Features
- 3-Way Splitter
- Single Ended Input and Outputs
- 1.3 dB Gain at output port 1
- 4.5 dB Gain at output ports 2 & 3
- +15 dBmV /Channel Input
- 4.5 dB Noise Figure at output port 1
- 4.0 dB Noise Figure at output ports 2 & 3
- Single +5 Volt Supply
- Lead-Free 2 mm 8-Lead PDFN Package
- Halogen-Free “Green” Mold Compound
- RoHS* Compliant and 260°C Reflow Compatible

Description
M/A-COM’s MAAM-008822 CATV 3-way active splitter is a GaAs MMIC which exhibits low noise figure and distortion in a lead-free 2mm 8-lead PDFN plastic package. The design features 75 Ω inputs and outputs.

The MAAM-008822 is ideally suited for multi-tuner set top boxes, home gateways, and other broadband internet based appliances.

The MAAM-008822 is fabricated using M/A-COM’s PHEMT process to realize low noise and low distortion. The process features full passivation for robust performance and reliability.

Ordering Information

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAAM-008822-TR1000</td>
<td>1000 piece reel</td>
</tr>
<tr>
<td>MAAM-008822-TR3000</td>
<td>3000 piece reel</td>
</tr>
<tr>
<td>MAAM-008822-001SMB</td>
<td>Sample Test Board</td>
</tr>
</tbody>
</table>

1. Reference Application Note M513 for reel size information.
2. All sample boards include 5 loose parts.

Broadband CATV Single Ended 3-Way Active Splitter
50 - 1100 MHz

Electrical Specifications: Freq. = 1000 MHz, \( T_A = 25^\circ C \), \( V_{DD} = +5 \) Volts, \( Z_0 = 75 \Omega \)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Test Conditions</th>
<th>Units</th>
<th>Min.</th>
<th>Typ.</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gain</td>
<td>IN to OUT1, IN to OUT2, IN to OUT3</td>
<td>dB</td>
<td>1</td>
<td>1.3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td>4.5</td>
<td>5.5</td>
</tr>
<tr>
<td>Gain Flatness</td>
<td></td>
<td>dB</td>
<td>-</td>
<td>0.5</td>
<td>-</td>
</tr>
<tr>
<td>Noise Figure</td>
<td>IN to OUT1, IN to OUT2, IN to OUT3</td>
<td>dB</td>
<td>-</td>
<td>4.5</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>-</td>
<td>4.0</td>
<td>-</td>
</tr>
<tr>
<td>Input Return Loss</td>
<td></td>
<td>dB</td>
<td>-</td>
<td>16</td>
<td>-</td>
</tr>
<tr>
<td>Output Return Loss</td>
<td></td>
<td>dB</td>
<td>-</td>
<td>8</td>
<td>-</td>
</tr>
<tr>
<td>Composite Triple Beat, CTB</td>
<td>132 channels, +15 dBmV/channel at the input All Outputs</td>
<td>dBc</td>
<td>-</td>
<td>-63</td>
<td>-</td>
</tr>
<tr>
<td>Composite Second Order, CSO</td>
<td>132 channels, +15 dBmV/channel at the input All Outputs</td>
<td>dBc</td>
<td>-</td>
<td>-60</td>
<td>-</td>
</tr>
<tr>
<td>Reverse Isolation</td>
<td></td>
<td>dB</td>
<td>-</td>
<td>-30</td>
<td>-</td>
</tr>
<tr>
<td>Output to Output Isolation</td>
<td></td>
<td>dB</td>
<td>-</td>
<td>-27</td>
<td>-</td>
</tr>
<tr>
<td>Output Power at 1dB Compression, P1dB</td>
<td></td>
<td>dBm</td>
<td>-</td>
<td>7.5</td>
<td>-</td>
</tr>
<tr>
<td>Output 3rd Order Intercept Point, OIP3</td>
<td>500 MHz, 2-tone, 6 MHz spacing, -15 dBm Pout</td>
<td>dBm</td>
<td>-</td>
<td>23</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>OUT1</td>
<td></td>
<td>-</td>
<td>24</td>
<td>-</td>
</tr>
<tr>
<td>Output 2nd Order Intercept Point, OIP2</td>
<td>500 MHz, 2-tone, 6 MHz spacing, -15 dBm Pout</td>
<td>dBm</td>
<td>-</td>
<td>45</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>OUT1</td>
<td></td>
<td>-</td>
<td>48</td>
<td>-</td>
</tr>
<tr>
<td>Output Power at 1dB Compression, P1dB</td>
<td></td>
<td>dBm</td>
<td>-</td>
<td>7.5</td>
<td>-</td>
</tr>
<tr>
<td>Output Power at 1dB Compression, P1dB</td>
<td></td>
<td>dBm</td>
<td>-</td>
<td>7.5</td>
<td>-</td>
</tr>
<tr>
<td>IDD</td>
<td>VDD= +5 Volts</td>
<td>mA</td>
<td>-</td>
<td>120</td>
<td>150</td>
</tr>
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</table>

Absolute Maximum Ratings \(^4,5,6,7\)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Absolute Maximum</th>
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</thead>
<tbody>
<tr>
<td>Max Input Power</td>
<td>+12 dBm</td>
</tr>
<tr>
<td>Vbias</td>
<td>+10.0 V</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-20°C to +85°C</td>
</tr>
<tr>
<td>Junction Temperature</td>
<td>150°C</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-65°C to +150°C</td>
</tr>
</tbody>
</table>

Handling Procedures

Please observe the following precautions to avoid damage:

**Static Sensitivity**

Gallium Arsenide Integrated Circuits are sensitive to electrostatic discharge (ESD) and can be damaged by static electricity. Proper ESD control techniques should be used when handling these devices.
Recommended PCB

Schematic Including Off-Chip Components

PCB Land Pattern

Off-Chip Component Values

8. The exposed pad centered on the package bottom must be connected to ground for RF, DC and thermal considerations.

9. L1 supplied from EPCOS, part number B82422A1102K100.
Typical Performance Curves

**Gain to 1100 MHz**
- **OUT1**
- **Gain to 3000 MHz**
- **OUT1**

**Gain to 1100 MHz**
- **OUT2 & OUT3**
- **Gain to 3000 MHz**
- **OUT2 & OUT3**

**Noise Figure**
- **OUT1**
- **OUT2 & OUT3**

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**Broadband CATV Single Ended 3-Way Active Splitter**

50 - 1100 MHz

**MAAM-008822**

Typical Performance Curves

**Input Return Loss**

- Frequency (MHz)
- S11 (dB)

**Output Return Loss__OUT1**

- Frequency (MHz)
- S22 (dB)

**Output Return Loss__OUT2 & OUT3**

- Frequency (MHz)
- S33, S44 (dB)

**Reverse Isolation__OUT1-IN**

- Frequency (MHz)
- S12 (dB)

**Reverse Isolation__OUT2-IN & OUT3-IN**

- Frequency (MHz)
- S13, S14 (dB)
Broadband CATV Single Ended 3-Way Active Splitter
50 - 1100 MHz

Typical Performance Curves

**OUT-OUT Isolation to 1100 MHz**
**OUT2-OUT3**

![Graph](image1)

**OUT-OUT Isolation to 1100 MHz**
**OUT1-OUT2 & OUT1-OUT3**

![Graph](image2)

**OUT-OUT Isolation to 3000 MHz**
**OUT2-OUT3**

![Graph](image3)

**OUT-OUT Isolation to 3000 MHz**
**OUT1-OUT2 & OUT1-OUT3**

![Graph](image4)
Lead-Free 2 mm 8-Lead PDFN†

† Reference Application Note M538 for lead-free solder reflow recommendations.
Meets JEDEC moisture sensitivity level 1 requirements.
Plating is 100% matte tin over copper.
Broadband CATV Single Ended 3-Way Active Splitter
50 - 1100 MHz

MAAM-008822

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