



Mini-Circuits

WIDEBAND

# Microwave Amplifier

**ZX60-24A-S+**

50Ω 5 to 20 GHz SMA Female

## THE BIG DEAL

- Wideband, 5 to 20 GHz
- Gain, 24 dB typ and flatness,  $\pm 2.2$  dB typ.
- Output power at 1 dB compression, 18.3 dBm typ.
- Excellent isolation, 67 dB typ.
- Unconditionally stable
- Protected by US patent 6,790,049



Generic photo used for illustration purposes only

|            |            |
|------------|------------|
| Model No.  | ZX60-24-S+ |
| Case Style | GC957      |
| Connectors | SMA Female |

## +RoHS Compliant

The +Suffix identifies RoHS Compliance.  
See our website for methodologies and qualifications

## APPLICATIONS

- Military and radar
- DBS
- Wideband isolation amplifier
- Microwave point to point radio
- Satellite systems

## PRODUCT OVERVIEW

The ZX60-24A-S+ two-stage amplifier provides high gain in a very small package, only 0.75" x 0.74" x 0.46" high. Internal compensating circuitry provides a consistent, flat response over the extra wide bandwidth. Designed for 50Ω SMA coax systems, the gold-plated package uses convenient 5V DC power, and has a nickel-plated brass cover and unibody construction for extra durability.

## KEY FEATURES

| Feature                               | Advantages                                                                                                                                                                                                                                                                                                                                                                                            |
|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Extra Wideband, 5-20 GHz              | Wider frequency range supports a wider array of applications, from microwave radio and radar to military communications, satellite communications, and countermeasures                                                                                                                                                                                                                                |
| Excellent Gain Flatness, $\pm 2.2$ dB | $\pm 2.2$ dB gain flatness across entire bandwidth minimizes the need for external equalizer networks, making it a great fit for instrumentation, test lab, EW, or any other amplitude sensitive system                                                                                                                                                                                               |
| Excellent Isolation, 67 dB typ.       | 24-dB gain with reverse isolation of 67 dB typ. (43 dB typ. directivity) minimizes leakage, making the ZX60-24A-S+ an excellent choice for minimizing interactions between different microwave components. It is an ideal LO driver amplifier and provides designers system flexibility and robustness when integrating cascaded RF components. Can replace expensive isolators in many applications. |
| Unconditionally Stable                | No risk of oscillation due to impedance mismatch.                                                                                                                                                                                                                                                                                                                                                     |

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ZX60-24A-S+  
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## ELECTRICAL SPECIFICATIONS AT 25°C

| Parameter                                                         | Condition (GHz) | Min. | Typ. | Max. | Units |
|-------------------------------------------------------------------|-----------------|------|------|------|-------|
| Frequency Range                                                   |                 | 5.0  |      | 20.0 | GHz   |
| Gain                                                              | 5.0             | —    | 23.0 | —    | dB    |
|                                                                   | 8.0             | 22.4 | 25.8 | 28.3 |       |
|                                                                   | 10.0            | 21.3 | 24.4 | 26.9 |       |
|                                                                   | 12.0            | —    | 23.9 | —    |       |
|                                                                   | 14.0            | —    | 24.0 | —    |       |
|                                                                   | 16.0            | —    | 25.3 | —    |       |
|                                                                   | 18.0            | 22.2 | 25.5 | 28.1 |       |
|                                                                   | 20.0            | 19.3 | 22.2 | 24.4 |       |
| Gain Flatness                                                     | 5.0 - 20.0      | —    | ±2.2 | —    | dB    |
| Input Return Loss                                                 | 5.0             | —    | 10.1 | —    | dB    |
|                                                                   | 8.0             | 10   | 17.5 | —    |       |
|                                                                   | 10.0            | —    | 17.4 | —    |       |
|                                                                   | 12.0            | 10   | 21.2 | —    |       |
|                                                                   | 14.0            | —    | 17.0 | —    |       |
|                                                                   | 16.0            | —    | 15.7 | —    |       |
|                                                                   | 18.0            | —    | 11.5 | —    |       |
|                                                                   | 20.0            | —    | 7.6  | —    |       |
| Output Return Loss                                                | 5.0             | —    | 7.5  | —    | dB    |
|                                                                   | 8.0             | 10   | 13.3 | —    |       |
|                                                                   | 10.0            | —    | 11.0 | —    |       |
|                                                                   | 12.0            | 10   | 14.2 | —    |       |
|                                                                   | 14.0            | —    | 14.7 | —    |       |
|                                                                   | 16.0            | —    | 12.4 | —    |       |
|                                                                   | 18.0            | —    | 10.7 | —    |       |
|                                                                   | 20.0            | —    | 14.3 | —    |       |
| Output IP3 @ Output Power +8 dBm / tone.<br>(Tone spacing, 1 MHz) | 5.0             |      | 30.5 |      | dBm   |
|                                                                   | 8.0             |      | 28.2 |      |       |
|                                                                   | 10.0            |      | 26.8 |      |       |
|                                                                   | 12.0            |      | 25.4 |      |       |
|                                                                   | 14.0            |      | 24.8 |      |       |
|                                                                   | 16.0            |      | 25.1 |      |       |
|                                                                   | 18.0            |      | 23.1 |      |       |
|                                                                   | 20.0            |      | 23.4 |      |       |
| Output Power @ 1 dB compression                                   | 5.0             |      | 17.4 |      | dBm   |
|                                                                   | 8.0             |      | 18.6 |      |       |
|                                                                   | 10.0            |      | 19.0 |      |       |
|                                                                   | 12.0            |      | 18.3 |      |       |
|                                                                   | 14.0            |      | 18.4 |      |       |
|                                                                   | 16.0            |      | 18.1 |      |       |
|                                                                   | 18.0            |      | 19.4 |      |       |
|                                                                   | 20.0            |      | 18.2 |      |       |
| Noise Figure                                                      | 5.0             |      | 9.4  |      | dB    |
|                                                                   | 8.0             |      | 5.3  |      |       |
|                                                                   | 10.0            |      | 6.0  |      |       |
|                                                                   | 12.0            |      | 6.4  |      |       |
|                                                                   | 14.0            |      | 7.4  |      |       |
|                                                                   | 16.0            |      | 7.6  |      |       |
|                                                                   | 18.0            |      | 6.9  |      |       |
|                                                                   | 20.0            |      | 7.2  |      |       |
| Directivity (Isolation-Gain)                                      |                 | —    | 43   | —    | dB    |
| DC Voltage                                                        |                 | —    | 5.0  | —    | V     |
| DC Current                                                        |                 | —    | 270  | 295  | mA    |



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## Microwave Amplifier

ZX60-24A-S+

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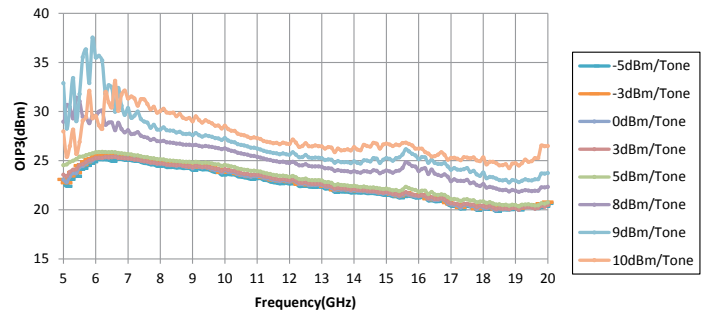
50Ω 5 to 20 GHz SMA Female

## ABSOLUTE MAXIMUM RATINGS

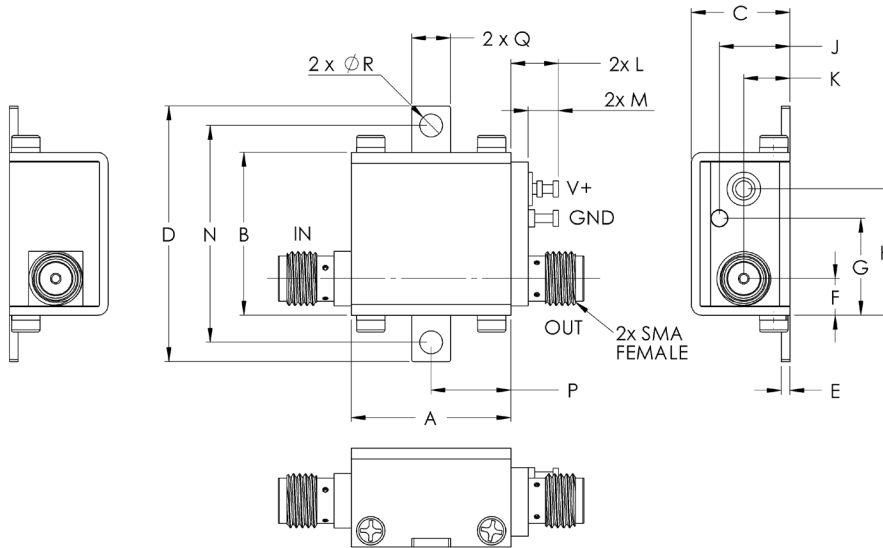
| Parameter                  | Ratings                        |
|----------------------------|--------------------------------|
| Operating Temperature      | -20°C to 85°C Base Plate Temp. |
| Storage Temperature        | -55°C to 100°C                 |
| DC Voltage                 | 5.5 V                          |
| Input RF Power (no damage) | +20 dBm                        |
| Power Dissipation          | 1.6 W                          |

Permanent damage may occur if any of these limits are exceeded.

**ZX60-24A+**  
**OIP3 vs. FREQUENCY and OUTPUT POWER**



## OUTLINE DRAWING



**NOTE:** When soldering the DC connections, caution must be used to avoid overheating the DC terminal.  
See Application Note [AN-40-010](#).

OUTLINE DIMENSIONS (Inches)  
mm

| A     | B    | C     | D    | E    | F    | G    | H     | J    | K    | L    | M    | N     | P    | Q    | R    | wt    |
|-------|------|-------|------|------|------|------|-------|------|------|------|------|-------|------|------|------|-------|
| .74   | .75  | .46   | 1.18 | .04  | .17  | .45  | .59   | .33  | .21  | .22  | .14  | 1.00  | .37  | .18  | .106 | grams |
| 18.80 | 19.1 | 11.68 | 30.0 | 1.02 | 4.32 | 11.4 | 14.99 | 8.38 | 5.33 | 5.59 | 3.56 | 25.40 | 9.40 | 4.57 | 2.69 | 23.0  |

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## Microwave Amplifier

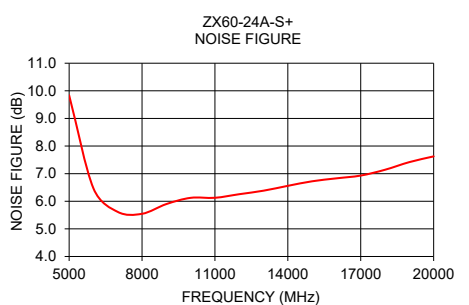
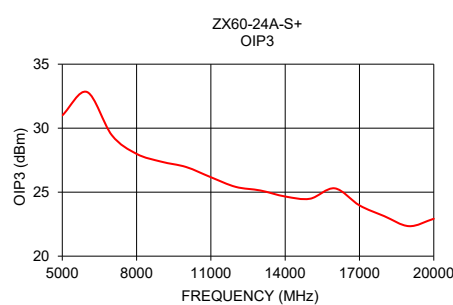
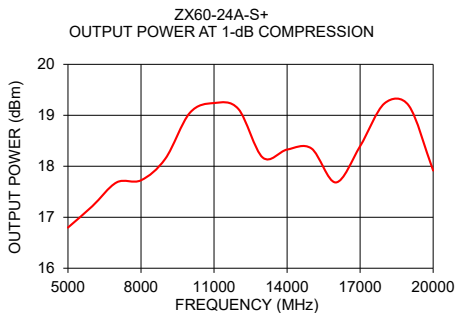
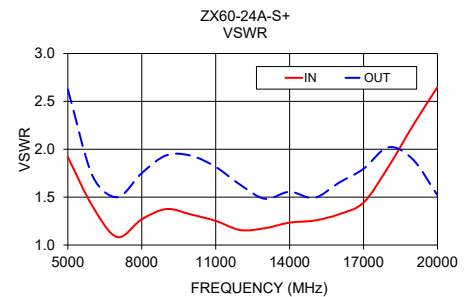
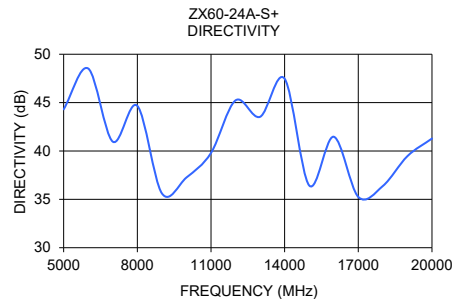
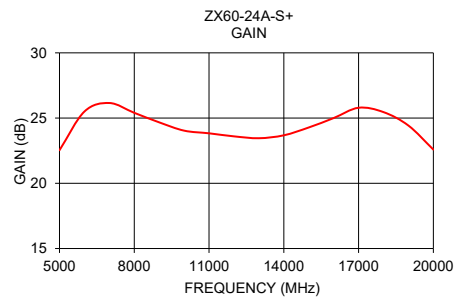
ZX60-24A-S+

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## TYPICAL PERFORMANCE DATA/CURVES

| Frequency<br>(MHz) | Gain<br>(dB) | Directivity<br>(dB) | VSWR<br>(:1) |      | Power Out<br>@1 dB Compr.<br>(dBm) | NF<br>(dB) | OIP3<br>(dBm) |
|--------------------|--------------|---------------------|--------------|------|------------------------------------|------------|---------------|
|                    |              |                     | IN           | OUT  |                                    |            |               |
| 5000               | 22.54        | 44.30               | 1.92         | 2.63 | 16.80                              | 9.84       | 31.00         |
| 6000               | 25.50        | 48.52               | 1.41         | 1.72 | 17.22                              | 6.47       | 32.82         |
| 7000               | 26.15        | 40.96               | 1.08         | 1.50 | 17.68                              | 5.61       | 29.45         |
| 8000               | 25.40        | 44.67               | 1.27         | 1.75 | 17.73                              | 5.55       | 27.99         |
| 9000               | 24.67        | 35.62               | 1.38         | 1.94 | 18.15                              | 5.90       | 27.38         |
| 10000              | 24.04        | 37.26               | 1.32         | 1.93 | 19.05                              | 6.12       | 26.96         |
| 11000              | 23.83        | 39.79               | 1.25         | 1.82 | 19.24                              | 6.13       | 26.17         |
| 12000              | 23.60        | 45.23               | 1.16         | 1.63 | 19.12                              | 6.26       | 25.41         |
| 13000              | 23.46        | 43.53               | 1.18         | 1.48 | 18.17                              | 6.38       | 25.13         |
| 14000              | 23.68        | 47.46               | 1.23         | 1.56 | 18.33                              | 6.56       | 24.66         |
| 15000              | 24.28        | 36.43               | 1.26         | 1.49 | 18.35                              | 6.72       | 24.49         |
| 16000              | 25.00        | 41.47               | 1.32         | 1.65 | 17.68                              | 6.83       | 25.30         |
| 17000              | 25.79        | 35.25               | 1.44         | 1.80 | 18.39                              | 6.93       | 23.97         |
| 18000              | 25.46        | 36.38               | 1.81         | 2.02 | 19.23                              | 7.14       | 23.13         |
| 19000              | 24.42        | 39.47               | 2.25         | 1.89 | 19.19                              | 7.42       | 22.34         |
| 20000              | 22.58        | 41.29               | 2.65         | 1.52 | 17.92                              | 7.63       | 22.92         |



## NOTES

- Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
- Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
- The parts covered by this specification document are subject to Mini-Circuits standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the standard. Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at [www.minicircuits.com/terms/viewterm.html](http://www.minicircuits.com/terms/viewterm.html)



*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 = 5.00V, Id = 264.47mA @ Temperature = +25°C

| FREQ  | Gain  | Isolation | Input<br>Return<br>Loss | Output<br>Return<br>Loss | Stability |         | IP-3<br>Output | 1dB<br>Comp.<br>Output | Noise<br>Figure |
|-------|-------|-----------|-------------------------|--------------------------|-----------|---------|----------------|------------------------|-----------------|
| (MHz) | (dB)  | (dB)      | (dB)                    | (dB)                     | K         | Measure | (dBm)          | (dBm)                  | (dB)            |
| 4000  | 15.74 | 65.63     | 7.74                    | 4.29                     | 81.60     | 0.73    | 22.50          | 13.26                  | 19.59           |
| 4250  | 22.21 | 65.95     | 9.20                    | 5.19                     | 47.38     | 0.78    | 26.83          | 15.11                  | 15.89           |
| 4500  | 21.99 | 65.82     | 9.19                    | 5.69                     | 50.01     | 0.82    | 27.79          | 16.22                  | 13.35           |
| 4750  | 22.05 | 66.15     | 9.47                    | 6.25                     | 54.27     | 0.85    | 30.39          | 16.76                  | 11.40           |
| 5000  | 22.54 | 66.84     | 10.04                   | 6.97                     | 59.07     | 0.88    | 31.00          | 16.80                  | 9.84            |
| 5250  | 23.25 | 67.83     | 10.88                   | 7.88                     | 65.14     | 0.91    | 30.75          | 17.23                  | 8.71            |
| 5500  | 24.05 | 69.33     | 11.99                   | 8.96                     | 75.11     | 0.93    | 30.63          | 17.66                  | 7.76            |
| 5750  | 24.83 | 71.57     | 13.52                   | 10.21                    | 93.82     | 0.95    | 33.22          | 16.96                  | 6.97            |
| 6000  | 25.50 | 74.02     | 15.45                   | 11.52                    | 120.46    | 0.96    | 32.82          | 17.22                  | 6.47            |
| 6500  | 26.17 | 72.43     | 21.58                   | 13.77                    | 97.77     | 0.96    | 29.88          | 17.65                  | 5.85            |
| 7000  | 26.15 | 67.12     | 27.93                   | 13.99                    | 53.56     | 0.96    | 29.45          | 17.68                  | 5.61            |
| 7500  | 25.81 | 67.45     | 22.53                   | 12.76                    | 56.87     | 0.95    | 28.12          | 18.47                  | 5.51            |
| 8000  | 25.40 | 70.07     | 18.53                   | 11.27                    | 78.08     | 0.94    | 27.99          | 17.73                  | 5.55            |
| 8500  | 25.02 | 63.95     | 16.53                   | 10.28                    | 39.19     | 0.93    | 27.62          | 18.04                  | 5.66            |
| 9000  | 24.67 | 60.29     | 16.02                   | 9.92                     | 26.47     | 0.92    | 27.38          | 18.15                  | 5.90            |
| 9500  | 24.25 | 61.01     | 16.89                   | 9.91                     | 30.34     | 0.92    | 27.24          | 18.80                  | 5.97            |
| 10000 | 24.04 | 61.29     | 17.23                   | 9.95                     | 32.20     | 0.91    | 26.96          | 19.05                  | 6.12            |
| 10500 | 23.90 | 62.06     | 17.91                   | 10.23                    | 36.08     | 0.92    | 26.66          | 19.22                  | 6.12            |
| 11000 | 23.83 | 63.62     | 19.02                   | 10.76                    | 44.18     | 0.93    | 26.17          | 19.24                  | 6.13            |
| 11500 | 23.71 | 66.25     | 20.82                   | 11.44                    | 61.65     | 0.94    | 25.73          | 19.39                  | 6.18            |
| 12000 | 23.60 | 68.83     | 22.80                   | 12.42                    | 85.61     | 0.95    | 25.41          | 19.12                  | 6.26            |
| 12500 | 23.52 | 67.59     | 23.60                   | 13.34                    | 75.87     | 0.96    | 25.49          | 17.70                  | 6.33            |
| 13000 | 23.46 | 66.99     | 21.85                   | 14.22                    | 71.76     | 0.97    | 25.13          | 18.17                  | 6.38            |
| 13500 | 23.58 | 65.71     | 21.28                   | 14.49                    | 61.17     | 0.97    | 24.63          | 19.01                  | 6.40            |
| 14000 | 23.68 | 71.14     | 19.60                   | 13.25                    | 111.29    | 0.96    | 24.66          | 18.33                  | 6.56            |
| 14500 | 23.54 | 63.40     | 18.15                   | 13.07                    | 46.09     | 0.97    | 24.59          | 18.52                  | 6.66            |
| 15000 | 24.28 | 60.71     | 18.92                   | 14.09                    | 31.44     | 0.97    | 24.49          | 18.35                  | 6.72            |
| 15500 | 24.67 | 67.42     | 18.33                   | 12.61                    | 63.91     | 0.96    | 24.81          | 18.45                  | 6.81            |
| 16000 | 25.00 | 66.47     | 17.18                   | 12.20                    | 54.58     | 0.96    | 25.30          | 17.68                  | 6.83            |
| 16500 | 25.46 | 63.33     | 16.64                   | 11.80                    | 35.75     | 0.95    | 24.49          | 17.77                  | 6.91            |
| 17000 | 25.79 | 61.04     | 14.82                   | 10.92                    | 25.76     | 0.95    | 23.97          | 18.39                  | 6.93            |
| 17500 | 25.71 | 61.35     | 12.67                   | 9.88                     | 25.75     | 0.94    | 23.24          | 19.38                  | 7.07            |
| 18000 | 25.46 | 61.84     | 10.79                   | 9.43                     | 26.84     | 0.96    | 23.13          | 19.23                  | 7.14            |
| 18500 | 25.04 | 63.19     | 9.48                    | 9.61                     | 31.98     | 0.99    | 22.82          | 19.14                  | 7.32            |
| 19000 | 24.42 | 63.89     | 8.32                    | 10.20                    | 36.20     | 1.04    | 22.34          | 19.19                  | 7.42            |
| 19500 | 23.58 | 65.13     | 7.45                    | 11.88                    | 45.71     | 1.11    | 22.42          | 18.42                  | 7.49            |
| 20000 | 22.58 | 63.87     | 6.90                    | 13.71                    | 44.08     | 1.15    | 22.92          | 17.92                  | 7.63            |
| 20500 | 21.37 | 63.87     | 6.51                    | 15.88                    | 50.42     | 1.19    | 23.68          | 17.36                  | 7.67            |
| 21000 | 19.70 | 64.48     | 6.26                    | 17.20                    | 64.93     | 1.21    | 24.49          | 17.12                  | 7.85            |
| 21500 | 17.83 | 64.98     | 5.93                    | 17.37                    | 83.31     | 1.23    | 27.51          | 16.30                  | 8.12            |
| 22000 | 15.49 | 63.41     | 5.51                    | 16.08                    | 87.27     | 1.25    | 23.43          | 16.38                  | 8.46            |

*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 = 4.75V, Id = 262.22mA @ Temperature = +25°C

| FREQ  | Gain  | Isolation | Input<br>Return<br>Loss | Output<br>Return<br>Loss | Stability |         | IP-3<br>Output | 1dB<br>Comp.<br>Output | Noise<br>Figure |
|-------|-------|-----------|-------------------------|--------------------------|-----------|---------|----------------|------------------------|-----------------|
| (MHz) | (dB)  | (dB)      | (dB)                    | (dB)                     | K         | Measure | (dBm)          | (dBm)                  | (dB)            |
| 4000  | 16.16 | 65.49     | 7.73                    | 4.32                     | 76.67     | 0.74    | 20.98          | 12.86                  | 19.51           |
| 4250  | 22.89 | 65.97     | 9.31                    | 5.23                     | 44.25     | 0.78    | 23.55          | 14.67                  | 15.80           |
| 4500  | 22.57 | 66.08     | 9.23                    | 5.71                     | 48.35     | 0.82    | 24.63          | 15.72                  | 13.24           |
| 4750  | 22.53 | 66.35     | 9.47                    | 6.26                     | 52.55     | 0.85    | 26.80          | 16.14                  | 11.29           |
| 5000  | 22.97 | 66.64     | 10.03                   | 6.97                     | 54.86     | 0.88    | 27.10          | 16.11                  | 9.76            |
| 5250  | 23.65 | 67.70     | 10.84                   | 7.87                     | 61.20     | 0.91    | 32.36          | 16.55                  | 8.62            |
| 5500  | 24.42 | 68.86     | 11.93                   | 8.96                     | 68.08     | 0.93    | 33.75          | 16.96                  | 7.68            |
| 5750  | 25.19 | 71.21     | 13.43                   | 10.21                    | 86.41     | 0.95    | 31.09          | 16.24                  | 6.89            |
| 6000  | 25.84 | 73.75     | 15.32                   | 11.55                    | 112.22    | 0.96    | 32.03          | 16.48                  | 6.40            |
| 6500  | 26.51 | 72.51     | 21.37                   | 13.95                    | 95.13     | 0.97    | 34.98          | 16.93                  | 5.74            |
| 7000  | 26.49 | 67.42     | 28.53                   | 14.25                    | 53.48     | 0.96    | 33.61          | 16.94                  | 5.54            |
| 7500  | 26.16 | 67.93     | 23.02                   | 12.96                    | 57.88     | 0.95    | 29.74          | 17.77                  | 5.44            |
| 8000  | 25.77 | 71.26     | 18.80                   | 11.45                    | 86.20     | 0.94    | 29.92          | 17.01                  | 5.47            |
| 8500  | 25.40 | 63.89     | 16.72                   | 10.37                    | 37.37     | 0.93    | 29.20          | 17.32                  | 5.60            |
| 9000  | 25.06 | 60.69     | 16.17                   | 10.02                    | 26.58     | 0.92    | 28.63          | 17.46                  | 5.84            |
| 9500  | 24.64 | 61.35     | 17.07                   | 9.98                     | 30.23     | 0.92    | 28.28          | 18.09                  | 5.90            |
| 10000 | 24.43 | 61.46     | 17.41                   | 10.05                    | 31.48     | 0.92    | 27.95          | 18.34                  | 6.06            |
| 10500 | 24.29 | 61.92     | 17.99                   | 10.32                    | 34.05     | 0.92    | 27.51          | 18.56                  | 6.09            |
| 11000 | 24.23 | 63.70     | 18.88                   | 10.87                    | 42.67     | 0.93    | 26.93          | 18.59                  | 6.08            |
| 11500 | 24.12 | 66.26     | 20.33                   | 11.57                    | 58.96     | 0.94    | 26.42          | 18.75                  | 6.12            |
| 12000 | 24.03 | 69.11     | 21.92                   | 12.57                    | 84.30     | 0.95    | 26.13          | 18.47                  | 6.17            |
| 12500 | 23.96 | 67.49     | 22.44                   | 13.55                    | 71.30     | 0.96    | 26.56          | 16.99                  | 6.24            |
| 13000 | 23.91 | 66.93     | 20.97                   | 14.43                    | 67.67     | 0.97    | 26.08          | 17.49                  | 6.32            |
| 13500 | 24.06 | 65.77     | 20.74                   | 14.72                    | 58.28     | 0.97    | 25.41          | 18.31                  | 6.30            |
| 14000 | 24.20 | 70.54     | 19.44                   | 13.31                    | 97.87     | 0.96    | 25.69          | 17.62                  | 6.49            |
| 14500 | 24.06 | 62.99     | 18.16                   | 13.03                    | 41.34     | 0.96    | 25.67          | 17.84                  | 6.56            |
| 15000 | 24.83 | 60.57     | 18.86                   | 14.17                    | 29.05     | 0.97    | 25.71          | 17.64                  | 6.65            |
| 15500 | 25.28 | 67.04     | 18.73                   | 12.68                    | 57.12     | 0.96    | 26.17          | 17.73                  | 6.66            |
| 16000 | 25.63 | 66.13     | 17.47                   | 12.29                    | 48.90     | 0.96    | 26.08          | 16.98                  | 6.76            |
| 16500 | 26.14 | 63.17     | 17.11                   | 11.96                    | 32.62     | 0.95    | 25.35          | 17.09                  | 6.82            |
| 17000 | 26.54 | 60.74     | 15.39                   | 11.06                    | 22.99     | 0.95    | 25.21          | 17.62                  | 6.87            |
| 17500 | 26.53 | 60.93     | 13.06                   | 9.92                     | 22.48     | 0.94    | 24.24          | 18.78                  | 6.95            |
| 18000 | 26.29 | 61.55     | 11.02                   | 9.28                     | 23.62     | 0.95    | 24.13          | 18.79                  | 7.07            |
| 18500 | 25.91 | 62.66     | 9.63                    | 9.39                     | 27.14     | 0.98    | 23.90          | 18.60                  | 7.21            |
| 19000 | 25.32 | 63.34     | 8.43                    | 9.95                     | 30.57     | 1.03    | 23.33          | 18.57                  | 7.30            |
| 19500 | 24.50 | 64.44     | 7.47                    | 11.67                    | 37.92     | 1.10    | 23.72          | 17.70                  | 7.35            |
| 20000 | 23.52 | 63.53     | 6.94                    | 13.88                    | 38.21     | 1.15    | 24.85          | 17.28                  | 7.49            |
| 20500 | 22.35 | 63.58     | 6.54                    | 16.68                    | 43.88     | 1.20    | 26.72          | 16.70                  | 7.53            |
| 21000 | 20.66 | 63.81     | 6.29                    | 18.66                    | 54.25     | 1.22    | 29.31          | 16.43                  | 7.72            |
| 21500 | 18.77 | 65.01     | 5.87                    | 18.98                    | 75.07     | 1.24    | 28.45          | 15.57                  | 7.96            |
| 22000 | 16.35 | 63.37     | 5.43                    | 16.97                    | 78.55     | 1.26    | 29.16          | 15.63                  | 8.33            |

*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 = 5.25V, Id = 264.98mA @ Temperature = +25°C

| FREQ  | Gain  | Isolation | Input<br>Return<br>Loss | Output<br>Return<br>Loss | Stability |         | IP-3<br>Output | 1dB<br>Comp.<br>Output | Noise<br>Figure |
|-------|-------|-----------|-------------------------|--------------------------|-----------|---------|----------------|------------------------|-----------------|
| (MHz) | (dB)  | (dB)      | (dB)                    | (dB)                     | K         | Measure | (dBm)          | (dBm)                  | (dB)            |
| 4000  | 15.65 | 65.62     | 7.71                    | 4.27                     | 81.92     | 0.73    | 23.36          | 13.60                  | 19.68           |
| 4250  | 21.93 | 65.62     | 9.11                    | 5.14                     | 46.79     | 0.78    | 33.60          | 15.47                  | 16.01           |
| 4500  | 21.73 | 65.70     | 9.12                    | 5.65                     | 50.51     | 0.82    | 30.38          | 16.63                  | 13.45           |
| 4750  | 21.82 | 66.08     | 9.41                    | 6.21                     | 55.04     | 0.85    | 29.34          | 17.23                  | 11.48           |
| 5000  | 22.33 | 66.78     | 10.00                   | 6.92                     | 59.84     | 0.88    | 29.85          | 17.35                  | 9.92            |
| 5250  | 23.07 | 67.66     | 10.85                   | 7.83                     | 65.04     | 0.90    | 28.59          | 17.79                  | 8.76            |
| 5500  | 23.89 | 69.16     | 11.95                   | 8.90                     | 74.73     | 0.93    | 28.72          | 18.20                  | 7.82            |
| 5750  | 24.70 | 71.29     | 13.49                   | 10.13                    | 92.11     | 0.94    | 29.45          | 17.52                  | 7.05            |
| 6000  | 25.38 | 74.11     | 15.43                   | 11.43                    | 123.13    | 0.95    | 29.38          | 17.75                  | 6.54            |
| 6500  | 26.08 | 73.23     | 21.58                   | 13.71                    | 108.29    | 0.96    | 28.43          | 18.21                  | 5.90            |
| 7000  | 26.06 | 67.55     | 27.68                   | 13.95                    | 56.84     | 0.96    | 28.10          | 18.22                  | 5.67            |
| 7500  | 25.72 | 67.84     | 22.20                   | 12.70                    | 60.09     | 0.95    | 27.52          | 19.01                  | 5.58            |
| 8000  | 25.29 | 69.97     | 18.28                   | 11.21                    | 77.97     | 0.94    | 27.26          | 18.26                  | 5.61            |
| 8500  | 24.90 | 63.82     | 16.35                   | 10.23                    | 39.02     | 0.93    | 27.03          | 18.56                  | 5.73            |
| 9000  | 24.55 | 60.25     | 15.86                   | 9.90                     | 26.67     | 0.92    | 26.91          | 18.71                  | 5.97            |
| 9500  | 24.13 | 61.44     | 16.68                   | 9.83                     | 32.19     | 0.91    | 26.84          | 19.33                  | 6.03            |
| 10000 | 23.92 | 61.24     | 17.08                   | 9.87                     | 32.37     | 0.91    | 26.60          | 19.56                  | 6.18            |
| 10500 | 23.78 | 62.07     | 17.76                   | 10.13                    | 36.52     | 0.92    | 26.33          | 19.77                  | 6.18            |
| 11000 | 23.70 | 63.61     | 18.92                   | 10.65                    | 44.66     | 0.93    | 25.88          | 19.78                  | 6.22            |
| 11500 | 23.57 | 66.31     | 20.84                   | 11.33                    | 62.99     | 0.93    | 25.49          | 19.91                  | 6.25            |
| 12000 | 23.45 | 68.47     | 23.17                   | 12.31                    | 83.49     | 0.95    | 25.15          | 19.68                  | 6.31            |
| 12500 | 23.35 | 67.18     | 24.15                   | 13.27                    | 73.73     | 0.96    | 25.05          | 18.29                  | 6.38            |
| 13000 | 23.28 | 66.64     | 22.25                   | 14.12                    | 70.39     | 0.97    | 24.75          | 18.77                  | 6.48            |
| 13500 | 23.40 | 65.37     | 21.68                   | 14.37                    | 60.07     | 0.97    | 24.35          | 19.52                  | 6.44            |
| 14000 | 23.47 | 70.71     | 19.75                   | 13.10                    | 108.31    | 0.96    | 24.26          | 18.88                  | 6.62            |
| 14500 | 23.32 | 63.43     | 18.38                   | 12.94                    | 47.37     | 0.96    | 24.15          | 19.06                  | 6.76            |
| 15000 | 24.04 | 60.59     | 19.05                   | 13.91                    | 31.83     | 0.97    | 23.94          | 18.90                  | 6.80            |
| 15500 | 24.41 | 67.09     | 18.12                   | 12.51                    | 63.29     | 0.96    | 24.13          | 18.96                  | 6.87            |
| 16000 | 24.73 | 66.74     | 16.80                   | 12.18                    | 57.94     | 0.96    | 24.53          | 18.27                  | 6.90            |
| 16500 | 25.16 | 63.44     | 16.01                   | 11.83                    | 37.39     | 0.96    | 23.83          | 18.38                  | 7.01            |
| 17000 | 25.44 | 60.94     | 14.13                   | 10.96                    | 26.39     | 0.95    | 23.34          | 18.89                  | 7.04            |
| 17500 | 25.33 | 61.36     | 12.08                   | 9.94                     | 26.76     | 0.95    | 22.80          | 19.82                  | 7.15            |
| 18000 | 25.04 | 62.08     | 10.33                   | 9.39                     | 28.64     | 0.96    | 22.66          | 19.71                  | 7.24            |
| 18500 | 24.60 | 63.47     | 9.13                    | 9.49                     | 34.25     | 1.00    | 22.35          | 19.64                  | 7.41            |
| 19000 | 23.98 | 64.24     | 8.10                    | 9.95                     | 39.04     | 1.04    | 21.95          | 19.72                  | 7.52            |
| 19500 | 23.15 | 65.43     | 7.29                    | 11.44                    | 48.95     | 1.10    | 21.92          | 19.00                  | 7.58            |
| 20000 | 22.19 | 64.24     | 6.84                    | 13.31                    | 47.74     | 1.15    | 22.12          | 18.58                  | 7.75            |
| 20500 | 21.03 | 64.12     | 6.48                    | 15.68                    | 53.81     | 1.19    | 22.49          | 18.03                  | 7.80            |
| 21000 | 19.37 | 64.48     | 6.25                    | 17.36                    | 67.47     | 1.21    | 22.79          | 17.82                  | 7.98            |
| 21500 | 17.53 | 64.48     | 5.83                    | 17.74                    | 80.82     | 1.24    | 23.99          | 16.99                  | 8.25            |
| 22000 | 15.19 | 62.87     | 5.41                    | 16.04                    | 84.15     | 1.26    | 21.70          | 17.09                  | 8.61            |

*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 = 5.00V, Id = 256.72mA @ Temperature = -20°C

| FREQ  | Gain  | Isolation | Input<br>Return<br>Loss | Output<br>Return<br>Loss | Stability |         | IP-3<br>Output | 1dB<br>Comp.<br>Output | Noise<br>Figure |
|-------|-------|-----------|-------------------------|--------------------------|-----------|---------|----------------|------------------------|-----------------|
| (MHz) | (dB)  | (dB)      | (dB)                    | (dB)                     | K         | Measure | (dBm)          | (dBm)                  | (dB)            |
| 4000  | 17.63 | 65.56     | 7.42                    | 4.15                     | 62.69     | 0.73    | 21.83          | 13.10                  | 19.11           |
| 4250  | 26.19 | 66.08     | 9.91                    | 5.31                     | 31.47     | 0.77    | 23.83          | 14.82                  | 15.11           |
| 4500  | 25.07 | 66.09     | 9.42                    | 5.73                     | 36.58     | 0.81    | 26.35          | 16.03                  | 12.57           |
| 4750  | 24.57 | 65.87     | 9.46                    | 6.17                     | 39.06     | 0.84    | 29.42          | 16.73                  | 10.64           |
| 5000  | 24.74 | 66.35     | 9.84                    | 6.79                     | 42.64     | 0.87    | 30.90          | 16.88                  | 9.12            |
| 5250  | 25.27 | 67.21     | 10.57                   | 7.67                     | 47.25     | 0.90    | 35.79          | 17.42                  | 7.92            |
| 5500  | 25.94 | 68.53     | 11.58                   | 8.63                     | 54.09     | 0.92    | 36.65          | 17.68                  | 6.96            |
| 5750  | 26.63 | 70.28     | 12.78                   | 9.74                     | 64.45     | 0.94    | 37.35          | 17.14                  | 6.28            |
| 6000  | 27.27 | 72.93     | 14.58                   | 11.13                    | 85.50     | 0.96    | 37.09          | 17.14                  | 5.71            |
| 6500  | 27.95 | 73.67     | 19.92                   | 13.96                    | 91.86     | 0.97    | 38.17          | 17.89                  | 5.16            |
| 7000  | 27.95 | 68.67     | 29.76                   | 14.90                    | 52.49     | 0.97    | 38.15          | 17.56                  | 4.91            |
| 7500  | 27.63 | 67.56     | 25.61                   | 13.24                    | 47.12     | 0.96    | 36.17          | 18.44                  | 4.81            |
| 8000  | 27.27 | 69.13     | 20.05                   | 11.36                    | 56.85     | 0.94    | 35.06          | 17.71                  | 4.90            |
| 8500  | 26.95 | 64.67     | 17.72                   | 10.39                    | 34.32     | 0.92    | 35.31          | 18.02                  | 4.97            |
| 9000  | 26.68 | 61.03     | 17.02                   | 10.03                    | 23.04     | 0.92    | 36.17          | 18.50                  | 5.15            |
| 9500  | 26.27 | 60.82     | 17.90                   | 10.22                    | 23.80     | 0.92    | 36.89          | 18.77                  | 5.24            |
| 10000 | 26.06 | 61.58     | 18.25                   | 10.30                    | 26.71     | 0.92    | 35.78          | 18.89                  | 5.35            |
| 10500 | 25.90 | 61.51     | 17.96                   | 10.45                    | 27.07     | 0.92    | 35.25          | 19.45                  | 5.44            |
| 11000 | 25.82 | 63.42     | 17.57                   | 10.52                    | 34.01     | 0.93    | 33.83          | 19.55                  | 5.48            |
| 11500 | 25.76 | 66.22     | 18.26                   | 11.24                    | 48.02     | 0.94    | 32.41          | 19.50                  | 5.50            |
| 12000 | 25.72 | 68.78     | 18.63                   | 12.19                    | 65.87     | 0.95    | 31.80          | 19.33                  | 5.53            |
| 12500 | 25.75 | 67.79     | 18.72                   | 13.96                    | 59.85     | 0.97    | 31.58          | 18.06                  | 5.59            |
| 13000 | 25.75 | 66.98     | 18.18                   | 15.51                    | 55.11     | 0.99    | 31.26          | 18.59                  | 5.70            |
| 13500 | 25.92 | 65.88     | 19.26                   | 15.02                    | 47.58     | 0.98    | 30.46          | 18.56                  | 5.67            |
| 14000 | 26.16 | 69.70     | 19.64                   | 12.63                    | 70.30     | 0.96    | 30.26          | 18.30                  | 5.78            |
| 14500 | 26.07 | 63.33     | 18.61                   | 11.85                    | 33.65     | 0.95    | 29.61          | 18.43                  | 5.84            |
| 15000 | 26.79 | 60.01     | 18.01                   | 14.07                    | 21.65     | 0.98    | 29.12          | 18.26                  | 5.92            |
| 15500 | 27.56 | 65.43     | 18.07                   | 13.20                    | 36.65     | 0.97    | 29.31          | 17.97                  | 5.95            |
| 16000 | 27.91 | 65.96     | 15.60                   | 13.46                    | 37.06     | 0.98    | 28.26          | 17.88                  | 5.98            |
| 16500 | 28.58 | 62.68     | 14.94                   | 13.51                    | 23.42     | 0.99    | 28.29          | 18.10                  | 6.20            |
| 17000 | 29.26 | 60.22     | 14.77                   | 11.99                    | 15.98     | 0.97    | 28.36          | 17.41                  | 6.29            |
| 17500 | 29.46 | 60.31     | 12.84                   | 9.59                     | 14.78     | 0.93    | 27.65          | 18.33                  | 6.48            |
| 18000 | 29.19 | 60.85     | 11.04                   | 7.34                     | 14.51     | 0.87    | 27.34          | 19.56                  | 6.46            |
| 18500 | 29.01 | 61.80     | 10.05                   | 6.87                     | 15.70     | 0.87    | 26.90          | 19.33                  | 6.57            |
| 19000 | 28.72 | 61.90     | 9.27                    | 7.48                     | 16.48     | 0.92    | 26.17          | 19.05                  | 6.47            |
| 19500 | 28.30 | 62.50     | 8.22                    | 9.61                     | 19.27     | 1.03    | 25.89          | 18.25                  | 6.53            |
| 20000 | 27.68 | 61.94     | 7.93                    | 16.15                    | 21.08     | 1.13    | 25.88          | 18.56                  | 6.48            |
| 20500 | 26.68 | 61.51     | 7.60                    | 30.64                    | 22.76     | 1.17    | 26.28          | 17.90                  | 6.55            |
| 21000 | 24.85 | 62.41     | 6.75                    | 22.08                    | 29.56     | 1.20    | 26.69          | 17.50                  | 6.85            |
| 21500 | 22.68 | 64.35     | 5.56                    | 17.36                    | 42.90     | 1.26    | 28.86          | 16.80                  | 7.22            |
| 22000 | 19.95 | 64.37     | 4.89                    | 14.35                    | 54.12     | 1.28    | 30.48          | 16.91                  | 7.64            |



*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 = 4.75V, Id = 254.10mA @ Temperature = -20°C

| FREQ  | Gain  | Isolation | Input<br>Return<br>Loss | Output<br>Return<br>Loss | Stability |         | IP-3<br>Output | 1dB<br>Comp.<br>Output | Noise<br>Figure |
|-------|-------|-----------|-------------------------|--------------------------|-----------|---------|----------------|------------------------|-----------------|
| (MHz) | (dB)  | (dB)      | (dB)                    | (dB)                     | K         | Measure | (dBm)          | (dBm)                  | (dB)            |
| 4000  | 18.57 | 65.59     | 7.39                    | 4.22                     | 56.90     | 0.74    | 20.28          | 12.50                  | 19.07           |
| 4250  | 27.90 | 66.47     | 10.33                   | 5.52                     | 27.84     | 0.78    | 21.80          | 13.98                  | 15.08           |
| 4500  | 26.48 | 65.90     | 9.53                    | 5.81                     | 30.76     | 0.82    | 23.69          | 15.02                  | 12.53           |
| 4750  | 25.76 | 65.89     | 9.47                    | 6.20                     | 34.25     | 0.85    | 25.74          | 15.65                  | 10.61           |
| 5000  | 25.80 | 66.38     | 9.81                    | 6.80                     | 37.88     | 0.87    | 26.61          | 15.78                  | 9.10            |
| 5250  | 26.23 | 67.12     | 10.49                   | 7.66                     | 41.76     | 0.90    | 29.03          | 16.37                  | 7.87            |
| 5500  | 26.85 | 68.34     | 11.47                   | 8.62                     | 47.52     | 0.92    | 29.26          | 16.65                  | 6.98            |
| 5750  | 27.49 | 70.20     | 12.61                   | 9.73                     | 57.64     | 0.94    | 29.17          | 16.13                  | 6.28            |
| 6000  | 28.10 | 71.88     | 14.33                   | 11.12                    | 68.66     | 0.96    | 28.83          | 16.13                  | 5.69            |
| 6500  | 28.74 | 73.39     | 19.46                   | 13.99                    | 81.10     | 0.97    | 31.50          | 16.87                  | 5.15            |
| 7000  | 28.74 | 68.74     | 29.27                   | 15.01                    | 48.41     | 0.97    | 30.92          | 16.57                  | 4.88            |
| 7500  | 28.44 | 67.43     | 27.12                   | 13.36                    | 42.38     | 0.96    | 32.33          | 17.48                  | 4.80            |
| 8000  | 28.11 | 69.02     | 20.84                   | 11.44                    | 51.09     | 0.94    | 32.32          | 16.76                  | 4.87            |
| 8500  | 27.82 | 64.69     | 18.22                   | 10.44                    | 31.24     | 0.92    | 32.03          | 16.99                  | 4.94            |
| 9000  | 27.57 | 61.25     | 17.42                   | 10.05                    | 21.39     | 0.92    | 31.82          | 17.47                  | 5.14            |
| 9500  | 27.15 | 60.86     | 18.46                   | 10.28                    | 21.67     | 0.92    | 31.67          | 17.67                  | 5.22            |
| 10000 | 26.92 | 61.66     | 18.89                   | 10.38                    | 24.49     | 0.92    | 31.96          | 17.80                  | 5.31            |
| 10500 | 26.76 | 61.77     | 18.40                   | 10.54                    | 25.35     | 0.92    | 31.84          | 18.48                  | 5.41            |
| 11000 | 26.68 | 63.63     | 17.63                   | 10.62                    | 31.62     | 0.93    | 32.10          | 18.65                  | 5.48            |
| 11500 | 26.63 | 66.42     | 17.85                   | 11.33                    | 44.48     | 0.94    | 32.09          | 18.59                  | 5.47            |
| 12000 | 26.59 | 69.21     | 17.76                   | 12.28                    | 62.51     | 0.96    | 32.05          | 18.40                  | 5.51            |
| 12500 | 26.64 | 67.99     | 17.59                   | 14.05                    | 55.09     | 0.98    | 32.27          | 17.08                  | 5.56            |
| 13000 | 26.65 | 67.51     | 17.00                   | 15.64                    | 52.62     | 0.99    | 31.87          | 17.59                  | 5.65            |
| 13500 | 26.83 | 66.44     | 17.86                   | 15.20                    | 45.60     | 0.99    | 31.60          | 17.55                  | 5.65            |
| 14000 | 27.14 | 69.28     | 18.39                   | 12.69                    | 59.69     | 0.96    | 31.03          | 17.23                  | 5.76            |
| 14500 | 27.06 | 63.12     | 17.46                   | 11.76                    | 29.16     | 0.95    | 30.39          | 17.31                  | 5.80            |
| 15000 | 27.77 | 59.69     | 16.31                   | 14.17                    | 18.55     | 0.98    | 30.17          | 17.09                  | 5.90            |
| 15500 | 28.66 | 65.16     | 16.80                   | 13.40                    | 31.19     | 0.97    | 29.37          | 16.72                  | 5.96            |
| 16000 | 29.01 | 65.93     | 14.70                   | 13.48                    | 32.35     | 0.99    | 26.36          | 16.53                  | 5.98            |
| 16500 | 29.73 | 62.36     | 14.36                   | 13.62                    | 19.69     | 0.99    | 28.12          | 16.80                  | 6.19            |
| 17000 | 30.58 | 59.78     | 15.17                   | 12.21                    | 13.12     | 0.97    | 27.68          | 16.07                  | 6.26            |
| 17500 | 31.00 | 59.75     | 14.27                   | 9.63                     | 11.79     | 0.92    | 29.47          | 16.91                  | 6.48            |
| 18000 | 30.88 | 60.17     | 12.37                   | 7.10                     | 11.18     | 0.84    | 29.79          | 18.43                  | 6.41            |
| 18500 | 30.86 | 60.79     | 11.29                   | 6.45                     | 11.35     | 0.82    | 29.38          | 18.32                  | 6.53            |
| 19000 | 30.72 | 60.85     | 10.29                   | 7.00                     | 11.62     | 0.88    | 29.66          | 18.01                  | 6.40            |
| 19500 | 30.49 | 61.25     | 8.83                    | 9.32                     | 13.15     | 1.00    | 29.80          | 17.19                  | 6.46            |
| 20000 | 29.93 | 60.74     | 8.28                    | 16.78                    | 14.44     | 1.13    | 30.60          | 17.55                  | 6.42            |
| 20500 | 28.96 | 60.51     | 7.88                    | 27.13                    | 15.79     | 1.16    | 32.15          | 16.87                  | 6.46            |
| 21000 | 27.18 | 61.64     | 6.98                    | 19.10                    | 20.83     | 1.19    | 31.18          | 16.39                  | 6.74            |
| 21500 | 24.97 | 63.60     | 5.70                    | 17.31                    | 30.60     | 1.25    | 28.02          | 15.69                  | 7.09            |
| 22000 | 22.11 | 64.89     | 4.98                    | 15.41                    | 45.64     | 1.28    | 27.46          | 15.77                  | 7.47            |

*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 = 5.25V, Id = 259.05mA @ Temperature = -20°C

| FREQ  | Gain  | Isolation | Input<br>Return<br>Loss | Output<br>Return<br>Loss | Stability |         | IP-3<br>Output | 1dB<br>Comp.<br>Output | Noise<br>Figure |
|-------|-------|-----------|-------------------------|--------------------------|-----------|---------|----------------|------------------------|-----------------|
| (MHz) | (dB)  | (dB)      | (dB)                    | (dB)                     | K         | Measure | (dBm)          | (dBm)                  | (dB)            |
| 4000  | 17.12 | 65.45     | 7.44                    | 4.13                     | 65.55     | 0.73    | 23.24          | 13.48                  | 19.20           |
| 4250  | 25.25 | 66.07     | 9.64                    | 5.25                     | 34.53     | 0.77    | 26.80          | 15.26                  | 15.19           |
| 4500  | 24.33 | 65.81     | 9.32                    | 5.70                     | 38.36     | 0.81    | 31.11          | 16.52                  | 12.65           |
| 4750  | 23.96 | 66.05     | 9.44                    | 6.16                     | 42.71     | 0.84    | 35.89          | 17.25                  | 10.70           |
| 5000  | 24.21 | 66.52     | 9.86                    | 6.79                     | 46.27     | 0.87    | 34.44          | 17.49                  | 9.21            |
| 5250  | 24.78 | 67.25     | 10.61                   | 7.66                     | 50.22     | 0.90    | 32.33          | 18.04                  | 7.96            |
| 5500  | 25.49 | 68.61     | 11.65                   | 8.63                     | 57.55     | 0.92    | 32.53          | 18.28                  | 7.06            |
| 5750  | 26.21 | 70.77     | 12.90                   | 9.74                     | 71.62     | 0.94    | 32.01          | 17.76                  | 6.36            |
| 6000  | 26.87 | 72.56     | 14.74                   | 11.14                    | 85.84     | 0.95    | 32.20          | 17.76                  | 5.76            |
| 6500  | 27.58 | 73.11     | 20.25                   | 13.95                    | 89.88     | 0.97    | 31.08          | 18.52                  | 5.22            |
| 7000  | 27.58 | 68.19     | 29.72                   | 14.85                    | 51.83     | 0.97    | 30.64          | 18.17                  | 4.95            |
| 7500  | 27.26 | 67.74     | 24.53                   | 13.18                    | 50.14     | 0.96    | 30.47          | 19.03                  | 4.86            |
| 8000  | 26.88 | 69.20     | 19.48                   | 11.31                    | 59.75     | 0.94    | 29.93          | 18.33                  | 4.95            |
| 8500  | 26.55 | 64.66     | 17.29                   | 10.37                    | 35.81     | 0.93    | 29.93          | 18.64                  | 5.01            |
| 9000  | 26.27 | 61.06     | 16.65                   | 10.03                    | 24.21     | 0.92    | 30.20          | 19.13                  | 5.22            |
| 9500  | 25.85 | 60.73     | 17.47                   | 10.21                    | 24.67     | 0.92    | 30.32          | 19.39                  | 5.30            |
| 10000 | 25.65 | 61.52     | 17.85                   | 10.28                    | 27.77     | 0.92    | 30.00          | 19.50                  | 5.45            |
| 10500 | 25.49 | 61.67     | 17.65                   | 10.44                    | 28.85     | 0.92    | 29.95          | 20.02                  | 5.49            |
| 11000 | 25.40 | 63.60     | 17.59                   | 10.50                    | 36.40     | 0.93    | 29.44          | 20.10                  | 5.56            |
| 11500 | 25.33 | 66.08     | 18.65                   | 11.22                    | 49.73     | 0.94    | 28.84          | 20.04                  | 5.54            |
| 12000 | 25.28 | 68.80     | 19.41                   | 12.20                    | 69.57     | 0.95    | 28.45          | 19.90                  | 5.59            |
| 12500 | 25.29 | 67.42     | 19.71                   | 13.99                    | 60.67     | 0.97    | 28.14          | 18.70                  | 5.63            |
| 13000 | 25.28 | 66.94     | 19.10                   | 15.51                    | 58.13     | 0.98    | 27.97          | 19.23                  | 5.75            |
| 13500 | 25.43 | 65.49     | 20.30                   | 14.97                    | 48.28     | 0.98    | 27.50          | 19.20                  | 5.72            |
| 14000 | 25.62 | 69.71     | 20.49                   | 12.62                    | 74.99     | 0.95    | 27.31          | 18.98                  | 5.84            |
| 14500 | 25.52 | 63.52     | 19.40                   | 11.91                    | 36.79     | 0.95    | 27.06          | 19.10                  | 5.86            |
| 15000 | 26.22 | 60.06     | 19.37                   | 14.07                    | 23.36     | 0.97    | 26.58          | 18.96                  | 5.97            |
| 15500 | 26.91 | 65.97     | 18.85                   | 13.19                    | 42.11     | 0.96    | 26.54          | 18.70                  | 6.02            |
| 16000 | 27.25 | 66.30     | 16.00                   | 13.56                    | 41.75     | 0.98    | 26.97          | 18.62                  | 6.07            |
| 16500 | 27.85 | 63.05     | 14.96                   | 13.54                    | 26.57     | 0.99    | 26.03          | 18.84                  | 6.26            |
| 17000 | 28.40 | 60.40     | 13.99                   | 11.94                    | 17.89     | 0.97    | 25.91          | 18.21                  | 6.32            |
| 17500 | 28.44 | 60.73     | 11.77                   | 9.62                     | 17.19     | 0.95    | 25.28          | 19.12                  | 6.52            |
| 18000 | 28.07 | 61.32     | 10.13                   | 7.49                     | 17.19     | 0.90    | 25.05          | 20.05                  | 6.50            |
| 18500 | 27.79 | 62.56     | 9.28                    | 7.12                     | 19.54     | 0.90    | 24.68          | 19.85                  | 6.63            |
| 19000 | 27.41 | 62.75     | 8.69                    | 7.74                     | 20.95     | 0.95    | 24.07          | 19.68                  | 6.56            |
| 19500 | 26.93 | 63.54     | 7.85                    | 9.74                     | 25.17     | 1.04    | 23.80          | 18.95                  | 6.59            |
| 20000 | 26.29 | 62.65     | 7.71                    | 15.84                    | 26.57     | 1.14    | 23.62          | 19.26                  | 6.61            |
| 20500 | 25.27 | 62.08     | 7.41                    | 28.96                    | 28.30     | 1.18    | 23.76          | 18.61                  | 6.68            |
| 21000 | 23.43 | 62.95     | 6.56                    | 23.22                    | 36.66     | 1.22    | 23.76          | 18.25                  | 7.01            |
| 21500 | 21.29 | 64.90     | 5.44                    | 17.17                    | 53.06     | 1.26    | 24.35          | 17.56                  | 7.40            |
| 22000 | 18.63 | 64.36     | 4.80                    | 13.90                    | 62.04     | 1.28    | 24.88          | 17.70                  | 7.83            |

*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 = 5.00V, Id = 264.90mA @ Temperature = +85°C

| FREQ  | Gain  | Isolation | Input<br>Return<br>Loss | Output<br>Return<br>Loss | Stability |         | IP-3<br>Output | 1dB<br>Comp.<br>Output | Noise<br>Figure |
|-------|-------|-----------|-------------------------|--------------------------|-----------|---------|----------------|------------------------|-----------------|
| (MHz) | (dB)  | (dB)      | (dB)                    | (dB)                     | K         | Measure | (dBm)          | (dBm)                  | (dB)            |
| 4000  | 14.41 | 65.63     | 7.87                    | 4.35                     | 96.44     | 0.74    | 21.44          | 13.04                  | 20.43           |
| 4250  | 19.88 | 65.67     | 8.90                    | 5.11                     | 58.86     | 0.78    | 25.74          | 14.91                  | 16.89           |
| 4500  | 20.14 | 65.83     | 9.07                    | 5.68                     | 61.59     | 0.82    | 26.29          | 15.89                  | 14.35           |
| 4750  | 20.48 | 66.30     | 9.49                    | 6.34                     | 66.64     | 0.85    | 28.60          | 16.33                  | 12.41           |
| 5000  | 21.14 | 66.99     | 10.13                   | 7.15                     | 71.52     | 0.89    | 28.72          | 16.32                  | 10.86           |
| 5250  | 21.96 | 68.07     | 10.99                   | 8.13                     | 78.68     | 0.91    | 36.04          | 16.71                  | 9.68            |
| 5500  | 22.83 | 69.81     | 12.20                   | 9.26                     | 92.45     | 0.93    | 35.21          | 17.27                  | 8.75            |
| 5750  | 23.65 | 72.00     | 13.79                   | 10.51                    | 114.16    | 0.95    | 35.80          | 16.58                  | 7.91            |
| 6000  | 24.32 | 74.40     | 15.84                   | 11.74                    | 145.06    | 0.96    | 39.36          | 17.02                  | 7.42            |
| 6500  | 24.97 | 72.39     | 22.02                   | 13.49                    | 111.61    | 0.96    | 32.34          | 17.15                  | 6.78            |
| 7000  | 24.94 | 67.04     | 28.23                   | 13.68                    | 60.85     | 0.96    | 30.74          | 17.49                  | 6.57            |
| 7500  | 24.58 | 68.76     | 22.35                   | 12.55                    | 75.97     | 0.95    | 29.10          | 18.13                  | 6.50            |
| 8000  | 24.13 | 70.30     | 17.96                   | 11.01                    | 92.15     | 0.94    | 28.93          | 17.52                  | 6.53            |
| 8500  | 23.68 | 63.51     | 15.89                   | 9.93                     | 42.88     | 0.92    | 28.26          | 17.85                  | 6.67            |
| 9000  | 23.30 | 60.43     | 15.40                   | 9.60                     | 31.12     | 0.92    | 27.96          | 17.62                  | 6.94            |
| 9500  | 22.89 | 61.13     | 16.24                   | 9.55                     | 35.46     | 0.91    | 27.48          | 18.36                  | 6.99            |
| 10000 | 22.70 | 61.68     | 16.90                   | 9.71                     | 38.95     | 0.91    | 27.01          | 18.79                  | 7.12            |
| 10500 | 22.56 | 62.11     | 18.09                   | 10.13                    | 42.20     | 0.92    | 26.66          | 18.69                  | 7.14            |
| 11000 | 22.48 | 64.00     | 20.24                   | 10.74                    | 54.05     | 0.92    | 26.15          | 18.64                  | 7.14            |
| 11500 | 22.31 | 66.79     | 23.02                   | 11.25                    | 77.11     | 0.93    | 25.71          | 18.89                  | 7.20            |
| 12000 | 22.15 | 69.11     | 26.00                   | 12.07                    | 104.22    | 0.94    | 25.46          | 18.52                  | 7.28            |
| 12500 | 22.03 | 67.39     | 28.85                   | 12.65                    | 87.54     | 0.95    | 25.57          | 17.43                  | 7.37            |
| 13000 | 21.96 | 66.73     | 25.73                   | 13.37                    | 82.40     | 0.96    | 25.35          | 17.60                  | 7.45            |
| 13500 | 22.06 | 65.84     | 23.30                   | 13.51                    | 73.43     | 0.96    | 24.69          | 18.75                  | 7.44            |
| 14000 | 22.11 | 71.59     | 20.40                   | 13.05                    | 140.25    | 0.96    | 24.88          | 18.10                  | 7.62            |
| 14500 | 22.00 | 62.91     | 17.99                   | 13.46                    | 52.17     | 0.97    | 24.98          | 18.12                  | 7.70            |
| 15000 | 22.71 | 60.84     | 17.85                   | 14.24                    | 38.16     | 0.98    | 24.92          | 17.98                  | 7.80            |
| 15500 | 22.98 | 67.36     | 16.41                   | 12.74                    | 76.62     | 0.97    | 25.13          | 18.28                  | 7.92            |
| 16000 | 23.28 | 65.95     | 15.72                   | 12.03                    | 62.00     | 0.96    | 25.25          | 17.24                  | 7.96            |
| 16500 | 23.60 | 63.25     | 14.95                   | 10.72                    | 42.53     | 0.94    | 24.76          | 17.03                  | 8.08            |
| 17000 | 23.75 | 61.28     | 13.54                   | 9.79                     | 32.26     | 0.93    | 23.65          | 18.58                  | 8.06            |
| 17500 | 23.57 | 61.61     | 12.44                   | 8.65                     | 32.58     | 0.91    | 23.20          | 18.98                  | 8.09            |
| 18000 | 23.32 | 62.05     | 11.44                   | 8.97                     | 35.04     | 0.94    | 23.55          | 18.28                  | 8.15            |
| 18500 | 22.98 | 63.17     | 10.42                   | 9.87                     | 41.65     | 0.98    | 23.19          | 18.41                  | 8.31            |
| 19000 | 22.39 | 63.98     | 8.99                    | 12.32                    | 49.34     | 1.06    | 22.92          | 18.58                  | 8.49            |
| 19500 | 21.46 | 65.08     | 7.89                    | 15.27                    | 61.60     | 1.13    | 23.09          | 18.24                  | 8.63            |
| 20000 | 20.19 | 64.21     | 6.72                    | 16.11                    | 60.94     | 1.18    | 24.97          | 16.99                  | 8.90            |
| 20500 | 18.60 | 64.25     | 6.00                    | 14.77                    | 69.31     | 1.21    | 26.31          | 16.54                  | 9.17            |
| 21000 | 16.62 | 65.26     | 5.50                    | 12.98                    | 92.17     | 1.22    | 28.98          | 16.12                  | 9.48            |
| 21500 | 14.70 | 64.90     | 5.54                    | 11.62                    | 108.61    | 1.19    | 25.72          | 15.50                  | 9.70            |
| 22000 | 12.37 | 62.85     | 5.50                    | 10.95                    | 110.53    | 1.18    | 24.60          | 15.35                  | 10.06           |

*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 = 4.75V, Id = 264.33mA @ Temperature = +85°C

| FREQ  | Gain  | Isolation | Input<br>Return<br>Loss | Output<br>Return<br>Loss | Stability |         | IP-3<br>Output | 1dB<br>Comp.<br>Output | Noise<br>Figure |
|-------|-------|-----------|-------------------------|--------------------------|-----------|---------|----------------|------------------------|-----------------|
| (MHz) | (dB)  | (dB)      | (dB)                    | (dB)                     | K         | Measure | (dBm)          | (dBm)                  | (dB)            |
| 4000  | 14.57 | 65.58     | 7.87                    | 4.38                     | 94.53     | 0.74    | 20.42          | 12.63                  | 20.34           |
| 4250  | 20.24 | 66.00     | 8.97                    | 5.16                     | 59.12     | 0.78    | 23.34          | 14.46                  | 16.82           |
| 4500  | 20.52 | 66.11     | 9.12                    | 5.73                     | 61.31     | 0.82    | 23.82          | 15.33                  | 14.27           |
| 4750  | 20.83 | 66.46     | 9.53                    | 6.39                     | 65.43     | 0.86    | 25.32          | 15.66                  | 12.33           |
| 5000  | 21.45 | 66.99     | 10.15                   | 7.21                     | 69.26     | 0.89    | 25.39          | 15.61                  | 10.78           |
| 5250  | 22.24 | 68.02     | 11.00                   | 8.21                     | 76.01     | 0.92    | 29.05          | 16.00                  | 9.61            |
| 5500  | 23.08 | 69.60     | 12.20                   | 9.37                     | 88.06     | 0.94    | 31.84          | 16.58                  | 8.67            |
| 5750  | 23.87 | 71.51     | 13.79                   | 10.68                    | 105.63    | 0.95    | 28.31          | 15.88                  | 7.87            |
| 6000  | 24.50 | 74.24     | 15.83                   | 11.97                    | 139.88    | 0.96    | 29.98          | 16.34                  | 7.36            |
| 6500  | 25.13 | 72.46     | 22.03                   | 13.86                    | 110.80    | 0.96    | 31.83          | 16.45                  | 6.69            |
| 7000  | 25.10 | 67.07     | 28.96                   | 14.07                    | 60.17     | 0.96    | 32.31          | 16.83                  | 6.50            |
| 7500  | 24.77 | 68.44     | 22.93                   | 12.88                    | 71.99     | 0.95    | 30.30          | 17.47                  | 6.43            |
| 8000  | 24.35 | 70.33     | 18.32                   | 11.28                    | 90.77     | 0.94    | 30.23          | 16.89                  | 6.49            |
| 8500  | 23.93 | 63.51     | 16.14                   | 10.15                    | 41.97     | 0.93    | 29.22          | 17.21                  | 6.64            |
| 9000  | 23.56 | 60.33     | 15.62                   | 9.80                     | 30.06     | 0.92    | 28.74          | 16.94                  | 6.87            |
| 9500  | 23.15 | 61.26     | 16.48                   | 9.76                     | 35.22     | 0.91    | 28.14          | 17.69                  | 6.93            |
| 10000 | 22.96 | 61.85     | 17.09                   | 9.95                     | 38.84     | 0.92    | 27.64          | 18.15                  | 7.06            |
| 10500 | 22.83 | 62.21     | 18.19                   | 10.40                    | 41.67     | 0.92    | 27.27          | 18.01                  | 7.08            |
| 11000 | 22.76 | 63.98     | 20.24                   | 11.06                    | 52.49     | 0.93    | 26.72          | 17.94                  | 7.06            |
| 11500 | 22.62 | 67.07     | 22.87                   | 11.57                    | 77.25     | 0.94    | 26.22          | 18.22                  | 7.12            |
| 12000 | 22.49 | 69.38     | 25.47                   | 12.39                    | 103.86    | 0.95    | 26.04          | 17.81                  | 7.20            |
| 12500 | 22.39 | 67.77     | 27.48                   | 12.95                    | 88.04     | 0.95    | 26.46          | 16.75                  | 7.26            |
| 13000 | 22.35 | 67.33     | 24.66                   | 13.67                    | 84.64     | 0.96    | 26.20          | 16.88                  | 7.36            |
| 13500 | 22.48 | 66.51     | 22.52                   | 13.82                    | 75.74     | 0.96    | 25.30          | 18.08                  | 7.32            |
| 14000 | 22.58 | 71.29     | 20.11                   | 13.32                    | 128.68    | 0.96    | 25.77          | 17.42                  | 7.52            |
| 14500 | 22.49 | 62.60     | 17.81                   | 13.69                    | 47.65     | 0.97    | 25.91          | 17.43                  | 7.61            |
| 15000 | 23.23 | 60.77     | 17.83                   | 14.63                    | 35.76     | 0.98    | 25.83          | 17.27                  | 7.72            |
| 15500 | 23.55 | 66.99     | 16.74                   | 12.99                    | 69.02     | 0.97    | 25.93          | 17.61                  | 7.78            |
| 16000 | 23.88 | 65.53     | 16.13                   | 12.19                    | 55.43     | 0.96    | 25.78          | 16.53                  | 7.85            |
| 16500 | 24.24 | 62.95     | 15.44                   | 10.77                    | 38.37     | 0.94    | 25.16          | 16.29                  | 7.96            |
| 17000 | 24.43 | 60.92     | 13.89                   | 9.79                     | 28.74     | 0.93    | 24.35          | 17.95                  | 7.93            |
| 17500 | 24.26 | 61.10     | 12.65                   | 8.57                     | 28.38     | 0.91    | 23.80          | 18.37                  | 7.96            |
| 18000 | 24.01 | 61.40     | 11.60                   | 8.89                     | 30.05     | 0.93    | 24.40          | 17.59                  | 8.02            |
| 18500 | 23.66 | 62.55     | 10.53                   | 9.93                     | 35.98     | 0.98    | 24.20          | 17.70                  | 8.16            |
| 19000 | 23.04 | 63.27     | 9.02                    | 12.74                    | 42.46     | 1.07    | 23.93          | 17.84                  | 8.32            |
| 19500 | 22.05 | 64.43     | 7.88                    | 16.22                    | 53.68     | 1.14    | 24.36          | 17.50                  | 8.47            |
| 20000 | 20.72 | 63.72     | 6.67                    | 17.09                    | 54.29     | 1.19    | 28.70          | 16.20                  | 8.75            |
| 20500 | 19.08 | 64.26     | 5.94                    | 15.42                    | 65.67     | 1.22    | 31.72          | 15.73                  | 9.00            |
| 21000 | 17.01 | 65.01     | 5.41                    | 13.39                    | 85.37     | 1.23    | 28.39          | 15.29                  | 9.31            |
| 21500 | 15.05 | 65.02     | 5.47                    | 11.85                    | 105.57    | 1.20    | 30.72          | 14.67                  | 9.52            |
| 22000 | 12.67 | 62.96     | 5.46                    | 11.09                    | 108.07    | 1.18    | 29.26          | 14.48                  | 9.87            |

*Typical Performance Data***Definitions:**

Input Return Loss = -S11 (dB)

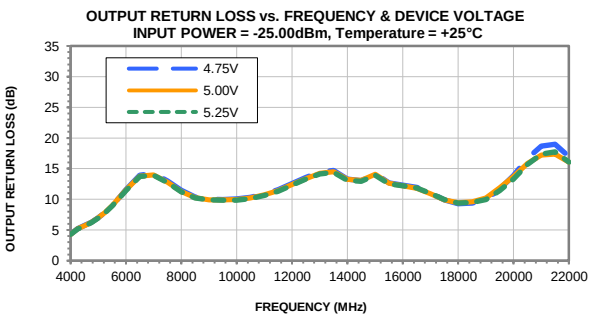
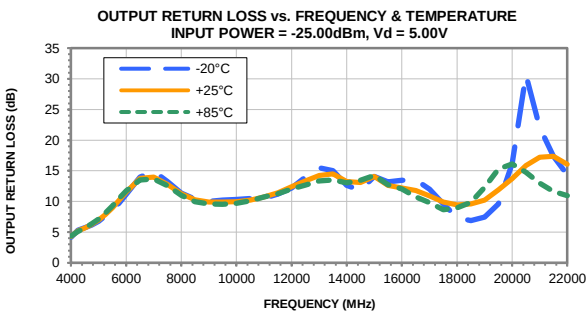
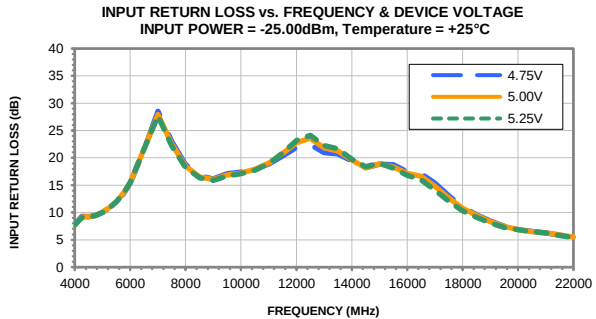
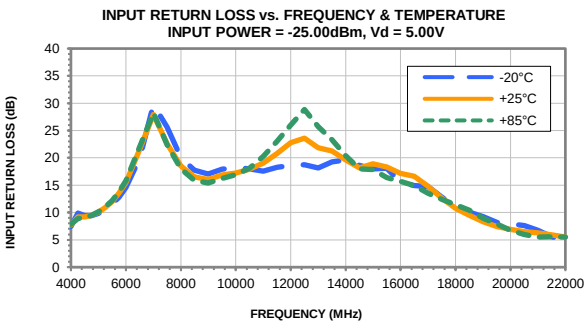
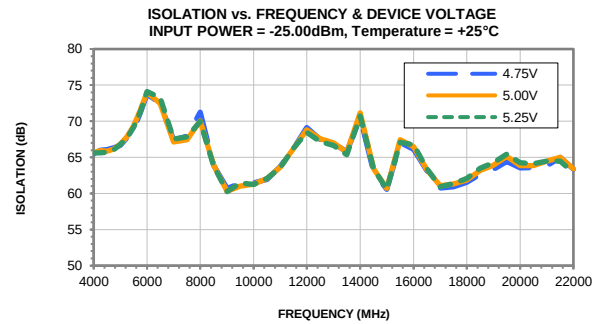
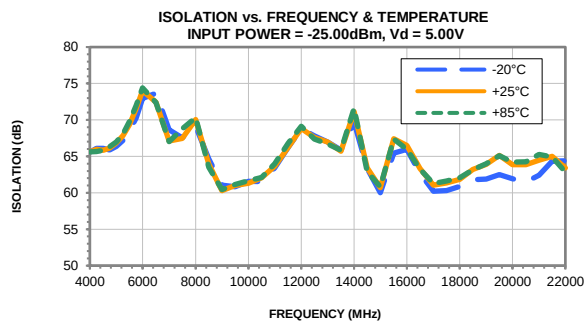
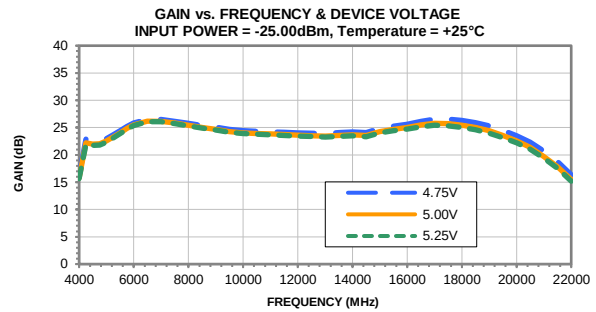
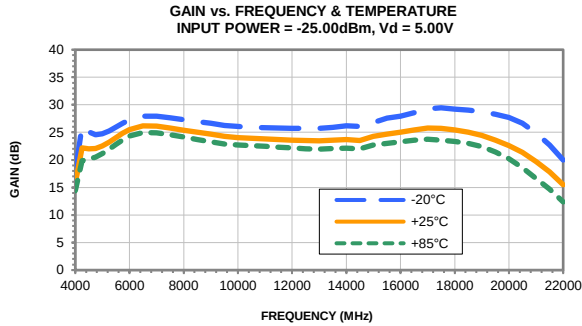
Gain(Power Gain) = S21 (dB)

Reverse Isolation = -S12 (dB)

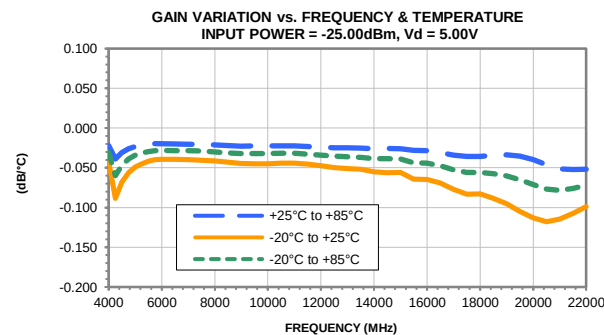
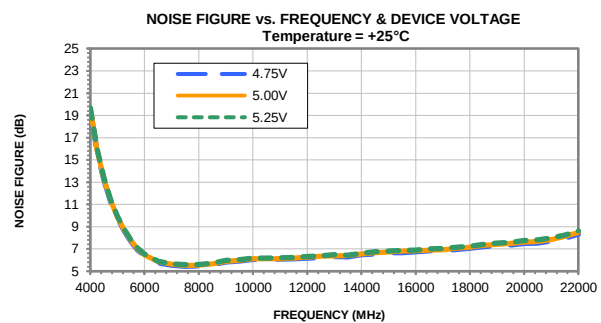
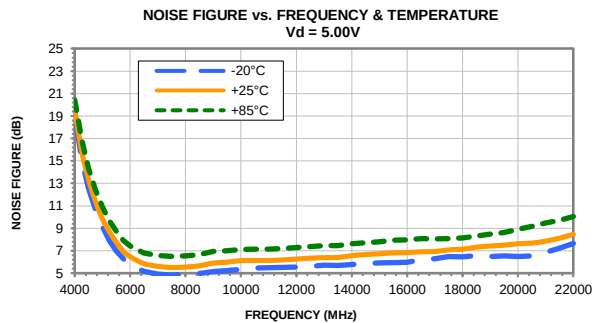
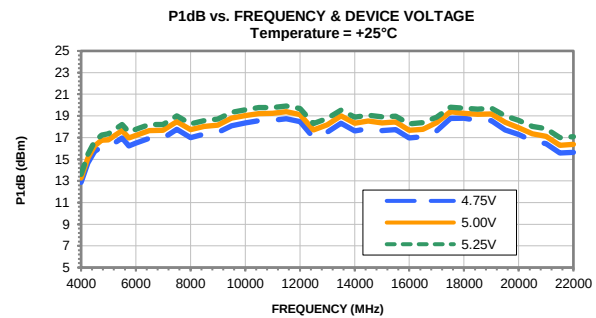
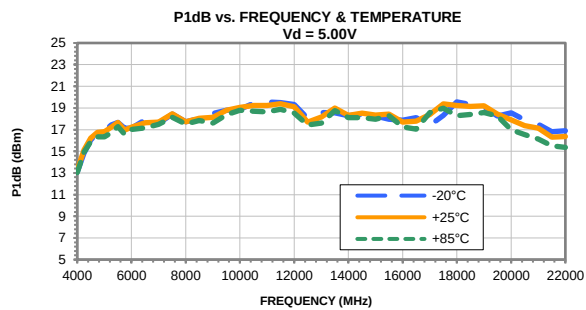
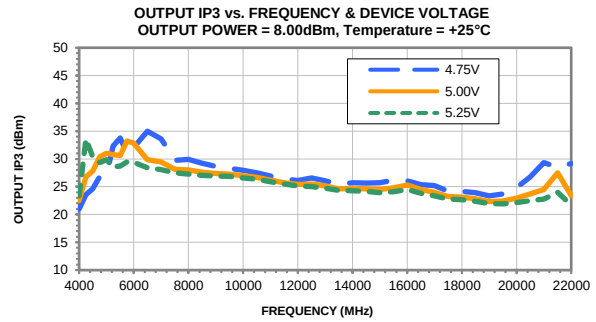
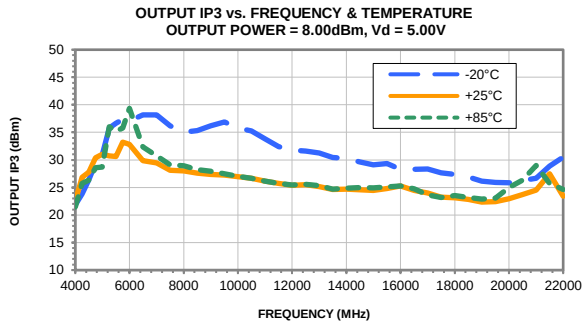
Output Return Loss = -S22 (dB)

TEST CONDITIONS: Vd = 5.25V, Id = 265.19mA @ Temperature = +85°C

| FREQ  | Gain  | Isolation | Input<br>Return<br>Loss | Output<br>Return<br>Loss | Stability |         | IP-3<br>Output | 1dB<br>Comp.<br>Output | Noise<br>Figure |
|-------|-------|-----------|-------------------------|--------------------------|-----------|---------|----------------|------------------------|-----------------|
| (MHz) | (dB)  | (dB)      | (dB)                    | (dB)                     | K         | Measure | (dBm)          | (dBm)                  | (dB)            |
| 4000  | 14.20 | 65.44     | 7.87                    | 4.32                     | 96.25     | 0.73    | 22.13          | 13.35                  | 20.50           |
| 4250  | 19.50 | 65.87     | 8.83                    | 5.06                     | 62.41     | 0.78    | 29.02          | 15.27                  | 16.98           |
| 4500  | 19.77 | 65.81     | 9.01                    | 5.64                     | 63.77     | 0.82    | 30.15          | 16.30                  | 14.44           |
| 4750  | 20.14 | 66.23     | 9.46                    | 6.30                     | 68.39     | 0.85    | 32.49          | 16.83                  | 12.50           |
| 5000  | 20.83 | 66.81     | 10.10                   | 7.11                     | 72.33     | 0.88    | 33.12          | 16.90                  | 10.93           |
| 5250  | 21.69 | 67.98     | 10.98                   | 8.09                     | 80.14     | 0.91    | 31.88          | 17.28                  | 9.77            |
| 5500  | 22.59 | 69.67     | 12.20                   | 9.20                     | 93.48     | 0.93    | 31.16          | 17.86                  | 8.83            |
| 5750  | 23.43 | 71.79     | 13.81                   | 10.44                    | 114.11    | 0.95    | 33.26          | 17.18                  | 8.02            |
| 6000  | 24.12 | 74.33     | 15.87                   | 11.61                    | 146.88    | 0.96    | 31.90          | 17.63                  | 7.49            |
| 6500  | 24.79 | 72.82     | 22.01                   | 13.22                    | 119.22    | 0.96    | 30.33          | 17.71                  | 6.84            |
| 7000  | 24.76 | 67.06     | 27.54                   | 13.37                    | 62.10     | 0.96    | 29.43          | 18.08                  | 6.65            |
| 7500  | 24.38 | 68.89     | 21.86                   | 12.31                    | 78.61     | 0.95    | 28.63          | 18.67                  | 6.58            |
| 8000  | 23.90 | 70.76     | 17.70                   | 10.87                    | 99.41     | 0.93    | 28.32          | 18.09                  | 6.62            |
| 8500  | 23.44 | 63.46     | 15.69                   | 9.83                     | 43.67     | 0.92    | 27.87          | 18.41                  | 6.76            |
| 9000  | 23.04 | 60.24     | 15.23                   | 9.51                     | 31.20     | 0.91    | 27.62          | 18.16                  | 7.03            |
| 9500  | 22.63 | 61.17     | 16.04                   | 9.43                     | 36.54     | 0.91    | 27.24          | 18.91                  | 7.07            |
| 10000 | 22.44 | 61.59     | 16.73                   | 9.58                     | 39.53     | 0.91    | 26.77          | 19.39                  | 7.22            |
| 10500 | 22.31 | 61.92     | 18.01                   | 9.98                     | 42.38     | 0.91    | 26.39          | 19.27                  | 7.22            |
| 11000 | 22.20 | 63.81     | 20.33                   | 10.59                    | 54.40     | 0.92    | 25.90          | 19.19                  | 7.24            |
| 11500 | 22.02 | 66.82     | 23.40                   | 11.06                    | 79.72     | 0.93    | 25.52          | 19.42                  | 7.31            |
| 12000 | 21.84 | 68.56     | 26.98                   | 11.85                    | 101.16    | 0.94    | 25.22          | 19.05                  | 7.36            |
| 12500 | 21.68 | 67.19     | 30.94                   | 12.38                    | 88.68     | 0.94    | 25.12          | 18.06                  | 7.45            |
| 13000 | 21.59 | 66.39     | 27.32                   | 13.05                    | 82.43     | 0.95    | 24.93          | 18.19                  | 7.56            |
| 13500 | 21.66 | 65.56     | 24.11                   | 13.17                    | 74.24     | 0.96    | 24.46          | 19.28                  | 7.54            |
| 14000 | 21.69 | 72.09     | 20.63                   | 12.87                    | 155.80    | 0.96    | 24.48          | 18.67                  | 7.70            |
| 14500 | 21.56 | 62.93     | 18.02                   | 13.41                    | 54.95     | 0.97    | 24.47          | 18.66                  | 7.79            |
| 15000 | 22.24 | 60.96     | 17.56                   | 14.19                    | 40.79     | 0.98    | 24.37          | 18.53                  | 7.92            |
| 15500 | 22.47 | 67.16     | 15.89                   | 12.70                    | 79.08     | 0.97    | 24.55          | 18.82                  | 7.99            |
| 16000 | 22.74 | 66.42     | 15.11                   | 12.03                    | 69.33     | 0.97    | 24.63          | 17.86                  | 8.06            |
| 16500 | 23.02 | 63.59     | 14.27                   | 10.60                    | 46.93     | 0.95    | 24.26          | 17.62                  | 8.18            |
| 17000 | 23.13 | 61.65     | 13.01                   | 9.67                     | 35.82     | 0.93    | 23.29          | 19.15                  | 8.15            |
| 17500 | 22.93 | 62.07     | 12.11                   | 8.48                     | 36.57     | 0.91    | 22.92          | 19.39                  | 8.20            |
| 18000 | 22.69 | 62.38     | 11.29                   | 8.74                     | 38.70     | 0.93    | 23.15          | 18.72                  | 8.27            |
| 18500 | 22.38 | 63.46     | 10.40                   | 9.59                     | 45.80     | 0.97    | 22.79          | 18.94                  | 8.43            |
| 19000 | 21.84 | 64.40     | 9.02                    | 12.07                    | 54.98     | 1.06    | 22.55          | 19.13                  | 8.60            |
| 19500 | 20.96 | 65.50     | 7.97                    | 15.03                    | 68.58     | 1.12    | 22.58          | 18.91                  | 8.76            |
| 20000 | 19.73 | 64.49     | 6.77                    | 16.15                    | 66.54     | 1.18    | 23.65          | 17.60                  | 9.05            |
| 20500 | 18.16 | 64.88     | 6.03                    | 14.51                    | 78.36     | 1.21    | 24.27          | 17.15                  | 9.34            |
| 21000 | 16.18 | 65.20     | 5.47                    | 12.52                    | 95.53     | 1.21    | 25.21          | 16.73                  | 9.63            |
| 21500 | 14.29 | 64.93     | 5.51                    | 11.07                    | 112.92    | 1.18    | 23.30          | 16.17                  | 9.88            |
| 22000 | 11.99 | 62.72     | 5.47                    | 10.42                    | 112.15    | 1.17    | 23.25          | 16.01                  | 10.25           |

*Typical Performance Curves*



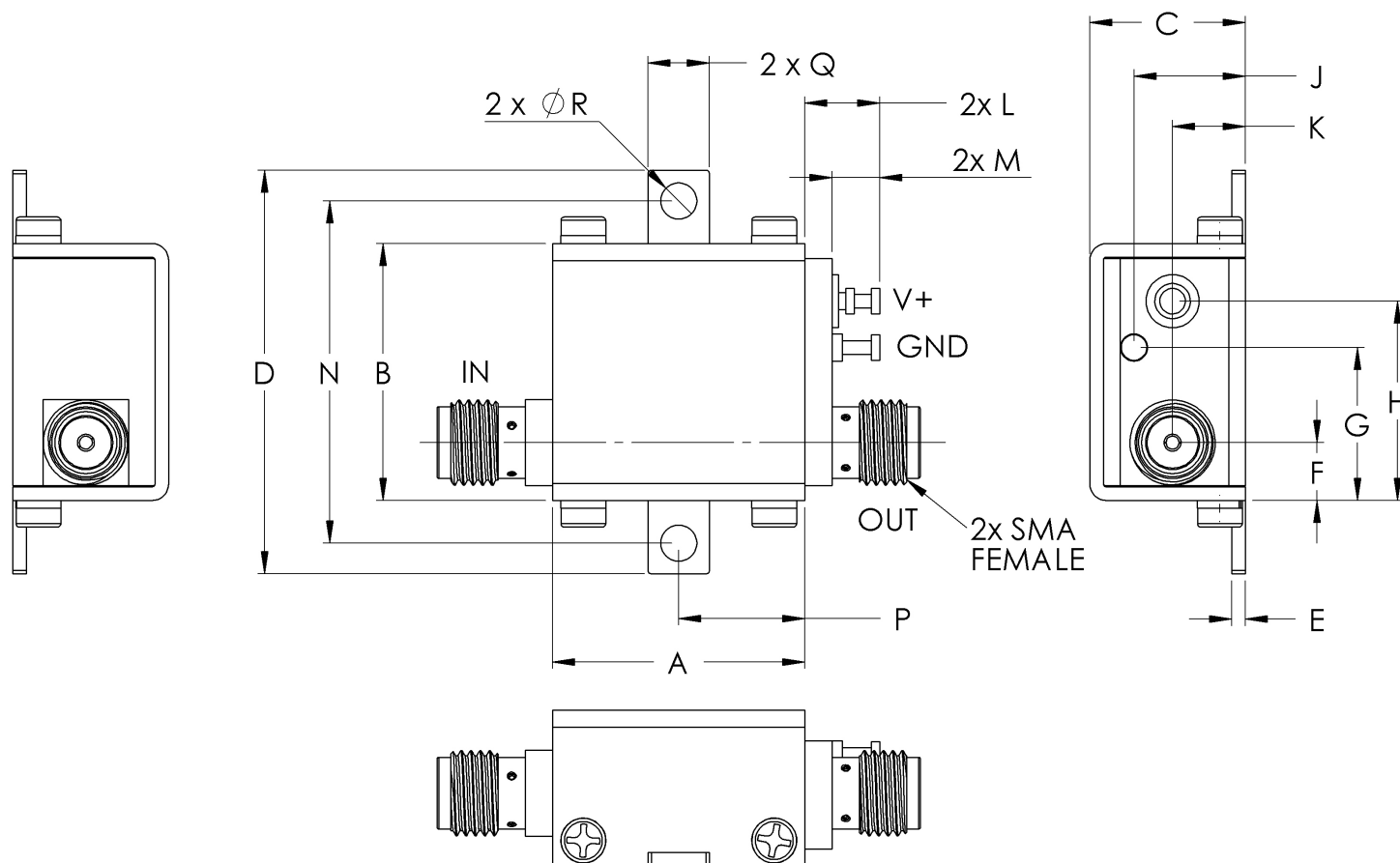
*Typical Performance Curves*

# Case Style

## Outline Dimensions

# GC

## GC957



| CASE #. | A              | B              | C              | D               | E             | F             | G              | H              | J             | K             | L             | M             | N              |
|---------|----------------|----------------|----------------|-----------------|---------------|---------------|----------------|----------------|---------------|---------------|---------------|---------------|----------------|
| GC957   | .74<br>(18.80) | .75<br>(19.15) | .46<br>(11.61) | 1.18<br>(30.07) | .04<br>(1.02) | .17<br>(4.32) | .45<br>(11.40) | .59<br>(14.86) | .33<br>(8.31) | .21<br>(5.44) | .22<br>(5.59) | .14<br>(3.56) | 1.00<br>(25.4) |

| CASE #. | P             | Q             | R              | WT GRAMS |
|---------|---------------|---------------|----------------|----------|
| GC957   | .37<br>(9.40) | .18<br>(4.57) | .106<br>(2.69) | 23.0     |

Dimensions are in inches (mm). Tolerances: 2Pl.  $\pm .03$ ; 3Pl.  $\pm .015$   
Tolerance on hole size and interaxes dimensions to be  $\pm .005$ .

### Note:

- Case material: Brass
- Case finish: Nickel plate



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All Mini-Circuits products are manufactured under exacting quality assurance and control standards, and are capable of meeting published specifications after being subjected to any or all of the following physical and environmental test.

| Specification             | Test/Inspection Condition             | Reference/Spec                                     |
|---------------------------|---------------------------------------|----------------------------------------------------|
| Operating Temperature     | -40° to 85° C<br>Case Temperature     | Individual Model Data Sheet                        |
| Storage Temperature       | -55° to 100° C<br>Ambient Environment | Individual Model Data Sheet                        |
| Stabilization Bake        | (non-operating)<br>125°C, 24 hours    | - - -                                              |
| Burn-in at Elevated Temp. | (DC on)<br>160 hours at 85° C         | MIL-STD-202, Method 108                            |
| Thermal Shock             | -55° to 100°C, 5 cycles               | MIL-STD-202, Method 107, Condition A, except 100°C |