DESCRIPTION

- 140 MHz SAW bandpass filter with 20 MHz bandwidth.
- 13.3 x 6.5 mm SMP package.
- RoHS compliant.

TYPICAL PERFORMANCE

Horizontal: Frequency : 8 MHz/div
Vertical from Top: Relative Magnitude : 10 dB/div
Relative magnitude : 1 dB/div
Phase Linearity : 5 deg/div
Group Delay : 100 ns/div

S11

S22
SPECIFICATION

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Min</th>
<th>Typ</th>
<th>Max</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Center Frequency (Fc)</td>
<td></td>
<td>140.0</td>
<td></td>
<td>MHz</td>
</tr>
<tr>
<td>Insertion Loss</td>
<td></td>
<td>12.7</td>
<td>15</td>
<td>dB</td>
</tr>
<tr>
<td>Lower 1 dB Frequency</td>
<td></td>
<td>129.80</td>
<td>130.40</td>
<td>MHz</td>
</tr>
<tr>
<td>Upper 1 dB Frequency</td>
<td>149.60</td>
<td>150.50</td>
<td></td>
<td>MHz</td>
</tr>
<tr>
<td>Lower 3 dB Frequency</td>
<td></td>
<td>129.40</td>
<td>130.00</td>
<td>MHz</td>
</tr>
<tr>
<td>Upper 3 dB Frequency</td>
<td>150.00</td>
<td>151.00</td>
<td></td>
<td>MHz</td>
</tr>
<tr>
<td>Lower 30 dB Frequency</td>
<td>127.25</td>
<td>128.00</td>
<td></td>
<td>MHz</td>
</tr>
<tr>
<td>Upper 30 dB Frequency</td>
<td></td>
<td>152.40</td>
<td>152.75</td>
<td>MHz</td>
</tr>
<tr>
<td>Lower 40 dB Frequency</td>
<td>120.00</td>
<td>121.50</td>
<td></td>
<td>MHz</td>
</tr>
<tr>
<td>Upper 40 dB Frequency</td>
<td></td>
<td>158.50</td>
<td>160.00</td>
<td>MHz</td>
</tr>
<tr>
<td>Passband Ripple</td>
<td></td>
<td>0.6</td>
<td>1.2</td>
<td>dB p-p</td>
</tr>
<tr>
<td>Group Delay Variation</td>
<td></td>
<td>45</td>
<td>200</td>
<td>ns p-p</td>
</tr>
<tr>
<td>Absolute Delay</td>
<td></td>
<td>1.0</td>
<td>1.6</td>
<td>us</td>
</tr>
<tr>
<td>Rejection (10 to 120 MHz)</td>
<td>40</td>
<td>48</td>
<td></td>
<td>dB</td>
</tr>
<tr>
<td>Rejection (160 to 250 MHz)</td>
<td>40</td>
<td>46</td>
<td></td>
<td>dB</td>
</tr>
<tr>
<td>Source and Load Impedance</td>
<td>-</td>
<td>50</td>
<td>-</td>
<td>Ω</td>
</tr>
<tr>
<td>Ambient Temperature (Tref)</td>
<td>-</td>
<td>25</td>
<td>-</td>
<td>°C</td>
</tr>
</tbody>
</table>

Notes:  
1. Average of lower and upper 3 dB band edge frequencies.  
2. Measured at Fc.  
3. Evaluated over 139.3 to 149.7 MHz.  
4. Typical change of filter response with temperature is: \( \Delta f = (T - T_{ref}) \cdot T_{c} \cdot Fc \) in ppm.

MAXIMUM RATINGS

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Min</th>
<th>Typ</th>
<th>Max</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storage Temperature Range</td>
<td>-40</td>
<td>25</td>
<td>85</td>
<td>°C</td>
</tr>
<tr>
<td>Temperature Coefficient of Frequency (Tc)</td>
<td>-</td>
<td>-94</td>
<td>-</td>
<td>ppm/°C</td>
</tr>
<tr>
<td>Input Power Level</td>
<td>-</td>
<td>0</td>
<td>10</td>
<td>dBm</td>
</tr>
</tbody>
</table>

MATCHING CIRCUIT

![Matching Circuit Diagram]

Typical component values:  
(Minimum inductor Q = 45)  
\( L_{s1} = 68 \) nH  
\( L_{s2} = 100 \) nH

Notes:  
1. Recommend the use of +/-2% tolerance components.  
2. Component values shown are for guidance only and may change depending on board layout.
**140 MHz SAW Filter**

20 MHz Bandwidth

Part Number SF0140BA01992S

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**PACKAGE OUTLINE**

![Package Outline Diagram]

**SUGGESTED FOOTPRINT**

![Suggested Footprint Diagram]

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Units: mm

Tolerances are ±0.15 mm except for the overall length and width, which are nominal values.

**Pad Configuration:**

Input: 11
Output: 5
Ground: 1,2,3,4,6,7,8,9,10,12

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Package Material:

Body: $\text{Al}_2\text{O}_3$ ceramic

Lid: Kovar, Ni plated

Terminations: Au plating 1 µm min, over a 1.3-8.9 µm Ni plating

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All specifications are believed to be accurate and reliable. However, Spectrum Microwave reserves the right to make changes without notice.

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DSSF0140BA01992S Rev A 5-Mar-2010

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