Jameco Part Number 338546

FEATURES AND SPECIFICATIONS

3.00mm (.118") Pitch Micro-Fit 3.0™ Wire-to-Board Header

43650

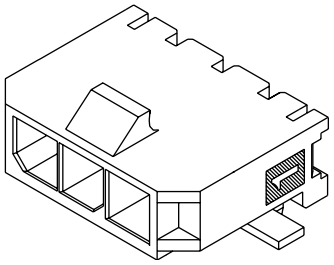
Single Row Right Angle, SMT With Solderable Fitting Nail

Features and Benefits
- Solderable fitting nail provides retention to PCB
- Fully polarized to mating receptacle
- Tape and reel packaging eliminates handling and provides higher insertion speeds compared to tray packing or hand assembly

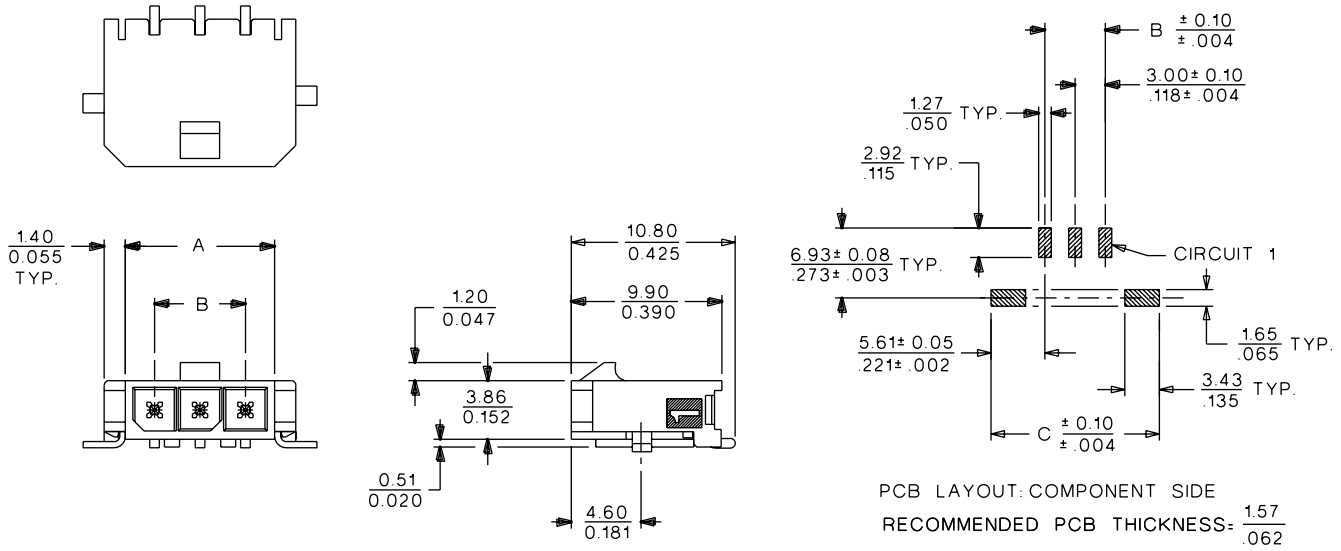
Reference Information
Product Specification: PS-43650
Packaging: Tape and reel for robotic placement
UL File No.: E29179
CSA File No.: LR19980A
TUV License No.: R95107
Mates With: 43645
Designed In: Millimeters

Electrical
Voltage: 250V
Current: 5.0A max.
Contact Resistance: 10mΩ max.
Dielectric Withstanding Voltage: 1500V AC
Insulation Resistance: 1000 MΩ min.

Physical
Housing: High temperature LCP, UL 94V-0
Contact: Brass
Plating: Tin or Gold



CATALOG DRAWING (FOR REFERENCE ONLY)



ORDERING INFORMATION AND DIMENSIONS

Circuits	Order No.			Dimension		
	Tin	15µ" Gold	30µ" Gold	A	B	C
2	43650-0212	43650-0213	43650-0214	6.85 (.270)	3.00 (.118)	14.20 (.559)
3	43650-0312	43650-0313	43650-0314	9.85 (.388)	6.00 (.236)	17.20 (.677)
4	43650-0412	43650-0413	43650-0414	12.85 (.506)	9.00 (.354)	20.20 (.795)
5	43650-0512	43650-0513	43650-0514	15.85 (.624)	12.00 (.472)	23.20 (.913)
6	43650-0612	43650-0613	43650-0614	18.85 (.742)	15.00 (.591)	26.20 (1.031)
7	43650-0712	43650-0713	43650-0714	21.85 (.860)	18.00 (.709)	29.20 (1.150)
8	43650-0812	43650-0813	43650-0814	24.85 (.978)	21.00 (.827)	32.20 (1.268)
9	43650-0912	43650-0913	43650-0914	27.85 (1.096)	24.00 (.945)	35.20 (1.386)
10	43650-1012	43650-1013	43650-1014	30.85 (1.215)	27.00 (1.063)	38.20 (1.504)
11	43650-1112	43650-1113	43650-1114	33.85 (1.333)	30.00 (1.181)	41.20 (1.622)
12	43650-1212	43650-1213	43650-1214	36.85 (1.451)	33.00 (1.299)	44.20 (1.740)

PRODUCT SPECIFICATION

MICRO-FIT

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 Terminal: 43030
Plug: 43640 Terminal: 43031
Headers: 43650
Test Plug: 44242 (recommended for continuity testing only)
Other products conforming to this specification are noted on the individual drawings.

2.2 **DIMENSIONS, MATERIALS, PLATINGS AND MARKINGS**

Housings: polyester or LCP
Terminal: Phosphor Bronze
Pins: Brass

2.3 **SAFETY AGENCY APPROVALS**

UL File Number: E29179
CSA: LR19980

3.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS

4.0 RATINGS

4.1 VOLTAGE

UL: 250 Volts AC (RMS) {or 176 Volts DC}

4.2 CURRENT 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	Amps	Outside Insulation Diameter
20	5	1.85 mm (.073 inch)
22	5	1.85 mm (.073 inch)
24	4	1.85 mm (.073 inch)
26	3	1.27 mm (.050 inch)
28	2	1.27 mm (.050 inch)
30	1	1.27 mm (.050 inch)

4.2.1 CURRENT FOR TEST PLUG 44242

2.5 Amps Maximum (Pogo pin current capacity)

4.3 TEMPERATURE

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

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 @ Rated Current	Mate connectors: apply a maximum voltage of 20 mV at rated current.	30 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 & 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
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 at a maximum rate of 10 cycles per minute prior to Environmental Tests.	20 milliohms MAXIMUM (change from initial)
Vibration (Random)	Mate connectors and vibrate per EIA 364-28, test condition VII.	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).	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 (275 grams) 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]) & Visual: No Damage
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 & Visual: No Damage
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: 245 ± 5°C	Visual: No Damage to insulator material
Salt Spray	Mate connectors: Duration: 48 hours exposure; Atmosphere: salt spray from a 5% solution; Temperature: 35 +1/-2°C	20 milliohms MAXIMUM (change from initial) & Visual: No Damage
Cold Resistance	Mate connectors: Duration: 96 hours; Temperature: -40 ± 3°C	20 milliohms MAXIMUM (change from initial) & Visual: No Damage
Corrosive Atmosphere: Sulfur Dioxide Gas (SO_2)	Mate connectors: Duration: 24 hours exposure; Atmosphere: 50 parts per million (ppm) SO_2 gas; Temperature: 40 ± 3°C	20 milliohms MAXIMUM (change from initial) & Visual: No Damage
Corrosive Atmosphere: Ammonia Gas (NH_3)	Mate connectors: Duration: 40 minutes exposure; Atmosphere: NH_3 gas evaporating from a 28% Ammonia solution	20 milliohms MAXIMUM (change from initial) & Visual: No Damage

6.0 PACKAGING

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

Receptacle: PK-43645-001
Plug: PK-43640-001
Headers: PK-70873-0321, PK-70873-0811, PK-70873-07**

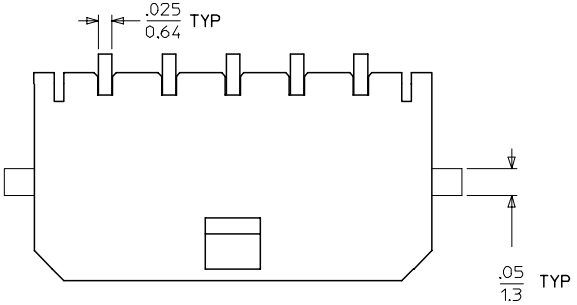
7.0 GAGES AND FIXTURES

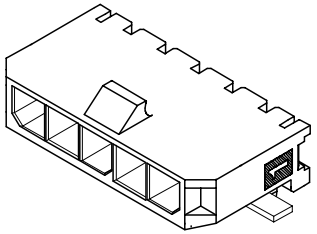
It is recommended that test plugs (Series 44242) be used for continuity testing of receptacles. Standard mating parts should not be used for harness testing.

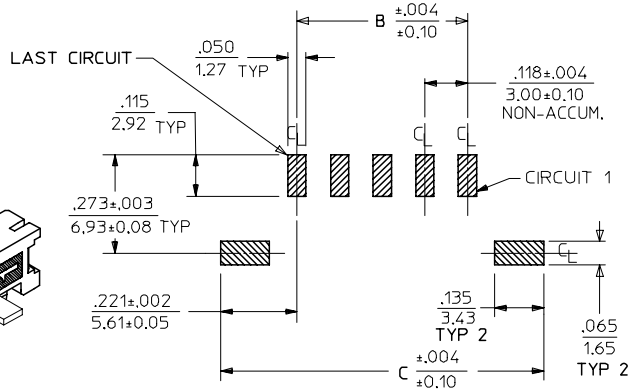
8.0 OTHER INFORMATION

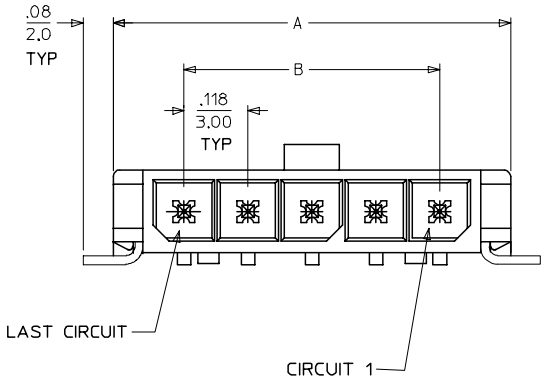
43650

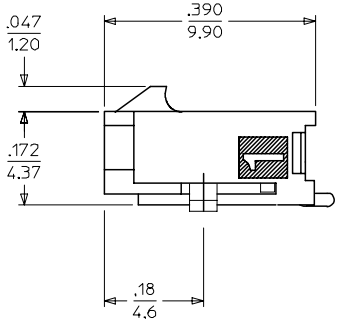
CKTS	A	B	C
2	.380 / 9.65	.118 / 3.00	.559 / 14.20
3	.498 / 12.65	.236 / 6.00	.677 / 17.20
4	.616 / 15.65	.354 / 9.00	.795 / 20.20
5	.734 / 18.64	.472 / 12.00	.913 / 23.20
6	.852 / 21.64	.591 / 15.00	1.031 / 26.20
7	.970 / 24.64	.709 / 18.00	1.150 / 29.20
8	1.088 / 27.64	.827 / 21.00	1.268 / 32.20
9	1.206 / 30.63	.945 / 24.00	1.386 / 35.20
10	1.325 / 33.66	1.063 / 27.00	1.504 / 38.20
11	1.443 / 36.65	1.181 / 30.00	1.622 / 14.20
12	1.561 / 39.65	1.299 / 33.00	1.740 / 44.20



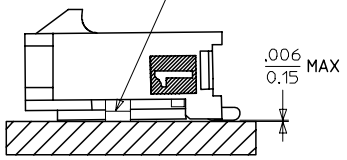






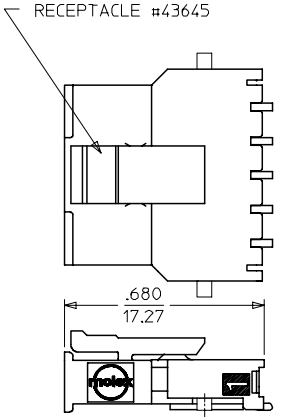


PCB LAYOUT: COMPONENT SIDE



COPLANARITY DETAIL

SEE NOTE #6



MATED MICRO FIT CONNECTOR

CKTS	FINISH A MATERIAL NO:	FINISH B MATERIAL NO:	FINISH C MATERIAL NO:
02	43650-0212	43650-0213	43650-0214
03	43650-0312	43650-0313	43650-0314
04	43650-0412	43650-0413	43650-0414
05	43650-0512	43650-0513	43650-0514
06	43650-0612	43650-0613	43650-0614
07	43650-0712	43650-0713	43650-0714
08	43650-0812	43650-0813	43650-0814
09	43650-0912	43650-0913	43650-0914
10	43650-1012	43650-1013	43650-1014
11	43650-1112	43650-1113	43650-1114
12	43650-1212	43650-1213	43650-1214

NOTES:

1. HOUSING MATERIAL: LIQUID CRYSTAL POLYMER, GLASS FILLED, UL94V-0, COLOR: BLACK
   TERMINAL MATERAIL: BRASS ALLOY
2. FINISH:
   A = .000100/(0.00254) MIN. TIN OVER .000050/(0.00127) MIN. NICKEL
   B = .000015/(0.00038) MIN. SELECT GOLD IN CONTACT AREA .000100/(0.00254) MIN. SELECT TIN ON SOLDER TAILS BOTH OVER .000050/(0.00127) NICKEL OVERALL
   C = .000030/(0.00076) MIN. SELECT GOLD IN CONTACT AREA .000100/(0.00254) MIN. SELECT TIN ON SOLDER TAILS BOTH OVER .000050/(0.00127) NICKEL OVERALL
   * THE PRIMARY SHIPPING CARTON WILL BE LABELED "COMPLIANT TO RoHS DIRECTIVE 2002/95/EC AND ELV ANNEX II OF DIRECTIVE 2000/53/EC." CARTONS WITHOUT THIS LABEL MAY CONTAIN PRODUCT WITH TIN/LEAD IN THE PC TAIL AREA.
3. PRODUCT SPECIFICATION: PS-43650
4. MATES WITH MICRO FIT (3.0) RECEPTACLE SERIES 43645
5. TAPE AND REEL PACKAGED : SEE MOLEX DRAWING PK-70873-07**
6. THE COPLANARITY DIMENSION IS ESTABLISHED BY PLACING THE ASSEMBLY ON A FLAT SURFACE. THE DISTANCE FROM THAT SURFACE TO THE BOTTOM OF ANY TERMINAL OR NAIL MUST NOT EXCEED .006/0.15

LEAD FREE
EC NO: UCP2004-1276 2004/03/12
DRWN: JCERNY 2004/03/31
CHKD:
APPR: FSMITH 2004/04/05
DESCRIPTION
REV D

QUALITY SYMBOLS
▼ = 0
▽ (C) = 0

GENERAL TOLERANCES (UNLESS SPECIFIED)

	mm	INCH
4 PLACES	± ---	± ---
3 PLACES	± ---	± .010
2 PLACES	± 0.25	± .014
1 PLACE	± 0.36	± ---
ANGULAR ±1/2°		

DRAFT WHERE APPLICABLE
MUST REMAIN WITHIN DIMENSIONS

SCALE ---
DESIGN UNITS METRIC
THIRD ANGLE PROJECTION
REVISE ON CAD ONLY
DIMENSION STYLE IN/MM
DRAWN BY SAMIEC DATE 2000/07/07
CHECKED BY MUELLER DATE 2000/07/07
APPROVED BY EDGLEY DATE 2000/07/07

TITLE
MICRO FIT (3.0)
SINGLE ROW / RIGHT ANGLE
SMT / NAILS / REELS

MOLEX INCORPORATED

MATERIAL NO. SEE CHART
DOCUMENT NO. SD-43650-005
SHEET NO. 1 OF 1

C