

## Typical Performance Data

**NOTE: Use PDF Bookmarks to view DATA at required conditions**

**Definitions:**

Input Return Loss = -S11 (dB)

Gain(Power Gain) = S21 (dB)

Reverse Isolation = -S12 (dB)

Output Return Loss = -S22 (dB)

TEST CONDITIONS: Vd = 3V, Rbias=1.5K ohms, Id=29 mA @ Temperature = +25degC

| FREQ   | Gain  | Isolation | Input Return Loss | Output Return Loss | Stability |         | IP-3 Output | 1dB Comp. Output (1) |                    | Noise Figure |
|--------|-------|-----------|-------------------|--------------------|-----------|---------|-------------|----------------------|--------------------|--------------|
|        |       |           |                   |                    |           |         |             | Current Limit 40mA   | Current Limit 60mA |              |
| (MHz)  | (dB)  | (dB)      | (dB)              | (dB)               | K         | Measure | (dBm)       | (dBm)                |                    | (dB)         |
| 50.0   | 24.37 | 30.19     | 9.69              | 10.20              | 1.09      | 0.70    | 27.58       | 16.98                | 17.01              | 1.10         |
| 100.0  | 24.40 | 29.66     | 9.31              | 14.14              | 1.07      | 0.76    | 27.58       | 17.20                | 17.57              | 0.80         |
| 300.0  | 23.48 | 28.37     | 8.46              | 18.27              | 1.01      | 0.82    | 28.05       | 17.17                | 17.68              | 0.68         |
| 500.0  | 22.07 | 27.30     | 7.60              | 20.14              | 0.99      | 0.90    | 27.70       | 17.03                | 17.85              | 0.59         |
| 600.0  | 21.33 | 26.83     | 7.27              | 20.97              | 0.99      | 0.94    | 28.45       | 16.97                | 17.99              | 0.68         |
| 800.0  | 19.88 | 25.84     | 6.76              | 22.42              | 1.00      | 0.99    | 29.01       | 16.97                | 18.08              | 0.68         |
| 1000.0 | 18.54 | 25.01     | 6.45              | 23.64              | 1.02      | 1.02    | 29.38       | 17.00                | 18.19              | 0.76         |
| 1200.0 | 17.32 | 24.16     | 6.17              | 24.48              | 1.04      | 1.05    | 30.38       | 17.02                | 18.39              | 0.85         |
| 1400.0 | 16.25 | 23.35     | 6.02              | 24.80              | 1.05      | 1.06    | 29.85       | 17.01                | 18.63              | 0.79         |
| 1600.0 | 15.26 | 22.63     | 5.86              | 24.74              | 1.07      | 1.08    | 30.25       | 16.94                | 18.38              | 0.90         |
| 1700.0 | 14.79 | 22.30     | 5.78              | 24.88              | 1.08      | 1.09    | 30.30       | 17.04                | 18.57              | 0.99         |
| 1900.0 | 13.99 | 21.61     | 5.78              | 24.61              | 1.09      | 1.09    | 30.77       | 16.92                | 18.55              | 0.93         |
| 2100.0 | 13.22 | 20.98     | 5.70              | 24.47              | 1.10      | 1.09    | 30.88       | 16.85                | 18.86              | 0.92         |
| 2300.0 | 12.55 | 20.38     | 5.70              | 24.64              | 1.10      | 1.10    | 30.86       | 16.84                | 18.89              | 1.11         |
| 2500.0 | 11.86 | 19.90     | 5.95              | 25.98              | 1.14      | 1.09    | 31.02       | 16.81                | 18.93              | 1.10         |
| 2700.0 | 11.15 | 19.38     | 5.62              | 23.06              | 1.13      | 1.11    | 30.95       | 16.83                | 19.02              | 1.35         |
| 2900.0 | 10.77 | 18.69     | 5.80              | 24.57              | 1.12      | 1.09    | 31.40       | 16.69                | 19.01              | 1.22         |
| 3000.0 | 10.52 | 18.45     | 5.90              | 24.92              | 1.13      | 1.09    | 31.33       | 16.73                | 19.00              | 1.12         |
| 3200.0 | 10.04 | 17.93     | 5.96              | 25.02              | 1.13      | 1.08    | 31.60       | 16.82                | 19.12              | 1.20         |
| 3400.0 | 9.61  | 17.43     | 6.18              | 25.75              | 1.14      | 1.07    | 31.39       | 16.91                | 19.02              | 1.18         |
| 3600.0 | 9.21  | 16.99     | 6.36              | 25.49              | 1.15      | 1.06    | 31.33       | 16.94                | 19.21              | 1.34         |
| 3800.0 | 8.83  | 16.54     | 6.48              | 25.23              | 1.15      | 1.05    | 31.39       | 16.90                | 19.15              | 1.54         |
| 4000.0 | 8.48  | 16.10     | 6.73              | 24.65              | 1.15      | 1.04    | 31.18       | 16.90                | 19.20              | 1.33         |
| 4100.0 | 8.26  | 15.94     | 6.78              | 23.96              | 1.16      | 1.03    | 31.49       | 16.98                | 19.06              | 1.49         |
| 4300.0 | 7.82  | 15.60     | 6.90              | 23.04              | 1.18      | 1.03    | 30.55       | 16.90                | 18.87              | 1.62         |
| 4500.0 | 7.49  | 15.18     | 7.10              | 22.49              | 1.18      | 1.01    | 30.67       | 17.17                | 18.90              | 1.61         |
| 4700.0 | 7.04  | 14.94     | 7.39              | 21.59              | 1.22      | 1.00    | 30.66       | 17.16                | 19.22              | 1.89         |
| 4900.0 | 6.81  | 14.53     | 6.90              | 21.62              | 1.18      | 1.01    | 31.89       | 17.22                | 19.28              | 1.64         |
| 5100.0 | 6.61  | 14.13     | 6.73              | 21.05              | 1.16      | 1.01    | 32.38       | 17.41                | 19.56              | 1.82         |
| 5300.0 | 6.33  | 13.84     | 6.53              | 20.43              | 1.15      | 1.01    | 32.37       | 17.29                | 19.60              | 1.75         |
| 5400.0 | 6.19  | 13.67     | 6.47              | 19.86              | 1.15      | 1.01    | 31.76       | 17.23                | 19.81              | 1.78         |
| 5600.0 | 5.91  | 13.41     | 6.34              | 18.84              | 1.14      | 1.01    | 32.02       | 17.13                | 19.80              | 1.53         |
| 5800.0 | 5.62  | 13.17     | 6.17              | 17.92              | 1.14      | 1.01    | 32.44       | 17.11                | 19.54              | 2.02         |
| 6000.0 | 5.34  | 12.91     | 5.93              | 17.22              | 1.13      | 1.02    | 32.56       | 17.14                | 19.39              | 2.08         |
| 6200.0 | 5.06  | 12.72     | 5.68              | 16.43              | 1.13      | 1.02    | 32.53       | 17.25                | 19.52              | 2.22         |
| 6400.0 | 4.78  | 12.52     | 5.47              | 15.92              | 1.12      | 1.03    | 32.25       | 17.25                | 19.52              | 2.47         |
| 6600.0 | 4.47  | 12.35     | 5.31              | 15.10              | 1.12      | 1.03    | 32.11       | 17.39                | 19.77              | 2.23         |
| 6800.0 | 4.12  | 12.26     | 5.14              | 14.51              | 1.14      | 1.04    | 32.31       | 17.42                | 19.70              | 2.75         |
| 7000.0 | 3.62  | 12.29     | 5.52              | 13.79              | 1.21      | 1.02    | 32.54       | 17.54                | 19.90              | 2.99         |

(1) Current is externally limited during P1dB measurements. Unit is capable of higher output power if current is not limited.

# MMIC Amplifier

# PMA-5451+

## Typical Performance Data

### Definitions:

Input Return Loss = -S11 (dB)

Gain(Power Gain) = S21 (dB)

Reverse Isolation = -S12 (dB)

Output Return Loss = -S22 (dB)

TEST CONDITIONS: Vd = 3V, Rbias=1.5K ohms, Id=30 mA @ Temperature = -45degC

| FREQ   | Gain  | Isolation | Input Return Loss | Output Return Loss | Stability |         | IP-3 Output | Noise Figure |
|--------|-------|-----------|-------------------|--------------------|-----------|---------|-------------|--------------|
| (MHz)  | (dB)  | (dB)      | (dB)              | (dB)               | K         | Measure | (dBm)       | (dB)         |
| 50.0   | 24.77 | 29.72     | 10.97             | 10.86              | 1.04      | 0.66    | 27.85       | 0.90         |
| 100.0  | 24.59 | 29.34     | 10.99             | 15.97              | 1.05      | 0.73    | 28.27       | 0.60         |
| 300.0  | 23.65 | 28.44     | 9.76              | 22.90              | 1.04      | 0.79    | 28.83       | 0.63         |
| 500.0  | 22.30 | 27.60     | 8.45              | 24.60              | 1.04      | 0.87    | 28.52       | 0.43         |
| 600.0  | 21.59 | 27.12     | 7.97              | 25.12              | 1.04      | 0.90    | 29.31       | 0.48         |
| 800.0  | 20.18 | 26.14     | 7.28              | 25.34              | 1.04      | 0.94    | 29.94       | 0.49         |
| 1000.0 | 18.87 | 25.19     | 6.82              | 25.13              | 1.05      | 0.98    | 30.41       | 0.51         |
| 1200.0 | 17.68 | 24.33     | 6.47              | 24.49              | 1.06      | 1.00    | 31.31       | 0.62         |
| 1400.0 | 16.61 | 23.47     | 6.26              | 24.12              | 1.07      | 1.02    | 30.77       | 0.65         |
| 1600.0 | 15.63 | 22.68     | 6.05              | 23.35              | 1.08      | 1.03    | 31.18       | 0.64         |
| 1700.0 | 15.18 | 22.32     | 5.96              | 23.41              | 1.08      | 1.04    | 31.23       | 0.88         |
| 1900.0 | 14.37 | 21.60     | 5.91              | 22.95              | 1.09      | 1.04    | 31.66       | 0.64         |
| 2100.0 | 13.62 | 20.89     | 5.80              | 22.87              | 1.09      | 1.05    | 31.79       | 0.63         |
| 2300.0 | 12.96 | 20.26     | 5.80              | 22.86              | 1.09      | 1.05    | 31.83       | 0.79         |
| 2500.0 | 12.25 | 19.80     | 6.05              | 23.91              | 1.13      | 1.05    | 31.97       | 0.80         |
| 2700.0 | 11.45 | 19.33     | 5.69              | 21.81              | 1.12      | 1.09    | 31.98       | 1.12         |
| 2900.0 | 11.19 | 18.51     | 5.85              | 23.06              | 1.09      | 1.05    | 32.34       | 0.85         |
| 3000.0 | 10.94 | 18.24     | 5.96              | 23.51              | 1.10      | 1.04    | 32.27       | 0.75         |
| 3200.0 | 10.48 | 17.71     | 6.06              | 23.85              | 1.10      | 1.04    | 32.64       | 0.85         |
| 3400.0 | 10.05 | 17.21     | 6.25              | 24.65              | 1.10      | 1.03    | 32.38       | 0.81         |
| 3600.0 | 9.65  | 16.73     | 6.43              | 24.85              | 1.11      | 1.01    | 32.31       | 0.91         |
| 3800.0 | 9.27  | 16.26     | 6.54              | 25.09              | 1.10      | 1.01    | 32.30       | 0.94         |
| 4000.0 | 8.93  | 15.84     | 6.81              | 24.88              | 1.11      | 0.99    | 32.15       | 1.02         |
| 4100.0 | 8.72  | 15.66     | 6.84              | 24.33              | 1.11      | 0.99    | 32.46       | 0.85         |
| 4300.0 | 8.29  | 15.32     | 6.94              | 22.98              | 1.13      | 0.99    | 31.52       | 0.99         |
| 4500.0 | 7.96  | 14.90     | 7.11              | 22.33              | 1.13      | 0.97    | 31.45       | 0.81         |
| 4700.0 | 7.54  | 14.62     | 7.31              | 20.84              | 1.16      | 0.96    | 31.58       | 1.28         |
| 4900.0 | 7.16  | 14.33     | 7.03              | 20.42              | 1.16      | 0.97    | 32.76       | 1.34         |
| 5100.0 | 7.03  | 13.88     | 6.72              | 19.90              | 1.12      | 0.96    | 33.39       | 1.32         |
| 5300.0 | 6.77  | 13.56     | 6.50              | 19.33              | 1.11      | 0.96    | 33.46       | 1.09         |
| 5400.0 | 6.61  | 13.44     | 6.40              | 18.66              | 1.11      | 0.97    | 32.69       | 1.26         |
| 5600.0 | 6.34  | 13.16     | 6.29              | 17.90              | 1.10      | 0.96    | 33.10       | 1.36         |
| 5800.0 | 6.05  | 12.90     | 6.14              | 17.02              | 1.10      | 0.96    | 33.41       | 1.41         |
| 6000.0 | 5.78  | 12.68     | 5.92              | 16.49              | 1.09      | 0.97    | 33.61       | 1.57         |
| 6200.0 | 5.49  | 12.46     | 5.64              | 15.69              | 1.08      | 0.97    | 33.53       | 1.44         |
| 6400.0 | 5.22  | 12.25     | 5.43              | 15.19              | 1.08      | 0.98    | 33.29       | 1.46         |
| 6600.0 | 4.92  | 12.10     | 5.21              | 14.40              | 1.08      | 0.98    | 33.14       | 1.49         |
| 6800.0 | 4.61  | 11.95     | 4.99              | 13.97              | 1.08      | 1.00    | 33.17       | 2.08         |
| 7000.0 | 4.17  | 11.94     | 5.13              | 13.10              | 1.12      | 0.99    | 33.49       | 1.98         |

## Typical Performance Data

### Definitions:

Input Return Loss = -S11 (dB)

Gain(Power Gain) = S21 (dB)

Reverse Isolation = -S12 (dB)

Output Return Loss = -S22 (dB)

TEST CONDITIONS: Vd = 3V, Rbias=1.5K ohms, Id=28 mA @ Temperature = +85degC

| FREQ   | Gain  | Isolation | Input Return Loss | Output Return Loss | Stability |         | IP-3 Output | Noise Figure |
|--------|-------|-----------|-------------------|--------------------|-----------|---------|-------------|--------------|
|        |       |           |                   |                    | K         | Measure |             |              |
| (MHz)  | (dB)  | (dB)      | (dB)              | (dB)               | K         | Measure | (dBm)       | (dB)         |
| 50.0   | 23.86 | 30.27     | 8.70              | 9.20               | 1.10      | 0.71    | 27.19       | 1.30         |
| 100.0  | 24.05 | 29.62     | 7.96              | 12.02              | 1.06      | 0.76    | 26.91       | 1.10         |
| 300.0  | 23.18 | 28.30     | 7.41              | 14.83              | 0.98      | 0.85    | 27.38       | 0.76         |
| 500.0  | 21.76 | 27.05     | 6.87              | 16.42              | 0.94      | 0.93    | 26.97       | 0.76         |
| 600.0  | 21.02 | 26.55     | 6.66              | 17.37              | 0.94      | 0.97    | 27.73       | 0.85         |
| 800.0  | 19.54 | 25.54     | 6.33              | 18.82              | 0.95      | 1.02    | 28.32       | 0.85         |
| 1000.0 | 18.21 | 24.67     | 6.13              | 20.37              | 0.98      | 1.05    | 28.60       | 0.97         |
| 1200.0 | 16.99 | 23.97     | 5.93              | 21.68              | 1.01      | 1.08    | 29.71       | 1.01         |
| 1400.0 | 15.92 | 23.22     | 5.83              | 22.67              | 1.03      | 1.10    | 29.10       | 1.14         |
| 1600.0 | 14.93 | 22.54     | 5.71              | 23.40              | 1.06      | 1.11    | 29.56       | 0.95         |
| 1700.0 | 14.46 | 22.25     | 5.64              | 23.66              | 1.07      | 1.12    | 29.58       | 1.04         |
| 1900.0 | 13.65 | 21.61     | 5.64              | 23.88              | 1.09      | 1.12    | 30.11       | 1.09         |
| 2100.0 | 12.88 | 21.00     | 5.57              | 24.32              | 1.10      | 1.13    | 30.16       | 1.17         |
| 2300.0 | 12.20 | 20.44     | 5.60              | 24.42              | 1.11      | 1.13    | 30.20       | 1.44         |
| 2500.0 | 11.52 | 19.97     | 5.81              | 25.44              | 1.15      | 1.12    | 30.41       | 1.32         |
| 2700.0 | 10.81 | 19.48     | 5.56              | 23.04              | 1.15      | 1.14    | 30.37       | 1.72         |
| 2900.0 | 10.42 | 18.86     | 5.74              | 24.35              | 1.15      | 1.13    | 30.76       | 1.56         |
| 3000.0 | 10.15 | 18.61     | 5.84              | 24.57              | 1.15      | 1.12    | 30.67       | 1.53         |
| 3200.0 | 9.67  | 18.15     | 5.91              | 24.61              | 1.16      | 1.12    | 30.93       | 1.62         |
| 3400.0 | 9.23  | 17.67     | 6.12              | 25.14              | 1.18      | 1.10    | 30.77       | 1.66         |
| 3600.0 | 8.82  | 17.24     | 6.30              | 24.63              | 1.19      | 1.09    | 30.72       | 1.67         |
| 3800.0 | 8.44  | 16.77     | 6.43              | 24.12              | 1.19      | 1.08    | 30.68       | 1.74         |
| 4000.0 | 8.08  | 16.36     | 6.66              | 23.51              | 1.20      | 1.07    | 30.58       | 1.84         |
| 4100.0 | 7.86  | 16.19     | 6.69              | 23.01              | 1.20      | 1.07    | 30.83       | 1.88         |
| 4300.0 | 7.42  | 15.89     | 6.84              | 22.25              | 1.23      | 1.06    | 30.02       | 1.95         |
| 4500.0 | 7.10  | 15.47     | 7.01              | 22.23              | 1.23      | 1.05    | 30.13       | 1.91         |
| 4700.0 | 6.66  | 15.20     | 7.28              | 21.76              | 1.27      | 1.04    | 30.22       | 2.27         |
| 4900.0 | 6.42  | 14.80     | 6.88              | 21.88              | 1.23      | 1.05    | 31.27       | 2.36         |
| 5100.0 | 6.21  | 14.43     | 6.68              | 21.43              | 1.21      | 1.05    | 31.70       | 2.26         |
| 5300.0 | 5.95  | 14.09     | 6.48              | 20.77              | 1.19      | 1.05    | 31.65       | 2.39         |
| 5400.0 | 5.82  | 13.96     | 6.46              | 20.48              | 1.19      | 1.05    | 31.14       | 2.38         |
| 5600.0 | 5.55  | 13.65     | 6.34              | 19.45              | 1.18      | 1.05    | 31.45       | 2.67         |
| 5800.0 | 5.25  | 13.41     | 6.12              | 18.55              | 1.18      | 1.05    | 31.84       | 2.60         |
| 6000.0 | 4.97  | 13.15     | 5.94              | 17.60              | 1.17      | 1.05    | 31.93       | 2.74         |
| 6200.0 | 4.69  | 12.96     | 5.72              | 16.98              | 1.16      | 1.06    | 31.86       | 2.74         |
| 6400.0 | 4.42  | 12.76     | 5.53              | 16.57              | 1.16      | 1.07    | 33.34       | 2.69         |
| 6600.0 | 4.11  | 12.59     | 5.36              | 15.77              | 1.16      | 1.07    | 31.48       | 3.16         |
| 6800.0 | 3.76  | 12.49     | 5.23              | 15.27              | 1.18      | 1.08    | 31.73       | 3.17         |
| 7000.0 | 3.29  | 12.48     | 5.51              | 14.38              | 1.25      | 1.06    | 31.80       | 3.52         |

## Typical Performance Data

### Definitions:

Input Return Loss = -S11 (dB)

Gain(Power Gain) = S21 (dB)

Reverse Isolation = -S12 (dB)

Output Return Loss = -S22 (dB)

TEST CONDITIONS: Vd = 3V, Id=20mA @ Temperature = +25degC (1)

| FREQ   | Gain  | Isolation | Input Return Loss | Output Return Loss | Stability |         | IP-3 Output | 1dB Comp. Output (2) |                    | FREQ   | Noise Figure |
|--------|-------|-----------|-------------------|--------------------|-----------|---------|-------------|----------------------|--------------------|--------|--------------|
|        |       |           |                   |                    |           |         |             | Current Limit 40mA   | Current Limit 60mA |        |              |
| (MHz)  | (dB)  | (dB)      | (dB)              | (dB)               | K         | Measure | (dBm)       | (dBm)                |                    | (MHz)  | (dB)         |
| 50.0   | 23.04 | 29.50     | 9.00              | 8.35               | 1.11      | 0.66    | 24.74       | 16.98                | 17.01              | 50.0   | 1.11         |
| 100.0  | 23.27 | 28.88     | 8.37              | 11.16              | 1.07      | 0.73    | 24.75       | 17.20                | 17.57              | 100.0  | 0.84         |
| 300.0  | 22.57 | 27.66     | 7.56              | 13.68              | 0.99      | 0.81    | 24.67       | 17.17                | 17.68              | 400.0  | 0.69         |
| 500.0  | 21.34 | 26.55     | 6.93              | 15.32              | 0.94      | 0.91    | 24.76       | 17.03                | 17.85              | 600.0  | 0.72         |
| 600.0  | 20.66 | 26.01     | 6.64              | 16.22              | 0.93      | 0.95    | 25.01       | 16.97                | 17.99              | 800.0  | 0.78         |
| 800.0  | 19.30 | 25.21     | 6.22              | 17.98              | 0.94      | 1.02    | 25.34       | 16.97                | 18.08              | 1100.0 | 0.86         |
| 1000.0 | 18.02 | 24.44     | 5.92              | 19.73              | 0.96      | 1.06    | 25.48       | 17.00                | 18.19              | 1300.0 | 0.90         |
| 1200.0 | 16.85 | 23.72     | 5.71              | 21.35              | 0.98      | 1.10    | 26.49       | 17.02                | 18.39              | 1600.0 | 0.97         |
| 1400.0 | 15.79 | 23.13     | 5.55              | 22.89              | 1.01      | 1.12    | 26.08       | 17.01                | 18.63              | 1800.0 | 1.14         |
| 1600.0 | 14.84 | 22.46     | 5.45              | 24.05              | 1.03      | 1.14    | 26.54       | 16.94                | 18.38              | 2000.0 | 0.97         |
| 1700.0 | 14.39 | 22.16     | 5.39              | 24.63              | 1.04      | 1.14    | 27.22       | 17.04                | 18.57              | 2300.0 | 1.06         |
| 1900.0 | 13.59 | 21.58     | 5.37              | 25.12              | 1.06      | 1.15    | 26.52       | 16.92                | 18.55              | 2500.0 | 1.17         |
| 2100.0 | 12.85 | 20.99     | 5.35              | 25.70              | 1.07      | 1.15    | 26.11       | 16.85                | 18.86              | 2700.0 | 1.67         |
| 2300.0 | 12.20 | 20.44     | 5.38              | 25.91              | 1.09      | 1.15    | 26.59       | 16.84                | 18.89              | 3000.0 | 1.25         |
| 2500.0 | 11.60 | 19.87     | 5.47              | 25.88              | 1.10      | 1.15    | 26.95       | 16.81                | 18.93              | 3200.0 | 1.36         |
| 2700.0 | 10.76 | 19.63     | 5.34              | 22.93              | 1.13      | 1.18    | 27.07       | 16.83                | 19.02              | 3400.0 | 1.46         |
| 2900.0 | 10.51 | 18.82     | 5.51              | 25.20              | 1.11      | 1.14    | 26.99       | 16.69                | 19.01              | 3700.0 | 1.39         |
| 3000.0 | 10.29 | 18.56     | 5.59              | 25.12              | 1.11      | 1.14    | 27.30       | 16.73                | 19.00              | 3900.0 | 1.64         |
| 3200.0 | 9.86  | 18.07     | 5.71              | 24.75              | 1.11      | 1.13    | 26.92       | 16.82                | 19.12              | 4100.0 | 1.59         |
| 3400.0 | 9.45  | 17.56     | 5.85              | 24.42              | 1.11      | 1.12    | 27.88       | 16.91                | 19.02              | 4400.0 | 1.73         |
| 3600.0 | 9.06  | 17.10     | 5.97              | 24.09              | 1.12      | 1.11    | 27.92       | 16.94                | 19.21              | 4600.0 | 1.85         |
| 3800.0 | 8.69  | 16.65     | 6.10              | 23.59              | 1.12      | 1.09    | 27.71       | 16.90                | 19.15              | 4900.0 | 2.17         |
| 4000.0 | 8.32  | 16.24     | 6.19              | 22.88              | 1.12      | 1.09    | 26.78       | 16.90                | 19.20              | 5100.0 | 1.97         |
| 4100.0 | 8.13  | 16.07     | 6.23              | 22.38              | 1.13      | 1.08    | 27.42       | 16.98                | 19.06              | 5300.0 | 1.96         |
| 4300.0 | 7.72  | 15.75     | 6.18              | 21.41              | 1.14      | 1.08    | 26.40       | 16.90                | 18.87              | 5600.0 | 2.15         |
| 4500.0 | 7.41  | 15.38     | 6.15              | 20.96              | 1.13      | 1.08    | 27.59       | 17.17                | 18.90              | 5800.0 | 2.32         |
| 4700.0 | 7.07  | 15.04     | 6.24              | 20.40              | 1.15      | 1.07    | 27.07       | 17.16                | 19.22              | 6000.0 | 2.37         |
| 4900.0 | 6.52  | 14.89     | 6.55              | 19.96              | 1.21      | 1.06    | 27.66       | 17.22                | 19.28              | 6400.0 | 2.68         |
| 5100.0 | 6.43  | 14.36     | 5.79              | 19.64              | 1.12      | 1.08    | 27.63       | 17.41                | 19.56              | 6600.0 | 2.60         |
| 5300.0 | 6.17  | 14.06     | 5.59              | 18.92              | 1.11      | 1.08    | 28.02       | 17.29                | 19.60              | 6800.0 | 2.80         |
| 5400.0 | 6.03  | 13.91     | 5.51              | 18.50              | 1.10      | 1.08    | 27.18       | 17.23                | 19.81              | 7000.0 | 2.69         |
| 5600.0 | 5.74  | 13.64     | 5.35              | 17.78              | 1.10      | 1.08    | 27.69       | 17.13                | 19.80              |        |              |
| 5800.0 | 5.44  | 13.38     | 5.18              | 17.16              | 1.09      | 1.09    | 28.72       | 17.11                | 19.54              |        |              |
| 6000.0 | 5.14  | 13.17     | 5.08              | 16.54              | 1.09      | 1.09    | 28.26       | 17.14                | 19.39              |        |              |
| 6200.0 | 4.88  | 12.92     | 4.87              | 15.99              | 1.08      | 1.10    | 27.30       | 17.25                | 19.52              |        |              |
| 6400.0 | 4.61  | 12.70     | 4.69              | 15.54              | 1.07      | 1.10    | 27.73       | 17.25                | 19.52              |        |              |
| 6600.0 | 4.33  | 12.50     | 4.56              | 15.08              | 1.07      | 1.11    | 28.58       | 17.39                | 19.77              |        |              |
| 6800.0 | 4.04  | 12.33     | 4.44              | 14.67              | 1.07      | 1.11    | 28.19       | 17.42                | 19.70              |        |              |
| 7000.0 | 3.68  | 12.26     | 4.42              | 14.16              | 1.09      | 1.11    | 28.15       | 17.54                | 19.90              |        |              |

(1) External Rbias resistor is adjusted to obtain desired current

(2) Current is externally limited during P1dB measurements. Unit is capable of higher output power if current is not limited.

## Typical Performance Data

### Definitions:

Input Return Loss = -S11 (dB)

Gain(Power Gain) = S21 (dB)

Reverse Isolation = -S12 (dB)

Output Return Loss = -S22 (dB)

TEST CONDITIONS: Vd = 3V, Id=30mA @ Temperature = +25degC (1)

| FREQ   | Gain  | Isolation | Input Return Loss | Output Return Loss | Stability |         | IP-3 Output | 1dB Comp. Output (2) |                    | FREQ   | Noise Figure |
|--------|-------|-----------|-------------------|--------------------|-----------|---------|-------------|----------------------|--------------------|--------|--------------|
|        |       |           |                   |                    |           |         |             | Current Limit 40mA   | Current Limit 60mA |        |              |
| (MHz)  | (dB)  | (dB)      | (dB)              | (dB)               | K         | Measure | (dBm)       | (dBm)                |                    | (MHz)  | (dB)         |
| 50.0   | 24.28 | 30.23     | 9.58              | 9.98               | 1.09      | 0.70    | 27.17       | 16.98                | 17.01              | 50.0   | 1.04         |
| 100.0  | 24.36 | 29.65     | 9.39              | 13.82              | 1.07      | 0.75    | 27.26       | 17.20                | 17.57              | 100.0  | 0.79         |
| 300.0  | 23.49 | 28.50     | 8.37              | 17.69              | 1.01      | 0.83    | 27.46       | 17.17                | 17.68              | 400.0  | 0.65         |
| 500.0  | 22.12 | 27.36     | 7.46              | 19.83              | 0.98      | 0.90    | 27.87       | 17.03                | 17.85              | 600.0  | 0.70         |
| 600.0  | 21.39 | 26.84     | 7.08              | 20.91              | 0.98      | 0.94    | 28.17       | 16.97                | 17.99              | 800.0  | 0.74         |
| 800.0  | 19.94 | 25.92     | 6.55              | 23.00              | 0.99      | 1.00    | 28.71       | 16.97                | 18.08              | 1100.0 | 0.81         |
| 1000.0 | 18.60 | 25.01     | 6.21              | 24.91              | 1.01      | 1.03    | 28.94       | 17.00                | 18.19              | 1300.0 | 0.86         |
| 1200.0 | 17.39 | 24.23     | 5.96              | 26.26              | 1.03      | 1.06    | 29.98       | 17.02                | 18.39              | 1600.0 | 0.93         |
| 1400.0 | 16.30 | 23.45     | 5.79              | 27.12              | 1.05      | 1.08    | 29.68       | 17.01                | 18.63              | 1800.0 | 1.04         |
| 1600.0 | 15.33 | 22.69     | 5.68              | 27.27              | 1.06      | 1.09    | 30.16       | 16.94                | 18.38              | 2000.0 | 0.90         |
| 1700.0 | 14.88 | 22.36     | 5.63              | 27.33              | 1.07      | 1.09    | 30.87       | 17.04                | 18.57              | 2300.0 | 1.05         |
| 1900.0 | 14.06 | 21.67     | 5.60              | 26.62              | 1.08      | 1.10    | 30.22       | 16.92                | 18.55              | 2500.0 | 1.11         |
| 2100.0 | 13.32 | 21.01     | 5.58              | 26.63              | 1.09      | 1.10    | 29.84       | 16.85                | 18.86              | 2700.0 | 1.57         |
| 2300.0 | 12.65 | 20.37     | 5.61              | 26.89              | 1.09      | 1.10    | 30.31       | 16.84                | 18.89              | 3000.0 | 1.13         |
| 2500.0 | 12.04 | 19.76     | 5.71              | 26.95              | 1.10      | 1.09    | 30.77       | 16.81                | 18.93              | 3200.0 | 1.18         |
| 2700.0 | 11.18 | 19.46     | 5.57              | 23.77              | 1.13      | 1.12    | 30.79       | 16.83                | 19.02              | 3400.0 | 1.29         |
| 2900.0 | 10.94 | 18.64     | 5.75              | 25.55              | 1.10      | 1.09    | 30.80       | 16.69                | 19.01              | 3700.0 | 1.25         |
| 3000.0 | 10.71 | 18.37     | 5.82              | 25.57              | 1.10      | 1.08    | 31.12       | 16.73                | 19.00              | 3900.0 | 1.37         |
| 3200.0 | 10.28 | 17.82     | 5.95              | 25.55              | 1.10      | 1.07    | 30.73       | 16.82                | 19.12              | 4100.0 | 1.46         |
| 3400.0 | 9.86  | 17.31     | 6.09              | 25.46              | 1.10      | 1.06    | 31.67       | 16.91                | 19.02              | 4400.0 | 1.61         |
| 3600.0 | 9.47  | 16.83     | 6.21              | 25.14              | 1.10      | 1.05    | 31.70       | 16.94                | 19.21              | 4600.0 | 1.66         |
| 3800.0 | 9.08  | 16.37     | 6.35              | 24.63              | 1.11      | 1.04    | 31.51       | 16.90                | 19.15              | 4900.0 | 1.99         |
| 4000.0 | 8.71  | 15.95     | 6.43              | 23.78              | 1.11      | 1.03    | 30.50       | 16.90                | 19.20              | 5100.0 | 1.89         |
| 4100.0 | 8.51  | 15.76     | 6.46              | 23.20              | 1.11      | 1.03    | 31.22       | 16.98                | 19.06              | 5300.0 | 1.75         |
| 4300.0 | 8.10  | 15.43     | 6.43              | 21.75              | 1.12      | 1.03    | 30.18       | 16.90                | 18.87              | 5600.0 | 1.93         |
| 4500.0 | 7.78  | 15.06     | 6.38              | 20.88              | 1.11      | 1.02    | 31.38       | 17.17                | 18.90              | 5800.0 | 2.18         |
| 4700.0 | 7.43  | 14.73     | 6.48              | 20.00              | 1.13      | 1.01    | 30.84       | 17.16                | 19.22              | 6000.0 | 2.24         |
| 4900.0 | 6.89  | 14.58     | 6.76              | 19.14              | 1.18      | 1.00    | 31.40       | 17.22                | 19.28              | 6400.0 | 2.34         |
| 5100.0 | 6.79  | 14.04     | 6.00              | 18.87              | 1.10      | 1.02    | 31.34       | 17.41                | 19.56              | 6600.0 | 2.56         |
| 5300.0 | 6.52  | 13.74     | 5.79              | 18.15              | 1.09      | 1.02    | 31.76       | 17.29                | 19.60              | 6800.0 | 2.68         |
| 5400.0 | 6.38  | 13.59     | 5.71              | 17.77              | 1.09      | 1.02    | 30.79       | 17.23                | 19.81              | 7000.0 | 2.88         |
| 5600.0 | 6.09  | 13.34     | 5.54              | 17.06              | 1.08      | 1.02    | 31.39       | 17.13                | 19.80              |        |              |
| 5800.0 | 5.80  | 13.08     | 5.36              | 16.39              | 1.07      | 1.03    | 32.51       | 17.11                | 19.54              |        |              |
| 6000.0 | 5.49  | 12.87     | 5.26              | 15.81              | 1.08      | 1.03    | 32.01       | 17.14                | 19.39              |        |              |
| 6200.0 | 5.22  | 12.66     | 5.05              | 15.28              | 1.07      | 1.03    | 31.20       | 17.25                | 19.52              |        |              |
| 6400.0 | 4.95  | 12.42     | 4.86              | 14.82              | 1.06      | 1.04    | 31.14       | 17.25                | 19.52              |        |              |
| 6600.0 | 4.67  | 12.23     | 4.73              | 14.35              | 1.06      | 1.04    | 32.35       | 17.39                | 19.77              |        |              |
| 6800.0 | 4.38  | 12.07     | 4.60              | 13.93              | 1.06      | 1.04    | 31.48       | 17.42                | 19.70              |        |              |
| 7000.0 | 4.02  | 12.00     | 4.58              | 13.40              | 1.08      | 1.04    | 32.75       | 17.54                | 19.90              |        |              |

(1) External Rbias resistor is adjusted to obtain desired current

(2) Current is externally limited during P1dB measurements. Unit is capable of higher output power if current is not limited.

## Typical Performance Data

### Definitions:

Input Return Loss = -S11 (dB)

Gain(Power Gain) = S21 (dB)

Reverse Isolation = -S12 (dB)

Output Return Loss = -S22 (dB)

TEST CONDITIONS: Vd = 3V, Id=40mA @ Temperature = +25degC (1)

| FREQ   | Gain  | Isolation | Input Return Loss | Output Return Loss | Stability |         | IP-3 Output | 1dB Comp. Output (2) |                    | FREQ   | Noise Figure |
|--------|-------|-----------|-------------------|--------------------|-----------|---------|-------------|----------------------|--------------------|--------|--------------|
|        |       |           |                   |                    |           |         |             | Current Limit 40mA   | Current Limit 60mA |        |              |
| (MHz)  | (dB)  | (dB)      | (dB)              | (dB)               | K         | Measure | (dBm)       | (dBm)                |                    | (MHz)  | (dB)         |
| 50.0   | 25.04 | 30.64     | 10.27             | 10.94              | 1.09      | 0.70    | 29.36       | 16.98                | 17.01              | 50.0   | 1.02         |
| 100.0  | 25.02 | 30.24     | 10.20             | 15.66              | 1.08      | 0.76    | 29.45       | 17.20                | 17.57              | 100.0  | 0.74         |
| 300.0  | 24.04 | 29.05     | 8.95              | 21.17              | 1.03      | 0.82    | 29.85       | 17.17                | 17.68              | 400.0  | 0.64         |
| 500.0  | 22.59 | 27.97     | 7.82              | 23.62              | 1.02      | 0.90    | 30.42       | 17.03                | 17.85              | 600.0  | 0.66         |
| 600.0  | 21.82 | 27.37     | 7.38              | 24.57              | 1.01      | 0.93    | 30.80       | 16.97                | 17.99              | 800.0  | 0.73         |
| 800.0  | 20.32 | 26.35     | 6.77              | 25.94              | 1.02      | 0.98    | 31.43       | 16.97                | 18.08              | 1100.0 | 0.79         |
| 1000.0 | 18.95 | 25.42     | 6.40              | 26.46              | 1.04      | 1.01    | 31.69       | 17.00                | 18.19              | 1300.0 | 0.84         |
| 1200.0 | 17.71 | 24.49     | 6.14              | 26.14              | 1.05      | 1.03    | 32.80       | 17.02                | 18.39              | 1600.0 | 0.91         |
| 1400.0 | 16.61 | 23.64     | 5.96              | 25.71              | 1.06      | 1.05    | 32.51       | 17.01                | 18.63              | 1800.0 | 1.04         |
| 1600.0 | 15.63 | 22.83     | 5.84              | 25.07              | 1.07      | 1.06    | 33.04       | 16.94                | 18.38              | 2000.0 | 0.86         |
| 1700.0 | 15.17 | 22.45     | 5.78              | 24.93              | 1.08      | 1.06    | 33.82       | 17.04                | 18.57              | 2300.0 | 0.97         |
| 1900.0 | 14.34 | 21.73     | 5.75              | 24.28              | 1.09      | 1.06    | 33.16       | 16.92                | 18.55              | 2500.0 | 0.99         |
| 2100.0 | 13.59 | 21.01     | 5.74              | 24.23              | 1.09      | 1.06    | 32.84       | 16.85                | 18.86              | 2700.0 | 1.54         |
| 2300.0 | 12.92 | 20.33     | 5.76              | 24.37              | 1.09      | 1.06    | 33.46       | 16.84                | 18.89              | 3000.0 | 1.11         |
| 2500.0 | 12.31 | 19.68     | 5.87              | 24.60              | 1.10      | 1.05    | 33.85       | 16.81                | 18.93              | 3200.0 | 1.17         |
| 2700.0 | 11.44 | 19.36     | 5.72              | 22.78              | 1.12      | 1.09    | 33.87       | 16.83                | 19.02              | 3400.0 | 1.31         |
| 2900.0 | 11.20 | 18.52     | 5.91              | 23.65              | 1.10      | 1.05    | 34.01       | 16.69                | 19.01              | 3700.0 | 1.24         |
| 3000.0 | 10.97 | 18.24     | 5.99              | 23.82              | 1.10      | 1.04    | 34.31       | 16.73                | 19.00              | 3900.0 | 1.39         |
| 3200.0 | 10.53 | 17.71     | 6.12              | 24.04              | 1.10      | 1.03    | 33.96       | 16.82                | 19.12              | 4100.0 | 1.57         |
| 3400.0 | 10.10 | 17.15     | 6.27              | 24.09              | 1.10      | 1.02    | 35.06       | 16.91                | 19.02              | 4400.0 | 1.60         |
| 3600.0 | 9.71  | 16.67     | 6.39              | 24.04              | 1.10      | 1.01    | 34.88       | 16.94                | 19.21              | 4600.0 | 1.64         |
| 3800.0 | 9.32  | 16.21     | 6.53              | 23.80              | 1.10      | 1.00    | 34.79       | 16.90                | 19.15              | 4900.0 | 2.01         |
| 4000.0 | 8.94  | 15.79     | 6.60              | 23.11              | 1.10      | 0.99    | 33.95       | 16.90                | 19.20              | 5100.0 | 1.75         |
| 4100.0 | 8.74  | 15.60     | 6.63              | 22.59              | 1.10      | 0.99    | 34.68       | 16.98                | 19.06              | 5300.0 | 1.76         |
| 4300.0 | 8.34  | 15.25     | 6.59              | 21.24              | 1.10      | 0.99    | 33.55       | 16.90                | 18.87              | 5600.0 | 1.88         |
| 4500.0 | 8.01  | 14.88     | 6.56              | 20.24              | 1.10      | 0.98    | 34.89       | 17.17                | 18.90              | 5800.0 | 2.06         |
| 4700.0 | 7.65  | 14.57     | 6.64              | 19.32              | 1.12      | 0.97    | 34.46       | 17.16                | 19.22              | 6000.0 | 2.19         |
| 4900.0 | 7.11  | 14.40     | 6.91              | 18.34              | 1.16      | 0.97    | 34.84       | 17.22                | 19.28              | 6400.0 | 2.26         |
| 5100.0 | 7.01  | 13.89     | 6.14              | 18.17              | 1.09      | 0.98    | 34.68       | 17.41                | 19.56              | 6600.0 | 2.49         |
| 5300.0 | 6.74  | 13.58     | 5.92              | 17.45              | 1.08      | 0.98    | 35.34       | 17.29                | 19.60              | 6800.0 | 2.70         |
| 5400.0 | 6.60  | 13.42     | 5.84              | 17.10              | 1.08      | 0.98    | 34.10       | 17.23                | 19.81              | 7000.0 | 2.90         |
| 5600.0 | 6.30  | 13.16     | 5.67              | 16.44              | 1.07      | 0.98    | 34.97       | 17.13                | 19.80              |        |              |
| 5800.0 | 6.01  | 12.92     | 5.49              | 15.81              | 1.07      | 0.98    | 36.20       | 17.11                | 19.54              |        |              |
| 6000.0 | 5.70  | 12.72     | 5.38              | 15.25              | 1.07      | 0.99    | 35.53       | 17.14                | 19.39              |        |              |
| 6200.0 | 5.43  | 12.49     | 5.16              | 14.76              | 1.06      | 0.99    | 34.63       | 17.25                | 19.52              |        |              |
| 6400.0 | 5.16  | 12.26     | 4.98              | 14.29              | 1.05      | 1.00    | 35.17       | 17.25                | 19.52              |        |              |
| 6600.0 | 4.88  | 12.09     | 4.83              | 13.83              | 1.05      | 1.00    | 35.99       | 17.39                | 19.77              |        |              |
| 6800.0 | 4.59  | 11.93     | 4.71              | 13.43              | 1.06      | 1.00    | 34.91       | 17.42                | 19.70              |        |              |
| 7000.0 | 4.23  | 11.86     | 4.68              | 12.89              | 1.08      | 1.00    | 34.78       | 17.54                | 19.90              |        |              |

(1) External Rbias resistor is adjusted to obtain desired current

(2) Current is externally limited during P1dB measurements. Unit is capable of higher output power if current is not limited.