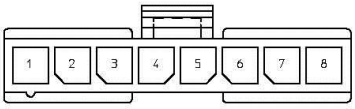

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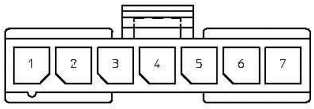

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