

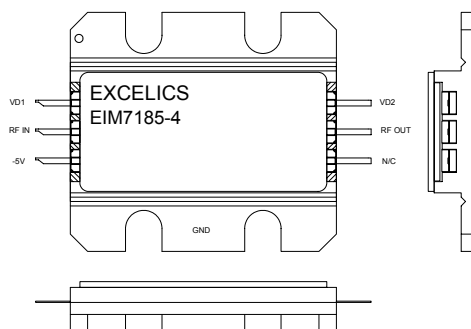
## 7.1 – 8.5 GHz Multi-Stage Power Amplifier

### FEATURES

- 7.1– 8.5GHz Operating Frequency Range
- 35.5dBm Output Power at 1dB Compression
- 33.0 dB Typical Power Gain @1dB gain compression
- -45dBc Typical OIM3@ each tone Pout 23.5dBm
- Non-Hermetic Metal Flange Package

### APPLICATIONS

- Point-to-point and point-to-multipoint radio
- Military Radar Systems



Caution! ESD sensitive device.

### ELECTRICAL CHARACTERISTICS (T<sub>b</sub> = 25 °C, 50 ohm, VD1=7V, VD2=10V, V<sub>gg</sub>=-5V)

| SYMBOL                 | PARAMETER/TEST CONDITIONS   | MIN  | TYP  | MAX  | UNITS |
|------------------------|---|------|------|------|-------|
| <b>F</b>               | Operating Frequency Range   | 7.1  |      | 8.5  | GHz   |
| <b>P1dB</b>            | Output Power at 1dB Gain Compression  | 34.5 | 35.5 |      | dBm   |
| <b>G1dB</b>            | Gain @1dB gain compression  | 29   | 33   |      | dB    |
| <b>ΔGain</b>           | Gain Flatness   |      | ±2.0 |      | dB    |
| <b>OIMD3</b>           | Output 3 <sup>rd</sup> Order Intermodulation Distortion @Δf=10MHz, Each Tone Pout 23.5dBm | -42  | -45  |      | dBc   |
| <b>Input RL</b>        | Input Return Loss   |      | -12  | -6   | dB    |
| <b>Output RL</b>       | Output Return Loss  |      | -15  | -10  | dB    |
| <b>VD1</b>             | Drain Supply Voltage 1  |      | 7    |      | V     |
| <b>VD2</b>             | Drain Supply Voltage 2  |      | 10   |      | V     |
| <b>I<sub>DQ1</sub></b> | Quiescent Drain Current 1   |      | 380  |      | mA    |
| <b>I<sub>DQ2</sub></b> | Quiescent Drain Current 2   |      | 1800 | 2000 | mA    |
| <b>V<sub>gg</sub></b>  | Gate Supply Voltage   |      | -5   |      | V     |
| <b>R<sub>th</sub></b>  | Thermal Resistance  |      | 3.4  |      | °C/W  |
| <b>T<sub>b</sub></b>   | Operating Base Plate Temperature  | - 30 |      | + 80 | °C    |



# EIM7185-4

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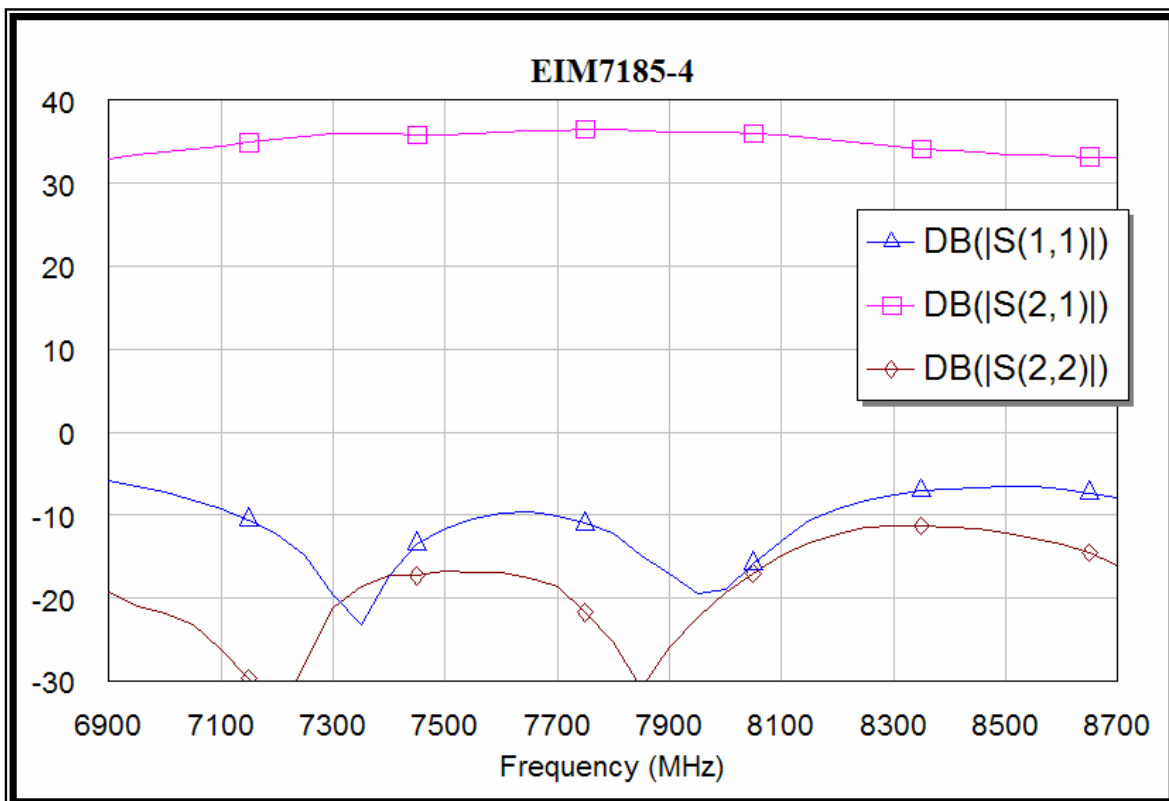
### MAXIMUM RATINGS @25°C<sup>1,2</sup>

| SYMBOL           | CHARACTERISTIC          | ABSOLUTE  | CONTINUOUS <sup>1,2</sup> |
|------------------|-------------------------|-----------|---------------------------|
| V <sub>D1</sub>  | Drain Supply Voltage 1  | 12V       | 8V                        |
| V <sub>D2</sub>  | Drain Supply Voltage 2  | 14V       | 10V                       |
| V <sub>gg</sub>  | Gate Supply Voltage     | -10V      | -6 V                      |
| I <sub>gg</sub>  | Gate Current            | 150mA     | 50 mA                     |
| P <sub>IN</sub>  | Input Power             | 20dBm     | @ Pout 1dB compression    |
| T <sub>CH</sub>  | Channel Temperature     | 175°C     | 175°C                     |
| T <sub>STG</sub> | Storage Temperature     | -65/175°C | -65/175°C                 |
| P <sub>T</sub>   | Total Power Dissipation | 37.5W     | 37.5W                     |

Notes: 1. Operating the device beyond any of the above rating may reduce MTTF and cause permanent damage.  
 2. Bias conditions must also satisfy the following equation  $V_{dd} \cdot I_{dd} < (T_{CH} - T_b) / R_{TH}$

### Typical Performance:

#### 1. Small Signal Performance (@V<sub>d1</sub> = 7V, V<sub>d2</sub> = 10V, I<sub>d1</sub> = 380mA, I<sub>d2</sub> = 1800mA)



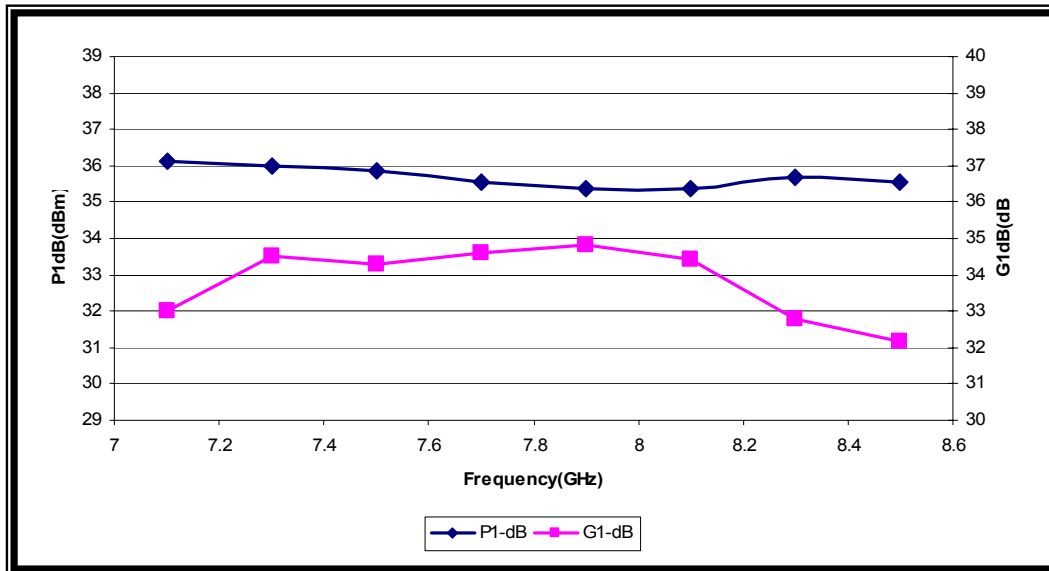
Specifications are subject to change without notice.

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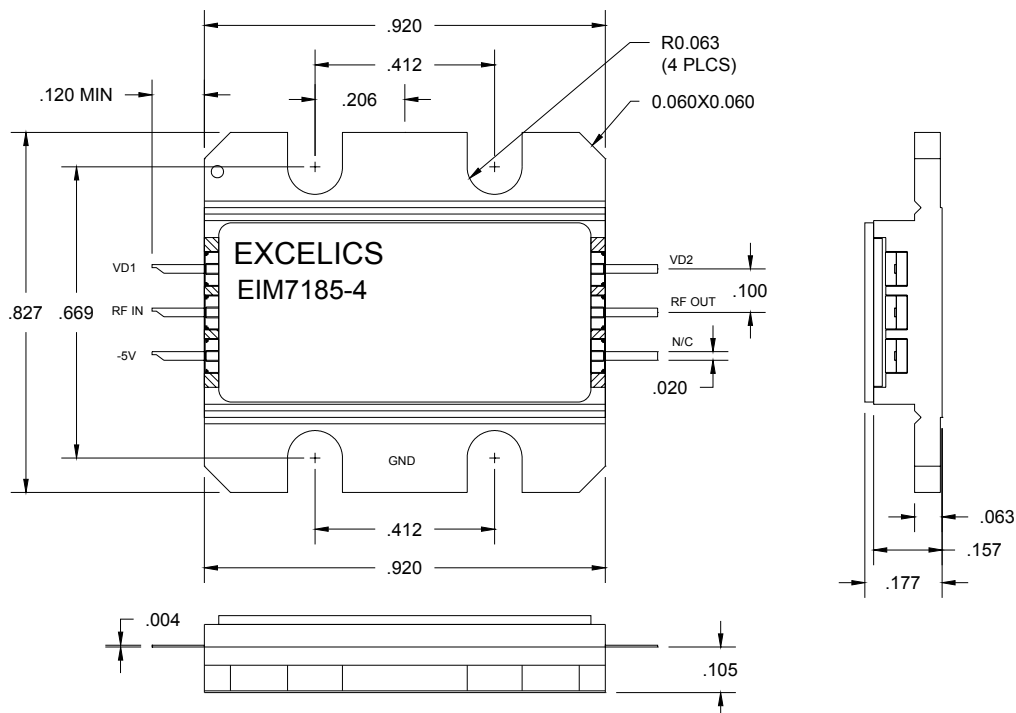
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### 2. P1-dB & G1-dB (@V<sub>d1</sub> = 7V, V<sub>d2</sub> = 10V, I<sub>d1</sub> = 380mA, I<sub>d2</sub> = 1800mA)



### Package Dimension and Pin Assignment

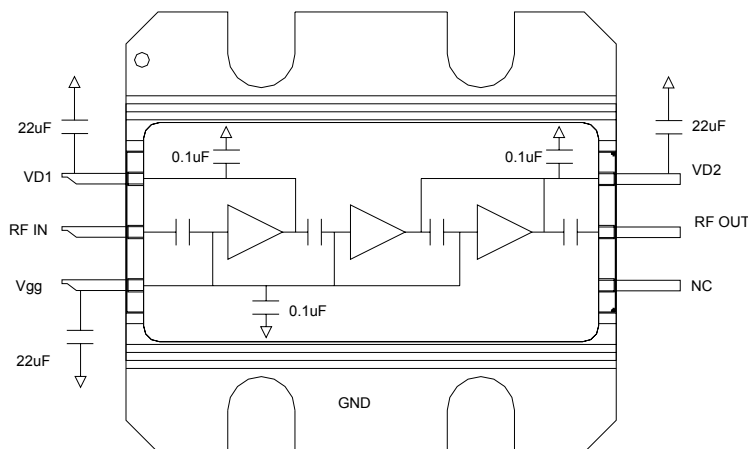


Dimensions are in inches  
\* NC: No connection inside the package

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### Application Note

1. The package should be screwed onto a good heat sink and ground
2. Turn on/off sequence is required:
  - to turn on: apply -5V first, then +7V and +10V.
  - to turn off: turn +7V and +10V off first, then turn -5V off
3. Recommended External Bias Circuit and Internal Block Diagram



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2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.