The BBM4A5ACJ (SKU 1012) is suitable for L-Band broadband linear power applications. This amplifier is utilizing Empower RF advanced GaAsFET technology achieving high gain, wide dynamic range, low distortions and excellent linearity. Exceptional performance, long term reliability, and high efficiency are achieved by employing advanced broadband RF matching networks and combining techniques, built in high efficiency sequence regulator, EMI/RFI filters, machined housing, and qualified components. Empower RF’s ISO9001 Quality Assurance Program assures consistent performance and the highest reliability.

- Solid-state class A linear design
- Instantaneous ultra broadband
- Small form factor and lightweight
- Suitable for CW, AM, and FM (Consult factory for other modulation types)
- 50 ohm input/output impedance
- High reliability and ruggedness

### Electrical Specifications

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Min</th>
<th>Typ</th>
<th>Max</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Frequency</td>
<td>BW</td>
<td>1000</td>
<td></td>
<td>2000</td>
<td>MHz</td>
</tr>
<tr>
<td>Power Output CW</td>
<td>PSAT</td>
<td>15</td>
<td></td>
<td></td>
<td>Watt</td>
</tr>
<tr>
<td>Power Output @ 1dB Gain Compression</td>
<td>P1dB</td>
<td>12</td>
<td></td>
<td></td>
<td>Watt</td>
</tr>
<tr>
<td>Power Gain @ 1dB Gain Compression</td>
<td>G1dB</td>
<td>40</td>
<td>42</td>
<td></td>
<td>dB</td>
</tr>
<tr>
<td>Input Power for Rated PSAT</td>
<td>PIN</td>
<td>0</td>
<td>3</td>
<td></td>
<td>dBm</td>
</tr>
<tr>
<td>Small Signal Gain Flatness, PIN = -20dBm</td>
<td>∆G</td>
<td>+1.5</td>
<td></td>
<td></td>
<td>dB</td>
</tr>
<tr>
<td>Input Return Loss</td>
<td>S11</td>
<td>-10</td>
<td></td>
<td></td>
<td>dB</td>
</tr>
<tr>
<td>Noise Figure</td>
<td>NF</td>
<td>10</td>
<td></td>
<td></td>
<td>dB</td>
</tr>
</tbody>
</table>

#### Third Order Intercept Point
2-Tone @ 33dBm/Tone, 100kHz Spacing

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSAT</td>
<td>H</td>
<td>-20</td>
<td>dBc</td>
</tr>
<tr>
<td>PSAT</td>
<td>Spur</td>
<td>-70</td>
<td>dBc</td>
</tr>
<tr>
<td>Power Output Voltage</td>
<td>VDC</td>
<td>12</td>
<td>13</td>
</tr>
<tr>
<td>Power Output Voltage</td>
<td>VDC</td>
<td>12</td>
<td>13</td>
</tr>
<tr>
<td>Current Consumption @ POUT = 15W</td>
<td>IDD</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>

### Mechanical Specifications

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions</td>
<td>6.8 x 2.7 x 0.8</td>
<td>Inch</td>
</tr>
<tr>
<td>Weight</td>
<td>1.0</td>
<td>Pound</td>
</tr>
<tr>
<td>RF Connectors Input/Output</td>
<td>Type-SMA, Female</td>
<td></td>
</tr>
<tr>
<td>DC Interface Connectors</td>
<td>Feed Thru/Terminal Post</td>
<td></td>
</tr>
<tr>
<td>Cooling</td>
<td>External Heatsink (Not Supplied)</td>
<td></td>
</tr>
</tbody>
</table>

### Environmental Characteristics (Design to Meet)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Min</th>
<th>Typ</th>
<th>Max</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Case Temperature</td>
<td>TC</td>
<td>0</td>
<td></td>
<td>+50</td>
<td>°C</td>
</tr>
<tr>
<td>Non-operating Temperature</td>
<td>TSTG</td>
<td>-40</td>
<td></td>
<td>+85</td>
<td>°C</td>
</tr>
<tr>
<td>Relative Humidity (non-condensing)</td>
<td>RH</td>
<td>95</td>
<td></td>
<td></td>
<td>%</td>
</tr>
<tr>
<td>Altitude (MIL-STD-810F Method 500.4)</td>
<td>ALT</td>
<td></td>
<td></td>
<td>30,000</td>
<td>Feet</td>
</tr>
<tr>
<td>Vibration/Shock</td>
<td>VI/SH</td>
<td></td>
<td></td>
<td></td>
<td>Airborne</td>
</tr>
</tbody>
</table>

Stock No. 1012
D.S. Rev. 1.8 / 10-13-2016
Solid State Broadband High Power Amplifier

1012 – BBM4A5ACJ  1000 – 2000 MHz / 15 Watts

LIMITS

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input RF drive level without damage</td>
<td>+10 dBm</td>
</tr>
<tr>
<td>Load VSWR @ P_{OUT} = 12W</td>
<td>Inf @ all load phase &amp; amplitude for duration of 1 minute</td>
</tr>
<tr>
<td>Thermal Overload</td>
<td>3:1 @ all load phase &amp; amplitude continuous</td>
</tr>
<tr>
<td></td>
<td>85°C shutdown</td>
</tr>
</tbody>
</table>

DC INTERFACE CONNECTORS – Feed Thru/Terminal Post

<table>
<thead>
<tr>
<th>Pin #</th>
<th>Description</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>E1</td>
<td>GND</td>
<td>Ground</td>
</tr>
<tr>
<td>E2</td>
<td>+VDD</td>
<td>+12.0-15.0V_{DC}</td>
</tr>
<tr>
<td>E3</td>
<td>Shutdown</td>
<td>Amplifier Disable: TTL Logic High (5V) (Internally Pulled-Low)</td>
</tr>
</tbody>
</table>

OUTLINE DRAWING

TYPICAL PERFORMANCE PLOTS

Plot 1 – Small Signal Gain and P_{1dB}

- Top Curve: Small Signal Gain @ P_{IN} = -20dBm
- Middle Curve: Power Gain @ P_{1dB}, P_{IN} = 0Bm
- Bottom Curve: Input Return Loss

Reference: 39dB, 1dB/div.

Plot 2 – Small Signal Gain and P_{SAT}

- Top Curve: Small Signal Gain @ P_{IN} = -20dBm
- Middle Curve: P_{SAT} @ P_{IN} = 2dBm
- Bottom Curve: Input Return Loss

Reference: 0dB, 10dB/div.