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ELECTRONICS

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Jameco Part Number 800454

FEATURES AND SPECIFICATIONS

Features and Benefits

- Snap-in peg locks header to PCB for optimum retention
- Fully polarized to mating receptacle
- 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

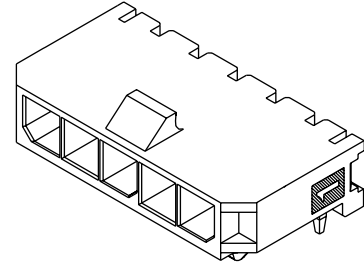
Voltage: 250V
 Current: 5.0A max.
 Contact Resistance: 10mΩ max.
 Dielectric Withstanding Voltage: 1500V AC
 Insulation Resistance: 1000 MΩ min.

Physical

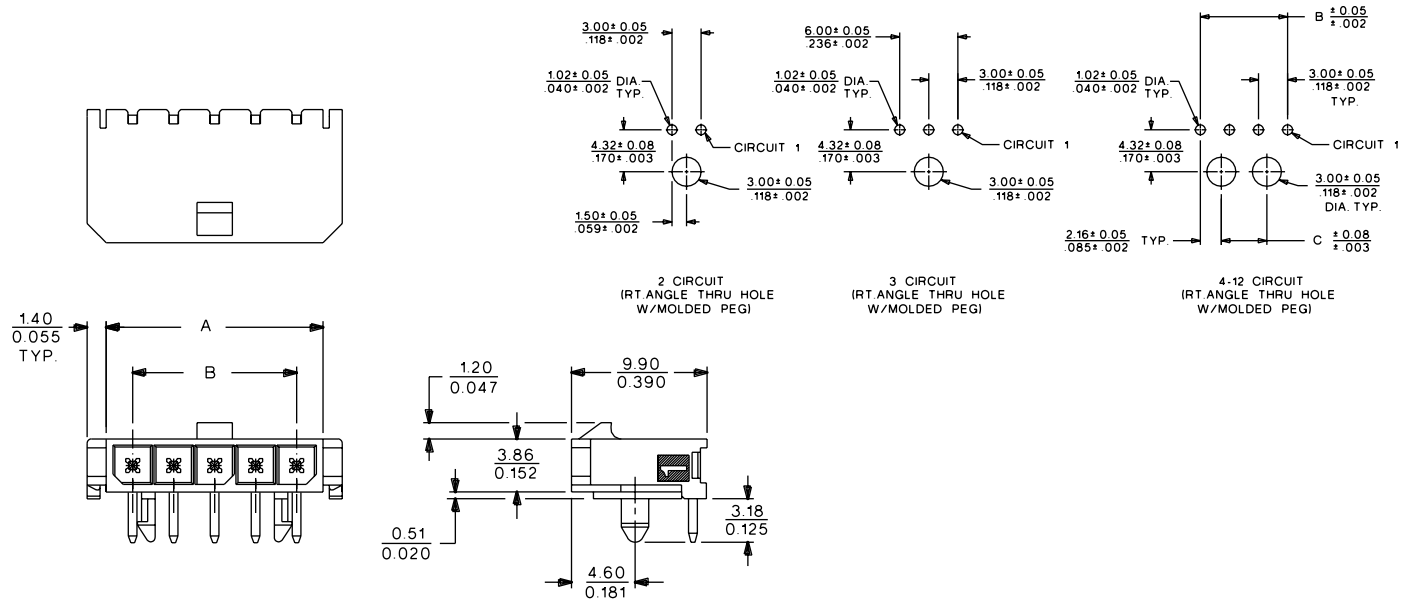
Housing: High temperature LCP, UL 94V-0
 Contact: Brass
 Plating: Tin or Gold

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

43650 Single Row Right Angle



CATALOG DRAWING (FOR REFERENCE ONLY)



ORDERING INFORMATION AND DIMENSIONS

| Circuits | Order No. | | | Dimension | | |
|----------|------------|------------|------------|---------------|---------------|---------------|
| | Tin | 15µ" Gold | 30µ" Gold | A | B | C |
| 2 | 43650-0200 | 43650-0201 | 43650-0202 | 6.85 (.270) | 3.00 (.118) | |
| 3 | 43650-0300 | 43650-0301 | 43650-0302 | 9.85 (.388) | 6.00 (.236) | |
| 4 | 43650-0400 | 43650-0401 | 43650-0402 | 12.85 (.506) | 9.00 (.354) | 4.70 (.185) |
| 5 | 43650-0500 | 43650-0501 | 43650-0502 | 15.85 (.624) | 12.00 (.472) | 7.70 (.303) |
| 6 | 43650-0600 | 43650-0601 | 43650-0602 | 18.85 (.742) | 15.00 (.591) | 10.70 (.421) |
| 7 | 43650-0700 | 43650-0701 | 43650-0702 | 21.85 (.860) | 18.00 (.709) | 13.70 (.539) |
| 8 | 43650-0800 | 43650-0801 | 43650-0802 | 24.85 (.978) | 21.00 (.827) | 16.70 (.657) |
| 9 | 43650-0900 | 43650-0901 | 43650-0902 | 27.85 (1.096) | 24.00 (.945) | 19.70 (.775) |
| 10 | 43650-1000 | 43650-1001 | 43650-1002 | 30.85 (1.215) | 27.00 (1.063) | 22.70 (.893) |
| 11 | 43650-1100 | 43650-1101 | 43650-1102 | 33.85 (1.333) | 30.00 (1.181) | 25.70 (1.011) |
| 12 | 43650-1200 | 43650-1201 | 43650-1202 | 36.85 (1.451) | 33.00 (1.299) | 28.70 (1.129) |



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

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



PRODUCT SPECIFICATION

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 |

| | | | |
|--|--|---|---------------------------------------|
| REVISION: J | EGR/ECN INFORMATION: EC No: UCP2007-0365 DATE: 2006/08/08 | TITLE: PRODUCT SPECIFICATION MICRO-FIT SINGLE ROW CONNECTORS | SHEET No. 2 of 5 |
| DOCUMENT NUMBER: PS-43650 | | CREATED / REVISED BY: M.KIPPER | CHECKED BY: S.SOUSEK |
| | | APPROVED BY: F.SMITH | |



PRODUCT SPECIFICATION

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 ($1 \pm \frac{1}{4}$ inch) per minute. (per circuit) | 8.0 N (1.8 lbf) MAXIMUM insertion force & 3.7 N (0.8 lbf) MINIMUM withdrawal force |
| Terminal Retention Force (in Housing) | Axial pullout force on the terminal in the housing at a rate of 25 ± 6 mm ($1 \pm \frac{1}{4}$ 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 ($1 \pm \frac{1}{4}$ 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 $\frac{1}{2}$ 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 |
| Wire Pullout Force (Axial) | Apply an axial pullout force on the wire at a rate of 25 ± 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) |
| 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 ($1 \pm \frac{1}{4}$ 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 ($1 \pm \frac{1}{4}$ inch) per minute. | 68.4 N (15.4 lbf) MINIMUM Yield Strength |

| | | | |
|-------------------------------------|---|--|--------------------------------|
| REVISION: J | EGR/ECN INFORMATION: EC No: UCP2007-0365 DATE: 2006/08/08 | TITLE: PRODUCT SPECIFICATION MICRO-FIT SINGLE ROW CONNECTORS | SHEET No. 3 of 5 |
| DOCUMENT NUMBER: PS-43650 | CREATED / REVISED BY: M.KIPPER | CHECKED BY: S.SOUSEK | APPROVED BY: F.SMITH |



PRODUCT SPECIFICATION

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: 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 |
| Cold Resistance | Mate connectors: Duration: 96 hours; Temperature: -40 ± 3°C | 20 milliohms MAXIMUM (change from initial) |
| Corrosive Atmosphere: Sulfur Dioxide Gas (SO₂) | 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) |
| Corrosive Atmosphere: Ammonia Gas (NH₃) | Mate connectors: Duration: 40 minutes exposure; Atmosphere: NH ₃ gas evaporating from a 28% Ammonia solution | 20 milliohms MAXIMUM (change from initial) |

| | | | |
|--|--|---|---------------------------------------|
| <u>REVISION:</u> J | <u>EGR/ECN INFORMATION:</u> EC No: UCP2007-0365 DATE: 2006/08/08 | <u>TITLE:</u> PRODUCT SPECIFICATION MICRO-FIT SINGLE ROW CONNECTORS | <u>SHEET No.</u> 4 of 5 |
| <u>DOCUMENT NUMBER:</u> PS-43650 | <u>CREATED / REVISED BY:</u> M.KIPPER | <u>CHECKED BY:</u> S.SOUSEK | <u>APPROVED BY:</u> F.SMITH |



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

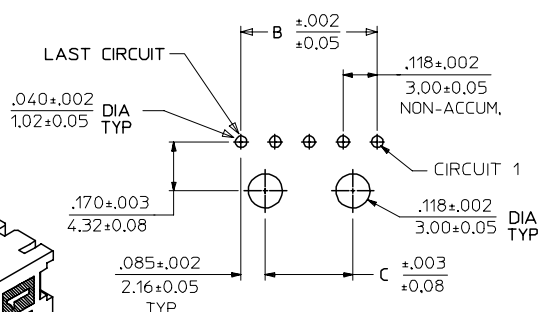
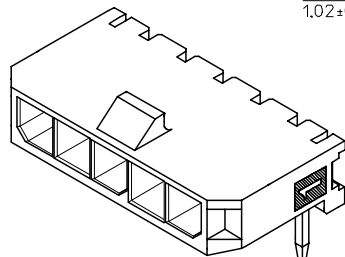
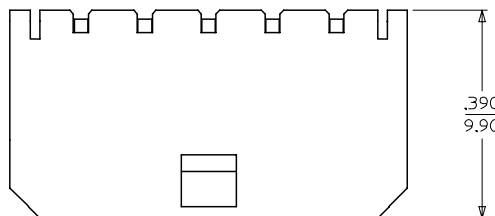
Headers: PK-70873-0321, PK-70873-0811, PK-70873-07**

7.0 GAGES AND FIXTURES

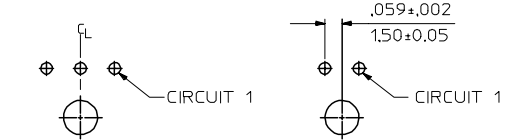
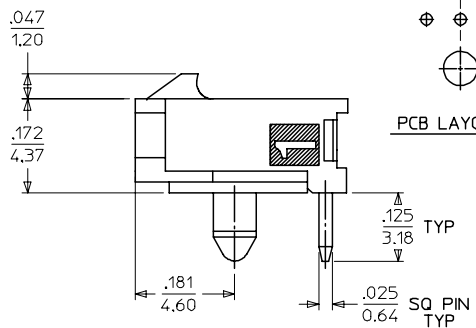
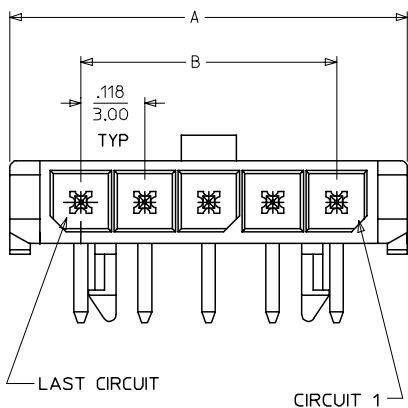
It is recommended that test plugs (Series 44242) be used for continuity testing of receptacles. Standard mating parts should not be used for harness testing.

8.0 OTHER INFORMATION

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



PCB LAYOUT: COMPONENT SIDE
RECOMMENDED PCB THICKNESS: .062/1.57
4-12 CIRCUIT HEADERS

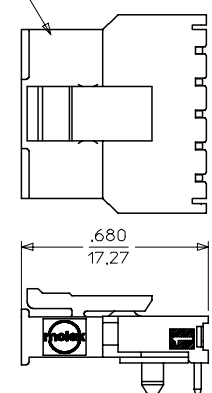


PCB LAYOUT: 3 CKT

PCB LAYOUT: 2 CKT

| CKTS | 43650 | | |
|------|----------------|----------------|----------------|
| | A | B | C |
| 2 | .380 9.65 | .118 3.00 | NA |
| 3 | .498 12.65 | .236 6.00 | NA |
| 4 | .616 15.65 | .354 9.00 | .185 4.70 |
| 5 | .734 18.64 | .472 12.00 | .303 7.70 |
| 6 | .852 21.64 | .591 15.00 | .421 10.70 |
| 7 | .970 24.64 | .709 18.00 | .539 13.70 |
| 8 | 1.088 27.64 | .827 21.00 | .657 16.70 |
| 9 | 1.206 30.63 | .945 24.00 | .776 19.70 |
| 10 | 1.325 33.66 | 1.063 27.00 | .894 22.70 |
| 11 | 1.443 36.65 | 1.181 30.00 | 1.012 25.70 |
| 12 | 1.561 39.65 | 1.299 33.00 | 1.130 28.70 |

RECEPTACLE #43645



MATED MICRO FIT CONNECTOR

| | FINISH A | FINISH B | FINISH C |
|------|--------------|--------------|--------------|
| CKTS | MATERIAL NO: | MATERIAL NO: | MATERIAL NO: |
| 02 | 43650-0200 | 43650-0201 | 43650-0202 |
| 03 | 43650-0300 | 43650-0301 | 43650-0302 |
| 04 | 43650-0400 | 43650-0401 | 43650-0402 |
| 05 | 43650-0500 | 43650-0501 | 43650-0502 |
| 06 | 43650-0600 | 43650-0601 | 43650-0602 |
| 07 | 43650-0700 | 43650-0701 | 43650-0702 |
| 08 | 43650-0800 | 43650-0801 | 43650-0802 |
| 09 | 43650-0900 | 43650-0901 | 43650-0902 |
| 10 | 43650-1000 | 43650-1001 | 43650-1002 |
| 11 | 43650-1100 | 43650-1101 | 43650-1102 |
| 12 | 43650-1200 | 43650-1201 | 43650-1202 |

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-70873-0321

| | | | | | | |
|---|-------------------------------|---------------------------------------|--|------------------------|---------------------------|--|
| LEAD FREE EC NO: UCP2004-1276 DRWN: JERNY 2004/03/12 CHKD: 2004/03/31 APPR: FSMITH 2004/04/05 | QUALITY SYMBOLS | GENERAL TOLERANCES (UNLESS SPECIFIED) | SCALE --- | DESIGN UNITS METRIC | THIRD ANGLE PROJECTION | REVISE ON CAD ONLY |
| | DESCRIPTION ▽ = 0 ▽ = 0 | mm | INCH | DIMENSION STYLE | | TITLE |
| | | 4 PLACES ± --- ± --- | 3 PLACES ± --- ± .010 | IN/MM | | MICRO-FIT (3.0) SINGLE ROW / RIGHT ANGLE THRU HOLE / PEGS / TRAY |
| | | 2 PLACES ± 0.25 ± .014 | 1 PLACE ± 0.35 ± --- | DRAWN BY SAMIEC | DATE 2000/07/07 | |
| ANGULAR ±1/2° | DRAFT WHERE APPLICABLE | CHECKED BY MUELLER | DATE 2000/07/07 | MATERIAL NO. SEE CHART | DOCUMENT NO. SD-43650-001 | SHEET NO. 1 OF 1 |
| MUST REMAIN WITHIN DIMENSIONS | | | THIS DRAWING CONTAINS INFORMATION THAT IS PROPRIETARY TO MOLEX INCORPORATED AND SHOULD NOT BE USED WITHOUT WRITTEN PERMISSION | | | |