MAAM-008819

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

Features
- 3-Way Splitter
- Single Ended Input and Outputs
- 2.5 dB Gain
- +15 dBmV /Channel Input
- 3.8 dB Noise Figure
- Single +5 Volt Supply
- Lead-Free 2 mm 8-Lead PDFN Package
- 100% Matte Tin Plating over Copper
- Halogen-Free “Green” Mold Compound
- RoHS* Compliant and 260°C Reflow Compatible

Description
M/A-COM’s MAAM-008819 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-008819 is ideally suited for multi-tuner set top boxes, home gateways, and other broadband internet based applications.

The MAAM-008819 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-008819-TR1000</td>
<td>1000 piece reel</td>
</tr>
<tr>
<td>MAAM-008819-TR3000</td>
<td>3000 piece reel</td>
</tr>
<tr>
<td>MAAM-008819-001SMB</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.

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Electrical Specifications:  F = 1000 MHz, T\(_A\) = 25°C, V\(_{DD}\) = +5 Volts, Z\(_0\) = 75 Ω

<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, OUT2 &amp; OUT3</td>
<td>dB</td>
<td>2.0</td>
<td>2.5</td>
<td>4.0</td>
</tr>
<tr>
<td>Gain Flatness</td>
<td>IN to OUT1, OUT2 &amp; OUT3</td>
<td>dB</td>
<td>-</td>
<td>1.0</td>
<td>-</td>
</tr>
<tr>
<td>Noise Figure</td>
<td>IN to OUT1, OUT2 &amp; OUT3</td>
<td>dB</td>
<td>-</td>
<td>3.8</td>
<td>-</td>
</tr>
<tr>
<td>Input Return Loss</td>
<td>IN</td>
<td>dB</td>
<td>-</td>
<td>12</td>
<td>-</td>
</tr>
<tr>
<td>Output Return Loss</td>
<td>OUT1, OUT2, OUT3</td>
<td>dB</td>
<td>-</td>
<td>9.5</td>
<td>-</td>
</tr>
<tr>
<td>Composite Triple Beat, CTB</td>
<td>132 channels, +15 dBmV/channel at the input</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</td>
<td>dBc</td>
<td>-</td>
<td>-60</td>
<td>-</td>
</tr>
<tr>
<td>Reverse Isolation</td>
<td>OUT1, OUT2 &amp; OUT3 to IN</td>
<td>dB</td>
<td>-</td>
<td>29</td>
<td>-</td>
</tr>
<tr>
<td>Output to Output Isolation</td>
<td>Isolation between all RF outputs</td>
<td>dB</td>
<td>-</td>
<td>24</td>
<td>-</td>
</tr>
<tr>
<td>Output Power at 1dB Compression, P1dB</td>
<td>IN to OUT1, OUT2, OUT3</td>
<td>dBm</td>
<td>-</td>
<td>8.5</td>
<td>-</td>
</tr>
<tr>
<td>Output 3rd Order Intercept Point, OIP3</td>
<td>500 MHz, 2-tone, 6MHz spacing, -15 dBm Pout</td>
<td>dBm</td>
<td>-</td>
<td>26</td>
<td>-</td>
</tr>
<tr>
<td>Output 2nd Order Intercept Point, OIP2</td>
<td>500 MHz, 2-tone, 6MHz spacing, -15 dBm Pout</td>
<td>dBm</td>
<td>-</td>
<td>45</td>
<td>-</td>
</tr>
<tr>
<td>I(_{DD})</td>
<td>V(_{DD}) = +5 Volts</td>
<td>mA</td>
<td>-</td>
<td>120</td>
<td>150</td>
</tr>
</tbody>
</table>

Absolute Maximum Ratings

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Absolute Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max Input Power</td>
<td>+12 dBm</td>
</tr>
<tr>
<td>V(_{bias})</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>

4. Exceeding any one or combination of these limits may cause permanent damage to this device.
5. M/A-COM does not recommend sustained operation near these survivability limits.
6. These operating conditions will ensure MTTF > 1 x 10\(^6\) hours.
7. Junction Temperature (T\(_J\)) = T\(_C\) + θ\(_jc\) * (V * I)
   Typical thermal resistance (θ\(_jc\)) = 62° C/W.
   a) For T\(_C\) = 25°C,
      T\(_J\) = 62 °C @ 5 V, 120 mA
   b) For T\(_C\) = 85°C,
      T\(_J\) = 119 °C @ 5 V, 110 mA

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

PCB Land Pattern

Schematic Including Off-Chip Components

Off-Chip Component Values

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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

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Typical Performance Curves

**Gain to 1100 MHz**

**Typical All Outputs**

**Gain to 3000 MHz**

**Typical All Outputs**

**Input Return Loss**

**Output Return Loss**

**Typical All Outputs**

For further information and support please visit: [https://www.macom.com/support](https://www.macom.com/support)
Typical Performance Curves

**OUT-OUT Isolation to 1100 MHz**
Typical Between All Outputs

**OUT-OUT Isolation to 3000 MHz**
Typical Between All Outputs

**Noise Figure**
Typical All Outputs

**Reverse Isolation to 3000 MHz**
Typical From All Outputs to Input
Lead-Free 2 mm 8-Lead PDFN†

† Reference Application Note S2083 for lead-free solder reflow recommendations.
Meets JEDEC moisture sensitivity level 1 requirements.
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