PRODUCT SPECIFICATION FOR

Impact™

100 OHM INTERCONNECT SYSTEMS
## 1.0 SCOPE

This specification covers the performance requirements and test methods for the following products listed by series numbers:

<table>
<thead>
<tr>
<th>Series</th>
<th>Description</th>
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<tbody>
<tr>
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<td>100 Ohm, 2-Pair, Vertical Header</td>
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<tr>
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<td>170026</td>
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<td>Series</td>
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</tbody>
</table>
The IMPACT interconnect system consists of modular groupings of broad-edge coupled signals with optional integrated guidance. These connectors are two-piece devices, which connect two printed circuit boards. The right angle receptacle connectors (daughtercard), header pin connectors (backplane), right angle male connectors (RAM), and vertical female connectors (mezzanine) are through-hole devices with eye-of-the-needle compliant pin terminals.

2.0 PRODUCT DESCRIPTION

2.1 PRODUCT NAMES

IMPACT™

2.2 DIMENSIONS, MATERIALS, PLATINGS AND MARKINGS

Refer to the appropriate sales drawings for information on dimensions, materials, platings and markings.

The Backplane header pins and RAM pins are lubricated in the contact area with an approved lubricant per industry standard Telcordia GR-1217-CORE, Section 5.3

2.3 SAFETY AGENCY APPROVALS

UL File Number: E29179

3.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS

Refer to the appropriate sales drawings and other sections of this specification for the necessary referenced documents and specifications.

3.1 MOLEX DOCUMENTS

| AS-76060-990 | IMPACT™ Routing Guide |
| AS-76850-990 | IMPACT™ Orthogonal Routing Guide |
| TS-76145-002 | IMPACT™ 0.39mm Compliant Pin Performance |
| TS-76145-003 | IMPACT™ Environmental Performance Summary |
| AS-76060-9997 | IMPACT™ Design Guide |
| AS-76060-9999 | IMPACT™ Screw Design Guide |

3.2 COMMERCIAL STANDARDS

| EIA-364-B | Electrical Connector Test Procedure |
| GR-1217-CORE | Generic Requirements for Separable Electrical Connectors used In Telecommunications Hardware |
4.0 RATINGS

4.1 CURRENT AND TEMPERATURE RATING

- Agency Voltage: 29.9 VAC RMS/DC max
- Non-Agency Voltage: 150 VAC RMS/DC max
- Signal Contact: 0.75 Amp per contact
- Temperature: -55°C to 85°C

4.2 ELECTRICAL RATINGS

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Mating interface contact resistance change</td>
<td>10mΩ maximum</td>
</tr>
<tr>
<td>Compliant pin to plated through hole resistance</td>
<td>1mΩ maximum</td>
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<tr>
<td>Insulation resistance</td>
<td>1000 MegaΩ</td>
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<tr>
<td>Dielectric Withstanding Voltage</td>
<td>500 VAC</td>
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### 4.3 SIGNAL CONTACT MATED BULK RESISTANCE

#### SIGNAL CONTACT MATED BULK RESISTANCE OF DAUGHTER CARD

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<th>LEFT WAFFLET</th>
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<td>Electrical Lengths [mm]</td>
<td>Bulk Resistance [mΩ]</td>
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<tr>
<td>A</td>
<td>GND</td>
<td>6.9</td>
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<tr>
<td>B</td>
<td>19.0</td>
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<td>C</td>
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<td>D</td>
<td>GND</td>
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<td>E</td>
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<td>F</td>
<td>26.0</td>
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<td>G</td>
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<td>H</td>
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</table>

**NOTES:**
1. Electrical lengths are measured from DC compliant to BP compliant.
2. The resistance values are actual measured values.
3. This chart represents values for conventional right angle DC to vertical BP.
## SIGNAL CONTACT MATED BULK RESISTANCE OF RIGHT ANGLE MALE

<table>
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<tr>
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<td>Electrical Lengths [mm]</td>
<td>Bulk Resistance [mΩ]</td>
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<tr>
<td>B</td>
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<tr>
<td>C</td>
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**NOTES:**
1. Electrical lengths are measured from RAM compliant to DC compliant.
2. The resistance values are actual measured values.
3. This chart represents values for conventional coplanar RAM to DC.
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NOTES:
1. Electrical lengths are measured from DC compliant to DC compliant.
2. The resistance values are actual measured values.
3. This chart represents values for conventional 90 Degree mating orientation angle DC to DC.
270 DEGREE ORIENTATION SIGNAL CONTACT
MATED BULK RESISTANCE OF THE ORTHOGONAL DIRECT

<table>
<thead>
<tr>
<th>ROW</th>
<th>LEFT WAFLET</th>
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<tbody>
<tr>
<td></td>
<td>Electrical Lengths [mm]</td>
<td>Bulk Resistance [mΩ]</td>
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<tr>
<td>A</td>
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NOTES:
1. Electrical lengths are measured from DC compliant to DC compliant.
2. The resistance values are actual measured values.
3. This chart represents values for conventional 270 Degree mating orientation angle DC to DC.
### PERFORMANCE

#### 5.1 ELECTRICAL PERFORMANCE

<table>
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<tr>
<th>ITEM</th>
<th>TEST CONDITION</th>
<th>REQUIREMENT</th>
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<tbody>
<tr>
<td>CONTACT RESISTANCE (LOW LEVEL)</td>
<td>Mated, 100mA max, 20mV per EIA-364-TP23</td>
<td>10 milliohm maximum change</td>
</tr>
<tr>
<td>INSULATION RESISTANCE</td>
<td>Unmated, 500VDC per EIA-364-TP21</td>
<td>1000 megaohms minimum</td>
</tr>
<tr>
<td>DIELECTRIC WITHSTANDING VOLTAGE</td>
<td>Unmated, 500VAC per EIA-364-TP20</td>
<td>No breakdown or flashover</td>
</tr>
<tr>
<td>SIGNAL CONTINUITY</td>
<td>Mated per EIA-364-TP87</td>
<td>No interrupts greater than 10 nanoseconds</td>
</tr>
<tr>
<td>COMPLIANT PIN INTERFACE RESISTANCE</td>
<td>Contact inserted into PCB per EIA-364-TP23</td>
<td>1 milliohm maximum</td>
</tr>
<tr>
<td>OVERLOAD TEST *</td>
<td>25 cycles, 12VDC, 0.5A per UL 1977, Section 15*</td>
<td>Pass</td>
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</table>

* Testing does not represent the full sequence of testing and does not qualify the connector for an interrupt Rating per UL 1977.
### 5.2 MECHANICAL PERFORMANCE

<table>
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<th>ITEM</th>
<th>TEST CONDITION</th>
<th>REQUIREMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>DURABILITY</td>
<td>200 Cycles minimum, mated and unmated per EIA-364-TP09</td>
<td>10 milliohm max change in LLCR</td>
</tr>
<tr>
<td>VIBRATION</td>
<td>Mated, 10-500Hz, 10g’s, 8 hr, 3 axis per EIA-364-TP28 with 10 ns event detection</td>
<td>10 milliohm max change in LLCR, zero events detected</td>
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<tr>
<td>MECHANICAL SHOCK</td>
<td>Mated, 30g half-sine, 11ms, 3 axis per EIA-364-TP27 with 10 ns event detection</td>
<td>10 milliohm max change in LLCR, zero events detected</td>
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<tr>
<td>MATING FORCE PER PIN</td>
<td>Mate daughter card and backplane assembly per EIA-364-TP13</td>
<td>35 g max (average over entire assembly)</td>
</tr>
<tr>
<td>UNMATING FORCE PER PIN</td>
<td>Unmate daughter card and backplane assembly per EIA-364-TP13</td>
<td>15 g (min as produced) 8 g (min EOL)</td>
</tr>
</tbody>
</table>

### 5.3 ENVIRONMENTAL PERFORMANCE

<table>
<thead>
<tr>
<th>ITEM</th>
<th>TEST CONDITION</th>
<th>REQUIREMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>THERMAL SHOCK</td>
<td>Mated, 5 cycles from -55°C to 85°C per EIA-364-TP32</td>
<td>10 milliohm max change in LLCR</td>
</tr>
<tr>
<td>TEMPERATURE LIFE</td>
<td>Mated, 85°C for 500 hours min per EIA-364-TP17</td>
<td>10 milliohm max change in LLCR</td>
</tr>
<tr>
<td>HUMIDITY CYCLING</td>
<td>Relative humidity 90 to 95% for 500 hrs per EIA-364-TP31</td>
<td>10 milliohm max change in LLCR</td>
</tr>
<tr>
<td>DUST</td>
<td>Unmated per EIA-364-TP91</td>
<td>10 milliohm max change in LLCR</td>
</tr>
<tr>
<td>MIXED FLOWING GAS</td>
<td>Class IIA exposure 10 days unmated 10 days mated per EIA-364-TP65A</td>
<td>10 milliohm max change in LLCR</td>
</tr>
</tbody>
</table>
5.4 COMPLIANT PIN PERFORMANCE

5.4.1 Insertion Force for Various Plating Types

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>MAX</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMPACT Backplane Signal Pin</td>
<td>6 lbs</td>
</tr>
<tr>
<td>IMPACT Daughtercard Signal Pin</td>
<td>4 lbs</td>
</tr>
</tbody>
</table>

Note: These max values are intended for press sizing only. The peak force value will occur prior to the final seating of the connector. Plating surface finish and PCB materials will impact actual values.

5.4.2 Retention Force for Various Plating Types

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>MIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMPACT Backplane Signal Pin</td>
<td>0.8 lb</td>
</tr>
<tr>
<td>IMPACT Daughtercard Signal Pin</td>
<td>0.8 lb</td>
</tr>
</tbody>
</table>

Note: Data reflects minimum average values for retention forces when tested in plated through holes drilled and plated as described in Section 5.4.3. Plating surface finish and PCB materials will impact actual values.

Radial hole deformation: 1.5 mils max
Axial hole deformation: 1.0 mil max

5.4.3 Printed Circuit Board Specifications

Refer to the appropriate sales drawing for the recommended pcb thickness. Refer to routing guide AS-76060-990 for detailed plated through-hole requirements.
## 6.0 TEST SEQUENCE

<table>
<thead>
<tr>
<th>Group 1</th>
<th>Group 2</th>
<th>Group 3</th>
<th>Group 4</th>
<th>Group 5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Temperature Life</strong></td>
<td><strong>Thermal Shock</strong></td>
<td><strong>Humidity w/ Thermal Cycle</strong></td>
<td><strong>Vibration &amp; Mechanical Shock</strong></td>
<td><strong>Mixed Flowing Gas</strong></td>
</tr>
<tr>
<td>Mating / Unmating Force</td>
<td>Mating / Unmating Force</td>
<td>LLCR</td>
<td>LLCR</td>
<td>LLCR</td>
</tr>
<tr>
<td>LLCR</td>
<td>LLCR</td>
<td>Prewear - 100 cycles</td>
<td>T-Life (85°C for 300 hrs) (mated)</td>
<td></td>
</tr>
<tr>
<td>T-Life (85°C for 500 hrs) (mated)</td>
<td>Thermal Shock per GR-1217-CORE R6-57, -55°C to 85°C 5 cycles min</td>
<td>Dust Application</td>
<td>Dust Application</td>
<td></td>
</tr>
<tr>
<td>LLCR</td>
<td>LLCR</td>
<td>Thermal Cycle per GR-1217-CORE R6-64, +25°C to +65°C 500 hrs min, w/ humidity</td>
<td>LLCR</td>
<td></td>
</tr>
<tr>
<td>Mating / Unmating Force</td>
<td>Mating / Unmating Force</td>
<td>Postwear - 100 cycles</td>
<td>Vibration per GR-1217-Core R9-9, 8hrs each axis, 10 nanosecond event detect</td>
<td></td>
</tr>
<tr>
<td>LLCR</td>
<td>LLCR</td>
<td>Mechanical shock per GR-1217-CORE R9-12, 3 shock pulses each direction, 10 nanosecond detect</td>
<td>MFG - Unmated 5 days w/ LLCR</td>
<td></td>
</tr>
<tr>
<td>LLCR</td>
<td>LLCR</td>
<td>Disturb 0.1 mm w/ LLCR</td>
<td>MFG - Mated 5 days w/ LLCR</td>
<td></td>
</tr>
</tbody>
</table>

**MFG**
- Unmated 5 days w/ LLCR
- Mated 5 days w/ LLCR