



Mini-Circuits

HIGH DIRECTIVITY

# Monolithic Amplifier

**MNA-6W+**

50Ω 0.5 to 5.5 GHz

## THE BIG DEAL

- Integrated matching, DC Blocks and bias circuits
- Excellent Active Directivity, 13-22 dB typ.
- Choice of supply voltage, 2.8V to 5V
- Micro-miniature size .120"X.120"
- Low noise figure, 2.7 dB typ. at 2 GHz
- Output power, up to +20 dBm typ.
- Aqueous washable



Generic photo used for illustration purposes only

CASE STYLE: DQ849

### +RoHS Compliant

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

## APPLICATIONS

- Buffer amplifier
- Cellular
- PCN
- Communications satellite
- Defense

## PRODUCT OVERVIEW

MNA-6W+ is a wideband PHEMT based MMIC amplifier with high active Directivity. MNA integrates the entire matching network and majority of the bias circuit inside the package, reducing the need for complicated external circuits. This approach makes the MNA amplifier extremely straightforward to use. This design operates on a single 2.8 to 5V supply, is well matched for 50Ω and comes in a tiny, low profile 3x3mm 8-lead MCLP package accommodating dense circuit board layouts. [MNA-6W+ belongs to MNA series of models available in Die and packaged form.](#)

## KEY FEATURES

| Feature                                                 | Advantages                                                                                                                                    |
|---------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| Excellent Active Directivity (Isolation- Gain) 13-22 dB | Ideal for use as a buffer amplifier minimizing interaction of adjacent circuits                                                               |
| Integrates DC blocks and RF choke                       | Minimizes external components, component count and circuit area.                                                                              |
| Single 2.8 to +5V operation                             | Amplifier can be used at low voltage such as +3V or standard +5V. +5V operation results in higher P1dB and OIP3.                              |
| 3 x 3mm 8-lead MCLP package                             | Tiny footprint saves space in dense layouts while providing low inductance, repeatable transitions, and excellent thermal contact to the PCB. |

REV. A  
ECO-011187  
MNA-6W+  
MCL NY  
220928





HIGH DIRECTIVITY

## Monolithic Amplifier

MNA-6W+

ELECTRICAL SPECIFICATIONS<sup>1</sup> AT 25°C

| Parameter                                               | Condition (GHz) | Min. | Vs=5V<br>Typ.         |  | Max. | Vs=2.8V<br>Typ.       | Units |
|---------------------------------------------------------|-----------------|------|-----------------------|--|------|-----------------------|-------|
| Frequency Range                                         |                 | 0.5  |                       |  | 5.5  | 0.5-5.5               | GHz   |
| Gain                                                    | 0.5             | —    | 22.3                  |  | —    | 20.4                  | dB    |
|                                                         | 1.0             | —    | 25.0                  |  | —    | 22.3                  |       |
|                                                         | 2.0             | 22.3 | 24.8                  |  | 27.3 | 21.6                  |       |
|                                                         | 2.5             | —    | 23.2                  |  | —    | 20.4                  |       |
|                                                         | 4.0             | —    | 16.5                  |  | —    | 14.8                  |       |
|                                                         | 5.5             | 9.7  | 10.7                  |  | 11.8 | 9.7                   |       |
| Input Return Loss                                       | 0.5             |      | 6.3                   |  |      | 6.9                   | dB    |
|                                                         | 1.0             |      | 14.2                  |  |      | 13.9                  |       |
|                                                         | 2.0             |      | 17.6                  |  |      | 17.5                  |       |
|                                                         | 2.5             |      | 14.9                  |  |      | 15.4                  |       |
|                                                         | 4.0             |      | 8.2                   |  |      | 8.8                   |       |
|                                                         | 5.5             |      | 5.2                   |  |      | 5.6                   |       |
| Output Return Loss                                      | 0.5             |      | 10.9                  |  |      | 9.8                   | dB    |
|                                                         | 1.0             |      | 27.2                  |  |      | 14.9                  |       |
|                                                         | 2.0             |      | 19.5                  |  |      | 14.8                  |       |
|                                                         | 2.5             |      | 19.4                  |  |      | 15.2                  |       |
|                                                         | 4.0             |      | 21.8                  |  |      | 22.0                  |       |
|                                                         | 5.5             |      | 14.4                  |  |      | 12.7                  |       |
| Output Power at P1dB                                    | 0.5             |      | 20.3                  |  |      | 11.1                  | dBm   |
|                                                         | 1.0             |      | 20.2                  |  |      | 11.9                  |       |
|                                                         | 2.0             |      | 19.4                  |  |      | 12.2                  |       |
|                                                         | 2.5             |      | 19.2                  |  |      | 12.5                  |       |
|                                                         | 4.0             |      | 18.2                  |  |      | 13.6                  |       |
|                                                         | 5.5             |      | 15.4                  |  |      | 12.3                  |       |
| Output IP3                                              | 0.5             |      | 33.2                  |  |      | 22.8                  | dBm   |
|                                                         | 1.0             |      | 32.4                  |  |      | 23.7                  |       |
|                                                         | 2.0             |      | 30.4                  |  |      | 23.8                  |       |
|                                                         | 2.5             |      | 30.0                  |  |      | 24.1                  |       |
|                                                         | 4.0             |      | 29.7                  |  |      | 25.4                  |       |
|                                                         | 5.5             |      | 27.6                  |  |      | 23.7                  |       |
| Noise Figure (dB)                                       | 0.5             |      | 3.1                   |  |      | 3.2                   | dB    |
|                                                         | 1.0             |      | 2.6                   |  |      | 2.7                   |       |
|                                                         | 2.0             |      | 2.7                   |  |      | 2.7                   |       |
|                                                         | 2.5             |      | 2.7                   |  |      | 2.8                   |       |
|                                                         | 4.0             |      | 3.3                   |  |      | 3.3                   |       |
|                                                         | 5.5             |      | 4.4                   |  |      | 4.5                   |       |
| Active Directivity<br>(Isolation-Gain)                  | 0.5             |      | 22.1                  |  |      | 24.9                  | dB    |
|                                                         | 1.0             |      | 18.7                  |  |      | 19.2                  |       |
|                                                         | 2.0             |      | 13.3                  |  |      | 13.6                  |       |
|                                                         | 2.5             |      | 13.2                  |  |      | 13.0                  |       |
|                                                         | 4.0             |      | 17.7                  |  |      | 16.3                  |       |
|                                                         | 5.5             |      | 22.6                  |  |      | 20.5                  |       |
| DC Current                                              |                 |      | 99                    |  | 110  | 92                    | mA    |
| Device Current Variation vs. Temperature <sup>(2)</sup> |                 |      | 41                    |  |      | 37                    | μA/°C |
| Device Current Variation vs Voltage                     |                 |      | 0.0017 <sup>(3)</sup> |  |      | 0.0044 <sup>(4)</sup> | mA/mV |
| Thermal resistance at 85°C (Junction to Lead)           |                 |      | 46                    |  |      | 46                    | °C/W  |

(1) Measured on Mini-Circuits Characterization test board TB-186+. See Characterization Test Circuit (Fig. 1)

(2) (Current at 85°C - Current at -45°C)/130

(3) (Current at 5.25V - Current at 3.9V)/1.35

(4) (Current at 3.9V - Current at 2.66V)/1.24

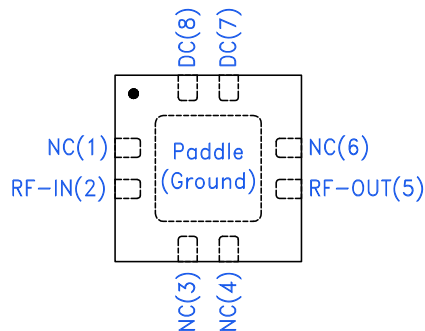
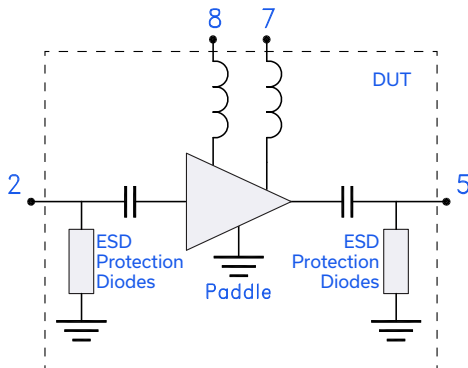


MAXIMUM RATINGS<sup>5</sup>

| Parameter             | Ratings                                               |
|-----------------------|-------------------------------------------------------|
| Operating Temperature | -40°C to 85°C                                         |
| Storage Temperature   | -55°C to 100°C                                        |
| DC Voltage            | 7V at pad 7 (on TB-186+)<br>1V at pads 2 & 5          |
| Power Dissipation     | 970 mW                                                |
| Input Power           | 10dBm (continuous operation)<br>26dBm (5 minutes max) |

5. Permanent damage may occur if any of these limits are exceeded. These ratings are not intended for continuous normal operation.

## SIMPLIFIED SCHEMATIC AND PAD DESCRIPTION



| Function | Pad Number | Description (See Fig 1)                                                                          |
|----------|------------|--------------------------------------------------------------------------------------------------|
| RF-IN    | 2          | RF input pin                                                                                     |
| RF-OUT   | 5          | RF output pin                                                                                    |
| DC       | 7,8        | DC Bias pads 7,8. Pad 7 connected to ground via 1000 pF. Pad 8 connected to pad 7 via 33.2 ohms. |
| NC       | 1,3,4,6    | Not Connected, connect pad 3 and 4 to ground externally                                          |
| GND      | Paddle     | Ground                                                                                           |
| OPTIONAL | 1,6        | No internal connection; recommended use: per PCB Layout PL-078                                   |



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# Monolithic Amplifier

**MNA-6W+**

## CHARACTERIZATION & APPLICATION TEST CIRCUIT

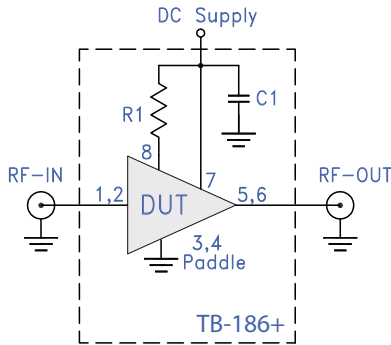


Fig 1. Block Diagram of Test Circuit used for characterization. (DUT soldered on Mini-Circuits Characterization test board TB-313)

Gain, Return loss, Output power at 1dB compression (P1 dB) , output IP3 (OIP3) and noise figure measured using Agilent's N5242A PNA-X microwave network analyzer.

Conditions:

1. Gain and Return loss: Pin= -25dBm
2. Output IP3 (OIP3): Two tones, spaced 1 MHz apart, 0 dBm/tone at output.

| Component | Size | Value | Units    |
|-----------|------|-------|----------|
| R1        | 0805 | 33.2  | $\Omega$ |
| C1        | 0402 | 1000  | $\mu F$  |

## RECOMMENDED APPLICATION CIRCUIT

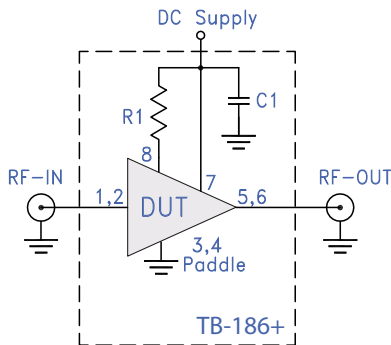
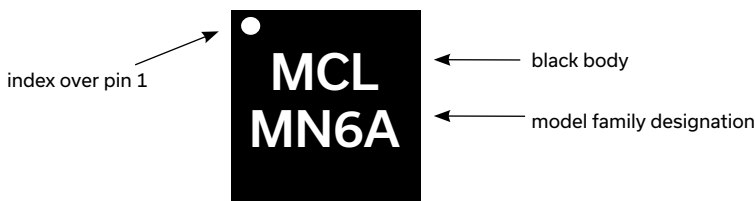


Fig 2. Test Board includes case, connectors, and components soldered to PCB

| Component | Size | Value | Units    |
|-----------|------|-------|----------|
| R1        | 0805 | 33.2  | $\Omega$ |
| C1        | 0402 | 1000  | $\mu F$  |

## PRODUCT MARKING



Marking may contain other features or characters for internal lot control





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# Monolithic Amplifier

MNA-6W+

ADDITIONAL DETAILED TECHNICAL INFORMATION IS AVAILABLE ON OUR DASH BOARD. TO ACCESS [CLICK HERE](#)

|                                                      |                                                                              |
|------------------------------------------------------|------------------------------------------------------------------------------|
| Performance Data                                     | Data Table<br>Swept Graphs<br>S-Parameter (S2P Files) Data Set (.zip file)   |
| Case Style                                           | DQ849 3x3x0.9 mm MCLP Plastic package, exposed paddle lead finish: Matte-Tin |
| Tape & Reel<br>Standard quantities available on reel | F104<br>7" reels with 20, 50, 100, 200, 500, 1K, or 2K devices               |
| Suggested Layout for PCB Design                      | PL-078                                                                       |
| Evaluation Board                                     | TB-186-6W+                                                                   |
| Environmental Ratings                                | ENV08T1                                                                      |

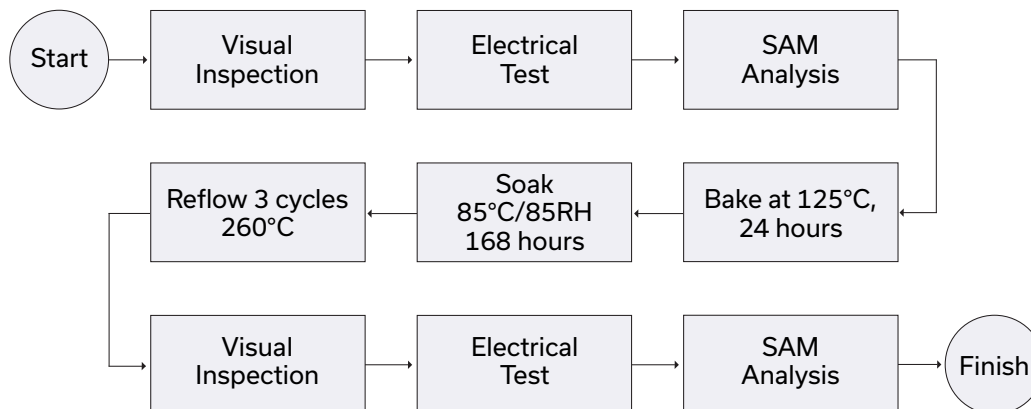
## ESD RATING

Human Body Model (HBM): Class 1A (250 to <500V) in accordance with ANSI/ESD STM 5.1 - 2001

## MSL RATING

Moisture Sensitivity: MSL1 in accordance with IPC/JEDEC J-STD-020D

## MSL TEST FLOW CHART



- NOTES
- A. 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.
- B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
- C. 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/MCLStore/terms.jsp](http://www.minicircuits.com/MCLStore/terms.jsp)



## 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 = 5V, Id = 98.44 mA @ Temperature = +25degC

| FREQ  | Gain  | Isolation | Input Return Loss | Output Return Loss | Stability |         | IP-3 Output | 1dB Comp. Output | Noise Figure |
|-------|-------|-----------|-------------------|--------------------|-----------|---------|-------------|------------------|--------------|
| (MHz) | (dB)  | (dB)      | (dB)              | (dB)               | K         | Measure | (dBm)       | (dBm)            | (dB)         |
| 200   | 6.80  | 47.63     | 3.29              | 2.72               | 13.17     | 0.69    | 26.62       | 13.25            | 6.49         |
| 300   | 15.41 | 44.15     | 3.57              | 5.80               | 5.33      | 1.08    | 32.17       | 18.67            | 4.23         |
| 400   | 20.00 | 43.81     | 4.64              | 8.44               | 4.17      | 1.18    | 33.66       | 20.20            | 3.52         |
| 500   | 22.35 | 45.60     | 6.26              | 10.90              | 4.99      | 1.15    | 34.08       | 20.62            | 4.27         |
| 600   | 23.55 | 45.89     | 8.24              | 13.59              | 5.28      | 1.11    | 33.58       | 20.72            | 3.02         |
| 700   | 24.23 | 45.95     | 10.03             | 16.60              | 5.37      | 1.08    | 34.36       | 20.63            | 2.93         |
| 800   | 24.63 | 45.37     | 11.69             | 19.86              | 5.05      | 1.05    | 33.67       | 20.58            | 2.71         |
| 1000  | 25.08 | 44.26     | 14.22             | 28.77              | 4.43      | 1.03    | 33.11       | 20.57            | 2.61         |
| 1100  | 25.21 | 43.65     | 15.21             | 38.39              | 4.11      | 1.02    | 32.98       | 20.48            | 2.61         |
| 1200  | 25.31 | 42.76     | 16.09             | 38.52              | 3.70      | 1.01    | 32.15       | 20.28            | 2.61         |
| 1300  | 25.37 | 42.02     | 16.84             | 30.16              | 3.40      | 1.00    | 32.28       | 20.19            | 2.60         |
| 1400  | 25.40 | 41.49     | 17.44             | 26.45              | 3.21      | 0.99    | 32.25       | 20.13            | 2.56         |
| 1500  | 25.38 | 40.89     | 18.09             | 23.86              | 3.01      | 0.98    | 31.81       | 20.08            | 2.59         |
| 1600  | 25.44 | 40.28     | 17.67             | 21.84              | 2.79      | 0.98    | 31.65       | 19.97            | 2.68         |
| 1700  | 25.32 | 39.80     | 18.07             | 21.50              | 2.69      | 0.97    | 31.61       | 20.00            | 2.64         |
| 1800  | 25.19 | 39.30     | 18.29             | 20.98              | 2.58      | 0.97    | 31.35       | 19.73            | 2.65         |
| 1900  | 25.06 | 38.98     | 18.25             | 20.11              | 2.52      | 0.96    | 31.08       | 19.76            | 2.62         |
| 2000  | 24.89 | 38.50     | 18.14             | 19.16              | 2.44      | 0.96    | 31.07       | 19.76            | 2.61         |
| 2100  | 24.64 | 37.79     | 17.67             | 19.77              | 2.32      | 0.96    | 30.72       | 19.67            | 2.54         |
| 2200  | 24.41 | 37.49     | 17.55             | 19.27              | 2.30      | 0.96    | 30.42       | 19.33            | 2.62         |
| 2300  | 24.18 | 37.33     | 17.42             | 18.72              | 2.31      | 0.96    | 30.64       | 19.47            | 2.70         |
| 2400  | 23.82 | 36.78     | 16.58             | 19.40              | 2.26      | 0.96    | 30.47       | 19.44            | 2.78         |
| 2500  | 23.38 | 37.07     | 15.15             | 20.92              | 2.43      | 0.98    | 30.61       | 19.49            | 2.67         |
| 2600  | 23.21 | 36.88     | 15.69             | 18.96              | 2.42      | 0.97    | 30.28       | 19.44            | 2.75         |
| 2700  | 22.55 | 36.26     | 14.01             | 22.47              | 2.42      | 0.99    | 30.49       | 19.32            | 2.80         |
| 2800  | 22.23 | 35.93     | 13.70             | 21.33              | 2.41      | 0.99    | 30.41       | 19.36            | 2.91         |
| 2900  | 21.86 | 35.49     | 13.43             | 20.77              | 2.38      | 0.99    | 30.42       | 19.25            | 2.95         |
| 3000  | 21.12 | 36.30     | 12.19             | 25.83              | 2.79      | 1.02    | 30.50       | 19.22            | 2.87         |
| 3100  | 20.82 | 35.31     | 11.93             | 23.05              | 2.57      | 1.02    | 30.25       | 19.10            | 2.90         |
| 3200  | 20.28 | 35.45     | 11.04             | 23.95              | 2.73      | 1.04    | 29.97       | 18.98            | 2.89         |
| 3300  | 19.96 | 34.58     | 10.95             | 22.68              | 2.57      | 1.03    | 30.15       | 19.09            | 2.93         |
| 3400  | 19.19 | 35.59     | 10.24             | 28.81              | 3.07      | 1.07    | 30.41       | 19.01            | 3.00         |
| 3500  | 19.03 | 34.41     | 9.83              | 23.46              | 2.73      | 1.06    | 30.03       | 18.85            | 2.97         |
| 3600  | 18.55 | 34.40     | 9.62              | 23.80              | 2.85      | 1.07    | 30.01       | 18.77            | 2.99         |
| 3700  | 18.06 | 34.67     | 9.25              | 24.41              | 3.06      | 1.09    | 30.29       | 18.66            | 3.05         |
| 3800  | 17.47 | 35.38     | 8.78              | 26.02              | 3.48      | 1.11    | 30.36       | 18.65            | 3.20         |
| 3900  | 17.19 | 34.74     | 8.63              | 23.49              | 3.33      | 1.11    | 29.97       | 18.50            | 3.18         |
| 4000  | 16.82 | 34.73     | 8.18              | 22.36              | 3.41      | 1.12    | 29.51       | 18.30            | 3.20         |
| 4100  | 16.27 | 34.73     | 7.75              | 25.56              | 3.56      | 1.15    | 29.63       | 18.16            | 3.27         |
| 4200  | 16.03 | 33.97     | 7.72              | 23.36              | 3.35      | 1.14    | 29.82       | 17.95            | 3.30         |
| 4300  | 15.67 | 34.39     | 7.47              | 22.70              | 3.61      | 1.15    | 29.52       | 17.93            | 3.34         |
| 4400  | 15.26 | 34.35     | 6.95              | 22.84              | 3.66      | 1.18    | 29.37       | 17.74            | 3.40         |
| 4500  | 15.02 | 34.70     | 6.66              | 21.45              | 3.84      | 1.19    | 29.12       | 17.78            | 3.45         |
| 4600  | 14.71 | 33.86     | 6.64              | 19.46              | 3.62      | 1.18    | 28.94       | 17.80            | 3.54         |
| 4700  | 14.35 | 33.24     | 6.53              | 19.41              | 3.49      | 1.18    | 29.32       | 17.58            | 3.60         |
| 4800  | 14.03 | 34.20     | 5.98              | 20.10              | 3.88      | 1.22    | 29.10       | 17.49            | 3.66         |
| 4900  | 13.64 | 33.38     | 6.07              | 18.62              | 3.71      | 1.21    | 28.60       | 17.12            | 3.72         |
| 5000  | 13.47 | 33.76     | 5.67              | 17.90              | 3.82      | 1.23    | 28.42       | 16.92            | 3.76         |
| 5100  | 12.94 | 32.25     | 5.73              | 18.09              | 3.45      | 1.22    | 28.30       | 16.57            | 3.88         |
| 5200  | 12.58 | 33.37     | 5.57              | 17.68              | 4.00      | 1.23    | 28.47       | 16.50            | 3.94         |
| 5300  | 12.06 | 33.76     | 5.55              | 16.69              | 4.41      | 1.23    | 28.16       | 15.96            | 4.11         |
| 5400  | 11.72 | 33.68     | 5.39              | 15.79              | 4.46      | 1.24    | 27.70       | 15.66            | 4.17         |
| 5500  | 11.14 | 34.54     | 5.40              | 14.25              | 5.18      | 1.22    | 26.96       | 15.45            | 4.36         |

## 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 = 3.9V, Id = 96.61 mA @ Temperature = +25degC

| FREQ  | Gain  | Isolation | Input Return Loss | Output Return Loss | Stability |         | IP-3 Output | 1dB Comp. Output | Noise Figure |
|-------|-------|-----------|-------------------|--------------------|-----------|---------|-------------|------------------|--------------|
| (MHz) | (dB)  | (dB)      | (dB)              | (dB)               | K         | Measure | (dBm)       | (dBm)            | (dB)         |
| 200   | 6.63  | 47.66     | 3.30              | 2.75               | 13.58     | 0.70    | 24.82       | 11.82            | 6.52         |
| 300   | 15.13 | 44.28     | 3.60              | 5.74               | 5.60      | 1.08    | 28.89       | 16.31            | 4.26         |
| 400   | 19.61 | 44.82     | 4.72              | 8.25               | 4.94      | 1.16    | 30.12       | 17.61            | 3.56         |
| 500   | 21.87 | 46.36     | 6.42              | 10.63              | 5.80      | 1.13    | 30.51       | 18.05            | 4.39         |
| 600   | 22.98 | 45.90     | 8.41              | 12.99              | 5.64      | 1.09    | 30.26       | 18.20            | 3.05         |
| 700   | 23.59 | 46.00     | 10.18             | 15.43              | 5.78      | 1.07    | 30.54       | 18.12            | 2.94         |
| 800   | 23.94 | 44.79     | 11.78             | 17.71              | 5.07      | 1.05    | 30.34       | 18.11            | 2.74         |
| 1000  | 24.31 | 43.47     | 14.14             | 21.56              | 4.37      | 1.02    | 30.48       | 18.41            | 2.63         |
| 1100  | 24.41 | 43.04     | 15.03             | 22.82              | 4.16      | 1.02    | 30.35       | 18.18            | 2.62         |
| 1200  | 24.47 | 41.61     | 15.73             | 23.48              | 3.55      | 1.01    | 29.92       | 17.94            | 2.63         |
| 1300  | 24.49 | 41.31     | 16.40             | 23.35              | 3.43      | 1.00    | 30.15       | 18.02            | 2.64         |
| 1400  | 24.49 | 40.60     | 16.98             | 22.70              | 3.19      | 0.99    | 30.30       | 18.13            | 2.59         |
| 1500  | 24.45 | 40.11     | 17.57             | 22.19              | 3.04      | 0.99    | 29.88       | 18.08            | 2.60         |
| 1600  | 24.48 | 39.49     | 17.08             | 20.42              | 2.82      | 0.98    | 29.92       | 18.00            | 2.74         |
| 1700  | 24.35 | 38.77     | 17.41             | 20.66              | 2.65      | 0.98    | 29.81       | 18.06            | 2.60         |
| 1800  | 24.21 | 38.34     | 17.68             | 20.60              | 2.57      | 0.97    | 29.85       | 18.15            | 2.67         |
| 1900  | 24.08 | 37.95     | 17.73             | 20.05              | 2.50      | 0.97    | 30.00       | 18.19            | 2.64         |
| 2000  | 23.91 | 37.35     | 17.59             | 19.62              | 2.39      | 0.96    | 29.79       | 18.14            | 2.64         |
| 2100  | 23.68 | 36.77     | 17.09             | 20.04              | 2.29      | 0.96    | 29.60       | 18.04            | 2.65         |
| 2200  | 23.47 | 36.56     | 16.95             | 20.05              | 2.29      | 0.96    | 29.63       | 18.02            | 2.71         |
| 2300  | 23.26 | 36.39     | 16.89             | 19.61              | 2.30      | 0.96    | 29.65       | 18.09            | 2.68         |
| 2400  | 22.93 | 35.91     | 16.18             | 20.40              | 2.26      | 0.97    | 29.70       | 18.15            | 2.72         |
| 2500  | 22.54 | 35.75     | 14.83             | 20.80              | 2.29      | 0.98    | 29.56       | 18.01            | 2.76         |
| 2600  | 22.39 | 35.80     | 15.14             | 19.53              | 2.34      | 0.98    | 29.48       | 17.87            | 2.79         |
| 2700  | 21.78 | 34.95     | 13.65             | 23.71              | 2.27      | 0.99    | 29.70       | 18.12            | 2.83         |
| 2800  | 21.50 | 34.78     | 13.39             | 23.06              | 2.29      | 1.00    | 29.62       | 18.03            | 2.79         |
| 2900  | 21.17 | 34.44     | 13.17             | 22.50              | 2.28      | 1.00    | 29.69       | 17.98            | 2.86         |
| 3000  | 20.49 | 35.11     | 11.99             | 27.99              | 2.61      | 1.03    | 29.71       | 17.80            | 2.87         |
| 3100  | 20.21 | 34.21     | 11.64             | 26.10              | 2.42      | 1.03    | 29.49       | 17.82            | 2.90         |
| 3200  | 19.72 | 34.09     | 10.81             | 27.58              | 2.49      | 1.05    | 29.53       | 17.85            | 2.88         |
| 3300  | 19.42 | 33.47     | 10.81             | 26.60              | 2.40      | 1.04    | 29.47       | 17.76            | 2.89         |
| 3400  | 18.72 | 34.30     | 10.23             | 28.85              | 2.80      | 1.07    | 29.74       | 17.81            | 2.98         |
| 3500  | 18.55 | 33.57     | 9.76              | 29.33              | 2.61      | 1.07    | 29.60       | 17.70            | 2.94         |
| 3600  | 18.11 | 33.15     | 9.48              | 28.90              | 2.60      | 1.08    | 29.35       | 17.63            | 2.96         |
| 3700  | 17.65 | 33.39     | 9.17              | 30.93              | 2.78      | 1.09    | 29.70       | 17.68            | 3.03         |
| 3800  | 17.09 | 33.95     | 8.82              | 40.18              | 3.10      | 1.11    | 29.57       | 17.62            | 3.17         |
| 3900  | 16.85 | 33.26     | 8.69              | 28.21              | 2.94      | 1.11    | 29.36       | 17.47            | 3.13         |
| 4000  | 16.49 | 33.29     | 8.28              | 25.64              | 3.02      | 1.12    | 28.99       | 17.20            | 3.18         |
| 4100  | 15.95 | 33.38     | 7.80              | 28.45              | 3.17      | 1.14    | 29.06       | 17.24            | 3.24         |
| 4200  | 15.73 | 32.77     | 7.77              | 24.92              | 3.04      | 1.14    | 29.22       | 17.12            | 3.30         |
| 4300  | 15.40 | 32.92     | 7.60              | 24.02              | 3.18      | 1.15    | 29.13       | 17.07            | 3.30         |
| 4400  | 15.01 | 32.93     | 7.14              | 22.90              | 3.24      | 1.17    | 28.62       | 16.76            | 3.40         |
| 4500  | 14.79 | 33.36     | 6.82              | 21.73              | 3.43      | 1.18    | 28.78       | 16.84            | 3.47         |
| 4600  | 14.49 | 32.31     | 6.74              | 19.00              | 3.13      | 1.17    | 28.66       | 16.93            | 3.51         |
| 4700  | 14.13 | 32.01     | 6.61              | 18.54              | 3.12      | 1.17    | 29.27       | 16.81            | 3.57         |
| 4800  | 13.83 | 32.52     | 6.11              | 19.34              | 3.32      | 1.21    | 28.75       | 16.58            | 3.65         |
| 4900  | 13.48 | 31.95     | 6.26              | 17.53              | 3.26      | 1.19    | 28.12       | 16.21            | 3.67         |
| 5000  | 13.31 | 32.09     | 5.83              | 16.97              | 3.27      | 1.21    | 27.95       | 15.96            | 3.76         |
| 5100  | 12.79 | 30.94     | 5.82              | 16.67              | 3.05      | 1.20    | 28.23       | 15.85            | 3.81         |
| 5200  | 12.46 | 31.75     | 5.63              | 16.56              | 3.40      | 1.22    | 28.24       | 15.80            | 3.90         |
| 5300  | 11.98 | 32.15     | 5.63              | 16.02              | 3.75      | 1.22    | 27.62       | 15.18            | 4.08         |
| 5400  | 11.65 | 32.08     | 5.54              | 15.26              | 3.81      | 1.21    | 26.97       | 14.84            | 4.14         |
| 5500  | 11.10 | 32.65     | 5.56              | 14.07              | 4.29      | 1.20    | 27.26       | 14.72            | 4.25         |

## 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 = 98.63 mA @ Temperature = +25degC

| FREQ  | Gain  | Isolation | Input Return Loss | Output Return Loss | Stability |         | IP-3 Output | 1dB Comp. Output | Noise Figure |
|-------|-------|-----------|-------------------|--------------------|-----------|---------|-------------|------------------|--------------|
| (MHz) | (dB)  | (dB)      | (dB)              | (dB)               | K         | Measure | (dBm)       | (dBm)            | (dB)         |
| 200   | 6.82  | 47.24     | 3.28              | 2.71               | 12.49     | 0.69    | 26.76       | 13.34            | 6.49         |
| 300   | 15.45 | 44.21     | 3.55              | 5.80               | 5.32      | 1.09    | 32.45       | 19.03            | 4.23         |
| 400   | 20.06 | 43.85     | 4.61              | 8.46               | 4.15      | 1.18    | 33.60       | 20.59            | 3.56         |
| 500   | 22.43 | 45.03     | 6.23              | 10.94              | 4.62      | 1.15    | 34.74       | 21.01            | 4.34         |
| 600   | 23.64 | 46.12     | 8.21              | 13.63              | 5.36      | 1.11    | 34.16       | 21.12            | 3.03         |
| 700   | 24.33 | 45.95     | 9.99              | 16.68              | 5.31      | 1.08    | 34.12       | 21.05            | 2.93         |
| 800   | 24.74 | 45.55     | 11.67             | 20.02              | 5.09      | 1.05    | 33.79       | 20.97            | 2.74         |
| 1000  | 25.20 | 44.13     | 14.24             | 28.89              | 4.30      | 1.02    | 33.35       | 20.89            | 2.64         |
| 1100  | 25.35 | 43.33     | 15.24             | 35.88              | 3.91      | 1.01    | 33.18       | 20.82            | 2.66         |
| 1200  | 25.45 | 42.79     | 16.07             | 33.78              | 3.66      | 1.00    | 32.91       | 20.62            | 2.64         |
| 1300  | 25.52 | 42.24     | 16.88             | 28.47              | 3.43      | 1.00    | 32.41       | 20.51            | 2.61         |
| 1400  | 25.55 | 41.51     | 17.59             | 25.50              | 3.16      | 0.99    | 32.43       | 20.41            | 2.59         |
| 1500  | 25.54 | 41.38     | 18.27             | 23.12              | 3.12      | 0.98    | 32.23       | 20.34            | 2.61         |
| 1600  | 25.61 | 40.52     | 17.76             | 21.44              | 2.81      | 0.98    | 31.82       | 20.22            | 2.78         |
| 1700  | 25.50 | 39.75     | 18.11             | 20.98              | 2.62      | 0.97    | 31.75       | 20.22            | 2.61         |
| 1800  | 25.36 | 39.26     | 18.41             | 20.46              | 2.52      | 0.96    | 31.32       | 19.90            | 2.71         |
| 1900  | 25.23 | 38.96     | 18.51             | 19.68              | 2.48      | 0.96    | 31.21       | 19.94            | 2.63         |
| 2000  | 25.05 | 38.69     | 18.31             | 18.84              | 2.44      | 0.96    | 30.99       | 19.95            | 2.62         |
| 2100  | 24.81 | 38.04     | 17.76             | 19.39              | 2.34      | 0.96    | 30.80       | 19.84            | 2.64         |
| 2200  | 24.57 | 37.63     | 17.67             | 18.80              | 2.30      | 0.95    | 30.60       | 19.46            | 2.75         |
| 2300  | 24.34 | 37.52     | 17.60             | 18.31              | 2.32      | 0.95    | 30.56       | 19.62            | 2.67         |
| 2400  | 23.97 | 37.06     | 16.81             | 18.97              | 2.29      | 0.96    | 30.56       | 19.56            | 2.76         |
| 2500  | 23.52 | 37.41     | 15.26             | 20.60              | 2.48      | 0.98    | 30.58       | 19.66            | 2.78         |
| 2600  | 23.34 | 37.29     | 15.71             | 18.61              | 2.50      | 0.97    | 30.42       | 19.65            | 2.82         |
| 2700  | 22.67 | 36.48     | 14.06             | 21.93              | 2.45      | 0.99    | 30.57       | 19.45            | 2.89         |
| 2800  | 22.35 | 36.18     | 13.81             | 20.79              | 2.45      | 0.99    | 30.38       | 19.50            | 2.79         |
| 2900  | 21.97 | 35.68     | 13.58             | 20.38              | 2.41      | 0.99    | 30.51       | 19.41            | 2.81         |
| 3000  | 21.22 | 36.57     | 12.24             | 24.97              | 2.84      | 1.02    | 30.36       | 19.40            | 2.83         |
| 3100  | 20.91 | 35.53     | 11.92             | 22.53              | 2.61      | 1.02    | 30.23       | 19.26            | 2.89         |
| 3200  | 20.37 | 35.46     | 11.01             | 23.28              | 2.71      | 1.04    | 30.07       | 19.10            | 2.88         |
| 3300  | 20.04 | 34.80     | 11.01             | 22.14              | 2.61      | 1.03    | 30.27       | 19.25            | 2.89         |
| 3400  | 19.27 | 35.85     | 10.31             | 27.89              | 3.14      | 1.07    | 30.55       | 19.17            | 2.94         |
| 3500  | 19.09 | 34.81     | 9.85              | 22.83              | 2.83      | 1.06    | 30.14       | 18.98            | 2.92         |
| 3600  | 18.61 | 34.46     | 9.54              | 23.19              | 2.85      | 1.07    | 29.97       | 18.91            | 2.96         |
| 3700  | 18.12 | 34.89     | 9.17              | 23.75              | 3.11      | 1.09    | 30.25       | 18.77            | 3.01         |
| 3800  | 17.53 | 35.66     | 8.75              | 25.28              | 3.56      | 1.11    | 30.29       | 18.77            | 3.15         |
| 3900  | 17.25 | 34.93     | 8.63              | 23.03              | 3.38      | 1.11    | 29.86       | 18.65            | 3.14         |
| 4000  | 16.86 | 34.64     | 8.17              | 21.90              | 3.36      | 1.12    | 29.43       | 18.47            | 3.16         |
| 4100  | 16.30 | 35.07     | 7.66              | 24.87              | 3.66      | 1.15    | 29.47       | 18.31            | 3.21         |
| 4200  | 16.06 | 34.26     | 7.63              | 23.03              | 3.44      | 1.14    | 29.71       | 18.06            | 3.28         |
| 4300  | 15.71 | 34.64     | 7.43              | 22.35              | 3.69      | 1.15    | 29.51       | 18.05            | 3.28         |
| 4400  | 15.29 | 34.68     | 6.95              | 22.55              | 3.78      | 1.18    | 29.21       | 17.85            | 3.36         |
| 4500  | 15.06 | 34.95     | 6.63              | 21.16              | 3.93      | 1.19    | 28.93       | 17.87            | 3.42         |
| 4600  | 14.73 | 34.01     | 6.56              | 19.35              | 3.65      | 1.18    | 28.77       | 17.93            | 3.47         |
| 4700  | 14.36 | 33.57     | 6.41              | 19.36              | 3.59      | 1.19    | 29.23       | 17.67            | 3.54         |
| 4800  | 14.04 | 34.44     | 5.92              | 20.02              | 3.95      | 1.23    | 29.07       | 17.56            | 3.61         |
| 4900  | 13.67 | 33.50     | 6.06              | 18.54              | 3.75      | 1.21    | 28.44       | 17.24            | 3.67         |
| 5000  | 13.49 | 34.01     | 5.65              | 17.87              | 3.92      | 1.23    | 28.25       | 17.07            | 3.72         |
| 5100  | 12.94 | 32.46     | 5.64              | 18.12              | 3.50      | 1.23    | 28.27       | 16.69            | 3.82         |
| 5200  | 12.58 | 33.53     | 5.46              | 17.74              | 4.03      | 1.24    | 28.44       | 16.62            | 3.91         |
| 5300  | 12.07 | 33.92     | 5.46              | 16.62              | 4.44      | 1.24    | 28.03       | 16.09            | 3.99         |
| 5400  | 11.73 | 34.12     | 5.37              | 15.71              | 4.66      | 1.24    | 27.48       | 15.79            | 4.12         |
| 5500  | 11.16 | 34.87     | 5.39              | 14.18              | 5.35      | 1.22    | 27.00       | 15.52            | 4.28         |

## 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 = 5V, Id = 94.34 mA @ Temperature = -45degC

| FREQ  | Gain  | Isolation | Input Return Loss | Output Return Loss | Stability |         | IP-3 Output | 1dB Comp. Output | Noise Figure |
|-------|-------|-----------|-------------------|--------------------|-----------|---------|-------------|------------------|--------------|
| (MHz) | (dB)  | (dB)      | (dB)              | (dB)               | K         | Measure | (dBm)       | (dBm)            | (dB)         |
| 200   | 6.94  | 47.78     | 3.14              | 2.70               | 12.72     | 0.70    | 27.12       | 12.82            | 5.79         |
| 300   | 15.73 | 43.54     | 3.43              | 5.89               | 4.67      | 1.10    | 33.23       | 18.71            | 3.63         |
| 400   | 20.37 | 43.54     | 4.45              | 8.45               | 3.76      | 1.19    | 34.50       | 20.24            | 3.02         |
| 500   | 22.79 | 45.79     | 5.99              | 11.00              | 4.76      | 1.17    | 35.35       | 20.69            | 3.73         |
| 600   | 23.99 | 45.95     | 7.98              | 13.59              | 4.99      | 1.12    | 34.97       | 20.79            | 2.54         |
| 700   | 24.72 | 45.94     | 9.76              | 16.63              | 5.04      | 1.08    | 34.63       | 20.74            | 2.49         |
| 800   | 25.16 | 45.63     | 11.49             | 20.20              | 4.88      | 1.05    | 34.18       | 20.66            | 2.25         |
| 1000  | 25.67 | 44.41     | 14.30             | 27.40              | 4.22      | 1.02    | 33.47       | 20.56            | 2.16         |
| 1100  | 25.84 | 43.79     | 15.33             | 30.08              | 3.90      | 1.01    | 33.23       | 20.50            | 2.14         |
| 1200  | 25.97 | 43.09     | 16.16             | 28.96              | 3.57      | 1.00    | 32.40       | 20.34            | 2.15         |
| 1300  | 26.05 | 42.43     | 16.89             | 26.44              | 3.30      | 0.99    | 32.02       | 20.20            | 2.16         |
| 1400  | 26.11 | 41.60     | 17.42             | 24.51              | 3.00      | 0.98    | 32.29       | 20.09            | 2.11         |
| 1500  | 26.12 | 41.33     | 18.10             | 22.35              | 2.91      | 0.98    | 31.70       | 20.07            | 2.12         |
| 1600  | 26.22 | 40.75     | 17.74             | 20.72              | 2.69      | 0.97    | 31.49       | 19.93            | 2.25         |
| 1700  | 26.14 | 40.10     | 18.09             | 20.17              | 2.54      | 0.96    | 31.23       | 19.95            | 2.11         |
| 1800  | 26.03 | 39.63     | 18.43             | 19.96              | 2.45      | 0.96    | 31.05       | 19.60            | 2.14         |
| 1900  | 25.92 | 39.34     | 18.62             | 19.54              | 2.40      | 0.96    | 31.23       | 19.61            | 2.13         |
| 2000  | 25.75 | 38.86     | 18.51             | 19.05              | 2.32      | 0.95    | 30.93       | 19.67            | 2.11         |
| 2100  | 25.53 | 38.27     | 18.00             | 19.35              | 2.23      | 0.95    | 30.92       | 19.57            | 2.10         |
| 2200  | 25.31 | 37.98     | 17.86             | 18.78              | 2.21      | 0.95    | 30.42       | 19.16            | 2.17         |
| 2300  | 25.08 | 37.80     | 17.74             | 18.27              | 2.21      | 0.95    | 30.41       | 19.33            | 2.16         |
| 2400  | 24.69 | 37.54     | 16.90             | 18.96              | 2.24      | 0.95    | 30.56       | 19.30            | 2.28         |
| 2500  | 24.27 | 37.43     | 15.49             | 20.03              | 2.30      | 0.97    | 30.30       | 19.46            | 2.20         |
| 2600  | 24.06 | 37.04     | 15.88             | 18.45              | 2.26      | 0.96    | 30.67       | 19.43            | 2.25         |
| 2700  | 23.39 | 36.68     | 14.11             | 21.90              | 2.32      | 0.98    | 30.88       | 19.19            | 2.28         |
| 2800  | 23.06 | 36.17     | 13.86             | 20.98              | 2.27      | 0.98    | 30.58       | 19.31            | 2.23         |
| 2900  | 22.67 | 35.92     | 13.53             | 20.71              | 2.30      | 0.98    | 30.61       | 19.30            | 2.27         |
| 3000  | 21.89 | 36.88     | 12.29             | 26.62              | 2.74      | 1.02    | 30.54       | 19.22            | 2.28         |
| 3100  | 21.59 | 36.00     | 11.97             | 23.58              | 2.56      | 1.02    | 30.34       | 19.04            | 2.29         |
| 3200  | 21.03 | 35.79     | 10.99             | 24.25              | 2.61      | 1.04    | 30.36       | 18.87            | 2.31         |
| 3300  | 20.67 | 35.10     | 11.09             | 23.59              | 2.53      | 1.03    | 30.51       | 19.12            | 2.36         |
| 3400  | 20.09 | 35.25     | 10.45             | 25.52              | 2.70      | 1.05    | 30.51       | 19.00            | 2.35         |
| 3500  | 19.64 | 35.28     | 9.82              | 24.87              | 2.80      | 1.07    | 30.27       | 18.79            | 2.34         |
| 3600  | 19.21 | 34.85     | 9.47              | 24.15              | 2.78      | 1.07    | 30.23       | 18.75            | 2.36         |
| 3700  | 18.68 | 34.95     | 9.16              | 25.06              | 2.95      | 1.09    | 30.45       | 18.57            | 2.43         |
| 3800  | 18.14 | 36.13     | 8.62              | 24.33              | 3.49      | 1.11    | 30.60       | 18.66            | 2.50         |
| 3900  | 17.81 | 35.38     | 8.49              | 23.89              | 3.32      | 1.11    | 29.45       | 18.49            | 2.51         |
| 4000  | 17.43 | 34.46     | 8.09              | 23.53              | 3.09      | 1.12    | 28.43       | 18.26            | 2.56         |
| 4100  | 16.84 | 35.39     | 7.49              | 25.85              | 3.55      | 1.16    | 29.08       | 18.14            | 2.59         |
| 4200  | 16.57 | 34.24     | 7.64              | 24.48              | 3.24      | 1.14    | 29.28       | 17.83            | 2.62         |
| 4300  | 16.22 | 35.03     | 7.35              | 23.41              | 3.62      | 1.16    | 28.63       | 17.80            | 2.65         |
| 4400  | 15.88 | 35.44     | 6.78              | 23.39              | 3.82      | 1.19    | 28.07       | 17.64            | 2.69         |
| 4500  | 15.56 | 35.83     | 6.55              | 21.19              | 4.07      | 1.19    | 28.09       | 17.61            | 2.79         |
| 4600  | 15.22 | 33.94     | 6.36              | 20.32              | 3.39      | 1.20    | 28.05       | 17.56            | 2.81         |
| 4700  | 14.90 | 33.79     | 6.30              | 20.09              | 3.44      | 1.20    | 28.77       | 17.36            | 2.88         |
| 4800  | 14.59 | 34.40     | 5.88              | 20.44              | 3.69      | 1.23    | 28.30       | 17.28            | 2.94         |
| 4900  | 14.22 | 34.14     | 5.88              | 19.30              | 3.74      | 1.22    | 27.60       | 16.92            | 2.94         |
| 5000  | 14.03 | 34.06     | 5.54              | 18.32              | 3.67      | 1.24    | 27.14       | 16.78            | 3.02         |
| 5100  | 13.49 | 32.71     | 5.38              | 19.44              | 3.32      | 1.25    | 27.80       | 16.37            | 3.11         |
| 5200  | 13.19 | 33.46     | 5.17              | 19.07              | 3.65      | 1.27    | 28.23       | 16.23            | 3.18         |
| 5300  | 12.76 | 34.11     | 5.21              | 16.93              | 4.11      | 1.26    | 27.54       | 15.80            | 3.27         |
| 5400  | 12.27 | 34.22     | 5.22              | 16.34              | 4.38      | 1.25    | 26.29       | 15.52            | 3.44         |
| 5500  | 11.79 | 34.25     | 5.06              | 15.53              | 4.56      | 1.26    | 27.01       | 14.98            | 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 = 3.9V, Id = 92.63 mA @ Temperature = -45degC

| FREQ  | Gain  | Isolation | Input Return Loss | Output Return Loss | Stability |         | IP-3 Output | 1dB Comp. Output | Noise Figure |
|-------|-------|-----------|-------------------|--------------------|-----------|---------|-------------|------------------|--------------|
| (MHz) | (dB)  | (dB)      | (dB)              | (dB)               | K         | Measure | (dBm)       | (dBm)            | (dB)         |
| 200   | 6.81  | 47.05     | 3.16              | 2.71               | 11.89     | 0.70    | 25.96       | 12.10            | 5.80         |
| 300   | 15.55 | 44.62     | 3.47              | 5.87               | 5.48      | 1.10    | 30.84       | 16.72            | 3.64         |
| 400   | 20.12 | 43.90     | 4.55              | 8.39               | 4.10      | 1.18    | 32.14       | 17.98            | 3.02         |
| 500   | 22.47 | 46.17     | 6.12              | 10.93              | 5.21      | 1.16    | 33.46       | 18.42            | 3.78         |
| 600   | 23.61 | 46.17     | 8.10              | 13.47              | 5.37      | 1.11    | 33.25       | 18.56            | 2.54         |
| 700   | 24.29 | 46.02     | 9.85              | 16.43              | 5.34      | 1.08    | 33.67       | 18.48            | 2.46         |
| 800   | 24.69 | 45.89     | 11.51             | 19.89              | 5.30      | 1.06    | 33.47       | 18.47            | 2.24         |
| 1000  | 25.14 | 43.96     | 14.11             | 27.82              | 4.24      | 1.02    | 33.67       | 18.79            | 2.17         |
| 1100  | 25.28 | 43.41     | 15.01             | 34.18              | 3.96      | 1.02    | 33.44       | 18.57            | 2.15         |
| 1200  | 25.37 | 42.69     | 15.76             | 36.73              | 3.64      | 1.01    | 32.98       | 18.31            | 2.16         |
| 1300  | 25.43 | 42.31     | 16.33             | 31.21              | 3.48      | 1.00    | 32.76       | 18.39            | 2.12         |
| 1400  | 25.46 | 41.25     | 16.75             | 27.76              | 3.10      | 0.99    | 33.19       | 18.53            | 2.10         |
| 1500  | 25.44 | 40.80     | 17.30             | 24.58              | 2.95      | 0.98    | 32.67       | 18.47            | 2.11         |
| 1600  | 25.51 | 40.38     | 16.95             | 22.36              | 2.79      | 0.98    | 32.93       | 18.44            | 2.26         |
| 1700  | 25.42 | 39.60     | 17.22             | 21.71              | 2.59      | 0.97    | 32.79       | 18.51            | 2.08         |
| 1800  | 25.30 | 39.04     | 17.53             | 21.41              | 2.48      | 0.97    | 32.27       | 18.57            | 2.13         |
| 1900  | 25.19 | 38.60     | 17.68             | 20.87              | 2.39      | 0.96    | 32.27       | 18.61            | 2.15         |
| 2000  | 25.03 | 38.32     | 17.59             | 20.19              | 2.36      | 0.96    | 32.12       | 18.60            | 2.12         |
| 2100  | 24.83 | 37.89     | 17.11             | 20.40              | 2.30      | 0.96    | 31.92       | 18.52            | 2.12         |
| 2200  | 24.63 | 37.48     | 16.95             | 19.69              | 2.24      | 0.96    | 31.76       | 18.45            | 2.13         |
| 2300  | 24.43 | 37.15     | 16.86             | 19.02              | 2.21      | 0.95    | 31.75       | 18.54            | 2.15         |
| 2400  | 24.07 | 36.97     | 16.13             | 19.73              | 2.24      | 0.96    | 31.79       | 18.60            | 2.23         |
| 2500  | 23.71 | 36.94     | 14.89             | 20.50              | 2.31      | 0.98    | 31.69       | 18.47            | 2.17         |
| 2600  | 23.52 | 36.41     | 15.20             | 18.94              | 2.23      | 0.96    | 31.51       | 18.35            | 2.23         |
| 2700  | 22.90 | 35.97     | 13.65             | 22.31              | 2.26      | 0.99    | 31.49       | 18.50            | 2.30         |
| 2800  | 22.61 | 35.79     | 13.39             | 21.34              | 2.27      | 0.99    | 31.50       | 18.52            | 2.29         |
| 2900  | 22.26 | 35.39     | 13.11             | 20.91              | 2.26      | 0.99    | 32.00       | 18.48            | 2.32         |
| 3000  | 21.52 | 36.21     | 12.07             | 26.89              | 2.64      | 1.02    | 31.90       | 18.28            | 2.31         |
| 3100  | 21.26 | 35.10     | 11.74             | 23.69              | 2.40      | 1.02    | 31.57       | 18.29            | 2.32         |
| 3200  | 20.76 | 35.09     | 10.83             | 24.03              | 2.49      | 1.04    | 31.53       | 18.27            | 2.31         |
| 3300  | 20.42 | 34.52     | 10.98             | 23.47              | 2.44      | 1.03    | 31.57       | 18.19            | 2.30         |
| 3400  | 19.87 | 34.59     | 10.40             | 25.20              | 2.57      | 1.05    | 31.86       | 18.16            | 2.33         |
| 3500  | 19.46 | 34.55     | 9.81              | 24.65              | 2.64      | 1.06    | 31.77       | 18.11            | 2.35         |
| 3600  | 19.05 | 34.06     | 9.50              | 23.97              | 2.60      | 1.07    | 31.69       | 18.01            | 2.38         |
| 3700  | 18.55 | 34.32     | 9.24              | 24.92              | 2.80      | 1.08    | 32.07       | 18.05            | 2.44         |
| 3800  | 18.02 | 35.45     | 8.77              | 24.50              | 3.30      | 1.11    | 31.92       | 18.00            | 2.54         |
| 3900  | 17.74 | 34.58     | 8.66              | 23.42              | 3.08      | 1.10    | 32.40       | 17.78            | 2.53         |
| 4000  | 17.38 | 33.83     | 8.26              | 22.73              | 2.92      | 1.11    | 32.26       | 17.53            | 2.55         |
| 4100  | 16.80 | 34.63     | 7.72              | 24.68              | 3.31      | 1.14    | 31.98       | 17.63            | 2.62         |
| 4200  | 16.56 | 33.67     | 7.88              | 23.35              | 3.08      | 1.13    | 32.48       | 17.43            | 2.66         |
| 4300  | 16.23 | 34.30     | 7.61              | 22.40              | 3.39      | 1.14    | 32.48       | 17.33            | 2.65         |
| 4400  | 15.91 | 34.35     | 7.03              | 22.22              | 3.42      | 1.17    | 32.44       | 17.00            | 2.76         |
| 4500  | 15.62 | 34.82     | 6.81              | 20.13              | 3.67      | 1.17    | 32.51       | 17.08            | 2.78         |
| 4600  | 15.31 | 33.04     | 6.64              | 19.06              | 3.09      | 1.17    | 32.12       | 17.18            | 2.81         |
| 4700  | 15.00 | 32.90     | 6.60              | 18.87              | 3.14      | 1.17    | 32.55       | 17.01            | 2.89         |
| 4800  | 14.71 | 33.59     | 6.18              | 19.15              | 3.41      | 1.20    | 32.30       | 16.73            | 2.95         |
| 4900  | 14.36 | 33.35     | 6.18              | 18.05              | 3.44      | 1.20    | 31.88       | 16.36            | 3.00         |
| 5000  | 14.19 | 33.31     | 5.81              | 17.18              | 3.39      | 1.21    | 32.11       | 16.15            | 3.04         |
| 5100  | 13.70 | 32.14     | 5.67              | 17.94              | 3.12      | 1.22    | 31.92       | 16.01            | 3.13         |
| 5200  | 13.38 | 32.50     | 5.50              | 17.68              | 3.31      | 1.23    | 31.47       | 15.78            | 3.17         |
| 5300  | 12.97 | 33.34     | 5.47              | 15.87              | 3.76      | 1.23    | 31.45       | 15.22            | 3.28         |
| 5400  | 12.53 | 33.39     | 5.43              | 15.38              | 3.94      | 1.23    | 31.44       | 14.82            | 3.39         |
| 5500  | 12.03 | 33.18     | 5.38              | 14.74              | 4.05      | 1.22    | 29.52       | 14.52            | 3.48         |

## 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 = 94.68 mA @ Temperature = -45degC

| FREQ  | Gain  | Isolation | Input Return Loss | Output Return Loss | Stability |         | IP-3 Output | 1dB Comp. Output | Noise Figure |
|-------|-------|-----------|-------------------|--------------------|-----------|---------|-------------|------------------|--------------|
| (MHz) | (dB)  | (dB)      | (dB)              | (dB)               | K         | Measure | (dBm)       | (dBm)            | (dB)         |
| 200   | 6.95  | 47.34     | 3.14              | 2.70               | 12.03     | 0.70    | 27.22       | 12.85            | 5.76         |
| 300   | 15.76 | 43.68     | 3.42              | 5.89               | 4.72      | 1.11    | 32.95       | 18.97            | 3.66         |
| 400   | 20.40 | 43.67     | 4.44              | 8.45               | 3.80      | 1.19    | 34.94       | 20.59            | 3.00         |
| 500   | 22.83 | 46.00     | 5.96              | 11.00              | 4.84      | 1.17    | 35.43       | 21.03            | 3.74         |
| 600   | 24.04 | 45.81     | 7.96              | 13.60              | 4.88      | 1.12    | 35.49       | 21.13            | 2.55         |
| 700   | 24.77 | 46.03     | 9.76              | 16.66              | 5.06      | 1.08    | 35.32       | 21.08            | 2.47         |
| 800   | 25.22 | 45.74     | 11.48             | 20.22              | 4.91      | 1.06    | 34.39       | 21.00            | 2.28         |
| 1000  | 25.74 | 44.62     | 14.32             | 27.06              | 4.28      | 1.02    | 33.80       | 20.80            | 2.18         |
| 1100  | 25.92 | 43.67     | 15.35             | 29.46              | 3.81      | 1.01    | 33.72       | 20.79            | 2.17         |
| 1200  | 26.05 | 43.26     | 16.23             | 28.09              | 3.61      | 1.00    | 32.86       | 20.62            | 2.16         |
| 1300  | 26.14 | 42.43     | 16.96             | 25.94              | 3.27      | 0.99    | 32.50       | 20.43            | 2.14         |
| 1400  | 26.20 | 41.86     | 17.50             | 24.12              | 3.06      | 0.98    | 32.52       | 20.27            | 2.10         |
| 1500  | 26.22 | 41.51     | 18.23             | 22.02              | 2.94      | 0.98    | 32.31       | 20.24            | 2.13         |
| 1600  | 26.32 | 41.00     | 17.87             | 20.49              | 2.74      | 0.97    | 31.93       | 20.09            | 2.19         |
| 1700  | 26.24 | 40.37     | 18.21             | 19.95              | 2.58      | 0.96    | 31.86       | 20.10            | 2.05         |
| 1800  | 26.12 | 39.51     | 18.58             | 19.76              | 2.39      | 0.95    | 31.39       | 19.66            | 2.12         |
| 1900  | 26.02 | 39.18     | 18.79             | 19.36              | 2.34      | 0.95    | 31.47       | 19.67            | 2.15         |
| 2000  | 25.84 | 38.81     | 18.64             | 18.88              | 2.28      | 0.95    | 31.44       | 19.74            | 2.12         |
| 2100  | 25.62 | 38.44     | 18.13             | 19.22              | 2.24      | 0.95    | 31.20       | 19.63            | 2.09         |
| 2200  | 25.40 | 38.11     | 17.99             | 18.66              | 2.22      | 0.95    | 30.79       | 19.22            | 2.17         |
| 2300  | 25.16 | 37.90     | 17.84             | 18.15              | 2.22      | 0.95    | 30.84       | 19.39            | 2.15         |
| 2400  | 24.77 | 37.71     | 17.01             | 18.90              | 2.26      | 0.95    | 31.10       | 19.35            | 2.15         |
| 2500  | 24.34 | 37.99     | 15.57             | 19.95              | 2.42      | 0.97    | 30.91       | 19.52            | 2.18         |
| 2600  | 24.13 | 37.22     | 16.02             | 18.36              | 2.28      | 0.96    | 31.29       | 19.51            | 2.24         |
| 2700  | 23.44 | 36.79     | 14.18             | 21.85              | 2.33      | 0.98    | 31.19       | 19.24            | 2.30         |
| 2800  | 23.10 | 36.55     | 13.91             | 20.94              | 2.35      | 0.98    | 31.06       | 19.38            | 2.25         |
| 2900  | 22.70 | 36.01     | 13.60             | 20.70              | 2.31      | 0.98    | 31.20       | 19.35            | 2.26         |
| 3000  | 21.92 | 37.05     | 12.30             | 26.65              | 2.78      | 1.02    | 31.09       | 19.31            | 2.35         |
| 3100  | 21.61 | 36.07     | 11.99             | 23.57              | 2.57      | 1.02    | 30.88       | 19.11            | 2.33         |
| 3200  | 21.05 | 35.99     | 11.01             | 24.23              | 2.67      | 1.04    | 30.66       | 18.94            | 2.29         |
| 3300  | 20.69 | 35.17     | 11.09             | 23.59              | 2.54      | 1.03    | 31.04       | 19.23            | 2.30         |
| 3400  | 20.09 | 35.53     | 10.46             | 25.56              | 2.78      | 1.05    | 31.12       | 19.08            | 2.34         |
| 3500  | 19.65 | 35.46     | 9.80              | 24.77              | 2.85      | 1.07    | 30.82       | 18.87            | 2.34         |
| 3600  | 19.21 | 35.14     | 9.45              | 24.20              | 2.86      | 1.08    | 30.71       | 18.82            | 2.37         |
| 3700  | 18.67 | 34.94     | 9.12              | 25.02              | 2.94      | 1.09    | 30.88       | 18.65            | 2.40         |
| 3800  | 18.13 | 36.27     | 8.58              | 24.26              | 3.54      | 1.12    | 31.18       | 18.75            | 2.52         |
| 3900  | 17.80 | 35.52     | 8.45              | 23.80              | 3.37      | 1.11    | 30.20       | 18.59            | 2.53         |
| 4000  | 17.41 | 34.67     | 8.06              | 23.54              | 3.16      | 1.13    | 29.24       | 18.36            | 2.55         |
| 4100  | 16.82 | 35.36     | 7.46              | 25.75              | 3.54      | 1.16    | 29.69       | 18.22            | 2.64         |
| 4200  | 16.55 | 34.46     | 7.57              | 24.56              | 3.32      | 1.15    | 29.91       | 17.91            | 2.63         |
| 4300  | 16.20 | 35.12     | 7.29              | 23.50              | 3.66      | 1.16    | 29.36       | 17.90            | 2.64         |
| 4400  | 15.84 | 35.22     | 6.72              | 23.49              | 3.73      | 1.19    | 28.74       | 17.69            | 2.73         |
| 4500  | 15.53 | 35.98     | 6.50              | 21.27              | 4.14      | 1.20    | 28.75       | 17.67            | 2.76         |
| 4600  | 15.19 | 34.03     | 6.31              | 20.43              | 3.43      | 1.20    | 28.71       | 17.69            | 2.79         |
| 4700  | 14.86 | 33.91     | 6.26              | 20.21              | 3.49      | 1.20    | 29.45       | 17.45            | 2.88         |
| 4800  | 14.55 | 34.59     | 5.83              | 20.62              | 3.77      | 1.23    | 29.17       | 17.41            | 2.93         |
| 4900  | 14.17 | 34.27     | 5.84              | 19.46              | 3.80      | 1.23    | 28.39       | 17.03            | 2.96         |
| 5000  | 13.99 | 34.30     | 5.50              | 18.47              | 3.78      | 1.24    | 28.02       | 16.89            | 3.03         |
| 5100  | 13.45 | 32.87     | 5.33              | 19.51              | 3.38      | 1.26    | 28.56       | 16.47            | 3.10         |
| 5200  | 13.13 | 33.45     | 5.13              | 19.29              | 3.66      | 1.27    | 29.01       | 16.35            | 3.19         |
| 5300  | 12.70 | 34.25     | 5.17              | 17.03              | 4.18      | 1.26    | 28.48       | 15.95            | 3.25         |
| 5400  | 12.21 | 34.40     | 5.18              | 16.47              | 4.48      | 1.26    | 27.17       | 15.68            | 3.40         |
| 5500  | 11.73 | 34.40     | 5.00              | 15.60              | 4.63      | 1.26    | 27.78       | 15.14            | 3.49         |

## 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 = 5V, Id = 100.28 mA @ Temperature = +85degC

| FREQ  | Gain  | Isolation | Input Return Loss | Output Return Loss | Stability |         | IP-3 Output | 1dB Comp. Output | Noise Figure |
|-------|-------|-----------|-------------------|--------------------|-----------|---------|-------------|------------------|--------------|
| (MHz) | (dB)  | (dB)      | (dB)              | (dB)               | K         | Measure | (dBm)       | (dBm)            | (dB)         |
| 200   | 6.57  | 47.58     | 3.44              | 2.74               | 13.95     | 0.69    | 26.40       | 13.17            | 7.06         |
| 300   | 15.03 | 44.10     | 3.73              | 5.76               | 5.70      | 1.07    | 31.84       | 18.45            | 4.79         |
| 400   | 19.58 | 44.06     | 4.79              | 8.46               | 4.62      | 1.16    | 33.41       | 19.96            | 4.02         |
| 500   | 21.97 | 45.94     | 6.46              | 11.20              | 5.55      | 1.15    | 33.88       | 20.43            | 4.19         |
| 600   | 23.16 | 45.67     | 8.42              | 13.94              | 5.44      | 1.10    | 33.85       | 20.55            | 3.45         |
| 700   | 23.83 | 46.12     | 10.24             | 17.05              | 5.78      | 1.07    | 33.58       | 20.46            | 3.32         |
| 800   | 24.22 | 45.27     | 11.96             | 20.75              | 5.26      | 1.05    | 33.36       | 20.41            | 3.17         |
| 1000  | 24.67 | 44.01     | 14.78             | 31.61              | 4.53      | 1.02    | 32.99       | 20.51            | 3.06         |
| 1100  | 24.78 | 43.44     | 15.92             | 37.36              | 4.24      | 1.01    | 33.35       | 20.37            | 3.05         |
| 1200  | 24.86 | 42.63     | 16.91             | 30.78              | 3.85      | 1.00    | 32.84       | 20.15            | 3.05         |
| 1300  | 24.92 | 42.01     | 17.86             | 26.14              | 3.59      | 0.99    | 32.72       | 20.10            | 3.04         |
| 1400  | 24.91 | 41.55     | 18.84             | 24.26              | 3.42      | 0.99    | 32.21       | 20.10            | 3.01         |
| 1500  | 24.88 | 40.83     | 19.73             | 22.38              | 3.17      | 0.98    | 32.23       | 20.05            | 3.02         |
| 1600  | 24.89 | 40.38     | 19.36             | 21.15              | 3.01      | 0.97    | 32.08       | 19.95            | 3.19         |
| 1700  | 24.78 | 39.70     | 19.60             | 20.59              | 2.83      | 0.97    | 31.97       | 19.98            | 3.02         |
| 1800  | 24.63 | 38.98     | 19.84             | 20.28              | 2.66      | 0.96    | 31.40       | 19.78            | 3.05         |
| 1900  | 24.47 | 38.92     | 20.02             | 19.22              | 2.68      | 0.96    | 31.52       | 19.80            | 3.07         |
| 2000  | 24.26 | 38.43     | 19.80             | 18.63              | 2.59      | 0.96    | 31.57       | 19.79            | 3.06         |
| 2100  | 24.00 | 38.09     | 19.33             | 19.22              | 2.57      | 0.96    | 31.42       | 19.71            | 3.04         |
| 2200  | 23.75 | 37.61     | 18.97             | 18.82              | 2.51      | 0.96    | 30.92       | 19.43            | 3.10         |
| 2300  | 23.47 | 37.63     | 18.66             | 18.67              | 2.59      | 0.96    | 30.83       | 19.52            | 3.09         |
| 2400  | 23.12 | 37.03     | 17.91             | 18.92              | 2.51      | 0.96    | 31.01       | 19.47            | 3.49         |
| 2500  | 22.75 | 36.96     | 16.88             | 19.30              | 2.58      | 0.97    | 31.09       | 19.51            | 3.14         |
| 2600  | 22.39 | 36.51     | 16.35             | 19.31              | 2.55      | 0.97    | 30.83       | 19.42            | 3.23         |
| 2700  | 21.90 | 36.24     | 15.23             | 20.48              | 2.61      | 0.98    | 30.55       | 19.30            | 3.30         |
| 2800  | 21.54 | 35.91     | 14.74             | 19.98              | 2.61      | 0.98    | 30.50       | 19.33            | 3.23         |
| 2900  | 21.15 | 35.64     | 14.28             | 19.80              | 2.63      | 0.99    | 30.82       | 19.24            | 3.29         |
| 3000  | 20.60 | 36.18     | 13.35             | 21.30              | 2.94      | 1.01    | 30.79       | 19.16            | 3.33         |
| 3100  | 20.15 | 35.36     | 12.68             | 21.69              | 2.81      | 1.01    | 30.46       | 19.07            | 3.38         |
| 3200  | 19.65 | 35.32     | 11.79             | 21.53              | 2.91      | 1.03    | 30.23       | 18.92            | 3.36         |
| 3300  | 19.25 | 35.03     | 11.46             | 21.14              | 2.94      | 1.03    | 30.53       | 18.99            | 3.37         |
| 3400  | 18.81 | 34.28     | 11.50             | 20.85              | 2.84      | 1.03    | 30.60       | 18.86            | 3.38         |
| 3500  | 18.32 | 34.92     | 10.39             | 21.67              | 3.15      | 1.06    | 30.46       | 18.76            | 3.44         |
| 3600  | 17.87 | 34.79     | 9.77              | 21.86              | 3.21      | 1.07    | 30.19       | 18.67            | 3.46         |
| 3700  | 17.43 | 34.12     | 9.60              | 22.23              | 3.12      | 1.07    | 30.42       | 18.57            | 3.53         |
| 3800  | 16.90 | 33.27     | 9.81              | 23.44              | 3.03      | 1.07    | 30.35       | 18.48            | 3.64         |
| 3900  | 16.62 | 34.41     | 8.99              | 21.82              | 3.46      | 1.09    | 30.21       | 18.38            | 3.65         |
| 4000  | 16.20 | 34.37     | 8.79              | 21.37              | 3.58      | 1.10    | 30.23       | 18.18            | 3.72         |
| 4100  | 15.60 | 33.83     | 8.50              | 22.78              | 3.57      | 1.11    | 30.08       | 18.05            | 3.80         |
| 4200  | 15.32 | 34.09     | 7.85              | 22.03              | 3.69      | 1.14    | 30.10       | 17.89            | 3.83         |
| 4300  | 14.97 | 34.50     | 7.52              | 21.93              | 3.96      | 1.15    | 29.92       | 17.80            | 3.88         |
| 4400  | 14.57 | 34.36     | 7.16              | 22.23              | 4.00      | 1.17    | 29.82       | 17.62            | 3.97         |
| 4500  | 14.23 | 34.00     | 6.54              | 21.86              | 3.86      | 1.20    | 29.69       | 17.63            | 4.05         |
| 4600  | 14.13 | 35.06     | 6.21              | 20.13              | 4.28      | 1.21    | 29.42       | 17.63            | 4.10         |
| 4700  | 13.59 | 32.71     | 6.32              | 20.10              | 3.53      | 1.20    | 29.69       | 17.48            | 4.20         |
| 4800  | 13.49 | 34.51     | 5.55              | 20.11              | 4.11      | 1.25    | 29.57       | 17.29            | 4.25         |
| 4900  | 13.11 | 34.67     | 5.93              | 18.17              | 4.49      | 1.22    | 29.00       | 16.92            | 4.25         |
| 5000  | 12.61 | 31.08     | 5.75              | 17.61              | 3.15      | 1.21    | 28.89       | 16.69            | 4.46         |
| 5100  | 12.31 | 32.91     | 5.71              | 17.10              | 3.96      | 1.22    | 28.72       | 16.46            | 4.48         |
| 5200  | 11.84 | 32.53     | 5.39              | 17.13              | 3.89      | 1.24    | 28.49       | 16.28            | 4.60         |
| 5300  | 11.36 | 33.55     | 5.34              | 16.75              | 4.55      | 1.25    | 28.29       | 15.74            | 4.69         |
| 5400  | 10.89 | 33.55     | 5.45              | 15.38              | 4.81      | 1.23    | 27.74       | 15.34            | 4.91         |
| 5500  | 10.46 | 33.88     | 5.20              | 13.19              | 4.99      | 1.23    | 27.44       | 15.40            | 5.16         |

## 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 = 3.9V, Id = 97.36 mA @ Temperature = +85degC

| FREQ  | Gain  | Isolation | Input Return Loss | Output Return Loss | Stability |         | IP-3 Output | 1dB Comp. Output | Noise Figure |
|-------|-------|-----------|-------------------|--------------------|-----------|---------|-------------|------------------|--------------|
| (MHz) | (dB)  | (dB)      | (dB)              | (dB)               | K         | Measure | (dBm)       | (dBm)            | (dB)         |
| 200   | 6.39  | 48.38     | 3.45              | 2.77               | 15.80     | 0.69    | 24.36       | 11.44            | 7.07         |
| 300   | 14.72 | 44.42     | 3.76              | 5.70               | 6.15      | 1.06    | 28.64       | 15.87            | 4.84         |
| 400   | 19.16 | 44.45     | 4.88              | 8.25               | 5.09      | 1.15    | 29.67       | 17.21            | 4.05         |
| 500   | 21.44 | 45.94     | 6.60              | 10.79              | 5.91      | 1.13    | 30.23       | 17.68            | 4.24         |
| 600   | 22.54 | 45.73     | 8.59              | 13.18              | 5.87      | 1.09    | 30.09       | 17.84            | 3.46         |
| 700   | 23.14 | 45.85     | 10.39             | 15.59              | 6.02      | 1.06    | 30.06       | 17.75            | 3.33         |
| 800   | 23.48 | 44.92     | 12.05             | 17.97              | 5.45      | 1.04    | 30.03       | 17.75            | 3.16         |
| 1000  | 23.84 | 42.90     | 14.68             | 21.94              | 4.35      | 1.02    | 30.31       | 18.12            | 3.06         |
| 1100  | 23.92 | 42.65     | 15.71             | 23.05              | 4.23      | 1.01    | 30.21       | 17.90            | 3.07         |
| 1200  | 23.96 | 42.00     | 16.62             | 23.46              | 3.94      | 1.00    | 29.68       | 17.61            | 3.04         |
| 1300  | 23.99 | 40.96     | 17.41             | 22.99              | 3.51      | 0.99    | 29.78       | 17.71            | 3.03         |
| 1400  | 23.95 | 40.30     | 18.29             | 22.40              | 3.29      | 0.99    | 30.02       | 17.85            | 3.02         |
| 1500  | 23.89 | 40.13     | 19.11             | 22.01              | 3.26      | 0.98    | 29.66       | 17.77            | 3.02         |
| 1600  | 23.89 | 39.39     | 18.79             | 20.55              | 2.99      | 0.98    | 29.68       | 17.73            | 3.16         |
| 1700  | 23.76 | 38.48     | 19.05             | 20.49              | 2.75      | 0.97    | 29.67       | 17.80            | 3.05         |
| 1800  | 23.61 | 37.81     | 19.29             | 20.45              | 2.60      | 0.97    | 29.50       | 17.89            | 3.06         |
| 1900  | 23.45 | 37.78     | 19.53             | 19.77              | 2.64      | 0.96    | 29.61       | 17.91            | 3.07         |
| 2000  | 23.25 | 37.28     | 19.37             | 19.16              | 2.55      | 0.96    | 29.47       | 17.89            | 3.07         |
| 2100  | 23.00 | 36.76     | 18.95             | 19.68              | 2.48      | 0.96    | 29.35       | 17.79            | 3.09         |
| 2200  | 22.78 | 36.43     | 18.59             | 19.58              | 2.45      | 0.96    | 29.29       | 17.80            | 3.20         |
| 2300  | 22.52 | 36.30     | 18.33             | 19.52              | 2.48      | 0.96    | 29.13       | 17.84            | 3.14         |
| 2400  | 22.21 | 35.84     | 17.65             | 19.93              | 2.43      | 0.97    | 29.44       | 17.92            | 3.27         |
| 2500  | 21.88 | 35.84     | 16.66             | 19.64              | 2.51      | 0.97    | 29.23       | 17.77            | 3.24         |
| 2600  | 21.55 | 35.34     | 16.15             | 20.32              | 2.46      | 0.98    | 28.95       | 17.60            | 3.26         |
| 2700  | 21.10 | 34.95     | 15.08             | 21.85              | 2.47      | 0.99    | 29.17       | 17.84            | 3.33         |
| 2800  | 20.77 | 34.65     | 14.59             | 21.85              | 2.46      | 0.99    | 29.00       | 17.74            | 3.26         |
| 2900  | 20.43 | 34.45     | 14.14             | 21.68              | 2.49      | 0.99    | 29.28       | 17.74            | 3.30         |
| 3000  | 19.93 | 34.77     | 13.29             | 22.50              | 2.70      | 1.01    | 29.07       | 17.56            | 3.33         |
| 3100  | 19.51 | 34.18     | 12.66             | 24.15              | 2.64      | 1.02    | 28.94       | 17.57            | 3.39         |
| 3200  | 19.05 | 33.91     | 11.77             | 25.29              | 2.66      | 1.03    | 28.83       | 17.62            | 3.37         |
| 3300  | 18.67 | 33.58     | 11.48             | 26.07              | 2.67      | 1.04    | 28.85       | 17.55            | 3.39         |
| 3400  | 18.26 | 33.11     | 11.54             | 24.75              | 2.66      | 1.03    | 28.94       | 17.49            | 3.39         |
| 3500  | 17.80 | 33.49     | 10.46             | 26.94              | 2.85      | 1.06    | 28.74       | 17.44            | 3.43         |
| 3600  | 17.39 | 33.35     | 9.88              | 27.12              | 2.90      | 1.07    | 28.59       | 17.39            | 3.48         |
| 3700  | 16.97 | 32.87     | 9.74              | 26.50              | 2.87      | 1.08    | 28.86       | 17.41            | 3.58         |
| 3800  | 16.48 | 32.10     | 9.98              | 24.68              | 2.80      | 1.07    | 28.86       | 17.31            | 3.68         |
| 3900  | 16.20 | 33.10     | 9.16              | 26.69              | 3.15      | 1.10    | 28.68       | 17.21            | 3.69         |
| 4000  | 15.80 | 33.02     | 8.98              | 25.88              | 3.24      | 1.10    | 28.45       | 16.89            | 3.74         |
| 4100  | 15.24 | 32.56     | 8.70              | 25.46              | 3.25      | 1.11    | 28.44       | 16.98            | 3.81         |
| 4200  | 14.96 | 32.84     | 8.07              | 24.22              | 3.37      | 1.13    | 28.62       | 16.91            | 3.86         |
| 4300  | 14.63 | 33.21     | 7.74              | 24.39              | 3.60      | 1.15    | 28.54       | 16.79            | 3.89         |
| 4400  | 14.25 | 32.86     | 7.37              | 23.15              | 3.55      | 1.16    | 28.22       | 16.52            | 3.95         |
| 4500  | 13.93 | 32.68     | 6.77              | 21.39              | 3.48      | 1.18    | 28.29       | 16.57            | 4.07         |
| 4600  | 13.84 | 33.26     | 6.41              | 20.31              | 3.66      | 1.20    | 28.03       | 16.61            | 4.09         |
| 4700  | 13.32 | 31.43     | 6.54              | 18.87              | 3.19      | 1.18    | 28.46       | 16.48            | 4.19         |
| 4800  | 13.21 | 32.73     | 5.75              | 19.87              | 3.54      | 1.23    | 28.20       | 16.24            | 4.26         |
| 4900  | 12.87 | 32.85     | 6.12              | 17.59              | 3.81      | 1.20    | 27.39       | 15.85            | 4.25         |
| 5000  | 12.38 | 30.12     | 5.98              | 16.05              | 2.94      | 1.19    | 27.14       | 15.64            | 4.46         |
| 5100  | 12.09 | 31.51     | 5.91              | 16.28              | 3.52      | 1.20    | 27.47       | 15.53            | 4.46         |
| 5200  | 11.65 | 31.03     | 5.57              | 16.24              | 3.42      | 1.22    | 27.44       | 15.42            | 4.60         |
| 5300  | 11.20 | 31.99     | 5.51              | 16.48              | 3.97      | 1.23    | 26.98       | 14.82            | 4.72         |
| 5400  | 10.74 | 31.91     | 5.62              | 15.58              | 4.16      | 1.22    | 26.23       | 14.42            | 4.88         |
| 5500  | 10.30 | 32.53     | 5.37              | 13.90              | 4.50      | 1.22    | 26.38       | 14.56            | 5.09         |

## 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 = 100.61 mA @ Temperature = +85degC

| FREQ  | Gain  | Isolation | Input Return Loss | Output Return Loss | Stability |         | IP-3 Output | 1dB Comp. Output | Noise Figure |
|-------|-------|-----------|-------------------|--------------------|-----------|---------|-------------|------------------|--------------|
| (MHz) | (dB)  | (dB)      | (dB)              | (dB)               | K         | Measure | (dBm)       | (dBm)            | (dB)         |
| 200   | 6.59  | 47.88     | 3.44              | 2.74               | 14.43     | 0.69    | 26.64       | 13.26            | 7.05         |
| 300   | 15.06 | 43.65     | 3.73              | 5.77               | 5.38      | 1.07    | 32.18       | 18.84            | 4.85         |
| 400   | 19.62 | 43.91     | 4.79              | 8.50               | 4.52      | 1.17    | 33.75       | 20.41            | 4.04         |
| 500   | 22.02 | 45.40     | 6.44              | 11.24              | 5.18      | 1.15    | 34.38       | 20.90            | 4.17         |
| 600   | 23.23 | 46.13     | 8.41              | 14.00              | 5.70      | 1.10    | 34.23       | 20.99            | 3.43         |
| 700   | 23.90 | 45.76     | 10.23             | 17.14              | 5.50      | 1.07    | 34.38       | 20.92            | 3.32         |
| 800   | 24.31 | 45.05     | 11.97             | 20.86              | 5.08      | 1.05    | 33.72       | 20.85            | 3.17         |
| 1000  | 24.76 | 44.38     | 14.81             | 30.31              | 4.68      | 1.02    | 33.57       | 20.86            | 3.04         |
| 1100  | 24.89 | 43.51     | 15.99             | 32.19              | 4.22      | 1.01    | 33.28       | 20.78            | 3.04         |
| 1200  | 24.97 | 43.03     | 17.03             | 28.22              | 3.98      | 1.00    | 33.13       | 20.56            | 3.04         |
| 1300  | 25.03 | 42.44     | 17.99             | 24.88              | 3.71      | 0.99    | 32.89       | 20.47            | 3.07         |
| 1400  | 25.03 | 41.72     | 18.99             | 23.29              | 3.44      | 0.98    | 32.53       | 20.41            | 3.02         |
| 1500  | 25.00 | 41.28     | 19.97             | 21.62              | 3.29      | 0.98    | 32.44       | 20.37            | 3.01         |
| 1600  | 25.02 | 40.33     | 19.53             | 20.60              | 2.95      | 0.97    | 32.14       | 20.25            | 3.18         |
| 1700  | 24.90 | 40.13     | 19.83             | 20.06              | 2.92      | 0.97    | 32.15       | 20.28            | 3.01         |
| 1800  | 24.75 | 39.35     | 20.04             | 19.73              | 2.73      | 0.96    | 31.81       | 19.99            | 3.06         |
| 1900  | 24.59 | 39.27     | 20.28             | 18.76              | 2.75      | 0.96    | 31.56       | 20.03            | 3.06         |
| 2000  | 24.39 | 38.77     | 20.02             | 18.21              | 2.65      | 0.96    | 31.55       | 20.02            | 3.06         |
| 2100  | 24.11 | 38.23     | 19.57             | 18.80              | 2.58      | 0.96    | 31.53       | 19.92            | 3.06         |
| 2200  | 23.86 | 37.93     | 19.16             | 18.41              | 2.56      | 0.96    | 31.02       | 19.59            | 3.11         |
| 2300  | 23.58 | 37.60     | 18.91             | 18.26              | 2.55      | 0.96    | 30.84       | 19.71            | 3.11         |
| 2400  | 23.23 | 37.22     | 18.13             | 18.50              | 2.53      | 0.96    | 30.90       | 19.63            | 3.10         |
| 2500  | 22.85 | 37.22     | 17.02             | 18.98              | 2.63      | 0.97    | 31.17       | 19.73            | 3.17         |
| 2600  | 22.48 | 36.89     | 16.51             | 18.95              | 2.63      | 0.97    | 31.05       | 19.65            | 3.20         |
| 2700  | 21.98 | 36.43     | 15.35             | 20.01              | 2.64      | 0.98    | 30.88       | 19.47            | 3.26         |
| 2800  | 21.61 | 36.02     | 14.85             | 19.53              | 2.62      | 0.98    | 30.65       | 19.50            | 3.24         |
| 2900  | 21.22 | 35.68     | 14.39             | 19.34              | 2.62      | 0.98    | 30.83       | 19.41            | 3.28         |
| 3000  | 20.66 | 36.22     | 13.42             | 20.87              | 2.93      | 1.01    | 30.88       | 19.38            | 3.33         |
| 3100  | 20.20 | 35.81     | 12.76             | 21.13              | 2.93      | 1.01    | 30.58       | 19.22            | 3.39         |
| 3200  | 19.70 | 35.64     | 11.83             | 20.92              | 3.00      | 1.03    | 30.39       | 19.10            | 3.34         |
| 3300  | 19.29 | 35.15     | 11.51             | 20.53              | 2.96      | 1.03    | 30.72       | 19.17            | 3.39         |
| 3400  | 18.84 | 34.47     | 11.54             | 20.28              | 2.89      | 1.03    | 30.66       | 19.02            | 3.41         |
| 3500  | 18.35 | 34.99     | 10.40             | 21.03              | 3.16      | 1.05    | 30.50       | 18.94            | 3.44         |
| 3600  | 17.90 | 34.84     | 9.78              | 21.16              | 3.22      | 1.07    | 30.32       | 18.83            | 3.47         |
| 3700  | 17.45 | 34.32     | 9.59              | 21.61              | 3.18      | 1.07    | 30.43       | 18.70            | 3.55         |
| 3800  | 16.91 | 33.34     | 9.80              | 23.02              | 3.05      | 1.07    | 30.48       | 18.65            | 3.65         |
| 3900  | 16.62 | 34.77     | 8.98              | 21.22              | 3.59      | 1.10    | 30.54       | 18.54            | 3.70         |
| 4000  | 16.20 | 34.45     | 8.76              | 20.79              | 3.61      | 1.10    | 30.22       | 18.35            | 3.70         |
| 4100  | 15.60 | 33.96     | 8.47              | 22.23              | 3.62      | 1.11    | 30.03       | 18.15            | 3.80         |
| 4200  | 15.32 | 34.33     | 7.82              | 21.61              | 3.79      | 1.14    | 30.08       | 18.02            | 3.81         |
| 4300  | 14.97 | 34.86     | 7.47              | 21.39              | 4.11      | 1.15    | 30.23       | 17.91            | 3.89         |
| 4400  | 14.56 | 34.40     | 7.12              | 21.82              | 4.02      | 1.17    | 29.94       | 17.76            | 3.96         |
| 4500  | 14.22 | 34.37     | 6.51              | 21.61              | 4.01      | 1.20    | 29.91       | 17.79            | 4.05         |
| 4600  | 14.12 | 35.29     | 6.18              | 19.85              | 4.39      | 1.21    | 29.61       | 17.76            | 4.11         |
| 4700  | 13.58 | 32.97     | 6.28              | 20.07              | 3.63      | 1.20    | 29.84       | 17.57            | 4.21         |
| 4800  | 13.47 | 34.87     | 5.53              | 19.85              | 4.28      | 1.25    | 29.75       | 17.42            | 4.26         |
| 4900  | 13.09 | 34.90     | 5.90              | 18.13              | 4.61      | 1.22    | 29.19       | 17.05            | 4.25         |
| 5000  | 12.58 | 31.34     | 5.71              | 17.75              | 3.24      | 1.22    | 29.08       | 16.86            | 4.45         |
| 5100  | 12.27 | 33.23     | 5.68              | 17.10              | 4.11      | 1.22    | 28.85       | 16.58            | 4.50         |
| 5200  | 11.81 | 32.59     | 5.35              | 17.18              | 3.92      | 1.25    | 28.67       | 16.40            | 4.63         |
| 5300  | 11.31 | 33.80     | 5.31              | 16.69              | 4.69      | 1.25    | 28.41       | 15.84            | 4.73         |
| 5400  | 10.85 | 33.79     | 5.42              | 15.26              | 4.95      | 1.24    | 27.91       | 15.48            | 4.95         |
| 5500  | 10.42 | 34.23     | 5.16              | 13.02              | 5.18      | 1.23    | 27.56       | 15.50            | 5.16         |

## 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 = 2.8V, Id = 92.53 mA @ Temperature = +25degC

| FREQ  | Gain  | Isolation | Input Return Loss | Output Return Loss | Stability |         | IP-3 Output | 1dB Comp. Output | Noise Figure |
|-------|-------|-----------|-------------------|--------------------|-----------|---------|-------------|------------------|--------------|
| (MHz) | (dB)  | (dB)      | (dB)              | (dB)               | K         | Measure | (dBm)       | (dBm)            | (dB)         |
| 200   | 6.04  | 47.70     | 3.32              | 2.79               | 14.86     | 0.70    | 15.77       | 6.06             | 6.72         |
| 300   | 14.29 | 45.58     | 3.72              | 5.63               | 7.34      | 1.05    | 22.25       | 10.42            | 4.35         |
| 400   | 18.53 | 45.50     | 4.97              | 7.89               | 6.19      | 1.12    | 23.53       | 11.94            | 3.61         |
| 500   | 20.57 | 47.16     | 6.78              | 9.88               | 7.46      | 1.10    | 24.42       | 12.63            | 4.24         |
| 600   | 21.53 | 46.21     | 8.76              | 11.50              | 6.84      | 1.06    | 24.56       | 12.96            | 3.04         |
| 700   | 22.03 | 44.91     | 10.46             | 12.85              | 5.98      | 1.04    | 24.65       | 13.04            | 2.94         |
| 800   | 22.30 | 44.30     | 11.93             | 13.79              | 5.64      | 1.02    | 24.80       | 13.16            | 2.61         |
| 1000  | 22.55 | 42.32     | 13.96             | 14.86              | 4.54      | 1.00    | 25.28       | 13.53            | 2.58         |
| 1100  | 22.60 | 41.40     | 14.70             | 15.13              | 4.11      | 0.99    | 25.10       | 13.38            | 2.60         |
| 1200  | 22.62 | 40.88     | 15.29             | 15.33              | 3.90      | 0.99    | 24.76       | 13.21            | 2.47         |
| 1300  | 22.60 | 40.08     | 15.84             | 15.41              | 3.59      | 0.98    | 25.03       | 13.32            | 2.49         |
| 1400  | 22.57 | 39.53     | 16.36             | 15.39              | 3.40      | 0.98    | 25.36       | 13.46            | 2.45         |
| 1500  | 22.50 | 39.07     | 16.92             | 15.47              | 3.27      | 0.97    | 25.17       | 13.42            | 2.40         |
| 1600  | 22.49 | 38.08     | 16.63             | 14.95              | 2.91      | 0.97    | 25.12       | 13.43            | 2.71         |
| 1700  | 22.36 | 37.53     | 17.13             | 15.29              | 2.80      | 0.96    | 25.14       | 13.48            | 2.65         |
| 1800  | 22.22 | 36.87     | 17.52             | 15.45              | 2.65      | 0.96    | 25.31       | 13.67            | 2.64         |
| 1900  | 22.09 | 36.54     | 17.69             | 15.39              | 2.60      | 0.96    | 25.49       | 13.73            | 2.65         |
| 2000  | 21.93 | 36.26     | 17.82             | 15.42              | 2.57      | 0.96    | 25.35       | 13.72            | 2.68         |
| 2100  | 21.73 | 35.64     | 17.62             | 15.69              | 2.46      | 0.96    | 25.32       | 13.70            | 2.62         |
| 2200  | 21.54 | 35.29     | 17.65             | 16.00              | 2.42      | 0.96    | 25.40       | 13.83            | 2.64         |
| 2300  | 21.36 | 35.01     | 17.65             | 15.88              | 2.39      | 0.95    | 25.49       | 13.91            | 2.68         |
| 2400  | 21.07 | 34.49     | 17.06             | 16.46              | 2.33      | 0.96    | 25.60       | 14.01            | 2.68         |
| 2500  | 20.74 | 34.38     | 15.75             | 16.26              | 2.36      | 0.97    | 25.44       | 13.84            | 2.73         |
| 2600  | 20.59 | 34.29     | 16.03             | 16.13              | 2.38      | 0.97    | 25.33       | 13.74            | 2.80         |
| 2700  | 20.07 | 33.53     | 14.61             | 17.93              | 2.32      | 0.98    | 25.94       | 14.23            | 2.87         |
| 2800  | 19.84 | 33.16     | 14.26             | 18.21              | 2.28      | 0.98    | 25.81       | 14.12            | 2.84         |
| 2900  | 19.54 | 32.85     | 13.99             | 18.23              | 2.27      | 0.99    | 25.90       | 14.17            | 2.89         |
| 3000  | 18.90 | 33.45     | 12.76             | 19.58              | 2.57      | 1.02    | 25.82       | 14.00            | 2.88         |
| 3100  | 18.67 | 32.66     | 12.40             | 19.92              | 2.41      | 1.02    | 25.84       | 14.16            | 2.96         |
| 3200  | 18.25 | 32.50     | 11.47             | 20.68              | 2.45      | 1.03    | 25.79       | 14.34            | 2.95         |
| 3300  | 17.97 | 31.89     | 11.49             | 20.90              | 2.37      | 1.03    | 25.79       | 14.15            | 2.99         |
| 3400  | 17.32 | 32.71     | 10.79             | 20.00              | 2.73      | 1.05    | 26.12       | 14.31            | 3.03         |
| 3500  | 17.17 | 31.73     | 10.41             | 22.32              | 2.49      | 1.06    | 25.93       | 14.35            | 3.05         |
| 3600  | 16.75 | 31.65     | 10.17             | 22.15              | 2.57      | 1.06    | 26.01       | 14.34            | 3.07         |
| 3700  | 16.30 | 31.68     | 9.87              | 22.73              | 2.69      | 1.07    | 26.45       | 14.60            | 3.15         |
| 3800  | 15.76 | 32.60     | 9.45              | 23.38              | 3.12      | 1.09    | 26.36       | 14.53            | 3.28         |
| 3900  | 15.55 | 31.99     | 9.19              | 23.14              | 2.97      | 1.10    | 26.20       | 14.43            | 3.26         |
| 4000  | 15.24 | 31.71     | 8.70              | 22.35              | 2.93      | 1.11    | 25.84       | 14.18            | 3.27         |
| 4100  | 14.72 | 31.96     | 8.27              | 21.72              | 3.14      | 1.12    | 25.94       | 14.46            | 3.36         |
| 4200  | 14.50 | 31.38     | 8.23              | 20.65              | 3.01      | 1.12    | 26.32       | 14.55            | 3.36         |
| 4300  | 14.17 | 31.56     | 7.97              | 20.45              | 3.16      | 1.13    | 26.07       | 14.42            | 3.42         |
| 4400  | 13.84 | 31.49     | 7.41              | 18.97              | 3.16      | 1.15    | 25.68       | 14.08            | 3.48         |
| 4500  | 13.64 | 31.60     | 7.14              | 18.49              | 3.23      | 1.16    | 25.73       | 14.17            | 3.58         |
| 4600  | 13.37 | 30.67     | 7.07              | 16.36              | 2.97      | 1.14    | 25.74       | 14.39            | 3.56         |
| 4700  | 13.01 | 30.34     | 6.95              | 15.88              | 2.96      | 1.14    | 26.14       | 14.38            | 3.67         |
| 4800  | 12.72 | 30.90     | 6.40              | 16.41              | 3.17      | 1.17    | 25.78       | 14.05            | 3.76         |
| 4900  | 12.40 | 30.28     | 6.53              | 15.03              | 3.07      | 1.15    | 25.23       | 13.77            | 3.81         |
| 5000  | 12.24 | 30.34     | 6.12              | 14.50              | 3.06      | 1.17    | 24.94       | 13.49            | 3.88         |
| 5100  | 11.74 | 29.34     | 6.12              | 14.19              | 2.90      | 1.16    | 25.26       | 13.73            | 3.93         |
| 5200  | 11.42 | 30.22     | 5.89              | 14.26              | 3.26      | 1.18    | 25.30       | 13.76            | 4.02         |
| 5300  | 10.99 | 30.80     | 5.85              | 13.93              | 3.63      | 1.18    | 24.73       | 13.06            | 4.16         |
| 5400  | 10.67 | 30.52     | 5.81              | 13.43              | 3.62      | 1.17    | 24.03       | 12.70            | 4.23         |
| 5500  | 10.08 | 30.97     | 5.88              | 12.72              | 4.05      | 1.16    | 24.14       | 12.94            | 4.41         |

## 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 = 2.66V, Id =91.51 mA @ Temperature = +25degC

| FREQ  | Gain  | Isolation | Input Return Loss | Output Return Loss | Stability |         | IP-3 Output | 1dB Comp. Output | Noise Figure |
|-------|-------|-----------|-------------------|--------------------|-----------|---------|-------------|------------------|--------------|
| (MHz) | (dB)  | (dB)      | (dB)              | (dB)               | K         | Measure | (dBm)       | (dBm)            | (dB)         |
| 200   | 5.87  | 48.63     | 3.33              | 2.79               | 17.00     | 0.70    | 14.19       | 4.82             | 6.77         |
| 300   | 14.06 | 45.58     | 3.77              | 5.61               | 7.59      | 1.05    | 19.96       | 9.08             | 4.43         |
| 400   | 18.24 | 45.43     | 5.07              | 7.84               | 6.39      | 1.11    | 21.74       | 10.65            | 3.65         |
| 500   | 20.24 | 46.77     | 6.88              | 9.76               | 7.44      | 1.09    | 22.82       | 11.32            | 4.57         |
| 600   | 21.16 | 46.23     | 8.83              | 11.28              | 7.14      | 1.05    | 23.04       | 11.69            | 3.12         |
| 700   | 21.65 | 45.50     | 10.48             | 12.52              | 6.66      | 1.03    | 23.23       | 11.82            | 3.03         |
| 800   | 21.91 | 44.41     | 11.87             | 13.37              | 5.94      | 1.02    | 23.39       | 11.94            | 2.80         |
| 1000  | 22.14 | 42.46     | 13.77             | 14.31              | 4.80      | 1.00    | 23.90       | 12.33            | 2.68         |
| 1100  | 22.18 | 41.49     | 14.46             | 14.55              | 4.32      | 0.99    | 23.87       | 12.22            | 2.71         |
| 1200  | 22.19 | 40.48     | 15.00             | 14.74              | 3.88      | 0.99    | 23.51       | 12.08            | 2.67         |
| 1300  | 22.17 | 40.16     | 15.50             | 14.82              | 3.77      | 0.98    | 23.82       | 12.19            | 2.68         |
| 1400  | 22.14 | 39.12     | 15.99             | 14.84              | 3.38      | 0.98    | 24.14       | 12.31            | 2.65         |
| 1500  | 22.07 | 38.81     | 16.50             | 14.94              | 3.31      | 0.97    | 23.92       | 12.26            | 2.64         |
| 1600  | 22.05 | 38.17     | 16.29             | 14.50              | 3.07      | 0.97    | 23.96       | 12.31            | 2.75         |
| 1700  | 21.92 | 37.20     | 16.74             | 14.82              | 2.82      | 0.96    | 23.98       | 12.37            | 2.65         |
| 1800  | 21.78 | 36.78     | 17.16             | 15.01              | 2.74      | 0.96    | 24.17       | 12.54            | 2.67         |
| 1900  | 21.65 | 36.23     | 17.39             | 14.97              | 2.62      | 0.96    | 24.31       | 12.63            | 2.67         |
| 2000  | 21.49 | 35.83     | 17.59             | 15.02              | 2.56      | 0.95    | 24.20       | 12.62            | 2.72         |
| 2100  | 21.30 | 35.43     | 17.43             | 15.32              | 2.50      | 0.96    | 24.22       | 12.63            | 2.73         |
| 2200  | 21.11 | 34.77     | 17.53             | 15.64              | 2.39      | 0.95    | 24.30       | 12.74            | 2.71         |
| 2300  | 20.93 | 34.83     | 17.50             | 15.56              | 2.45      | 0.96    | 24.42       | 12.84            | 2.75         |
| 2400  | 20.66 | 34.37     | 16.97             | 16.09              | 2.40      | 0.96    | 24.58       | 12.93            | 2.74         |
| 2500  | 20.33 | 34.22     | 15.74             | 15.92              | 2.42      | 0.97    | 24.43       | 12.82            | 2.77         |
| 2600  | 20.19 | 34.18     | 15.97             | 15.87              | 2.46      | 0.97    | 24.32       | 12.76            | 2.84         |
| 2700  | 19.68 | 33.32     | 14.61             | 17.47              | 2.36      | 0.98    | 24.91       | 13.21            | 2.90         |
| 2800  | 19.45 | 32.97     | 14.29             | 17.78              | 2.33      | 0.99    | 24.81       | 13.18            | 2.87         |
| 2900  | 19.16 | 32.73     | 13.99             | 17.83              | 2.33      | 0.99    | 24.95       | 13.19            | 2.91         |
| 3000  | 18.55 | 33.19     | 12.74             | 19.01              | 2.59      | 1.02    | 24.87       | 13.09            | 2.92         |
| 3100  | 18.32 | 32.47     | 12.38             | 19.37              | 2.45      | 1.02    | 24.88       | 13.23            | 2.98         |
| 3200  | 17.91 | 32.36     | 11.46             | 20.09              | 2.50      | 1.03    | 24.90       | 13.46            | 3.02         |
| 3300  | 17.62 | 31.64     | 11.48             | 20.28              | 2.39      | 1.03    | 24.89       | 13.31            | 3.01         |
| 3400  | 17.00 | 32.40     | 10.75             | 19.44              | 2.72      | 1.05    | 25.26       | 13.45            | 3.06         |
| 3500  | 16.85 | 31.52     | 10.40             | 21.52              | 2.51      | 1.06    | 25.10       | 13.50            | 3.06         |
| 3600  | 16.43 | 31.34     | 10.13             | 21.40              | 2.56      | 1.06    | 25.10       | 13.49            | 3.12         |
| 3700  | 15.99 | 31.65     | 9.82              | 21.90              | 2.76      | 1.08    | 25.56       | 13.84            | 3.16         |
| 3800  | 15.46 | 32.26     | 9.38              | 22.45              | 3.09      | 1.09    | 25.52       | 13.73            | 3.29         |
| 3900  | 15.26 | 31.59     | 9.13              | 22.26              | 2.93      | 1.10    | 25.35       | 13.64            | 3.26         |
| 4000  | 14.95 | 31.33     | 8.64              | 21.61              | 2.89      | 1.11    | 25.13       | 13.44            | 3.29         |
| 4100  | 14.44 | 31.63     | 8.22              | 20.94              | 3.11      | 1.12    | 25.30       | 13.71            | 3.36         |
| 4200  | 14.22 | 30.91     | 8.18              | 19.95              | 2.94      | 1.12    | 25.63       | 13.87            | 3.40         |
| 4300  | 13.89 | 31.28     | 7.90              | 19.75              | 3.14      | 1.13    | 25.41       | 13.69            | 3.44         |
| 4400  | 13.57 | 31.09     | 7.36              | 18.39              | 3.10      | 1.15    | 24.99       | 13.34            | 3.54         |
| 4500  | 13.37 | 31.15     | 7.08              | 17.92              | 3.15      | 1.15    | 25.11       | 13.47            | 3.60         |
| 4600  | 13.11 | 30.40     | 7.02              | 15.90              | 2.95      | 1.14    | 25.06       | 13.66            | 3.62         |
| 4700  | 12.74 | 30.01     | 6.89              | 15.45              | 2.92      | 1.14    | 25.44       | 13.68            | 3.71         |
| 4800  | 12.45 | 30.62     | 6.34              | 15.87              | 3.14      | 1.17    | 25.11       | 13.39            | 3.80         |
| 4900  | 12.14 | 30.00     | 6.47              | 14.59              | 3.05      | 1.15    | 24.59       | 13.09            | 3.86         |
| 5000  | 11.97 | 30.00     | 6.08              | 14.06              | 3.02      | 1.16    | 24.33       | 12.75            | 3.96         |
| 5100  | 11.48 | 29.04     | 6.07              | 13.72              | 2.87      | 1.16    | 24.64       | 13.06            | 3.97         |
| 5200  | 11.16 | 29.85     | 5.83              | 13.80              | 3.19      | 1.17    | 24.72       | 13.18            | 4.03         |
| 5300  | 10.73 | 30.29     | 5.79              | 13.55              | 3.50      | 1.17    | 24.07       | 12.43            | 4.24         |
| 5400  | 10.41 | 30.21     | 5.75              | 13.04              | 3.57      | 1.17    | 23.40       | 12.09            | 4.26         |
| 5500  | 9.83  | 30.60     | 5.82              | 12.43              | 3.97      | 1.16    | 23.49       | 12.26            | 4.43         |

## 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 = 93.43 mA @ Temperature = +25degC

| FREQ  | Gain  | Isolation | Input Return Loss | Output Return Loss | Stability |         | IP-3 Output | 1dB Comp. Output | Noise Figure |
|-------|-------|-----------|-------------------|--------------------|-----------|---------|-------------|------------------|--------------|
| (MHz) | (dB)  | (dB)      | (dB)              | (dB)               | K         | Measure | (dBm)       | (dBm)            | (dB)         |
| 200   | 6.22  | 48.06     | 3.31              | 2.78               | 15.12     | 0.70    | 18.50       | 7.67             | 6.64         |
| 300   | 14.53 | 44.91     | 3.67              | 5.66               | 6.53      | 1.06    | 24.33       | 11.89            | 4.39         |
| 400   | 18.84 | 45.15     | 4.88              | 7.98               | 5.67      | 1.13    | 25.37       | 13.40            | 3.59         |
| 500   | 20.94 | 46.71     | 6.66              | 10.05              | 6.76      | 1.11    | 26.06       | 13.98            | 4.52         |
| 600   | 21.93 | 46.29     | 8.66              | 11.80              | 6.60      | 1.07    | 26.16       | 14.28            | 3.07         |
| 700   | 22.46 | 45.15     | 10.40             | 13.35              | 5.88      | 1.04    | 26.14       | 14.32            | 3.00         |
| 800   | 22.74 | 44.38     | 11.93             | 14.45              | 5.44      | 1.03    | 26.27       | 14.36            | 2.74         |
| 1000  | 23.02 | 42.46     | 14.09             | 15.79              | 4.41      | 1.01    | 26.53       | 14.76            | 2.63         |
| 1100  | 23.08 | 41.56     | 14.89             | 16.08              | 4.00      | 1.00    | 26.49       | 14.57            | 2.65         |
| 1200  | 23.10 | 40.91     | 15.54             | 16.32              | 3.73      | 0.99    | 26.11       | 14.37            | 2.65         |
| 1300  | 23.10 | 40.17     | 16.13             | 16.40              | 3.45      | 0.99    | 26.37       | 14.48            | 2.57         |
| 1400  | 23.07 | 39.49     | 16.68             | 16.33              | 3.22      | 0.98    | 26.62       | 14.62            | 2.59         |
| 1500  | 23.01 | 39.01     | 17.27             | 16.37              | 3.09      | 0.97    | 26.34       | 14.56            | 2.57         |
| 1600  | 23.01 | 38.43     | 16.96             | 15.76              | 2.88      | 0.97    | 26.35       | 14.57            | 2.72         |
| 1700  | 22.88 | 37.71     | 17.39             | 16.10              | 2.72      | 0.97    | 26.36       | 14.61            | 2.61         |
| 1800  | 22.74 | 37.00     | 17.82             | 16.23              | 2.56      | 0.96    | 26.48       | 14.82            | 2.62         |
| 1900  | 22.60 | 36.41     | 17.98             | 16.13              | 2.44      | 0.96    | 26.59       | 14.87            | 2.61         |
| 2000  | 22.44 | 36.33     | 18.03             | 16.09              | 2.46      | 0.96    | 26.50       | 14.84            | 2.59         |
| 2100  | 22.24 | 35.74     | 17.70             | 16.37              | 2.36      | 0.96    | 26.38       | 14.79            | 2.63         |
| 2200  | 22.04 | 35.43     | 17.69             | 16.69              | 2.34      | 0.96    | 26.45       | 14.93            | 2.61         |
| 2300  | 21.85 | 35.11     | 17.69             | 16.52              | 2.30      | 0.95    | 26.51       | 14.96            | 2.66         |
| 2400  | 21.56 | 34.84     | 17.02             | 17.14              | 2.31      | 0.96    | 26.63       | 15.08            | 2.66         |
| 2500  | 21.21 | 34.58     | 15.67             | 16.93              | 2.31      | 0.97    | 26.46       | 14.91            | 2.73         |
| 2600  | 21.06 | 34.45     | 15.98             | 16.69              | 2.31      | 0.97    | 26.32       | 14.81            | 2.77         |
| 2700  | 20.52 | 33.87     | 14.51             | 18.80              | 2.30      | 0.98    | 26.97       | 15.27            | 2.86         |
| 2800  | 20.28 | 33.35     | 14.20             | 19.03              | 2.23      | 0.98    | 26.73       | 15.15            | 2.82         |
| 2900  | 19.97 | 33.07     | 13.94             | 18.99              | 2.23      | 0.99    | 26.88       | 15.19            | 2.86         |
| 3000  | 19.32 | 33.71     | 12.69             | 20.62              | 2.53      | 1.02    | 26.77       | 14.99            | 2.87         |
| 3100  | 19.08 | 32.93     | 12.36             | 20.98              | 2.38      | 1.02    | 26.78       | 15.13            | 2.95         |
| 3200  | 18.65 | 32.88     | 11.43             | 21.82              | 2.45      | 1.03    | 26.72       | 15.30            | 2.93         |
| 3300  | 18.35 | 32.17     | 11.46             | 22.10              | 2.35      | 1.03    | 26.68       | 15.11            | 2.97         |
| 3400  | 17.69 | 32.84     | 10.76             | 21.02              | 2.66      | 1.05    | 26.98       | 15.24            | 3.03         |
| 3500  | 17.54 | 32.18     | 10.41             | 23.75              | 2.52      | 1.06    | 26.90       | 15.26            | 3.01         |
| 3600  | 17.11 | 31.91     | 10.15             | 23.54              | 2.55      | 1.06    | 26.86       | 15.19            | 3.05         |
| 3700  | 16.65 | 32.11     | 9.84              | 24.27              | 2.72      | 1.08    | 27.34       | 15.51            | 3.10         |
| 3800  | 16.10 | 32.83     | 9.44              | 24.90              | 3.09      | 1.09    | 27.19       | 15.43            | 3.24         |
| 3900  | 15.89 | 32.22     | 9.19              | 24.64              | 2.94      | 1.10    | 26.94       | 15.29            | 3.24         |
| 4000  | 15.57 | 32.11     | 8.71              | 23.64              | 2.96      | 1.11    | 26.52       | 15.04            | 3.28         |
| 4100  | 15.04 | 32.13     | 8.27              | 23.10              | 3.09      | 1.13    | 26.57       | 15.24            | 3.31         |
| 4200  | 14.82 | 31.62     | 8.24              | 21.79              | 2.99      | 1.12    | 26.94       | 15.31            | 3.37         |
| 4300  | 14.49 | 31.87     | 7.99              | 21.60              | 3.16      | 1.13    | 26.63       | 15.24            | 3.39         |
| 4400  | 14.16 | 31.64     | 7.43              | 19.98              | 3.11      | 1.15    | 26.26       | 14.86            | 3.49         |
| 4500  | 13.96 | 31.92     | 7.15              | 19.47              | 3.24      | 1.16    | 26.24       | 14.97            | 3.55         |
| 4600  | 13.68 | 31.04     | 7.08              | 17.08              | 3.00      | 1.15    | 26.28       | 15.07            | 3.56         |
| 4700  | 13.32 | 30.73     | 6.96              | 16.59              | 3.00      | 1.15    | 26.70       | 15.09            | 3.64         |
| 4800  | 13.03 | 31.21     | 6.41              | 17.23              | 3.18      | 1.18    | 26.29       | 14.76            | 3.72         |
| 4900  | 12.70 | 30.70     | 6.55              | 15.71              | 3.13      | 1.16    | 25.75       | 14.49            | 3.78         |
| 5000  | 12.54 | 30.74     | 6.14              | 15.17              | 3.11      | 1.17    | 25.47       | 14.21            | 3.84         |
| 5100  | 12.03 | 29.64     | 6.13              | 14.86              | 2.92      | 1.17    | 25.69       | 14.36            | 3.90         |
| 5200  | 11.72 | 30.57     | 5.90              | 14.93              | 3.29      | 1.18    | 25.79       | 14.37            | 3.97         |
| 5300  | 11.28 | 31.19     | 5.87              | 14.58              | 3.68      | 1.19    | 25.21       | 13.72            | 4.12         |
| 5400  | 10.96 | 30.90     | 5.82              | 14.03              | 3.67      | 1.18    | 24.54       | 13.36            | 4.20         |
| 5500  | 10.38 | 31.51     | 5.91              | 13.21              | 4.19      | 1.17    | 24.54       | 13.40            | 4.39         |

## 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 = 2.8V, Id = 89.86 mA @ Temperature = -45degC

| FREQ  | Gain  | Isolation | Input Return Loss | Output Return Loss | Stability |         | IP-3 Output | 1dB Comp. Output | Noise Figure |
|-------|-------|-----------|-------------------|--------------------|-----------|---------|-------------|------------------|--------------|
| (MHz) | (dB)  | (dB)      | (dB)              | (dB)               | K         | Measure | (dBm)       | (dBm)            | (dB)         |
| 200   | 6.33  | 47.70     | 3.19              | 2.75               | 13.84     | 0.70    | 17.87       | 7.27             | 5.97         |
| 300   | 14.86 | 44.92     | 3.60              | 5.82               | 6.30      | 1.08    | 23.87       | 11.34            | 3.78         |
| 400   | 19.20 | 44.76     | 4.82              | 8.22               | 5.21      | 1.15    | 24.99       | 12.72            | 3.08         |
| 500   | 21.35 | 46.60     | 6.50              | 10.60              | 6.38      | 1.13    | 25.85       | 13.24            | 3.96         |
| 600   | 22.36 | 46.31     | 8.44              | 12.79              | 6.34      | 1.09    | 25.95       | 13.45            | 2.60         |
| 700   | 22.94 | 45.74     | 10.12             | 15.13              | 6.02      | 1.07    | 25.90       | 13.43            | 2.57         |
| 800   | 23.27 | 45.41     | 11.58             | 17.39              | 5.84      | 1.05    | 26.08       | 13.45            | 2.31         |
| 1000  | 23.61 | 43.36     | 13.80             | 21.01              | 4.65      | 1.03    | 26.99       | 13.98            | 2.20         |
| 1100  | 23.69 | 42.24     | 14.55             | 22.12              | 4.10      | 1.02    | 26.54       | 13.70            | 2.21         |
| 1200  | 23.74 | 41.75     | 15.14             | 23.06              | 3.89      | 1.01    | 26.11       | 13.43            | 2.17         |
| 1300  | 23.75 | 41.21     | 15.60             | 23.40              | 3.67      | 1.01    | 26.47       | 13.57            | 2.18         |
| 1400  | 23.74 | 40.27     | 15.92             | 22.90              | 3.32      | 1.00    | 26.88       | 13.79            | 2.14         |
| 1500  | 23.69 | 40.03     | 16.33             | 22.30              | 3.25      | 1.00    | 26.55       | 13.67            | 2.18         |
| 1600  | 23.72 | 39.09     | 16.05             | 20.77              | 2.92      | 0.99    | 26.65       | 13.71            | 2.21         |
| 1700  | 23.63 | 38.40     | 16.43             | 21.11              | 2.74      | 0.98    | 26.59       | 13.73            | 2.14         |
| 1800  | 23.50 | 37.74     | 16.78             | 21.17              | 2.60      | 0.98    | 27.02       | 14.05            | 2.17         |
| 1900  | 23.39 | 37.47     | 17.00             | 20.65              | 2.55      | 0.97    | 27.13       | 14.07            | 2.17         |
| 2000  | 23.24 | 37.04     | 17.17             | 20.06              | 2.48      | 0.97    | 26.91       | 14.01            | 2.17         |
| 2100  | 23.07 | 36.46     | 16.93             | 20.22              | 2.37      | 0.97    | 26.77       | 13.99            | 2.18         |
| 2200  | 22.89 | 36.17     | 16.87             | 19.98              | 2.34      | 0.97    | 27.12       | 14.24            | 2.22         |
| 2300  | 22.72 | 35.94     | 16.82             | 19.29              | 2.32      | 0.96    | 27.09       | 14.23            | 2.22         |
| 2400  | 22.42 | 35.65     | 16.21             | 19.88              | 2.32      | 0.97    | 27.26       | 14.28            | 2.34         |
| 2500  | 22.12 | 35.39     | 15.08             | 19.77              | 2.31      | 0.98    | 26.76       | 14.09            | 2.22         |
| 2600  | 21.97 | 35.11     | 15.29             | 19.19              | 2.28      | 0.97    | 26.36       | 13.91            | 2.29         |
| 2700  | 21.44 | 34.55     | 13.91             | 22.69              | 2.26      | 0.99    | 27.00       | 14.52            | 2.36         |
| 2800  | 21.21 | 34.16     | 13.63             | 22.19              | 2.22      | 0.99    | 26.91       | 14.43            | 2.33         |
| 2900  | 20.91 | 33.82     | 13.31             | 22.06              | 2.20      | 0.99    | 27.10       | 14.44            | 2.35         |
| 3000  | 20.25 | 34.58     | 12.57             | 27.16              | 2.54      | 1.02    | 26.79       | 14.23            | 2.38         |
| 3100  | 20.03 | 33.69     | 12.15             | 25.94              | 2.36      | 1.02    | 26.80       | 14.43            | 2.38         |
| 3200  | 19.59 | 33.64     | 11.01             | 26.87              | 2.41      | 1.04    | 26.93       | 14.73            | 2.36         |
| 3300  | 19.19 | 33.38     | 11.03             | 27.16              | 2.45      | 1.04    | 26.39       | 14.37            | 2.37         |
| 3400  | 18.77 | 33.26     | 10.51             | 28.74              | 2.51      | 1.05    | 26.56       | 14.49            | 2.41         |
| 3500  | 18.45 | 33.00     | 10.12             | 29.84              | 2.50      | 1.06    | 26.57       | 14.67            | 2.43         |
| 3600  | 18.06 | 32.66     | 9.92              | 29.29              | 2.51      | 1.06    | 26.41       | 14.65            | 2.44         |
| 3700  | 17.58 | 32.73     | 9.75              | 31.72              | 2.65      | 1.07    | 27.03       | 15.08            | 2.51         |
| 3800  | 17.06 | 33.58     | 9.46              | 37.37              | 3.05      | 1.09    | 26.85       | 14.92            | 2.60         |
| 3900  | 16.82 | 32.96     | 9.09              | 27.31              | 2.90      | 1.09    | 26.51       | 14.79            | 2.62         |
| 4000  | 16.46 | 32.35     | 8.65              | 24.72              | 2.77      | 1.10    | 26.34       | 14.61            | 2.64         |
| 4100  | 15.95 | 33.13     | 8.18              | 26.05              | 3.14      | 1.13    | 26.72       | 14.98            | 2.71         |
| 4200  | 15.70 | 32.12     | 8.38              | 23.54              | 2.91      | 1.11    | 27.61       | 15.04            | 2.74         |
| 4300  | 15.36 | 32.51     | 8.14              | 22.43              | 3.12      | 1.12    | 27.05       | 14.83            | 2.74         |
| 4400  | 15.15 | 32.76     | 7.36              | 21.42              | 3.17      | 1.15    | 26.54       | 14.31            | 2.80         |
| 4500  | 14.84 | 32.65     | 7.21              | 19.24              | 3.22      | 1.15    | 27.04       | 14.69            | 2.86         |
| 4600  | 14.61 | 31.60     | 7.00              | 17.91              | 2.90      | 1.15    | 26.84       | 14.94            | 2.88         |
| 4700  | 14.27 | 30.99     | 6.99              | 17.40              | 2.81      | 1.14    | 27.56       | 14.93            | 2.97         |
| 4800  | 14.00 | 31.67     | 6.61              | 17.65              | 3.06      | 1.17    | 26.52       | 14.46            | 3.01         |
| 4900  | 13.67 | 31.27     | 6.62              | 16.35              | 3.03      | 1.15    | 25.98       | 14.17            | 3.06         |
| 5000  | 13.56 | 31.43     | 6.15              | 15.55              | 3.02      | 1.17    | 25.81       | 13.96            | 3.13         |
| 5100  | 13.13 | 30.44     | 6.12              | 16.02              | 2.85      | 1.17    | 27.04       | 14.43            | 3.15         |
| 5200  | 12.76 | 30.63     | 6.03              | 15.61              | 3.00      | 1.18    | 26.83       | 14.29            | 3.25         |
| 5300  | 12.45 | 32.22     | 5.75              | 14.10              | 3.59      | 1.19    | 25.75       | 13.56            | 3.35         |
| 5400  | 12.08 | 32.04     | 5.67              | 13.49              | 3.62      | 1.18    | 24.57       | 13.10            | 3.45         |
| 5500  | 11.53 | 31.42     | 5.85              | 13.32              | 3.64      | 1.17    | 25.96       | 13.69            | 3.55         |

## 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 = 2.66V, Id = 89.65 mA @ Temperature = -45degC

| FREQ  | Gain  | Isolation | Input Return Loss | Output Return Loss | Stability |         | IP-3 Output | 1dB Comp. Output | Noise Figure |
|-------|-------|-----------|-------------------|--------------------|-----------|---------|-------------|------------------|--------------|
| (MHz) | (dB)  | (dB)      | (dB)              | (dB)               | K         | Measure | (dBm)       | (dBm)            | (dB)         |
| 200   | 6.18  | 47.33     | 3.20              | 2.76               | 13.53     | 0.70    | 16.18       | 6.03             | 6.03         |
| 300   | 14.64 | 45.60     | 3.66              | 5.80               | 7.08      | 1.07    | 22.40       | 10.20            | 3.77         |
| 400   | 18.92 | 44.57     | 4.92              | 8.18               | 5.32      | 1.14    | 23.62       | 11.64            | 3.13         |
| 500   | 21.01 | 47.34     | 6.61              | 10.50              | 7.27      | 1.12    | 24.47       | 12.22            | 4.02         |
| 600   | 21.99 | 46.72     | 8.51              | 12.59              | 6.93      | 1.08    | 24.63       | 12.47            | 2.62         |
| 700   | 22.55 | 46.30     | 10.14             | 14.75              | 6.70      | 1.06    | 24.64       | 12.52            | 2.60         |
| 800   | 22.86 | 45.34     | 11.53             | 16.75              | 6.05      | 1.05    | 24.75       | 12.56            | 2.32         |
| 1000  | 23.18 | 43.44     | 13.57             | 19.72              | 4.90      | 1.03    | 25.69       | 13.06            | 2.22         |
| 1100  | 23.25 | 42.43     | 14.26             | 20.54              | 4.38      | 1.02    | 25.36       | 12.82            | 2.24         |
| 1200  | 23.29 | 41.59     | 14.81             | 21.26              | 4.00      | 1.01    | 24.87       | 12.58            | 2.23         |
| 1300  | 23.30 | 40.88     | 15.21             | 21.60              | 3.70      | 1.01    | 25.29       | 12.72            | 2.20         |
| 1400  | 23.28 | 40.23     | 15.48             | 21.32              | 3.46      | 1.00    | 25.81       | 12.91            | 2.16         |
| 1500  | 23.22 | 39.74     | 15.86             | 21.00              | 3.30      | 1.00    | 25.45       | 12.82            | 2.18         |
| 1600  | 23.23 | 38.84     | 15.59             | 19.86              | 2.98      | 0.99    | 25.46       | 12.86            | 2.23         |
| 1700  | 23.14 | 38.32     | 15.97             | 20.25              | 2.85      | 0.99    | 25.48       | 12.87            | 2.12         |
| 1800  | 23.01 | 37.65     | 16.31             | 20.43              | 2.70      | 0.98    | 25.88       | 13.15            | 2.18         |
| 1900  | 22.90 | 37.11     | 16.55             | 20.02              | 2.58      | 0.98    | 25.97       | 13.20            | 2.20         |
| 2000  | 22.75 | 36.88     | 16.73             | 19.58              | 2.56      | 0.97    | 25.81       | 13.15            | 2.20         |
| 2100  | 22.58 | 36.39     | 16.57             | 19.78              | 2.47      | 0.97    | 25.71       | 13.13            | 2.19         |
| 2200  | 22.41 | 35.86     | 16.55             | 19.63              | 2.38      | 0.97    | 26.04       | 13.36            | 2.23         |
| 2300  | 22.24 | 35.60     | 16.50             | 19.07              | 2.35      | 0.97    | 26.04       | 13.37            | 2.23         |
| 2400  | 21.95 | 35.50     | 15.93             | 19.68              | 2.39      | 0.97    | 26.19       | 13.46            | 2.27         |
| 2500  | 21.66 | 35.33     | 14.89             | 19.47              | 2.40      | 0.98    | 25.71       | 13.24            | 2.24         |
| 2600  | 21.52 | 34.79     | 15.13             | 19.19              | 2.31      | 0.97    | 25.56       | 13.09            | 2.30         |
| 2700  | 21.01 | 34.37     | 13.80             | 22.31              | 2.31      | 0.99    | 26.33       | 13.73            | 2.36         |
| 2800  | 20.78 | 33.92     | 13.48             | 21.94              | 2.26      | 0.99    | 26.34       | 13.68            | 2.36         |
| 2900  | 20.50 | 33.55     | 13.14             | 22.03              | 2.23      | 1.00    | 26.41       | 13.68            | 2.39         |
| 3000  | 19.85 | 34.32     | 12.38             | 26.38              | 2.57      | 1.02    | 26.13       | 13.44            | 2.40         |
| 3100  | 19.65 | 33.48     | 11.87             | 25.71              | 2.39      | 1.02    | 26.26       | 13.72            | 2.41         |
| 3200  | 19.22 | 33.24     | 10.90             | 26.14              | 2.40      | 1.04    | 26.37       | 13.97            | 2.37         |
| 3300  | 18.90 | 32.74     | 11.09             | 25.62              | 2.36      | 1.03    | 25.99       | 13.67            | 2.40         |
| 3400  | 18.42 | 33.02     | 10.44             | 27.54              | 2.53      | 1.05    | 26.23       | 13.74            | 2.43         |
| 3500  | 18.10 | 32.81     | 10.00             | 28.77              | 2.53      | 1.06    | 26.39       | 13.96            | 2.46         |
| 3600  | 17.73 | 32.33     | 9.75              | 28.45              | 2.49      | 1.07    | 26.34       | 13.95            | 2.49         |
| 3700  | 17.26 | 32.70     | 9.58              | 30.35              | 2.72      | 1.08    | 27.07       | 14.35            | 2.58         |
| 3800  | 16.75 | 33.56     | 9.21              | 35.51              | 3.12      | 1.10    | 26.82       | 14.23            | 2.66         |
| 3900  | 16.51 | 32.76     | 8.95              | 26.18              | 2.91      | 1.10    | 26.72       | 14.11            | 2.61         |
| 4000  | 16.19 | 31.88     | 8.57              | 23.36              | 2.71      | 1.10    | 26.31       | 13.88            | 2.66         |
| 4100  | 15.66 | 32.79     | 8.11              | 24.73              | 3.11      | 1.13    | 26.86       | 14.29            | 2.73         |
| 4200  | 15.43 | 31.93     | 8.26              | 22.34              | 2.92      | 1.11    | 27.41       | 14.33            | 2.76         |
| 4300  | 15.11 | 32.31     | 8.01              | 21.15              | 3.12      | 1.12    | 26.95       | 14.15            | 2.77         |
| 4400  | 14.84 | 32.28     | 7.33              | 20.14              | 3.10      | 1.15    | 26.11       | 13.67            | 2.83         |
| 4500  | 14.58 | 32.46     | 7.16              | 18.24              | 3.22      | 1.15    | 26.50       | 13.93            | 2.88         |
| 4600  | 14.33 | 30.87     | 6.92              | 16.69              | 2.74      | 1.14    | 26.65       | 14.24            | 2.93         |
| 4700  | 14.01 | 30.72     | 6.94              | 16.43              | 2.80      | 1.14    | 27.27       | 14.30            | 2.99         |
| 4800  | 13.73 | 31.27     | 6.56              | 16.46              | 3.00      | 1.16    | 26.40       | 13.81            | 3.08         |
| 4900  | 13.43 | 30.98     | 6.55              | 15.46              | 2.99      | 1.15    | 25.82       | 13.48            | 3.09         |
| 5000  | 13.30 | 30.82     | 6.09              | 14.72              | 2.89      | 1.16    | 25.52       | 13.27            | 3.19         |
| 5100  | 12.81 | 30.08     | 6.07              | 14.92              | 2.82      | 1.16    | 26.52       | 13.78            | 3.23         |
| 5200  | 12.53 | 30.57     | 5.84              | 14.56              | 3.00      | 1.18    | 26.29       | 13.66            | 3.26         |
| 5300  | 12.18 | 31.60     | 5.78              | 13.25              | 3.44      | 1.17    | 25.37       | 12.97            | 3.40         |
| 5400  | 11.77 | 31.32     | 5.79              | 12.89              | 3.48      | 1.16    | 24.41       | 12.51            | 3.51         |
| 5500  | 11.29 | 30.99     | 5.78              | 12.45              | 3.52      | 1.16    | 25.40       | 13.08            | 3.62         |

## 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 = 90.45 mA @ Temperature = -45degC

| FREQ  | Gain  | Isolation | Input Return Loss | Output Return Loss | Stability |         | IP-3 Output | 1dB Comp. Output | Noise Figure |
|-------|-------|-----------|-------------------|--------------------|-----------|---------|-------------|------------------|--------------|
| (MHz) | (dB)  | (dB)      | (dB)              | (dB)               | K         | Measure | (dBm)       | (dBm)            | (dB)         |
| 200   | 6.48  | 48.10     | 3.18              | 2.74               | 14.18     | 0.70    | 20.69       | 8.65             | 5.93         |
| 300   | 15.07 | 44.31     | 3.56              | 5.84               | 5.67      | 1.09    | 25.89       | 12.76            | 3.66         |
| 400   | 19.47 | 44.79     | 4.73              | 8.29               | 5.02      | 1.16    | 26.83       | 14.11            | 3.06         |
| 500   | 21.68 | 46.37     | 6.38              | 10.73              | 5.94      | 1.14    | 27.62       | 14.60            | 3.89         |
| 600   | 22.72 | 46.78     | 8.35              | 13.03              | 6.41      | 1.10    | 27.70       | 14.79            | 2.57         |
| 700   | 23.33 | 46.40     | 10.04             | 15.57              | 6.22      | 1.07    | 27.69       | 14.73            | 2.53         |
| 800   | 23.68 | 45.32     | 11.57             | 18.22              | 5.54      | 1.05    | 27.80       | 14.74            | 2.30         |
| 1000  | 24.04 | 43.71     | 13.90             | 22.99              | 4.63      | 1.03    | 28.75       | 15.28            | 2.19         |
| 1100  | 24.13 | 42.35     | 14.71             | 24.79              | 3.97      | 1.02    | 28.30       | 14.96            | 2.17         |
| 1200  | 24.20 | 41.85     | 15.34             | 26.39              | 3.76      | 1.01    | 27.74       | 14.71            | 2.22         |
| 1300  | 24.22 | 41.26     | 15.85             | 26.76              | 3.52      | 1.01    | 28.04       | 14.85            | 2.16         |
| 1400  | 24.22 | 40.61     | 16.18             | 25.60              | 3.28      | 1.00    | 28.50       | 15.06            | 2.12         |
| 1500  | 24.18 | 40.02     | 16.62             | 24.20              | 3.10      | 0.99    | 28.19       | 14.96            | 2.14         |
| 1600  | 24.21 | 39.53     | 16.32             | 22.09              | 2.91      | 0.99    | 28.20       | 14.98            | 2.28         |
| 1700  | 24.12 | 38.63     | 16.69             | 22.19              | 2.68      | 0.98    | 28.23       | 15.04            | 2.13         |
| 1800  | 24.00 | 38.10     | 17.06             | 22.12              | 2.57      | 0.98    | 28.56       | 15.34            | 2.17         |
| 1900  | 23.89 | 37.70     | 17.25             | 21.45              | 2.49      | 0.97    | 28.65       | 15.36            | 2.16         |
| 2000  | 23.73 | 37.58     | 17.33             | 20.72              | 2.50      | 0.97    | 28.46       | 15.29            | 2.16         |
| 2100  | 23.56 | 36.55     | 17.05             | 20.84              | 2.28      | 0.96    | 28.18       | 15.25            | 2.15         |
| 2200  | 23.39 | 36.40     | 16.97             | 20.35              | 2.28      | 0.96    | 28.47       | 15.48            | 2.20         |
| 2300  | 23.21 | 35.98     | 16.97             | 19.53              | 2.22      | 0.96    | 28.40       | 15.49            | 2.20         |
| 2400  | 22.89 | 36.01     | 16.26             | 20.27              | 2.30      | 0.97    | 28.62       | 15.58            | 2.10         |
| 2500  | 22.58 | 35.61     | 15.10             | 20.29              | 2.25      | 0.98    | 28.16       | 15.36            | 2.21         |
| 2600  | 22.43 | 35.36     | 15.45             | 19.45              | 2.24      | 0.97    | 27.64       | 15.22            | 2.28         |
| 2700  | 21.87 | 34.67     | 13.94             | 23.27              | 2.19      | 0.99    | 28.29       | 15.76            | 2.35         |
| 2800  | 21.62 | 34.32     | 13.66             | 22.46              | 2.16      | 0.99    | 28.28       | 15.67            | 2.30         |
| 2900  | 21.32 | 34.00     | 13.38             | 22.29              | 2.15      | 0.99    | 28.47       | 15.66            | 2.32         |
| 3000  | 20.60 | 35.07     | 12.50             | 29.12              | 2.58      | 1.02    | 28.14       | 15.40            | 2.40         |
| 3100  | 20.39 | 33.99     | 12.10             | 27.03              | 2.34      | 1.02    | 28.12       | 15.63            | 2.37         |
| 3200  | 19.95 | 33.85     | 11.08             | 27.33              | 2.38      | 1.03    | 28.31       | 15.85            | 2.35         |
| 3300  | 19.62 | 33.23     | 11.34             | 26.77              | 2.32      | 1.03    | 27.75       | 15.53            | 2.34         |
| 3400  | 19.11 | 33.47     | 10.62             | 29.66              | 2.48      | 1.05    | 27.93       | 15.57            | 2.38         |
| 3500  | 18.75 | 33.18     | 10.23             | 30.57              | 2.48      | 1.06    | 27.88       | 15.77            | 2.41         |
| 3600  | 18.36 | 32.91     | 9.98              | 30.12              | 2.50      | 1.06    | 27.69       | 15.69            | 2.46         |
| 3700  | 17.86 | 33.05     | 9.81              | 33.02              | 2.67      | 1.07    | 28.29       | 16.05            | 2.52         |
| 3800  | 17.33 | 34.19     | 9.36              | 33.04              | 3.16      | 1.09    | 28.13       | 15.83            | 2.56         |
| 3900  | 17.09 | 33.45     | 9.10              | 28.22              | 2.97      | 1.09    | 27.98       | 15.77            | 2.59         |
| 4000  | 16.78 | 32.72     | 8.67              | 25.30              | 2.79      | 1.10    | 27.80       | 15.57            | 2.62         |
| 4100  | 16.21 | 33.56     | 8.18              | 28.12              | 3.20      | 1.13    | 28.09       | 15.86            | 2.70         |
| 4200  | 15.97 | 32.46     | 8.41              | 25.22              | 2.94      | 1.11    | 28.92       | 15.95            | 2.72         |
| 4300  | 15.65 | 33.14     | 8.06              | 24.03              | 3.24      | 1.13    | 28.60       | 15.72            | 2.72         |
| 4400  | 15.39 | 33.25     | 7.35              | 22.89              | 3.27      | 1.15    | 28.11       | 15.20            | 2.77         |
| 4500  | 15.13 | 33.55     | 7.18              | 20.35              | 3.44      | 1.16    | 28.38       | 15.55            | 2.82         |
| 4600  | 14.88 | 31.60     | 7.02              | 18.39              | 2.82      | 1.15    | 28.25       | 15.75            | 2.88         |
| 4700  | 14.55 | 31.54     | 7.02              | 18.31              | 2.91      | 1.15    | 29.01       | 15.73            | 2.92         |
| 4800  | 14.27 | 32.14     | 6.60              | 18.59              | 3.13      | 1.17    | 27.96       | 15.25            | 2.99         |
| 4900  | 13.95 | 31.90     | 6.57              | 17.43              | 3.15      | 1.17    | 27.51       | 14.99            | 3.02         |
| 5000  | 13.83 | 31.79     | 6.18              | 16.43              | 3.07      | 1.18    | 27.36       | 14.77            | 3.10         |
| 5100  | 13.33 | 30.75     | 6.12              | 16.96              | 2.89      | 1.18    | 28.48       | 15.12            | 3.16         |
| 5200  | 13.04 | 31.34     | 5.83              | 16.74              | 3.11      | 1.20    | 28.16       | 14.97            | 3.20         |
| 5300  | 12.69 | 32.31     | 5.81              | 15.14              | 3.56      | 1.20    | 27.08       | 14.24            | 3.34         |
| 5400  | 12.27 | 32.10     | 5.83              | 14.73              | 3.64      | 1.19    | 26.06       | 13.75            | 3.44         |
| 5500  | 11.78 | 31.58     | 5.81              | 14.22              | 3.61      | 1.19    | 27.16       | 14.17            | 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 = 2.8V, Id = 92.95mA @ Temperature = +85degC

| FREQ  | Gain  | Isolation | Input Return Loss | Output Return Loss | Stability |         | IP-3 Output | 1dB Comp. Output | Noise Figure |
|-------|-------|-----------|-------------------|--------------------|-----------|---------|-------------|------------------|--------------|
| (MHz) | (dB)  | (dB)      | (dB)              | (dB)               | K         | Measure | (dBm)       | (dBm)            | (dB)         |
| 200   | 5.73  | 48.71     | 3.48              | 2.80               | 18.01     | 0.70    | 14.81       | 5.27             | 7.31         |
| 300   | 13.80 | 45.43     | 3.91              | 5.59               | 7.87      | 1.04    | 21.22       | 9.50             | 5.00         |
| 400   | 17.96 | 45.35     | 5.17              | 7.88               | 6.63      | 1.11    | 22.86       | 11.08            | 4.19         |
| 500   | 20.02 | 46.72     | 6.99              | 10.01              | 7.68      | 1.09    | 23.82       | 11.79            | 4.39         |
| 600   | 20.97 | 46.31     | 8.92              | 11.67              | 7.45      | 1.06    | 24.05       | 12.15            | 3.53         |
| 700   | 21.46 | 45.43     | 10.57             | 13.03              | 6.82      | 1.04    | 24.22       | 12.27            | 3.43         |
| 800   | 21.72 | 44.47     | 11.99             | 14.05              | 6.16      | 1.02    | 24.34       | 12.39            | 3.23         |
| 1000  | 21.97 | 42.45     | 14.06             | 15.31              | 4.95      | 1.00    | 24.83       | 12.80            | 3.11         |
| 1100  | 22.01 | 41.56     | 14.87             | 15.61              | 4.50      | 1.00    | 24.72       | 12.66            | 3.12         |
| 1200  | 22.02 | 40.95     | 15.52             | 15.83              | 4.22      | 0.99    | 24.42       | 12.49            | 3.11         |
| 1300  | 22.01 | 39.99     | 16.08             | 15.91              | 3.82      | 0.99    | 24.64       | 12.62            | 3.12         |
| 1400  | 21.95 | 39.11     | 16.76             | 15.93              | 3.50      | 0.98    | 24.98       | 12.78            | 3.09         |
| 1500  | 21.87 | 38.80     | 17.42             | 16.10              | 3.43      | 0.98    | 24.77       | 12.72            | 3.09         |
| 1600  | 21.83 | 38.24     | 17.37             | 15.66              | 3.22      | 0.97    | 24.79       | 12.77            | 3.23         |
| 1700  | 21.71 | 37.41     | 17.76             | 15.80              | 2.99      | 0.97    | 24.82       | 12.81            | 3.10         |
| 1800  | 21.56 | 36.82     | 18.14             | 15.97              | 2.86      | 0.96    | 24.94       | 12.99            | 3.15         |
| 1900  | 21.40 | 36.57     | 18.55             | 15.91              | 2.83      | 0.96    | 25.04       | 13.04            | 3.14         |
| 2000  | 21.23 | 36.17     | 18.82             | 15.72              | 2.76      | 0.96    | 25.03       | 13.06            | 3.17         |
| 2100  | 21.00 | 35.53     | 18.70             | 16.05              | 2.64      | 0.96    | 24.98       | 13.03            | 3.19         |
| 2200  | 20.80 | 35.01     | 18.58             | 16.21              | 2.55      | 0.96    | 25.00       | 13.14            | 3.22         |
| 2300  | 20.58 | 34.83     | 18.42             | 16.33              | 2.57      | 0.96    | 25.14       | 13.23            | 3.22         |
| 2400  | 20.32 | 34.41     | 18.08             | 16.62              | 2.52      | 0.96    | 25.34       | 13.38            | 3.15         |
| 2500  | 20.03 | 34.40     | 17.26             | 16.28              | 2.58      | 0.96    | 25.17       | 13.20            | 3.24         |
| 2600  | 19.74 | 33.91     | 16.76             | 16.94              | 2.53      | 0.97    | 25.09       | 13.16            | 3.30         |
| 2700  | 19.35 | 33.59     | 15.72             | 17.78              | 2.55      | 0.98    | 25.45       | 13.55            | 3.38         |
| 2800  | 19.06 | 33.19     | 15.19             | 18.21              | 2.51      | 0.98    | 25.47       | 13.54            | 3.34         |
| 2900  | 18.76 | 32.83     | 14.67             | 18.37              | 2.49      | 0.99    | 25.70       | 13.62            | 3.35         |
| 3000  | 18.32 | 33.06     | 13.75             | 18.46              | 2.65      | 1.00    | 25.54       | 13.44            | 3.44         |
| 3100  | 17.94 | 32.72     | 13.13             | 19.54              | 2.65      | 1.01    | 25.49       | 13.56            | 3.49         |
| 3200  | 17.55 | 32.44     | 12.26             | 20.64              | 2.66      | 1.02    | 25.49       | 13.79            | 3.44         |
| 3300  | 17.19 | 32.10     | 11.94             | 21.57              | 2.66      | 1.03    | 25.54       | 13.64            | 3.50         |
| 3400  | 16.79 | 31.79     | 11.89             | 21.39              | 2.69      | 1.03    | 25.73       | 13.72            | 3.51         |
| 3500  | 16.40 | 31.98     | 10.85             | 22.19              | 2.81      | 1.05    | 25.63       | 13.77            | 3.56         |
| 3600  | 16.02 | 31.75     | 10.26             | 22.31              | 2.82      | 1.07    | 25.65       | 13.82            | 3.61         |
| 3700  | 15.62 | 31.32     | 10.13             | 21.65              | 2.80      | 1.07    | 25.99       | 14.08            | 3.67         |
| 3800  | 15.15 | 30.75     | 10.27             | 20.12              | 2.78      | 1.06    | 25.88       | 14.01            | 3.80         |
| 3900  | 14.90 | 31.60     | 9.52              | 22.64              | 3.09      | 1.09    | 25.82       | 13.91            | 3.83         |
| 4000  | 14.51 | 31.57     | 9.28              | 22.52              | 3.20      | 1.09    | 25.58       | 13.58            | 3.86         |
| 4100  | 13.98 | 31.32     | 8.88              | 21.21              | 3.25      | 1.10    | 25.70       | 13.98            | 3.92         |
| 4200  | 13.73 | 31.31     | 8.30              | 20.10              | 3.27      | 1.12    | 25.90       | 14.03            | 4.01         |
| 4300  | 13.41 | 31.68     | 7.94              | 20.13              | 3.48      | 1.13    | 25.73       | 13.90            | 4.03         |
| 4400  | 13.07 | 31.39     | 7.54              | 18.86              | 3.43      | 1.14    | 25.38       | 13.56            | 4.11         |
| 4500  | 12.79 | 31.00     | 6.96              | 17.43              | 3.28      | 1.16    | 25.37       | 13.65            | 4.19         |
| 4600  | 12.70 | 31.22     | 6.64              | 16.67              | 3.32      | 1.17    | 25.31       | 13.78            | 4.22         |
| 4700  | 12.19 | 29.73     | 6.75              | 15.47              | 2.99      | 1.15    | 25.72       | 13.85            | 4.35         |
| 4800  | 12.07 | 30.65     | 6.00              | 16.17              | 3.22      | 1.19    | 25.48       | 13.58            | 4.41         |
| 4900  | 11.77 | 30.81     | 6.29              | 14.84              | 3.43      | 1.17    | 24.81       | 13.19            | 4.41         |
| 5000  | 11.32 | 28.88     | 6.22              | 13.32              | 2.87      | 1.15    | 24.56       | 12.97            | 4.64         |
| 5100  | 11.02 | 29.77     | 6.10              | 13.72              | 3.27      | 1.16    | 24.93       | 13.29            | 4.59         |
| 5200  | 10.59 | 29.46     | 5.77              | 13.66              | 3.24      | 1.18    | 24.84       | 13.22            | 4.76         |
| 5300  | 10.16 | 30.24     | 5.70              | 13.99              | 3.69      | 1.19    | 24.43       | 12.61            | 4.93         |
| 5400  | 9.71  | 30.33     | 5.84              | 13.51              | 3.95      | 1.18    | 23.68       | 12.19            | 5.03         |
| 5500  | 9.24  | 31.21     | 5.59              | 12.60              | 4.43      | 1.18    | 23.76       | 12.34            | 5.28         |

## 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 = 2.66V, Id = 92.34 mA @ Temperature = +85degC

| FREQ  | Gain  | Isolation | Input Return Loss | Output Return Loss | Stability |         | IP-3 Output | 1dB Comp. Output | Noise Figure |
|-------|-------|-----------|-------------------|--------------------|-----------|---------|-------------|------------------|--------------|
| (MHz) | (dB)  | (dB)      | (dB)              | (dB)               | K         | Measure | (dBm)       | (dBm)            | (dB)         |
| 200   | 5.52  | 48.93     | 3.50              | 2.80               | 19.00     | 0.69    | 13.45       | 3.62             | 7.41         |
| 300   | 13.53 | 45.20     | 3.97              | 5.57               | 7.98      | 1.03    | 18.56       | 8.00             | 5.04         |
| 400   | 17.61 | 45.74     | 5.27              | 7.81               | 7.29      | 1.10    | 20.58       | 9.55             | 4.21         |
| 500   | 19.61 | 46.57     | 7.09              | 9.88               | 7.94      | 1.08    | 21.84       | 10.36            | 4.45         |
| 600   | 20.54 | 45.52     | 8.96              | 11.44              | 7.14      | 1.05    | 22.25       | 10.72            | 3.56         |
| 700   | 21.00 | 45.24     | 10.53             | 12.68              | 6.99      | 1.03    | 22.46       | 10.87            | 3.47         |
| 800   | 21.25 | 44.02     | 11.83             | 13.59              | 6.13      | 1.02    | 22.70       | 11.00            | 3.27         |
| 1000  | 21.49 | 42.53     | 13.68             | 14.72              | 5.23      | 1.00    | 23.33       | 11.43            | 3.14         |
| 1100  | 21.52 | 41.41     | 14.39             | 15.00              | 4.64      | 1.00    | 23.27       | 11.30            | 3.16         |
| 1200  | 21.52 | 40.55     | 14.98             | 15.23              | 4.24      | 0.99    | 22.92       | 11.19            | 3.14         |
| 1300  | 21.50 | 40.00     | 15.43             | 15.32              | 4.01      | 0.99    | 23.19       | 11.32            | 3.11         |
| 1400  | 21.44 | 39.15     | 16.06             | 15.37              | 3.69      | 0.98    | 23.58       | 11.45            | 3.10         |
| 1500  | 21.36 | 38.74     | 16.68             | 15.55              | 3.57      | 0.98    | 23.39       | 11.43            | 3.11         |
| 1600  | 21.32 | 37.88     | 16.66             | 15.22              | 3.26      | 0.97    | 23.34       | 11.46            | 3.28         |
| 1700  | 21.20 | 37.29     | 17.04             | 15.37              | 3.10      | 0.97    | 23.45       | 11.53            | 3.12         |
| 1800  | 21.05 | 36.77     | 17.44             | 15.53              | 2.99      | 0.97    | 23.58       | 11.72            | 3.13         |
| 1900  | 20.90 | 36.33     | 17.89             | 15.51              | 2.90      | 0.96    | 23.70       | 11.77            | 3.17         |
| 2000  | 20.73 | 35.98     | 18.19             | 15.38              | 2.84      | 0.96    | 23.71       | 11.83            | 3.19         |
| 2100  | 20.51 | 35.40     | 18.17             | 15.68              | 2.74      | 0.96    | 23.68       | 11.79            | 3.20         |
| 2200  | 20.32 | 34.81     | 18.13             | 15.83              | 2.63      | 0.96    | 23.79       | 11.92            | 3.22         |
| 2300  | 20.10 | 34.51     | 18.05             | 16.02              | 2.61      | 0.96    | 23.91       | 11.99            | 3.22         |
| 2400  | 19.84 | 34.31     | 17.80             | 16.29              | 2.62      | 0.96    | 24.09       | 12.13            | 3.39         |
| 2500  | 19.56 | 34.21     | 17.04             | 16.02              | 2.66      | 0.97    | 24.01       | 12.07            | 3.27         |
| 2600  | 19.28 | 33.68     | 16.60             | 16.61              | 2.59      | 0.97    | 23.97       | 12.01            | 3.31         |
| 2700  | 18.90 | 33.27     | 15.63             | 17.39              | 2.57      | 0.98    | 24.32       | 12.41            | 3.40         |
| 2800  | 18.63 | 33.04     | 15.07             | 17.83              | 2.58      | 0.98    | 24.36       | 12.43            | 3.39         |
| 2900  | 18.34 | 32.64     | 14.58             | 17.97              | 2.54      | 0.99    | 24.56       | 12.51            | 3.43         |
| 3000  | 17.91 | 32.92     | 13.67             | 18.13              | 2.72      | 1.00    | 24.50       | 12.38            | 3.45         |
| 3100  | 17.54 | 32.42     | 13.04             | 19.12              | 2.67      | 1.01    | 24.47       | 12.49            | 3.52         |
| 3200  | 17.15 | 32.28     | 12.19             | 20.12              | 2.72      | 1.03    | 24.45       | 12.74            | 3.47         |
| 3300  | 16.81 | 31.89     | 11.87             | 20.97              | 2.70      | 1.03    | 24.52       | 12.66            | 3.53         |
| 3400  | 16.42 | 31.57     | 11.78             | 20.81              | 2.72      | 1.03    | 24.74       | 12.75            | 3.52         |
| 3500  | 16.03 | 31.62     | 10.76             | 21.51              | 2.80      | 1.05    | 24.73       | 12.83            | 3.59         |
| 3600  | 15.66 | 31.55     | 10.19             | 21.56              | 2.86      | 1.07    | 24.77       | 12.84            | 3.66         |
| 3700  | 15.27 | 31.02     | 10.04             | 20.96              | 2.81      | 1.07    | 25.06       | 13.15            | 3.72         |
| 3800  | 14.81 | 30.52     | 10.15             | 19.61              | 2.80      | 1.06    | 25.01       | 13.10            | 3.83         |
| 3900  | 14.56 | 31.33     | 9.43              | 21.81              | 3.10      | 1.09    | 24.95       | 12.98            | 3.85         |
| 4000  | 14.18 | 31.36     | 9.18              | 21.63              | 3.22      | 1.09    | 24.69       | 12.75            | 3.89         |
| 4100  | 13.66 | 31.19     | 8.78              | 20.44              | 3.30      | 1.10    | 24.87       | 13.09            | 3.98         |
| 4200  | 13.41 | 31.01     | 8.21              | 19.40              | 3.25      | 1.12    | 25.11       | 13.17            | 4.04         |
| 4300  | 13.10 | 31.29     | 7.86              | 19.34              | 3.43      | 1.13    | 24.89       | 13.08            | 4.05         |
| 4400  | 12.75 | 31.12     | 7.47              | 18.15              | 3.43      | 1.14    | 24.56       | 12.75            | 4.17         |
| 4500  | 12.48 | 30.64     | 6.90              | 16.79              | 3.24      | 1.16    | 24.58       | 12.86            | 4.24         |
| 4600  | 12.38 | 30.76     | 6.57              | 16.05              | 3.25      | 1.17    | 24.49       | 13.04            | 4.24         |
| 4700  | 11.88 | 29.43     | 6.69              | 14.94              | 2.98      | 1.15    | 24.87       | 13.07            | 4.39         |
| 4800  | 11.75 | 30.28     | 5.95              | 15.53              | 3.18      | 1.19    | 24.67       | 12.78            | 4.49         |
| 4900  | 11.46 | 30.61     | 6.24              | 14.29              | 3.45      | 1.16    | 24.01       | 12.40            | 4.47         |
| 5000  | 11.01 | 28.75     | 6.17              | 12.86              | 2.91      | 1.14    | 23.81       | 12.21            | 4.71         |
| 5100  | 10.72 | 29.43     | 6.05              | 13.21              | 3.24      | 1.15    | 24.17       | 12.51            | 4.65         |
| 5200  | 10.28 | 29.30     | 5.70              | 13.14              | 3.27      | 1.17    | 24.16       | 12.48            | 4.83         |
| 5300  | 9.86  | 29.78     | 5.64              | 13.43              | 3.60      | 1.18    | 23.72       | 11.94            | 5.00         |
| 5400  | 9.41  | 30.06     | 5.77              | 12.95              | 3.92      | 1.17    | 22.91       | 11.42            | 5.13         |
| 5500  | 8.92  | 30.82     | 5.54              | 12.14              | 4.36      | 1.18    | 22.96       | 11.65            | 5.36         |

## Typical Performance Data

## Definitions:

Input Return Loss = -S11 (dB)

Gain(Power Gain) = S21 (dB)

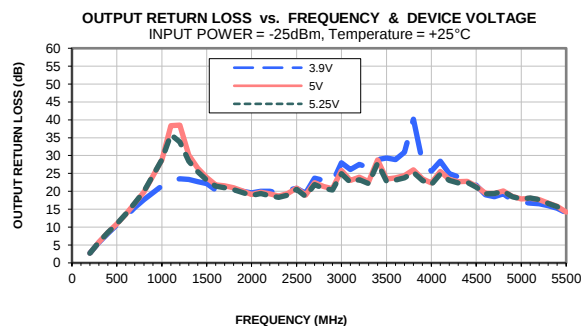
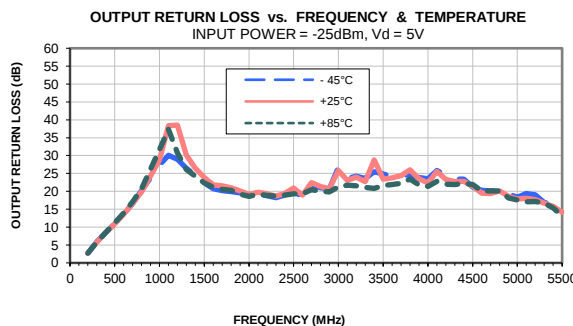
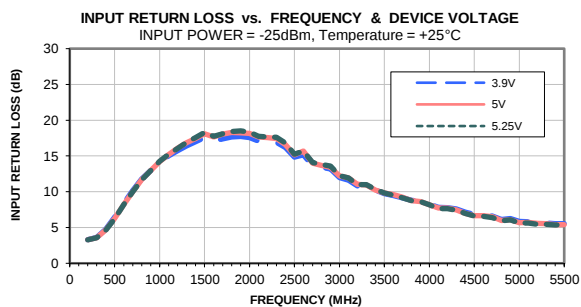
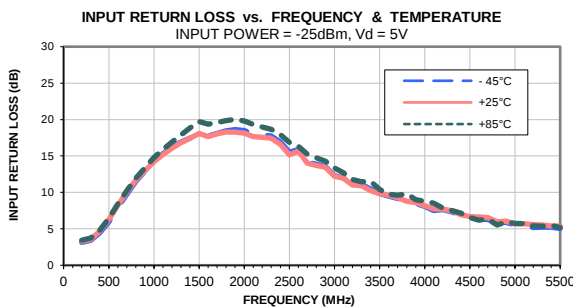
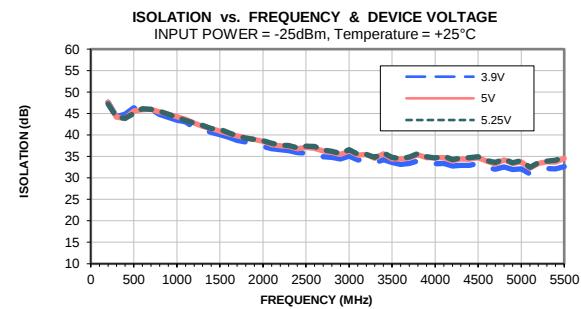
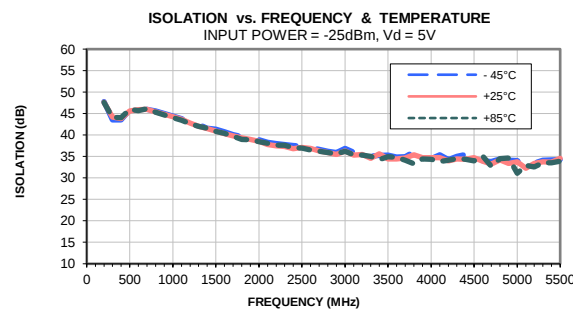
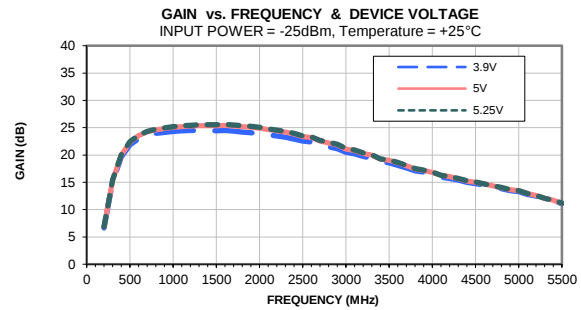
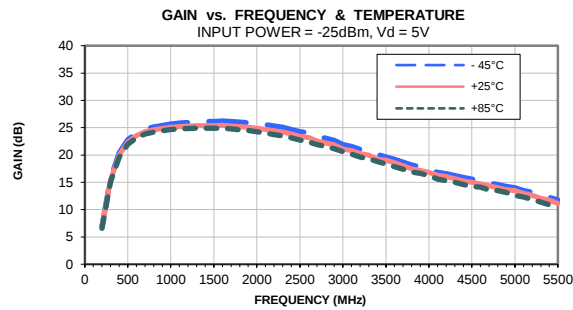
Reverse Isolation = -S12 (dB)

Output Return Loss = -S22 (dB)

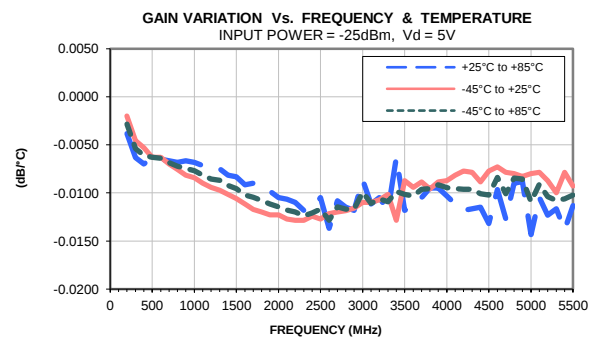
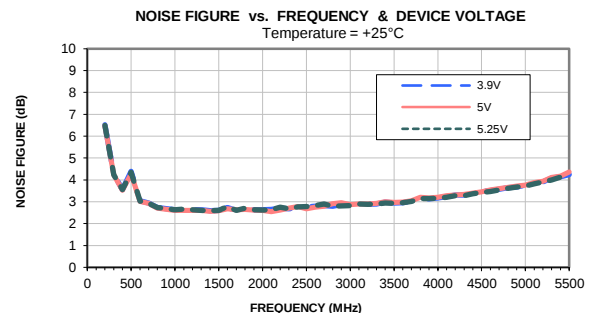
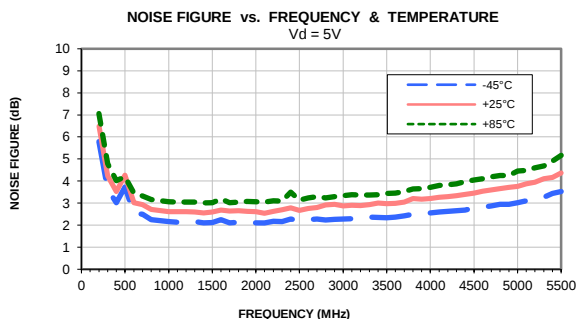
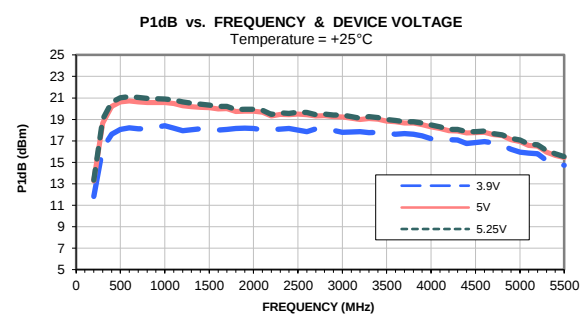
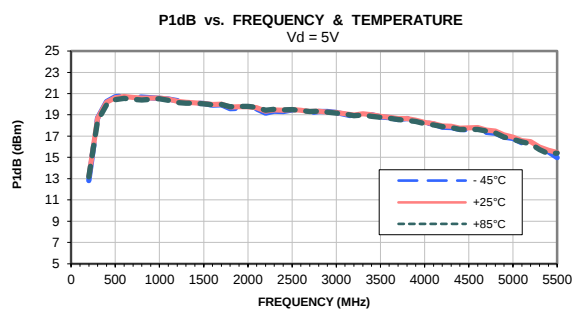
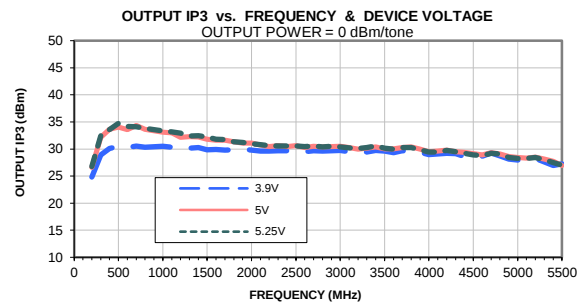
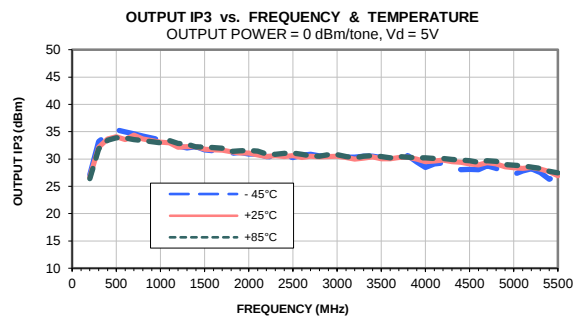
TEST CONDITIONS: Vd = 3V, Id = 93.82 mA @ Temperature = +85degC

| FREQ  | Gain  | Isolation | Input Return Loss | Output Return Loss | Stability |         | IP-3 Output | 1dB Comp. Output | Noise Figure |
|-------|-------|-----------|-------------------|--------------------|-----------|---------|-------------|------------------|--------------|
| (MHz) | (dB)  | (dB)      | (dB)              | (dB)               | K         | Measure | (dBm)       | (dBm)            | (dB)         |
| 200   | 5.94  | 47.73     | 3.46              | 2.80               | 15.58     | 0.70    | 17.35       | 6.97             | 7.24         |
| 300   | 14.09 | 45.21     | 3.84              | 5.62               | 7.35      | 1.04    | 23.77       | 11.26            | 4.92         |
| 400   | 18.32 | 45.18     | 5.06              | 7.97               | 6.19      | 1.12    | 25.05       | 12.77            | 4.14         |
| 500   | 20.44 | 46.42     | 6.87              | 10.18              | 7.04      | 1.10    | 25.85       | 13.45            | 4.32         |
| 600   | 21.43 | 46.39     | 8.83              | 11.98              | 7.15      | 1.07    | 25.94       | 13.73            | 3.51         |
| 700   | 21.94 | 45.25     | 10.55             | 13.51              | 6.35      | 1.04    | 25.93       | 13.80            | 3.39         |
| 800   | 22.22 | 44.22     | 12.07             | 14.72              | 5.70      | 1.03    | 25.99       | 13.85            | 3.22         |
| 1000  | 22.49 | 42.56     | 14.35             | 16.19              | 4.76      | 1.01    | 26.40       | 14.30            | 3.09         |
| 1100  | 22.54 | 41.53     | 15.24             | 16.55              | 4.26      | 1.00    | 26.36       | 14.10            | 3.10         |
| 1200  | 22.56 | 40.86     | 15.98             | 16.81              | 3.97      | 0.99    | 26.01       | 13.88            | 3.09         |
| 1300  | 22.55 | 40.33     | 16.58             | 16.86              | 3.76      | 0.99    | 26.17       | 14.02            | 3.09         |
| 1400  | 22.49 | 39.22     | 17.36             | 16.84              | 3.36      | 0.98    | 26.47       | 14.18            | 3.07         |
| 1500  | 22.42 | 39.05     | 18.08             | 16.95              | 3.34      | 0.98    | 26.20       | 14.10            | 3.08         |
| 1600  | 22.39 | 38.23     | 17.97             | 16.42              | 3.05      | 0.97    | 26.18       | 14.13            | 3.19         |
| 1700  | 22.26 | 37.46     | 18.35             | 16.57              | 2.85      | 0.97    | 26.20       | 14.18            | 3.08         |
| 1800  | 22.11 | 36.99     | 18.71             | 16.68              | 2.76      | 0.96    | 26.33       | 14.38            | 3.09         |
| 1900  | 21.95 | 36.69     | 19.12             | 16.57              | 2.72      | 0.96    | 26.38       | 14.42            | 3.12         |
| 2000  | 21.77 | 36.21     | 19.23             | 16.31              | 2.63      | 0.96    | 26.37       | 14.41            | 3.14         |
| 2100  | 21.54 | 35.82     | 19.00             | 16.65              | 2.58      | 0.96    | 26.29       | 14.35            | 3.14         |
| 2200  | 21.34 | 35.46     | 18.81             | 16.77              | 2.54      | 0.96    | 26.35       | 14.47            | 3.19         |
| 2300  | 21.11 | 35.12     | 18.61             | 16.90              | 2.51      | 0.96    | 26.34       | 14.54            | 3.18         |
| 2400  | 20.83 | 34.65     | 18.16             | 17.22              | 2.46      | 0.96    | 26.48       | 14.65            | 3.14         |
| 2500  | 20.53 | 34.62     | 17.28             | 16.84              | 2.51      | 0.96    | 26.37       | 14.50            | 3.25         |
| 2600  | 20.23 | 34.06     | 16.75             | 17.52              | 2.45      | 0.97    | 26.26       | 14.34            | 3.28         |
| 2700  | 19.82 | 33.74     | 15.68             | 18.48              | 2.46      | 0.98    | 26.62       | 14.79            | 3.36         |
| 2800  | 19.53 | 33.43     | 15.12             | 18.88              | 2.46      | 0.98    | 26.58       | 14.76            | 3.30         |
| 2900  | 19.22 | 32.98     | 14.63             | 19.04              | 2.41      | 0.99    | 26.79       | 14.79            | 3.37         |
| 3000  | 18.76 | 33.42     | 13.73             | 19.18              | 2.63      | 1.00    | 26.56       | 14.59            | 3.40         |
| 3100  | 18.37 | 33.01     | 13.12             | 20.38              | 2.62      | 1.01    | 26.55       | 14.73            | 3.45         |
| 3200  | 17.96 | 32.63     | 12.25             | 21.56              | 2.60      | 1.02    | 26.46       | 14.89            | 3.44         |
| 3300  | 17.60 | 32.38     | 11.93             | 22.66              | 2.63      | 1.03    | 26.48       | 14.69            | 3.47         |
| 3400  | 17.19 | 32.07     | 11.91             | 22.33              | 2.66      | 1.03    | 26.69       | 14.82            | 3.49         |
| 3500  | 16.79 | 32.30     | 10.85             | 23.35              | 2.80      | 1.05    | 26.62       | 14.83            | 3.53         |
| 3600  | 16.40 | 32.12     | 10.26             | 23.45              | 2.82      | 1.07    | 26.56       | 14.84            | 3.57         |
| 3700  | 16.00 | 31.68     | 10.15             | 22.69              | 2.80      | 1.07    | 26.94       | 15.06            | 3.65         |
| 3800  | 15.52 | 31.03     | 10.33             | 20.90              | 2.76      | 1.06    | 26.87       | 15.01            | 3.77         |
| 3900  | 15.26 | 31.90     | 9.54              | 23.82              | 3.07      | 1.09    | 26.73       | 14.91            | 3.77         |
| 4000  | 14.87 | 32.01     | 9.32              | 23.69              | 3.23      | 1.09    | 26.36       | 14.58            | 3.81         |
| 4100  | 14.33 | 31.69     | 8.93              | 22.25              | 3.27      | 1.10    | 26.54       | 14.83            | 3.91         |
| 4200  | 14.08 | 31.77     | 8.33              | 21.17              | 3.32      | 1.12    | 26.64       | 14.89            | 3.93         |
| 4300  | 13.76 | 32.00     | 7.97              | 21.21              | 3.48      | 1.13    | 26.45       | 14.75            | 4.00         |
| 4400  | 13.41 | 31.73     | 7.57              | 19.79              | 3.44      | 1.14    | 26.10       | 14.43            | 4.10         |
| 4500  | 13.13 | 31.44     | 6.98              | 18.32              | 3.33      | 1.16    | 26.11       | 14.48            | 4.13         |
| 4600  | 13.04 | 31.61     | 6.65              | 17.49              | 3.35      | 1.17    | 26.07       | 14.65            | 4.18         |
| 4700  | 12.52 | 30.14     | 6.77              | 16.18              | 3.03      | 1.15    | 26.49       | 14.67            | 4.30         |
| 4800  | 12.41 | 31.01     | 6.01              | 17.04              | 3.24      | 1.20    | 26.22       | 14.40            | 4.37         |
| 4900  | 12.10 | 31.27     | 6.32              | 15.53              | 3.51      | 1.17    | 25.56       | 14.05            | 4.35         |
| 5000  | 11.64 | 29.16     | 6.23              | 13.92              | 2.88      | 1.15    | 25.32       | 13.76            | 4.59         |
| 5100  | 11.34 | 30.12     | 6.13              | 14.38              | 3.30      | 1.17    | 25.62       | 13.96            | 4.53         |
| 5200  | 10.91 | 29.86     | 5.78              | 14.32              | 3.29      | 1.18    | 25.54       | 13.95            | 4.70         |
| 5300  | 10.48 | 30.59     | 5.71              | 14.72              | 3.72      | 1.20    | 25.13       | 13.24            | 4.86         |
| 5400  | 10.03 | 30.70     | 5.86              | 14.16              | 3.99      | 1.18    | 24.45       | 12.87            | 4.98         |
| 5500  | 9.56  | 31.52     | 5.60              | 13.11              | 4.45      | 1.19    | 24.50       | 13.08            | 5.21         |

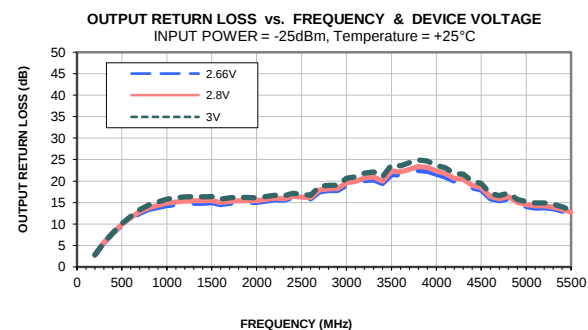
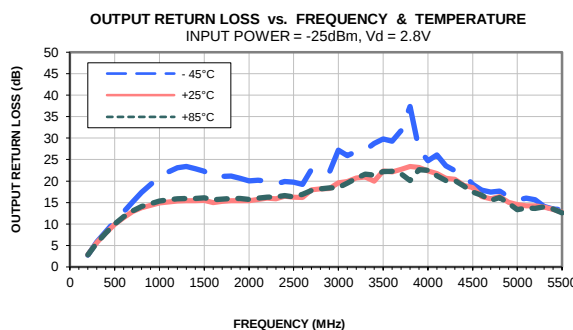
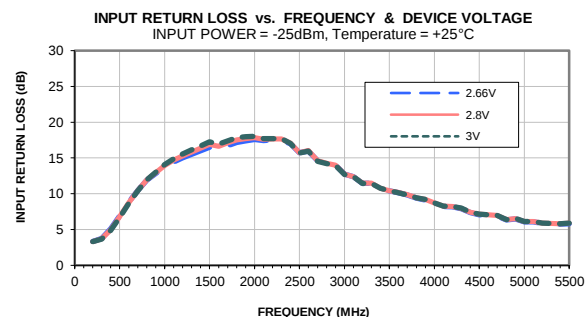
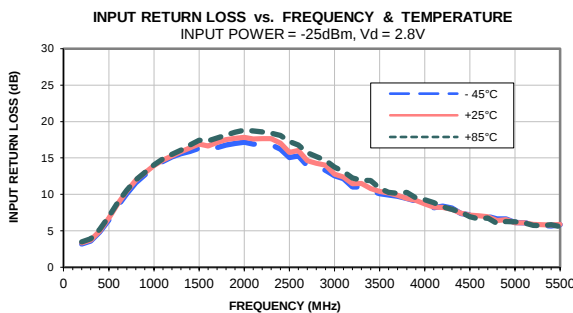
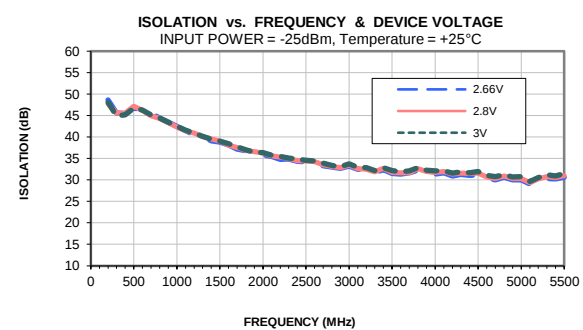
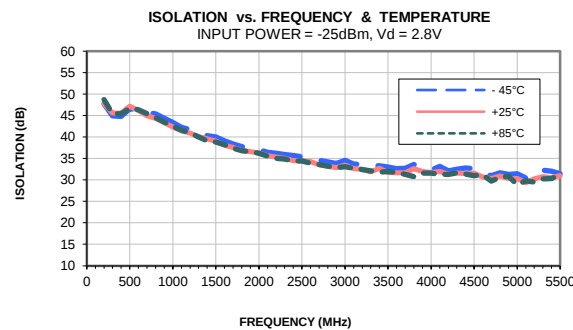
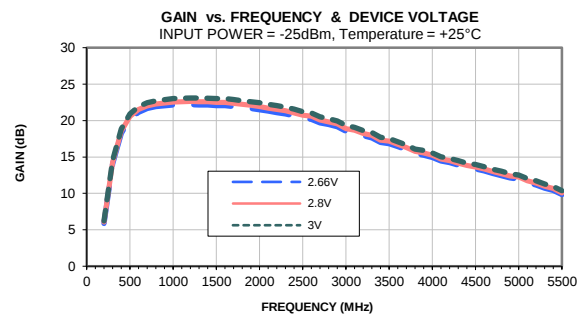
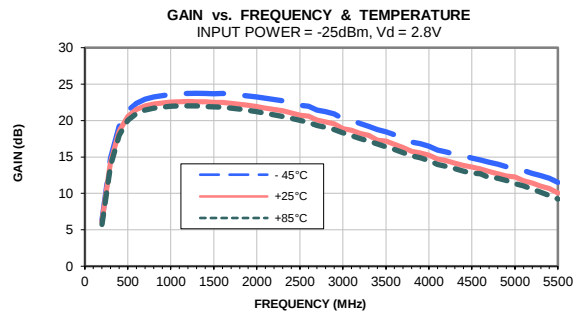
## Typical Performance Curves



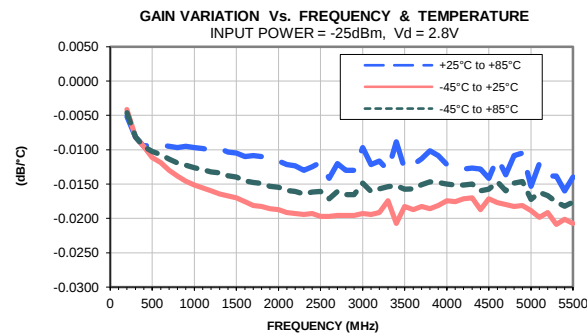
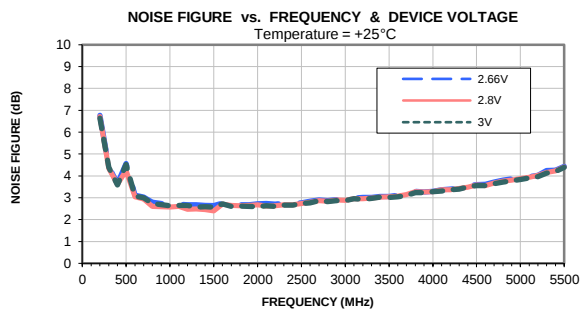
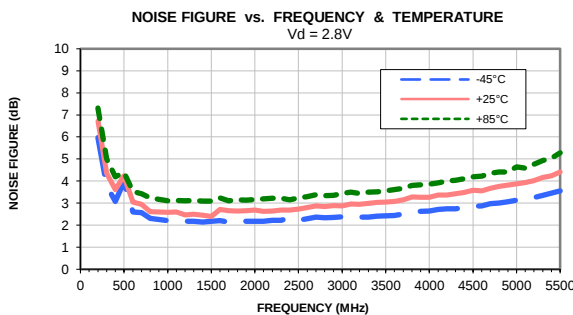
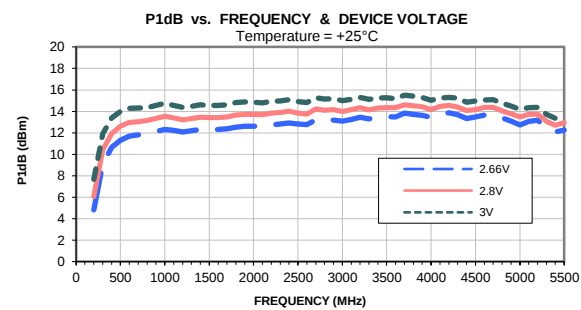
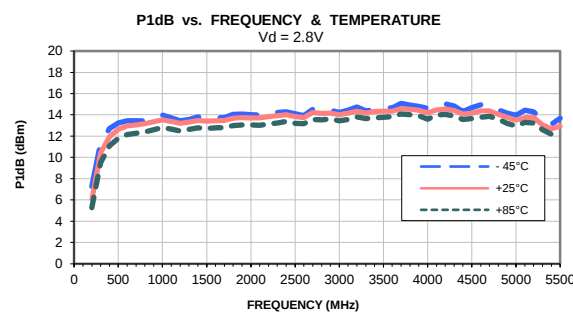
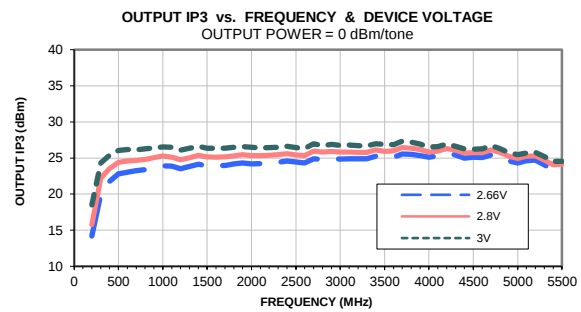
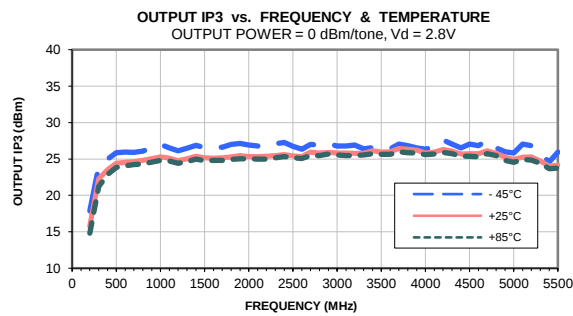
## Typical Performance Curves



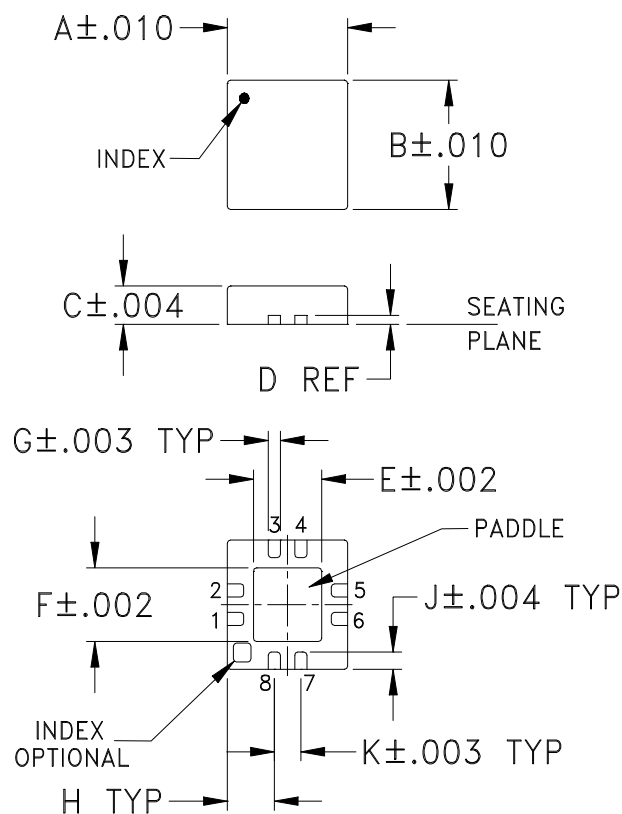
## Typical Performance Curves



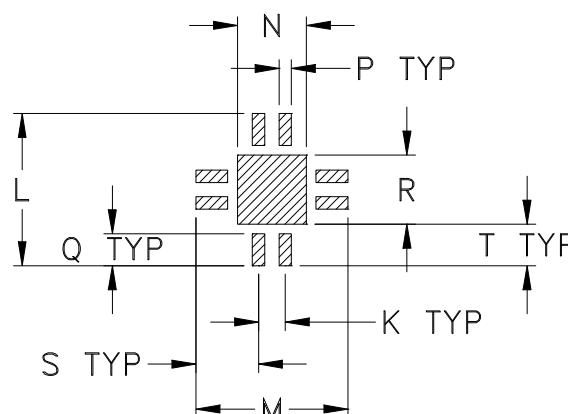
## Typical Performance Curves



### Outline Dimensions



### PCB Land Pattern



Suggested Layout,  
Tolerance to be within  $\pm.002$

| CASE # | A              | B              | C              | D              | E              | F              | G              | H              | J              | K              | L              | M              | N              |
|--------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| DQ849  | .118<br>(3.00) | .118<br>(3.00) | .035<br>(0.89) | .008<br>(0.20) | .067<br>(1.70) | .067<br>(1.70) | .012<br>(0.30) | .046<br>(1.17) | .016<br>(0.41) | .026<br>(0.66) | .148<br>(3.76) | .148<br>(3.76) | .067<br>(1.70) |

| CASE # | P              | Q              | R              | S              | T              | WT. GRAM |
|--------|----------------|----------------|----------------|----------------|----------------|----------|
| DQ849  | .012<br>(0.30) | .031<br>(0.79) | .067<br>(1.70) | .061<br>(1.55) | .041<br>(1.04) | .02      |

Dimensions are in inches (mm). Tolerances: 2Pl.  $\pm.01$ ; 3 Pl.  $\pm.004$

### Notes:

- Case material: Plastic.
- Termination finish:  
For RoHS Case Styles: Tin-Silver alloy plate over Nickel barrier or Matte-Tin plated. All models, (+) suffix. See Data sheet.  
For RoHS-5 Case Styles: Tin-Lead plate. All models. no (+) suffix.



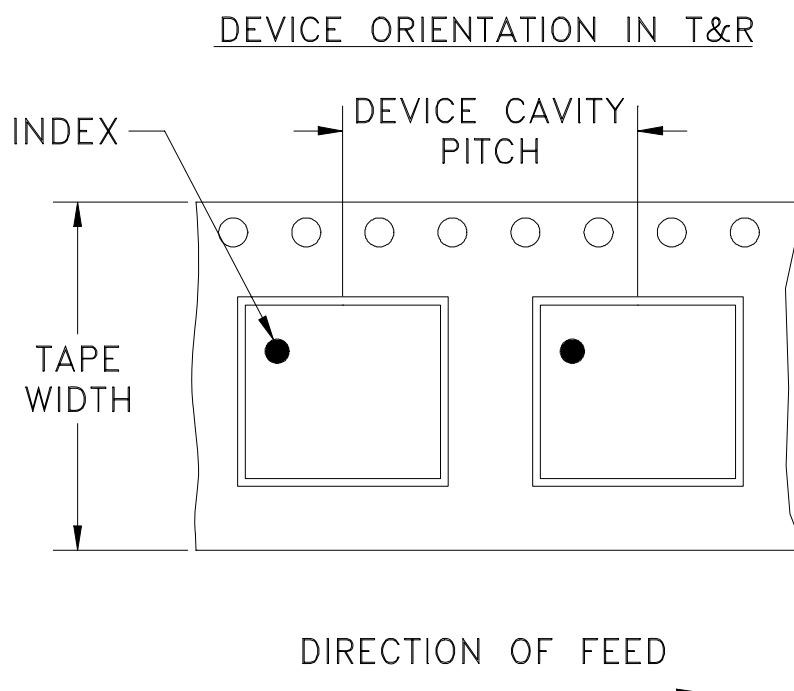
INTERNET <http://www.minicircuits.com>

P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661

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Mini-Circuits ISO 9001 & ISO 14001 Certified

# Tape & Reel Packaging TR-F104



| Tape Width, mm | Device Cavity Pitch, mm | Reel Size, inches | Devices per Reel                    |      |
|----------------|-------------------------|-------------------|-------------------------------------|------|
| 8              | 4                       | 7                 | Small quantity standards (see note) | 20   |
|                |                         |                   |                                     | 50   |
|                |                         |                   |                                     | 100  |
|                |                         |                   |                                     | 200  |
|                |                         |                   |                                     | 500  |
|                |                         |                   |                                     | 1000 |
|                |                         | 7                 | Standard                            | 2000 |

Note: Please Consult individual model data sheet to determine device per reel availability.

Mini-Circuits carrier tape materials provide protection from ESD (Electro-Static Discharge) during handling and transportation. Tapes are static dissipative and comply with industry standards EIA-481/EIA-541.

Go to: [www.minicircuits.com/pages/pdfs/tape.pdf](http://www.minicircuits.com/pages/pdfs/tape.pdf)



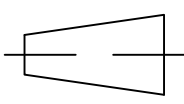
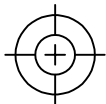
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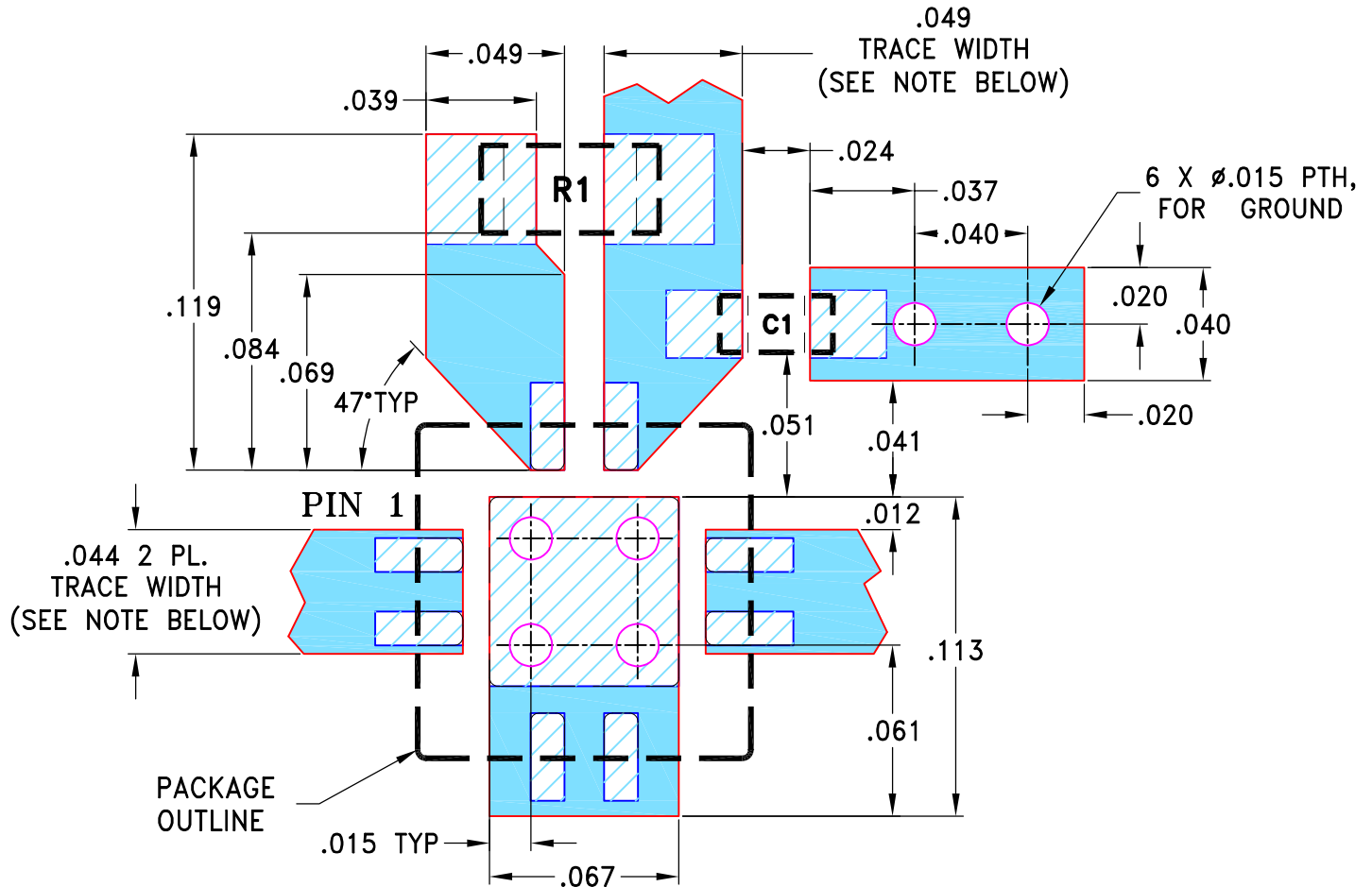
## THIRD ANGLE PROJECTION



## REVISIONS

| REV | ECN No.    | DESCRIPTION                                         | DATE     | DR  | AUTH |
|-----|------------|-----------------------------------------------------|----------|-----|------|
| OR  | M82272     | NEW RELEASE                                         | 08/05/02 | GF  | DJ   |
| A   | M82598     | MODIFIED LAYOUT                                     | 08/12/02 | GF  | MM   |
| B   | M102713    | ADDED "...WITH SMOBC"                               | 01/14/06 | GF  | IL   |
| C   | ECO-003400 | REMOVED COMP. VALUE, ADDED NOTE REF. TO EVAL. BOARD | 07/23/20 | ITG | IL   |

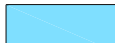
### SUGGESTED MOUNTING CONFIGURATION FOR DQ849 CASE STYLE

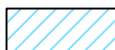


RESISTOR R1: 0603 SIZE  
CAPACITOR C1: 0402 SIZE

## NOTES:

1. LINE WIDTH IS SHOWN FOR ROGERS R04350B WITH DIELECTRIC THICKNESS  $.020 \pm .0015$ ;  
COPPER: 1/2 OZ. FOR OTHER MATERIALS LINE WIDTH MAY NEED TO BE MODIFIED.
2. FOR "R1" & "C1" VALUES REFER TO THE CORRESPONDING EVALUATION BOARD TB-186-XX+.
3. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

 DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)

 DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

UNLESS OTHERWISE SPECIFIED

INITIALS

DATE

DIMENSIONS ARE IN INCHES

TOLERANCES ON:

2 PL DECIMALS  $\pm$ 3 PL DECIMALS  $\pm .005$ ANGLES  $\pm$ FRACTIONS  $\pm$ 

DRAWN

GF

07/19/02

CHECKED

LC

08/01/02

APPROVED

DJ

08/05/02



Mini-Circuits®

13 Neptune Avenue  
Brooklyn NY 11235

PL, DQ849, TB-186-XX+

SIZE

A

CODE IDENT

15542

DRAWING NO:

98-PL-078

REV:

C

FILE:

98PL078

SCALE:

15:1

SHEET:

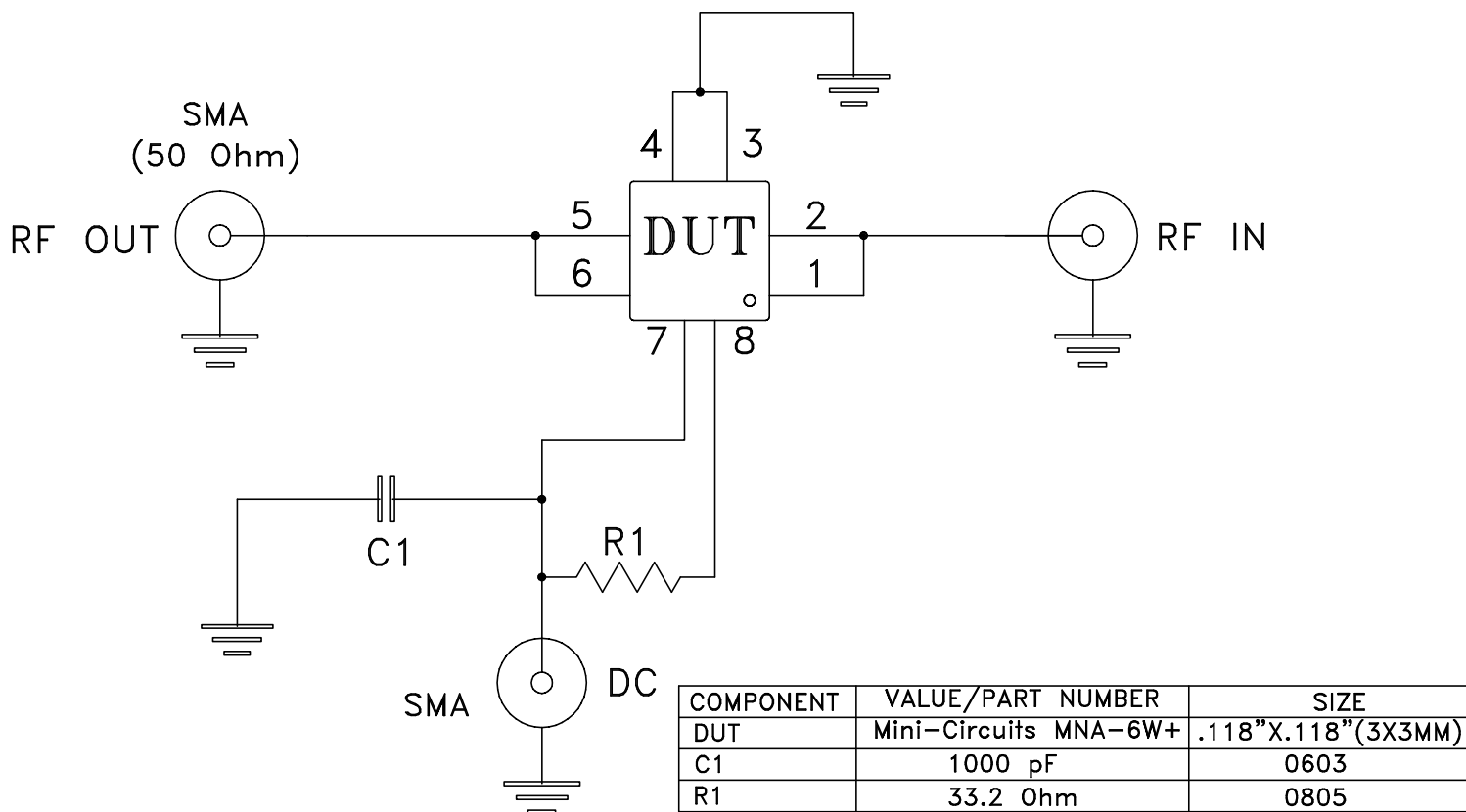
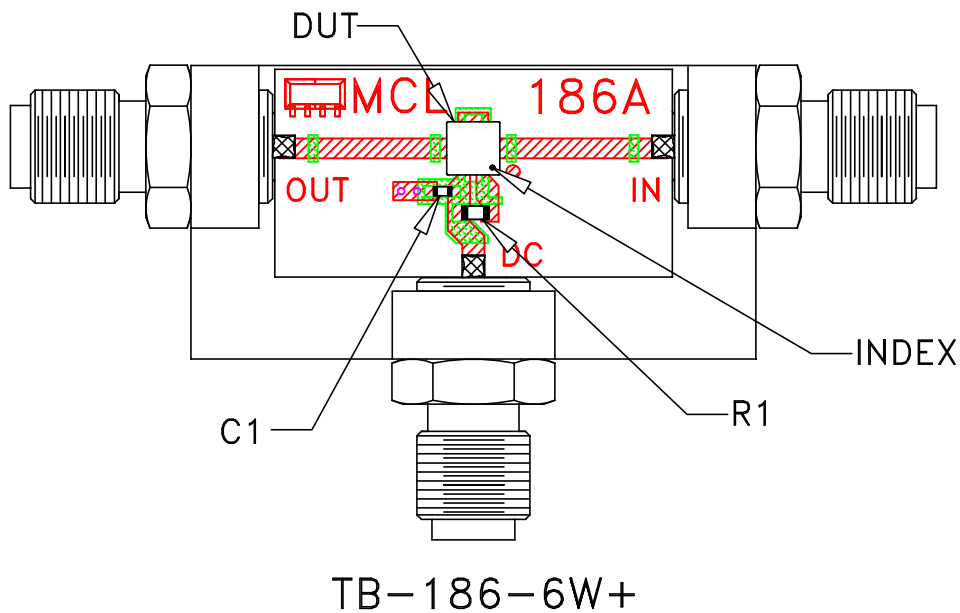
1 OF 1

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ASHEETA1.DWG REV:A DATE:01/12/95

# Evaluation Board and Circuit



| COMPONENT | VALUE/PART NUMBER     | SIZE               |
|-----------|-----------------------|--------------------|
| DUT       | Mini-Circuits MNA-6W+ | .118"X.118"(3X3MM) |
| C1        | 1000 pF               | 0603               |
| R1        | 33.2 Ohm              | 0805               |

Schematic Diagram

## Notes:

1. SMA Female connectors.
2. PCB Material: Rogers R04350 or equivalent, Dielectric Constant=3.5, Thickness=.020 inch.
3. Pins 1 and 6 have no internal connecton.
4. Paddle underneath DUT must be grounded.

 **Mini-Circuits®**



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 or -45° to 85°C<br>Ambient Environment                                                                            | Individual Model Data Sheet                                     |
| Storage Temperature            | -55° to 100° C or -65° to 150°<br>Ambient Environment                                                                          | Individual Model Data Sheet                                     |
| Thermal Shock                  | -55° to 100°C, 100 cycles                                                                                                      | MIL-STD-202, Method 107, Condition A-3, except +100°C           |
| Mechanical Shock               | 1.5Kg, 0.5 ms, 5 shock pulses, Y1 direction only                                                                               | MIL-STD-883, Method 2002, Condition B, except Y1 direction only |
| Vibration (Variable Frequency) | 50g peak                                                                                                                       | MIL-STD-883, Method 2007, Condition B                           |
| Autoclave                      | 15 psig, 100% RH, 121°C, 96 hours                                                                                              | JESD22-A102, Condition C                                        |
| HAST                           | 130°C, 85% RH, 96 hours                                                                                                        | JESD22-A110                                                     |
| Solderability                  | 10X Magnification                                                                                                              | J-STD-002, Para 4.2.5, Test S, 95% Coverage                     |
| Solder Reflow Heat             | Sn-Pb Eutetic Process: 240°C peak<br>Pb-Free Process: 260°C peak                                                               | J-STD-020, Table 4-1, 4-2 and 5-2; Figure 5-1                   |
| Moisture Sensitivity: Level 1  | Bake at 125°C for 24 hours<br>Soak at 85°C/85% RH for 168 hours, Reflow 3 cycles at 260°C peak                                 | J-STD-020                                                       |
| Marking Resistance to Solvents | Isopropyl alcohol + mineral spirits at 25°C; terpene defluxer at 25°C;<br>distilled water + proylene glycol monomethyl ether + | MIL-STD-202, Method 215                                         |



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| Specification | Test/Inspection Condition        | Reference/Spec |
|---------------|----------------------------------|----------------|
|               | monoethanolamine at 63°C to 70°C |                |