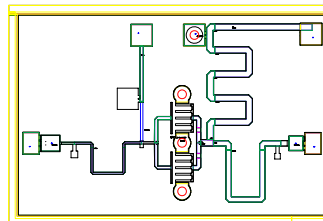


## Features:

- Frequency Range: 6-18 GHz
- P1dB: +27 dBm
- Gain: 8dB
- Best Suited in a balanced configuration
- MTTF > 100 years @ 85°C ambient temperature



## Applications:

- EW

## Description:

The MMA-061827 is a 6-18 GHz GaAs power amplifier MMIC chip. Small signal gain is typically 8.0 dB across band. In a balanced configuration, input and output VSWR are better than 1.5:1 with a typical P1B more than 29 dBm, and a Psat of 30 dBm. The typical performance is shown below. MMA-061827 can be used in broadband EW and defense applications. Hi-rel and space screening are available.

## Typical Performance in a balanced configuration:

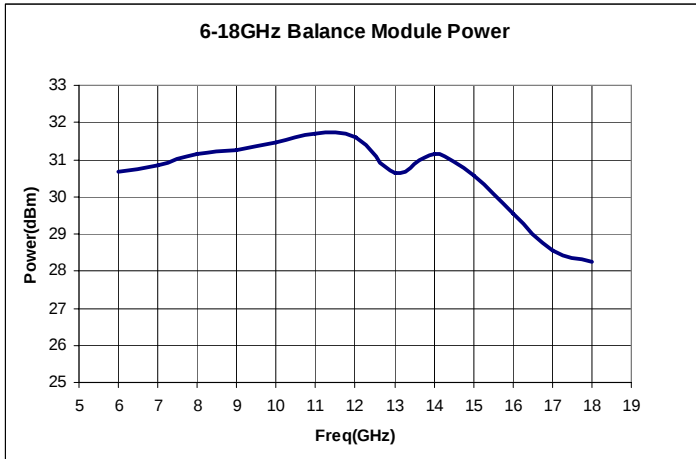
(Vds = 8.0V, Vgs = -0.65V, Ids=380mA, Zo=50 ohm, T<sub>A</sub>=25 °C )

| Parameter                         | Units | Min.  | Typ.  | Max. |
|-----------------------------------|-------|-------|-------|------|
| Frequency Range (Min/Max)         | GHz   | 6     |       | 18   |
| Small Signal Gain                 | dB    | 6.0   | 8.0   |      |
| Gain Flatness                     | +/-dB |       | 1.0   |      |
| Input Return Loss                 | dB    |       | 10    |      |
| Output Return Loss                | dB    |       | 10    |      |
| Output P1dB                       | dBm   | +27.0 | +29.0 |      |
| Output Saturation Power           | dBm   |       | +30.0 |      |
| Noise Figure                      | dB    | 5.5   | 6.5   |      |
| Operating Current Range (Min/Max) | mA    | 300   | 380   | 500  |
| Thermal Resistance                | °C/W  |       | 20    |      |

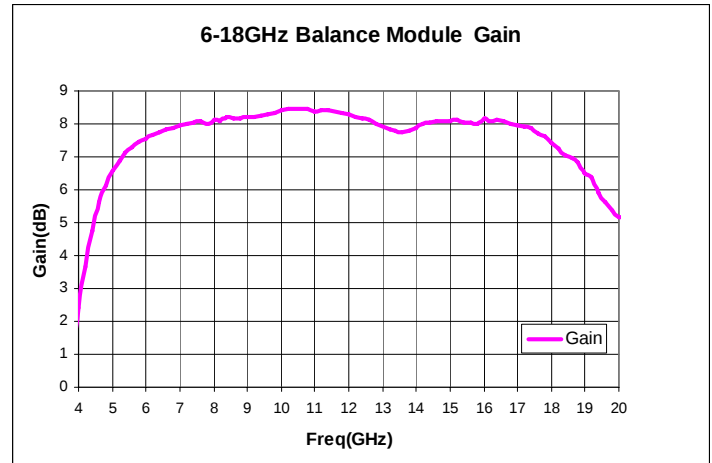
## Typical RF Performance in balanced configuration:

(V<sub>ds</sub> = 8.0V, I<sub>ds</sub>=380mA, T<sub>A</sub>=25 °C, 50 Ohm system unless stated otherwise)

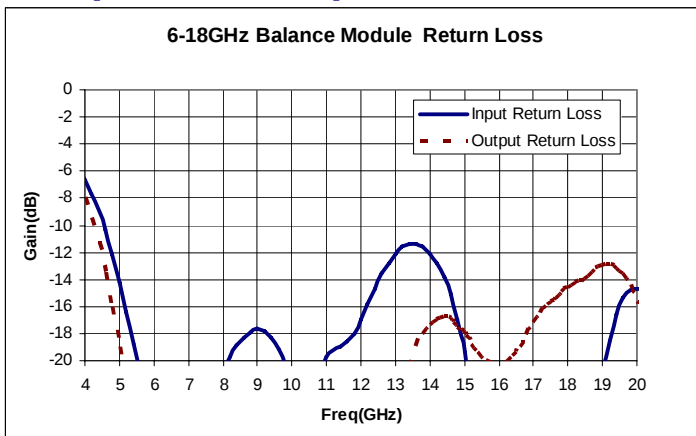
### Output Power



### Gain



### Input and Output Return Loss



**S-parameter in balanced configuration:** ( $V_{ds} = 8.0V$ ,  $I_{ds}=380mA$ ,  $T_A=25^\circ C$ , 50 Ohm system)

| Freq(GHz) | magS11 | angS11 | magS21 | angS21 | magS12 | angS12 | magS22 | angS22 |
|-----------|--------|--------|--------|--------|--------|--------|--------|--------|
| 4         | 0.47   | 136.0  | 1.32   | -22.8  | 0.019  | -92.9  | 0.40   | 142.0  |
| 5         | 0.20   | -14.3  | 2.14   | -144.0 | 0.030  | 148.0  | 0.11   | 10.5   |
| 6         | 0.05   | 150.0  | 2.39   | 108.0  | 0.033  | 43.1   | 0.02   | 129.0  |
| 7         | 0.07   | -63.2  | 2.50   | 7.4    | 0.036  | -55.2  | 0.09   | 5.8    |
| 8         | 0.09   | 123.0  | 2.54   | -88.5  | 0.040  | -151.0 | 0.07   | -84.7  |
| 9         | 0.13   | -9.1   | 2.57   | 177.0  | 0.044  | 118.0  | 0.05   | -106.0 |
| 10        | 0.08   | -91.9  | 2.63   | 83.7   | 0.048  | 26.5   | 0.06   | 163.0  |
| 11        | 0.10   | -147.0 | 2.63   | -11.1  | 0.052  | -65.2  | 0.06   | 60.5   |
| 12        | 0.14   | 63.7   | 2.60   | -105.0 | 0.055  | -157.0 | 0.07   | -17.9  |
| 13        | 0.25   | -74.2  | 2.48   | 161.0  | 0.056  | 110.0  | 0.06   | -29.2  |
| 14        | 0.25   | 173.0  | 2.48   | 69.0   | 0.063  | 18.2   | 0.14   | -85.8  |
| 15        | 0.11   | 59.1   | 2.53   | -27.4  | 0.069  | -76.4  | 0.13   | -175.0 |
| 16        | 0.05   | 64.9   | 2.56   | -125.0 | 0.076  | -173.0 | 0.10   | 107.0  |
| 17        | 0.05   | -54.9  | 2.49   | 133.0  | 0.081  | 88.6   | 0.14   | 22.0   |
| 18        | 0.02   | -82.1  | 2.35   | 27.7   | 0.081  | -12.0  | 0.19   | -44.0  |
| 19        | 0.09   | -42.8  | 2.11   | -78.6  | 0.076  | -118.0 | 0.22   | -116.0 |
| 20        | 0.19   | 166.0  | 1.81   | 169.0  | 0.071  | 131.0  | 0.17   | 144.0  |

**Absolute Maximum Ratings (\*):**

| SYMBOL        | PARAMETER            | UNITS       | ABSOLUTE MAXIMUM |
|---------------|----------------------|-------------|------------------|
| $V_{ds}$      | Drain-Source Voltage | V           | 9.0              |
| $V_{gs}$      | Gate-Source Voltage  | V           | -2.0 to +0.8     |
| $I_{ds}$      | Drain Current        | mA          | 600              |
| $I_{gs}$      | Gate Current         | mA          | 3.0              |
| $P_{diss}$    | DC Power Dissipation | W           | 5.0              |
| $P_{in\ max}$ | RF Input Power       | dBm         | +25              |
| $T_{ch}$      | Channel Temperature  | $^{\circ}C$ | 150              |
| $T_{stg}$     | Storage Temperature  | $^{\circ}C$ | -60 to 150       |

(\*) Operation of this device above any one of these parameters may cause permanent damage.

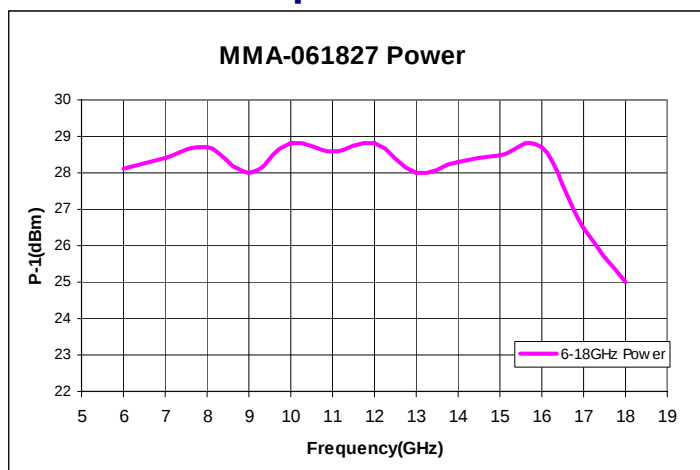
## Electrical Specifications: (V<sub>ds</sub> = 8.0V, V<sub>gs</sub> = -0.65V, I<sub>ds</sub>=180mA, Z<sub>o</sub>=50 ohm, T<sub>A</sub> =25 °C )

| Parameter                         | Units | Min. | Typ.  | Max. |
|-----------------------------------|-------|------|-------|------|
| Frequency Range (Min/Max)         | GHz   | 6    |       | 18   |
| Small Signal Gain                 | dB    | 6.0  | 8.0   |      |
| Gain Flatness                     | +/-dB |      | 1.0   |      |
| Output Return Loss                | dB    |      | 8     |      |
| Input Return Loss                 | dB    |      | 2     |      |
| Output P1dB                       | dBm   |      | +27.0 |      |
| Output Saturation Power           | dBm   |      | +30.0 |      |
| Noise Figure                      | dB    |      | 6.5   |      |
| Operating Current Range (Min/Max) | mA    | 150  | 180   | 250  |
| Thermal Resistance                | °C/W  |      | 20    |      |

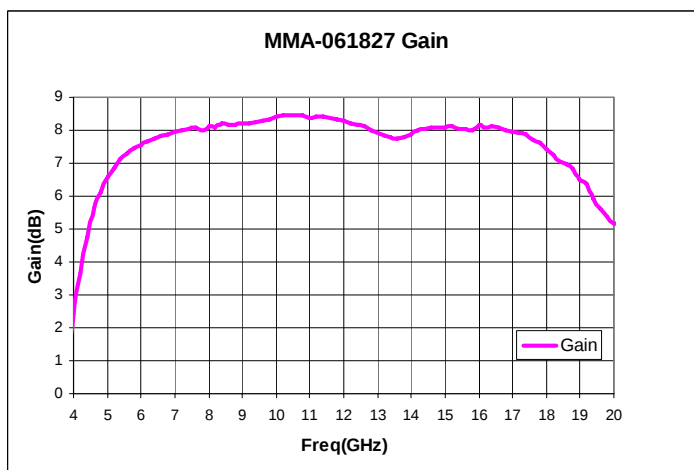
## Typical Chip RF Performance:

(V<sub>ds</sub> = 8.0V, I<sub>ds</sub>=180mA, T<sub>A</sub> =25 °C, 50 Ohm system unless stated otherwise)

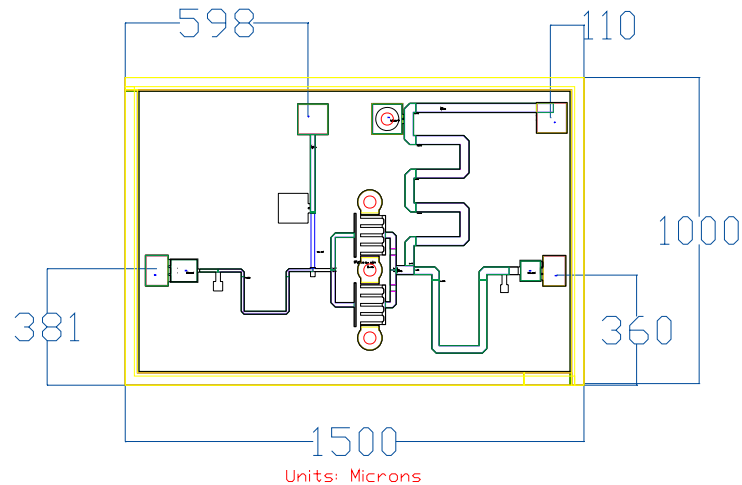
### Output Power



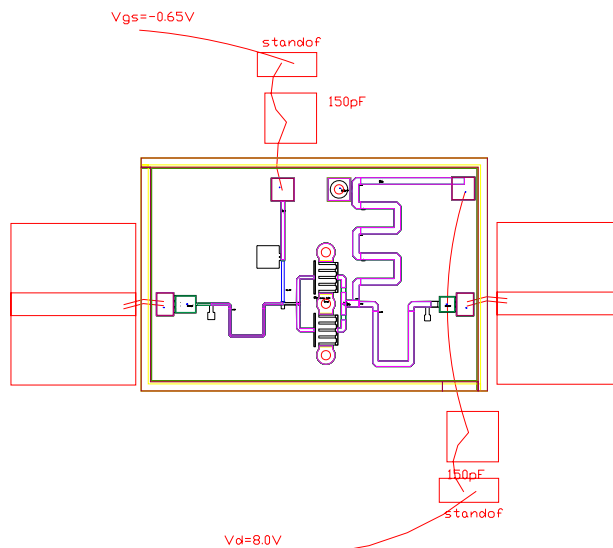
### Gain



## Mechanical Diagram:



## Application Information:



Notes: Put 10 mils ridge underneath the MMIC chip to make MMIC same height with the circuit; make output bond short to improve the performance.