DESCRIPTION

AMCOM’s AM12516541MD-5H is a broadband GaN Power Amplifier module designed for general purpose applications. It operates from 12.5GHz to 16.5GHz and typically delivers 12 watts (41 dBm) of CW output power and 51 dB small signal gain. The amplifier module has 4 screw slots for mounting to a heat sink. This amplifier module is compact and light weight at 2.2” (L) x 2.2” (W) x 0.65” (H).

FEATURES

- Wide bandwidth from 12.5 to 16.5 GHz
- Psat 41 dBm, Gain 51 dB
- Input / Output matched to 50 Ohms
- TTL control
- Temperature monitor
- Thermal Shutdown for Temp > 95°C

APPLICATIONS

- Radar
- Fixed microwave backhaul
- Instrumentation and measurements
- Military and Aerospace

TYPICAL PERFORMANCE * (Quiescent bias is +32V, I_{ddq} = 0.5 A)

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Minimum</th>
<th>Typical **</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>13 – 16 GHz</td>
<td>12.5 – 16.5 GHz</td>
<td></td>
</tr>
<tr>
<td>Small Signal Gain</td>
<td>46 dB</td>
<td>51 dB</td>
<td></td>
</tr>
<tr>
<td>Gain Ripple</td>
<td>± 1.5 dB</td>
<td>± 3.5 dB</td>
<td></td>
</tr>
<tr>
<td>P_{sat}</td>
<td>39 dBm</td>
<td>41 dBm</td>
<td></td>
</tr>
<tr>
<td>PAE @ P_{sat}</td>
<td></td>
<td>25%</td>
<td></td>
</tr>
<tr>
<td>Current @ P_{sat}</td>
<td>1.75 A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Noise Figure</td>
<td>7 dB</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Input Return Loss</td>
<td>10 dB</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Output Return Loss</td>
<td></td>
<td>5 dB</td>
<td></td>
</tr>
<tr>
<td>Temperature Sensor Output (V)</td>
<td></td>
<td>V_{out}=0.45V+(10_{nv} x Temp in Celsius)</td>
<td>e.g for (50°C) : V_{out}=0.45+.01x50=0.95V</td>
</tr>
<tr>
<td>TTL RF ON/OFF</td>
<td>&lt;1V for OFF</td>
<td>&gt;2.5 V for ON</td>
<td></td>
</tr>
</tbody>
</table>

* Notes:
1- Specifications are subject to change without notice.
2- Proper heat sink should be used to remove heat from bottom of package.
AM12516541MD-5H
March 2019
Rev 0

ABSOLUTE MAXIMUM RATING

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Symbol</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drain source voltage</td>
<td>V_{dd}</td>
<td>36 V</td>
</tr>
<tr>
<td>Maximum RF input power</td>
<td>P_{in}</td>
<td>+7 dBm</td>
</tr>
<tr>
<td>Continuous dissipation at 25°C</td>
<td>P_{t}</td>
<td>70 W</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>T_{op}</td>
<td>-40°C to +85°C</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>T_{sto}</td>
<td>-55°C to +135°C</td>
</tr>
</tbody>
</table>

SMALL SIGNAL DATA

![Graph showing Gain, Input RL, and Output RL vs. Frequency (GHz)]
POWER DATA

Parameter(s)

- Frequency (GHz)
- Power Output (dBm)

Plot

- PSAT
- EFF PSAT

Data Points

- Pin = -10 dBm
- Pin = -5 dBm
- Pin = 0 dBm
- Pin = 5 dBm
INTERMODULATION DISTORTION
**NOISE FIGURE**

![Graph showing noise figure vs frequency (GHz)]

* $V_{out} = 0.45V + (T \text{°C} \times 10mV)$, e.g. for (50°C): $V_{out} = 0.45 + 0.01 \times 50 = 0.95V$.

* Thermal shutdown protection for high temperatures > 95°C.

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**TEMPERATURE SENSOR**

![Graph showing temperature vs output voltage (V)]

* $V_{out} = 0.45V + (T \text{°C} \times 10mV)$, e.g. for (50°C): $V_{out} = 0.45 + 0.01 \times 50 = 0.95V$.

* Thermal shutdown protection for high temperatures > 95°C.
NOTES:

1. Dimensions are in inches.
2. Aluminum housing with silver nickel plating.
3. Female SMA for RF input and output.
4. Use a heat sink to remove heat from the module.