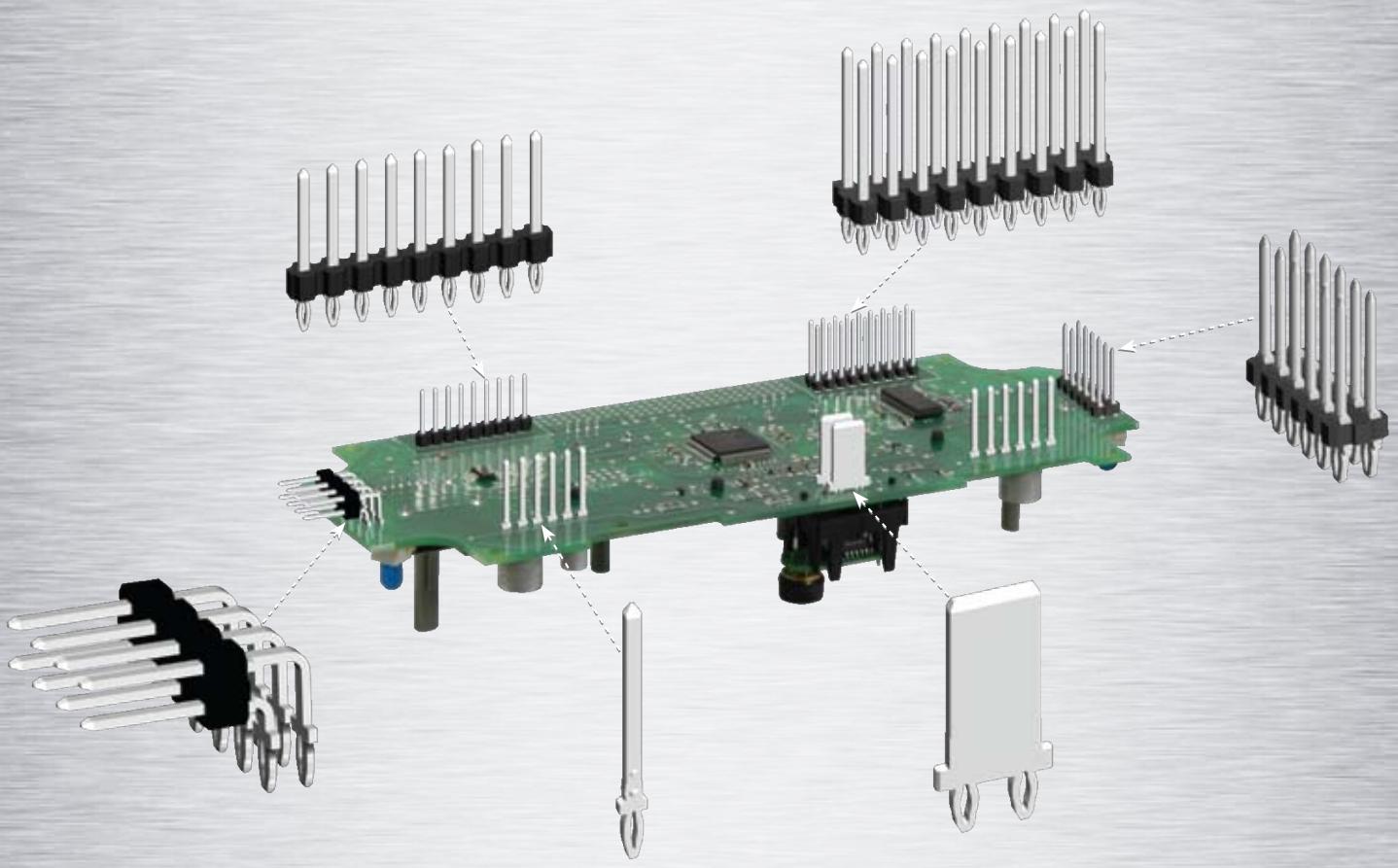
# Compliant Terminals and Connectors

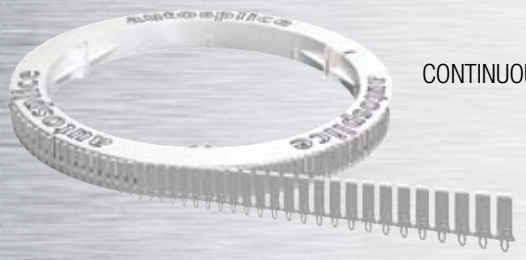


Lead Free
RoHS Compliant

## Solder Free Solutions

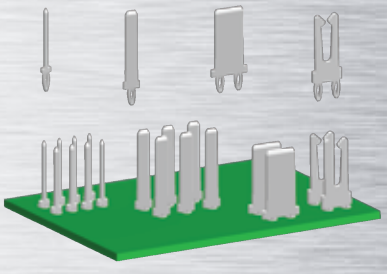
bulletin #0509ct

autosplice®
Innovative Interconnections™



CONTINUOUS REELED TABS

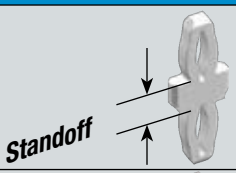
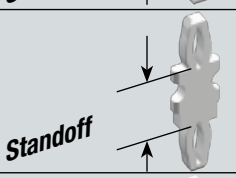
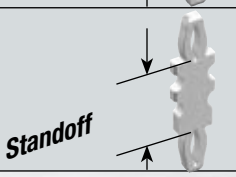
DIRECT INSERT INTO PCB



# Compliant Terminals Selection Guide (For Automatic Insertion)

| Terminal Types | Contact Cross - Section | Current * | Hole Size |
|---|---|---|---|
|  | .64mm x 0.64mm ( .025" x .025" ) square | 7.5 Amps | A |
|  | 1mm x 0.64mm ( .039" x .025" ) blade | 10 Amps | |
|  | 1.8mm x 0.64mm ( .070" x .025" ) blade | 10 Amps | |
|  | 1.5mm x 0.81mm ( .059" x .032" ) blade | 12.5 Amps | B |
|  | 2.8mm x 0.81mm ( .110" x .032" ) blade | 15 Amps | |
|  | 6.0mm x 0.81mm ( .236" x .032" ) blade | 25 Amps | |
|  | 6.3mm x 0.81mm ( .248" x .032" ) blade | 25 Amps | |
|  | 1.03mm ( .040" ) round | 12.5 Amps | |

* See temperature rise vs current data

| Dual Compliant Terminals | Current * | Hole Size |
|---|---|---|
|   | 15 Amps | A |
|   | 15 Amps | |
|   | 15 Amps | |

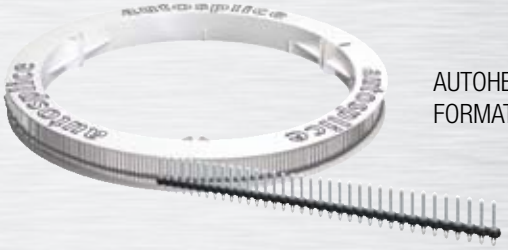
MULTISERT INSERTION MACHINE

## ** Finished Hole Sizes (P.T.H.)

| |
|---|
| **A** |
| Tin - Lead Plated Hole: 1.02 ± 0.08mm (0.040 ± .003") |
| **B** |
| Tin - Lead Plated Hole: 1.49 ± .08mm (0.0585 ± .003") |

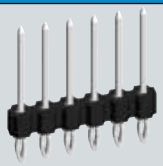
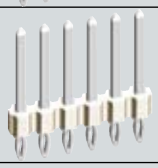
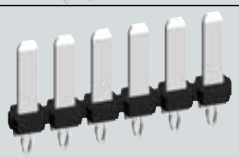
** Consult Factory for drilled/plated hole details and other platings

AUTO TRIMMER
CUT HEADER
KITTING
MACHINE

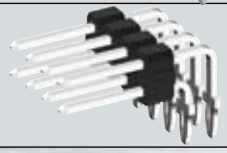


AUTOHEADER CONTINUOUS
FORMAT FOR AUTOMATED PLACEMENT

# Straight Compliant Autoheader Selection Guide

| Header Types | Connector Pitch | Rows | Contact Cross - Section | Current * per pin | Hole Size |
|---|---|---|---|---|---|
|  | 2.54mm ( .100" ) | Single | 0.64mm x 0.64mm ( .025" x .025" ) square | 7.5 Amps | A |
|  | 2.54mm x 2.54mm ( .100" x .100" ) | Dual | .64mm x 0.64mm ( .025" x .025" ) square | 7.5 Amps | |
|  | 2.54mm ( .100" ) | Single | 1.0mm x 0.64mm ( .039" x .025" ) blade | 10 Amps | |
|  | 2.54mm x 2.54mm ( .100" x .100" ) | Dual | 1.0mm x 0.64mm ( .039" x .025" ) blade | 10 Amps | |
|  | 2.50mm ( .098" ) | Single | 1.0mm x 0.64mm ( .039" x .025" ) blade | 10 Amps | |
|  | 5.0mm ( .197" ) | Single | 2.8mm x 0.81mm ( .110" x .032" ) blade | 15 Amps | B |
|  | 3.0mm x 3.0mm ( .118" x .118" ) | Dual | 1.03mm ( .040" ) round | 12.5 Amps | |

# Right Angle Compliant Autoheader Selection Guide

| | | | | | |
|---|---|---|---|---|---|
|  | 2.54 mm ( .100" x .100" ) | Single | 0.64mm x 0.64mm ( .025" x .025" ) square | 7.5 Amps | A |
|  | 2.54mm x 2.54mm ( .100" x .100" ) | Dual | 0.64mm x 0.64mm ( .025" x .025" ) square | 7.5 Amps | |

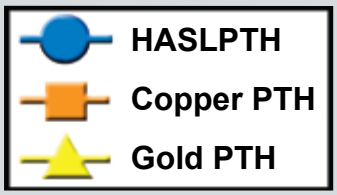
# Insertion and Retention Forces: N (lbf) Sample Test Data

| TEST | PCB HOLE PLATING | | |
|---|---|---|---|
| 1.0mm x.64mm (.039" x .025") contact, 1 leg (7-V5004-015TT) | HASL N (lbf) | Cu Plated N (lbf) | Gold Plated N (lbf) |
| 1st Insertion (maximum reading) | 59.6 (13.4) | 63.6 (14.3) | 42.3 (9.5) |
| 3rd Insertion (maximum reading) | 60.1 (13.5) | 49.8 (11.2) | 34.7 (7.8) |
| 1st Extraction (minimum reading) | 46.7 (10.5) | 51.2 (11.5) | 24.9 (5.6) |
| 3rd Extraction (minimum reading) | 53.8 (12.1) | 44.9 (10.1) | 27.1 (6.1) |

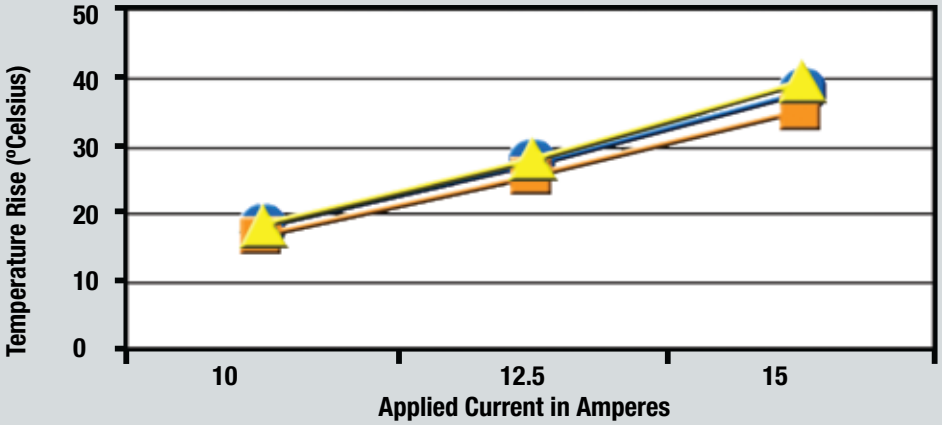
| 1.5mm x.81mm (.059" x .032") contact, 1 leg (7-V5005-015TT) | HASL N (lbf) | Cu Plated N (lbf) | Gold Plated N (lbf) |
|---|---|---|---|
| 1st Insertion (maximum reading) | 132.1 (29.7) | 132.6 (29.8) | 121.4 (27.3) |
| 3rd Insertion (maximum reading) | 141.0 (31.7) | 113.4 (25.5) | 113.9 (25.6) |
| 1st Extraction (minimum reading) | 88.1 (19.8) | 85.4 (19.2) | 85.9 (19.3) |
| 3rd Extraction (minimum reading) | 84.1 (18.9) | 57.4 (12.9) | 77.0 (17.3) |

| 6.0mm x 0.81mm (.236" x .032") dual-leg contact, (7-V5008-015TT) | HASL N (lbf) | Cu Plated N (lbf) | Gold Plated N (lbf) |
|---|---|---|---|
| 1st Insertion (maximum reading) | 282.9 (63.6) | 293.6 (66.0) | 248.7 (55.9) |
| 3rd Insertion (maximum reading) | 289.1 (65.0) | 252.2 (56.7) | 248.7 (55.9) |
| 1st Extraction (minimum reading) | 181.5 (40.8) | 197.9 (44.5) | 151.7 (34.1) |
| 3rd Extraction (minimum reading) | 179.7 (40.4) | 173.0 (38.9) | 160.1 (36.0) |

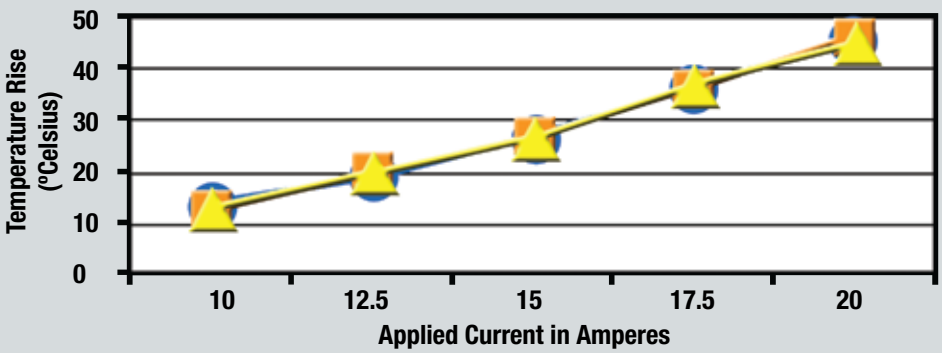
# Temperature Rise vs Current Data




Terminal 7-V5004-015TT
1.0mm x 0.64mm (.039" x .025") in a 1.02mm (.040") PTH




Terminal 7-V5005-015TT
1.5mm x 0.81mm (.059" x .032") in a 1.49mm (.0587") PTH



# Compliant Contact Specifications

Mechanical:

- Plating: Tin (RoHS) or Tin-Lead 0.76-2.00 microns (30-80 micro inches) over 1.27-2.54 micron (50-100 micro inches) Nickel.
- Hole Deformation: 0.05mm(.002") max radial deformation.
- Insertion/Withdrawal Forces (HASL PCB):
    - 0.64mm(.025")
        - Insertion Force max. 59.6N (13.4 lbf)
        - Retention Force min. 46.7N (10.5 lbf)
    - 0.81mm(.031")
        - Insertion Force max. 132.1N (29.7 lbf)
        - Retention Force Min. 88.1N (19.8 lbf)

Electrical:

- Current Rating*: 0.64mm x 0.64mm (.025" x .025") = 7.5 Amps
  1.00mm x 0.64mm (.039" x .025") = 10.0 Amps
  1.50mm x 0.81mm (.059" x .032") = 12.5 Amps
  2.80mm x 0.81mm (.110" x .032") = 15.0 Amps
  6.00mm x 0.81mm (.236" x .032") = 25.0 Amps
  (Compliant terminal only. 30ºC maximum temperature rise in air. See temp. rise vs current data)
  * Current rating may be limited by mating connector.
- Contact Resistance: 1.0mΩmax.

Environmental:

- Operating Temp: -40°C to +125°C (SAE/USCAR Class III)
- Vibration and Mechanical Shock: 1.8G random axis, and 10 millisecond 35G, 3 axis.
- Thermal Shock: 100 cycles from -40°C to +125°C.
- Temperature/Humidity: 40 cycles from -40°C to +125°C @ 95% RH.
- High Temperature Exposure: +125°C for 1008 hours.
- Mixed Flowing Gas Exposure: $H_2S$ @ 500ppb and $SO_2$ at 100ppb at a temperature of 25°C and a relative humidity of 75% for a period of 10 days.

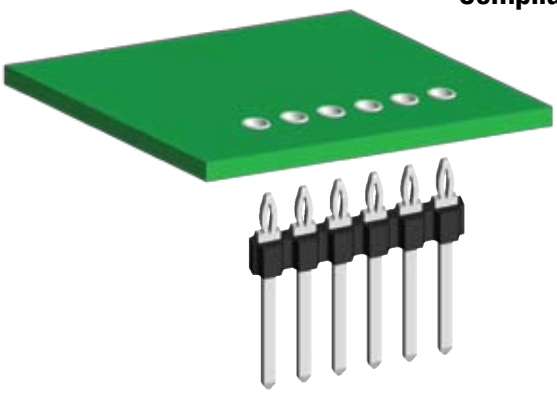
# Test Plan and Results

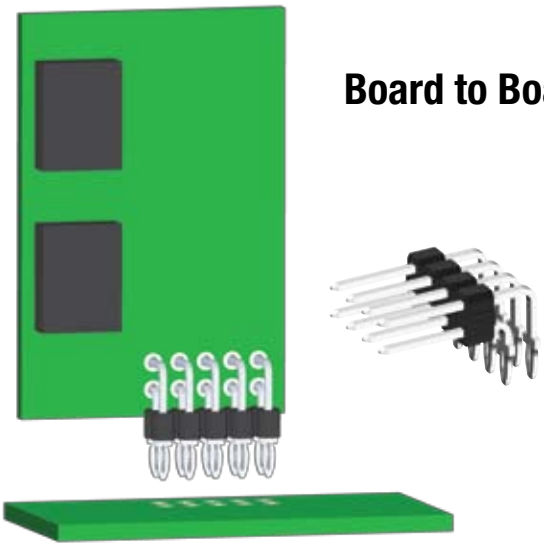
**For further test details, please contact Autosplice.**

| Test | Specification | Section | Test Result |
|---|---|---|---|
| Current Carrying Capacity (with temperature rise) | SAE/USCAR-2 | 5.3.3 | See chart. No evidence of physical damage and none of the samples exhibited a change in CPIR that exceeded 1 mΩ. |
| Current Cycling | SAE/USCAR-2 | 5.3.4 | No evidence of physical damage and none of the samples exhibited a change in CPIR that exceeded 1 mΩ. |
| Vibration and Mechanical Shock | SAE/USCAR-2 | 5.4.6 | |
| Thermal Shock | SAE/USCAR-2 | 5.6.1 | |
| Thermal Cycling with Humidity | SAE/USCAR-2 | 5.6.2 | |
| High Temperature Life Tests (1008 hours exposure) | SAE/USCAR-2 | 5.6.3 | |
| Exposure to Corrosive, Mixed Flowing Gases | IEC 60352-5 | Proc. 65 | |
| Plated Through Hole Conditioning and Integrity | EIA publication 364 | | See cross section photos. The examination found no evidence of physical damage. Hole deformation did not exceed a radius of 0.038mm to 0.050mm (0.0015" to 0.0020") measured from the drilled hole. |
| Micro sectioning of the PTH for analysis | EIA publication 364 | | See cross section photos |
| Insertion/Retention Forces | EIA publication 364 | | See Chart |

# Compliant Terminal & Connector

Press PCB Onto
Compliant Header



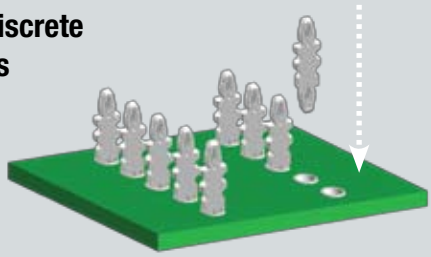


Board to Board

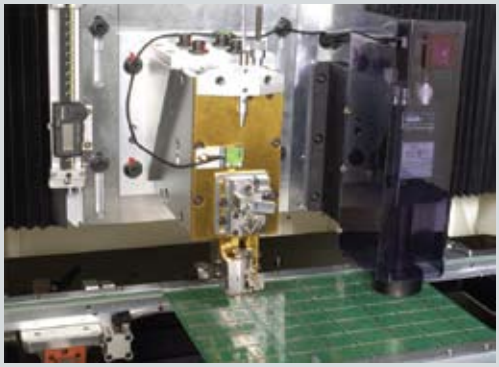
## Simplified Assembly Processes Reduce Cost

## Machine Inserted Compliant Contacts

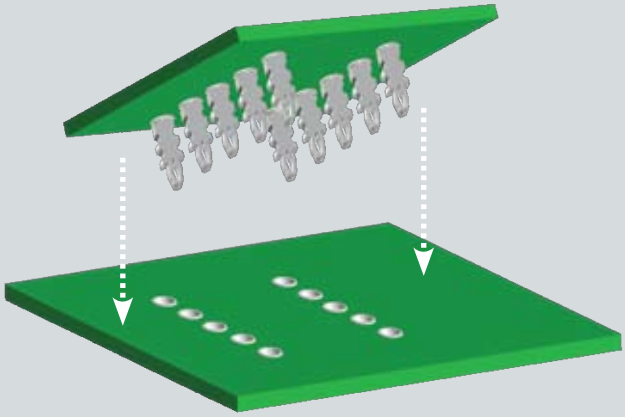
Insert Discrete
Contacts

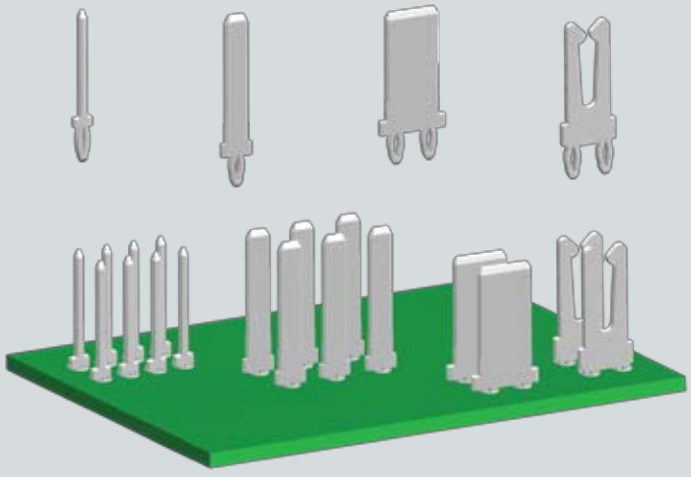


Insertion Head For Discrete Contacts



Press Into Main Board

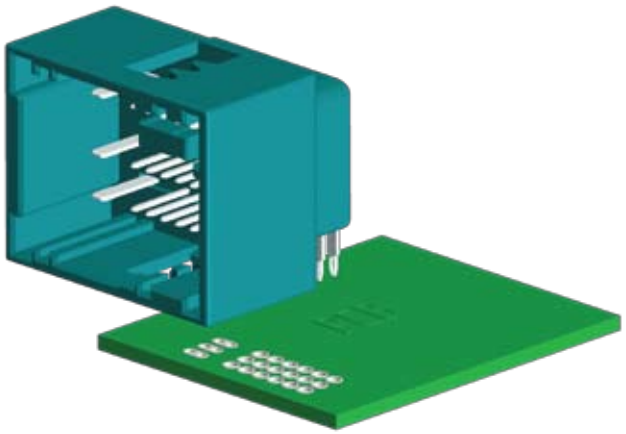


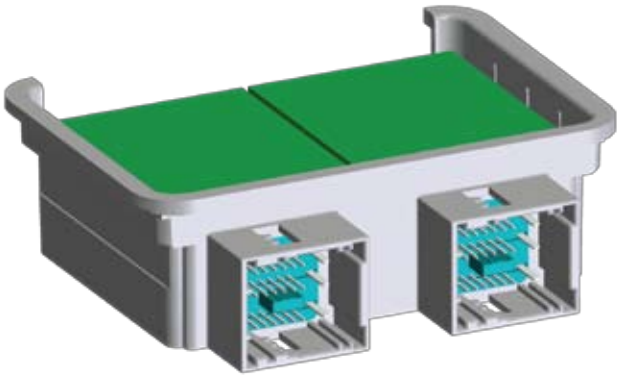


## Solderless Press Fit High Reliability Connection

# Applications

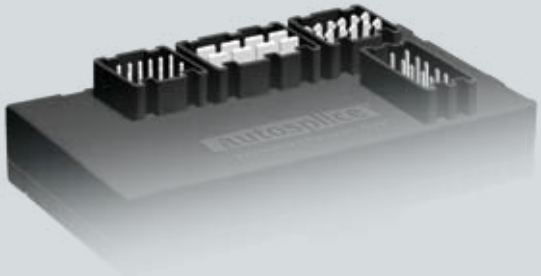
## Right Angle Compliant Contacts Integrated Into Housing

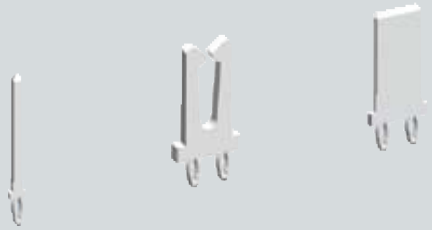




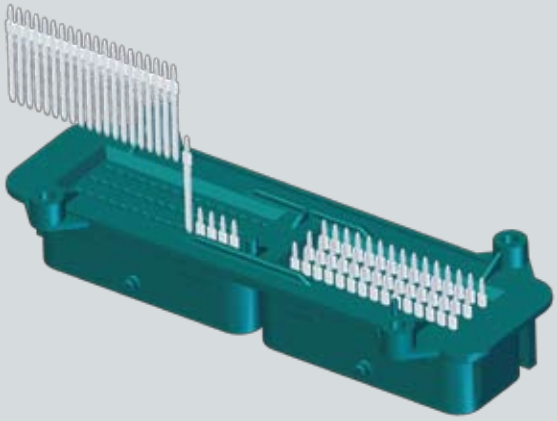
## Junction Box With Machine Inserted Discrete Compliant Contacts

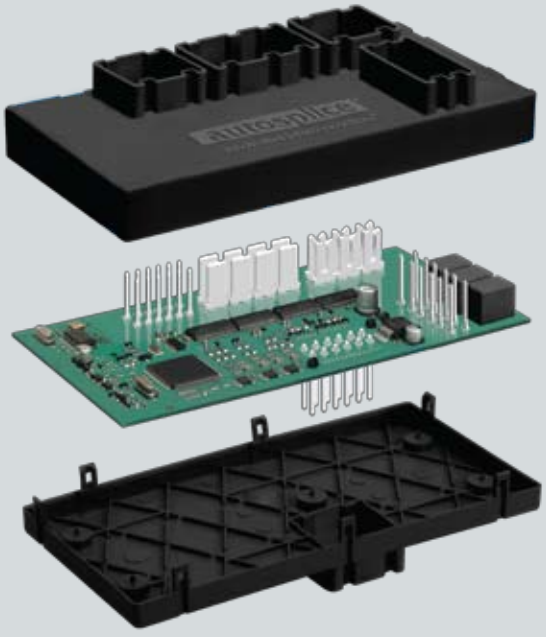
**Exceeds Automotive Test Requirements For USCAR Class 1, 2, and 3 (class 4 consult factory)**





## Housing Interface Connector

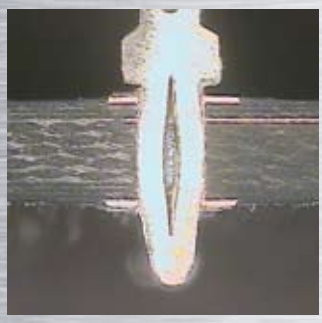


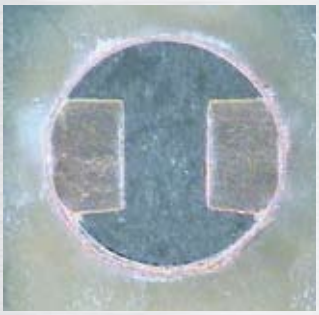


## Direct Insertion or Header Format

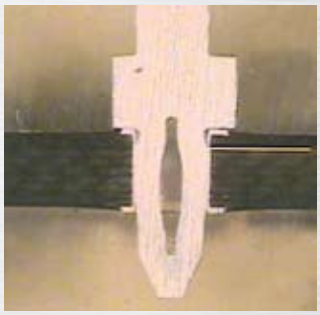
# Plated Through Hole Integrity

**1.00mm x 0.64mm (.039" x .025") Compliant Pin (7-V5004-015TT)**





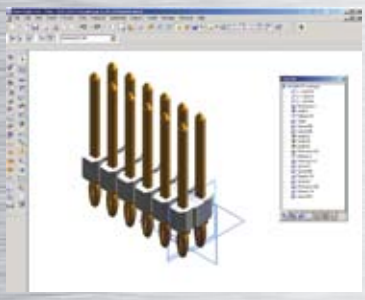
**1.50mm x 0.81mm (.059" x .032") Compliant Pin (7-V5005-015TT)**



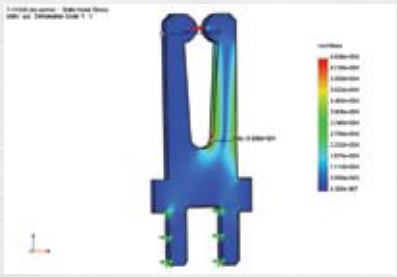
# Over 50 Years of Design Engineering Innovation

## Component and Machine Application Solutions

Applications requiring engineered solutions are critical to many of Autosplice's customers. Experience in the creation of cost-effective interconnection technology combined with years of component insertion equipment and placement knowledge sets Autosplice apart from ordinary component suppliers. Unique designs that provide quality, reliability, and installed cost savings are Autosplice's contribution to customers' requirements.



Design



Analysis

Validation


# Autosplice Contacts Worldwide


USA

Autosplice, Inc.
10121 Barnes Canyon Road
San Diego, CA 92121
USA
Tel: (858) 535-0077
E-mail: sales@autosplice.com

MEXICO

Autosplice Mexico, S. de R.L. de C.V.
Cartagena 18960 Plant 1 & 2
El Porvenir, Tijuana, BC 22224
Mexico
Tel: 52 664 625 8796
E-mail: connect@autosplice.com

EU

Autosplice Europe GmbH
Muhlsteig 2,
90579 Langenzenn
Germany
Tel: 09101 / 9014 - 0
E-mail: info@autosplice.de

JAPAN

Autosplice Japan
3-7-39 Minami Cho,
Higashi Kurume Shi
Tokyo 203-0031 Japan
Tel: 81 424 62 8481
E-mail: info@autosplice.co.jp

SINGAPORE

Autosplice Asia Pte, Ltd.
Redhill Industrial Estate
1002 Jalan Bukit Merah, Unit #05-13 to 20,
Singapore 159456
Tel: 65 6276 8223
E-mail: sales@autospliceasia.com.sg

USA

Autosplice Versatile Engineering
1559 W 135th Street
Gardena, CA 90249
USA
Tel: (310) 532-6044
E-mail: rpfetsch@autosplice.com

BRAZIL

Autosplice Industria E Comercio
Rua Laguna 79, Jardim Platina
CEP 06273-140, Osasco
Sao Paulo, Brazil
Tel: 55 11 3601 4445
E-mail: conect@autosplice.com.br

UK

Autosplice Brittanic Ltd.
Units 1-5 Crompton Road Industrial Estate
Ilkeston, Derbyshire DE7 4BG
United Kingdom
Tel: 49 9102 9957 0
E-mail: info@autosplice.de

KOREA

Autosplice Korea
Namdong Industrial Complex
117 Block 2 Lot 686-13, Gojan-Dong,
Namdong-Gu, Incheon City, South Korea
Tel: 82 32 812 9784
E-mail: autosplice@autosplice.co.kr

CHINA

Autosplice Electric Co Ltd
Haixing Mansion, Xi Cun, Liabou Town
Dongguan City,
523408 China
Tel: 86 769 352 5370
E-mail: sales@autosplicechina.com