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ELECTRONICS

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Jameco Part Number 884168

## FEATURES AND SPECIFICATIONS

### Features and Benefits

- "Offset Terminal Retention" for optimum retention to PC board during wave soldering
- Fully polarized to mating receptacle
- Peg feature provides polarization to PCB
- Surface Mount Compatible

### Reference Information

Product Specification: PS-43650  
 Packaging: Tray  
 UL File No.: E29179  
 CSA File No.: LR19980  
 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.

### Mechanical

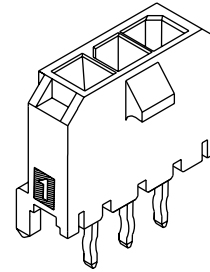
Insertion Force to PCB: 7.5kgf max. (16.5 lb)

### Physical

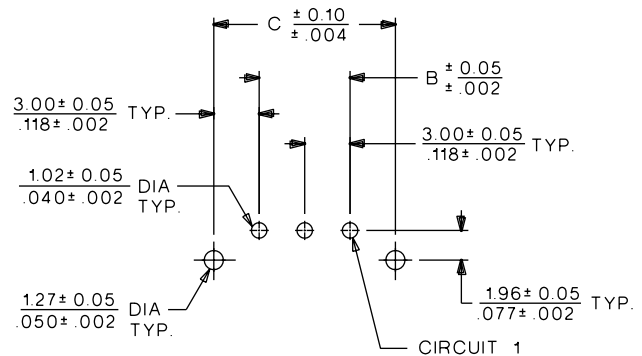
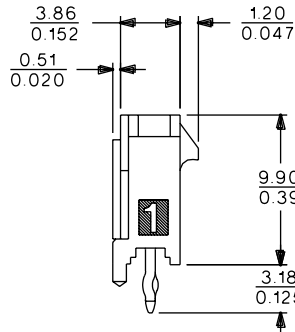
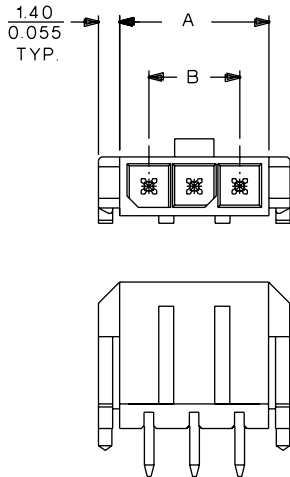
Housing: High temperature LCP, UL 94V-0  
 Contact: Brass  
 Plating: Tin or Gold

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

## 43650 Single Row Vertical



## CATALOG DRAWING (FOR REFERENCE ONLY)



PCB LAYOUT: COMPONENT SIDE

RECOMMENDED PCB THICKNESS =  $\frac{1.57}{.062}$

## ORDERING INFORMATION AND DIMENSIONS

Circuits	Order No.						Dimension		
	Standard "OTR" Version			Straight Tail Version			A	B	C
	Tin	15μ" Gold	30μ" Gold	Tin	15μ" Gold	30μ" Gold			
2	43650-0215	43650-0216	43650-0217	43650-0227	43650-0228	43650-0229	6.85 (.270)	3.00 (.118)	9.00 (.354)
3	43650-0315	43650-0316	43650-0317	43650-0327	43650-0328	43650-0329	9.85 (.388)	6.00 (.236)	12.00 (.472)
4	43650-0415	43650-0416	43650-0417	43650-0427	43650-0428	43650-0429	12.85 (.506)	9.00 (.354)	15.00 (.591)
5	43650-0515	43650-0516	43650-0517	43650-0527	43650-0528	43650-0529	15.85 (.624)	12.00 (.472)	18.00 (.708)
6	43650-0615	43650-0616	43650-0617	43650-0627	43650-0628	43650-0629	18.85 (.742)	15.00 (.591)	21.00 (.827)
7	43650-0715	43650-0716	43650-0717	43650-0727	43650-0728	43650-0729	21.85 (.860)	18.00 (.709)	24.00 (.945)
8	43650-0815	43650-0816	43650-0817	43650-0827	43650-0828	43650-0829	24.85 (.978)	21.00 (.827)	27.00 (1.063)
9	43650-0915	43650-0916	43650-0917	43650-0927	43650-0928	43650-0929	27.85 (1.096)	24.00 (.945)	30.00 (1.181)
10	43650-1015	43650-1016	43650-1017	43650-1027	43650-1028	43650-1029	30.85 (1.215)	27.00 (1.063)	33.00 (1.299)
11	43650-1115	43650-1116	43650-1117	43650-1127	43650-1128	43650-1129	33.85 (1.333)	30.00 (1.181)	36.00 (1.417)
12	43650-1215	43650-1216	43650-1217	43650-1227	43650-1228	43650-1229	36.85 (1.451)	33.00 (1.299)	39.00 (1.535)



# 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      Female Crimp Terminal: 43030  
Plug: 43640            Male Crimp 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: Receptacle and Plug - Polyester; Headers - LCP

Crimp Terminals: Phosphor Bronze

Pins: Brass

#### 2.3 SAFETY AGENCY APPROVALS

UL File Number: E29179

CSA: LR19980

TUV: 72040445

### 3.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS

Test Summary: TS-43045-001

### 4.0 RATINGS

#### 4.1 VOLTAGE

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

TUV: 250 Volts

**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)

(Test plugs are for testing purposes only and not intended for continuous use.)

#### 4.3 TEMPERATURE

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

Nonoperating: - 40°C to + 105°C

<u>REVISION:</u> <b>J</b>	<u>EGR/ECN INFORMATION:</u> EC No: <b>UCP2007-0365</b> DATE: <b>2006/08/08</b>	<u>TITLE:</u> <b>PRODUCT SPECIFICATION MICRO-FIT SINGLE ROW CONNECTORS</b>	<u>SHEET No.</u> <b>1 of 5</b>
<u>DOCUMENT NUMBER:</u> <b>PS-43650</b>	<u>CREATED / REVISED BY:</u> <b>M.KIPPER</b>	<u>CHECKED BY:</u> <b>S.SOUSEK</b>	<u>APPROVED BY:</u> <b>F.SMITH</b>



# PRODUCT SPECIFICATION

## 5.0 PERFORMANCE

### 5.1 ELECTRICAL REQUIREMENTS

DESCRIPTION	TEST CONDITION	REQUIREMENT
<b>Contact Resistance (Low Level)</b>	Mate connectors: apply a maximum voltage of 20 mV and a current of 100 mA. (Does not include wire resistance)	10 milliohms MAXIMUM [initial]
<b>Contact Resistance @ Rated Current</b>	Mate connectors: apply a maximum voltage of 20 mV at rated current.	30 milliohms MAXIMUM [initial]
<b>Contact Resistance of Wire Termination (Low Level)</b>	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]
<b>Insulation Resistance</b>	Unmate & unmount connectors: apply a voltage of 500 VDC between adjacent terminals and between terminals to ground.	1000 Megohms MINIMUM
<b>Dielectric Withstanding Voltage</b>	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
<b>Capacitance</b>	Measure between adjacent terminals at 1 MHz.	2 picofarads MAXIMUM
<b>Temperature Rise (via Current Cycling)</b>	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

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		<b>APPROVED BY:</b> <b>F.SMITH</b>	



# PRODUCT SPECIFICATION

## 5.2 MECHANICAL REQUIREMENTS

DESCRIPTION	TEST CONDITION	REQUIREMENT
<b>Connector Mate and Unmate Forces</b>	Mate and unmate connector (male to female) at a rate of $25 \pm 6$ mm ( $1 \pm \frac{1}{4}$ inch) per minute. (per circuit)	8.0 N (1.8 lbf) MAXIMUM insertion force & 3.7 N (0.8 lbf) MINIMUM withdrawal force
<b>Terminal Retention Force (in Housing)</b>	Axial pullout force on the terminal in the housing at a rate of $25 \pm 6$ mm ( $1 \pm \frac{1}{4}$ inch) per minute.	24.5 N (5.5 lbf) MINIMUM retention force
<b>Terminal Insertion Force (into Housing)</b>	Apply an axial insertion force on the terminal at a rate of $25 \pm 6$ mm ( $1 \pm \frac{1}{4}$ inch).	14.7 N (3.3 lbf) MAXIMUM insertion force
<b>Durability</b>	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)
<b>Vibration (Random)</b>	Mate connectors and vibrate per EIA 364-28, test condition VII.	20 milliohms MAXIMUM (change from initial) & Discontinuity < 1 microsecond
<b>Shock (Mechanical)</b>	Mate connectors and shock at 50 g's with $\frac{1}{2}$ sine wave (11 milliseconds) shocks in the $\pm X, \pm Y, \pm Z$ axes (18 shocks total).	20 milliohms MAXIMUM (change from initial) & Discontinuity < 1 microsecond
<b>Wire Pullout Force (Axial)</b>	Apply an axial pullout force on the wire at a rate of $25 \pm 6$ mm ( $1 \pm \frac{1}{4}$ 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)
<b>Normal Force</b>	Apply a perpendicular force.	2.7 N (0.6 lbf) MINIMUM
<b>Pin to Header Retention</b>	Apply axial push force to pin at a rate of $25 \pm 6$ mm ( $1 \pm \frac{1}{4}$ inch) per minute.	13.7 N (3.1 lbf) MINIMUM pushout force
<b>Thumb Latch to Ramp Yield Strength</b>	Full mate and then Unmate the connectors at a rate of $25 \pm 6$ mm ( $1 \pm \frac{1}{4}$ inch) per minute.	68.4 N (15.4 lbf) MINIMUM Yield Strength

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DOCUMENT NUMBER: <b>PS-43650</b>	CREATED / REVISED BY: <b>M.KIPPER</b>	CHECKED BY: <b>S.SOUSEK</b>	APPROVED BY: <b>F.SMITH</b>



# PRODUCT SPECIFICATION

## 5.3 ENVIRONMENTAL REQUIREMENTS

DESCRIPTION	TEST CONDITION	REQUIREMENT
<b>Thermal Aging</b>	Mate connectors; expose to: 240 hours at 105 ± 2°C OR 500 hours at 85 ± 2°C	20 milliohms MAXIMUM (change from initial)
<b>Humidity (Steady State)</b>	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
<b>Solderability</b>	Per SMES-152	Solder coverage: 95% MINIMUM (per SMES-152)
<b>Solder Resistance</b>	A) Wave Solder Process Dip connector terminal tails in solder; Solder Duration: 5 ± 0.5 seconds; Solder Temperature: 260°C MAX  B) Convection Reflow Solder Process 235°C MAX Per SMES-152	Visual: No Damage to insulator material
<b>Cold Resistance</b>	Mate connectors: Duration: 96 hours; Temperature: -40 ± 3°C	20 milliohms MAXIMUM (change from initial)
<b>Corrosive Atmosphere: Sulfur Dioxide Gas (SO<sub>2</sub>)</b>	Mate connectors: Duration: 24 hours exposure; Atmosphere: 50 parts per million (ppm) SO <sub>2</sub> gas; Temperature: 40 ± 3°C	20 milliohms MAXIMUM (change from initial)
<b>Corrosive Atmosphere: Ammonia Gas (NH<sub>3</sub>)</b>	Mate connectors: Duration: 40 minutes exposure; Atmosphere: NH <sub>3</sub> gas evaporating from a 28% Ammonia solution	20 milliohms MAXIMUM (change from initial)

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# PRODUCT SPECIFICATION

## 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\*\*

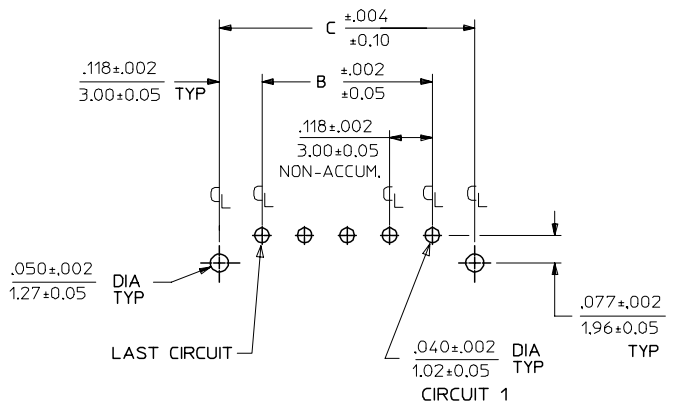
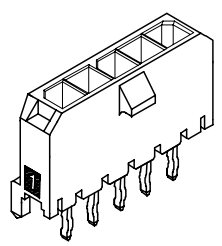
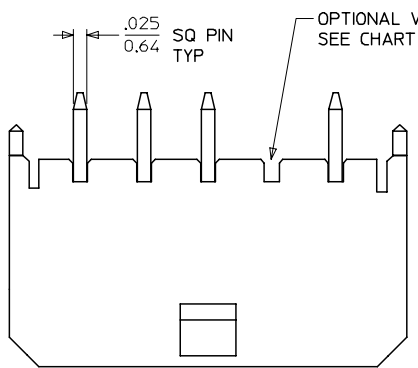
## 7.0 GAGES AND FIXTURES

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.

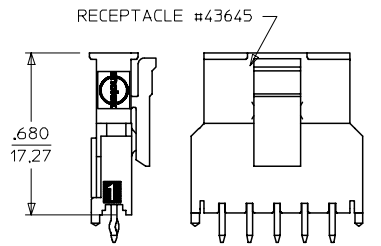
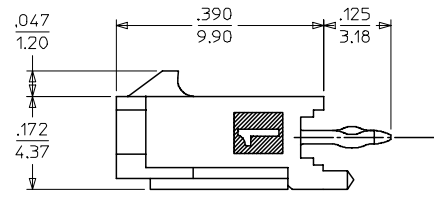
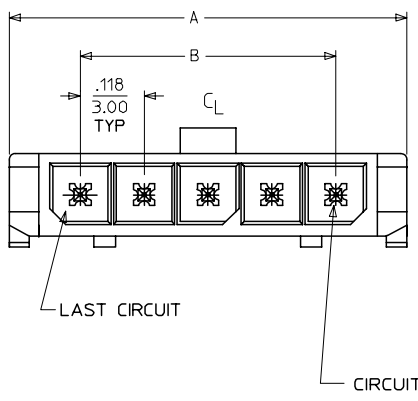
## 8.0 OTHER INFORMATION

<u>REVISION:</u> <b>J</b>	<u>EGR/ECN INFORMATION:</u> EC No: <b>UCP2007-0365</b> DATE: <b>2006/08/08</b>	<u>TITLE:</u> <b>PRODUCT SPECIFICATION MICRO-FIT SINGLE ROW CONNECTORS</b>	<u>SHEET No.</u> <b>5 of 5</b>
<u>DOCUMENT NUMBER:</u> <b>PS-43650</b>	<u>CREATED / REVISED BY:</u> <b>M.KIPPER</b>	<u>CHECKED BY:</u> <b>S.SOUSEK</b>	<u>APPROVED BY:</u> <b>F.SMITH</b>

13 12 11 10 9 8 7 6 5 4 3 2 43650



PCB LAYOUT: COMPONENT SIDE  
RECOMMENDED PCB THICKNESS: .062/157



MATED MICRO FIT CONNECTORS

CKTS	A	B	C
2	.380 9.65	.118 3.00	.354 9.00
3	.498 12.65	.236 6.00	.472 12.00
4	.616 15.65	.354 9.00	.591 15.00
5	.734 18.64	.472 12.00	.709 18.00
6	.852 21.64	.591 15.00	.827 21.00
7	.970 24.64	.709 18.00	.945 24.00
8	1.088 27.64	.827 21.00	1.063 27.00
9	1.206 30.63	.945 24.00	1.181 30.00
10	1.325 33.66	1.063 27.00	1.299 33.00
11	1.443 36.65	1.181 30.00	1.417 36.00
12	1.561 39.65	1.299 33.00	1.535 39.00

FINISH A			FINISH B			FINISH C		
CKTS	MATERIAL NO:	VOID CKT	CKTS	MATERIAL NO:	VOID CKT	CKTS	MATERIAL NO:	VOID CKT
02	43650-0215		02	43650-0216		02	43650-0217	
03	43650-0315		03	43650-0316		03	43650-0317	
04	43650-0415		04	43650-0416		04	43650-0417	
05	43650-0515		05	43650-0516		05	43650-0517	
06	43650-0615		06	43650-0616		06	43650-0617	
07	43650-0715		07	43650-0716		07	43650-0717	
08	43650-0815		08	43650-0816		08	43650-0817	
09	43650-0915		09	43650-0916		09	43650-0917	
10	43650-1015		10	43650-1016		10	43650-1017	
11	43650-1115		11	43650-1116		11	43650-1117	
12	43650-1215		12	43650-1216		12	43650-1217	
03	43650-0330	02	04	43650-0431	02,03	04	43650-0430	02,03
05	43650-9915	03						
06	43650-0630	02,04,05						

- NOTES:
- HOUSING MATERIAL: LIQUID CRYSTAL POLYMER, GLASS FILLED, UL94V-0, COLOR: BLACK  
TERMINAL MATERIAL: BRASS ALLOY
  - 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.
  - PRODUCT SPECIFICATION: PS-43650
  - MATES WITH MICRO FIT (3.0) RECEPTACLE SERIES 43645
  - TRAY PACKAGED : SEE MOLEX DRAWING PK-70873-0811

LEAD FREE EC NO: UCP2004-1276 DRAWN: JCERNY 2004/03/12 CHKD: 2004/03/31 APPR: FSMITH 2004/04/05 REV DESCRIPTION	QUALITY SYMBOLS	GENERAL TOLERANCES (UNLESS SPECIFIED)	SCALE ---	DESIGN UNITS METRIC	THIRD ANGLE PROJECTION	REVISE ON CAD ONLY
	▽ = 0 ▽ = 0	mm	INCH	DIMENSION STYLE		
		4 PLACES ± --- ± ---	3 PLACES ± --- ± .010	IN/MM		
		2 PLACES ± 0.25 ± .014	1 PLACE ± 0.36 ± ---	DRAWN BY SAMIEC DATE 2000/07/07		
	ANGULAR ±1/2°	CHECKED BY MUELLER DATE 2000/07/07			TITLE	
DRAFT WHERE APPLICABLE MUST REMAIN WITHIN DIMENSIONS		APPROVED BY EDGLEY DATE 2000/07/07			MATERIAL NO. DOCUMENT NO. SHEET NO.	
		THIS DRAWING CONTAINS INFORMATION THAT IS PROPRIETARY TO MOLEX INCORPORATED AND SHOULD NOT BE USED WITHOUT WRITTEN PERMISSION			SEE CHART SD-43650-006 1 OF 1	

MOLEX INCORPORATED  
MICRO-FIT (3.0)  
SINGLE ROW / VERTICAL  
THRU HOLE / PEGS / TRAY