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**(23) UWB Band Pass Filter (SCI-306W/F)**

**DESCRIPTION**

STATS ChipPAC’s SCI-306W/F is a band pass filter (BPF) for UWB band applications. The BPF has low pass-band insertion loss and small size. It is composed of 8.0 µm Cu-plated inductors and Metal-Insulator-Metal capacitors which are fabricated on a silicon substrate using our IPD (Integrated Passive Device) process. The pad or bump size and pitch of the BPF are selected so that the device can be mounted directly on a PCB or laminate substrate using conventional wirebonding or surface mount techniques. The low profile and small form-factor of the device make it especially suitable for SiP applications.

**FEATURES**

- Passive integration on silicon substrate
- Low insertion loss in pass band
- Small size: 1.4 mm x 1.2 mm (wirebond)
  1.6 mm x 1.2 mm (flip chip)
- Eutectic Sn/Pb or lead-free solder bump
- Low profile, 0.40 mm height
- Directly attachable on PCB or flipped on PCB
- Operating temperature: -40 to +85 °C
- Storage temperature: -40 to +85 °C

**ELECTRICAL SPECIFICATIONS**

(Test board loss 0.2 dB included)

<table>
<thead>
<tr>
<th>Specification</th>
<th>Unit</th>
<th>Minimum</th>
<th>Wirebonding Typical (Bumped Typical)</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pass Band</td>
<td>MHz</td>
<td>3000</td>
<td></td>
<td>5000</td>
</tr>
<tr>
<td>Insertion Loss</td>
<td>dB</td>
<td>2.5 (2.0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Return Loss</td>
<td>dB</td>
<td>10 (12)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attenuation, 900 MHz</td>
<td>dB</td>
<td>55 (45)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attenuation, 1900 MHz</td>
<td>dB</td>
<td>25 (23)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attenuation, 8000 - 20000 MHz</td>
<td>dB</td>
<td>10 (30)</td>
<td></td>
<td>50</td>
</tr>
<tr>
<td>Size</td>
<td>mm</td>
<td>1.4 x 1.2 (WB)</td>
<td></td>
<td>1.6 x 1.2 (FC)</td>
</tr>
</tbody>
</table>

**DIMENSIONS**

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The document contains diagrams and descriptions of the product, including its specifications and features. The text is clear and directly relevant to the product's capabilities and applications.
TYPICAL CHARACTERISTICS

![Graphs showing Insertion Loss and Return Loss for Wire-bondable and Bumped configurations.](image)

TEST BOARD DRAWING

**SCI-306W (Wirebond)**

![Diagram of SCI-306W (Wirebond) test board layout.](image)

**SCI-306F (Flip Chip)**

![Diagram of SCI-306F (Flip Chip) test board layout.](image)

NOTES

All dimension measurement units are in millimeters (mm). Electrical performance and typical values are measured at room temperature. For best results, ground plane directly beneath the device should be in the top metal layer.

Refer to "Appendix A" for:
- Pad sizes and typical wirebond length used in the wirebonded IPD products.
- Recommended solder thermal profile, landing pattern recommendation and bump specifications used in the flip chip IPD products.