1.85 mm (V) DC TO 67 GHz CONNECTORS

Low VSWR
Low Insertion Loss
Low RF Leakage
High Temperature
Rugged & Durable
Excellent Repeatability

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SOLDERLESS VERTICAL LAUNCH CONNECTORS
1.85 mm (V) DC to 67 GHz connectors from Southwest Microwave include field-replaceable 2- and 4-hole Flange-mount and standard or metric Thread-in Connectors, Direct-solder Cable Connectors, clamp-on End Launch Connectors, and the new Solderless Vertical Launch Connector.

### SPECIFICATIONS

**Electrical:**
- Mode Free Through 67 GHz
- Low VSWR: DC to 18.0 GHz ........ 1.10:1 max
  - 18.0 to 40.0 GHz .......... 1.15:1 max
  - 40.0 to 50.0 GHz .......... 1.18:1 max
  - 50.0 to 67.0 GHz .......... 1.25:1 max
- Low RF Leakage ≤ -100 dB
- Low Insertion Loss

**Temperature:**
- -55°C to + 165°C

**Materials / Construction:**
- Materials and finishes vary by product type.
  For data, refer to website or request Product Drawings and Specifications for desired connector.

### INTERFACE STANDARDS

#### 1.85mm JACK (SOCKET CONTACT)

<table>
<thead>
<tr>
<th>LTR</th>
<th>INCHES (MILLIMETERS)</th>
<th>MINIMUM</th>
<th>MAXIMUM</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>.228 (5.79mm)</td>
<td>.232</td>
<td>(5.89mm)</td>
</tr>
<tr>
<td>B</td>
<td>.1878 (4.770mm)</td>
<td>.1888</td>
<td>(4.796mm)</td>
</tr>
<tr>
<td>C</td>
<td>.0725 (1.841mm)</td>
<td>.0731</td>
<td>(1.857mm)</td>
</tr>
<tr>
<td>D</td>
<td>.118 (3.00mm)</td>
<td>.122</td>
<td>(3.10mm)</td>
</tr>
<tr>
<td>E</td>
<td>.000 (0.00mm)</td>
<td>.005</td>
<td>(0.13mm)</td>
</tr>
<tr>
<td>F</td>
<td>.055 (1.40mm)</td>
<td>.065</td>
<td>(1.65mm)</td>
</tr>
<tr>
<td>H</td>
<td>.189 (4.81mm)</td>
<td>.199</td>
<td>(5.06mm)</td>
</tr>
<tr>
<td>J</td>
<td>.0313 (0.795mm)</td>
<td>.0319</td>
<td>(0.810mm)</td>
</tr>
</tbody>
</table>

#### 1.85mm PLUG (PIN CONTACT)

<table>
<thead>
<tr>
<th>LTR</th>
<th>INCHES (MILLIMETERS)</th>
<th>MINIMUM</th>
<th>MAXIMUM</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>.276 (7.01mm)</td>
<td>.280</td>
<td>(7.11mm)</td>
</tr>
<tr>
<td>B</td>
<td>.1865 (4.737mm)</td>
<td>.1872</td>
<td>(4.755mm)</td>
</tr>
<tr>
<td>C</td>
<td>.0725 (1.842mm)</td>
<td>.0730</td>
<td>(1.854mm)</td>
</tr>
<tr>
<td>D</td>
<td>.0729 (1.852mm)</td>
<td>.0965</td>
<td>(2.451mm)</td>
</tr>
<tr>
<td>E</td>
<td>.172 (4.37mm)</td>
<td>.182</td>
<td>(4.62mm)</td>
</tr>
<tr>
<td>F</td>
<td>.020 (0.51mm)</td>
<td>.030</td>
<td>(0.76mm)</td>
</tr>
<tr>
<td>G</td>
<td>.0196 (0.498mm)</td>
<td>.0203</td>
<td>(0.516mm)</td>
</tr>
<tr>
<td>H</td>
<td>.0525 (1.335mm)</td>
<td>.0569</td>
<td>(1.445mm)</td>
</tr>
<tr>
<td>J</td>
<td>.000 (0.00mm)</td>
<td>.005</td>
<td>(0.13mm)</td>
</tr>
<tr>
<td>K</td>
<td>.0311 (0.790mm)</td>
<td>.0320</td>
<td>(0.813mm)</td>
</tr>
</tbody>
</table>

Notes: 1. Meets VSWR when mated with .0196 / .0206 (0.498 mm / 0.523 mm) Diameter Pin. 2. Interface per IEC 169 Grade 1
TEST DATA

Data shown represents two 1.85 mm (V) 9 mil pin connectors tested back-to-back. To extract VSWR data for a single connector, take the square root of the VSWR data point and divide the insertion loss data point by two.

VSWR = $\sqrt{1.26} = 1.12:1$ maximum for each connector, as shown. Contact Southwest Microwave for performance specifications for 1.85 mm and all other connectors.

INTERFACE COMPATIBILITY WITH 2.40 mm CONNECTORS

1.85 mm Plug (Male) Connector

2.40 mm Jack (Female) Connector

1.85 mm (V) Plug

2.40 mm Jack

1812-02SF Back-to-Back Test Data

S21 (dB)

S11 (VSWR)

Frequency (GHz)
## Flange Jack (Female) Connectors

<table>
<thead>
<tr>
<th>Flange Jack (Female)</th>
<th>4 Hole .500 Square</th>
<th>Accepts Pin Dia.</th>
<th>Connector No.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>.012</td>
<td>1812-04SF</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.009</td>
<td>1812-01SF</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Flange Jack (Female)</th>
<th>4 Hole .375 Square</th>
<th>Accepts Pin Dia.</th>
<th>Connector No.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>.012</td>
<td>1812-05SF*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.009</td>
<td>1812-02SF*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.009</td>
<td>1812-09SF</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.012</td>
<td>1812-10SF</td>
</tr>
</tbody>
</table>

*Connector also has .067 Flange Hole Size

<table>
<thead>
<tr>
<th>Flange Jack (Female)</th>
<th>2 Hole .625 x .223</th>
<th>Accepts Pin Dia.</th>
<th>Connector No.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>.012</td>
<td>1814-04SF</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.009</td>
<td>1814-01SF</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Flange Jack (Female)</th>
<th>2 Hole .550 x .190</th>
<th>Accepts Pin Dia.</th>
<th>Connector No.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>.012</td>
<td>1814-05SF</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.009</td>
<td>1814-02SF</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Flange Jack (Female)</th>
<th>2 Hole .500 x .190</th>
<th>Accepts Pin Dia.</th>
<th>Connector No.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>.012</td>
<td>1814-06SF</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.009</td>
<td>1814-03SF</td>
</tr>
</tbody>
</table>

### Thread-In Jack (Female)

<table>
<thead>
<tr>
<th>Thread-In Jack (Female)</th>
<th>Standard M6x .75 Rear Thd</th>
<th>Accepts Pin Dia.</th>
<th>Connector No.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>.012</td>
<td>1820-04SF</td>
<td></td>
</tr>
<tr>
<td></td>
<td>.009</td>
<td>1820-01SF</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Thread-In Jack (Female)</th>
<th>Optional .250-36 Rear Thd</th>
<th>Accepts Pin Dia.</th>
<th>Connector No.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>.012</td>
<td>1820-05SF</td>
<td></td>
</tr>
<tr>
<td></td>
<td>.009</td>
<td>1820-03SF</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Thread-In Hex (Female)</th>
<th>Standard M6x .75 Rear Thd</th>
<th>Accepts Pin Dia.</th>
<th>Connector No.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>.009</td>
<td>1820-10SF</td>
<td></td>
</tr>
<tr>
<td></td>
<td>.009</td>
<td>1820-11SF</td>
<td></td>
</tr>
</tbody>
</table>

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PLUG (MALE) CONNECTORS

FLANGE PLUG (MALE)  
4 HOLE .500 SQUARE

- ACCEPTS PIN DIA.  Connector No.
- .009  1811-01SF
- .012  1811-04SF

FLANGE PLUG (MALE)  
4 HOLE .375 SQUARE

- ACCEPTS PIN DIA.  Connector No.
- .012  1811-05SF
- .009  1811-02SF

FLANGE PLUG (MALE)  
2 HOLE .625 x .223

- ACCEPTS PIN DIA.  Connector No.
- .012  1813-04SF
- .009  1813-01SF

FLANGE PLUG (MALE)  
2 HOLE .550 x .190

- ACCEPTS PIN DIA.  Connector No.
- .012  1813-05SF
- .009  1813-02SF

THREAD-IN PLUG (MALE)  
STANDARD M6x .75 REAR THD

- ACCEPTS PIN DIA.  Connector No.
- .012  1821-04SF
- .009  1821-01SF

THREAD-IN PLUG (MALE)  
OPTIONAL .250-36 REAR THD

- ACCEPTS PIN DIA.  Connector No.
- .012  1821-05SF
- .009  1821-03SF
ADAPTERS

Low VSWR
DC to 18.0 GHz......1.10:1 max
18.0 to 40.0 GHz......1.15:1 max
40.0 to 50.0 GHz......1.18:1 max
50.0 to 67.0 GHz......1.25:1 max

Low Insertion Loss

Temperature Rating:
-55ºC to + 165ºC

RF Leakage: <-100dB

18.0 to 40.0 GHz....1.15:1 max
DC to 18.0 GHz......1.10:1 max

Low VSWR

1.85 mm to 1.85 mm Adapter (Model # 1832-00SF) Test Data

CABLE CONNECTORS

Detailed information on Direct Solder and on other Cable Connectors, including 0.9mm SuperMini and SSBP for use in multicontact D-Subminiature and MIL-DTL-38999 connectors, is available on the Southwest Microwave website.

<table>
<thead>
<tr>
<th>Cable Center Conductor Dia.</th>
<th>Cable</th>
<th>Field Replaceable</th>
<th>Cable Connector No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>.0113</td>
<td>.047 Semi-Rigid</td>
<td>Direct Solder</td>
<td>1802-05SF (F)</td>
</tr>
<tr>
<td>.0113</td>
<td>.047</td>
<td>Direct Solder</td>
<td>18370-01G (F)</td>
</tr>
<tr>
<td>.0113</td>
<td>.047</td>
<td>Direct Solder</td>
<td>18270-01G (M)</td>
</tr>
<tr>
<td>.0253</td>
<td>.086 LL</td>
<td>Direct Solder</td>
<td>18270-03G (M)</td>
</tr>
<tr>
<td>.0113</td>
<td>.047</td>
<td>Direct Solder</td>
<td>18270-06Z (M)</td>
</tr>
<tr>
<td>.086 LL</td>
<td>Direct Solder</td>
<td>18270-05G (M)</td>
<td></td>
</tr>
<tr>
<td>.086 LL</td>
<td>Direct Solder</td>
<td>18270-02G (M)</td>
<td></td>
</tr>
</tbody>
</table>

1.85 mm connectors and IW-1251 cable mated (Baseline Cable Assembly)

Assembly with two 18270-02G and 6” IW-1251 cables

Baseline Cable Assembly
Cable Assembly with SSBP

S11 (VSWR)
0 1.000 1.100 1.300

S21 (IL dB)
0 0.0 0.4 0.8 1.2 1.5

Frequency (GHz)
0 32.5 65.0

1.85 mm (V) to 1.0 mm (W) Adapters (67 GHz)
1.85 mm (F) to 1.0 mm (F): 1830-00SF
1.85 mm (F) to 1.0 mm (M): 1831-00SF
1.85 mm (M) to 1.0 mm (F): 1832-02SF
1.85 mm (M) to 1.0 mm (M): 1832-02SF

1.85 mm (V) to 0.9 mm SuperMini (67 GHz)
1.85 mm (F) to 0.9 mm SuperMini (M): 183420-00SF
1.85 mm (M) to 0.9 mm SuperMini (F): 183530-00G
1.85 mm (M) to 0.9 mm SuperMini (M): 183530-00G

1.85 mm (V) to SSBP Coax Contacts (67 GHz)
1.85 mm (F) to SSBP Coax Contacts (F): 185020-00G
1.85 mm (M) to SSBP Coax Contacts (F): 185030-01G

1.85 mm (V) Adapters (67 GHz)
1.85 mm (F) to 1.85 mm (F): 1830-00SF
1.85 mm (F) to 1.85 mm (M): 1830-02SF
1.85 mm (M) to 1.85 mm (F): 1832-02SF
1.85 mm (M) to 1.85 mm (M): 1832-02SF

1.85 mm (V) to 1.0 mm (W) Adapters (67 GHz)
1.85 mm (F) to 1.0 mm (F): 182410-00SF
1.85 mm (F) to 1.0 mm (M): 182420-00SF
1.85 mm (M) to 1.0 mm (F): 182430-00SF
1.85 mm (M) to 1.0 mm (M): 182440-00SF

1.85 mm (V) to 0.9 mm SuperMini (67 GHz)
1.85 mm (F) to 0.9 mm SuperMini (M): 185220-00G
1.85 mm (M) to 0.9 mm SuperMini (F): 185310-00G
1.85 mm (M) to 0.9 mm SuperMini (M): 185330-00G

1.85 mm (V) to SSBP Coax Contacts (67 GHz)
1.85 mm (F) to SSBP Coax Contacts (F): 185020-00G
1.85 mm (M) to SSBP Coax Contacts (F): 185030-01G

1.85 mm (V) Adapters (67 GHz)
1.85 mm (F) to 1.85 mm (F): 1830-00SF
1.85 mm (F) to 1.85 mm (M): 1830-02SF
1.85 mm (M) to 1.85 mm (F): 1832-02SF
1.85 mm (M) to 1.85 mm (M): 1832-02SF
**Test Data, Microstrip**

Showing test results to 67 GHz for two 1892-04A-5 End Launch Connectors on a RO4003 microstrip board with top ground launch. This shows both VSWR and Insertion Loss for the test board and the two connectors. This is not an optimized test board and is used to illustrate typical assembly.

Contact Southwest Microwave for suggested board-launch geometries based upon frequency and board material, for Grounded Coplanar/GCPWG and Microstrip applications.

Contact Southwest Microwave for Non-Magnetic models.

**Vertical Launch Connectors DC to 110 GHz**

**Compression-Mount, Solderless**

**1.85 mm (V) DC to 67 GHz (18359-001J)**

VSWR of 1.25:1 max across 67 GHz bandwidth.

Data represent two 1.85 mm connectors mounted on
Since 1981, Southwest Microwave has been providing a broad range of high-performance microwave connectors and adapters, currently available from DC to 110 GHz, for hi-rel / space, defense, instrumentation, integrated-circuit and PCB evaluation applications. Built in the USA to rigorous performance and quality standards, Southwest Microwave interconnect solutions offers the industry’s lowest VSWR, insertion loss and RF leakage.