

Dual Matched High Dynamic Range

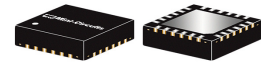
Monolithic Amplifier

MPGA-122-75+

75Ω 40 to 1250 MHz

The Big Deal

- High IP3
- Positive Gain Slope
- 1W Output Power



4x4mm 24-lead, MCLP package

Product Overview

MPGA-122-75+ (RoHS compliant) is an advanced wideband dual amplifier fabricated using E-PHEMT* technology and offers extremely high dynamic range over a broad frequency range and with low noise figure and flat gain. In addition, the MPGA-122-75+ has excellent input and output return loss when used per suggested application circuit over a broad frequency range. It is enclosed in a 4x4mm, 24 lead MCLP package for very good thermal performance.

Key Features

| Feature | Advantages |
|--|---|
| Broad Band: 0.04 to 1.25 GHz Usable to 1.5 GHz | Covers primary CATV applications such as DOCSIS 3.1 |
| Positive Gain Slope, 0.3 dB | Compensates for increasing loss versus frequency of cables |
| High IP3 Versus DC power Consumption: 51 dBm typical at 0.5 GHz | The MPGA-122-75+ matches industry leading IP3 performance relative to device size and power consumption. The combination of the design and E-PHEMPT structure provides enhanced linearity over a broad frequency range as evidence in the IP3 being typically 14-19 dB above the P 1dB point. This feature makes this amplifier ideal for use in CATV applications. |
| High IP2, 68 dBm at 0.5 GHz | Suppresses second order product on wideband applications such as CATV |
| Low Noise Figure, 2.8 dB at 0.5 GHz | Low noise figure performance in combination with the high output IP3 results in high dynamic range. |
| Excellent CSO/CTB* CSO, -80 dBc CTB, -83 dBc Measured at channel 17 | Competitive performance at lower current and supply voltage. |

*108 channels flat, 40 dBm/channel at output, 6 MHz channel spacing.

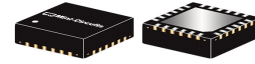


Dual Matched High Dynamic Range Monolithic Amplifier

40-1250 MHz

Product Features

- High IP3, 50 dBm typ. at 0.5 GHz
- Gain, 15.1 dB typ. at 0.5 GHz
- High Pout, P1dB 80 dBmV typ. at 0.5 GHz
- Low Noise Figure, 2.9 dB at 0.5 GHz
- Usable over 40-1800 MHz



MPGA-122-75+

CASE STYLE: DG1847

Typical Applications

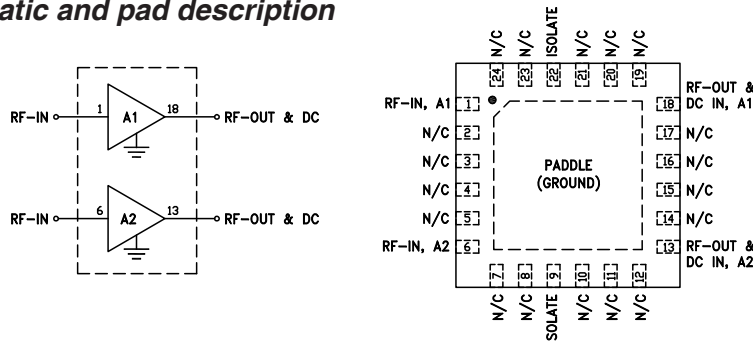
- CATV, DOCSIS 3.1
- GPON
- MOCA
- DBS

+RoHS Compliant
The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

General Description

MPGA-122-75+ (RoHS compliant) is an advanced wideband dual amplifier fabricated using E-PHEMT* technology and offers extremely high dynamic range over a broad frequency range and with low noise figure and flat gain. In addition, the MPGA-122-75+ has excellent input and output return loss when used per suggested application circuit over a broad frequency range. It is enclosed in a 4x4mm, 24 lead MCLP package for very good thermal performance.

simplified schematic and pad description



| Function | Pad Number | Description (Refer to Figure 1) |
|----------------------|-----------------------------------|---|
| RF IN, A1 | 1 | RF input pad. This pad requires the use of an external DC blocking capacitor |
| RF IN, A2 | 6 | RF input pad. This pad requires the use of an external DC blocking capacitor |
| RF-OUT and DC-IN, A1 | 18 | RF output and bias pad. DC voltage is present on this pad; therefore a DC blocking capacitor is necessary for proper operation. An RF choke is needed to feed DC bias without loss of RF signal due to the bias connection, as shown in "Recommended Application Circuit", Fig. 1 |
| RF-OUT and DC-IN, A2 | 13 | RF output and bias pad. DC voltage is present on this pad; therefore a DC blocking capacitor is necessary for proper operation. An RF choke is needed to feed DC bias without loss of RF signal due to the bias connection, as shown in "Recommended Application Circuit", Fig. 1 |
| GND | Paddle | Connections to ground. Use via holes as shown in "Suggested Layout for PCB Design" to reduce ground path inductance for best performance. |
| N/C | 2-5, 7,8 10-12,14-17, 19-21 23-24 | No connection. Ground externally |
| Do not use | 9,22 | Isolate on PCB trace |

*Enhanced mode pseudomorphic High Electron Mobility Transistor.



Electrical Specifications¹ at 25°C, 75Ω unless noted

| Parameter | Condition (GHz) | V _{DD} =9V (Note 1) | | | V _{DD} =8V (Note 1) | | | V _{DD} =9V (Note 1A) | Units |
|--|-----------------|------------------------------|-------------|------|------------------------------|-------------|------|-------------------------------|---------------|
| | | Min. | Typ. | Max. | Min. | Typ. | Max. | Typ. | |
| Frequency range | | 0.04 | | 1.25 | 0.04 | | 1.25 | 0.04-1.25 | GHz |
| Gain | 0.04 | | 15 | | | 14.9 | | 15.0 | dB |
| | 0.5 | | 15.1 | | | 15.1 | | 15.1 | |
| | 0.86 | 13.8 | 15.3 | 16.9 | | 15.3 | | 15.3 | |
| | 1.25 | | 15.3 | | | 15.3 | | 15.0 | |
| | 1.5 | | 15.1 | | | 15.0 | | 14.5 | |
| Input return loss | 0.04 | | 13.6 | | | 13.7 | | 13.4 | dB |
| | 0.5 | | 16.4 | | | 16.3 | | 15.3 | |
| | 0.86 | | 20.5 | | | 20.1 | | 20.6 | |
| | 1.25 | | 19.1 | | | 18.7 | | 20.3 | |
| | 1.5 | | 15.1 | | | 14.6 | | 15.7 | |
| Output return loss | 0.04 | | 16.8 | | | 16.7 | | 16.7 | dB |
| | 0.5 | | 13.7 | | | 13.6 | | 13.4 | |
| | 0.86 | | 16.4 | | | 16.3 | | 17.1 | |
| | 1.25 | | 17.5 | | | 17.0 | | 15.3 | |
| | 1.5 | | 12.6 | | | 12.2 | | 9.7 | |
| Reverse isolation | 1.0 | | 21.5 | | | 21.5 | | 21.7 | dB |
| Output power @ 1dB compression | 0.04 | | 30.1 (78.8) | | | 29.1 (77.8) | | 30.2 (78.9) | dBm (dBmV) |
| | 0.5 | | 30.9 (79.6) | | | 29.9 (78.7) | | 30.9 (79.7) | |
| | 0.86 | | 30.6 (79.4) | | | 29.6 (78.3) | | 30.5 (79.2) | |
| | 1.25 | | 28.6 (77.4) | | | 27.4 (76.2) | | 28.0 (76.7) | |
| | 1.5 | | 28.2 (76.4) | | | 27.1 (75.9) | | 27.3 (76.0) | |
| Output IP3 | 0.04 | | 45.9 | | | 45.4 | | 44.4 | dBm |
| | 0.5 | | 49.7 | | | 48.9 | | 50.6 | |
| | 0.86 | | 48.8 | | | 46.5 | | 47.0 | |
| | 1.25 | | 48.4 | | | 48.6 | | 46.3 | |
| | 1.5 | | 42.8 | | | 43.0 | | 40.7 | |
| Output IP2 ² | 0.04 | | 75.7 | | | 73.7 | | 76.2 | dBm |
| | 0.5 | | 68.9 | | | 69.4 | | 69.2 | |
| | 0.86 | | 68.8 | | | 66.8 | | 67.1 | |
| | 1.25 | | 72.5 | | | 70.6 | | 66.2 | |
| | 1.5 | | 55.3 | | | 53.1 | | 50.1 | |
| Noise figure | 0.04 | | 2.9 | | | 2.8 | | 2.8 | dB |
| | 0.5 | | 2.9 | | | 2.8 | | 2.9 | |
| | 0.86 | | 3.2 | | | 3.2 | | 3.2 | |
| | 1.25 | | 3.6 | | | 3.5 | | 3.6 | |
| | 1.5 | | 3.9 | | | 3.9 | | 4.1 | |
| Supply operating voltage | | | 9.0 | | | 8.0 | | 9.0 | V |
| Supply operating current (Total) | | — | 391 | 487 | | 343 | | 392 | mA |
| Device current variation vs temperature ³ | | | 9.4 | | | 29.4 | | — | μA/°C |
| Device current variation vs voltage | | | 0.0506 | | | 0.0507 | | — | mA/mV |
| Thermal resistance, junction-to-ground lead | | | 8.6 | | | 8.6 | | 8.6 | °C/W |

1. Measured on Mini-Circuits Characterization Test board MB012. PCB material Rogers 4350B. See Characterization Test Circuit (Fig. 1).

1A. Measured on Mini-Circuit Evaluation Board TB-937+ (PCB Material FR4) VDD=12V is applied to get 9V at DUT (Fig. 2)

2. Output IP2 measured at sum frequency of the two tones (f means= f1+f2).

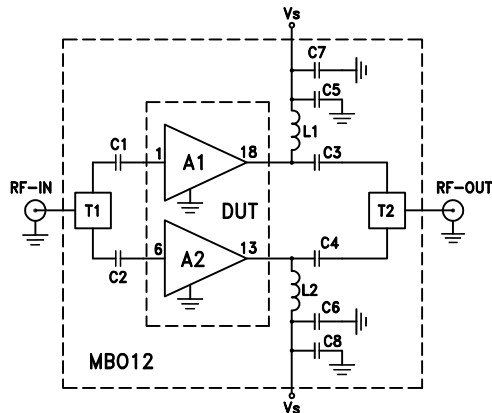
3. (Current at 85°C - Current at -45°C)/130

Absolute Maximum Ratings⁶

| Parameter | Ratings |
|-------------------------------------|---|
| Operating Temperature (ground lead) | -40°C to 85°C |
| Storage Temperature | -65°C to 150°C |
| Operating Current at 9.0V | 464 mA |
| Power Dissipation | 8.5 W |
| Input Power (CW) at 9V | +28 dBm (5 minutes) +25 dBm (continuous) |
| DC Voltage on Pad 13 & 18 | 12V |

6. Permanent damage may occur if any of these limits are exceeded. Electrical maximum ratings are not intended for continuous normal operation.

Characterization and Application Test Circuit



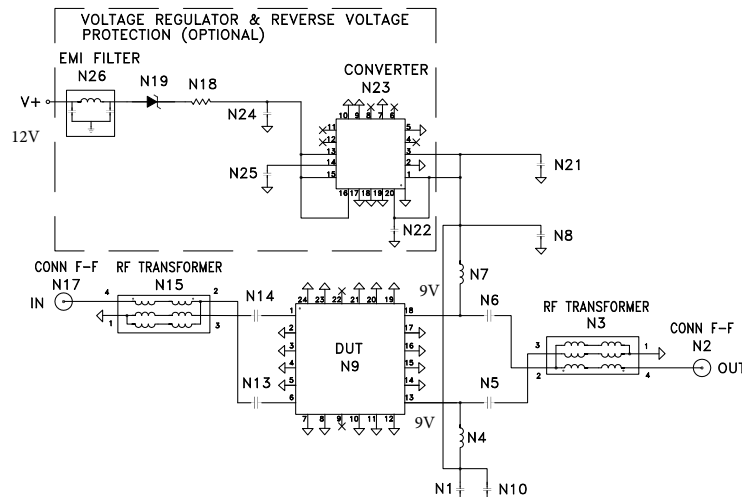
| Component | Size | Value | Manufacturers P/N | Manufacturer |
|-----------|------|--------------|--------------------|---------------|
| DUT | -- | --- | MPGA-122-75+ | Mini-Circuits |
| C1 & C2 | 0402 | 220 pF | GRM1555C1H221JA01D | Murata |
| C3 & C4 | 0402 | 220 pF | GRM1555C1H221JA01D | Murata |
| C5 & C6 | 0402 | 0.01 μ F | GRM155R71E103KA01D | Murata |
| C7 & C8 | 1210 | 10 μ F | GRM32ER71H106MA2L | Murata |
| L1, L2 | 0805 | 390 nH | 0805CS-391XGLC | Coilcraft |
| T1 & T2 | -- | -- | TRS1-182-75+ | Mini-Circuits |

Fig 1. Block Diagram of Test Circuit used for characterization. (DUT tested on Mini-Circuits Characterization test board MB012) Gain, Return loss, Output power at 1 dB compression (P1 dB) , output IP3 (OIP3), output IP2 (OIP2) 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, 5 dBm/tone at output.
3. Output IP2 (OIP2): Two tones, spaced 1 MHz apart, 5 dBm/tone at output.

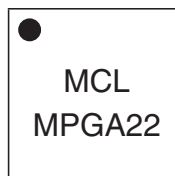
Application Circuit



| COMPONENT | VALUE | SIZE |
|---------------|----------------------------------|--------------|
| N9 (DUT) | Mini-Circuits MPGA-122-75+ | 4X4 mm |
| N1,N21,N24 | Capacitor 10 uF | 1206 |
| N3,N15 | Mini-Circuits TRS1-182-75+ | 7.11X6.35 mm |
| N4,N7 | Inductor 390 nH | 0805 |
| N5,N6,N13,N14 | Capacitor 220 pF | 0402 |
| N8,N10 | Capacitor .01 uF | |
| N18 | Resistor 4.32 Ohms,1W | 2512 |
| N19 | Diode Schottky SMA 40V MSL1 | 5.21X2.60 mm |
| N22 | Capacitor 22 uF | 1210 |
| N23 | Voltage Regulator QFN20 ADJ MSL2 | 5X5 mm |
| N25 | Capacitor 1 uF | 0603 |
| N26 | EMI Filter | - |

Fig 2. Block Diagram of Application Circuit (DUT soldered on TB-937+) due to 3V drop at the voltage regulator and reversed voltage protection circuit, $V_{DD}=12V$ is needed to get 9V at DUT.

Product Marking



Marking may contain other features or characters for internal lot control

| Additional Detailed Technical Information <i>additional information is available on our dash board. To access this information click here</i> | |
|---|---|
| Performance Data | Data Table |
| | Swept Graphs |
| | S-Parameter (S2P Files) Data Set (.zip file) |
| Case Style | DG1847 <i>Plastic package, exposed paddle lead finish: matt-tin</i> |
| Tape & Reel Standard quantities available on reel | F68 <i>7" reels with 20, 50, 100, 200, 500 or 1K devices</i> |
| Suggested Layout for PCB Design | PL-500 |
| Evaluation Board | TB-937+ |
| Environmental Ratings | ENV08T1 |

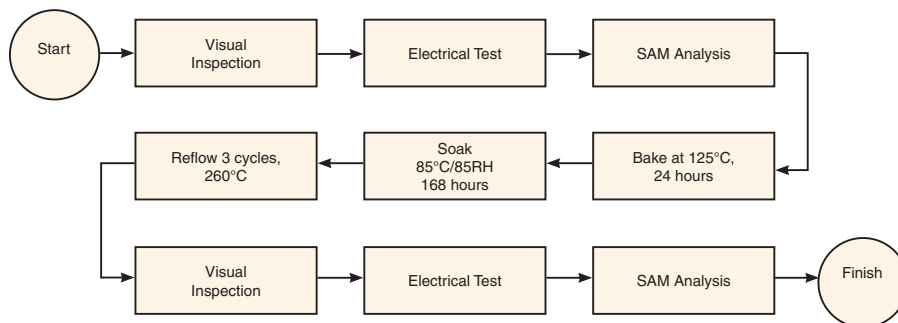
ESD Rating

Human Body Model (HBM): Class 1A (Pass 250V) 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



Additional Notes

- Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
- Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
- The parts covered by this specification document are subject to Mini-Circuits standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the Standard Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at www.minicircuits.com/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 = 9.00V, Id = 391.97mA @ Temperature = +25°C

| FREQ | Gain | Isolation | Input Return Loss | Output Return Loss | Stability | | IP-3 Output | 1dB Comp. Output | Noise Figure |
|-------|-------|-----------|-------------------|--------------------|-----------|---------|-------------|------------------|--------------|
| | | | | | K | Measure | | | |
| (MHz) | (dB) | (dB) | (dB) | (dB) | K | Measure | (dBm) | (dBm) | (dB) |
| 20 | 14.56 | 21.59 | 6.50 | 10.68 | 1.16 | 0.80 | 39.90 | 30.21 | 2.87 |
| 30 | 15.02 | 21.10 | 10.81 | 15.68 | 1.19 | 0.76 | 42.17 | 30.32 | 2.71 |
| 40 | 15.00 | 21.01 | 13.72 | 17.35 | 1.22 | 0.75 | 43.94 | 30.09 | 2.62 |
| 50 | 14.99 | 21.10 | 15.39 | 17.54 | 1.23 | 0.75 | 47.36 | 30.27 | 2.56 |
| 60 | 15.02 | 21.03 | 16.34 | 17.57 | 1.23 | 0.74 | 49.66 | 30.41 | 2.65 |
| 70 | 15.03 | 20.93 | 16.90 | 17.56 | 1.22 | 0.73 | 49.26 | 30.45 | 2.63 |
| 80 | 15.06 | 20.92 | 17.35 | 17.42 | 1.22 | 0.73 | 50.39 | 30.55 | 2.54 |
| 90 | 15.07 | 20.98 | 17.50 | 17.41 | 1.22 | 0.73 | 50.55 | 30.54 | 2.49 |
| 100 | 15.09 | 20.89 | 17.72 | 17.34 | 1.21 | 0.72 | 50.56 | 30.53 | 2.44 |
| 150 | 15.14 | 20.83 | 18.12 | 16.82 | 1.20 | 0.71 | 50.52 | 30.61 | 2.45 |
| 200 | 15.17 | 20.84 | 18.13 | 16.30 | 1.20 | 0.70 | 49.30 | 30.73 | 2.42 |
| 250 | 15.18 | 20.81 | 18.07 | 15.83 | 1.19 | 0.70 | 48.63 | 30.84 | 2.51 |
| 300 | 15.18 | 20.82 | 17.91 | 15.41 | 1.19 | 0.70 | 49.48 | 31.05 | 2.50 |
| 350 | 15.19 | 20.92 | 17.68 | 14.97 | 1.20 | 0.70 | 49.33 | 30.93 | 2.54 |
| 400 | 15.19 | 20.81 | 17.39 | 14.72 | 1.19 | 0.69 | 50.38 | 30.92 | 2.56 |
| 450 | 15.18 | 20.98 | 17.39 | 14.46 | 1.20 | 0.70 | 51.82 | 30.97 | 2.57 |
| 500 | 15.19 | 21.01 | 17.30 | 14.35 | 1.20 | 0.70 | 50.76 | 31.03 | 2.71 |
| 550 | 15.20 | 21.10 | 17.50 | 14.36 | 1.21 | 0.70 | 50.61 | 30.94 | 2.69 |
| 600 | 15.21 | 21.12 | 17.62 | 14.46 | 1.21 | 0.70 | 53.03 | 30.93 | 2.69 |
| 650 | 15.23 | 21.13 | 18.00 | 14.70 | 1.21 | 0.70 | 52.95 | 31.04 | 2.75 |
| 700 | 15.24 | 21.15 | 18.39 | 15.01 | 1.21 | 0.71 | 51.57 | 30.93 | 2.73 |
| 750 | 15.28 | 21.16 | 19.18 | 15.56 | 1.21 | 0.71 | 50.67 | 30.97 | 2.81 |
| 800 | 15.31 | 21.21 | 20.05 | 16.13 | 1.22 | 0.71 | 49.05 | 30.87 | 2.93 |
| 850 | 15.36 | 21.25 | 21.24 | 16.99 | 1.22 | 0.72 | 47.49 | 30.79 | 3.00 |
| 900 | 15.39 | 21.30 | 22.29 | 17.95 | 1.23 | 0.73 | 46.63 | 30.51 | 3.03 |
| 950 | 15.41 | 21.39 | 23.09 | 19.19 | 1.23 | 0.74 | 47.27 | 30.49 | 3.06 |
| 1000 | 15.42 | 21.44 | 23.35 | 20.36 | 1.24 | 0.74 | 46.29 | 30.21 | 3.02 |
| 1100 | 15.42 | 21.69 | 22.53 | 21.80 | 1.26 | 0.77 | 48.29 | 29.34 | 3.08 |
| 1200 | 15.38 | 21.90 | 20.72 | 20.60 | 1.27 | 0.78 | 49.98 | 28.57 | 3.21 |
| 1300 | 15.32 | 22.18 | 19.06 | 17.96 | 1.29 | 0.80 | 46.39 | 28.36 | 3.41 |
| 1400 | 15.20 | 22.52 | 17.51 | 15.31 | 1.31 | 0.81 | 43.58 | 27.90 | 3.46 |
| 1500 | 15.09 | 22.98 | 15.91 | 13.07 | 1.34 | 0.82 | 41.79 | 28.14 | 3.47 |
| 1600 | 14.90 | 23.41 | 14.24 | 11.20 | 1.38 | 0.81 | 40.03 | 28.11 | 3.69 |
| 1700 | 14.66 | 23.86 | 13.05 | 9.79 | 1.42 | 0.80 | 39.47 | 27.51 | 3.88 |
| 1800 | 14.37 | 24.55 | 12.23 | 8.83 | 1.51 | 0.80 | 38.54 | 26.87 | 3.98 |
| 1900 | 14.01 | 25.12 | 11.69 | 8.13 | 1.61 | 0.80 | 37.43 | 26.06 | 4.23 |
| 2000 | 13.44 | 25.99 | 11.14 | 7.63 | 1.78 | 0.81 | 36.90 | 25.01 | 4.51 |
| 2100 | 13.04 | 26.88 | 10.56 | 7.52 | 1.98 | 0.84 | 36.01 | 24.58 | 4.80 |
| 2200 | 12.25 | 27.95 | 8.75 | 6.93 | 2.22 | 0.86 | 35.97 | 24.48 | 5.25 |
| 2300 | 11.04 | 29.65 | 6.91 | 6.09 | 2.66 | 0.88 | 36.11 | 23.90 | 5.64 |
| 2400 | 9.36 | 31.94 | 5.40 | 5.19 | 3.45 | 0.88 | 35.76 | 23.23 | 5.77 |
| 2500 | 7.35 | 34.22 | 4.32 | 4.37 | 4.51 | 0.86 | 38.24 | 22.00 | 6.75 |

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 = 8.00V, Id = 344.62mA @ Temperature = +25°C

| FREQ | Gain | Isolation | Input Return Loss | Output Return Loss | Stability | | IP-3 Output | 1dB Comp. Output | Noise Figure |
|-------|-------|-----------|-------------------|--------------------|-----------|---------|-------------|------------------|--------------|
| | | | | | K | Measure | | | |
| (MHz) | (dB) | (dB) | (dB) | (dB) | K | Measure | (dBm) | (dBm) | (dB) |
| 20 | 14.53 | 21.53 | 6.49 | 10.59 | 1.16 | 0.79 | 40.35 | 29.19 | 2.84 |
| 30 | 14.99 | 21.14 | 10.79 | 15.66 | 1.20 | 0.77 | 42.80 | 29.33 | 2.71 |
| 40 | 14.97 | 21.03 | 13.67 | 17.39 | 1.22 | 0.75 | 44.48 | 29.09 | 2.55 |
| 50 | 14.96 | 20.87 | 15.26 | 17.44 | 1.21 | 0.73 | 47.69 | 29.29 | 2.56 |
| 60 | 14.99 | 20.87 | 16.20 | 17.39 | 1.21 | 0.73 | 49.67 | 29.43 | 2.58 |
| 70 | 15.00 | 21.00 | 16.72 | 17.41 | 1.23 | 0.73 | 48.56 | 29.48 | 2.57 |
| 80 | 15.02 | 20.98 | 17.22 | 17.30 | 1.22 | 0.73 | 50.82 | 29.58 | 2.52 |
| 90 | 15.04 | 20.87 | 17.40 | 17.27 | 1.21 | 0.72 | 50.45 | 29.58 | 2.48 |
| 100 | 15.06 | 20.92 | 17.59 | 17.19 | 1.22 | 0.72 | 49.00 | 29.57 | 2.45 |
| 150 | 15.11 | 20.87 | 17.96 | 16.62 | 1.21 | 0.71 | 49.07 | 29.67 | 2.41 |
| 200 | 15.14 | 20.82 | 18.03 | 16.22 | 1.20 | 0.71 | 49.21 | 29.79 | 2.41 |
| 250 | 15.15 | 20.80 | 17.94 | 15.75 | 1.19 | 0.70 | 48.56 | 29.92 | 2.44 |
| 300 | 15.15 | 20.87 | 17.73 | 15.30 | 1.20 | 0.70 | 49.35 | 30.13 | 2.46 |
| 350 | 15.16 | 20.95 | 17.50 | 14.86 | 1.20 | 0.70 | 48.85 | 29.99 | 2.51 |
| 400 | 15.16 | 20.92 | 17.24 | 14.62 | 1.20 | 0.70 | 48.55 | 29.98 | 2.56 |
| 450 | 15.15 | 21.01 | 17.28 | 14.38 | 1.20 | 0.70 | 48.67 | 30.01 | 2.55 |
| 500 | 15.16 | 20.97 | 17.13 | 14.21 | 1.20 | 0.69 | 48.06 | 30.04 | 2.62 |
| 550 | 15.17 | 21.04 | 17.33 | 14.28 | 1.21 | 0.70 | 48.58 | 29.94 | 2.64 |
| 600 | 15.18 | 21.02 | 17.47 | 14.35 | 1.20 | 0.70 | 49.12 | 29.91 | 2.66 |
| 650 | 15.20 | 21.14 | 17.81 | 14.58 | 1.21 | 0.71 | 49.08 | 30.00 | 2.75 |
| 700 | 15.21 | 21.15 | 18.19 | 14.91 | 1.22 | 0.71 | 48.68 | 29.89 | 2.78 |
| 750 | 15.25 | 21.15 | 18.98 | 15.47 | 1.22 | 0.71 | 49.32 | 29.94 | 2.82 |
| 800 | 15.28 | 21.18 | 19.79 | 15.96 | 1.22 | 0.71 | 46.74 | 29.84 | 2.84 |
| 850 | 15.33 | 21.26 | 20.98 | 16.81 | 1.22 | 0.72 | 45.67 | 29.73 | 2.97 |
| 900 | 15.36 | 21.26 | 21.86 | 17.69 | 1.22 | 0.73 | 45.48 | 29.42 | 3.01 |
| 950 | 15.37 | 21.41 | 22.69 | 18.91 | 1.24 | 0.74 | 45.35 | 29.37 | 3.06 |
| 1000 | 15.38 | 21.52 | 22.78 | 19.95 | 1.25 | 0.75 | 44.97 | 29.03 | 3.04 |
| 1100 | 15.38 | 21.65 | 21.97 | 21.09 | 1.25 | 0.77 | 47.06 | 28.02 | 3.07 |
| 1200 | 15.34 | 21.84 | 20.35 | 19.89 | 1.27 | 0.78 | 52.39 | 27.31 | 3.18 |
| 1300 | 15.26 | 22.27 | 18.60 | 17.36 | 1.30 | 0.81 | 46.84 | 27.10 | 3.33 |
| 1400 | 15.14 | 22.49 | 17.07 | 14.80 | 1.31 | 0.81 | 43.76 | 26.59 | 3.45 |
| 1500 | 15.02 | 23.04 | 15.38 | 12.63 | 1.35 | 0.82 | 41.80 | 27.02 | 3.50 |
| 1600 | 14.80 | 23.48 | 13.81 | 10.82 | 1.38 | 0.82 | 39.90 | 26.94 | 3.68 |
| 1700 | 14.55 | 23.94 | 12.60 | 9.47 | 1.43 | 0.80 | 39.42 | 26.32 | 3.87 |
| 1800 | 14.24 | 24.69 | 11.84 | 8.53 | 1.53 | 0.80 | 38.58 | 25.65 | 3.99 |
| 1900 | 13.87 | 25.37 | 11.30 | 7.89 | 1.64 | 0.80 | 37.66 | 24.79 | 4.17 |
| 2000 | 13.29 | 26.29 | 10.81 | 7.41 | 1.83 | 0.82 | 37.12 | 23.73 | 4.43 |
| 2100 | 12.86 | 27.05 | 10.25 | 7.29 | 2.02 | 0.84 | 35.95 | 23.32 | 4.76 |
| 2200 | 12.04 | 28.10 | 8.51 | 6.76 | 2.27 | 0.86 | 35.42 | 23.26 | 5.26 |
| 2300 | 10.81 | 29.83 | 6.77 | 5.95 | 2.74 | 0.88 | 35.70 | 22.65 | 5.70 |
| 2400 | 9.10 | 32.07 | 5.29 | 5.11 | 3.52 | 0.88 | 35.65 | 21.97 | 5.74 |
| 2500 | 7.09 | 34.28 | 4.26 | 4.31 | 4.58 | 0.86 | 37.81 | 21.16 | 6.80 |

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 = 9.50V, Id = 415.87mA @ Temperature = +25°C

| FREQ | Gain | Isolation | Input Return Loss | Output Return Loss | Stability | | IP-3 Output | 1dB Comp. Output | Noise Figure |
|-------|-------|-----------|-------------------|--------------------|-----------|---------|-------------|------------------|--------------|
| | | | | | K | Measure | | | |
| (MHz) | (dB) | (dB) | (dB) | (dB) | K | Measure | (dBm) | (dBm) | (dB) |
| 20 | 14.57 | 21.97 | 6.48 | 10.61 | 1.18 | 0.82 | 39.85 | 30.67 | 2.86 |
| 30 | 15.03 | 21.18 | 10.84 | 15.74 | 1.20 | 0.77 | 42.28 | 30.75 | 2.74 |
| 40 | 15.01 | 21.02 | 13.74 | 17.34 | 1.21 | 0.75 | 46.05 | 30.53 | 2.65 |
| 50 | 15.00 | 21.04 | 15.41 | 17.53 | 1.22 | 0.74 | 47.94 | 30.71 | 2.60 |
| 60 | 15.03 | 20.98 | 16.27 | 17.51 | 1.22 | 0.73 | 49.29 | 30.84 | 2.65 |
| 70 | 15.05 | 20.88 | 16.90 | 17.62 | 1.21 | 0.73 | 49.92 | 30.89 | 2.65 |
| 80 | 15.07 | 20.96 | 17.34 | 17.52 | 1.22 | 0.73 | 50.23 | 30.98 | 2.59 |
| 90 | 15.09 | 20.88 | 17.57 | 17.43 | 1.21 | 0.72 | 51.64 | 30.98 | 2.48 |
| 100 | 15.11 | 20.87 | 17.80 | 17.36 | 1.21 | 0.72 | 51.59 | 30.96 | 2.45 |
| 150 | 15.15 | 20.85 | 18.15 | 16.84 | 1.20 | 0.71 | 50.64 | 31.03 | 2.46 |
| 200 | 15.19 | 20.80 | 18.24 | 16.42 | 1.20 | 0.70 | 52.09 | 31.14 | 2.41 |
| 250 | 15.20 | 20.86 | 18.14 | 15.84 | 1.20 | 0.70 | 48.81 | 31.24 | 2.49 |
| 300 | 15.19 | 20.88 | 17.91 | 15.43 | 1.20 | 0.70 | 50.64 | 31.44 | 2.49 |
| 350 | 15.20 | 20.85 | 17.78 | 15.05 | 1.19 | 0.69 | 50.34 | 31.33 | 2.52 |
| 400 | 15.20 | 20.96 | 17.48 | 14.78 | 1.20 | 0.70 | 50.19 | 31.33 | 2.55 |
| 450 | 15.19 | 20.90 | 17.44 | 14.50 | 1.19 | 0.69 | 51.83 | 31.39 | 2.62 |
| 500 | 15.21 | 21.00 | 17.36 | 14.34 | 1.20 | 0.69 | 49.78 | 31.46 | 2.63 |
| 550 | 15.21 | 20.97 | 17.51 | 14.41 | 1.20 | 0.69 | 52.54 | 31.38 | 2.72 |
| 600 | 15.22 | 21.06 | 17.71 | 14.47 | 1.21 | 0.70 | 52.53 | 31.37 | 2.71 |
| 650 | 15.24 | 21.10 | 18.11 | 14.74 | 1.21 | 0.70 | 51.27 | 31.48 | 2.78 |
| 700 | 15.25 | 21.11 | 18.45 | 15.06 | 1.21 | 0.70 | 51.19 | 31.39 | 2.77 |
| 750 | 15.29 | 21.15 | 19.33 | 15.61 | 1.21 | 0.71 | 51.09 | 31.42 | 2.80 |
| 800 | 15.33 | 21.14 | 20.16 | 16.14 | 1.21 | 0.71 | 49.11 | 31.32 | 2.90 |
| 850 | 15.37 | 21.32 | 21.43 | 17.05 | 1.23 | 0.72 | 47.43 | 31.25 | 2.95 |
| 900 | 15.40 | 21.31 | 22.37 | 18.01 | 1.23 | 0.73 | 46.81 | 30.98 | 3.04 |
| 950 | 15.42 | 21.39 | 23.31 | 19.29 | 1.23 | 0.74 | 46.67 | 30.97 | 3.10 |
| 1000 | 15.44 | 21.46 | 23.62 | 20.52 | 1.24 | 0.74 | 46.35 | 30.71 | 3.07 |
| 1100 | 15.44 | 21.66 | 22.62 | 22.13 | 1.25 | 0.76 | 48.12 | 29.91 | 3.13 |
| 1200 | 15.41 | 21.94 | 20.85 | 21.04 | 1.27 | 0.78 | 51.38 | 29.16 | 3.23 |
| 1300 | 15.34 | 22.19 | 19.22 | 18.22 | 1.29 | 0.80 | 48.23 | 28.90 | 3.44 |
| 1400 | 15.23 | 22.51 | 17.71 | 15.52 | 1.31 | 0.81 | 44.68 | 28.47 | 3.52 |
| 1500 | 15.13 | 22.90 | 16.11 | 13.23 | 1.33 | 0.82 | 42.41 | 28.60 | 3.55 |
| 1600 | 14.94 | 23.30 | 14.44 | 11.34 | 1.37 | 0.81 | 40.53 | 28.59 | 3.70 |
| 1700 | 14.70 | 23.80 | 13.19 | 9.88 | 1.41 | 0.80 | 39.98 | 28.01 | 3.94 |
| 1800 | 14.42 | 24.52 | 12.36 | 8.90 | 1.51 | 0.80 | 38.78 | 27.37 | 4.03 |
| 1900 | 14.06 | 25.16 | 11.83 | 8.23 | 1.61 | 0.80 | 37.68 | 26.60 | 4.25 |
| 2000 | 13.50 | 26.11 | 11.28 | 7.69 | 1.80 | 0.82 | 36.99 | 25.56 | 4.47 |
| 2100 | 13.11 | 26.78 | 10.66 | 7.58 | 1.96 | 0.84 | 36.08 | 25.12 | 4.83 |
| 2200 | 12.33 | 27.93 | 8.85 | 6.99 | 2.22 | 0.86 | 36.00 | 25.01 | 5.33 |
| 2300 | 11.13 | 29.57 | 6.97 | 6.13 | 2.63 | 0.88 | 36.20 | 24.44 | 5.68 |
| 2400 | 9.45 | 31.82 | 5.42 | 5.21 | 3.38 | 0.88 | 35.88 | 23.77 | 5.89 |
| 2500 | 7.45 | 34.19 | 4.32 | 4.37 | 4.45 | 0.86 | 38.53 | 22.26 | 6.70 |

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 = 9.00V, Id = 388.05mA @ Temperature = -45°C

| FREQ | Gain | Isolation | Input Return Loss | Output Return Loss | Stability | | IP-3 Output | 1dB Comp. Output | Noise Figure |
|-------|-------|-----------|-------------------|--------------------|-----------|---------|-------------|------------------|--------------|
| | | | | | K | Measure | | | |
| (MHz) | (dB) | (dB) | (dB) | (dB) | K | Measure | (dBm) | (dBm) | (dB) |
| 20 | 14.22 | 22.28 | 7.16 | 9.97 | 1.26 | 0.81 | 37.98 | 30.12 | 2.47 |
| 30 | 14.78 | 21.24 | 11.77 | 14.76 | 1.23 | 0.76 | 40.14 | 30.41 | 2.28 |
| 40 | 14.87 | 21.17 | 14.24 | 16.59 | 1.24 | 0.75 | 42.01 | 30.23 | 2.17 |
| 50 | 14.91 | 21.10 | 15.49 | 16.94 | 1.24 | 0.75 | 44.65 | 30.43 | 2.13 |
| 60 | 14.98 | 21.03 | 16.30 | 16.94 | 1.23 | 0.74 | 47.36 | 30.57 | 2.11 |
| 70 | 15.02 | 21.00 | 16.69 | 17.00 | 1.22 | 0.73 | 48.92 | 30.64 | 2.08 |
| 80 | 15.06 | 21.06 | 17.02 | 16.81 | 1.23 | 0.73 | 50.39 | 30.75 | 2.02 |
| 90 | 15.09 | 20.86 | 17.08 | 16.73 | 1.21 | 0.72 | 49.64 | 30.76 | 1.96 |
| 100 | 15.12 | 20.86 | 17.18 | 16.60 | 1.20 | 0.71 | 49.52 | 30.74 | 1.91 |
| 150 | 15.18 | 20.92 | 17.37 | 15.86 | 1.20 | 0.71 | 48.54 | 30.85 | 1.90 |
| 200 | 15.23 | 20.85 | 17.67 | 15.66 | 1.19 | 0.70 | 49.18 | 30.96 | 1.89 |
| 250 | 15.27 | 20.74 | 17.92 | 15.57 | 1.18 | 0.69 | 47.99 | 31.10 | 1.97 |
| 300 | 15.29 | 20.79 | 18.06 | 15.58 | 1.18 | 0.69 | 48.60 | 31.34 | 1.94 |
| 350 | 15.31 | 20.73 | 18.11 | 15.32 | 1.18 | 0.68 | 49.32 | 31.21 | 1.94 |
| 400 | 15.32 | 20.85 | 17.66 | 15.05 | 1.18 | 0.69 | 50.26 | 31.18 | 1.99 |
| 450 | 15.31 | 20.85 | 17.55 | 14.58 | 1.18 | 0.68 | 52.29 | 31.22 | 2.02 |
| 500 | 15.33 | 20.82 | 17.21 | 14.25 | 1.18 | 0.67 | 49.52 | 31.28 | 2.07 |
| 550 | 15.33 | 20.90 | 17.12 | 14.17 | 1.18 | 0.68 | 51.07 | 31.18 | 2.08 |
| 600 | 15.34 | 20.92 | 17.24 | 14.19 | 1.18 | 0.68 | 51.27 | 31.16 | 2.08 |
| 650 | 15.36 | 20.97 | 17.61 | 14.38 | 1.19 | 0.68 | 50.87 | 31.30 | 2.10 |
| 700 | 15.38 | 21.06 | 17.96 | 14.69 | 1.20 | 0.69 | 50.34 | 31.19 | 2.15 |
| 750 | 15.42 | 21.00 | 18.91 | 15.29 | 1.19 | 0.69 | 49.83 | 31.21 | 2.19 |
| 800 | 15.46 | 21.04 | 19.84 | 15.82 | 1.19 | 0.69 | 48.47 | 31.16 | 2.26 |
| 850 | 15.51 | 21.05 | 21.08 | 16.77 | 1.19 | 0.70 | 48.13 | 31.07 | 2.34 |
| 900 | 15.54 | 21.11 | 22.13 | 17.66 | 1.20 | 0.70 | 48.02 | 30.77 | 2.38 |
| 950 | 15.57 | 21.19 | 23.01 | 18.90 | 1.20 | 0.71 | 47.17 | 30.76 | 2.43 |
| 1000 | 15.58 | 21.17 | 23.45 | 19.83 | 1.20 | 0.72 | 46.47 | 30.50 | 2.40 |
| 1100 | 15.59 | 21.42 | 22.82 | 20.83 | 1.22 | 0.74 | 48.43 | 29.69 | 2.44 |
| 1200 | 15.57 | 21.66 | 21.64 | 19.93 | 1.23 | 0.76 | 51.27 | 28.99 | 2.55 |
| 1300 | 15.51 | 21.91 | 20.31 | 17.72 | 1.25 | 0.77 | 45.97 | 28.72 | 2.69 |
| 1400 | 15.39 | 22.29 | 18.75 | 15.19 | 1.27 | 0.79 | 43.03 | 28.23 | 2.86 |
| 1500 | 15.31 | 22.60 | 16.92 | 13.09 | 1.29 | 0.79 | 41.24 | 27.99 | 2.82 |
| 1600 | 15.13 | 23.03 | 14.95 | 11.24 | 1.32 | 0.79 | 39.51 | 28.40 | 2.87 |
| 1700 | 14.92 | 23.48 | 13.52 | 9.88 | 1.36 | 0.78 | 38.89 | 27.87 | 3.10 |
| 1800 | 14.68 | 24.04 | 12.64 | 8.95 | 1.42 | 0.78 | 37.90 | 27.27 | 3.21 |
| 1900 | 14.39 | 24.60 | 12.08 | 8.33 | 1.50 | 0.78 | 36.78 | 26.60 | 3.44 |
| 2000 | 13.92 | 25.37 | 11.50 | 7.87 | 1.63 | 0.80 | 36.13 | 25.67 | 3.62 |
| 2100 | 13.50 | 26.12 | 11.16 | 7.79 | 1.79 | 0.83 | 35.17 | 25.05 | 3.84 |
| 2200 | 12.88 | 27.07 | 9.28 | 7.21 | 1.96 | 0.86 | 35.11 | 24.98 | 4.30 |
| 2300 | 11.80 | 28.67 | 7.24 | 6.27 | 2.27 | 0.88 | 34.92 | 24.54 | 4.67 |
| 2400 | 10.21 | 30.76 | 5.48 | 5.24 | 2.80 | 0.88 | 34.63 | 24.04 | 4.80 |
| 2500 | 8.20 | 33.20 | 4.25 | 4.27 | 3.59 | 0.85 | 36.61 | 23.41 | 5.69 |

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 = 8.00V, Id = 340.78mA @ Temperature = -45°C

| FREQ | Gain | Isolation | Input Return Loss | Output Return Loss | Stability | | IP-3 Output | 1dB Comp. Output | Noise Figure |
|-------|-------|-----------|-------------------|--------------------|-----------|---------|-------------|------------------|--------------|
| | | | | | K | Measure | | | |
| (MHz) | (dB) | (dB) | (dB) | (dB) | K | Measure | (dBm) | (dBm) | (dB) |
| 20 | 14.20 | 22.26 | 7.12 | 10.00 | 1.25 | 0.81 | 38.04 | 29.04 | 2.42 |
| 30 | 14.75 | 21.38 | 11.75 | 14.77 | 1.25 | 0.77 | 39.74 | 29.36 | 2.24 |
| 40 | 14.84 | 21.23 | 14.23 | 16.52 | 1.25 | 0.76 | 41.76 | 29.18 | 2.12 |
| 50 | 14.88 | 21.20 | 15.53 | 16.84 | 1.25 | 0.75 | 44.57 | 29.40 | 2.06 |
| 60 | 14.95 | 21.05 | 16.24 | 16.94 | 1.23 | 0.74 | 47.23 | 29.56 | 2.03 |
| 70 | 14.99 | 21.06 | 16.59 | 16.89 | 1.23 | 0.74 | 47.98 | 29.63 | 2.11 |
| 80 | 15.03 | 20.92 | 16.89 | 16.68 | 1.22 | 0.72 | 50.16 | 29.75 | 1.97 |
| 90 | 15.06 | 20.94 | 16.97 | 16.55 | 1.22 | 0.72 | 48.77 | 29.76 | 1.94 |
| 100 | 15.08 | 20.87 | 17.10 | 16.45 | 1.21 | 0.71 | 50.48 | 29.75 | 1.91 |
| 150 | 15.15 | 20.71 | 17.21 | 15.79 | 1.19 | 0.69 | 49.07 | 29.87 | 1.88 |
| 200 | 15.20 | 20.81 | 17.50 | 15.55 | 1.19 | 0.69 | 49.34 | 29.98 | 1.86 |
| 250 | 15.24 | 20.75 | 17.79 | 15.49 | 1.18 | 0.69 | 48.27 | 30.14 | 1.87 |
| 300 | 15.26 | 20.78 | 17.93 | 15.45 | 1.18 | 0.69 | 50.30 | 30.34 | 1.91 |
| 350 | 15.28 | 20.82 | 17.88 | 15.16 | 1.18 | 0.69 | 49.50 | 30.19 | 1.93 |
| 400 | 15.29 | 20.78 | 17.61 | 14.92 | 1.18 | 0.68 | 50.24 | 30.16 | 1.98 |
| 450 | 15.28 | 20.78 | 17.39 | 14.48 | 1.18 | 0.68 | 51.40 | 30.19 | 2.00 |
| 500 | 15.29 | 20.85 | 17.06 | 14.17 | 1.18 | 0.68 | 50.91 | 30.24 | 2.07 |
| 550 | 15.30 | 20.87 | 17.04 | 14.06 | 1.18 | 0.68 | 51.53 | 30.12 | 2.09 |
| 600 | 15.31 | 20.95 | 17.10 | 14.08 | 1.19 | 0.68 | 54.05 | 30.09 | 2.02 |
| 650 | 15.34 | 20.90 | 17.41 | 14.29 | 1.18 | 0.68 | 51.88 | 30.21 | 2.15 |
| 700 | 15.35 | 20.95 | 17.73 | 14.52 | 1.19 | 0.68 | 51.58 | 30.10 | 2.07 |
| 750 | 15.39 | 21.02 | 18.66 | 15.09 | 1.19 | 0.69 | 50.65 | 30.14 | 2.18 |
| 800 | 15.43 | 21.07 | 19.54 | 15.71 | 1.20 | 0.70 | 48.70 | 30.08 | 2.25 |
| 850 | 15.48 | 21.11 | 20.75 | 16.61 | 1.20 | 0.70 | 48.72 | 29.98 | 2.30 |
| 900 | 15.51 | 21.02 | 21.75 | 17.44 | 1.19 | 0.70 | 48.50 | 29.66 | 2.31 |
| 950 | 15.53 | 21.20 | 22.55 | 18.60 | 1.21 | 0.72 | 48.72 | 29.64 | 2.39 |
| 1000 | 15.55 | 21.27 | 22.85 | 19.56 | 1.21 | 0.72 | 47.65 | 29.34 | 2.37 |
| 1100 | 15.55 | 21.40 | 22.46 | 20.52 | 1.22 | 0.74 | 52.16 | 28.46 | 2.39 |
| 1200 | 15.53 | 21.63 | 21.18 | 19.67 | 1.23 | 0.76 | 46.40 | 27.75 | 2.49 |
| 1300 | 15.47 | 21.97 | 19.81 | 17.49 | 1.25 | 0.78 | 43.22 | 27.50 | 2.65 |
| 1400 | 15.34 | 22.31 | 18.30 | 14.99 | 1.28 | 0.79 | 41.12 | 26.98 | 2.75 |
| 1500 | 15.25 | 22.64 | 16.49 | 12.89 | 1.29 | 0.79 | 40.05 | 26.83 | 2.76 |
| 1600 | 15.07 | 23.09 | 14.57 | 11.06 | 1.32 | 0.79 | 38.60 | 27.21 | 2.85 |
| 1700 | 14.84 | 23.57 | 13.17 | 9.69 | 1.36 | 0.79 | 37.99 | 26.67 | 3.04 |
| 1800 | 14.59 | 24.11 | 12.33 | 8.78 | 1.43 | 0.78 | 37.26 | 26.06 | 3.16 |
| 1900 | 14.29 | 24.71 | 11.81 | 8.18 | 1.51 | 0.78 | 36.36 | 25.34 | 3.34 |
| 2000 | 13.80 | 25.57 | 11.17 | 7.72 | 1.66 | 0.80 | 35.92 | 24.38 | 3.61 |
| 2100 | 13.37 | 26.38 | 10.87 | 7.61 | 1.84 | 0.83 | 35.19 | 23.77 | 3.83 |
| 2200 | 12.72 | 27.37 | 9.06 | 7.05 | 2.02 | 0.86 | 35.09 | 23.73 | 4.20 |
| 2300 | 11.61 | 28.96 | 7.07 | 6.15 | 2.36 | 0.88 | 34.83 | 23.26 | 4.60 |
| 2400 | 9.99 | 31.06 | 5.38 | 5.14 | 2.90 | 0.87 | 34.54 | 22.74 | 4.69 |
| 2500 | 7.96 | 33.23 | 4.18 | 4.20 | 3.64 | 0.84 | 36.37 | 22.05 | 5.64 |

Typical Performance Data

Definitions:

Input Return Loss = -S11 (dB)

Gain(Power Gain) = S21 (dB)

Reverse Isolation = -S12 (dB)

Output Return Loss = -S22 (dB)

TEST CONDITIONS: Vd = 9.50V, Id = 413.23mA @ Temperature = -45°C

| FREQ | Gain | Isolation | Input Return Loss | Output Return Loss | Stability | | IP-3 Output | 1dB Comp. Output | Noise Figure |
|-------|-------|-----------|-------------------|--------------------|-----------|---------|-------------|------------------|--------------|
| | | | | | K | Measure | | | |
| (MHz) | (dB) | (dB) | (dB) | (dB) | K | Measure | (dBm) | (dBm) | (dB) |
| 20 | 14.24 | 22.10 | 7.11 | 10.11 | 1.24 | 0.80 | 37.87 | 30.59 | 2.51 |
| 30 | 14.81 | 21.36 | 11.73 | 14.74 | 1.24 | 0.77 | 40.60 | 30.85 | 2.33 |
| 40 | 14.89 | 21.14 | 14.28 | 16.66 | 1.24 | 0.75 | 42.85 | 30.69 | 2.18 |
| 50 | 14.93 | 21.20 | 15.63 | 16.97 | 1.24 | 0.75 | 44.79 | 30.89 | 2.12 |
| 60 | 15.00 | 20.93 | 16.33 | 17.11 | 1.22 | 0.73 | 45.79 | 31.02 | 2.15 |
| 70 | 15.04 | 20.98 | 16.73 | 17.05 | 1.22 | 0.73 | 47.10 | 31.08 | 2.07 |
| 80 | 15.08 | 20.98 | 17.06 | 16.88 | 1.22 | 0.72 | 49.79 | 31.20 | 2.01 |
| 90 | 15.11 | 20.93 | 17.10 | 16.74 | 1.21 | 0.72 | 49.63 | 31.20 | 2.00 |
| 100 | 15.13 | 20.94 | 17.23 | 16.60 | 1.21 | 0.72 | 50.29 | 31.18 | 1.90 |
| 150 | 15.20 | 20.85 | 17.43 | 16.00 | 1.20 | 0.70 | 51.49 | 31.29 | 1.96 |
| 200 | 15.25 | 20.85 | 17.67 | 15.71 | 1.19 | 0.70 | 49.64 | 31.40 | 1.92 |
| 250 | 15.28 | 20.79 | 17.97 | 15.62 | 1.18 | 0.69 | 47.55 | 31.53 | 1.95 |
| 300 | 15.31 | 20.80 | 18.21 | 15.58 | 1.18 | 0.69 | 48.09 | 31.78 | 1.97 |
| 350 | 15.33 | 20.75 | 18.16 | 15.40 | 1.18 | 0.68 | 49.19 | 31.66 | 1.96 |
| 400 | 15.34 | 20.83 | 17.80 | 15.08 | 1.18 | 0.68 | 50.13 | 31.64 | 2.01 |
| 450 | 15.33 | 20.85 | 17.62 | 14.60 | 1.18 | 0.68 | 51.08 | 31.69 | 2.02 |
| 500 | 15.34 | 20.87 | 17.25 | 14.30 | 1.18 | 0.68 | 49.37 | 31.75 | 2.08 |
| 550 | 15.35 | 20.86 | 17.19 | 14.25 | 1.18 | 0.67 | 52.05 | 31.66 | 2.11 |
| 600 | 15.36 | 20.87 | 17.31 | 14.25 | 1.18 | 0.67 | 52.57 | 31.64 | 2.07 |
| 650 | 15.38 | 20.97 | 17.66 | 14.44 | 1.19 | 0.68 | 50.39 | 31.78 | 2.19 |
| 700 | 15.40 | 21.08 | 18.04 | 14.71 | 1.20 | 0.69 | 50.66 | 31.68 | 2.13 |
| 750 | 15.44 | 20.98 | 18.94 | 15.28 | 1.19 | 0.68 | 50.62 | 31.69 | 2.20 |
| 800 | 15.48 | 21.07 | 19.90 | 15.90 | 1.19 | 0.69 | 48.40 | 31.64 | 2.29 |
| 850 | 15.52 | 21.03 | 21.23 | 16.81 | 1.19 | 0.69 | 47.97 | 31.55 | 2.37 |
| 900 | 15.56 | 21.13 | 22.27 | 17.73 | 1.20 | 0.70 | 47.17 | 31.26 | 2.43 |
| 950 | 15.59 | 21.19 | 23.19 | 18.96 | 1.20 | 0.71 | 47.50 | 31.26 | 2.46 |
| 1000 | 15.60 | 21.25 | 23.60 | 19.96 | 1.21 | 0.72 | 46.26 | 31.01 | 2.49 |
| 1100 | 15.61 | 21.50 | 23.05 | 21.05 | 1.22 | 0.74 | 46.87 | 30.25 | 2.46 |
| 1200 | 15.59 | 21.60 | 21.82 | 20.20 | 1.23 | 0.75 | 51.14 | 29.63 | 2.58 |
| 1300 | 15.54 | 21.95 | 20.46 | 17.80 | 1.25 | 0.77 | 49.01 | 29.26 | 2.71 |
| 1400 | 15.42 | 22.22 | 18.95 | 15.28 | 1.26 | 0.79 | 44.19 | 28.79 | 2.80 |
| 1500 | 15.34 | 22.62 | 17.16 | 13.20 | 1.29 | 0.79 | 42.41 | 28.51 | 2.81 |
| 1600 | 15.17 | 23.07 | 15.19 | 11.31 | 1.32 | 0.79 | 40.35 | 28.91 | 2.93 |
| 1700 | 14.96 | 23.53 | 13.70 | 9.95 | 1.36 | 0.78 | 39.51 | 28.39 | 3.14 |
| 1800 | 14.73 | 23.99 | 12.78 | 9.04 | 1.41 | 0.78 | 38.51 | 27.79 | 3.23 |
| 1900 | 14.44 | 24.46 | 12.23 | 8.44 | 1.48 | 0.78 | 37.24 | 27.15 | 3.40 |
| 2000 | 13.98 | 25.45 | 11.60 | 7.95 | 1.64 | 0.80 | 36.50 | 26.23 | 3.68 |
| 2100 | 13.57 | 26.05 | 11.30 | 7.89 | 1.78 | 0.83 | 35.47 | 25.61 | 3.88 |
| 2200 | 12.95 | 27.17 | 9.38 | 7.28 | 1.97 | 0.86 | 35.35 | 25.53 | 4.32 |
| 2300 | 11.88 | 28.80 | 7.32 | 6.32 | 2.30 | 0.88 | 35.23 | 25.09 | 4.73 |
| 2400 | 10.29 | 30.70 | 5.53 | 5.26 | 2.77 | 0.88 | 34.88 | 24.62 | 4.88 |
| 2500 | 8.29 | 33.17 | 4.27 | 4.27 | 3.56 | 0.85 | 36.97 | 23.78 | 5.67 |

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 = 9.00V, Id = 394.13mA @ Temperature = +85°C

| FREQ | Gain | Isolation | Input Return Loss | Output Return Loss | Stability | | IP-3 Output | 1dB Comp. Output | Noise Figure |
|-------|-------|-----------|-------------------|--------------------|-----------|---------|-------------|------------------|--------------|
| | | | | | K | Measure | | | |
| (MHz) | (dB) | (dB) | (dB) | (dB) | K | Measure | (dBm) | (dBm) | (dB) |
| 20 | 14.30 | 22.11 | 6.75 | 10.47 | 1.22 | 0.82 | 40.27 | 29.91 | 3.47 |
| 30 | 14.73 | 21.31 | 11.44 | 15.30 | 1.24 | 0.78 | 43.51 | 29.98 | 3.32 |
| 40 | 14.76 | 21.30 | 14.32 | 17.17 | 1.26 | 0.77 | 46.40 | 29.73 | 3.13 |
| 50 | 14.78 | 21.03 | 15.87 | 17.48 | 1.24 | 0.75 | 50.29 | 29.88 | 3.09 |
| 60 | 14.83 | 21.14 | 16.89 | 17.70 | 1.25 | 0.75 | 48.53 | 30.03 | 3.16 |
| 70 | 14.86 | 21.04 | 17.42 | 17.82 | 1.24 | 0.75 | 50.54 | 30.07 | 3.10 |
| 80 | 14.89 | 21.06 | 17.94 | 17.82 | 1.24 | 0.74 | 51.73 | 30.15 | 3.04 |
| 90 | 14.91 | 21.05 | 18.13 | 17.89 | 1.24 | 0.74 | 52.20 | 30.14 | 2.99 |
| 100 | 14.93 | 21.00 | 18.39 | 17.92 | 1.24 | 0.74 | 51.81 | 30.13 | 2.93 |
| 150 | 14.99 | 20.92 | 18.87 | 17.55 | 1.22 | 0.73 | 49.92 | 30.16 | 2.94 |
| 200 | 15.03 | 20.89 | 18.89 | 17.00 | 1.22 | 0.72 | 52.17 | 30.28 | 2.92 |
| 250 | 15.02 | 20.95 | 18.43 | 16.24 | 1.22 | 0.72 | 49.75 | 30.34 | 2.97 |
| 300 | 15.01 | 20.98 | 17.85 | 15.47 | 1.22 | 0.72 | 50.67 | 30.49 | 3.01 |
| 350 | 15.01 | 21.00 | 17.42 | 14.77 | 1.21 | 0.71 | 51.18 | 30.36 | 3.03 |
| 400 | 15.01 | 21.03 | 16.98 | 14.36 | 1.22 | 0.71 | 50.56 | 30.39 | 3.08 |
| 450 | 15.00 | 21.05 | 16.99 | 14.10 | 1.22 | 0.71 | 50.83 | 30.48 | 3.07 |
| 500 | 15.02 | 21.13 | 17.01 | 14.02 | 1.22 | 0.71 | 50.50 | 30.54 | 3.18 |
| 550 | 15.03 | 21.11 | 17.33 | 14.19 | 1.22 | 0.71 | 50.64 | 30.45 | 3.22 |
| 600 | 15.05 | 21.20 | 17.68 | 14.39 | 1.23 | 0.72 | 49.97 | 30.44 | 3.28 |
| 650 | 15.07 | 21.22 | 18.27 | 14.74 | 1.23 | 0.72 | 51.24 | 30.54 | 3.33 |
| 700 | 15.09 | 21.26 | 18.81 | 15.19 | 1.24 | 0.72 | 50.74 | 30.46 | 3.26 |
| 750 | 15.13 | 21.32 | 19.85 | 15.86 | 1.24 | 0.73 | 51.11 | 30.49 | 3.40 |
| 800 | 15.16 | 21.28 | 20.75 | 16.50 | 1.24 | 0.73 | 48.43 | 30.39 | 3.47 |
| 850 | 15.20 | 21.34 | 21.96 | 17.46 | 1.24 | 0.74 | 47.73 | 30.32 | 3.58 |
| 900 | 15.22 | 21.49 | 22.80 | 18.39 | 1.26 | 0.75 | 46.42 | 30.07 | 3.57 |
| 950 | 15.23 | 21.59 | 23.14 | 19.70 | 1.27 | 0.76 | 46.62 | 30.04 | 3.67 |
| 1000 | 15.24 | 21.61 | 22.86 | 20.81 | 1.27 | 0.77 | 46.89 | 29.76 | 3.69 |
| 1100 | 15.22 | 21.89 | 21.39 | 21.88 | 1.29 | 0.79 | 47.12 | 28.84 | 3.74 |
| 1200 | 15.18 | 22.17 | 19.55 | 20.67 | 1.31 | 0.81 | 49.98 | 28.13 | 3.92 |
| 1300 | 15.10 | 22.34 | 17.92 | 17.89 | 1.32 | 0.82 | 48.74 | 27.92 | 4.05 |
| 1400 | 14.99 | 22.76 | 16.50 | 15.30 | 1.35 | 0.83 | 45.33 | 27.52 | 4.15 |
| 1500 | 14.86 | 23.15 | 15.13 | 13.00 | 1.38 | 0.83 | 43.17 | 27.69 | 4.18 |
| 1600 | 14.64 | 23.68 | 13.78 | 11.09 | 1.43 | 0.83 | 41.37 | 27.55 | 4.38 |
| 1700 | 14.37 | 24.26 | 12.67 | 9.70 | 1.50 | 0.82 | 40.77 | 26.94 | 4.60 |
| 1800 | 14.03 | 24.90 | 11.89 | 8.64 | 1.60 | 0.81 | 39.43 | 26.27 | 4.76 |
| 1900 | 13.59 | 25.57 | 11.22 | 7.86 | 1.71 | 0.81 | 38.40 | 25.41 | 5.05 |
| 2000 | 12.95 | 26.54 | 10.71 | 7.33 | 1.94 | 0.82 | 37.62 | 24.34 | 5.26 |
| 2100 | 12.47 | 27.48 | 9.89 | 7.07 | 2.17 | 0.84 | 36.76 | 24.07 | 5.65 |
| 2200 | 11.55 | 28.64 | 8.39 | 6.56 | 2.51 | 0.86 | 36.55 | 23.91 | 6.14 |
| 2300 | 10.27 | 30.62 | 6.79 | 5.90 | 3.17 | 0.88 | 37.34 | 23.23 | 6.53 |
| 2400 | 8.57 | 32.64 | 5.47 | 5.21 | 4.10 | 0.88 | 37.00 | 22.51 | 6.77 |
| 2500 | 6.60 | 35.03 | 4.49 | 4.51 | 5.61 | 0.87 | 40.45 | 20.53 | 7.79 |

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 = 8.00V, Id = 346.71mA @ Temperature = +85°C

| FREQ | Gain | Isolation | Input Return Loss | Output Return Loss | Stability | | IP-3 Output | 1dB Comp. Output | Noise Figure |
|-------|-------|-----------|-------------------|--------------------|-----------|---------|-------------|------------------|--------------|
| | | | | | K | Measure | | | |
| (MHz) | (dB) | (dB) | (dB) | (dB) | K | Measure | (dBm) | (dBm) | (dB) |
| 20 | 14.27 | 22.02 | 6.79 | 10.48 | 1.22 | 0.82 | 39.74 | 28.90 | 3.38 |
| 30 | 14.68 | 21.29 | 11.47 | 15.26 | 1.24 | 0.78 | 42.50 | 29.00 | 3.24 |
| 40 | 14.72 | 21.22 | 14.34 | 17.16 | 1.26 | 0.77 | 45.96 | 28.76 | 3.08 |
| 50 | 14.74 | 21.11 | 15.93 | 17.41 | 1.26 | 0.76 | 47.79 | 28.94 | 3.07 |
| 60 | 14.79 | 21.15 | 16.75 | 17.53 | 1.26 | 0.76 | 48.50 | 29.09 | 3.07 |
| 70 | 14.81 | 21.09 | 17.34 | 17.76 | 1.25 | 0.75 | 48.80 | 29.13 | 3.06 |
| 80 | 14.85 | 21.06 | 17.84 | 17.72 | 1.25 | 0.75 | 50.72 | 29.22 | 2.98 |
| 90 | 14.87 | 20.96 | 18.08 | 17.78 | 1.24 | 0.74 | 51.56 | 29.21 | 2.92 |
| 100 | 14.89 | 20.96 | 18.32 | 17.85 | 1.24 | 0.74 | 50.92 | 29.20 | 2.88 |
| 150 | 14.95 | 20.94 | 18.68 | 17.56 | 1.23 | 0.73 | 50.61 | 29.26 | 2.91 |
| 200 | 14.98 | 20.87 | 18.65 | 16.93 | 1.22 | 0.72 | 50.57 | 29.39 | 2.82 |
| 250 | 14.98 | 20.91 | 18.20 | 16.13 | 1.22 | 0.72 | 49.77 | 29.47 | 2.90 |
| 300 | 14.97 | 20.94 | 17.70 | 15.31 | 1.22 | 0.72 | 50.99 | 29.64 | 2.94 |
| 350 | 14.97 | 20.91 | 17.15 | 14.64 | 1.21 | 0.71 | 48.73 | 29.52 | 2.94 |
| 400 | 14.97 | 20.98 | 16.80 | 14.26 | 1.21 | 0.71 | 49.24 | 29.53 | 3.02 |
| 450 | 14.96 | 21.12 | 16.82 | 13.95 | 1.22 | 0.71 | 48.47 | 29.58 | 3.03 |
| 500 | 14.98 | 21.15 | 16.85 | 13.92 | 1.23 | 0.71 | 48.15 | 29.62 | 3.14 |
| 550 | 14.99 | 21.10 | 17.10 | 14.05 | 1.22 | 0.71 | 48.71 | 29.53 | 3.15 |
| 600 | 15.01 | 21.12 | 17.46 | 14.29 | 1.23 | 0.71 | 49.31 | 29.51 | 3.17 |
| 650 | 15.03 | 21.26 | 18.05 | 14.65 | 1.24 | 0.72 | 49.51 | 29.59 | 3.21 |
| 700 | 15.05 | 21.26 | 18.54 | 15.04 | 1.24 | 0.72 | 49.90 | 29.48 | 3.22 |
| 750 | 15.09 | 21.29 | 19.50 | 15.72 | 1.24 | 0.73 | 48.77 | 29.52 | 3.30 |
| 800 | 15.12 | 21.32 | 20.35 | 16.28 | 1.24 | 0.73 | 46.85 | 29.40 | 3.39 |
| 850 | 15.16 | 21.36 | 21.51 | 17.25 | 1.25 | 0.74 | 46.02 | 29.31 | 3.47 |
| 900 | 15.18 | 21.45 | 22.19 | 18.24 | 1.26 | 0.75 | 45.41 | 29.02 | 3.58 |
| 950 | 15.19 | 21.50 | 22.56 | 19.42 | 1.26 | 0.76 | 45.64 | 28.96 | 3.55 |
| 1000 | 15.19 | 21.59 | 22.33 | 20.45 | 1.27 | 0.77 | 45.97 | 28.62 | 3.56 |
| 1100 | 15.17 | 21.86 | 20.90 | 21.48 | 1.29 | 0.79 | 48.06 | 27.57 | 3.62 |
| 1200 | 15.12 | 22.13 | 19.07 | 20.11 | 1.31 | 0.81 | 53.16 | 26.90 | 3.79 |
| 1300 | 15.03 | 22.42 | 17.46 | 17.41 | 1.33 | 0.82 | 47.54 | 26.69 | 4.03 |
| 1400 | 14.91 | 22.81 | 15.98 | 14.85 | 1.36 | 0.84 | 44.73 | 26.23 | 4.04 |
| 1500 | 14.77 | 23.27 | 14.60 | 12.64 | 1.40 | 0.84 | 42.71 | 26.65 | 4.15 |
| 1600 | 14.54 | 23.70 | 13.30 | 10.83 | 1.44 | 0.83 | 40.61 | 26.47 | 4.29 |
| 1700 | 14.25 | 24.30 | 12.24 | 9.45 | 1.51 | 0.82 | 39.93 | 25.82 | 4.55 |
| 1800 | 13.89 | 24.98 | 11.51 | 8.43 | 1.61 | 0.82 | 38.89 | 25.10 | 4.70 |
| 1900 | 13.42 | 25.75 | 10.91 | 7.65 | 1.75 | 0.81 | 38.02 | 24.17 | 4.90 |
| 2000 | 12.76 | 26.90 | 10.41 | 7.16 | 2.01 | 0.82 | 37.20 | 23.07 | 5.16 |
| 2100 | 12.25 | 27.70 | 9.62 | 6.90 | 2.23 | 0.84 | 36.06 | 22.83 | 5.56 |
| 2200 | 11.30 | 29.02 | 8.15 | 6.41 | 2.63 | 0.86 | 35.46 | 22.73 | 6.03 |
| 2300 | 9.99 | 30.75 | 6.66 | 5.81 | 3.26 | 0.88 | 36.44 | 22.07 | 6.47 |
| 2400 | 8.27 | 32.64 | 5.39 | 5.15 | 4.18 | 0.88 | 36.51 | 21.37 | 6.67 |
| 2500 | 6.29 | 35.37 | 4.46 | 4.48 | 5.96 | 0.87 | 39.33 | 20.04 | 7.65 |

Typical Performance Data

Definitions:

Input Return Loss = -S11 (dB)

Gain(Power Gain) = S21 (dB)

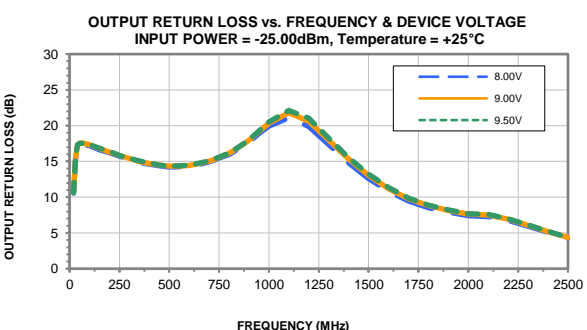
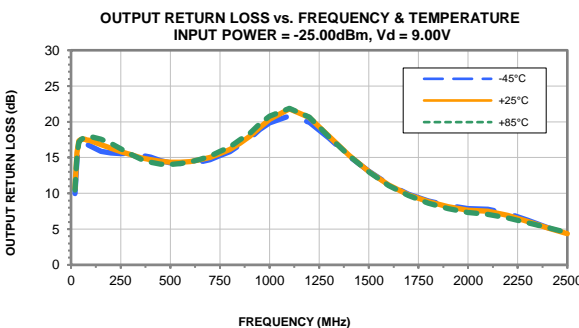
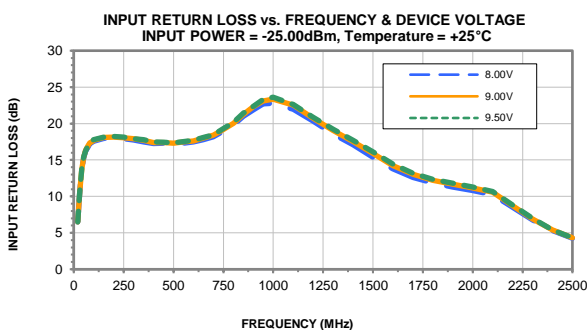
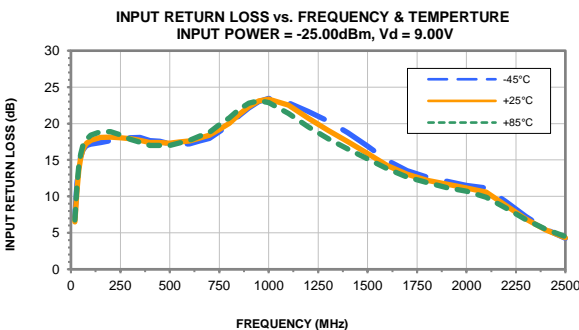
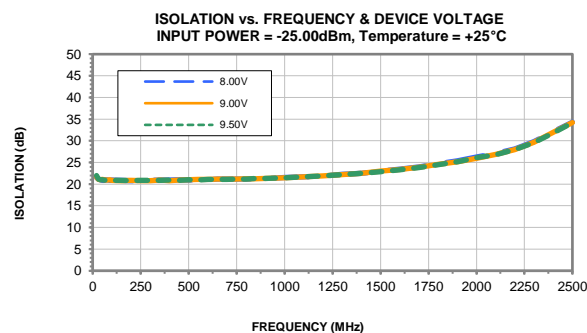
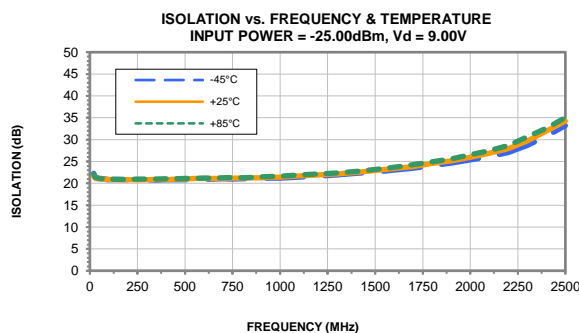
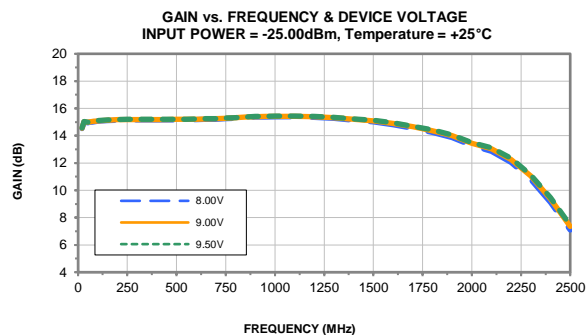
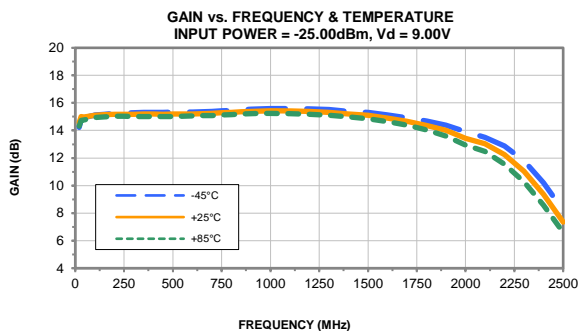
Reverse Isolation = -S12 (dB)

Output Return Loss = -S22 (dB)

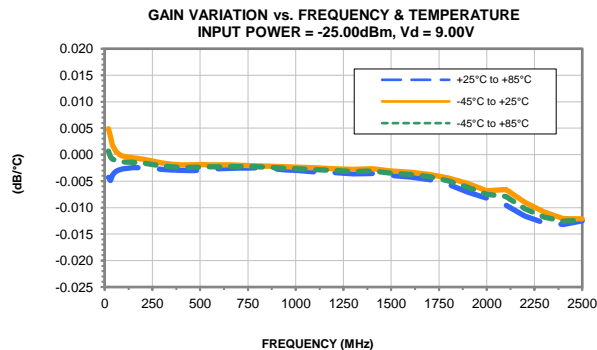
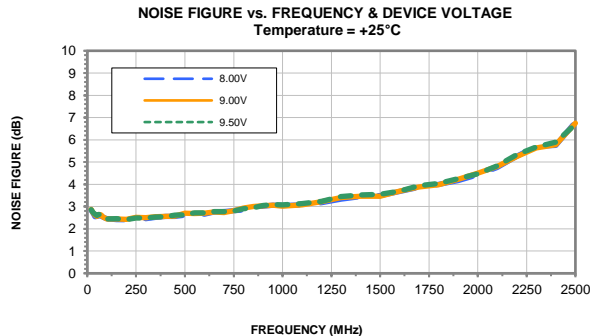
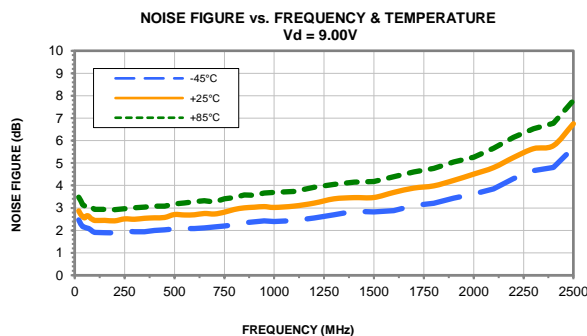
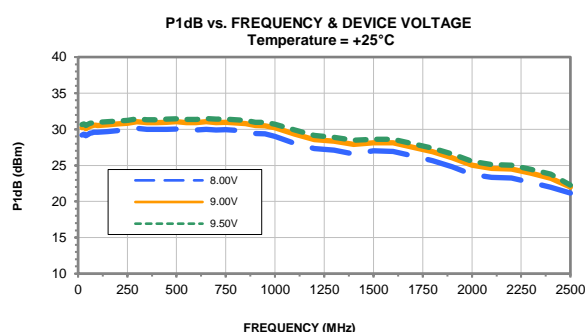
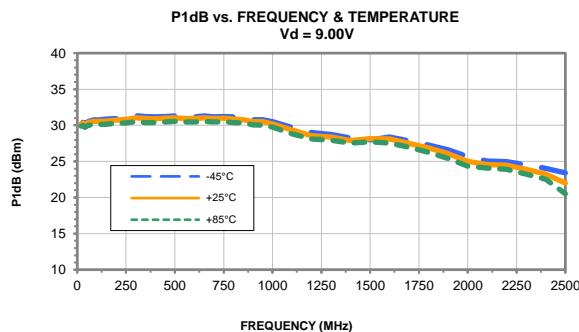
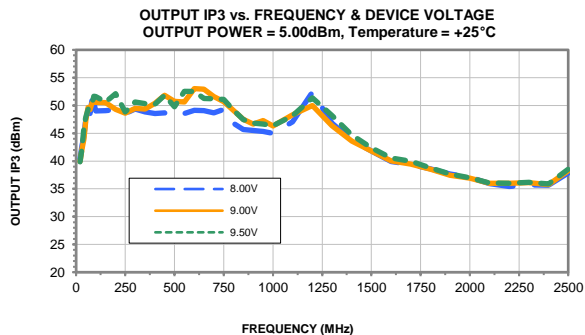
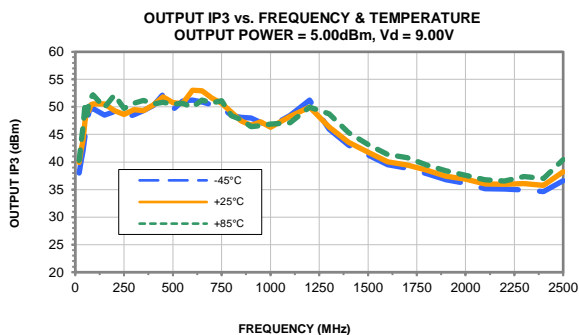
TEST CONDITIONS: Vd = 9.50V, Id = 417.35mA @ Temperature = +85°C

| FREQ | Gain | Isolation | Input Return Loss | Output Return Loss | Stability | | IP-3 Output | 1dB Comp. Output | Noise Figure |
|-------|-------|-----------|-------------------|--------------------|-----------|---------|-------------|------------------|--------------|
| | | | | | K | Measure | | | |
| (MHz) | (dB) | (dB) | (dB) | (dB) | K | Measure | (dBm) | (dBm) | (dB) |
| 20 | 14.31 | 21.82 | 6.75 | 10.49 | 1.20 | 0.81 | 40.04 | 30.36 | 3.47 |
| 30 | 14.73 | 21.34 | 11.49 | 15.35 | 1.24 | 0.78 | 42.96 | 30.41 | 3.30 |
| 40 | 14.77 | 21.18 | 14.35 | 17.21 | 1.25 | 0.77 | 45.60 | 30.15 | 3.15 |
| 50 | 14.79 | 21.14 | 15.94 | 17.44 | 1.25 | 0.76 | 48.49 | 30.29 | 3.13 |
| 60 | 14.84 | 21.12 | 16.91 | 17.75 | 1.25 | 0.75 | 48.91 | 30.43 | 3.18 |
| 70 | 14.86 | 20.95 | 17.48 | 17.90 | 1.24 | 0.74 | 50.44 | 30.49 | 3.12 |
| 80 | 14.90 | 21.13 | 18.04 | 17.83 | 1.25 | 0.75 | 50.84 | 30.56 | 3.05 |
| 90 | 14.92 | 21.02 | 18.24 | 17.90 | 1.24 | 0.74 | 51.80 | 30.55 | 2.98 |
| 100 | 14.94 | 21.02 | 18.52 | 17.97 | 1.24 | 0.74 | 51.41 | 30.53 | 2.97 |
| 150 | 15.00 | 20.97 | 18.97 | 17.67 | 1.23 | 0.73 | 50.57 | 30.54 | 2.98 |
| 200 | 15.03 | 20.89 | 18.97 | 17.08 | 1.22 | 0.72 | 52.56 | 30.67 | 2.90 |
| 250 | 15.03 | 21.00 | 18.52 | 16.26 | 1.22 | 0.72 | 49.80 | 30.71 | 2.98 |
| 300 | 15.02 | 20.96 | 17.99 | 15.48 | 1.21 | 0.72 | 50.59 | 30.84 | 3.02 |
| 350 | 15.02 | 20.97 | 17.45 | 14.81 | 1.21 | 0.71 | 51.33 | 30.71 | 3.01 |
| 400 | 15.01 | 21.07 | 17.10 | 14.40 | 1.22 | 0.71 | 50.84 | 30.75 | 3.10 |
| 450 | 15.01 | 21.03 | 17.07 | 14.19 | 1.22 | 0.71 | 50.14 | 30.85 | 3.15 |
| 500 | 15.02 | 21.18 | 17.15 | 14.06 | 1.23 | 0.71 | 50.57 | 30.92 | 3.18 |
| 550 | 15.04 | 21.08 | 17.45 | 14.21 | 1.22 | 0.71 | 49.50 | 30.83 | 3.21 |
| 600 | 15.05 | 21.18 | 17.82 | 14.46 | 1.23 | 0.72 | 49.89 | 30.83 | 3.24 |
| 650 | 15.08 | 21.24 | 18.44 | 14.80 | 1.23 | 0.72 | 51.18 | 30.94 | 3.30 |
| 700 | 15.09 | 21.27 | 18.93 | 15.25 | 1.24 | 0.72 | 50.48 | 30.86 | 3.31 |
| 750 | 15.13 | 21.29 | 19.98 | 15.91 | 1.24 | 0.73 | 50.33 | 30.90 | 3.38 |
| 800 | 15.17 | 21.34 | 20.89 | 16.53 | 1.24 | 0.73 | 49.08 | 30.80 | 3.51 |
| 850 | 15.21 | 21.34 | 22.24 | 17.51 | 1.24 | 0.74 | 47.57 | 30.75 | 3.57 |
| 900 | 15.23 | 21.41 | 22.99 | 18.49 | 1.25 | 0.74 | 46.60 | 30.51 | 3.62 |
| 950 | 15.24 | 21.52 | 23.43 | 19.87 | 1.26 | 0.76 | 46.43 | 30.49 | 3.67 |
| 1000 | 15.25 | 21.59 | 23.13 | 20.91 | 1.27 | 0.76 | 46.75 | 30.24 | 3.68 |
| 1100 | 15.23 | 21.81 | 21.47 | 22.17 | 1.28 | 0.78 | 47.00 | 29.38 | 3.70 |
| 1200 | 15.19 | 22.12 | 19.64 | 20.95 | 1.31 | 0.80 | 48.73 | 28.65 | 3.87 |
| 1300 | 15.11 | 22.35 | 18.08 | 18.07 | 1.32 | 0.82 | 49.31 | 28.44 | 4.05 |
| 1400 | 15.00 | 22.82 | 16.66 | 15.43 | 1.36 | 0.84 | 46.17 | 28.07 | 4.17 |
| 1500 | 14.88 | 23.08 | 15.26 | 13.12 | 1.38 | 0.83 | 44.12 | 28.09 | 4.21 |
| 1600 | 14.67 | 23.63 | 13.92 | 11.22 | 1.43 | 0.83 | 42.11 | 27.99 | 4.38 |
| 1700 | 14.40 | 24.21 | 12.81 | 9.79 | 1.50 | 0.82 | 41.34 | 27.39 | 4.60 |
| 1800 | 14.07 | 24.86 | 12.01 | 8.72 | 1.59 | 0.81 | 39.98 | 26.75 | 4.78 |
| 1900 | 13.62 | 25.64 | 11.34 | 7.93 | 1.73 | 0.81 | 38.77 | 25.93 | 5.02 |
| 2000 | 12.99 | 26.60 | 10.86 | 7.39 | 1.95 | 0.82 | 37.98 | 24.87 | 5.31 |
| 2100 | 12.52 | 27.51 | 10.03 | 7.11 | 2.17 | 0.84 | 37.16 | 24.58 | 5.68 |
| 2200 | 11.61 | 28.84 | 8.47 | 6.61 | 2.56 | 0.86 | 37.12 | 24.38 | 6.14 |
| 2300 | 10.34 | 30.54 | 6.85 | 5.93 | 3.13 | 0.88 | 37.88 | 23.70 | 6.53 |
| 2400 | 8.65 | 32.54 | 5.51 | 5.23 | 4.04 | 0.88 | 37.43 | 22.99 | 6.76 |
| 2500 | 6.68 | 34.71 | 4.51 | 4.54 | 5.37 | 0.87 | 41.19 | 20.69 | 7.71 |

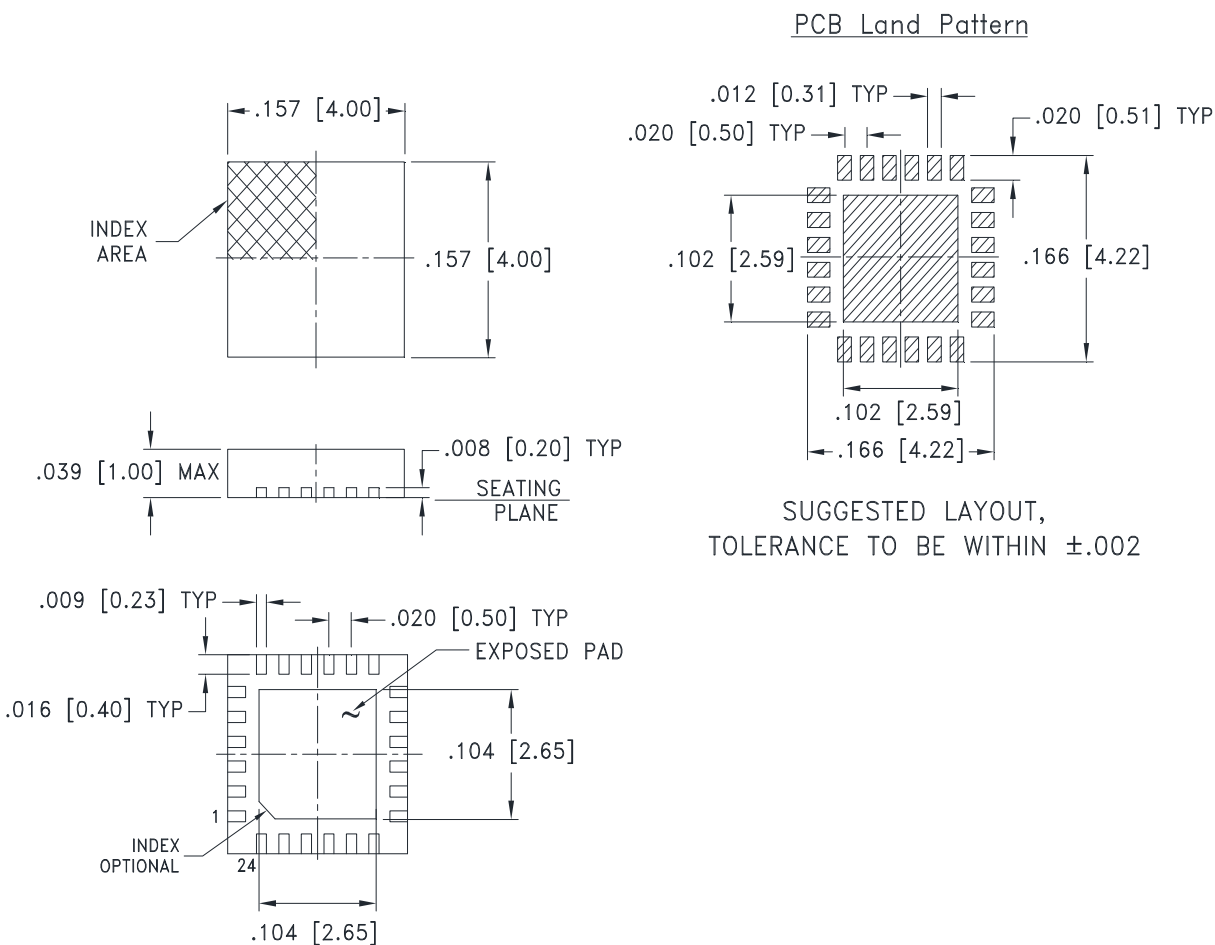
Typical Performance Curves



Typical Performance Curves



Outline Dimensions



Weight: .04 Grams

Dimensions are in inches (mm). Tolerances: 2 Pl. \pm .01; 3 Pl. \pm .005

Notes:

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

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DG1847 Rev.: AH (16 FEB 23) ECO-016811 File: DG1847

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Tape & Reel Packaging TR-F68

DEVICE ORIENTATION IN T&R



| Tape Width, mm | Device Cavity Pitch, mm | Reel Size, inches | Devices per Reel see note | |
|----------------|-------------------------|-------------------|---------------------------|------|
| 12 | 8 | 7 | Small quantity standard | 20 |
| | | | | 50 |
| | | | | 100 |
| | | | | 200 |
| | | | | 500 |
| | | 7 | Standard | 1000 |
| | | 13 | Standard | 2000 |
| | | | | 3000 |
| | | | | 4000 |

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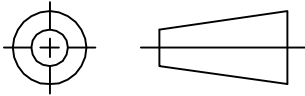
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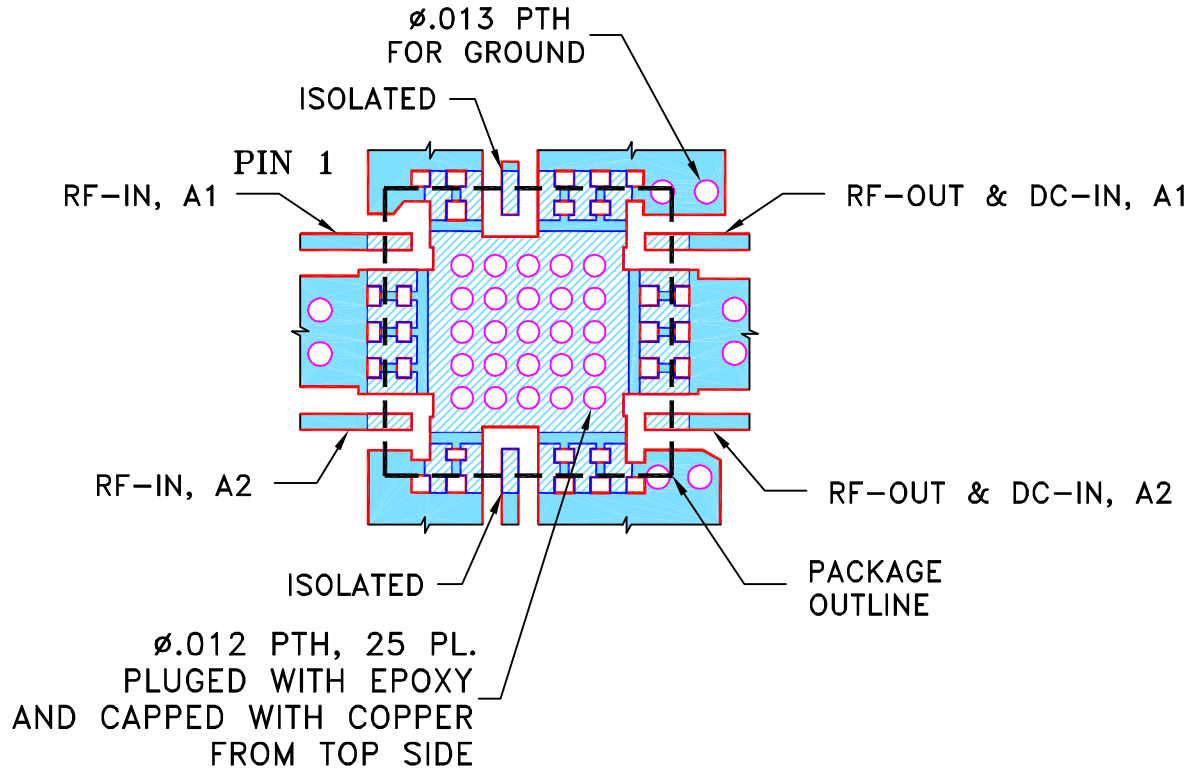
THIRD ANGLE PROJECTION




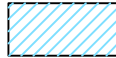
REVISIONS

| REV | ECN No. | DESCRIPTION | DATE | DR | AUTH |
|-----|---------|-------------|----------|----|------|
| OR | M160689 | NEW RELEASE | 03/10/17 | GF | RS |
| | | | | | |
| | | | | | |


SUGGESTED MOUNTING CONFIGURATION FOR
DG1847 CASE STYLE, "24AM02" PIN CONNECTION



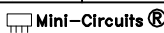
- NOTES: 1. MATERIAL: FR4 WITH DIELECTRIC THICKNESS 0.024" ± 0.002"; COPPER: 1/2 OZ. EACH SIDE.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

 DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)
 DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

| UNLESS OTHERWISE SPECIFIED | INITIALS | DATE |
|----------------------------|----------|----------|
| DRAWN | GF | 03/08/17 |
| CHECKED | IL | 03/10/17 |
| APPROVED | RS | 03/10/17 |

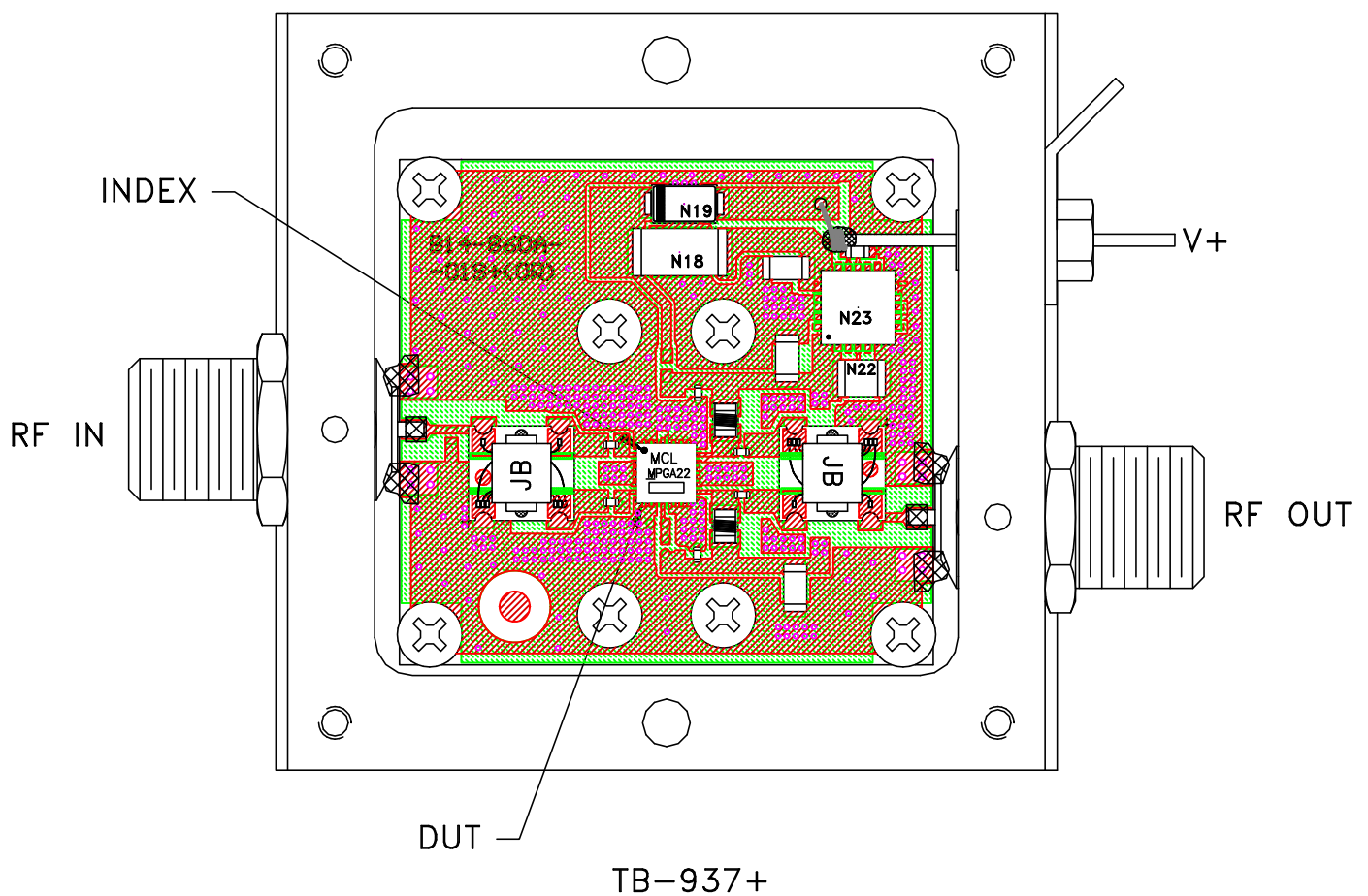
 **Mini-Circuits®** 13 Neptune Avenue
Brooklyn NY 11235

PL, 24AM02, DG1847, TB-937+

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| | | | |
|------------------|---------------------|--------------------------|------------|
| SIZE A | CODE IDENT 15542 | DRAWING NO: 98-PL-500 | REV: OR |
| FILE: 98PL500 | SCALE: 10:1 | SHEET: 1 OF 1 | |


Evaluation Board and Circuit



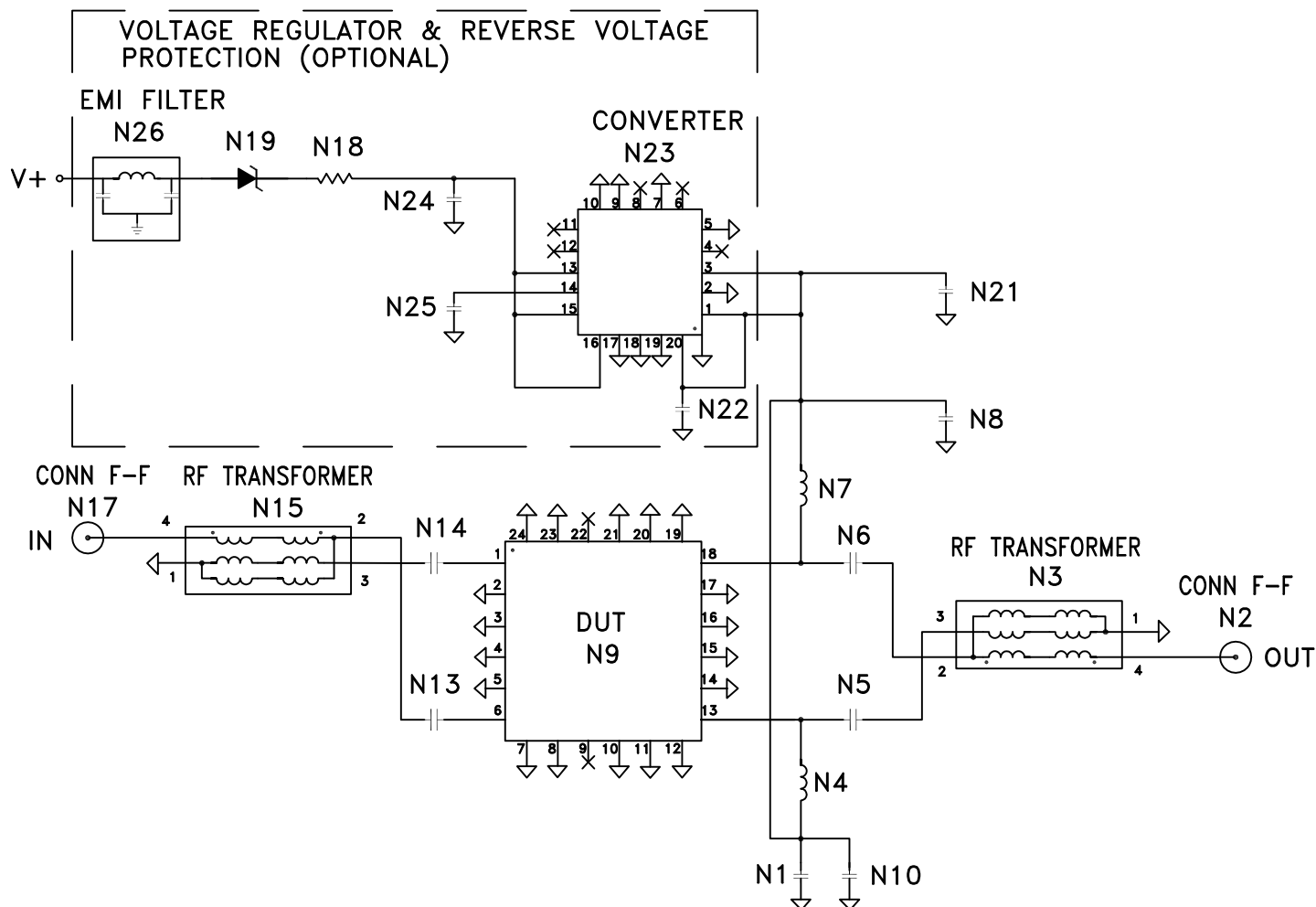
STACK-UP DIAGRAM

Notes:

1. 75 Ohm F-Type Female connectors.
2. PCB Material: FR4 or equivalent, Dielectric Constant=4.5.
Total Finished Thickness - .024".


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Evaluation Board and Circuit



| COMPONENT | VALUE | SIZE |
|---------------|----------------------------------|--------------|
| N9 (DUT) | Mini-Circuits MPGA-122-75+ | 4X4 mm |
| N1,N21,N24 | Capacitor 10 uF | 1206 |
| N3,N15 | Mini-Circuits TRS1-182-75+ | 7.11X6.35 mm |
| N4,N7 | Inductor 390 nH | 0805 |
| N5,N6,N13,N14 | Capacitor 220 pF | 0402 |
| N8,N10 | Capacitor .01 uF | |
| N18 | Resistor 4.32 Ohms,1W | 2512 |
| N19 | Diode Schottky SMA 40V MSL1 | 5.21X2.60 mm |
| N22 | Capacitor 22 uF | 1210 |
| N23 | Voltage Regulator QFN20 ADJ MSL2 | 5X5 mm |
| N25 | Capacitor 1 uF | 0603 |
| N26 | EMI Filter | - |

Schematic Diagram

 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 or -55° to 105° C or -40° to 105° C or -40° to 95° C Ambient Environment | Individual Model Data Sheet |
| Storage Temperature | -55° to 100° C or -65° to 150° Ambient Environment | Individual Model Data Sheet |
| HTOL | 1000 hours at 125°C | MIL-STD-883, Method 1005, Condition B |
| 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 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 Soak at 85°C/85% RH for 168 hours, Reflow 3 cycles at 260°C peak | J-STD-020 |

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| Specification | Test/Inspection Condition | Reference/Spec |
|--------------------------------|---|-------------------------|
| Marking Resistance to Solvents | Isopropyl alcohol + mineral spirits at 25°C; terpene defluxer at 25°C; distilled water + proylene glycol monomethyl ether + monoethanolamine at 63°C to 70°C | MIL-STD-202, Method 215 |