TEST DATA
ON
0.5 TO 18 GHz
15.5 dB
HIGH SPEED DIGITAL ATTENUATOR

AMC MODEL No.
ADVAN-218-15DD
OPTION HS25NS, 5B

SERIAL NUMBER: ATN2P1

DESIGNED, TESTED AND REPORTED
BY
S KUHN

15 January 2004
AMC MODEL No: ADVAN-218-15DD  
OPTION HS25NS, 5B

FEATURES:

- VERY HIGH SPEED < 15 ns
- WIDE BANDWIDTH
- 15.5 dB RANGE
- 0.5 dB DIGITAL STEP SIZE

SPECIFICATIONS

<table>
<thead>
<tr>
<th>#</th>
<th>DESCRIPTION</th>
<th>MIN</th>
<th>MAX</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>FREQUENCY RANGE</td>
<td>0.5</td>
<td>18</td>
<td>GHz</td>
</tr>
<tr>
<td>2</td>
<td>INSERTION LOSS</td>
<td>2.5</td>
<td>6.0</td>
<td>dB</td>
</tr>
<tr>
<td>3</td>
<td>RETURN LOSS</td>
<td>-10</td>
<td></td>
<td>dB</td>
</tr>
<tr>
<td>4</td>
<td>SWITCHING TIME</td>
<td></td>
<td>15</td>
<td>ns</td>
</tr>
<tr>
<td>5</td>
<td>P1dB 2 to 18 GHz</td>
<td></td>
<td>19</td>
<td>dBm</td>
</tr>
<tr>
<td>6</td>
<td>P1dB 0.5 to 2 GHz</td>
<td></td>
<td>15</td>
<td>dBm</td>
</tr>
<tr>
<td>7</td>
<td>ATTENUATION FLATNESS ATN &lt; 5 dB</td>
<td></td>
<td>±0.5</td>
<td>dB</td>
</tr>
<tr>
<td>7</td>
<td>ATTENUATION FLATNESS ATN &lt; 10 dB</td>
<td>25°C</td>
<td>±0.8</td>
<td>dB</td>
</tr>
<tr>
<td>8</td>
<td>ATTENUATION FLATNESS any ATN</td>
<td>25°C</td>
<td>±1.2</td>
<td>dB</td>
</tr>
<tr>
<td>9</td>
<td>POSITIVE SUPPLY VOLTAGE</td>
<td>9</td>
<td>15</td>
<td>V</td>
</tr>
<tr>
<td>10</td>
<td>NEGATIVE SUPPLY VOLTAGE</td>
<td>-9</td>
<td>-15</td>
<td>V</td>
</tr>
<tr>
<td>11</td>
<td>POSITIVE SUPPLY CURRENT</td>
<td></td>
<td>25</td>
<td>mA</td>
</tr>
<tr>
<td>12</td>
<td>NEGATIVE SUPPLY CURRENT</td>
<td></td>
<td>25</td>
<td>mA</td>
</tr>
<tr>
<td>13</td>
<td>OPERATING TEMPERATURE RANGE</td>
<td></td>
<td>-40</td>
<td>°C</td>
</tr>
</tbody>
</table>

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WEBSITE: http://www.americanmicrowavecorp.com
MECHANICAL OUTLINE

AMC MODEL No: ADVAN-218-15DD OPTION HS25NS,5B

AMC STANDARD ENVIRONMENTAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>Specification</th>
<th>Requirement</th>
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<tbody>
<tr>
<td>TEMPERATURE</td>
<td>-40°C to +85°C (Operating)</td>
</tr>
<tr>
<td></td>
<td>-65°C to +100°C (Storage)</td>
</tr>
<tr>
<td>HUMIDITY</td>
<td>MIL-STD-202F, METHOD 103B, Condition B</td>
</tr>
<tr>
<td>SHOCK</td>
<td>MIL-STD-202F, METHOD 213B, Condition B</td>
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<tr>
<td>VIBRATION</td>
<td>MIL-STD-202F, METHOD 204D, Condition B</td>
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<tr>
<td>ALTITUDE</td>
<td>MIL-STD-202F, METHOD 105C, Condition B</td>
</tr>
<tr>
<td>TEMPERATURE CYCLE</td>
<td>MIL-STD-202F, METHOD 107D, Condition A</td>
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NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION
AMC MODEL No: ADVAN-218-15DD OPTION HS25NS,5B

Measured data from unit: ATN2P1

<table>
<thead>
<tr>
<th>DIGITAL CODE</th>
<th>PROGRAMMED ATTENUATION</th>
<th>MEASURED AVERAGE ATTENUATION</th>
<th>FLATNESS</th>
</tr>
</thead>
<tbody>
<tr>
<td>HEX</td>
<td>BINARY</td>
<td>ATTENUATION</td>
<td>ATTENUATION</td>
</tr>
<tr>
<td>00</td>
<td>00000</td>
<td>0 dB</td>
<td>0 dB</td>
</tr>
<tr>
<td>04</td>
<td>00100</td>
<td>2 dB</td>
<td>2.2 dB</td>
</tr>
<tr>
<td>08</td>
<td>01000</td>
<td>4 dB</td>
<td>4.2 dB</td>
</tr>
<tr>
<td>0C</td>
<td>01100</td>
<td>6 dB</td>
<td>6.2 dB</td>
</tr>
<tr>
<td>10</td>
<td>10000</td>
<td>8 dB</td>
<td>8.6 dB</td>
</tr>
<tr>
<td>14</td>
<td>10100</td>
<td>10 dB</td>
<td>10.7 dB</td>
</tr>
<tr>
<td>18</td>
<td>11000</td>
<td>12 dB</td>
<td>12.6 dB</td>
</tr>
<tr>
<td>1C</td>
<td>11100</td>
<td>14 dB</td>
<td>14.6 dB</td>
</tr>
<tr>
<td>1F</td>
<td>11111</td>
<td>15.5 dB</td>
<td>16.3 dB</td>
</tr>
</tbody>
</table>
ATTENUATION
RETURN LOSS
RELATIVE PHASE SHIFT

CONTROL BITS : 00000
ATTENUATION
RETURN LOSS
RELATIVE PHASE SHIFT

CONTROL BITS: 00100

The graph shows the performance metrics for the AMC Model No: ADVAN-218-15DD, with the control bits set to 00100. The x-axis represents frequency, and the y-axis represents the values for S21, S11, S22, and phase shift. The graph indicates the behavior of the device under test for different control bits.
ATTENUATION
RETURN LOSS
RELATIVE PHASE SHIFT

CONTROL BITS : 01000
ATTENUATION
RETURN LOSS
RELATIVE PHASE SHIFT

CONTROL BITS : 01100
ATTENUATION
RETURN LOSS
RELATIVE PHASE SHIFT

CONTROL BITS : 10000

ATN2P 125 deg C 5Bit code 10H REL S21 REL Phase 18NOV2003
ATTENUATION
RETURN LOSS
RELATIVE PHASE SHIFT

CONTROL BITS: 10100

S21 S11 S22

ATN2P1 25 deg C 5Bit code 14H REL S21 REL Phase 18NOV2003
ATTENUATION
RETURN LOSS
RELATIVE PHASE SHIFT

CONTROL BITS: 11000

ATTN2P1 25 deg C 5Bit code 18H REL S21 REL Phase 18NOV2003
ATTENUATION
RETURN LOSS
RELATIVE PHASE SHIFT

CONTROL BITS : 11100

ATTENUATION CONTROL BITS : 11100
ATTENUATION
RETURN LOSS
RELATIVE PHASE SHIFT

CONTROL BITS: 11111
ABSOLUTE INSERTION LOSS
RETURN LOSS
RELATIVE PHASE SHIFT

CONTROL BITS : 00000

ATN2P1 25 deg C 5Bit code 00H ABS S21 REL Phase 18NOV2003
ABSOLUTE INSERTION LOSS CONTROL BITS: 00100
RETURN LOSS
RELATIVE PHASE SHIFT

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Graph showing S21, S11, S22, S21 Phas, and Phase.

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ABSOLUTE INSERTION LOSS
RETURN LOSS
RELATIVE PHASE SHIFT

CONTROL BITS: 01000

S21 S11 S22

S21
Phase
S11
S22

ATN2P1 25 deg C 5Bit code 08H ABS S21 REL Phase 18NOV2003
ABSOLUTE INSERTION LOSS
RETURN LOSS
RELATIVE PHASE SHIFT

CONTROL BITS: 01100

ATN2P1 25 deg C 5Bit code 0CH ABS S21 REL Phase 18NOV2003
ABSOLUTE INSERTION LOSS  
CONTROL BITS : 10000

RETURN LOSS

RELATIVE PHASE SHIFT

S21 S11 S22

S21

Phase

S11

S22

ATN2P1 25 deg C 5Bit code 10H ABS S21 REL Phase 18NOV2003
ABSOLUTE INSERTION LOSS

RETURN LOSS

RELATIVE PHASE SHIFT

CONTROL BITS: 10100
ABSOLUTE INSERTION LOSS

RETURN LOSS

RELATIVE PHASE SHIFT

CONTROL BITS: 11000
ABSOLUTE INSERTION LOSS
RETURN LOSS
RELATIVE PHASE SHIFT

CONTROL BITS: 11100

---GRAPHIC DEPICTING MEASUREMENTS---

ATN2P 125 deg C 5Bit code 1CH ABS S21 REL Phase 18NOV2003
ABSOLUTE INSERTION LOSS  
RETURN LOSS  
RELATIVE PHASE SHIFT

CONTROL BITS: 11111

![Graph showing S21, S11, S22, Phase, and their relationship over frequency. The graph includes various markers and lines indicating the performance parameters of the device.]
ATN2P1

Uncalibrated RF into tunnel detector.

5 bit digital attenuator. 0.5dB step 15.5 dB range.

Step through all states.

Frequency = 10 GHz
ATN2P1

Uncalibrated RF into tunnel detector.

5 bit digital attenuator. 0.5dB step 15.5 dB range.

Step through all states.

Frequency = 2 GHz
ATN2P1

Uncalibrated RF into tunnel detector.

5 bit digital attenuator. 0.5dB step 15.5 dB range.

Step through all states.

Frequency = 18 GHz
ATN2P1

Uncalibrated RF into tunnel detector.

5 bit digital attenuator. 0.5dB step 15.5 dB range.

Frequency = 10 GHz

BLUE TRACE : TTL INPUT
GREEN TRACE : DETECTED OUTPUT
ATN2P1

Uncalibrated RF into tunnel detector.

5 bit digital attenuator. 0.5dB step 15.5 dB range.

Frequency = 10 GHz

BLUE TRACE : TTL INPUT
GREEN TRACE : DETECTED OUTPUT