HMC-C026

WIDEBAND HIGH GAIN POWER AMPLIFIER
MODULE, 2 - 20 GHz

Features

Gain: 31 dB @ 6 GHz
P1dB Output Power: +26 dBm @ 6 GHz
Noise Figure: 2.5 dB @ 8 GHz
Spurious-Free Operation
Regulated Supply and Bias Sequencing
Hermetically Sealed Module
Field Replaceable SMA connectors
-55 °C to +85 °C Operating Temperature

General Description

The HMC-C026 is a GaAs MMIC pHEMT Distributed Power Amplifier in a miniature, hermetic module with replaceable SMA connectors which operates between 2 and 20 GHz. The amplifier provides 31 dB of gain, 2.5 dB noise figure, +30 dBm output IP3 and up to +26 dBm of output power at 1 dB gain compression. The wideband amplifier I/Os are internally matched to 50 Ohms and are DC blocked making the HMC-C026 ideal for EW, ECM RADAR and test equipment applications. Integrated voltage regulators allow for flexible biasing of both the negative and positive supply pins, while internal bias sequencing circuitry assures robust operation.

Electrical Specifications, $T_A = +25^\circ$ C, $+Vdc = +11V$ to $+16V$, $-Vdc = -3V$ to $-12V$

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<tbody>
<tr>
<td>Frequency Range</td>
<td></td>
<td></td>
<td></td>
<td>2 - 6</td>
<td></td>
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<td>6 - 12</td>
<td></td>
<td></td>
<td>12 - 16</td>
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<td>16 - 20</td>
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<tr>
<td>Gain</td>
<td>28</td>
<td>31</td>
<td>26</td>
<td>26</td>
<td>29</td>
<td>24</td>
<td>27</td>
<td>19</td>
<td>22</td>
<td></td>
<td></td>
<td></td>
<td>dB</td>
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<tr>
<td>Gain Flatness</td>
<td>±0.25</td>
<td>±0.75</td>
<td>±1.0</td>
<td>±0.25</td>
<td>±0.75</td>
<td>±1.0</td>
<td>±1.0</td>
<td>±0.25</td>
<td>±0.75</td>
<td>±1.0</td>
<td>±1.0</td>
<td>±1.0</td>
<td>dB</td>
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<tr>
<td>Gain Variation Over Temperature</td>
<td>0.03</td>
<td>0.04</td>
<td>0.03</td>
<td>0.03</td>
<td>0.04</td>
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<td>dB/°C</td>
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<td>Noise Figure</td>
<td>3.0</td>
<td>5.0</td>
<td>2.5</td>
<td>5.0</td>
<td>3.5</td>
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<td>4.0</td>
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<td>5.0</td>
<td></td>
<td></td>
<td></td>
<td>dB</td>
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<tr>
<td>Input Return Loss</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>13</td>
<td>13</td>
<td></td>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>dB</td>
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<tr>
<td>Output Return Loss</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>10</td>
<td>10</td>
<td>8</td>
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<td></td>
<td></td>
<td></td>
<td>dB</td>
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<tr>
<td>Output Power for 1 dB Compression (P1dB)</td>
<td>23</td>
<td>26</td>
<td>22.5</td>
<td>25.5</td>
<td>20</td>
<td>24</td>
<td></td>
<td>18</td>
<td>21</td>
<td></td>
<td></td>
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<td>dBm</td>
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<tr>
<td>Saturated Output Power (Psat)</td>
<td>27.5</td>
<td>27</td>
<td>27</td>
<td>25</td>
<td>25</td>
<td>23</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>dBm</td>
</tr>
<tr>
<td>Output Third Order Intercept (IP3)</td>
<td>33</td>
<td>30</td>
<td>30</td>
<td>27</td>
<td>27</td>
<td>24</td>
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<td></td>
<td></td>
<td></td>
<td>dBm</td>
</tr>
<tr>
<td>Positive Supply Current (+IDC)</td>
<td>400</td>
<td>450</td>
<td>400</td>
<td>450</td>
<td>400</td>
<td>450</td>
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<td>400</td>
<td>450</td>
<td></td>
<td></td>
<td></td>
<td>mA</td>
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<tr>
<td>Negative Supply Current (-IDC)</td>
<td>3.2</td>
<td>5</td>
<td>3.2</td>
<td>5</td>
<td>3.2</td>
<td>5</td>
<td></td>
<td>3.2</td>
<td>5</td>
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**HMC-C026**

**WIDEBAND HIGH GAIN POWER AMPLIFIER MODULE, 2 - 20 GHz**

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**Absolute Maximum Ratings**

- **RF Input Power (RFIN)**: +23 dBm
- **Positive Bias Supply Voltage (+Vdc)**: +17V Max
- **Negative Bias Supply (-Vdc)**: -16V Min.
- **Thermal Resistance (at +Vdc = 12V, -Vdc = -4V, DC Power = 4.8 Watts)**: 15.9 °C/W
- **Storage Temperature**: -65 to +150 °C
- **Operating Temperature**: -55 to +85 °C

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**Notes**:

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  Phone: 781-329-4700  Order online at www.analog.com
  Application Support: Phone: 1-800-ANALOG-D

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**Electrostatic Sensitive Device**

**Observe Handling Precautions**
### Pin Descriptions

<table>
<thead>
<tr>
<th>Pin Number</th>
<th>Function</th>
<th>Description</th>
<th>Interface Schematic</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>RFIN &amp; RF Ground</td>
<td>RF input connector, SMA female, field replaceable. This pin is AC coupled and matched to 50 Ohms.</td>
<td><img src="image1" alt="RFIN &amp; RF Ground Interface" /></td>
</tr>
<tr>
<td>2</td>
<td>+Vdc</td>
<td>Positive power supply voltage for the amplifier.</td>
<td><img src="image2" alt="+Vdc Interface" /></td>
</tr>
<tr>
<td>3</td>
<td>RFOUT &amp; RF Ground</td>
<td>RF output connector, SMA female. This pin is AC coupled and matched to 50 Ohms.</td>
<td><img src="image3" alt="RFOUT &amp; RF Ground Interface" /></td>
</tr>
<tr>
<td>4</td>
<td>-Vdc</td>
<td>Negative power supply voltage for the amplifier</td>
<td><img src="image4" alt="+Vdc Interface" /></td>
</tr>
<tr>
<td>5</td>
<td>GND</td>
<td>Power supply ground.</td>
<td><img src="image5" alt="GND Interface" /></td>
</tr>
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</table>
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Outline Drawing

NOTES:
1. PACKAGE, LEADS, COVER MATERIAL: KOVAR™
2. SPACER MATERIAL: ALUMINUM
3. PLATING: ELECTROLYTIC GOLD 50 MICROINCHES MIN., OVER ELECTROLYTIC NICKEL 75 MICROINCHES MIN.
4. ALL DIMENSIONS ARE IN INCHES [MILLIMETERS].
5. TOLERANCES ±.005 [0.13] UNLESS OTHERWISE SPECIFIED.
6. FIELD REPLACEABLE SMA CONNECTORS.
7. TO MOUNT MODULE TO SYSTEM PLATFORM REPLACE 0 -80 HARDWARE WITH DESIRED MOUNTING SCREWS.

Package Information

<table>
<thead>
<tr>
<th>Package Type</th>
<th>C-3B</th>
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<tbody>
<tr>
<td>Spacer Weight</td>
<td>N/A</td>
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</tbody>
</table>

[1] Includes the connectors
[2] ±1 gms Tolerance

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