LEAD-FREE / RoHS-COMPLIANT

1 Device Overview

1.1 General Description
The ATNXX-0067 is a family of precision GaAs MMIC fixed attenuators. These attenuators are an ideal solution for attenuating a signal and they can be used in a wide range of applications. They are ideal for test equipment's protection and signal overload prevention in various RF circuitry. A 50-ohm match is maintained over the entire operating frequency range.

1.2 Features
- 6 or 10dB attenuation DC to 67 GHz
- Return loss: typical 22 dB over the entire band
- S2P data: ATNXX-0067.s2p

1.3 Applications
- 5G
- Automotive Radar
- Test Equipment
- Amplitude matching
- Precision characterization
- Wireless Backhaul

1.4 Functional Block Diagram

1.5 Part Ordering Options

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Attenuation (dB)</th>
<th>Description</th>
<th>Package</th>
<th>Green Status</th>
<th>Product Lifecycle</th>
<th>Export Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATN06-0067</td>
<td>6</td>
<td>Connectorized Module 1.85 mm-F/F</td>
<td>Module</td>
<td>RoHS</td>
<td>Active</td>
<td>EAR99</td>
</tr>
<tr>
<td>ATN10-0067</td>
<td>10</td>
<td>Connectorized Module 1.85 mm-M/F</td>
<td>Module</td>
<td>RoHS</td>
<td>Active</td>
<td>EAR99</td>
</tr>
<tr>
<td>ATN06-0067-2HV</td>
<td>6</td>
<td>Connectorized Module 1.85 mm-M/F</td>
<td>Module</td>
<td>RoHS</td>
<td>Active</td>
<td>EAR99</td>
</tr>
<tr>
<td>ATN10-0067-2HV</td>
<td>10</td>
<td>Connectorized Module 1.85 mm-M/F</td>
<td>Module</td>
<td>RoHS</td>
<td>Active</td>
<td>EAR99</td>
</tr>
<tr>
<td>ATN06-0067-3HV</td>
<td>6</td>
<td>Connectorized Module 1.85 mm-M/M</td>
<td>Module</td>
<td>RoHS</td>
<td>Active</td>
<td>EAR99</td>
</tr>
<tr>
<td>ATN10-0067-3HV</td>
<td>10</td>
<td>Connectorized Module 1.85 mm-M/M</td>
<td>Module</td>
<td>RoHS</td>
<td>Active</td>
<td>EAR99</td>
</tr>
</tbody>
</table>

1 Refer to our website for a list of definitions for terminology presented in this table.
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Revision History

<table>
<thead>
<tr>
<th>Revision Code</th>
<th>Revision Date</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>November 2020</td>
<td>Datasheet Initial Release</td>
</tr>
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</table>
2 Port Configurations and Functions

2.1 Port Diagram
A bottom-up view of the ATN10-0067 M-package outline drawing is shown below.

```
```

2.2 Port Functions

<table>
<thead>
<tr>
<th>Port</th>
<th>Function</th>
<th>Description</th>
<th>Equivalent Circuit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Port 1</td>
<td>Input/Output</td>
<td>Port 1 and port 2 are DC connected to each other and ground through a T-network of resistors.</td>
<td><img src="image" alt="Port 1 Port 2 Diagram" /></td>
</tr>
<tr>
<td>Port 2</td>
<td>Input/Output</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pad</td>
<td>Ground</td>
<td>M package ground provided through metal housing and outer coax conductor.</td>
<td><img src="image" alt="Ground Symbol" /></td>
</tr>
</tbody>
</table>
3 Specifications

3.1 Absolute Maximum Ratings

The Absolute Maximum Ratings indicate limits beyond which damage may occur to the device. If these limits are exceeded, the device may be inoperable or have a reduced lifetime.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Maximum Rating</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC Current at any port (6 dB attenuator)</td>
<td>100</td>
<td>mA</td>
</tr>
<tr>
<td>DC Current at any port (10 dB attenuator)</td>
<td>150</td>
<td>mA</td>
</tr>
<tr>
<td>Power Handling, at any Port(^3)</td>
<td>2</td>
<td>W</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-55 to +100</td>
<td>°C</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-65 to +125</td>
<td>°C</td>
</tr>
</tbody>
</table>

3.2 Package Information

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Details</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESD</td>
<td>Human Body Model (HBM), per MIL-STD-750, Method 1020</td>
<td>1A</td>
</tr>
<tr>
<td>Weight</td>
<td>M package</td>
<td>15.2 g</td>
</tr>
</tbody>
</table>

3.3 Electrical Specifications

The electrical specifications apply at \(T_A=+25°C\) in a 50Ω system. Typical data shown is for the attenuator in a M package with a sine wave input applied to port 1.

Min and Max limits are guaranteed at \(T_A=+25°C\).

<table>
<thead>
<tr>
<th>Model</th>
<th>Attenuation (dB)</th>
<th>Frequency (GHz)</th>
<th>Attenuation accuracy (Typical)</th>
<th>Return loss (dB) (Typical)</th>
<th>Impedance (Ω)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATN06-0067</td>
<td>6.1</td>
<td>DC-35</td>
<td>±0.2</td>
<td>30</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>6.4</td>
<td>35-67</td>
<td>±0.4</td>
<td>23</td>
<td></td>
</tr>
<tr>
<td>ATN10-0067</td>
<td>10.2</td>
<td>DC-35</td>
<td>±0.3</td>
<td>27</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>10.5</td>
<td>35-67</td>
<td>±0.5</td>
<td>22</td>
<td></td>
</tr>
</tbody>
</table>

\(^2\) Reliability ratings are individual, a combination of stresses (DC current, RF power, and heat) may cause premature failure.

\(^3\) Actual failure observed at 4W at 2 GHz with a baseplate temperature of 23°C. Power handling will derate with frequency and temperature.
3.4 Typical Performance Plots

3.4.1 6 dB Attenuator performance plots

3.4.2 10 dB Attenuator performance plots
3.4.3 6 dB Attenuator performance over temperature plots

3.4.4 10 dB Attenuator performance over temperature plots
3.4.5 6 dB Attenuator performance vs current plots

3.4.6 10 dB Attenuator performance vs current plots
4 Mechanical Data

4.1 ATNXX-0067 Outline Drawing

All Measurements are typical

Note2: Use 9/16 fixed wrench to hold in place body of M housing while tightening connectors to 25Ncm

Note: Connectors are not removeable. Do not attempt replacing.

Note1: RoHS Compliant Assembly
All Measurements are typical

Bottomside View

0.48 [12.29]
0.31 [7.87]
0.28 [7.11]
0.56 [14.30]
1.24 [31.52]
0.45 [11.35]

XX dB Attenuator

Marki

D/C

1.85 mm Male Connector

Topside View

1.85 mm Female Connector

1.85 mm Male Connector

Side View

0.40 [10.11]
0.16 [4.19]
0.28 [7.16]
0.40 [10.11]
0.375 [9.52]
0.56 [14.30]

xx Part Number
6 ATN06-0067
10 ATN10-0067

Note: Connectors are not removeable. Do not attempt replacing.

Note1: RoHS Compliant Assembly

Note2: Use 9/16 fixed wrench to hold in place body of M housing while tightening connectors to 25Ncm
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