



MMIC SURFACE MOUNT

Low Noise Amplifier **PMA2-162LNA+**

Mini-Circuits

50Ω 700 to 1600 MHz Ultra Low Noise

THE BIG DEAL

- Noise Figure, Typ 0.5 dB
- Adjustable Gain, Typ. 19.7 dB to 23.5 dB
- Class 1B HBM ESD (500V)
- OIP3, Typ. +30 dBm
- P1dB, Typ +20 dBm
- 2x2mm 8-Lead SMT Package
- May be used as a replacement for MGA-631P8^{a,b}

APPLICATIONS

- Base Station Infrastructure
- Portable Wireless
- LTE
- GPS
- GSM
- Airborn Radar

PRODUCT OVERVIEW

The PMA2-162LNA+ is an E-pHEMT* amplifier that operates from 700 to 1600 MHz. The amplifier has a low noise figure of 0.5 dB typical while providing 22.7 dB of gain, +30 dBm OIP3, and +20 dBm P1dB with 18 dB typical return loss with a +4V and 55mA DC power. Gain is adjustable from 19.7 dB to 23.5 dB. The amplifier is housed in an industry standard 2x2mm SMT package, with RF ports internally matched to 50Ω, facilitating easy integration into microwave system PC boards.

KEY FEATURES

| Feature | Advantages |
|---|---|
| Ultra Low Noise Figure • Typ. 0.5 dB | Excellent noise figure performance. |
| High OIP3 • OIP3, Typ. +30 dBm | Suitable as a driver amplifier in receiver/transmitter chains. |
| Adjustable Gain | By changing feedback resistor R1, gain can be changed from 19.7 dB to 23.5 dB. |
| Max Input Power, +25 dBm | Ruggedized design operates up to high input power often seen at Receiver inputs eliminating the need for an external limiter. |
| Class 1B ESD (500V HBM) | The PMA2-162LNA+ is a super low noise E-pHEMT based design. Mini-Circuits incorporates ESD protection on die to achieve industry leading ESD performance for a low noise amplifier. |
| 2x2mm 8-Lead SMT package | Small footprint saves space in dense layouts while providing low inductance, repeatable transitions, and excellent thermal contact to the PCB. |

a. Suitability for model replacement within a particular system must be determined by and is solely the responsibility of the customer based on, among other things, electrical performance criteria, stimulus conditions, application, and compatibility with other components and environmental conditions and stresses.

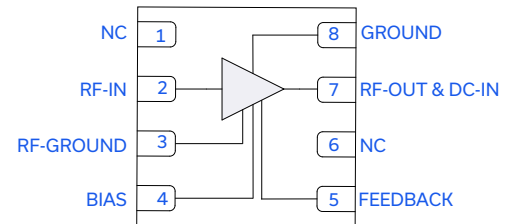
b. The Avago MGA-631P8 part number is used for identification and comparison purposes only.

*Enhanced mode Pseudomorphic High Electron Mobility Transistor



Generic photo used for illustration purposes only

FUNCTIONAL DIAGRAM





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ELECTRICAL SPECIFICATIONS^{1,2} AT +25°C, Z_o = 50Ω, AND V_s = +4V UNLESS NOTED OTHERWISE

| Parameter | Condition (MHz) | R1 = 267Ω ¹ | | | R1 = 93Ω ² | | | Units |
|---|-----------------|------------------------|-------|------|-----------------------|-------|------|-------|
| | | Min. | Typ. | Max. | Min. | Typ. | Max. | |
| Frequency Range | | 700 | | 1600 | 700 | | 1600 | MHz |
| Gain | 700 | | 24.4 | | | 22.7 | | dB |
| | 800 | | 24.1 | | | 22.2 | | |
| | 1000 | 20.9 | 22.7 | 24.5 | 18.6 | 20.8 | 23.1 | |
| | 1300 | | 20.7 | | | 19.1 | | |
| | 1600 | | 18.8 | | | 17.7 | | |
| Input Return Loss | 700 | | 9.5 | | | 11.5 | | dB |
| | 800 | | 15.5 | | | 18.8 | | |
| | 1000 | | 17.9 | | | 20.0 | | |
| | 1300 | | 12.4 | | | 14.5 | | |
| | 1600 | | 10.8 | | | 12.4 | | |
| Output Return Loss | 700 | | 13.6 | | | 21.6 | | dB |
| | 800 | | 16.1 | | | 17.8 | | |
| | 1000 | | 18.9 | | | 16.0 | | |
| | 1300 | | 15.6 | | | 15.1 | | |
| | 1600 | | 10.7 | | | 11.6 | | |
| Isolation | 700-1600 | | 38.2 | | | 34.2 | | dB |
| Output Power at 1 dB Compression (P1dB) | 700 | | +19.5 | | | +18.3 | | dBm |
| | 800 | | +19.8 | | | +18.9 | | |
| | 1000 | | +19.9 | | | +19.7 | | |
| | 1300 | | +19.7 | | | +19.8 | | |
| | 1600 | | +18.8 | | | +19.0 | | |
| Output Third-Order Intercept Point (Pout = 0 dBm/Tone) | 700 | | +29.1 | | | +28.3 | | dBm |
| | 800 | | +30.3 | | | +38.5 | | |
| | 1000 | | +30.0 | | | +29.0 | | |
| | 1300 | | +30.1 | | | +29.2 | | |
| | 1600 | | +29.4 | | | +28.5 | | |
| Noise Figure | 700 | | 0.55 | | | 0.57 | | dB |
| | 800 | | 0.51 | | | 0.54 | | |
| | 1000 | | 0.47 | | | 0.48 | | |
| | 1300 | | 0.64 | | | 0.65 | | |
| | 1600 | | 0.80 | | | 0.81 | | |
| Device Operating Voltage (V _s) | | +3.8 | +4.0 | +4.2 | +3.8 | +4.0 | +4.2 | V |
| Device Operating Current (I _s) ³ | | | 55 | | | 55 | | mA |
| Device Current Variation Vs. Temperature ⁴ | | | 2 | | | 2 | | μA/°C |
| Device Current Variation Vs. Voltage ⁵ | | | 0.018 | | | 0.016 | | mA/mV |

1. Tested in Mini-Circuits Characterization Test/Evaluation Board TB-PMA2162LNAC+ with R1 = 267Ω. See Figure 2. De-embedded to the device reference plane.

2. Tested in Mini-Circuits Characterization Test/Evaluation Board TB-PMA2162LNAC+ with R1* = 93Ω. See Figure 2. De-embedded to the device reference plane.

3. Current at P_{IN} = -25 dBm. Increases to 95 mA at P1dB.

4. ((Current at Tmax°C - Current at -Tmin°C)/(Tmax °C - Tmin °C))

5. (Current at Nominal V +ΔV in mA) - (Current at Nominal V -ΔV mA)/(2ΔV mV)





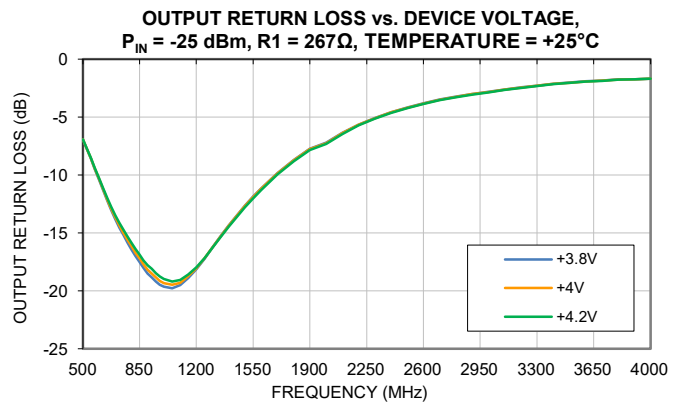
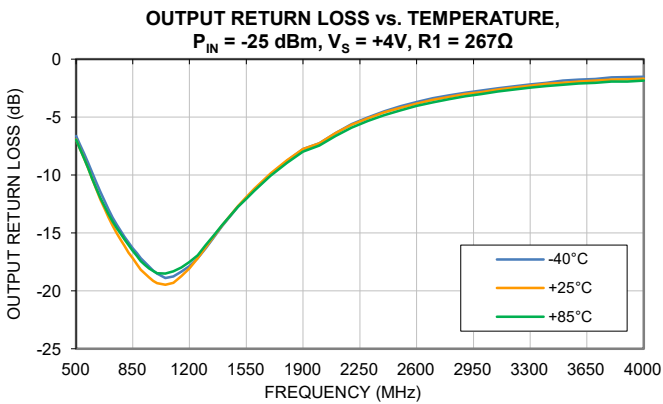
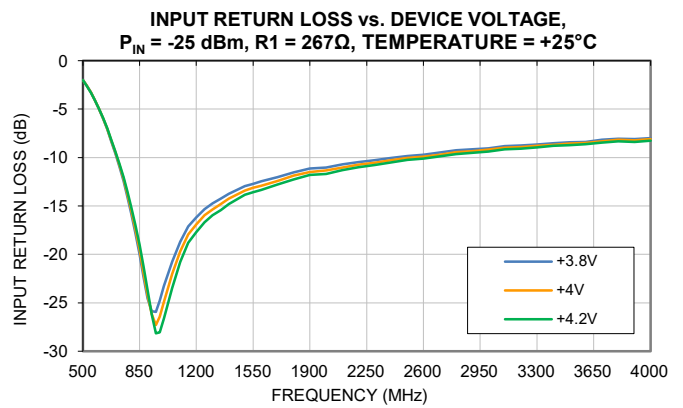
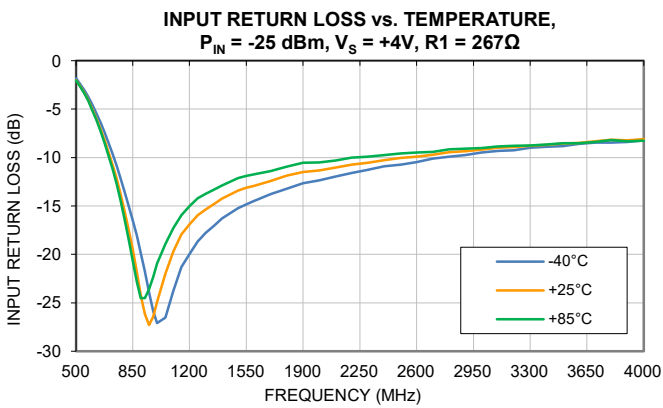
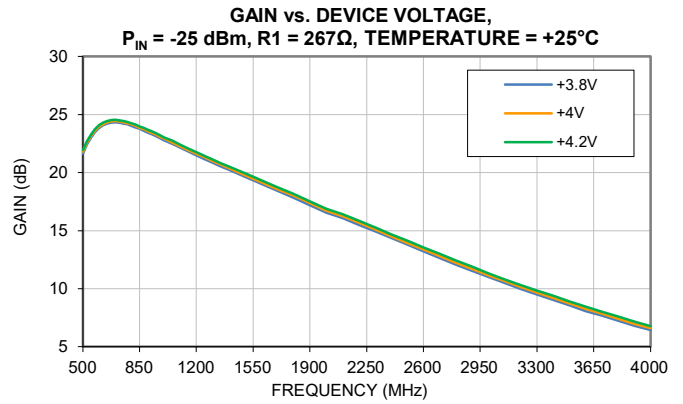
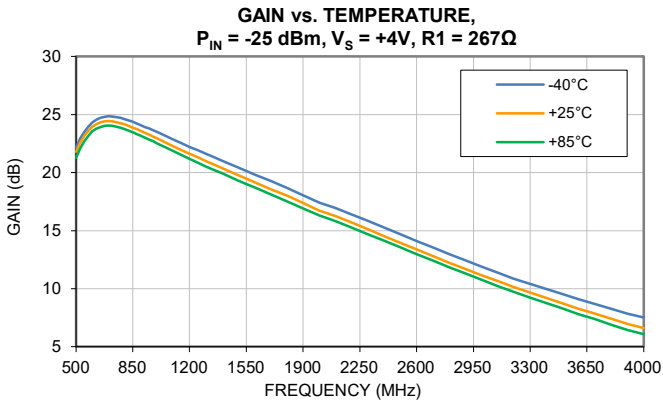
MMIC SURFACE MOUNT

Low Noise Amplifier PMA2-162LNA+

Mini-Circuits

50Ω 700 to 1600 MHz Ultra Low Noise

TYPICAL PERFORMANCE GRAPHS





MMIC SURFACE MOUNT

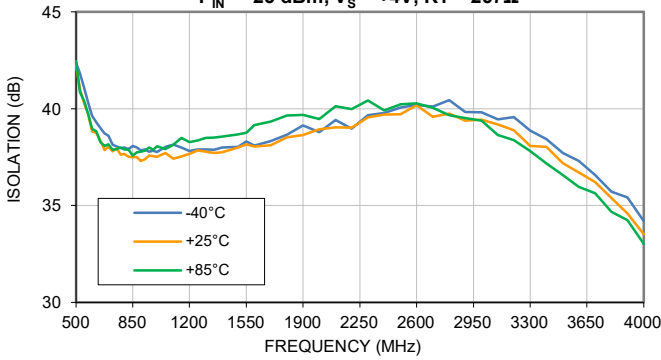
Low Noise Amplifier PMA2-162LNA+

Mini-Circuits

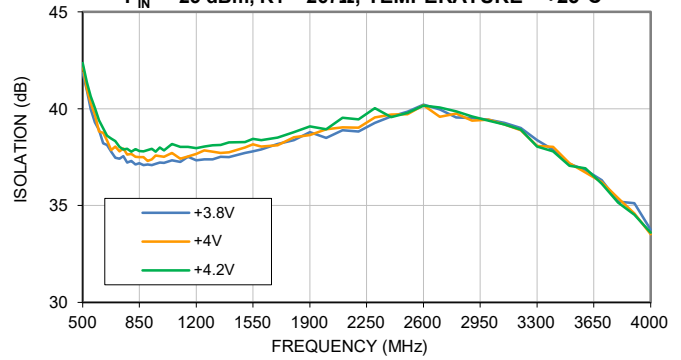
50Ω 700 to 1600 MHz Ultra Low Noise

TYPICAL PERFORMANCE GRAPHS

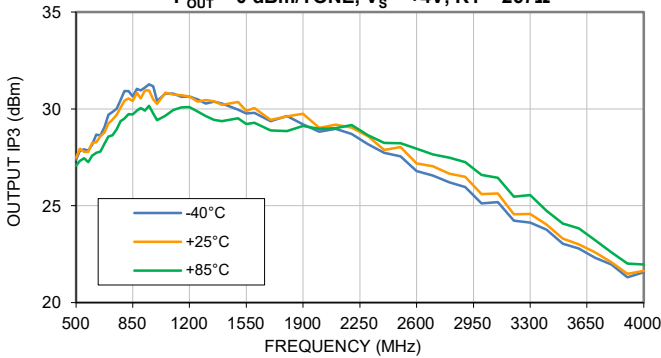
ISOLATION vs. TEMPERATURE,
 $P_{IN} = -25 \text{ dBm}$, $V_S = +4V$, $R_1 = 267\Omega$



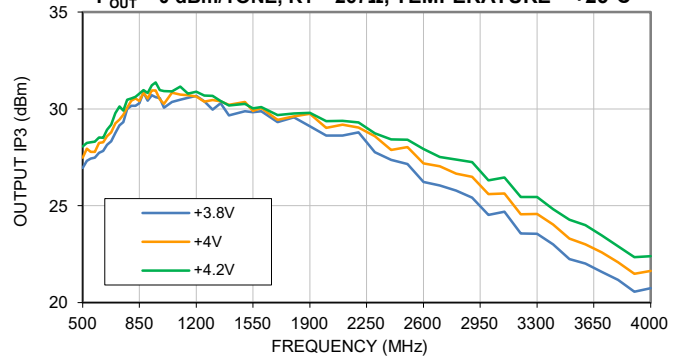
ISOLATION vs. DEVICE VOLTAGE,
 $P_{IN} = -25 \text{ dBm}$, $R_1 = 267\Omega$, TEMPERATURE = +25°C



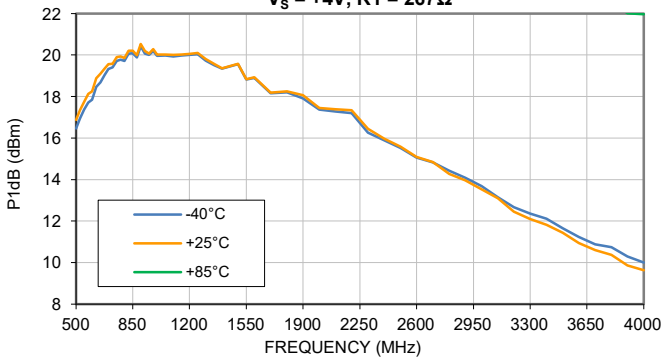
OUTPUT IP3 vs. TEMPERATURE,
 $P_{OUT} = 0 \text{ dBm/TONE}$, $V_S = +4V$, $R_1 = 267\Omega$



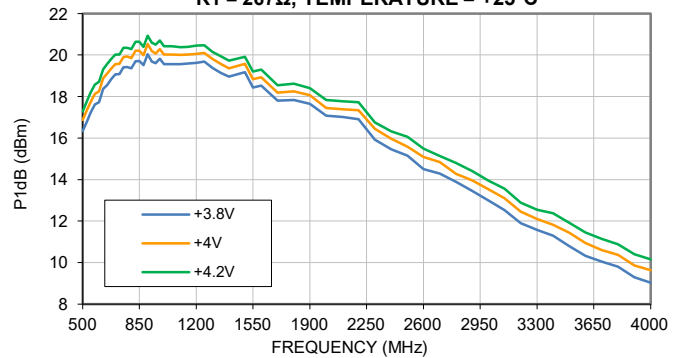
OUTPUT IP3 vs. DEVICE VOLTAGE,
 $P_{OUT} = 0 \text{ dBm/TONE}$, $R_1 = 267\Omega$, TEMPERATURE = +25°C



P1dB vs. TEMPERATURE,
 $V_S = +4V$, $R_1 = 267\Omega$



P1dB vs. DEVICE VOLTAGE,
 $R_1 = 267\Omega$, TEMPERATURE = +25°C

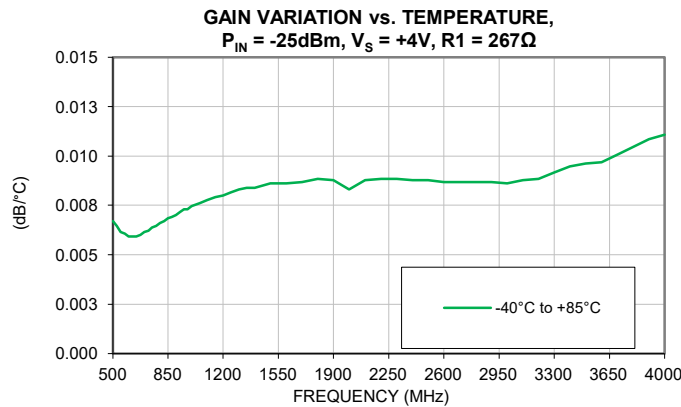
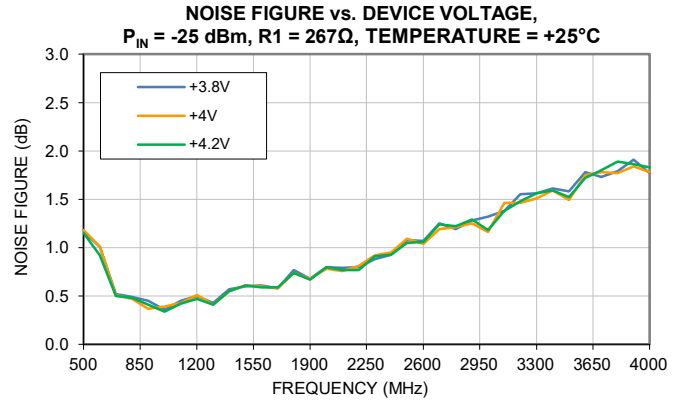
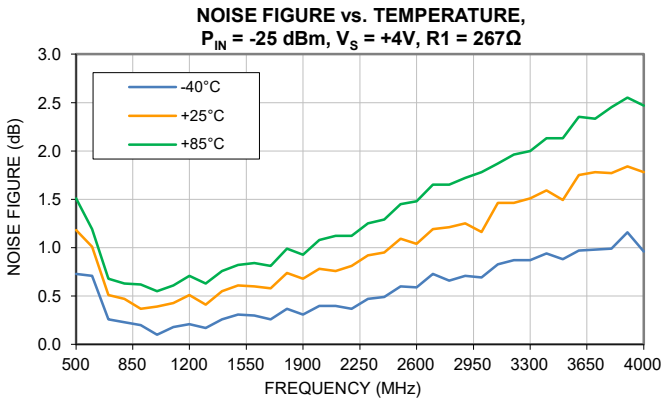




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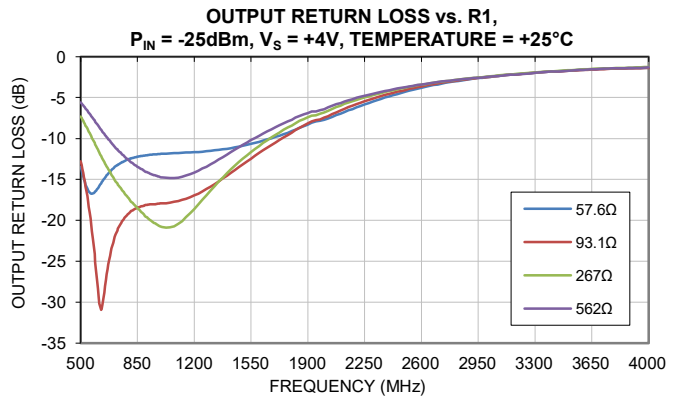
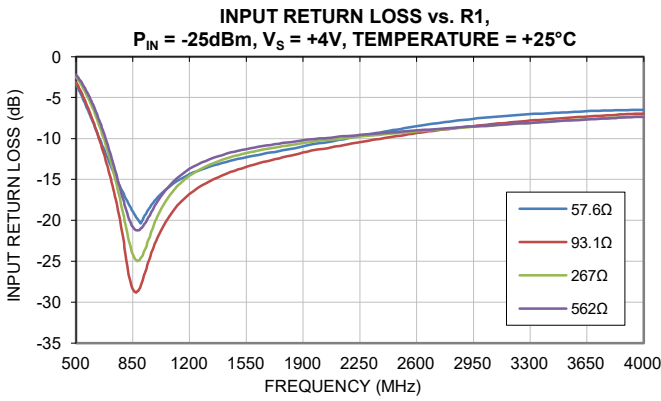
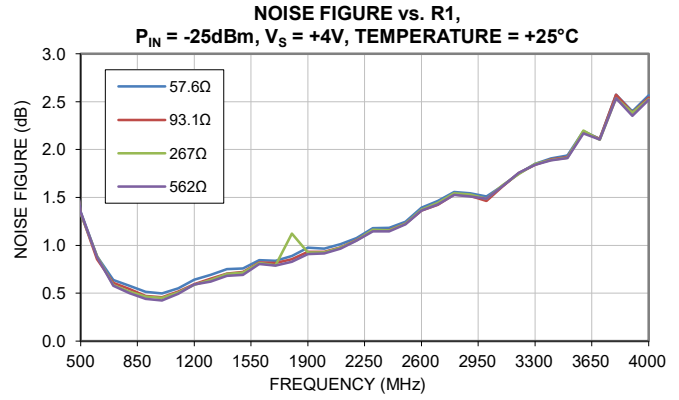
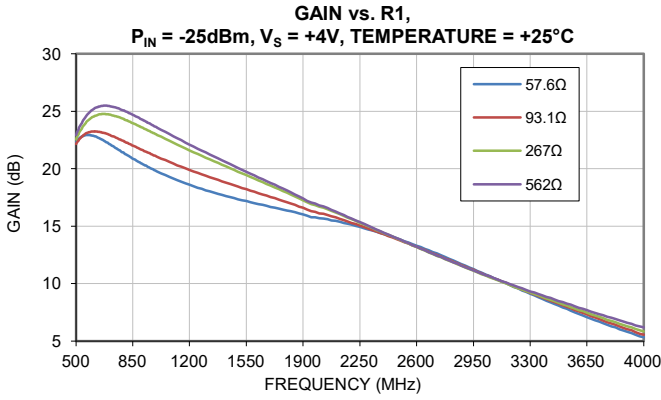
TYPICAL PERFORMANCE GRAPHS





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TYPICAL PERFORMANCE GRAPHS





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ABSOLUTE MAXIMUM RATINGS⁶

| Parameter | Ratings |
|-----------------------------------|-----------------|
| Operating Temperature | -40°C to +85°C |
| Storage Temperature | -65°C to +150°C |
| Total Power Dissipation | 0.55W |
| Junction Temperature ⁷ | +150°C |
| Input Power (CW), $V_s = +4V$ | +25 dBm |
| DC Voltage on V_s | +5.5V |
| Current I_s | 130mA |

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

7. Peak temperature on top of Die.

THERMAL RESISTANCE

| Parameter | Ratings |
|---|---------|
| Thermal Resistance (Θ_{jc}) ⁸ | 53°C/W |

8. Θ_{jc} = (Hot Spot Temperature on Die - Temperature at Ground Lead)/Dissipated Power

ESD RATING

| | Class | Voltage Range | Reference Standard |
|------------------------|-------|----------------|-----------------------------|
| Human Body Model (HBM) | 1B | 500V to <1000V | ANSI/ESDA/JEDEC JS-001-2017 |
| Machine Model (MM) | M1 | 25V | JESD22-C101F |



ESD HANDLING PRECAUTION: This device is designed to be Class 1B for HBM. Static charges may easily produce potentials higher than this with improper handling and can discharge into DUT and damage it. As a preventive measure Industry standard ESD handling precautions should be used at all times to protect the device from ESD damage.

MSL RATING

Moisture Sensitivity: MSL1 in accordance with IPC/JEDEC J-STD-020E/JEDEC J-STD-033C



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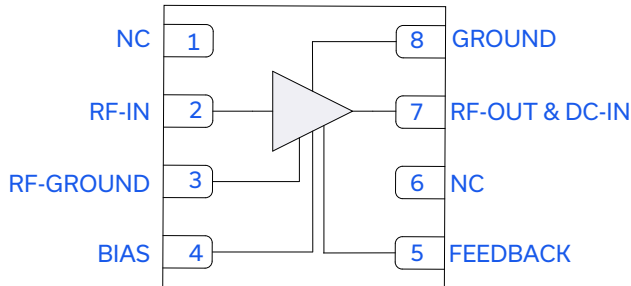
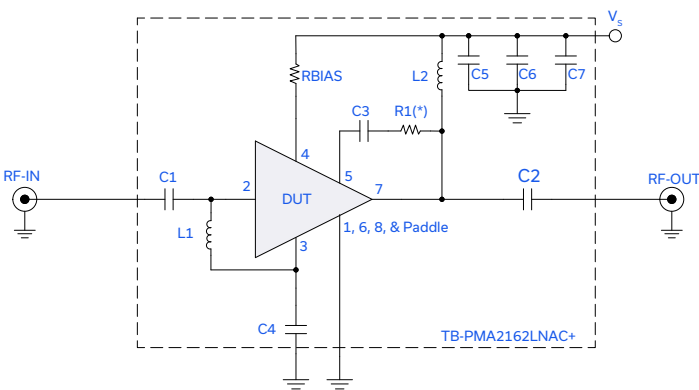


Figure 1. PMA2-162LNA+ Functional Diagram

PAD DESCRIPTION

| Function | Pad Number | Description |
|----------------|------------|--|
| RF-IN | 2 | RF-IN Pad connects to RF-Input port. |
| RF-OUT & DC-IN | 7 | RF-OUT Pad connects to RF-Output and the voltage input port, DC-IN. |
| BIAS | 4 | Bias Pad that is used to adjust the bias voltage supplied to the DUT through the use of an RBIAS resistor. |
| FEEDBACK | 5 | Feedback Pad used to reflect any feedback into the DUT. |
| RF-GROUND | 3 | RF-Ground Pad used for grounding. |
| GROUND | 8 & Paddle | Connects to ground. |
| NC | 1 & 6 | Not used internally. Connected to ground on test board. |

CHARACTERIZATION TEST BOARD



Gain, Return Loss, Output Power at 1dB compression (P1dB), Output IP3 (OIP3) and Noise Figure measured using PNA-X N5242A Microwave Network Analyzer.

Conditions:

1. Gain and Return Loss: $P_{IN} = -25$ dBm
2. Output IP3 (OIP3): Two tones, spaced 1 MHz apart, 0 dBm/tone at output.
3. $V_s = +4V$

Figure 2. DUT soldered on Mini-Circuits Characterization Test Board: TB-PMA2162LNAC+

| Component | Vendor | Vendor P/N | Value | Size |
|-----------|-----------------------|---------------------|-------|------|
| C1, C6 | AVX CORP | 04025U9R1CAT2A | 9.1pF | 0402 |
| C2, C4 | Murata | GRM15555C1H101JA01D | 100pF | 0402 |
| C3 | Murata | GJM1555C1H5R6BB01D | 5.6pF | 0402 |
| C5, C7 | Murata | GRM155R71C104KA88D | 0.1μF | 0402 |
| R1 | KOA Speer Electronics | RK73H1ETTP2670F | 267Ω | 0402 |
| R1* | KOA Speer Electronics | RK73H1ETTP930F | 93Ω | 0402 |
| Rbias | KOA Speer Electronics | RK73H1ETTP7500F | 750Ω | 0402 |
| L1 | Coilcraft | 0402CS-6N8XGLW | 6.8nH | 0402 |
| L2 | Coilcraft | 0402CS-15NXGLW | 15nH | 0402 |





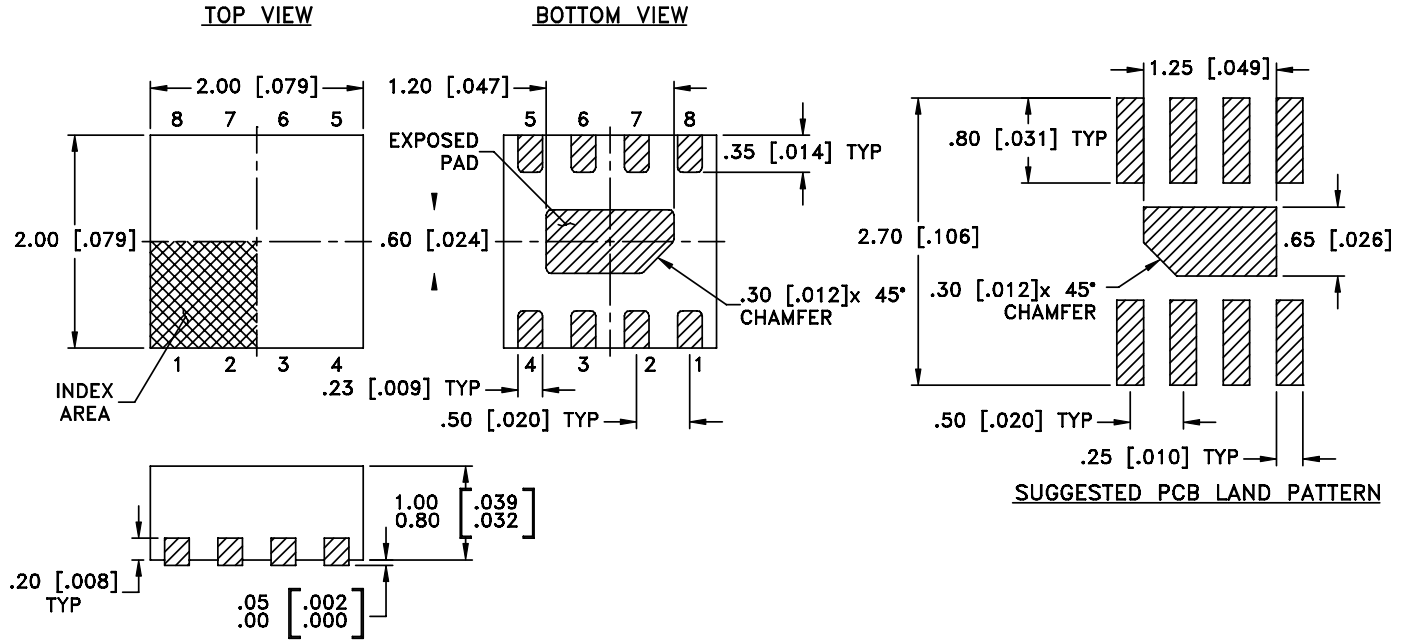
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CASE STYLE DRAWING



Weight: 0.006 grams
Dimensions are in inches [mm].

Figure 3. MC1631-1 Case Style Drawing

PRODUCT MARKING



Marking may contain other features or characters for internal lot control

Figure 4. PMA2-162LNA+ Product Marking



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

| | |
|--|---|
| Performance Data | Data Graphs S-Parameter (S2P Files) Data Set (.zip file) |
| Case Style | MC1631-1. Plastic Package, Exposed Paddle, Lead Finish: Matte Tin |
| RoHs Status | Compliant |
| Tape & Reel | F66 |
| Standard quantities available on reel | 7" reels with 20, 50, 100, 200, 500, or 1000 devices |
| Suggested Layout for PCB Design | PL-737 |
| Evaluation Board | TB-PMA2162LNAC+ Gerber File |
| Environmental Ratings | ENV08T1 |

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/terms/viewterm.html



Typical Performance Data

NOTE: Use PDF Bookmarks to view DATA at required conditions

Definitions:

Input Return Loss = -S11 (dB)

Gain(Power Gain) = S21 (dB)

Reverse Isolation = -S12 (dB)

Output Return Loss = -S22 (dB)

TEST CONDITIONS: $V_s = +4V$, $I_s = 54.09mA$, $R1=267 \Omega$ @ Temperature = +25°C

| FREQ | Gain | Isolation | Input Return Loss | Output Return Loss | Stability | | IP-3 Output | 1dB Comp. Output | FREQ | Noise Figure |
|--------|-------|-----------|-------------------|--------------------|-----------|---------|-------------|------------------|--------|--------------|
| (MHz) | (dB) | (dB) | (dB) | (dB) | K | Measure | (dBm) | (dBm) | (MHz) | (dB) |
| 500.0 | 21.78 | 42.23 | -2.02 | -6.93 | 1.92 | 1.23 | 27.48 | 16.87 | 500.0 | 1.18 |
| 525.0 | 22.53 | 41.02 | -2.59 | -7.73 | 1.89 | 1.21 | 27.95 | 17.34 | 600.0 | 1.01 |
| 550.0 | 23.13 | 40.30 | -3.28 | -8.57 | 1.92 | 1.19 | 27.79 | 17.75 | 700.0 | 0.51 |
| 575.0 | 23.59 | 39.70 | -4.08 | -9.45 | 1.97 | 1.16 | 27.79 | 18.12 | 800.0 | 0.47 |
| 600.0 | 23.94 | 38.83 | -4.97 | -10.31 | 1.94 | 1.12 | 28.24 | 18.25 | 900.0 | 0.37 |
| 625.0 | 24.18 | 38.76 | -5.96 | -11.21 | 2.04 | 1.09 | 28.29 | 18.88 | 1000.0 | 0.39 |
| 650.0 | 24.32 | 38.36 | -7.04 | -12.10 | 2.06 | 1.06 | 28.58 | 19.09 | 1100.0 | 0.43 |
| 675.0 | 24.40 | 37.86 | -8.21 | -12.90 | 2.06 | 1.02 | 28.79 | 19.35 | 1200.0 | 0.51 |
| 700.0 | 24.43 | 38.04 | -9.45 | -13.64 | 2.18 | 1.01 | 29.24 | 19.57 | 1300.0 | 0.41 |
| 725.0 | 24.40 | 37.80 | -10.77 | -14.36 | 2.20 | 0.99 | 29.44 | 19.58 | 1400.0 | 0.55 |
| 750.0 | 24.33 | 37.95 | -12.21 | -15.02 | 2.31 | 0.97 | 29.69 | 19.91 | 1500.0 | 0.61 |
| 775.0 | 24.25 | 37.63 | -13.78 | -15.57 | 2.30 | 0.96 | 30.06 | 19.94 | 1600.0 | 0.60 |
| 800.0 | 24.14 | 37.66 | -15.47 | -16.12 | 2.37 | 0.95 | 30.42 | 19.85 | 1700.0 | 0.58 |
| 825.0 | 24.02 | 37.52 | -17.41 | -16.70 | 2.39 | 0.95 | 30.54 | 20.22 | 1800.0 | 0.74 |
| 850.0 | 23.88 | 37.50 | -19.50 | -17.20 | 2.44 | 0.94 | 30.40 | 20.22 | 1900.0 | 0.68 |
| 875.0 | 23.73 | 37.50 | -21.84 | -17.71 | 2.49 | 0.94 | 30.84 | 19.99 | 2000.0 | 0.78 |
| 900.0 | 23.58 | 37.31 | -24.22 | -18.16 | 2.49 | 0.94 | 30.53 | 20.53 | 2100.0 | 0.76 |
| 925.0 | 23.42 | 37.40 | -26.19 | -18.51 | 2.56 | 0.95 | 30.94 | 20.18 | 2200.0 | 0.81 |
| 950.0 | 23.26 | 37.59 | -27.29 | -18.85 | 2.66 | 0.95 | 30.95 | 20.07 | 2300.0 | 0.92 |
| 975.0 | 23.10 | 37.56 | -26.41 | -19.15 | 2.70 | 0.95 | 30.49 | 20.28 | 2400.0 | 0.95 |
| 1000.0 | 22.93 | 37.52 | -24.92 | -19.33 | 2.74 | 0.96 | 30.25 | 20.02 | 2500.0 | 1.09 |
| 1050.0 | 22.60 | 37.72 | -22.00 | -19.47 | 2.89 | 0.96 | 30.84 | 20.02 | 2600.0 | 1.04 |
| 1100.0 | 22.27 | 37.43 | -19.69 | -19.29 | 2.88 | 0.97 | 30.74 | 20.00 | 2700.0 | 1.19 |
| 1150.0 | 21.94 | 37.53 | -17.93 | -18.72 | 3.00 | 0.98 | 30.71 | 20.02 | 2800.0 | 1.21 |
| 1200.0 | 21.62 | 37.66 | -16.93 | -18.08 | 3.12 | 0.98 | 30.64 | 20.06 | 2900.0 | 1.25 |
| 1250.0 | 21.30 | 37.84 | -15.96 | -17.18 | 3.27 | 0.99 | 30.37 | 20.10 | 3000.0 | 1.16 |
| 1300.0 | 20.99 | 37.78 | -15.35 | -16.24 | 3.32 | 0.99 | 30.44 | 19.81 | 3100.0 | 1.46 |
| 1350.0 | 20.68 | 37.72 | -14.83 | -15.27 | 3.38 | 0.99 | 30.39 | 19.58 | 3200.0 | 1.46 |
| 1400.0 | 20.38 | 37.76 | -14.26 | -14.36 | 3.46 | 0.99 | 30.21 | 19.36 | 3300.0 | 1.51 |
| 1500.0 | 19.78 | 37.99 | -13.41 | -12.69 | 3.69 | 0.99 | 30.35 | 19.58 | 3400.0 | 1.59 |
| 1550.0 | 19.47 | 38.16 | -13.13 | -11.92 | 3.83 | 0.98 | 29.89 | 18.84 | 3500.0 | 1.49 |
| 1600.0 | 19.18 | 38.04 | -12.91 | -11.19 | 3.84 | 0.97 | 30.04 | 18.92 | 3600.0 | 1.75 |
| 1700.0 | 18.59 | 38.11 | -12.40 | -9.85 | 3.98 | 0.95 | 29.43 | 18.19 | 3700.0 | 1.78 |
| 1800.0 | 17.99 | 38.52 | -11.88 | -8.73 | 4.26 | 0.93 | 29.60 | 18.25 | 3800.0 | 1.77 |
| 1900.0 | 17.37 | 38.65 | -11.50 | -7.76 | 4.42 | 0.90 | 29.74 | 18.07 | 3900.0 | 1.84 |
| 2000.0 | 16.73 | 38.95 | -11.33 | -7.25 | 4.78 | 0.88 | 29.02 | 17.45 | 4000.0 | 1.78 |
| 2100.0 | 16.25 | 39.04 | -11.02 | -6.38 | 4.79 | 0.84 | 29.18 | 17.40 | | |
| 2200.0 | 15.69 | 39.02 | -10.74 | -5.66 | 4.78 | 0.81 | 29.04 | 17.34 | | |
| 2300.0 | 15.12 | 39.54 | -10.55 | -5.10 | 5.11 | 0.77 | 28.59 | 16.44 | | |
| 2400.0 | 14.53 | 39.69 | -10.27 | -4.60 | 5.20 | 0.73 | 27.88 | 15.96 | | |
| 2500.0 | 13.95 | 39.71 | -10.05 | -4.19 | 5.25 | 0.70 | 28.02 | 15.58 | | |
| 2600.0 | 13.38 | 40.18 | -9.92 | -3.83 | 5.58 | 0.66 | 27.18 | 15.10 | | |
| 2700.0 | 12.81 | 39.59 | -9.71 | -3.51 | 5.21 | 0.63 | 27.03 | 14.84 | | |
| 2800.0 | 12.24 | 39.75 | -9.48 | -3.25 | 5.34 | 0.60 | 26.66 | 14.26 | | |
| 2900.0 | 11.70 | 39.38 | -9.36 | -3.02 | 5.15 | 0.58 | 26.49 | 13.97 | | |
| 3000.0 | 11.17 | 39.44 | -9.21 | -2.83 | 5.23 | 0.55 | 25.59 | 13.54 | | |
| 3100.0 | 10.65 | 39.19 | -9.00 | -2.62 | 5.06 | 0.53 | 25.64 | 13.10 | | |
| 3200.0 | 10.14 | 38.88 | -8.93 | -2.46 | 4.91 | 0.51 | 24.56 | 12.46 | | |
| 3300.0 | 9.67 | 38.08 | -8.81 | -2.29 | 4.43 | 0.48 | 24.57 | 12.11 | | |
| 3400.0 | 9.20 | 38.03 | -8.68 | -2.14 | 4.38 | 0.46 | 24.03 | 11.83 | | |
| 3500.0 | 8.74 | 37.19 | -8.56 | -2.02 | 3.97 | 0.44 | 23.31 | 11.43 | | |
| 3600.0 | 8.26 | 36.71 | -8.50 | -1.92 | 3.79 | 0.43 | 23.01 | 10.94 | | |
| 3700.0 | 7.85 | 36.22 | -8.32 | -1.86 | 3.62 | 0.42 | 22.59 | 10.60 | | |
| 3800.0 | 7.41 | 35.38 | -8.17 | -1.75 | 3.23 | 0.40 | 22.07 | 10.37 | | |
| 3900.0 | 6.98 | 34.60 | -8.24 | -1.72 | 3.06 | 0.40 | 21.48 | 9.86 | | |
| 4000.0 | 6.60 | 33.52 | -8.12 | -1.68 | 2.72 | 0.40 | 21.64 | 9.63 | | |

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: $V_s = +3.8V$, $I_s = 50.72mA$, $R1=267 \Omega$ @ Temperature = +25°C

| FREQ (MHz) | Gain (dB) | Isolation (dB) | Input Return Loss (dB) | Output Return Loss (dB) | Stability | | IP-3 Output (dBm) | 1dB Comp. Output (dBm) | FREQ (MHz) | Noise Figure (dB) |
|---------------|--------------|-------------------|---------------------------------|----------------------------------|-----------|---------|-------------------------|---------------------------------|---------------|-------------------------|
| | | | | | K | Measure | | | | |
| 500.0 | 21.62 | 41.85 | -2.00 | -6.93 | 1.87 | 1.23 | 26.95 | 16.34 | 500.0 | 1.16 |
| 525.0 | 22.38 | 40.96 | -2.59 | -7.74 | 1.90 | 1.21 | 27.32 | 16.79 | 600.0 | 1.01 |
| 550.0 | 22.99 | 39.98 | -3.27 | -8.59 | 1.89 | 1.19 | 27.42 | 17.22 | 700.0 | 0.52 |
| 575.0 | 23.46 | 39.30 | -4.08 | -9.49 | 1.92 | 1.15 | 27.48 | 17.62 | 800.0 | 0.49 |
| 600.0 | 23.82 | 38.92 | -4.99 | -10.38 | 1.98 | 1.12 | 27.72 | 17.73 | 900.0 | 0.45 |
| 625.0 | 24.06 | 38.22 | -5.98 | -11.31 | 1.96 | 1.08 | 27.83 | 18.37 | 1000.0 | 0.36 |
| 650.0 | 24.21 | 38.13 | -7.08 | -12.21 | 2.05 | 1.05 | 28.15 | 18.54 | 1100.0 | 0.45 |
| 675.0 | 24.29 | 37.79 | -8.28 | -13.02 | 2.07 | 1.02 | 28.33 | 18.84 | 1200.0 | 0.50 |
| 700.0 | 24.32 | 37.47 | -9.56 | -13.83 | 2.09 | 1.00 | 28.75 | 19.06 | 1300.0 | 0.43 |
| 725.0 | 24.29 | 37.43 | -10.93 | -14.56 | 2.15 | 0.98 | 29.16 | 19.08 | 1400.0 | 0.57 |
| 750.0 | 24.22 | 37.55 | -12.41 | -15.21 | 2.25 | 0.97 | 29.32 | 19.40 | 1500.0 | 0.60 |
| 775.0 | 24.14 | 37.23 | -14.06 | -15.84 | 2.24 | 0.95 | 29.99 | 19.43 | 1600.0 | 0.61 |
| 800.0 | 24.02 | 37.31 | -15.81 | -16.42 | 2.32 | 0.95 | 30.16 | 19.36 | 1700.0 | 0.58 |
| 825.0 | 23.90 | 37.13 | -17.82 | -16.99 | 2.33 | 0.94 | 30.16 | 19.70 | 1800.0 | 0.77 |
| 850.0 | 23.76 | 37.19 | -20.00 | -17.52 | 2.40 | 0.94 | 30.29 | 19.73 | 1900.0 | 0.68 |
| 875.0 | 23.61 | 37.10 | -22.28 | -18.03 | 2.43 | 0.94 | 30.85 | 19.51 | 2000.0 | 0.80 |
| 900.0 | 23.45 | 37.13 | -24.55 | -18.51 | 2.48 | 0.94 | 30.42 | 20.04 | 2100.0 | 0.79 |
| 925.0 | 23.29 | 37.10 | -25.87 | -18.85 | 2.52 | 0.95 | 30.71 | 19.68 | 2200.0 | 0.80 |
| 950.0 | 23.13 | 37.16 | -25.95 | -19.19 | 2.58 | 0.95 | 30.60 | 19.61 | 2300.0 | 0.88 |
| 975.0 | 22.97 | 37.21 | -24.77 | -19.47 | 2.64 | 0.95 | 30.55 | 19.82 | 2400.0 | 0.93 |
| 1000.0 | 22.80 | 37.20 | -23.26 | -19.64 | 2.68 | 0.96 | 30.05 | 19.57 | 2500.0 | 1.08 |
| 1050.0 | 22.47 | 37.33 | -20.74 | -19.78 | 2.80 | 0.97 | 30.35 | 19.57 | 2600.0 | 1.07 |
| 1100.0 | 22.14 | 37.26 | -18.70 | -19.50 | 2.86 | 0.97 | 30.48 | 19.55 | 2700.0 | 1.25 |
| 1150.0 | 21.80 | 37.51 | -17.14 | -18.89 | 3.03 | 0.98 | 30.57 | 19.60 | 2800.0 | 1.19 |
| 1200.0 | 21.48 | 37.34 | -16.20 | -18.14 | 3.05 | 0.99 | 30.68 | 19.62 | 2900.0 | 1.28 |
| 1250.0 | 21.16 | 37.39 | -15.32 | -17.25 | 3.15 | 0.99 | 30.38 | 19.68 | 3000.0 | 1.32 |
| 1300.0 | 20.85 | 37.39 | -14.73 | -16.23 | 3.22 | 0.99 | 29.97 | 19.37 | 3100.0 | 1.38 |
| 1350.0 | 20.53 | 37.51 | -14.25 | -15.26 | 3.34 | 0.99 | 30.28 | 19.15 | 3200.0 | 1.55 |
| 1400.0 | 20.23 | 37.50 | -13.74 | -14.33 | 3.40 | 1.00 | 29.67 | 18.96 | 3300.0 | 1.56 |
| 1500.0 | 19.62 | 37.72 | -12.94 | -12.65 | 3.62 | 0.99 | 29.88 | 19.17 | 3400.0 | 1.61 |
| 1550.0 | 19.32 | 37.80 | -12.70 | -11.86 | 3.72 | 0.98 | 29.83 | 18.43 | 3500.0 | 1.58 |
| 1600.0 | 19.02 | 37.90 | -12.48 | -11.15 | 3.82 | 0.98 | 29.87 | 18.53 | 3600.0 | 1.78 |
| 1700.0 | 18.43 | 38.18 | -12.03 | -9.82 | 4.05 | 0.96 | 29.32 | 17.80 | 3700.0 | 1.73 |
| 1800.0 | 17.83 | 38.38 | -11.53 | -8.70 | 4.24 | 0.93 | 29.56 | 17.83 | 3800.0 | 1.79 |
| 1900.0 | 17.21 | 38.79 | -11.16 | -7.73 | 4.54 | 0.91 | 29.09 | 17.65 | 3900.0 | 1.91 |
| 2000.0 | 16.56 | 38.50 | -11.04 | -7.21 | 4.59 | 0.89 | 28.62 | 17.07 | 4000.0 | 1.77 |
| 2100.0 | 16.09 | 38.88 | -10.71 | -6.35 | 4.75 | 0.85 | 28.62 | 17.01 | | |
| 2200.0 | 15.53 | 38.83 | -10.48 | -5.64 | 4.72 | 0.81 | 28.80 | 16.92 | | |
| 2300.0 | 14.95 | 39.28 | -10.28 | -5.07 | 5.00 | 0.77 | 27.75 | 15.92 | | |
| 2400.0 | 14.37 | 39.60 | -10.04 | -4.56 | 5.20 | 0.73 | 27.36 | 15.46 | | |
| 2500.0 | 13.78 | 39.85 | -9.85 | -4.17 | 5.39 | 0.70 | 27.16 | 15.15 | | |
| 2600.0 | 13.21 | 40.21 | -9.71 | -3.81 | 5.65 | 0.66 | 26.22 | 14.50 | | |
| 2700.0 | 12.64 | 39.97 | -9.51 | -3.49 | 5.50 | 0.63 | 26.05 | 14.30 | | |
| 2800.0 | 12.07 | 39.55 | -9.27 | -3.23 | 5.26 | 0.60 | 25.77 | 13.89 | | |
| 2900.0 | 11.54 | 39.52 | -9.18 | -3.01 | 5.29 | 0.58 | 25.41 | 13.45 | | |
| 3000.0 | 11.00 | 39.44 | -9.04 | -2.81 | 5.27 | 0.55 | 24.53 | 12.99 | | |
| 3100.0 | 10.48 | 39.27 | -8.84 | -2.61 | 5.16 | 0.53 | 24.69 | 12.52 | | |
| 3200.0 | 9.97 | 39.01 | -8.76 | -2.44 | 5.03 | 0.51 | 23.56 | 11.90 | | |
| 3300.0 | 9.50 | 38.38 | -8.65 | -2.27 | 4.63 | 0.48 | 23.54 | 11.57 | | |
| 3400.0 | 9.03 | 37.87 | -8.52 | -2.13 | 4.33 | 0.46 | 23.01 | 11.30 | | |
| 3500.0 | 8.57 | 37.16 | -8.42 | -2.01 | 3.99 | 0.44 | 22.24 | 10.79 | | |
| 3600.0 | 8.08 | 36.84 | -8.37 | -1.90 | 3.87 | 0.43 | 22.01 | 10.32 | | |
| 3700.0 | 7.68 | 36.31 | -8.18 | -1.85 | 3.68 | 0.42 | 21.58 | 10.04 | | |
| 3800.0 | 7.24 | 35.22 | -8.04 | -1.74 | 3.20 | 0.41 | 21.17 | 9.81 | | |
| 3900.0 | 6.81 | 35.13 | -8.08 | -1.73 | 3.33 | 0.40 | 20.56 | 9.30 | | |
| 4000.0 | 6.44 | 33.75 | -7.98 | -1.68 | 2.84 | 0.40 | 20.73 | 9.03 | | |

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: $V_s = +4.2V$, $I_s = 57.17mA$, $R1=267 \Omega$ @ Temperature = +25°C

| FREQ (MHz) | Gain (dB) | Isolation (dB) | Input Return Loss (dB) | Output Return Loss (dB) | Stability | | IP-3 Output (dBm) | 1dB Comp. Output (dBm) | FREQ (MHz) | Noise Figure (dB) |
|---------------|--------------|-------------------|---------------------------------|----------------------------------|-----------|---------|-------------------------|---------------------------------|---------------|-------------------------|
| | | | | | K | Measure | | | | |
| 500.0 | 21.93 | 42.37 | -2.03 | -6.92 | 1.92 | 1.23 | 28.05 | 17.28 | 500.0 | 1.15 |
| 525.0 | 22.67 | 41.37 | -2.61 | -7.72 | 1.93 | 1.21 | 28.24 | 17.78 | 600.0 | 0.92 |
| 550.0 | 23.25 | 40.64 | -3.29 | -8.54 | 1.96 | 1.19 | 28.26 | 18.21 | 700.0 | 0.50 |
| 575.0 | 23.71 | 40.04 | -4.08 | -9.40 | 2.00 | 1.16 | 28.32 | 18.58 | 800.0 | 0.48 |
| 600.0 | 24.06 | 39.41 | -4.96 | -10.26 | 2.02 | 1.12 | 28.52 | 18.72 | 900.0 | 0.41 |
| 625.0 | 24.29 | 38.99 | -5.93 | -11.14 | 2.05 | 1.09 | 28.51 | 19.31 | 1000.0 | 0.34 |
| 650.0 | 24.43 | 38.62 | -6.98 | -11.99 | 2.09 | 1.06 | 28.91 | 19.56 | 1100.0 | 0.42 |
| 675.0 | 24.51 | 38.47 | -8.13 | -12.73 | 2.15 | 1.03 | 29.18 | 19.81 | 1200.0 | 0.47 |
| 700.0 | 24.53 | 38.33 | -9.34 | -13.46 | 2.20 | 1.01 | 29.78 | 20.02 | 1300.0 | 0.41 |
| 725.0 | 24.50 | 38.02 | -10.63 | -14.14 | 2.22 | 0.99 | 30.12 | 20.02 | 1400.0 | 0.55 |
| 750.0 | 24.43 | 37.90 | -12.02 | -14.74 | 2.26 | 0.97 | 29.91 | 20.36 | 1500.0 | 0.61 |
| 775.0 | 24.35 | 37.94 | -13.53 | -15.30 | 2.34 | 0.96 | 30.48 | 20.36 | 1600.0 | 0.59 |
| 800.0 | 24.25 | 37.78 | -15.16 | -15.84 | 2.36 | 0.95 | 30.54 | 20.28 | 1700.0 | 0.59 |
| 825.0 | 24.12 | 37.92 | -16.99 | -16.39 | 2.46 | 0.95 | 30.63 | 20.64 | 1800.0 | 0.74 |
| 850.0 | 23.98 | 37.81 | -18.99 | -16.88 | 2.49 | 0.95 | 30.80 | 20.63 | 1900.0 | 0.67 |
| 875.0 | 23.84 | 37.80 | -21.19 | -17.36 | 2.54 | 0.95 | 30.97 | 20.40 | 2000.0 | 0.80 |
| 900.0 | 23.69 | 37.86 | -23.69 | -17.79 | 2.61 | 0.95 | 30.83 | 20.93 | 2100.0 | 0.77 |
| 925.0 | 23.53 | 37.94 | -26.21 | -18.10 | 2.68 | 0.95 | 31.22 | 20.59 | 2200.0 | 0.77 |
| 950.0 | 23.38 | 37.79 | -28.14 | -18.48 | 2.69 | 0.95 | 31.36 | 20.49 | 2300.0 | 0.91 |
| 975.0 | 23.22 | 37.99 | -28.05 | -18.75 | 2.80 | 0.95 | 30.97 | 20.70 | 2400.0 | 0.93 |
| 1000.0 | 23.05 | 37.85 | -26.63 | -18.98 | 2.80 | 0.96 | 30.92 | 20.42 | 2500.0 | 1.05 |
| 1050.0 | 22.73 | 38.18 | -23.46 | -19.21 | 3.00 | 0.96 | 30.90 | 20.42 | 2600.0 | 1.06 |
| 1100.0 | 22.40 | 38.02 | -20.79 | -19.04 | 3.04 | 0.97 | 31.15 | 20.38 | 2700.0 | 1.24 |
| 1150.0 | 22.07 | 38.02 | -18.82 | -18.61 | 3.13 | 0.98 | 30.78 | 20.40 | 2800.0 | 1.22 |
| 1200.0 | 21.76 | 37.96 | -17.71 | -18.00 | 3.19 | 0.98 | 30.89 | 20.45 | 2900.0 | 1.29 |
| 1250.0 | 21.44 | 38.05 | -16.67 | -17.20 | 3.31 | 0.98 | 30.69 | 20.47 | 3000.0 | 1.18 |
| 1300.0 | 21.13 | 38.12 | -15.97 | -16.25 | 3.42 | 0.99 | 30.68 | 20.15 | 3100.0 | 1.38 |
| 1350.0 | 20.82 | 38.13 | -15.41 | -15.34 | 3.50 | 0.99 | 30.40 | 19.95 | 3200.0 | 1.48 |
| 1400.0 | 20.52 | 38.27 | -14.81 | -14.44 | 3.63 | 0.99 | 30.17 | 19.74 | 3300.0 | 1.56 |
| 1500.0 | 19.92 | 38.29 | -13.87 | -12.78 | 3.78 | 0.98 | 30.25 | 19.92 | 3400.0 | 1.59 |
| 1550.0 | 19.62 | 38.45 | -13.59 | -12.00 | 3.92 | 0.98 | 30.03 | 19.20 | 3500.0 | 1.52 |
| 1600.0 | 19.33 | 38.38 | -13.34 | -11.28 | 3.96 | 0.97 | 30.08 | 19.30 | 3600.0 | 1.72 |
| 1700.0 | 18.74 | 38.51 | -12.81 | -9.94 | 4.13 | 0.95 | 29.68 | 18.55 | 3700.0 | 1.80 |
| 1800.0 | 18.15 | 38.80 | -12.25 | -8.81 | 4.36 | 0.93 | 29.75 | 18.62 | 3800.0 | 1.89 |
| 1900.0 | 17.53 | 39.09 | -11.81 | -7.83 | 4.61 | 0.90 | 29.80 | 18.40 | 3900.0 | 1.86 |
| 2000.0 | 16.88 | 38.95 | -11.68 | -7.31 | 4.74 | 0.88 | 29.36 | 17.83 | 4000.0 | 1.83 |
| 2100.0 | 16.42 | 39.53 | -11.29 | -6.45 | 5.03 | 0.84 | 29.38 | 17.77 | | |
| 2200.0 | 15.86 | 39.45 | -11.00 | -5.72 | 4.99 | 0.80 | 29.30 | 17.73 | | |
| 2300.0 | 15.29 | 40.02 | -10.78 | -5.15 | 5.36 | 0.77 | 28.73 | 16.76 | | |
| 2400.0 | 14.70 | 39.57 | -10.51 | -4.64 | 5.10 | 0.73 | 28.42 | 16.33 | | |
| 2500.0 | 14.12 | 39.78 | -10.26 | -4.22 | 5.25 | 0.70 | 28.40 | 16.06 | | |
| 2600.0 | 13.55 | 40.16 | -10.13 | -3.87 | 5.53 | 0.66 | 27.92 | 15.48 | | |
| 2700.0 | 12.98 | 40.06 | -9.90 | -3.55 | 5.47 | 0.63 | 27.51 | 15.14 | | |
| 2800.0 | 12.41 | 39.86 | -9.66 | -3.28 | 5.36 | 0.60 | 27.38 | 14.80 | | |
| 2900.0 | 11.88 | 39.60 | -9.54 | -3.05 | 5.24 | 0.58 | 27.24 | 14.40 | | |
| 3000.0 | 11.34 | 39.38 | -9.38 | -2.85 | 5.15 | 0.55 | 26.31 | 13.96 | | |
| 3100.0 | 10.82 | 39.18 | -9.16 | -2.65 | 5.02 | 0.53 | 26.46 | 13.56 | | |
| 3200.0 | 10.31 | 38.93 | -9.09 | -2.48 | 4.91 | 0.51 | 25.45 | 12.89 | | |
| 3300.0 | 9.84 | 38.04 | -8.96 | -2.31 | 4.39 | 0.48 | 25.44 | 12.56 | | |
| 3400.0 | 9.37 | 37.80 | -8.81 | -2.16 | 4.23 | 0.46 | 24.83 | 12.37 | | |
| 3500.0 | 8.91 | 37.05 | -8.72 | -2.04 | 3.87 | 0.45 | 24.28 | 11.91 | | |
| 3600.0 | 8.44 | 36.93 | -8.63 | -1.93 | 3.85 | 0.43 | 24.00 | 11.44 | | |
| 3700.0 | 8.03 | 36.13 | -8.46 | -1.87 | 3.54 | 0.42 | 23.47 | 11.15 | | |
| 3800.0 | 7.59 | 35.16 | -8.31 | -1.76 | 3.12 | 0.41 | 22.90 | 10.89 | | |
| 3900.0 | 7.16 | 34.53 | -8.38 | -1.74 | 3.02 | 0.40 | 22.34 | 10.41 | | |
| 4000.0 | 6.78 | 33.61 | -8.27 | -1.69 | 2.74 | 0.40 | 22.39 | 10.16 | | |

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: $V_S = +4V$, $I_S = 53.52mA$, $R1=267 \Omega$ @ Temperature = $-40^\circ C$

| FREQ (MHz) | Gain (dB) | Isolation (dB) | Input Return Loss (dB) | Output Return Loss (dB) | Stability | | IP-3 Output (dBm) | 1dB Comp. Output (dBm) | FREQ (MHz) | Noise Figure (dB) |
|---------------|--------------|-------------------|---------------------------------|----------------------------------|-----------|---------|-------------------------|---------------------------------|---------------|-------------------------|
| | | | | | K | Measure | | | | |
| 500.0 | 22.14 | 42.36 | -1.83 | -6.64 | 1.76 | 1.22 | 27.38 | 16.47 | 500.0 | 0.73 |
| 525.0 | 22.88 | 41.83 | -2.37 | -7.39 | 1.86 | 1.22 | 27.85 | 16.94 | 600.0 | 0.71 |
| 550.0 | 23.47 | 41.10 | -2.99 | -8.15 | 1.89 | 1.20 | 27.90 | 17.37 | 700.0 | 0.26 |
| 575.0 | 23.94 | 40.30 | -3.71 | -8.97 | 1.91 | 1.17 | 27.84 | 17.72 | 800.0 | 0.23 |
| 600.0 | 24.30 | 39.63 | -4.52 | -9.78 | 1.92 | 1.13 | 28.14 | 17.85 | 900.0 | 0.20 |
| 625.0 | 24.54 | 39.31 | -5.40 | -10.62 | 1.98 | 1.10 | 28.67 | 18.46 | 1000.0 | 0.10 |
| 650.0 | 24.70 | 39.00 | -6.35 | -11.46 | 2.03 | 1.07 | 28.62 | 18.69 | 1100.0 | 0.18 |
| 675.0 | 24.79 | 38.72 | -7.39 | -12.24 | 2.08 | 1.05 | 29.06 | 19.03 | 1200.0 | 0.21 |
| 700.0 | 24.84 | 38.61 | -8.48 | -12.95 | 2.14 | 1.02 | 29.69 | 19.33 | 1300.0 | 0.17 |
| 725.0 | 24.82 | 38.15 | -9.63 | -13.66 | 2.12 | 1.00 | 29.85 | 19.40 | 1400.0 | 0.26 |
| 750.0 | 24.77 | 38.06 | -10.87 | -14.28 | 2.18 | 0.98 | 30.01 | 19.72 | 1500.0 | 0.31 |
| 775.0 | 24.70 | 37.97 | -12.16 | -14.81 | 2.22 | 0.97 | 30.44 | 19.78 | 1600.0 | 0.30 |
| 800.0 | 24.60 | 37.99 | -13.49 | -15.32 | 2.29 | 0.96 | 30.91 | 19.73 | 1700.0 | 0.26 |
| 825.0 | 24.49 | 37.92 | -14.96 | -15.83 | 2.33 | 0.95 | 30.91 | 20.08 | 1800.0 | 0.37 |
| 850.0 | 24.36 | 38.08 | -16.49 | -16.30 | 2.43 | 0.95 | 30.64 | 20.09 | 1900.0 | 0.31 |
| 875.0 | 24.22 | 37.99 | -18.06 | -16.75 | 2.47 | 0.95 | 31.03 | 19.89 | 2000.0 | 0.40 |
| 900.0 | 24.08 | 37.85 | -19.86 | -17.19 | 2.48 | 0.95 | 30.95 | 20.43 | 2100.0 | 0.40 |
| 925.0 | 23.93 | 37.91 | -21.76 | -17.55 | 2.55 | 0.95 | 31.10 | 20.07 | 2200.0 | 0.37 |
| 950.0 | 23.79 | 37.78 | -23.93 | -17.90 | 2.56 | 0.95 | 31.27 | 20.00 | 2300.0 | 0.47 |
| 975.0 | 23.63 | 37.83 | -25.88 | -18.27 | 2.62 | 0.95 | 31.17 | 20.19 | 2400.0 | 0.49 |
| 1000.0 | 23.48 | 37.77 | -27.10 | -18.50 | 2.65 | 0.95 | 30.40 | 19.96 | 2500.0 | 0.60 |
| 1050.0 | 23.16 | 38.02 | -26.53 | -18.89 | 2.82 | 0.96 | 30.80 | 19.97 | 2600.0 | 0.59 |
| 1100.0 | 22.84 | 38.14 | -23.74 | -18.75 | 2.95 | 0.96 | 30.79 | 19.93 | 2700.0 | 0.73 |
| 1150.0 | 22.53 | 37.99 | -21.32 | -18.34 | 2.98 | 0.97 | 30.61 | 19.97 | 2800.0 | 0.66 |
| 1200.0 | 22.22 | 37.81 | -20.00 | -17.88 | 3.01 | 0.97 | 30.64 | 20.00 | 2900.0 | 0.71 |
| 1250.0 | 21.91 | 37.90 | -18.66 | -17.19 | 3.12 | 0.97 | 30.49 | 20.05 | 3000.0 | 0.69 |
| 1300.0 | 21.61 | 37.90 | -17.77 | -16.32 | 3.19 | 0.97 | 30.26 | 19.74 | 3100.0 | 0.83 |
| 1350.0 | 21.31 | 37.88 | -17.04 | -15.35 | 3.26 | 0.97 | 30.37 | 19.52 | 3200.0 | 0.87 |
| 1400.0 | 21.01 | 37.99 | -16.29 | -14.43 | 3.37 | 0.97 | 30.27 | 19.35 | 3300.0 | 0.87 |
| 1500.0 | 20.43 | 38.03 | -15.24 | -12.75 | 3.52 | 0.97 | 29.96 | 19.55 | 3400.0 | 0.94 |
| 1550.0 | 20.13 | 38.32 | -14.85 | -12.02 | 3.70 | 0.96 | 29.76 | 18.82 | 3500.0 | 0.88 |
| 1600.0 | 19.84 | 38.10 | -14.50 | -11.32 | 3.67 | 0.96 | 29.80 | 18.90 | 3600.0 | 0.97 |
| 1700.0 | 19.27 | 38.33 | -13.80 | -9.94 | 3.86 | 0.94 | 29.37 | 18.15 | 3700.0 | 0.98 |
| 1800.0 | 18.68 | 38.66 | -13.22 | -8.76 | 4.09 | 0.91 | 29.63 | 18.21 | 3800.0 | 0.99 |
| 1900.0 | 18.06 | 39.14 | -12.66 | -7.75 | 4.41 | 0.89 | 29.20 | 17.92 | 3900.0 | 1.16 |
| 2000.0 | 17.39 | 38.79 | -12.36 | -7.26 | 4.43 | 0.87 | 28.83 | 17.37 | 4000.0 | 0.96 |
| 2100.0 | 16.96 | 39.42 | -11.96 | -6.37 | 4.71 | 0.83 | 28.97 | 17.28 | | |
| 2200.0 | 16.41 | 38.98 | -11.61 | -5.60 | 4.44 | 0.79 | 28.71 | 17.20 | | |
| 2300.0 | 15.84 | 39.66 | -11.26 | -5.02 | 4.80 | 0.75 | 28.17 | 16.26 | | |
| 2400.0 | 15.26 | 39.78 | -10.91 | -4.50 | 4.86 | 0.71 | 27.73 | 15.89 | | |
| 2500.0 | 14.67 | 40.05 | -10.74 | -4.06 | 5.01 | 0.67 | 27.55 | 15.53 | | |
| 2600.0 | 14.10 | 40.20 | -10.48 | -3.68 | 5.09 | 0.64 | 26.80 | 15.06 | | |
| 2700.0 | 13.54 | 40.12 | -10.12 | -3.37 | 5.01 | 0.61 | 26.55 | 14.83 | | |
| 2800.0 | 12.97 | 40.45 | -9.92 | -3.11 | 5.23 | 0.58 | 26.21 | 14.42 | | |
| 2900.0 | 12.43 | 39.83 | -9.77 | -2.88 | 4.87 | 0.55 | 25.97 | 14.08 | | |
| 3000.0 | 11.89 | 39.81 | -9.49 | -2.72 | 4.91 | 0.54 | 25.12 | 13.69 | | |
| 3100.0 | 11.38 | 39.46 | -9.32 | -2.52 | 4.69 | 0.51 | 25.19 | 13.15 | | |
| 3200.0 | 10.87 | 39.58 | -9.25 | -2.35 | 4.77 | 0.49 | 24.23 | 12.66 | | |
| 3300.0 | 10.41 | 38.87 | -9.00 | -2.18 | 4.31 | 0.46 | 24.13 | 12.36 | | |
| 3400.0 | 9.99 | 38.43 | -8.90 | -2.04 | 4.05 | 0.44 | 23.76 | 12.12 | | |
| 3500.0 | 9.54 | 37.71 | -8.84 | -1.86 | 3.61 | 0.41 | 23.03 | 11.66 | | |
| 3600.0 | 9.07 | 37.31 | -8.59 | -1.75 | 3.42 | 0.40 | 22.79 | 11.24 | | |
| 3700.0 | 8.69 | 36.58 | -8.48 | -1.70 | 3.17 | 0.39 | 22.32 | 10.88 | | |
| 3800.0 | 8.27 | 35.72 | -8.47 | -1.58 | 2.79 | 0.37 | 21.97 | 10.74 | | |
| 3900.0 | 7.86 | 35.43 | -8.39 | -1.56 | 2.79 | 0.37 | 21.31 | 10.29 | | |
| 4000.0 | 7.52 | 34.20 | -8.24 | -1.51 | 2.40 | 0.36 | 21.57 | 10.01 | | |



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: $V_S = +3.8V$, $I_S = 50.44mA$, $R1=267 \Omega$ @ Temperature = $-40^\circ C$

| FREQ | Gain | Isolation | Input Return Loss | Output Return Loss | Stability | | IP-3 Output | 1dB Comp. Output | FREQ | Noise Figure |
|--------|-------|-----------|-------------------|--------------------|-----------|---------|-------------|------------------|--------|--------------|
| | | | | | K | Measure | | | | |
| (MHz) | (dB) | (dB) | (dB) | (dB) | K | Measure | (dBm) | (dBm) | (MHz) | (dB) |
| 500.0 | 21.94 | 41.79 | -1.81 | -6.65 | 1.70 | 1.22 | 26.76 | 15.84 | 500.0 | 0.77 |
| 525.0 | 22.69 | 41.40 | -2.34 | -7.41 | 1.81 | 1.22 | 27.31 | 16.31 | 600.0 | 0.67 |
| 550.0 | 23.30 | 40.44 | -2.97 | -8.18 | 1.82 | 1.19 | 27.26 | 16.68 | 700.0 | 0.28 |
| 575.0 | 23.77 | 40.14 | -3.69 | -9.01 | 1.91 | 1.17 | 27.29 | 17.06 | 800.0 | 0.26 |
| 600.0 | 24.14 | 39.30 | -4.51 | -9.85 | 1.90 | 1.13 | 27.73 | 17.12 | 900.0 | 0.18 |
| 625.0 | 24.39 | 38.84 | -5.39 | -10.71 | 1.92 | 1.10 | 27.81 | 17.80 | 1000.0 | 0.17 |
| 650.0 | 24.56 | 38.70 | -6.37 | -11.59 | 2.01 | 1.07 | 28.29 | 18.00 | 1100.0 | 0.22 |
| 675.0 | 24.66 | 38.26 | -7.44 | -12.39 | 2.02 | 1.04 | 28.42 | 18.37 | 1200.0 | 0.27 |
| 700.0 | 24.71 | 38.15 | -8.55 | -13.16 | 2.08 | 1.02 | 29.06 | 18.61 | 1300.0 | 0.22 |
| 725.0 | 24.69 | 38.01 | -9.75 | -13.88 | 2.13 | 1.00 | 29.48 | 18.74 | 1400.0 | 0.31 |
| 750.0 | 24.64 | 37.73 | -11.02 | -14.53 | 2.15 | 0.98 | 29.31 | 19.07 | 1500.0 | 0.32 |
| 775.0 | 24.57 | 37.63 | -12.37 | -15.08 | 2.19 | 0.97 | 29.94 | 19.16 | 1600.0 | 0.33 |
| 800.0 | 24.46 | 37.64 | -13.76 | -15.65 | 2.25 | 0.96 | 30.24 | 19.13 | 1700.0 | 0.29 |
| 825.0 | 24.36 | 37.69 | -15.29 | -16.19 | 2.32 | 0.95 | 30.32 | 19.50 | 1800.0 | 0.41 |
| 850.0 | 24.22 | 37.56 | -16.87 | -16.64 | 2.35 | 0.95 | 30.33 | 19.53 | 1900.0 | 0.33 |
| 875.0 | 24.08 | 37.60 | -18.53 | -17.13 | 2.41 | 0.94 | 30.54 | 19.32 | 2000.0 | 0.43 |
| 900.0 | 23.94 | 37.47 | -20.34 | -17.57 | 2.43 | 0.94 | 30.28 | 19.84 | 2100.0 | 0.42 |
| 925.0 | 23.79 | 37.58 | -22.26 | -17.89 | 2.50 | 0.94 | 30.73 | 19.52 | 2200.0 | 0.40 |
| 950.0 | 23.64 | 37.52 | -24.30 | -18.28 | 2.53 | 0.94 | 30.68 | 19.46 | 2300.0 | 0.52 |
| 975.0 | 23.49 | 37.50 | -25.65 | -18.65 | 2.58 | 0.95 | 30.44 | 19.63 | 2400.0 | 0.55 |
| 1000.0 | 23.33 | 37.59 | -26.05 | -18.90 | 2.64 | 0.95 | 29.85 | 19.44 | 2500.0 | 0.63 |
| 1050.0 | 23.01 | 37.52 | -24.50 | -19.19 | 2.71 | 0.96 | 30.35 | 19.43 | 2600.0 | 0.64 |
| 1100.0 | 22.69 | 37.48 | -22.00 | -19.02 | 2.78 | 0.96 | 30.31 | 19.44 | 2700.0 | 0.77 |
| 1150.0 | 22.37 | 37.65 | -19.92 | -18.50 | 2.91 | 0.97 | 30.09 | 19.47 | 2800.0 | 0.72 |
| 1200.0 | 22.06 | 37.61 | -18.79 | -17.94 | 2.98 | 0.97 | 30.22 | 19.49 | 2900.0 | 0.72 |
| 1250.0 | 21.75 | 37.61 | -17.61 | -17.21 | 3.06 | 0.98 | 30.18 | 19.55 | 3000.0 | 0.71 |
| 1300.0 | 21.44 | 37.58 | -16.84 | -16.27 | 3.13 | 0.98 | 29.87 | 19.27 | 3100.0 | 0.74 |
| 1350.0 | 21.14 | 37.68 | -16.19 | -15.28 | 3.23 | 0.98 | 30.07 | 19.03 | 3200.0 | 0.91 |
| 1400.0 | 20.84 | 37.76 | -15.52 | -14.35 | 3.33 | 0.98 | 29.41 | 18.84 | 3300.0 | 0.91 |
| 1500.0 | 20.25 | 37.79 | -14.55 | -12.68 | 3.46 | 0.97 | 29.82 | 19.09 | 3400.0 | 1.02 |
| 1550.0 | 19.95 | 37.88 | -14.20 | -11.93 | 3.56 | 0.97 | 29.38 | 18.38 | 3500.0 | 0.91 |
| 1600.0 | 19.66 | 38.10 | -13.87 | -11.23 | 3.71 | 0.96 | 29.46 | 18.45 | 3600.0 | 1.11 |
| 1700.0 | 19.08 | 38.33 | -13.27 | -9.85 | 3.91 | 0.94 | 29.12 | 17.69 | 3700.0 | 1.07 |
| 1800.0 | 18.49 | 38.41 | -12.73 | -8.68 | 4.02 | 0.92 | 29.34 | 17.73 | 3800.0 | 1.03 |
| 1900.0 | 17.87 | 38.52 | -12.22 | -7.69 | 4.15 | 0.89 | 28.88 | 17.52 | 3900.0 | 1.18 |
| 2000.0 | 17.20 | 38.41 | -11.91 | -7.19 | 4.29 | 0.87 | 28.44 | 16.89 | 4000.0 | 0.97 |
| 2100.0 | 16.76 | 38.88 | -11.57 | -6.32 | 4.47 | 0.83 | 28.41 | 16.77 | | |
| 2200.0 | 16.21 | 38.77 | -11.25 | -5.54 | 4.38 | 0.79 | 28.45 | 16.62 | | |
| 2300.0 | 15.63 | 39.50 | -10.93 | -4.97 | 4.77 | 0.75 | 27.59 | 15.64 | | |
| 2400.0 | 15.05 | 39.60 | -10.62 | -4.45 | 4.80 | 0.71 | 27.09 | 15.33 | | |
| 2500.0 | 14.47 | 39.73 | -10.46 | -4.02 | 4.88 | 0.67 | 26.96 | 14.99 | | |
| 2600.0 | 13.90 | 39.95 | -10.23 | -3.65 | 4.99 | 0.64 | 26.05 | 14.49 | | |
| 2700.0 | 13.33 | 39.93 | -9.88 | -3.34 | 4.95 | 0.61 | 25.90 | 14.15 | | |
| 2800.0 | 12.76 | 39.81 | -9.69 | -3.07 | 4.89 | 0.58 | 25.59 | 13.86 | | |
| 2900.0 | 12.22 | 40.00 | -9.56 | -2.85 | 5.03 | 0.55 | 25.27 | 13.47 | | |
| 3000.0 | 11.68 | 40.03 | -9.29 | -2.68 | 5.09 | 0.53 | 24.32 | 13.07 | | |
| 3100.0 | 11.17 | 39.88 | -9.13 | -2.50 | 4.99 | 0.51 | 24.54 | 12.59 | | |
| 3200.0 | 10.66 | 39.55 | -9.06 | -2.33 | 4.80 | 0.48 | 23.37 | 12.01 | | |
| 3300.0 | 10.21 | 39.02 | -8.83 | -2.15 | 4.42 | 0.46 | 23.39 | 11.71 | | |
| 3400.0 | 9.78 | 38.58 | -8.73 | -1.99 | 4.12 | 0.44 | 22.95 | 11.46 | | |
| 3500.0 | 9.33 | 37.61 | -8.67 | -1.84 | 3.60 | 0.41 | 22.17 | 10.99 | | |
| 3600.0 | 8.86 | 37.82 | -8.42 | -1.74 | 3.67 | 0.40 | 21.89 | 10.55 | | |
| 3700.0 | 8.47 | 36.90 | -8.32 | -1.68 | 3.32 | 0.39 | 21.46 | 10.20 | | |
| 3800.0 | 8.06 | 35.70 | -8.30 | -1.56 | 2.82 | 0.37 | 21.13 | 10.02 | | |
| 3900.0 | 7.64 | 35.76 | -8.22 | -1.55 | 2.95 | 0.37 | 20.44 | 9.62 | | |
| 4000.0 | 7.30 | 34.39 | -8.07 | -1.50 | 2.49 | 0.36 | 20.81 | 9.24 | | |

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: $V_s = +4.2V$, $I_s = 53.41mA$, $R1=267 \Omega$ @ Temperature = $-40^\circ C$

| FREQ | Gain | Isolation | Input Return Loss | Output Return Loss | Stability | | IP-3 Output | 1dB Comp. Output | FREQ | Noise Figure |
|--------|-------|-----------|-------------------|--------------------|-----------|---------|-------------|------------------|--------|--------------|
| (MHz) | (dB) | (dB) | (dB) | (dB) | K | Measure | (dBm) | (dBm) | (MHz) | (dB) |
| 500.0 | 22.17 | 42.83 | -1.83 | -6.61 | 1.81 | 1.23 | 27.53 | 16.93 | 500.0 | 0.76 |
| 525.0 | 22.91 | 42.14 | -2.36 | -7.36 | 1.90 | 1.22 | 28.13 | 17.36 | 600.0 | 0.73 |
| 550.0 | 23.50 | 41.28 | -2.98 | -8.10 | 1.91 | 1.20 | 27.94 | 17.74 | 700.0 | 0.29 |
| 575.0 | 23.96 | 40.40 | -3.69 | -8.89 | 1.92 | 1.16 | 27.95 | 18.10 | 800.0 | 0.26 |
| 600.0 | 24.32 | 40.20 | -4.49 | -9.66 | 2.01 | 1.14 | 28.24 | 18.28 | 900.0 | 0.21 |
| 625.0 | 24.56 | 39.66 | -5.35 | -10.51 | 2.03 | 1.11 | 28.46 | 18.89 | 1000.0 | 0.15 |
| 650.0 | 24.72 | 39.20 | -6.29 | -11.30 | 2.05 | 1.08 | 28.90 | 19.18 | 1100.0 | 0.23 |
| 675.0 | 24.82 | 39.09 | -7.31 | -12.05 | 2.13 | 1.05 | 29.22 | 19.49 | 1200.0 | 0.28 |
| 700.0 | 24.86 | 38.42 | -8.39 | -12.74 | 2.08 | 1.02 | 29.81 | 19.80 | 1300.0 | 0.18 |
| 725.0 | 24.85 | 38.55 | -9.52 | -13.40 | 2.19 | 1.00 | 30.33 | 19.88 | 1400.0 | 0.32 |
| 750.0 | 24.80 | 38.52 | -10.73 | -14.02 | 2.27 | 0.99 | 30.16 | 20.20 | 1500.0 | 0.34 |
| 775.0 | 24.73 | 38.29 | -12.00 | -14.52 | 2.28 | 0.97 | 30.75 | 20.27 | 1600.0 | 0.34 |
| 800.0 | 24.63 | 38.28 | -13.30 | -15.02 | 2.34 | 0.96 | 31.20 | 20.22 | 1700.0 | 0.28 |
| 825.0 | 24.53 | 38.24 | -14.73 | -15.50 | 2.40 | 0.96 | 31.00 | 20.56 | 1800.0 | 0.43 |
| 850.0 | 24.39 | 38.25 | -16.21 | -15.94 | 2.46 | 0.95 | 30.98 | 20.58 | 1900.0 | 0.36 |
| 875.0 | 24.26 | 38.22 | -17.75 | -16.39 | 2.51 | 0.95 | 31.28 | 20.39 | 2000.0 | 0.45 |
| 900.0 | 24.11 | 38.20 | -19.50 | -16.77 | 2.56 | 0.95 | 31.04 | 20.92 | 2100.0 | 0.41 |
| 925.0 | 23.97 | 38.32 | -21.33 | -17.13 | 2.64 | 0.95 | 31.39 | 20.55 | 2200.0 | 0.42 |
| 950.0 | 23.82 | 38.11 | -23.43 | -17.49 | 2.64 | 0.95 | 31.29 | 20.49 | 2300.0 | 0.49 |
| 975.0 | 23.67 | 38.37 | -25.32 | -17.83 | 2.76 | 0.95 | 31.46 | 20.70 | 2400.0 | 0.52 |
| 1000.0 | 23.52 | 38.31 | -26.76 | -18.11 | 2.79 | 0.95 | 30.77 | 20.47 | 2500.0 | 0.62 |
| 1050.0 | 23.20 | 38.26 | -26.85 | -18.46 | 2.87 | 0.96 | 31.06 | 20.43 | 2600.0 | 0.59 |
| 1100.0 | 22.89 | 38.38 | -24.25 | -18.39 | 3.01 | 0.96 | 30.82 | 20.43 | 2700.0 | 0.75 |
| 1150.0 | 22.57 | 38.38 | -21.76 | -18.06 | 3.09 | 0.97 | 30.91 | 20.46 | 2800.0 | 0.67 |
| 1200.0 | 22.27 | 38.25 | -20.35 | -17.65 | 3.14 | 0.97 | 30.99 | 20.48 | 2900.0 | 0.77 |
| 1250.0 | 21.96 | 38.23 | -18.98 | -17.06 | 3.22 | 0.97 | 30.89 | 20.53 | 3000.0 | 0.71 |
| 1300.0 | 21.66 | 38.34 | -18.06 | -16.22 | 3.34 | 0.97 | 30.44 | 20.23 | 3100.0 | 0.80 |
| 1350.0 | 21.35 | 38.45 | -17.28 | -15.30 | 3.46 | 0.97 | 30.49 | 19.99 | 3200.0 | 0.89 |
| 1400.0 | 21.06 | 38.68 | -16.54 | -14.40 | 3.63 | 0.97 | 30.06 | 19.80 | 3300.0 | 0.91 |
| 1500.0 | 20.48 | 38.41 | -15.46 | -12.78 | 3.66 | 0.97 | 30.24 | 20.01 | 3400.0 | 0.97 |
| 1550.0 | 20.18 | 38.35 | -15.04 | -12.04 | 3.70 | 0.96 | 29.71 | 19.27 | 3500.0 | 0.90 |
| 1600.0 | 19.89 | 38.61 | -14.66 | -11.33 | 3.87 | 0.96 | 29.82 | 19.35 | 3600.0 | 1.09 |
| 1700.0 | 19.32 | 38.76 | -13.96 | -9.96 | 4.04 | 0.94 | 29.40 | 18.57 | 3700.0 | 1.10 |
| 1800.0 | 18.74 | 39.00 | -13.37 | -8.79 | 4.24 | 0.91 | 29.77 | 18.62 | 3800.0 | 1.13 |
| 1900.0 | 18.12 | 39.41 | -12.78 | -7.79 | 4.54 | 0.89 | 29.27 | 18.39 | 3900.0 | 1.15 |
| 2000.0 | 17.44 | 39.25 | -12.48 | -7.31 | 4.67 | 0.87 | 28.69 | 17.77 | 4000.0 | 0.98 |
| 2100.0 | 17.01 | 40.02 | -12.08 | -6.41 | 5.04 | 0.83 | 28.78 | 17.70 | | |
| 2200.0 | 16.47 | 39.91 | -11.71 | -5.63 | 4.94 | 0.79 | 28.81 | 17.54 | | |
| 2300.0 | 15.90 | 40.18 | -11.35 | -5.04 | 5.09 | 0.75 | 28.08 | 16.73 | | |
| 2400.0 | 15.32 | 39.84 | -11.01 | -4.53 | 4.88 | 0.71 | 27.67 | 16.33 | | |
| 2500.0 | 14.74 | 39.86 | -10.84 | -4.08 | 4.89 | 0.68 | 27.43 | 15.92 | | |
| 2600.0 | 14.17 | 40.31 | -10.59 | -3.70 | 5.14 | 0.64 | 26.95 | 15.45 | | |
| 2700.0 | 13.61 | 40.01 | -10.22 | -3.39 | 4.95 | 0.61 | 26.60 | 15.27 | | |
| 2800.0 | 13.03 | 40.42 | -10.02 | -3.12 | 5.20 | 0.58 | 26.33 | 14.90 | | |
| 2900.0 | 12.49 | 39.96 | -9.90 | -2.89 | 4.95 | 0.55 | 26.01 | 14.51 | | |
| 3000.0 | 11.96 | 39.66 | -9.62 | -2.73 | 4.82 | 0.54 | 25.27 | 14.15 | | |
| 3100.0 | 11.45 | 39.34 | -9.45 | -2.54 | 4.63 | 0.51 | 25.30 | 13.72 | | |
| 3200.0 | 10.94 | 39.47 | -9.39 | -2.36 | 4.71 | 0.48 | 24.37 | 13.04 | | |
| 3300.0 | 10.49 | 38.96 | -9.13 | -2.19 | 4.36 | 0.46 | 24.29 | 12.74 | | |
| 3400.0 | 10.06 | 38.32 | -9.03 | -2.04 | 3.98 | 0.44 | 23.97 | 12.60 | | |
| 3500.0 | 9.62 | 37.39 | -8.99 | -1.87 | 3.49 | 0.42 | 23.28 | 12.16 | | |
| 3600.0 | 9.15 | 37.33 | -8.71 | -1.77 | 3.43 | 0.40 | 23.01 | 11.74 | | |
| 3700.0 | 8.77 | 36.74 | -8.62 | -1.71 | 3.24 | 0.39 | 22.63 | 11.42 | | |
| 3800.0 | 8.35 | 35.54 | -8.61 | -1.59 | 2.75 | 0.37 | 22.23 | 11.29 | | |
| 3900.0 | 7.94 | 35.20 | -8.54 | -1.57 | 2.73 | 0.37 | 21.66 | 10.77 | | |
| 4000.0 | 7.60 | 33.95 | -8.41 | -1.51 | 2.33 | 0.36 | 21.87 | 10.52 | | |

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: $V_s = +4V$, $I_s = 53.86mA$, $R1=267 \Omega$ @ Temperature = +85°C

| FREQ | Gain | Isolation | Input Return Loss | Output Return Loss | Stability | | IP-3 Output | 1dB Comp. Output | FREQ | Noise Figure |
|--------|-------|-----------|-------------------|--------------------|-----------|---------|-------------|------------------|--------|--------------|
| (MHz) | (dB) | (dB) | (dB) | (dB) | K | Measure | (dBm) | (dBm) | (MHz) | (dB) |
| 500.0 | 21.27 | 42.46 | -2.05 | -6.95 | 2.08 | 1.23 | 27.07 | 16.50 | 500.0 | 1.51 |
| 525.0 | 22.04 | 40.86 | -2.63 | -7.74 | 1.96 | 1.21 | 27.32 | 16.95 | 600.0 | 1.19 |
| 550.0 | 22.67 | 40.42 | -3.32 | -8.57 | 2.05 | 1.19 | 27.46 | 17.33 | 700.0 | 0.68 |
| 575.0 | 23.15 | 39.72 | -4.15 | -9.43 | 2.07 | 1.16 | 27.25 | 17.80 | 800.0 | 0.63 |
| 600.0 | 23.53 | 38.96 | -5.09 | -10.29 | 2.06 | 1.12 | 27.57 | 17.83 | 900.0 | 0.62 |
| 625.0 | 23.77 | 38.84 | -6.11 | -11.15 | 2.16 | 1.09 | 27.73 | 18.51 | 1000.0 | 0.55 |
| 650.0 | 23.93 | 38.28 | -7.24 | -11.98 | 2.14 | 1.05 | 27.80 | 18.71 | 1100.0 | 0.61 |
| 675.0 | 24.01 | 38.08 | -8.49 | -12.71 | 2.20 | 1.02 | 28.20 | 18.99 | 1200.0 | 0.71 |
| 700.0 | 24.04 | 38.16 | -9.80 | -13.37 | 2.31 | 1.00 | 28.57 | 19.24 | 1300.0 | 0.63 |
| 725.0 | 24.01 | 37.89 | -11.19 | -14.00 | 2.33 | 0.98 | 28.65 | 19.27 | 1400.0 | 0.76 |
| 750.0 | 23.94 | 37.92 | -12.74 | -14.57 | 2.41 | 0.97 | 28.95 | 19.60 | 1500.0 | 0.82 |
| 775.0 | 23.86 | 37.99 | -14.45 | -15.05 | 2.49 | 0.96 | 29.37 | 19.64 | 1600.0 | 0.84 |
| 800.0 | 23.74 | 37.91 | -16.30 | -15.56 | 2.54 | 0.95 | 29.50 | 19.60 | 1700.0 | 0.81 |
| 825.0 | 23.62 | 37.89 | -18.41 | -16.05 | 2.59 | 0.95 | 29.73 | 19.96 | 1800.0 | 0.99 |
| 850.0 | 23.47 | 37.59 | -20.66 | -16.54 | 2.57 | 0.94 | 29.71 | 19.96 | 1900.0 | 0.93 |
| 875.0 | 23.32 | 37.76 | -22.89 | -17.00 | 2.67 | 0.95 | 29.90 | 19.74 | 2000.0 | 1.08 |
| 900.0 | 23.17 | 37.78 | -24.51 | -17.43 | 2.73 | 0.95 | 30.04 | 20.25 | 2100.0 | 1.12 |
| 925.0 | 23.00 | 37.83 | -24.51 | -17.76 | 2.80 | 0.95 | 29.90 | 19.94 | 2200.0 | 1.12 |
| 950.0 | 22.84 | 37.99 | -23.59 | -18.06 | 2.90 | 0.96 | 30.16 | 19.85 | 2300.0 | 1.25 |
| 975.0 | 22.68 | 37.89 | -22.32 | -18.30 | 2.91 | 0.96 | 29.76 | 20.09 | 2400.0 | 1.29 |
| 1000.0 | 22.51 | 38.07 | -20.96 | -18.46 | 3.02 | 0.96 | 29.41 | 19.80 | 2500.0 | 1.45 |
| 1050.0 | 22.17 | 37.92 | -18.95 | -18.50 | 3.07 | 0.97 | 29.65 | 19.85 | 2600.0 | 1.48 |
| 1100.0 | 21.83 | 38.14 | -17.27 | -18.32 | 3.23 | 0.98 | 29.93 | 19.82 | 2700.0 | 1.65 |
| 1150.0 | 21.50 | 38.49 | -15.95 | -18.00 | 3.46 | 0.99 | 30.07 | 19.87 | 2800.0 | 1.65 |
| 1200.0 | 21.18 | 38.29 | -15.03 | -17.52 | 3.47 | 1.00 | 30.09 | 19.93 | 2900.0 | 1.72 |
| 1250.0 | 20.85 | 38.36 | -14.21 | -16.93 | 3.59 | 1.00 | 29.86 | 19.93 | 3000.0 | 1.78 |
| 1300.0 | 20.53 | 38.50 | -13.73 | -16.07 | 3.74 | 1.01 | 29.63 | 19.65 | 3100.0 | 1.87 |
| 1350.0 | 20.22 | 38.51 | -13.31 | -15.18 | 3.82 | 1.01 | 29.42 | 19.44 | 3200.0 | 1.96 |
| 1400.0 | 19.92 | 38.57 | -12.90 | -14.32 | 3.93 | 1.01 | 29.36 | 19.26 | 3300.0 | 2.00 |
| 1500.0 | 19.31 | 38.68 | -12.15 | -12.75 | 4.14 | 1.00 | 29.52 | 19.47 | 3400.0 | 2.13 |
| 1550.0 | 19.01 | 38.77 | -11.90 | -12.03 | 4.26 | 1.00 | 29.22 | 18.73 | 3500.0 | 2.13 |
| 1600.0 | 18.72 | 39.16 | -11.72 | -11.36 | 4.53 | 0.99 | 29.29 | 18.84 | 3600.0 | 2.35 |
| 1700.0 | 18.14 | 39.33 | -11.38 | -10.05 | 4.76 | 0.97 | 28.88 | 18.09 | 3700.0 | 2.33 |
| 1800.0 | 17.53 | 39.65 | -10.93 | -8.94 | 5.06 | 0.95 | 28.86 | 18.17 | 3800.0 | 2.45 |
| 1900.0 | 16.92 | 39.68 | -10.55 | -7.99 | 5.19 | 0.93 | 29.13 | 17.99 | 3900.0 | 2.55 |
| 2000.0 | 16.31 | 39.47 | -10.52 | -7.47 | 5.29 | 0.91 | 28.97 | 17.37 | 4000.0 | 2.47 |
| 2100.0 | 15.82 | 40.14 | -10.30 | -6.63 | 5.72 | 0.87 | 29.00 | 17.33 | | |
| 2200.0 | 15.26 | 39.98 | -10.02 | -5.89 | 5.63 | 0.83 | 29.17 | 17.26 | | |
| 2300.0 | 14.69 | 40.44 | -9.92 | -5.32 | 6.00 | 0.79 | 28.65 | 16.32 | | |
| 2400.0 | 14.12 | 39.92 | -9.78 | -4.83 | 5.69 | 0.76 | 28.24 | 15.91 | | |
| 2500.0 | 13.53 | 40.24 | -9.59 | -4.41 | 5.97 | 0.72 | 28.22 | 15.60 | | |
| 2600.0 | 12.97 | 40.29 | -9.49 | -4.05 | 6.06 | 0.69 | 27.93 | 15.09 | | |
| 2700.0 | 12.41 | 40.04 | -9.40 | -3.72 | 5.93 | 0.66 | 27.65 | 14.83 | | |
| 2800.0 | 11.84 | 39.67 | -9.17 | -3.44 | 5.71 | 0.63 | 27.49 | 14.40 | | |
| 2900.0 | 11.30 | 39.52 | -9.09 | -3.20 | 5.67 | 0.60 | 27.24 | 13.94 | | |
| 3000.0 | 10.77 | 39.39 | -9.03 | -3.00 | 5.67 | 0.58 | 26.58 | 13.47 | | |
| 3100.0 | 10.24 | 38.65 | -8.85 | -2.79 | 5.20 | 0.55 | 26.43 | 13.05 | | |
| 3200.0 | 9.72 | 38.37 | -8.80 | -2.62 | 5.09 | 0.53 | 25.47 | 12.42 | | |
| 3300.0 | 9.22 | 37.82 | -8.75 | -2.45 | 4.79 | 0.51 | 25.54 | 12.03 | | |
| 3400.0 | 8.76 | 37.17 | -8.66 | -2.31 | 4.45 | 0.49 | 24.73 | 11.81 | | |
| 3500.0 | 8.29 | 36.59 | -8.54 | -2.21 | 4.21 | 0.47 | 24.08 | 11.38 | | |
| 3600.0 | 7.81 | 35.97 | -8.52 | -2.10 | 3.96 | 0.46 | 23.83 | 10.94 | | |
| 3700.0 | 7.38 | 35.64 | -8.37 | -2.03 | 3.87 | 0.45 | 23.22 | 10.55 | | |
| 3800.0 | 6.91 | 34.67 | -8.21 | -1.93 | 3.44 | 0.43 | 22.59 | 10.34 | | |
| 3900.0 | 6.45 | 34.25 | -8.32 | -1.93 | 3.49 | 0.43 | 22.01 | 9.78 | | |
| 4000.0 | 6.08 | 33.02 | -8.26 | -1.85 | 3.01 | 0.42 | 21.96 | 9.57 | | |



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: $V_S = +3.8V$, $I_S = 50.72mA$, $R1=267 \Omega$ @ Temperature = +85°C

| FREQ (MHz) | Gain (dB) | Isolation (dB) | Input Return Loss (dB) | Output Return Loss (dB) | Stability | | IP-3 Output (dBm) | 1dB Comp. Output (dBm) | FREQ (MHz) | Noise Figure (dB) |
|---------------|--------------|-------------------|---------------------------------|----------------------------------|-----------|---------|-------------------------|---------------------------------|---------------|-------------------------|
| | | | | | K | Measure | | | | |
| 500.0 | 21.12 | 41.84 | -2.03 | -6.96 | 1.98 | 1.23 | 26.63 | 16.06 | 500.0 | 1.51 |
| 525.0 | 21.89 | 40.90 | -2.61 | -7.77 | 2.00 | 1.22 | 26.95 | 16.51 | 600.0 | 1.20 |
| 550.0 | 22.53 | 40.20 | -3.31 | -8.61 | 2.03 | 1.19 | 27.02 | 16.88 | 700.0 | 0.72 |
| 575.0 | 23.03 | 39.10 | -4.14 | -9.49 | 1.98 | 1.15 | 26.98 | 17.30 | 800.0 | 0.65 |
| 600.0 | 23.41 | 38.87 | -5.09 | -10.39 | 2.07 | 1.12 | 27.10 | 17.39 | 900.0 | 0.59 |
| 625.0 | 23.66 | 38.41 | -6.13 | -11.28 | 2.10 | 1.08 | 27.32 | 18.03 | 1000.0 | 0.56 |
| 650.0 | 23.82 | 38.13 | -7.29 | -12.16 | 2.15 | 1.05 | 27.63 | 18.25 | 1100.0 | 0.64 |
| 675.0 | 23.91 | 37.90 | -8.55 | -12.92 | 2.20 | 1.02 | 27.69 | 18.53 | 1200.0 | 0.69 |
| 700.0 | 23.94 | 37.57 | -9.88 | -13.62 | 2.21 | 0.99 | 28.25 | 18.80 | 1300.0 | 0.61 |
| 725.0 | 23.90 | 37.64 | -11.33 | -14.28 | 2.30 | 0.98 | 28.29 | 18.82 | 1400.0 | 0.75 |
| 750.0 | 23.83 | 37.50 | -12.92 | -14.89 | 2.34 | 0.96 | 28.52 | 19.14 | 1500.0 | 0.84 |
| 775.0 | 23.75 | 37.29 | -14.65 | -15.40 | 2.35 | 0.95 | 28.89 | 19.20 | 1600.0 | 0.83 |
| 800.0 | 23.63 | 37.42 | -16.57 | -15.95 | 2.45 | 0.95 | 29.17 | 19.15 | 1700.0 | 0.84 |
| 825.0 | 23.51 | 37.47 | -18.73 | -16.50 | 2.52 | 0.95 | 29.45 | 19.52 | 1800.0 | 1.00 |
| 850.0 | 23.36 | 37.33 | -20.91 | -16.98 | 2.54 | 0.94 | 29.52 | 19.53 | 1900.0 | 0.95 |
| 875.0 | 23.21 | 37.42 | -22.83 | -17.47 | 2.61 | 0.95 | 29.52 | 19.33 | 2000.0 | 1.11 |
| 900.0 | 23.05 | 37.39 | -23.85 | -17.90 | 2.66 | 0.95 | 29.66 | 19.83 | 2100.0 | 1.09 |
| 925.0 | 22.88 | 37.17 | -23.39 | -18.24 | 2.64 | 0.95 | 29.68 | 19.52 | 2200.0 | 1.14 |
| 950.0 | 22.72 | 37.46 | -22.26 | -18.54 | 2.77 | 0.96 | 29.80 | 19.44 | 2300.0 | 1.22 |
| 975.0 | 22.55 | 37.56 | -21.09 | -18.77 | 2.85 | 0.96 | 29.68 | 19.66 | 2400.0 | 1.30 |
| 1000.0 | 22.38 | 37.45 | -19.86 | -18.86 | 2.86 | 0.96 | 29.08 | 19.40 | 2500.0 | 1.46 |
| 1050.0 | 22.03 | 37.83 | -18.04 | -18.89 | 3.08 | 0.98 | 29.66 | 19.45 | 2600.0 | 1.45 |
| 1100.0 | 21.69 | 37.63 | -16.53 | -18.58 | 3.10 | 0.98 | 29.73 | 19.44 | 2700.0 | 1.65 |
| 1150.0 | 21.35 | 37.81 | -15.28 | -18.14 | 3.24 | 0.99 | 29.60 | 19.48 | 2800.0 | 1.62 |
| 1200.0 | 21.03 | 37.71 | -14.45 | -17.58 | 3.29 | 1.00 | 29.79 | 19.52 | 2900.0 | 1.70 |
| 1250.0 | 20.69 | 38.00 | -13.69 | -16.89 | 3.48 | 1.01 | 29.58 | 19.58 | 3000.0 | 1.70 |
| 1300.0 | 20.38 | 38.13 | -13.24 | -15.98 | 3.62 | 1.01 | 29.34 | 19.27 | 3100.0 | 1.84 |
| 1350.0 | 20.07 | 38.11 | -12.86 | -15.06 | 3.70 | 1.01 | 29.21 | 19.06 | 3200.0 | 1.96 |
| 1400.0 | 19.76 | 38.20 | -12.46 | -14.18 | 3.81 | 1.01 | 29.00 | 18.88 | 3300.0 | 1.96 |
| 1500.0 | 19.15 | 38.44 | -11.77 | -12.59 | 4.06 | 1.01 | 29.06 | 19.12 | 3400.0 | 2.09 |
| 1550.0 | 18.84 | 38.54 | -11.54 | -11.88 | 4.19 | 1.00 | 29.02 | 18.36 | 3500.0 | 2.09 |
| 1600.0 | 18.55 | 38.62 | -11.36 | -11.21 | 4.30 | 1.00 | 28.92 | 18.47 | 3600.0 | 2.31 |
| 1700.0 | 17.96 | 38.78 | -11.05 | -9.90 | 4.50 | 0.98 | 28.81 | 17.71 | 3700.0 | 2.36 |
| 1800.0 | 17.35 | 38.96 | -10.63 | -8.80 | 4.71 | 0.95 | 28.77 | 17.79 | 3800.0 | 2.39 |
| 1900.0 | 16.73 | 39.20 | -10.28 | -7.86 | 4.95 | 0.93 | 28.87 | 17.58 | 3900.0 | 2.61 |
| 2000.0 | 16.12 | 38.96 | -10.27 | -7.34 | 5.03 | 0.91 | 28.53 | 16.98 | 4000.0 | 2.50 |
| 2100.0 | 15.62 | 39.73 | -10.06 | -6.51 | 5.50 | 0.87 | 28.58 | 16.93 | | |
| 2200.0 | 15.06 | 39.37 | -9.79 | -5.79 | 5.27 | 0.83 | 28.46 | 16.92 | | |
| 2300.0 | 14.49 | 40.17 | -9.70 | -5.23 | 5.86 | 0.79 | 27.92 | 15.89 | | |
| 2400.0 | 13.91 | 40.13 | -9.56 | -4.73 | 5.87 | 0.75 | 27.60 | 15.43 | | |
| 2500.0 | 13.32 | 40.22 | -9.38 | -4.34 | 5.99 | 0.72 | 27.34 | 15.26 | | |
| 2600.0 | 12.76 | 40.48 | -9.31 | -3.98 | 6.24 | 0.69 | 26.97 | 14.57 | | |
| 2700.0 | 12.20 | 39.89 | -9.21 | -3.66 | 5.87 | 0.65 | 26.66 | 14.31 | | |
| 2800.0 | 11.62 | 39.69 | -9.00 | -3.38 | 5.76 | 0.63 | 26.29 | 13.86 | | |
| 2900.0 | 11.08 | 39.65 | -8.92 | -3.15 | 5.80 | 0.60 | 26.11 | 13.42 | | |
| 3000.0 | 10.55 | 39.00 | -8.86 | -2.95 | 5.45 | 0.58 | 25.22 | 12.95 | | |
| 3100.0 | 10.02 | 38.63 | -8.68 | -2.75 | 5.22 | 0.55 | 25.21 | 12.49 | | |
| 3200.0 | 9.49 | 38.56 | -8.64 | -2.58 | 5.25 | 0.53 | 24.17 | 11.89 | | |
| 3300.0 | 9.00 | 37.80 | -8.59 | -2.42 | 4.82 | 0.50 | 24.20 | 11.46 | | |
| 3400.0 | 8.53 | 37.41 | -8.49 | -2.28 | 4.62 | 0.48 | 23.52 | 11.25 | | |
| 3500.0 | 8.06 | 36.70 | -8.37 | -2.17 | 4.28 | 0.47 | 22.90 | 10.82 | | |
| 3600.0 | 7.58 | 36.20 | -8.35 | -2.06 | 4.09 | 0.45 | 22.57 | 10.34 | | |
| 3700.0 | 7.15 | 35.88 | -8.20 | -2.00 | 4.01 | 0.44 | 22.01 | 9.99 | | |
| 3800.0 | 6.68 | 34.74 | -8.06 | -1.91 | 3.52 | 0.43 | 21.46 | 9.81 | | |
| 3900.0 | 6.22 | 34.36 | -8.16 | -1.90 | 3.57 | 0.43 | 20.90 | 9.20 | | |
| 4000.0 | 5.85 | 33.16 | -8.09 | -1.83 | 3.09 | 0.42 | 20.94 | 8.98 | | |



Typical Performance Data

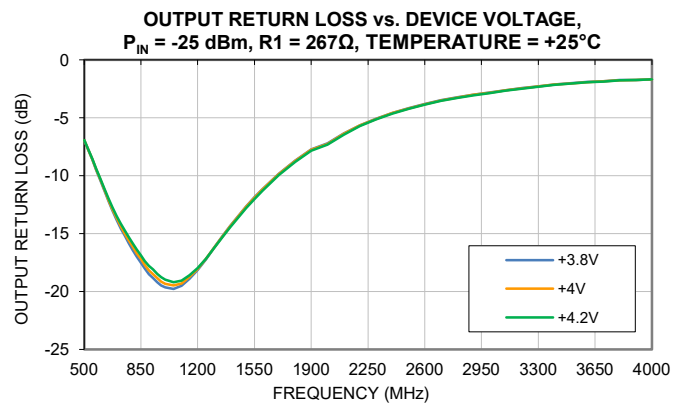
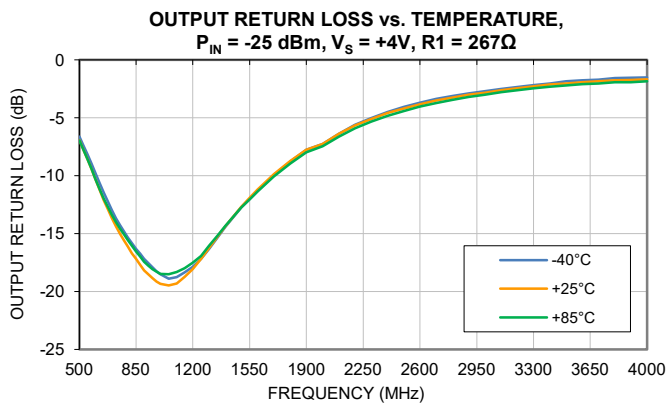
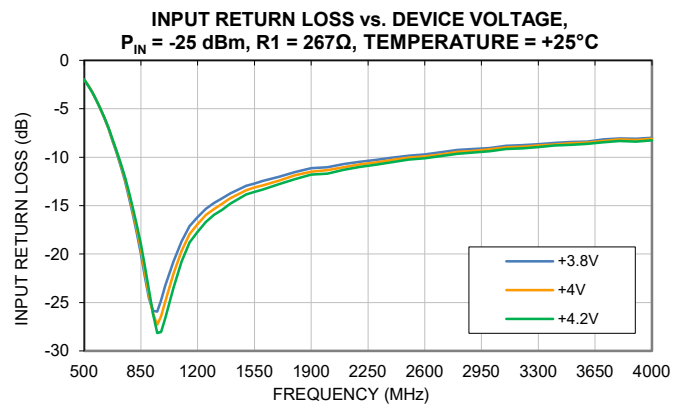
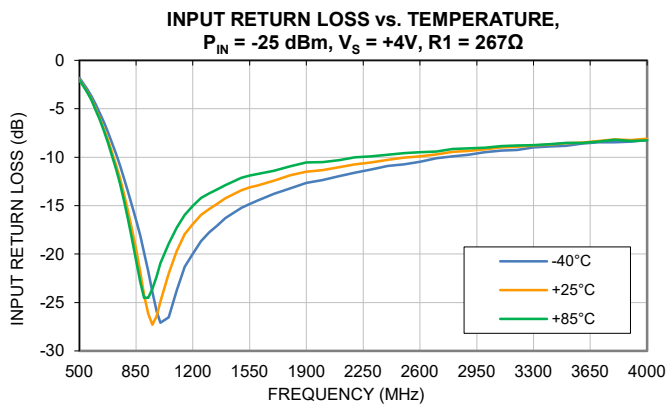
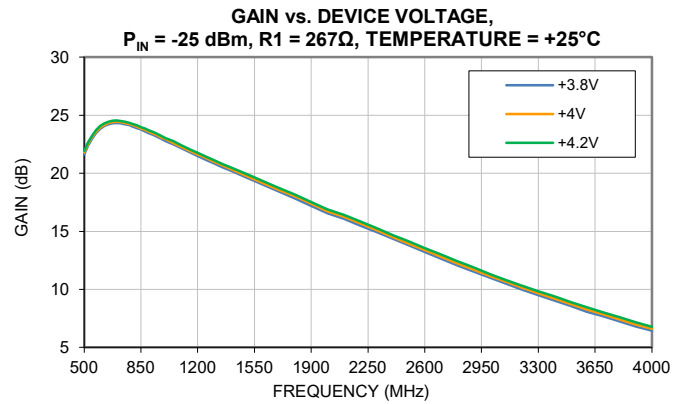
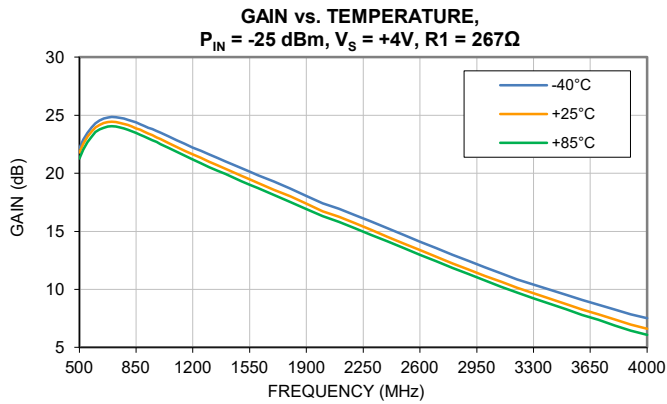
Definitions:

Input Return Loss = -S11 (dB)
 Gain(Power Gain) = S21 (dB)
 Reverse Isolation = -S12 (dB)
 Output Return Loss = -S22 (dB)

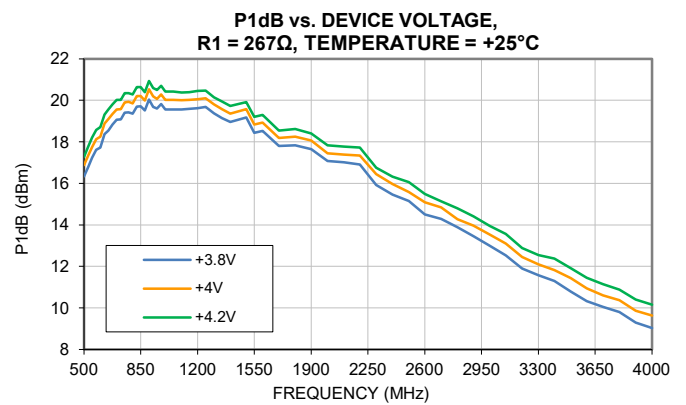
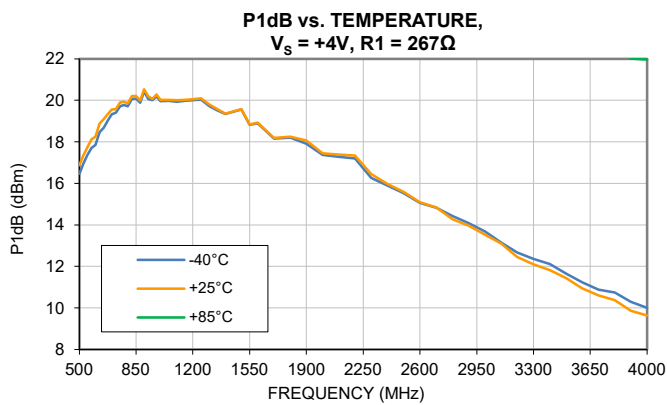
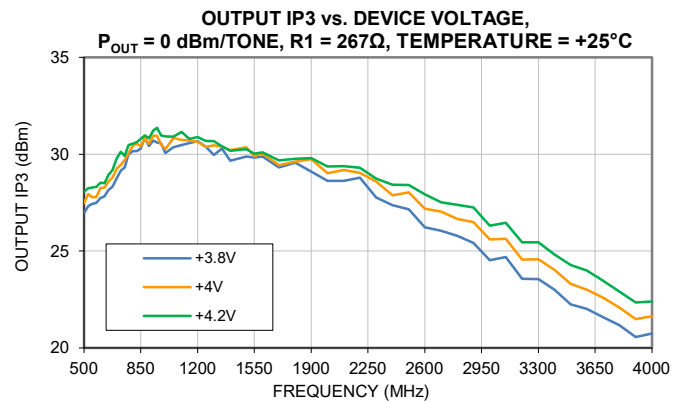
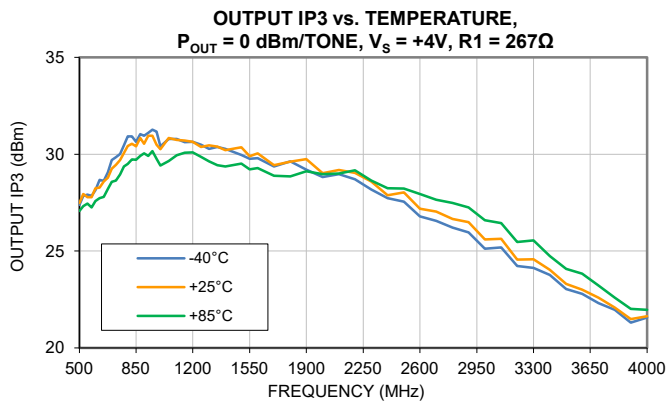
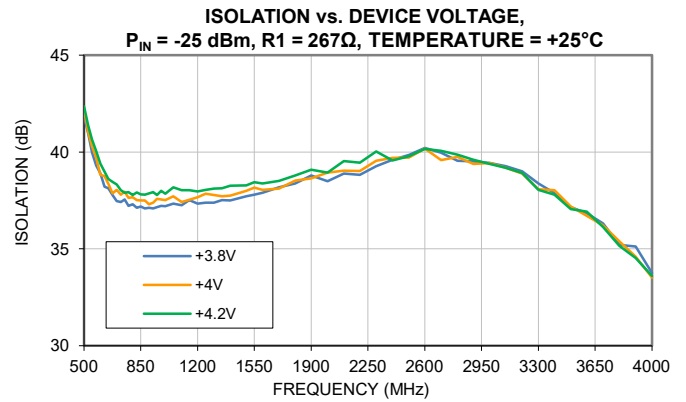
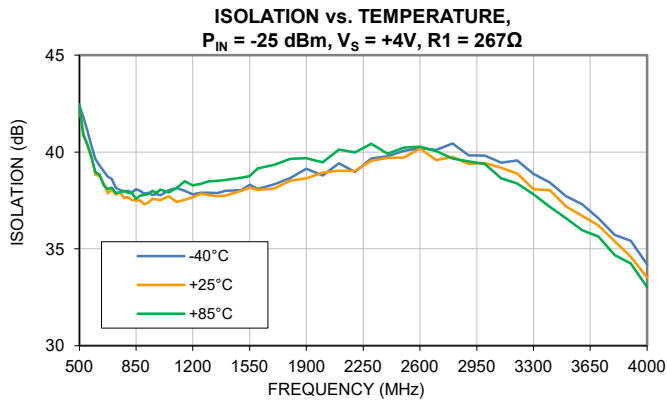
TEST CONDITIONS: $V_s = +4.2V$, $I_s = 57.08mA$, $R1=267 \Omega$ @ Temperature = +85°C

| FREQ | Gain | Isolation | Input Return Loss | Output Return Loss | Stability | | IP-3 Output | 1dB Comp. Output | FREQ | Noise Figure |
|--------|-------|-----------|-------------------|--------------------|-----------|---------|-------------|------------------|--------|--------------|
| (MHz) | (dB) | (dB) | (dB) | (dB) | K | Measure | (dBm) | (dBm) | (MHz) | (dB) |
| 500.0 | 21.42 | 42.37 | -2.07 | -6.94 | 2.03 | 1.23 | 27.46 | 16.88 | 500.0 | 1.47 |
| 525.0 | 22.18 | 41.77 | -2.65 | -7.72 | 2.11 | 1.22 | 27.75 | 17.37 | 600.0 | 1.18 |
| 550.0 | 22.80 | 40.60 | -3.34 | -8.54 | 2.06 | 1.19 | 27.82 | 17.75 | 700.0 | 0.70 |
| 575.0 | 23.28 | 39.81 | -4.16 | -9.39 | 2.07 | 1.15 | 27.71 | 18.14 | 800.0 | 0.64 |
| 600.0 | 23.64 | 39.43 | -5.09 | -10.22 | 2.13 | 1.12 | 27.94 | 18.27 | 900.0 | 0.57 |
| 625.0 | 23.88 | 39.15 | -6.10 | -11.07 | 2.19 | 1.09 | 28.20 | 18.88 | 1000.0 | 0.56 |
| 650.0 | 24.04 | 38.88 | -7.22 | -11.86 | 2.25 | 1.05 | 28.38 | 19.06 | 1100.0 | 0.61 |
| 675.0 | 24.12 | 38.50 | -8.45 | -12.58 | 2.27 | 1.02 | 28.62 | 19.38 | 1200.0 | 0.69 |
| 700.0 | 24.14 | 38.50 | -9.74 | -13.20 | 2.36 | 1.00 | 28.97 | 19.62 | 1300.0 | 0.61 |
| 725.0 | 24.11 | 38.46 | -11.11 | -13.82 | 2.43 | 0.98 | 29.00 | 19.64 | 1400.0 | 0.74 |
| 750.0 | 24.04 | 38.27 | -12.61 | -14.34 | 2.46 | 0.97 | 29.22 | 19.99 | 1500.0 | 0.83 |
| 775.0 | 23.96 | 38.27 | -14.27 | -14.83 | 2.53 | 0.96 | 29.67 | 20.01 | 1600.0 | 0.85 |
| 800.0 | 23.85 | 38.15 | -16.09 | -15.31 | 2.57 | 0.95 | 29.80 | 19.96 | 1700.0 | 0.82 |
| 825.0 | 23.73 | 38.19 | -18.15 | -15.79 | 2.64 | 0.95 | 29.96 | 20.32 | 1800.0 | 0.99 |
| 850.0 | 23.58 | 38.36 | -20.45 | -16.23 | 2.75 | 0.95 | 30.27 | 20.32 | 1900.0 | 0.95 |
| 875.0 | 23.43 | 38.06 | -22.82 | -16.70 | 2.73 | 0.95 | 30.24 | 20.10 | 2000.0 | 1.09 |
| 900.0 | 23.28 | 38.19 | -24.86 | -17.12 | 2.82 | 0.95 | 30.41 | 20.61 | 2100.0 | 1.06 |
| 925.0 | 23.11 | 38.21 | -25.57 | -17.47 | 2.88 | 0.95 | 30.39 | 20.29 | 2200.0 | 1.11 |
| 950.0 | 22.96 | 38.17 | -24.86 | -17.74 | 2.92 | 0.95 | 30.43 | 20.22 | 2300.0 | 1.20 |
| 975.0 | 22.79 | 38.13 | -23.53 | -17.99 | 2.96 | 0.96 | 30.20 | 20.45 | 2400.0 | 1.27 |
| 1000.0 | 22.62 | 38.22 | -22.01 | -18.11 | 3.03 | 0.96 | 29.97 | 20.15 | 2500.0 | 1.44 |
| 1050.0 | 22.29 | 38.43 | -19.81 | -18.25 | 3.20 | 0.97 | 30.30 | 20.21 | 2600.0 | 1.43 |
| 1100.0 | 21.95 | 38.42 | -18.00 | -18.12 | 3.30 | 0.98 | 30.41 | 20.17 | 2700.0 | 1.59 |
| 1150.0 | 21.62 | 38.69 | -16.52 | -17.83 | 3.49 | 0.99 | 30.70 | 20.23 | 2800.0 | 1.58 |
| 1200.0 | 21.30 | 38.72 | -15.58 | -17.39 | 3.60 | 0.99 | 30.64 | 20.26 | 2900.0 | 1.70 |
| 1250.0 | 20.97 | 38.77 | -14.71 | -16.87 | 3.72 | 1.00 | 30.65 | 20.30 | 3000.0 | 1.66 |
| 1300.0 | 20.66 | 38.73 | -14.18 | -16.01 | 3.79 | 1.00 | 30.20 | 19.99 | 3100.0 | 1.81 |
| 1350.0 | 20.35 | 38.89 | -13.74 | -15.16 | 3.96 | 1.00 | 29.76 | 19.78 | 3200.0 | 1.99 |
| 1400.0 | 20.05 | 38.95 | -13.31 | -14.33 | 4.07 | 1.00 | 29.70 | 19.60 | 3300.0 | 1.99 |
| 1500.0 | 19.45 | 39.22 | -12.51 | -12.77 | 4.36 | 1.00 | 29.93 | 19.82 | 3400.0 | 2.09 |
| 1550.0 | 19.14 | 39.30 | -12.26 | -12.07 | 4.48 | 0.99 | 29.30 | 19.08 | 3500.0 | 2.04 |
| 1600.0 | 18.85 | 39.31 | -12.05 | -11.40 | 4.57 | 0.99 | 29.36 | 19.20 | 3600.0 | 2.24 |
| 1700.0 | 18.27 | 39.50 | -11.70 | -10.09 | 4.81 | 0.97 | 29.18 | 18.44 | 3700.0 | 2.33 |
| 1800.0 | 17.67 | 39.82 | -11.21 | -8.98 | 5.11 | 0.95 | 29.37 | 18.53 | 3800.0 | 2.42 |
| 1900.0 | 17.06 | 40.28 | -10.81 | -8.02 | 5.52 | 0.92 | 29.67 | 18.36 | 3900.0 | 2.49 |
| 2000.0 | 16.45 | 39.79 | -10.79 | -7.52 | 5.46 | 0.90 | 29.39 | 17.74 | 4000.0 | 2.34 |
| 2100.0 | 15.96 | 40.48 | -10.56 | -6.66 | 5.91 | 0.87 | 29.61 | 17.70 | | |
| 2200.0 | 15.40 | 40.09 | -10.25 | -5.92 | 5.66 | 0.83 | 29.40 | 17.65 | | |
| 2300.0 | 14.83 | 40.18 | -10.15 | -5.35 | 5.79 | 0.79 | 29.02 | 16.76 | | |
| 2400.0 | 14.26 | 40.38 | -9.99 | -4.85 | 5.97 | 0.76 | 28.76 | 16.35 | | |
| 2500.0 | 13.68 | 40.72 | -9.78 | -4.44 | 6.27 | 0.72 | 28.93 | 16.08 | | |
| 2600.0 | 13.12 | 40.64 | -9.70 | -4.07 | 6.28 | 0.69 | 28.85 | 15.53 | | |
| 2700.0 | 12.56 | 40.41 | -9.59 | -3.75 | 6.16 | 0.66 | 28.59 | 15.32 | | |
| 2800.0 | 11.98 | 39.72 | -9.36 | -3.45 | 5.71 | 0.63 | 28.26 | 14.84 | | |
| 2900.0 | 11.44 | 39.57 | -9.27 | -3.22 | 5.68 | 0.60 | 28.26 | 14.42 | | |
| 3000.0 | 10.91 | 39.11 | -9.20 | -3.02 | 5.45 | 0.58 | 27.59 | 13.94 | | |
| 3100.0 | 10.39 | 38.62 | -9.02 | -2.81 | 5.15 | 0.55 | 27.46 | 13.52 | | |
| 3200.0 | 9.86 | 38.35 | -8.96 | -2.64 | 5.05 | 0.53 | 26.63 | 12.90 | | |
| 3300.0 | 9.37 | 37.61 | -8.92 | -2.47 | 4.64 | 0.51 | 26.72 | 12.56 | | |
| 3400.0 | 8.91 | 37.09 | -8.81 | -2.33 | 4.38 | 0.49 | 25.83 | 12.40 | | |
| 3500.0 | 8.44 | 36.63 | -8.69 | -2.22 | 4.19 | 0.47 | 25.27 | 11.91 | | |
| 3600.0 | 7.96 | 36.20 | -8.68 | -2.11 | 4.05 | 0.46 | 24.97 | 11.43 | | |
| 3700.0 | 7.53 | 35.27 | -8.52 | -2.04 | 3.68 | 0.45 | 24.28 | 11.14 | | |
| 3800.0 | 7.06 | 34.56 | -8.36 | -1.93 | 3.38 | 0.43 | 23.61 | 10.84 | | |
| 3900.0 | 6.60 | 34.13 | -8.48 | -1.93 | 3.40 | 0.43 | 23.05 | 10.36 | | |
| 4000.0 | 6.23 | 33.09 | -8.43 | -1.85 | 3.02 | 0.42 | 22.86 | 10.11 | | |

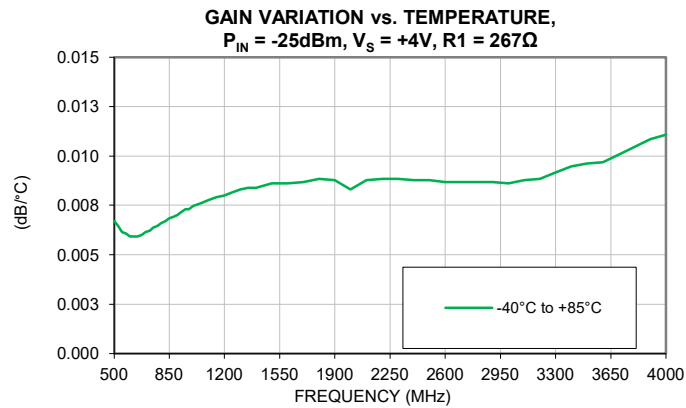
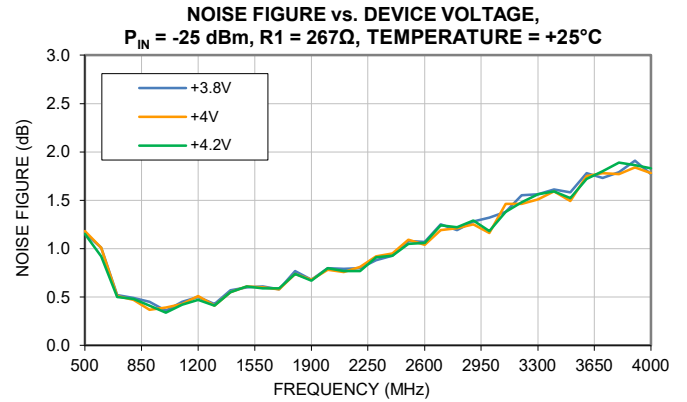
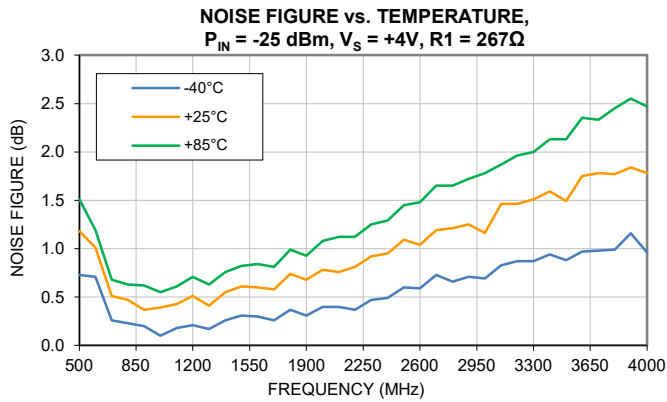
Typical Performance Curves



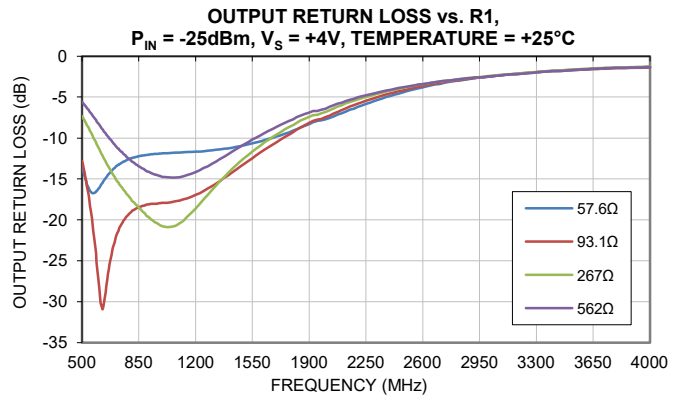
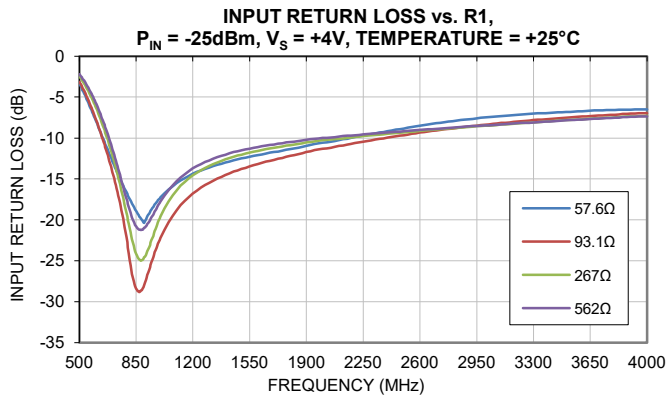
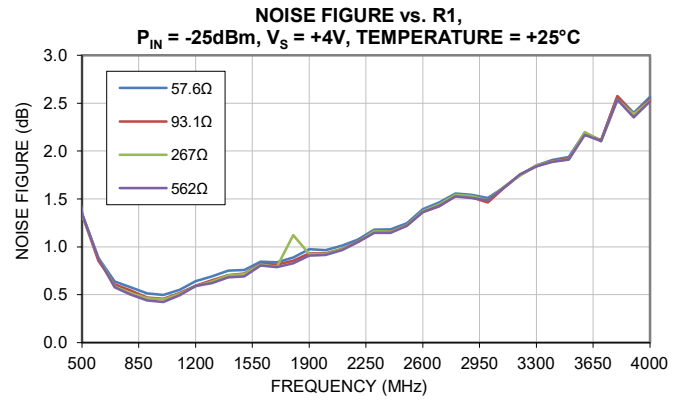
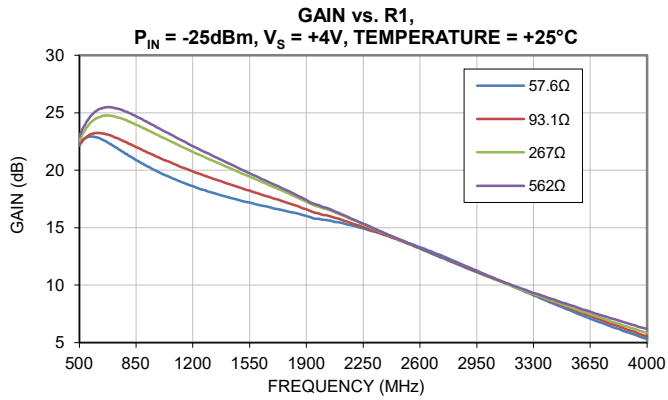
Typical Performance Curves



Typical Performance Curves

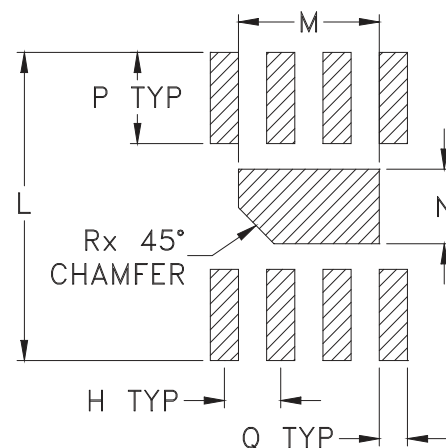
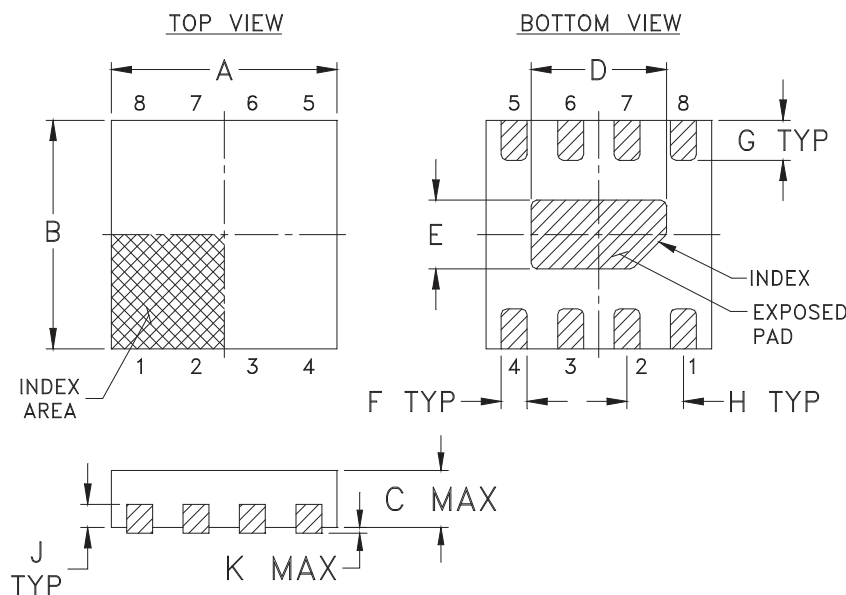


Typical Performance Curves



Outline Dimensions

PCB Land Pattern



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

| SE #. | A | B | C | D | E | F | G | H | J | K | L | M | N | P |
|----------|----------------|----------------|----------------|----------------|---------------|---------------|---------------|---------------|---------------|---------------|----------------|----------------|---------------|---------------|
| MC1631-1 | .079 (2.00) | .079 (2.00) | .039 (1.00) | .047 (1.20) | .024 (.60) | .009 (.23) | .014 (.35) | .020 (.50) | .008 (.20) | .002 (.05) | .106 (2.70) | .049 (1.25) | .026 (.65) | .031 (.80) |

| CASE #. | Q | R | WT, GRAM |
|----------|---------------|---------------|----------|
| MC1631-1 | .010 (.25) | .012 (.30) | .006 |

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

Notes:

- Case material: Plastic.
- Termination finish:
For RoHS Case Styles: Tin-Silver over Nickel plated or Matte-Tin Plated (See Data sheet).
All models, (+) suffix.
- Lead #1 identifier shall be located in the cross-hatched area shown.
Identifier may be either a molded or marked feature.



P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661 For detailed performance specs & shopping online see Mini-Circuits web site



The Design Engineers Search Engine Provides ACTUAL Data Instantly From MINI-CIRCUITS At: www.minicircuits.com

RF/IF MICROWAVE COMPONENTS

Tape & Reel Packaging TR-F66



| Tape Width, mm | Device Cavity Pitch, mm | Reel Size, inches | Devices per Reel see note | |
|----------------|-------------------------|-------------------|------------------------------|------------------|
| 8 | 4 | 7 | Small quantity standard | 20 |
| | | | | 50 |
| | | | | 100 |
| | | | | 200 |
| | | | | 500 |
| | | 7 | Standard | 1000, 2000, 3000 |

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

Mini-Circuits®

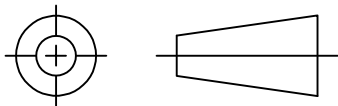
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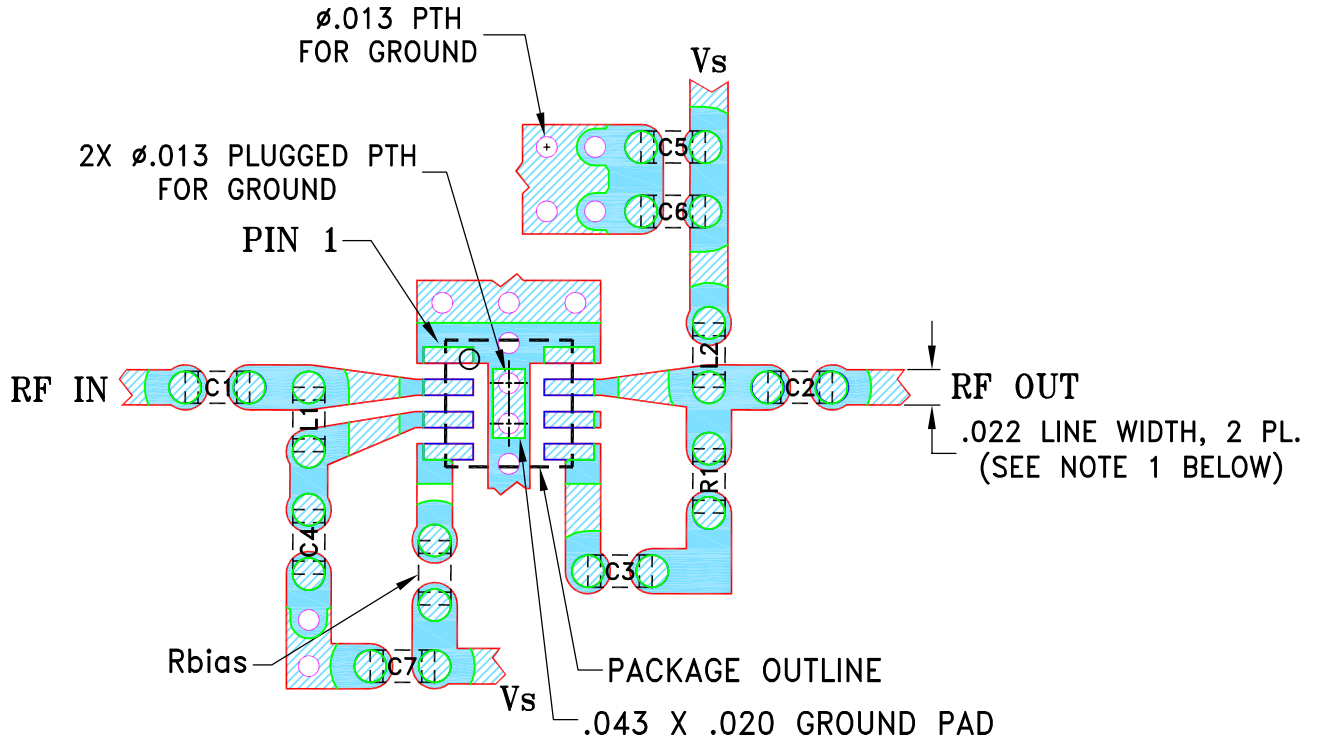
THIRD ANGLE PROJECTION



REVISIONS

| REV | ECN No. | DESCRIPTION | DATE | DR | AUTH |
|-----|------------|-----------------------------|----------|-----|------|
| OR | ECO-014708 | NEW RELEASE | 08/26/22 | ITG | IL |
| A | ECO-017341 | UPDATED THE REFERENCE OF TB | 03/30/23 | ITG | IL |
| | | | | | |

SUGGESTED MOUNTING CONFIGURATION FOR
MC1631-1 CASE STYLE



NOTES:

1. TRACE WIDTH IS SHOWN FOR ROGERS R04350B WITH DIELECTRIC THICKNESS $.010 \pm .001$ "; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
2. UNIT FOOT PRINT FOR GROUND PAD IS OPTIMIZED FOR PERFORMANCE AND IS DIFFERENT FROM CASE STYLE MC1631-1 RECOMMENDATIONS.
3. 0402 SIZE COMPONENTS FOOT PRINTS SHOWN FOR REFERENCE, FOR COMPONENT VALUE REFER TO TB-PMA2162LNAC+.
4. BOTTOM SIDE OF THIS PATTERN OF 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 | ITG | 08/25/22 |
| TOLERANCES ON: | GF | 08/25/22 |
| 2 PL DECIMALS \pm | IL | 08/26/22 |
| 3 PL DECIMALS \pm .005 | | |
| ANGLES \pm | | |
| FRACTIONS \pm | | |

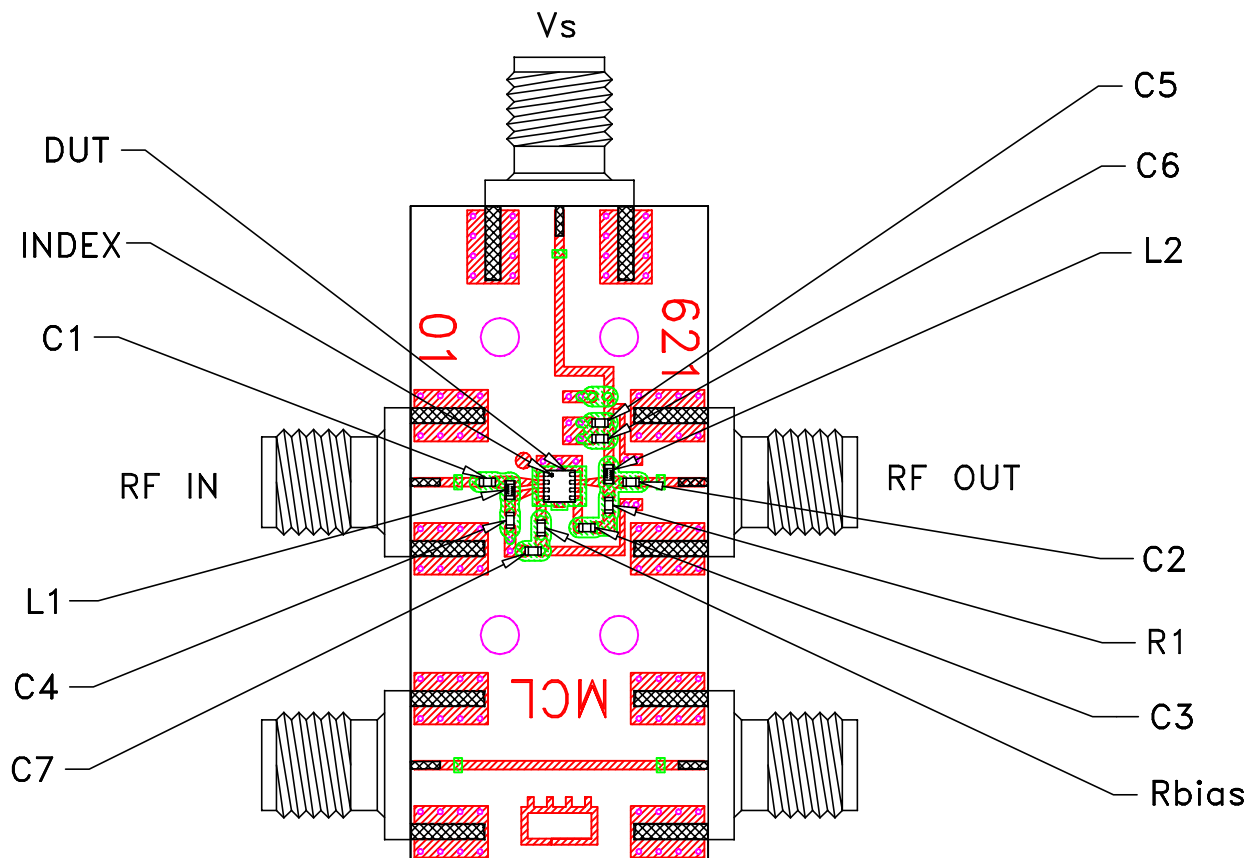
Mini-Circuits[®] 13 Neptune Avenue
Brooklyn NY 11235

PL,MC1631-1,TB-PMA2162LNAC+

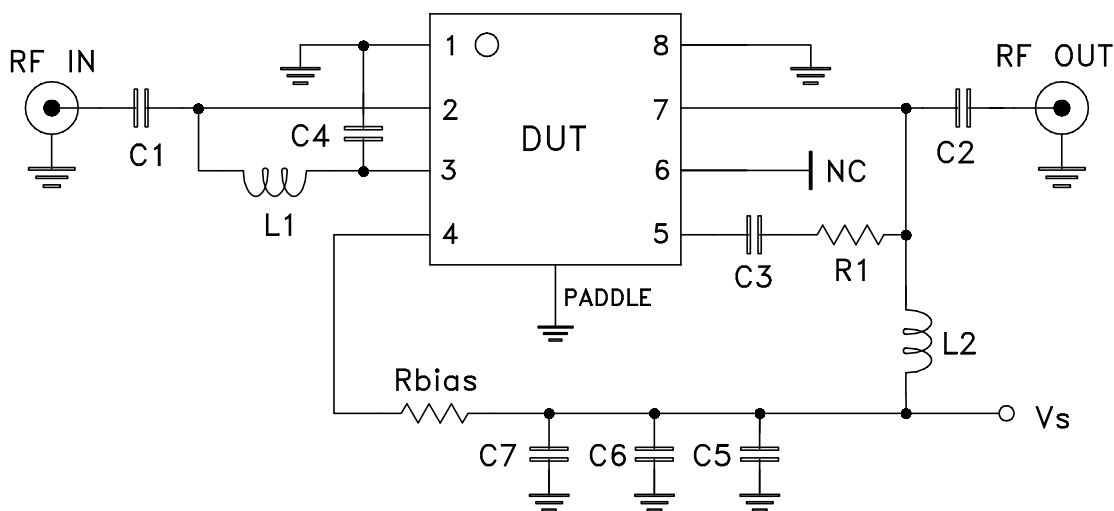
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| SIZE | CODE IDENT | DRAWING NO: | REV: |
|-------|------------|-------------|---------------|
| A | 15542 | 98-PL-737 | A |
| FILE: | 98PL737 | SCALE: 8:1 | SHEET: 1 OF 1 |

Evaluation Board and Circuit



TB-PMA2162LNAC+




Schematic Diagram

| ITEM | DESCRIPTION |
|--------|--------------|
| C1, C6 | CAP, 9.1pF |
| C2, C4 | CAP, 100pF |
| C3 | CAP, 5.6pF |
| C5, C7 | CAP, 0.1uF |
| R1 | RES, 267 Ohm |
| Rbias | RES, 750 Ohm |
| L1 | IND, 6.8nH |
| L2 | IND, 15nH |
| DUT | PMA2-162LNA+ |

NOTES:

1. SMA Female connectors.
2. PCB material: Rogers R04350 or equivalent, dielectric constant=3.5, dielectric thickness=.010 inch.

 **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 Ambient Environment | Individual Model Data Sheet |
| Storage Temperature | -55° to 100° C or -65° to 150° 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 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 |
| Marking Resistance to Solvents | Isopropyl alcohol + mineral spirits at 25°C; terpene defluxer at 25°C; distilled water + proylene glycol monomethyl ether + | MIL-STD-202, Method 215 |



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 |
|----------------------|----------------------------------|-----------------------|
| | monoethanolamine at 63°C to 70°C | |