



**Product Family:** [High Frequency, Power Attenuator](#)  
**Part Number Series:** [AFN Series](#)



	<p><b>Construction:</b></p> <ul style="list-style-type: none"> <li>Alumina Nitride Substrate</li> <li>Ni alloy thin-film resistive elements</li> <li>100% matte tin terminations (RoHS compliant and Pb Free)</li> </ul>	<p><b>Features:</b></p> <ul style="list-style-type: none"> <li>1220 English case size (3050 Metric)</li> <li>13.5GHz+ performance</li> <li>2W power rating</li> <li>5dB, 10dB and 20dB attenuation values</li> <li>50Ω impedance</li> <li>High volume production suitable for commercial and special applications</li> </ul>
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Surface mount thin film attenuator on Aluminum Nitride substrate providing excellent attenuation of transmitted signals for RF and microwave frequencies with optimal thermal dissipation. Balanced circuit design provides excellent frequency characteristics with tight tolerance behavior.

**Product Dimensions and Land Pattern\*:**

	<table border="1"> <thead> <tr> <th>Dimensional Callout</th> <th>Inches (millimeters)</th> </tr> </thead> <tbody> <tr> <td>L</td> <td>0.197 ±0.008 (5.00 ±0.20)</td> </tr> <tr> <td>W</td> <td>0.118 ±0.008 (3.00 ±0.20)</td> </tr> <tr> <td>T</td> <td>0.020 max. (0.50 max.)</td> </tr> <tr> <td>A</td> <td>0.020 ±0.004 (0.50 ±0.10)</td> </tr> <tr> <td>B</td> <td>0.020 ±0.004 (0.50 ±0.10)</td> </tr> <tr> <td>C</td> <td>0.020 ±0.004 (0.50 ±0.10)</td> </tr> <tr> <td>D</td> <td>0.098 ±0.004 (2.50 ±0.10)</td> </tr> </tbody> </table>	Dimensional Callout	Inches (millimeters)	L	0.197 ±0.008 (5.00 ±0.20)	W	0.118 ±0.008 (3.00 ±0.20)	T	0.020 max. (0.50 max.)	A	0.020 ±0.004 (0.50 ±0.10)	B	0.020 ±0.004 (0.50 ±0.10)	C	0.020 ±0.004 (0.50 ±0.10)	D	0.098 ±0.004 (2.50 ±0.10)	<p style="text-align: center;"><u>Land Pattern</u></p> <p>* Note: To obtain specified frequency performance, the recommended land pattern must be fabricated on Rogers printed circuit board material. Contact the factory for a DXF output of the recommended land pattern design.</p>
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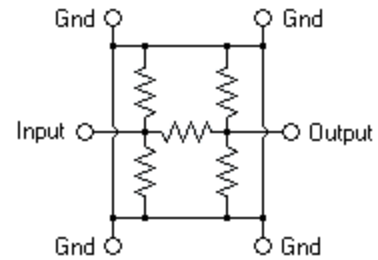
**HPA Series Part Numbering:** Ex: AFN1220-C-05R0S

Product Designator	English Size	Impedance Code	Attenuation Value	Serial Code
AFN	1220	C = 50Ω	Four digits where "R" denotes decimal position 05R0 = 5dB 10R0 = 10dB 20R0 = 20dB	S = Standard

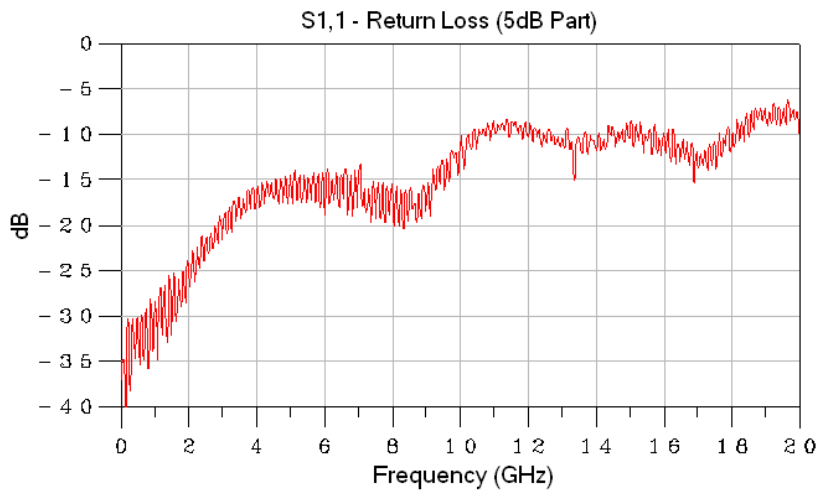
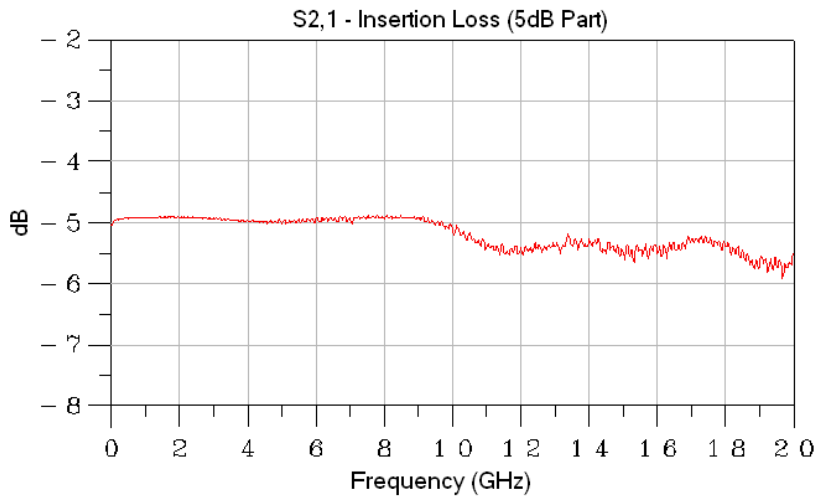
**Electrical Specifications and Schematic:**

Item	Spec
English Size	1220
Metric Size	3050
Frequency Range	DC to 13.5 GHz
Rated Input Power	2 Watts
Attenuation	5dB, 10dB, 20dB
Attenuation Tolerance	±0.7dB to 6GHz, ±1.0 dB @>6GHz
Return loss	-12dB through 8GHz, -8dB through 13.5GHz
Characteristic Impedance	50Ω
Operating Temperature	-55°C to 100°C

**Schematic**



**Typical Electrical and Thermal Performance Plots:**



Shown below is a thermal plot of a 5dB attenuator with 2 watts of applied power. The part was mounted on a 14.7mm x 14.7mm Rogers PCB coupon. The outer red square represents the Rogers coupon area and the inner yellow square represents the attenuator. Maximum surface temperature was 67°C.

