



SUPER WIDEBAND, HIGH GAIN, MEDIUM POWER

Monolithic Amplifier Die

AVA-20453MP-D+

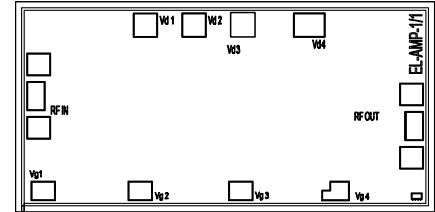
50Ω 20 to 45 GHz

THE BIG DEAL

- Ultra Wideband, 20 to 45GHz
- Excellent Input and Output Return Loss >10 dB Typ.
- Medium Power, 20dBm typical P1dB.
- Excellent Alternative to AMMC-5040 & TGA4040^{a,b}

APPLICATIONS

- 5G
- Point-to-Point Radio
- Military
- Instrumentation



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

SEE ORDERING INFORMATION ON THE LAST PAGE

PRODUCT OVERVIEW

AVA-20453MP-D+ is a GaAs, pHEMT, MMIC 4-Stage Amplifier Die that operates from 20 to 45 GHz. The amplifier typically provides 23.9 dB Gain and 20 dBm Output Power at 1 dB Gain Compression, 29.4 dBm Output IP3. The amplifier is well-matched to 50 Ohm at both input and output. AVA-20453MP-D+ is a current-biased amplifier that can operate with a single VDD of 4.5V and a single VG that tunes for 300mA operation.

KEY FEATURES

| Feature | Advantages |
|---|---|
| Super-Wide Bandwidth with Flat Gain • 20.4 ±3.5 dB over 20-45GHz | General Purpose Wideband Amplifier is suitable for wide variety of applications. |
| Medium Output Power • 20dBm Typical P1dB | The combination of High Gain and High Output Power reduces the need for cascading several amplifiers to get the same performance. |
| High Output IP3 • 29 dBm Typical at Pout = 10dBm/Tone | Easy to integrate into signal chain. |
| Excellent Wideband In/Out Return Loss • >10 dB from 20 to 45 GHz | |
| Unpackaged Die | Enables user to integrate it directly into hybrids |

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 AMMC-5040 & TGA4040 part number is used for identification and comparison purposes only





SUPER WIDEBAND, HIGH GAIN, MEDIUM POWER

Monolithic Amplifier Die **AVA-20453MP-D+**

Mini-Circuits

ELECTRICAL SPECIFICATIONS¹ AT 25°C, 50Ω, UNLESS NOTED

| Parameter | Condition (GHz) | VDD = 4.5V, IDD = 300mA | | | Units |
|--|-----------------|-------------------------|-------|------|-------|
| | | Min. | Typ. | Max. | |
| Frequency range | | 20 | | 45 | GHz |
| Gain | 20 | | 23.8 | | dB |
| | 25 | | 23.9 | | |
| | 30 | | 19.5 | | |
| | 35 | | 18.6 | | |
| | 40 | | 16.9 | | |
| | 45 | | 20.4 | | |
| Input Return loss | 20 | | 13.1 | | dB |
| | 25 | | 12.0 | | |
| | 30 | | 13.7 | | |
| | 35 | | 16.9 | | |
| | 40 | | 13.0 | | |
| | 45 | | 17.3 | | |
| Output Return loss | 20 | | 15.9 | | dB |
| | 25 | | 31.8 | | |
| | 30 | | 15.1 | | |
| | 35 | | 11.1 | | |
| | 40 | | 11.5 | | |
| | 45 | | 10.9 | | |
| P1dB | 20 | | 19.9 | | dBm |
| | 25 | | 20.9 | | |
| | 30 | | 20.1 | | |
| | 35 | | 19.6 | | |
| | 40 | | 19.6 | | |
| | 45 | | 17.7 | | |
| OIP3 (Pout= 10 dBm/Tone) | 20 | | 30.1 | | dBm |
| | 25 | | 29.4 | | |
| | 30 | | 28.2 | | |
| | 35 | | 27.8 | | |
| | 40 | | 27.3 | | |
| | 45 | | 27.0 | | |
| Noise Figure | 20-45 | | 10.2 | | dB |
| Device operating voltage (VDD) | | 3 | 4.5 | 5 | V |
| Device operating current (IDD) | | | 300 | 350 | mA |
| Device Gate Voltage (VG) , adjusted to IDD = 300mA | | | -0.45 | | V |
| Pinch-off Voltage for VG (Vp), VDD =4.5V, IDD<10mA | | | -1.5 | | V |
| Thermal resistance, junction-to-ground Lead | | | 27 | | °C/W |

1. Measured on Mini-Circuits Characterization Test Board. See Characterization Test & Application Circuit (Fig. 1)



SUPER WIDEBAND, HIGH GAIN, MEDIUM POWER

Monolithic Amplifier Die

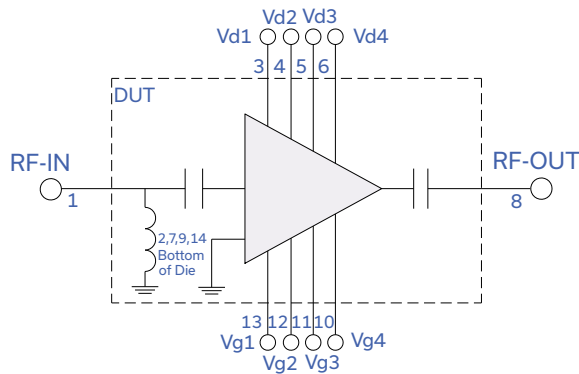
AVA-20453MP-D+

MAXIMUM RATINGS²

| Parameter | Ratings |
|-------------------------------------|---------------|
| Operating temperature (ground lead) | -40°C to 85°C |
| Junction Temperature | 150°C |
| Total power dissipation | 2W |
| Input power (CW) | 21 dBm |
| DC voltage at VDD | 6V |
| DC voltage at VG | -3V to +0.5V |

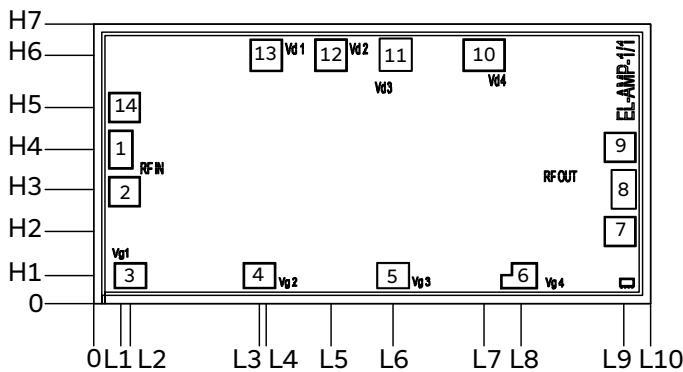
2. Permanent damage may occur if any of those limits are exceeded. Electrical maximum ratings are not intended for continuous normal operation

SIMPLIFIED SCHEMATIC AND PAD DESCRIPTION



| Pad # | Function | Description (Refer to Figure 1) |
|-----------------------------|----------|--|
| 1 | RF-IN | RF Input Pad |
| 3 | Vd1 | Drain Voltage for Stage 1, Connects to VDD via Bypass Cap C1, C9 & C11 |
| 4 | Vd2 | Drain Voltage for Stage 2, Connects to VDD via Bypass Cap C2, C9 & C11 |
| 5 | Vd3 | Drain Voltage for Stage 3, Connects to VDD via Bypass Cap C3, C9 & C11 |
| 6 | Vd4 | Drain Voltage for Stage 4, Connects to VDD via Bypass Cap C4, C9 & C11 |
| 8 | RF-OUT | RF Output Pad |
| 10 | Vg4 | Gate Voltage for Stage 4, Connects to VG via Bypass Cap C8, C10 & C12 |
| 11 | Vg3 | Gate Voltage for Stage 3, Connects to VG via Bypass Cap C7, C10 & C12 |
| 12 | Vg2 | Gate Voltage for Stage 2, Connects to VG via Bypass Cap C6, C10 & C12 |
| 13 | Vg1 | Gate Voltage for Stage 1, Connects to VG via Bypass Cap C5, C10 & C12 |
| 2, 7, 9, 14 & Bottom of Die | Ground | Connects to Ground |

BONDING PAD POSITION



Dimension in um, Typical

| L1 | L2 | L3 | L4 | L5 | L6 | L7 | L8 | L9 | L10 |
|------|-------|-------|-------|-------|-------|--------|--------|--------|------|
| 84.0 | 113.0 | 512.0 | 533.0 | 733.0 | 925.0 | 1206.0 | 1321.0 | 1637.0 | 1720 |

| H1 | H2 | H3 | H4 | H5 | H6 | H7 | Thickness | Die size |
|------|-------|-------|-------|-------|-------|-------|-----------|------------|
| 86.0 | 222.0 | 352.0 | 476.0 | 606.0 | 767.0 | 863.0 | 100 | 1720 x 863 |

| Pad Size 1 & 8 | Pad Size 2, 7, 9 & 14 | Pad Size 3, 4 & 5 | Pad Size 6 | Pad Size 10 | Pad Size 11 | Pad Size 12 & 13 |
|----------------|-----------------------|-------------------|------------|-------------|-------------|------------------|
| 68 x 113 | 91 x 86 | 93 x 73 | 106 x 73 | 123 x 93 | 100 x 100 | 93 x 93 |





CHARACTERIZATION, APPLICATION CIRCUIT & ASSEMBLY DRAWING

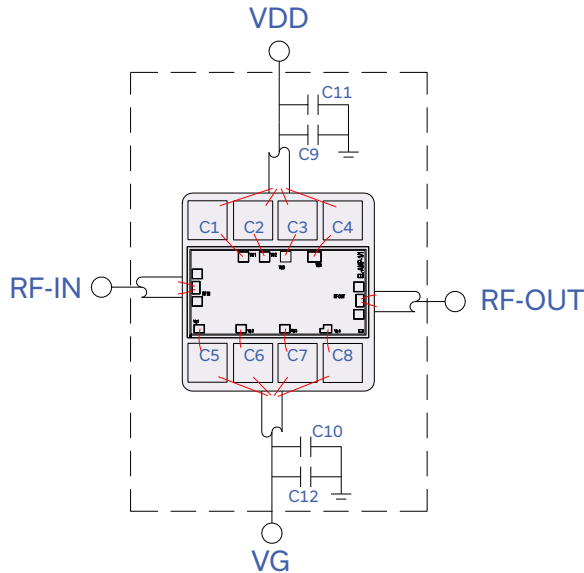


Fig 1. Characterization, Application Circuit & Assembly Drawing

Note: This block diagram is used for characterization. (DUT was soldered on test board of Mini-Circuits Characterization Test Board). Gain, Return loss, Output power at 1 dB compression (P1dB), output IP3 (OIP3) and noise figure measured using Agilent's N5242A PNA-X microwave network analyzer.

Conditions:

1. VDD=4.5V, IDD = 300mA
2. Gain and Return loss: Pin= -25 dBm
3. Output IP3 (OIP3): Two tones, spaced 1 MHz apart, 10 dBm/tone at output.


Switch ON/OFF Sequence:

1. To switch the amplifier ON
 - a) Turn ON VG = -2V
 - b) Turn ON VDD = 4.5V
 - c) Adjust VG Until IDD = 300mA
2. To switch the amplifier OFF
 - a) Adjust VG = -2V
 - b) Turn OFF VDD
 - c) Turn OFF VG

| Component | Size | Value | Part Number | Manufacturer |
|-----------|---------------|-------|--------------------|--------------|
| C1-C8 | 15mil x 15mil | 100pF | LSA1515B101M2H5C-F | Presidio |
| C9, C10 | 0402 | 0.1uF | GRM155R71C104KA88D | Murata |
| C11, C12 | 1206 | 10uF | CL31B106KBHNNNE | Samsung |

Note: C1-C8 needs to be as close as possible to the die so that we can keep the wire-bonds as short as possible. Short wire-bonds are critical for getting desirable performance.

ASSEMBLY PROCEDURE

1. Storage
Dice should be stored in a dry nitrogen purged desiccators or equivalent.
2.  ESD
MMIC PHEMT amplifier dice are susceptible to electrostatic and mechanical damage. Die are supplied in antistatic protected material, which should be open in clean room conditions at an appropriately grounded anti-static workstation.
3. Die Handling and Attachment
Devices need careful handling using correctly designed collets, it is recommended to handle the chip along the edges with a custom design collet. The die mounting surface must be clean and flat. Using conductive silver filled epoxy, recommended epoxies are Ablestik 84-1 LMISR4 or equivalents. Apply sufficient epoxy to meet required epoxy bond line thickness, epoxy fillet height and epoxy coverage around total periphery. Parts shall be cured in a nitrogen filled atmosphere per manufacturer's cure condition. The surface of the chip has exposed air bridges and should not be touched with vacuum collet, tweezers or fingers.
5. Wire Bonding
Bond pad openings in the surface passivation above the bond pads are provided to allow wire bonding to the dice gold bond pads. Thermo-sonic bonding is used with minimized ultrasonic content. Bond force, time, ultrasonic power and temperature are all critical parameters. Suggested wire is pure gold, 1mil diameter. Bonds must be made from the bond pads on the die to the packaged or substrate. All bond wires should be kept as short as low as reasonable to minimize performance degradation due to undesirable series inductance.



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Monolithic Amplifier Die

AVA-20453MP-D+

Mini-Circuits

ADDITIONAL DETAILED TECHNICAL INFORMATION IS AVAILABLE ON OUR DASH BOARD.

| | | | | | | | | | |
|--|---|-------------------|-----------|------------------------------------|-----------------|--|-----------------|------------|-----------------|
| Performance Data | Data Table | | | | | | | | |
| | Swept Graphs | | | | | | | | |
| | S-Parameter (S2P Files) Data Set with and without port extension(.zip file) | | | | | | | | |
| Case Style | Die | | | | | | | | |
| Die Ordering and packaging information | <table border="0"> <tr> <td>Quantity, Package</td> <td>Model No.</td> </tr> <tr> <td>Small, Gel - Pak: 5,10,50,100 KGD*</td> <td>AVA-20453MP-DG+</td> </tr> <tr> <td>Medium[†], Partial wafer: KGD*<1092</td> <td>AVA-20453MP-DP+</td> </tr> <tr> <td>Full Wafer</td> <td>AVA-20453MP-DF+</td> </tr> </table> | Quantity, Package | Model No. | Small, Gel - Pak: 5,10,50,100 KGD* | AVA-20453MP-DG+ | Medium [†] , Partial wafer: KGD*<1092 | AVA-20453MP-DP+ | Full Wafer | AVA-20453MP-DF+ |
| | Quantity, Package | Model No. | | | | | | | |
| Small, Gel - Pak: 5,10,50,100 KGD* | AVA-20453MP-DG+ | | | | | | | | |
| Medium [†] , Partial wafer: KGD*<1092 | AVA-20453MP-DP+ | | | | | | | | |
| Full Wafer | AVA-20453MP-DF+ | | | | | | | | |
| [†] Available upon request contact sales representative Refer to AN-60-067 | | | | | | | | | |
| Environmental Ratings | ENV80 | | | | | | | | |

*Known Good Die ('KGD') means that the dice are taken from PCM Good Wafers and visually inspected according to Mini-Circuits' inspection procedures. While this is not definitive, it does help to provide a higher degree of confidence that the dice are capable of meeting typical RF electrical performance specified by Mini-Circuits.

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.
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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: VDD = 3.00V, IDD = 300mA, VG = -0.45V@ 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) |
| 18000.0 | 24.55 | 54.35 | 13.18 | 6.71 | 11.49 | 0.83 | 21.29 | 14.22 | 8.38 |
| 18500.0 | 26.29 | 53.73 | 13.61 | 8.53 | 9.69 | 0.90 | 20.84 | 14.60 | 8.29 |
| 19000.0 | 27.75 | 53.11 | 14.57 | 11.39 | 8.35 | 0.95 | 20.85 | 14.95 | 8.24 |
| 19500.0 | 28.81 | 52.46 | 16.15 | 14.94 | 7.25 | 0.98 | 21.12 | 15.24 | 8.18 |
| 20000.0 | 29.54 | 51.93 | 18.51 | 17.47 | 6.42 | 0.99 | 21.68 | 15.47 | 8.16 |
| 20500.0 | 29.91 | 51.92 | 20.01 | 18.09 | 6.17 | 0.99 | 21.86 | 15.51 | 8.22 |
| 21000.0 | 30.01 | 52.41 | 18.22 | 17.44 | 6.40 | 0.99 | 21.76 | 15.45 | 8.24 |
| 21500.0 | 30.03 | 54.22 | 15.31 | 15.58 | 7.67 | 1.00 | 20.96 | 15.45 | 8.31 |
| 22000.0 | 30.44 | 56.19 | 13.82 | 15.21 | 9.07 | 1.00 | 21.18 | 15.41 | 8.33 |
| 22500.0 | 30.78 | 55.35 | 12.26 | 15.39 | 7.80 | 1.02 | 21.72 | 15.38 | 8.30 |
| 23000.0 | 30.91 | 54.45 | 11.21 | 15.27 | 6.82 | 1.03 | 22.46 | 15.65 | 8.29 |
| 23500.0 | 30.87 | 53.93 | 10.65 | 15.54 | 6.37 | 1.05 | 22.94 | 16.12 | 8.31 |
| 24000.0 | 30.86 | 53.41 | 10.90 | 16.92 | 6.06 | 1.06 | 22.87 | 16.13 | 8.29 |
| 24500.0 | 30.87 | 53.08 | 11.50 | 19.23 | 5.93 | 1.06 | 23.04 | 16.01 | 8.28 |
| 25000.0 | 30.84 | 52.84 | 12.01 | 20.51 | 5.88 | 1.05 | 23.23 | 15.91 | 8.32 |
| 25500.0 | 30.68 | 52.58 | 11.98 | 18.64 | 5.81 | 1.04 | 23.06 | 15.90 | 8.28 |
| 26000.0 | 30.34 | 52.28 | 11.02 | 15.79 | 5.67 | 1.04 | 22.74 | 16.23 | 8.40 |
| 26500.0 | 29.84 | 51.97 | 10.07 | 13.94 | 5.53 | 1.05 | 22.94 | 16.27 | 8.44 |
| 27000.0 | 29.33 | 51.79 | 9.51 | 13.23 | 5.58 | 1.06 | 22.90 | 15.93 | 8.47 |
| 27500.0 | 28.89 | 51.68 | 9.40 | 13.45 | 5.80 | 1.07 | 23.24 | 15.82 | 8.48 |
| 28000.0 | 28.55 | 52.08 | 9.90 | 14.58 | 6.54 | 1.06 | 23.14 | 15.43 | 8.55 |
| 28500.0 | 28.24 | 52.28 | 10.54 | 16.12 | 7.16 | 1.05 | 22.52 | 15.35 | 8.53 |
| 29000.0 | 27.88 | 52.58 | 11.31 | 17.92 | 7.88 | 1.05 | 22.48 | 15.37 | 8.46 |
| 29500.0 | 27.45 | 53.24 | 11.57 | 18.30 | 8.94 | 1.05 | 22.51 | 15.78 | 8.39 |
| 30000.0 | 26.99 | 54.13 | 11.16 | 16.67 | 10.26 | 1.05 | 22.70 | 15.80 | 8.48 |
| 30500.0 | 26.49 | 55.13 | 10.59 | 14.51 | 11.92 | 1.05 | 22.50 | 15.76 | 8.49 |
| 31000.0 | 26.08 | 56.75 | 10.18 | 12.77 | 14.68 | 1.03 | 22.30 | 15.56 | 8.58 |
| 31500.0 | 25.82 | 58.35 | 10.00 | 11.76 | 17.86 | 1.02 | 22.49 | 15.73 | 8.73 |
| 32000.0 | 25.68 | 59.93 | 10.42 | 11.45 | 21.78 | 1.01 | 22.47 | 15.62 | 8.65 |
| 32500.0 | 25.51 | 62.00 | 11.02 | 11.64 | 28.55 | 1.01 | 23.18 | 15.78 | 8.71 |
| 33000.0 | 25.37 | 62.00 | 12.08 | 12.30 | 29.92 | 1.00 | 23.54 | 15.66 | 8.68 |
| 34000.0 | 25.21 | 58.51 | 13.74 | 12.73 | 20.99 | 0.98 | 25.63 | 15.86 | 8.67 |
| 35000.0 | 25.26 | 58.19 | 14.17 | 11.64 | 19.80 | 0.97 | 25.78 | 16.34 | 8.67 |
| 36000.0 | 25.67 | 57.10 | 14.65 | 11.31 | 16.69 | 0.96 | 26.16 | 15.64 | 8.63 |
| 37000.0 | 25.80 | 58.28 | 15.12 | 12.52 | 19.30 | 0.97 | 27.52 | 15.99 | 8.55 |
| 38000.0 | 25.53 | 62.02 | 12.84 | 11.75 | 29.49 | 0.98 | 28.22 | 16.44 | 8.53 |
| 39000.0 | 24.82 | 66.98 | 9.76 | 9.13 | 50.46 | 0.97 | 29.17 | 16.67 | 8.75 |
| 40000.0 | 24.39 | 71.41 | 8.70 | 8.53 | 83.31 | 0.98 | 28.60 | 16.42 | 8.78 |
| 41000.0 | 24.91 | 61.15 | 10.01 | 10.37 | 26.61 | 1.00 | 27.75 | 16.69 | 8.46 |
| 42000.0 | 25.70 | 57.92 | 11.82 | 12.82 | 18.07 | 1.01 | 24.55 | 16.42 | 8.20 |
| 43000.0 | 25.65 | 65.56 | 11.50 | 11.24 | 42.55 | 0.99 | 23.11 | 15.72 | 7.96 |
| 44000.0 | 25.70 | 62.87 | 10.86 | 11.19 | 30.57 | 1.00 | 23.54 | 15.39 | 7.96 |
| 45000.0 | 27.02 | 54.87 | 12.69 | 14.29 | 11.30 | 1.01 | 24.68 | 14.91 | 8.01 |
| 46000.0 | 27.86 | 49.80 | 14.88 | 14.06 | 5.83 | 0.99 | 27.64 | 13.54 | 8.28 |
| 47000.0 | 25.29 | 47.40 | 11.74 | 23.03 | 5.95 | 1.06 | 31.98 | 12.47 | 8.85 |

MMIC Amplifier

AVA-20453MP-D+

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: VDD = 3.50V, IDD = 300mA, VG = -0.45V@ 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) |
| 18000.0 | 22.25 | 54.35 | 12.83 | 6.58 | 14.81 | 0.83 | 24.38 | 16.48 | 8.60 |
| 18500.0 | 23.97 | 53.68 | 13.24 | 8.31 | 12.40 | 0.89 | 23.60 | 16.77 | 8.52 |
| 19000.0 | 25.45 | 53.06 | 14.18 | 10.95 | 10.67 | 0.95 | 23.52 | 17.11 | 8.47 |
| 19500.0 | 26.56 | 52.43 | 15.79 | 14.09 | 9.26 | 0.98 | 23.88 | 17.41 | 8.41 |
| 20000.0 | 27.34 | 51.92 | 18.15 | 16.17 | 8.17 | 0.99 | 24.67 | 17.62 | 8.38 |
| 20500.0 | 27.80 | 51.87 | 19.50 | 16.55 | 7.74 | 0.99 | 25.01 | 17.67 | 8.42 |
| 21000.0 | 27.98 | 52.39 | 17.65 | 16.06 | 7.98 | 0.99 | 24.46 | 17.60 | 8.42 |
| 21500.0 | 28.10 | 54.04 | 14.93 | 14.89 | 9.30 | 1.00 | 22.78 | 17.61 | 8.50 |
| 22000.0 | 28.50 | 56.08 | 13.35 | 14.88 | 11.08 | 1.01 | 23.20 | 17.60 | 8.51 |
| 22500.0 | 28.79 | 55.33 | 11.87 | 15.44 | 9.71 | 1.03 | 24.19 | 17.56 | 8.50 |
| 23000.0 | 28.88 | 54.59 | 10.93 | 15.92 | 8.71 | 1.05 | 25.46 | 17.91 | 8.51 |
| 23500.0 | 28.81 | 54.06 | 10.56 | 16.81 | 8.21 | 1.06 | 26.17 | 18.45 | 8.53 |
| 24000.0 | 28.73 | 53.55 | 10.90 | 18.92 | 7.92 | 1.07 | 26.01 | 18.51 | 8.51 |
| 24500.0 | 28.66 | 53.34 | 11.63 | 22.31 | 7.95 | 1.06 | 26.30 | 18.41 | 8.49 |
| 25000.0 | 28.51 | 53.14 | 12.22 | 24.25 | 8.01 | 1.05 | 26.74 | 18.35 | 8.52 |
| 25500.0 | 28.22 | 52.92 | 12.24 | 21.38 | 8.06 | 1.05 | 26.40 | 18.32 | 8.54 |
| 26000.0 | 27.78 | 52.58 | 11.32 | 18.00 | 7.97 | 1.05 | 25.92 | 18.66 | 8.61 |
| 26500.0 | 27.23 | 52.31 | 10.42 | 15.94 | 7.96 | 1.06 | 26.39 | 18.78 | 8.71 |
| 27000.0 | 26.68 | 52.07 | 9.92 | 15.04 | 8.07 | 1.07 | 26.16 | 18.44 | 8.74 |
| 27500.0 | 26.22 | 51.95 | 9.78 | 14.94 | 8.35 | 1.07 | 26.90 | 18.31 | 8.75 |
| 28000.0 | 25.85 | 52.35 | 10.27 | 15.66 | 9.33 | 1.06 | 26.41 | 17.90 | 8.82 |
| 28500.0 | 25.53 | 52.47 | 10.93 | 16.79 | 10.05 | 1.05 | 25.48 | 17.82 | 8.75 |
| 29000.0 | 25.19 | 52.92 | 11.74 | 18.40 | 11.24 | 1.05 | 25.84 | 17.79 | 8.75 |
| 29500.0 | 24.82 | 53.60 | 11.98 | 18.94 | 12.72 | 1.05 | 25.82 | 18.22 | 8.68 |
| 30000.0 | 24.41 | 54.59 | 11.44 | 17.22 | 14.68 | 1.05 | 26.64 | 18.18 | 8.68 |
| 30500.0 | 23.97 | 55.41 | 10.76 | 14.77 | 16.52 | 1.05 | 26.82 | 18.10 | 8.76 |
| 31000.0 | 23.61 | 56.48 | 10.23 | 12.78 | 18.92 | 1.03 | 27.20 | 17.87 | 8.85 |
| 31500.0 | 23.38 | 58.31 | 10.05 | 11.60 | 23.49 | 1.02 | 27.56 | 18.00 | 8.90 |
| 32000.0 | 23.27 | 59.61 | 10.42 | 11.19 | 27.59 | 1.01 | 27.31 | 17.88 | 8.88 |
| 32500.0 | 23.16 | 62.88 | 10.99 | 11.30 | 41.23 | 1.00 | 28.38 | 18.01 | 8.98 |
| 33000.0 | 23.07 | 61.79 | 12.02 | 11.88 | 37.81 | 0.99 | 28.78 | 17.89 | 8.95 |
| 34000.0 | 23.02 | 58.45 | 13.44 | 12.21 | 26.57 | 0.98 | 29.85 | 18.06 | 8.91 |
| 35000.0 | 23.04 | 57.54 | 13.63 | 10.96 | 23.31 | 0.96 | 29.87 | 18.46 | 8.91 |
| 36000.0 | 23.31 | 56.64 | 13.90 | 10.49 | 20.28 | 0.95 | 29.95 | 17.70 | 8.84 |
| 37000.0 | 23.34 | 58.05 | 14.48 | 11.67 | 24.50 | 0.96 | 30.74 | 18.10 | 8.81 |
| 38000.0 | 22.98 | 61.17 | 12.34 | 11.07 | 35.18 | 0.98 | 30.99 | 18.47 | 8.83 |
| 39000.0 | 22.15 | 67.70 | 9.62 | 8.69 | 73.08 | 0.96 | 32.05 | 18.71 | 9.05 |
| 40000.0 | 21.73 | 72.99 | 8.76 | 8.16 | 134.12 | 0.96 | 31.22 | 18.44 | 9.05 |
| 41000.0 | 22.31 | 61.29 | 10.26 | 9.92 | 36.28 | 0.98 | 31.03 | 18.71 | 8.78 |
| 42000.0 | 23.04 | 58.02 | 12.49 | 12.35 | 24.91 | 1.00 | 30.22 | 18.57 | 8.54 |
| 43000.0 | 23.08 | 65.24 | 12.11 | 11.03 | 55.43 | 0.98 | 31.71 | 17.96 | 8.32 |
| 44000.0 | 23.41 | 65.50 | 11.60 | 11.06 | 54.48 | 0.99 | 32.12 | 17.66 | 8.29 |
| 45000.0 | 24.91 | 54.21 | 13.55 | 14.24 | 13.46 | 1.00 | 32.19 | 17.30 | 8.31 |
| 46000.0 | 25.68 | 49.85 | 15.19 | 14.73 | 7.61 | 0.99 | 33.70 | 16.31 | 8.65 |
| 47000.0 | 22.91 | 47.79 | 11.63 | 23.16 | 8.14 | 1.06 | 33.89 | 15.54 | 9.25 |

Typical Performance Data

Definitions:

Input Return Loss = -S11 (dB)

Gain(Power Gain) = S21 (dB)

Reverse Isolation = -S12 (dB)

Output Return Loss = -S22 (dB)

TEST CONDITIONS: VDD= 4.00V, IDD = 300mA, VG = -0.45V@ 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) |
| 18000.0 | 20.36 | 54.26 | 12.56 | 6.41 | 17.95 | 0.82 | 26.95 | 17.79 | 8.83 |
| 18500.0 | 22.09 | 53.67 | 12.97 | 8.04 | 15.15 | 0.89 | 27.35 | 18.17 | 8.71 |
| 19000.0 | 23.59 | 53.11 | 13.91 | 10.50 | 13.12 | 0.94 | 26.49 | 18.55 | 8.69 |
| 19500.0 | 24.74 | 52.43 | 15.55 | 13.31 | 11.29 | 0.98 | 27.08 | 18.89 | 8.60 |
| 20000.0 | 25.56 | 51.91 | 17.92 | 15.05 | 9.93 | 0.98 | 27.78 | 19.14 | 8.59 |
| 20500.0 | 26.07 | 51.84 | 19.06 | 15.30 | 9.32 | 0.98 | 28.16 | 19.18 | 8.61 |
| 21000.0 | 26.31 | 52.30 | 17.23 | 14.96 | 9.48 | 0.99 | 28.02 | 19.15 | 8.64 |
| 21500.0 | 26.49 | 53.98 | 14.60 | 14.24 | 11.02 | 0.99 | 25.77 | 19.19 | 8.68 |
| 22000.0 | 26.89 | 55.97 | 13.02 | 14.54 | 13.08 | 1.01 | 26.73 | 19.17 | 8.73 |
| 22500.0 | 27.14 | 55.29 | 11.56 | 15.52 | 11.62 | 1.03 | 28.02 | 19.13 | 8.72 |
| 23000.0 | 27.20 | 54.64 | 10.79 | 16.66 | 10.63 | 1.05 | 29.51 | 19.47 | 8.71 |
| 23500.0 | 27.10 | 54.19 | 10.51 | 18.32 | 10.20 | 1.07 | 29.68 | 20.11 | 8.71 |
| 24000.0 | 26.95 | 53.69 | 10.96 | 21.44 | 9.93 | 1.07 | 29.62 | 20.17 | 8.75 |
| 24500.0 | 26.80 | 53.48 | 11.77 | 26.79 | 10.06 | 1.06 | 29.57 | 20.09 | 8.71 |
| 25000.0 | 26.56 | 53.32 | 12.42 | 29.77 | 10.27 | 1.05 | 29.57 | 19.97 | 8.79 |
| 25500.0 | 26.19 | 53.17 | 12.46 | 24.57 | 10.53 | 1.05 | 29.37 | 19.94 | 8.77 |
| 26000.0 | 25.71 | 52.82 | 11.57 | 20.54 | 10.49 | 1.06 | 29.16 | 20.27 | 8.85 |
| 26500.0 | 25.13 | 52.55 | 10.65 | 18.08 | 10.58 | 1.07 | 29.29 | 20.37 | 8.93 |
| 27000.0 | 24.55 | 52.32 | 10.15 | 16.73 | 10.80 | 1.07 | 29.21 | 20.07 | 9.01 |
| 27500.0 | 24.08 | 52.02 | 10.02 | 16.08 | 10.93 | 1.07 | 28.99 | 19.88 | 9.01 |
| 28000.0 | 23.69 | 52.33 | 10.54 | 16.18 | 12.01 | 1.06 | 29.01 | 19.46 | 9.04 |
| 28500.0 | 23.36 | 52.77 | 11.19 | 16.79 | 13.39 | 1.05 | 28.89 | 19.34 | 9.05 |
| 29000.0 | 23.05 | 53.27 | 11.95 | 18.09 | 14.99 | 1.04 | 29.02 | 19.25 | 9.03 |
| 29500.0 | 22.71 | 53.72 | 12.17 | 18.77 | 16.47 | 1.05 | 29.01 | 19.67 | 8.93 |
| 30000.0 | 22.34 | 54.34 | 11.62 | 17.29 | 18.17 | 1.05 | 28.91 | 19.59 | 8.91 |
| 30500.0 | 21.94 | 55.46 | 10.82 | 14.79 | 21.00 | 1.05 | 28.86 | 19.48 | 8.97 |
| 31000.0 | 21.60 | 57.07 | 10.34 | 12.66 | 25.51 | 1.03 | 29.08 | 19.24 | 9.09 |
| 31500.0 | 21.39 | 58.28 | 10.04 | 11.39 | 29.29 | 1.02 | 29.06 | 19.37 | 9.18 |
| 32000.0 | 21.30 | 60.80 | 10.42 | 10.90 | 39.47 | 1.00 | 29.09 | 19.18 | 9.13 |
| 32500.0 | 21.21 | 62.49 | 10.97 | 10.94 | 48.97 | 0.99 | 29.07 | 19.30 | 9.17 |
| 33000.0 | 21.16 | 61.64 | 11.93 | 11.45 | 45.84 | 0.99 | 28.94 | 19.11 | 9.18 |
| 34000.0 | 21.16 | 57.85 | 13.23 | 11.71 | 30.39 | 0.98 | 29.08 | 19.20 | 9.14 |
| 35000.0 | 21.16 | 57.09 | 13.27 | 10.41 | 27.06 | 0.95 | 28.88 | 19.62 | 9.12 |
| 36000.0 | 21.30 | 56.16 | 13.48 | 9.91 | 23.73 | 0.94 | 29.00 | 18.94 | 9.10 |
| 37000.0 | 21.25 | 58.08 | 14.08 | 11.07 | 30.80 | 0.96 | 29.87 | 19.30 | 9.08 |
| 38000.0 | 20.84 | 61.09 | 12.10 | 10.57 | 43.99 | 0.97 | 30.21 | 19.61 | 9.10 |
| 39000.0 | 19.94 | 67.08 | 9.51 | 8.36 | 86.35 | 0.95 | 31.90 | 18.96 | 9.34 |
| 40000.0 | 19.54 | 74.12 | 8.84 | 7.87 | 194.71 | 0.95 | 30.25 | 19.30 | 9.42 |
| 41000.0 | 20.15 | 61.94 | 10.53 | 9.56 | 49.85 | 0.97 | 29.81 | 19.83 | 9.09 |
| 42000.0 | 20.88 | 58.66 | 13.00 | 11.94 | 34.43 | 0.98 | 28.42 | 19.80 | 8.84 |
| 43000.0 | 20.99 | 66.32 | 12.78 | 10.79 | 80.15 | 0.96 | 28.32 | 19.27 | 8.62 |
| 44000.0 | 21.50 | 62.70 | 12.20 | 10.82 | 49.45 | 0.97 | 28.60 | 18.99 | 8.62 |
| 45000.0 | 23.12 | 54.75 | 14.12 | 13.97 | 17.61 | 1.00 | 29.43 | 18.73 | 8.63 |
| 46000.0 | 23.77 | 50.11 | 15.32 | 14.92 | 9.78 | 0.99 | 31.55 | 17.84 | 8.92 |
| 47000.0 | 20.76 | 47.86 | 11.62 | 20.99 | 10.47 | 1.06 | 33.10 | 17.10 | 9.66 |

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: VDD = 4.50V, IDD = 300mA, VG = -0.45V @ 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) |
| 18000.0 | 19.05 | 54.28 | 12.40 | 6.18 | 20.54 | 0.81 | 26.89 | 18.57 | 9.13 |
| 18500.0 | 20.80 | 53.72 | 12.81 | 7.72 | 17.40 | 0.88 | 27.32 | 18.92 | 8.97 |
| 19000.0 | 22.33 | 53.05 | 13.78 | 10.01 | 14.87 | 0.94 | 27.26 | 19.33 | 8.89 |
| 19500.0 | 23.51 | 52.51 | 15.41 | 12.55 | 12.97 | 0.97 | 27.64 | 19.70 | 8.85 |
| 20000.0 | 24.37 | 51.93 | 17.75 | 14.03 | 11.31 | 0.97 | 28.04 | 20.06 | 8.80 |
| 20500.0 | 24.92 | 51.84 | 18.85 | 14.23 | 10.54 | 0.97 | 28.40 | 20.23 | 8.81 |
| 21000.0 | 25.21 | 52.24 | 16.97 | 14.04 | 10.57 | 0.98 | 28.99 | 20.23 | 8.83 |
| 21500.0 | 25.43 | 53.82 | 14.44 | 13.65 | 12.14 | 0.99 | 28.76 | 20.33 | 8.90 |
| 22000.0 | 25.82 | 55.91 | 12.85 | 14.20 | 14.61 | 1.01 | 29.31 | 20.03 | 8.93 |
| 22500.0 | 26.07 | 55.42 | 11.40 | 15.60 | 13.29 | 1.04 | 29.37 | 20.32 | 8.91 |
| 23000.0 | 26.11 | 54.69 | 10.74 | 17.45 | 12.12 | 1.06 | 29.54 | 20.86 | 8.91 |
| 23500.0 | 25.99 | 54.28 | 10.52 | 20.07 | 11.75 | 1.08 | 29.47 | 20.93 | 8.97 |
| 24000.0 | 25.81 | 53.88 | 11.02 | 24.81 | 11.64 | 1.07 | 29.36 | 21.13 | 8.96 |
| 24500.0 | 25.59 | 53.66 | 11.87 | 35.30 | 11.85 | 1.06 | 29.05 | 20.98 | 8.97 |
| 25000.0 | 25.29 | 53.55 | 12.57 | 35.56 | 12.25 | 1.05 | 28.87 | 20.98 | 9.00 |
| 25500.0 | 24.88 | 53.42 | 12.60 | 27.59 | 12.64 | 1.05 | 28.75 | 21.09 | 9.01 |
| 26000.0 | 24.35 | 53.05 | 11.73 | 23.54 | 12.66 | 1.06 | 28.54 | 21.13 | 9.10 |
| 26500.0 | 23.76 | 52.74 | 10.80 | 20.46 | 12.79 | 1.07 | 28.30 | 21.35 | 9.19 |
| 27000.0 | 23.18 | 52.32 | 10.30 | 18.34 | 12.78 | 1.08 | 28.01 | 21.24 | 9.24 |
| 27500.0 | 22.69 | 52.36 | 10.16 | 16.87 | 13.45 | 1.08 | 27.88 | 21.19 | 9.22 |
| 28000.0 | 22.28 | 52.44 | 10.67 | 16.31 | 14.35 | 1.06 | 27.72 | 20.96 | 9.33 |
| 28500.0 | 21.95 | 52.99 | 11.33 | 16.43 | 16.16 | 1.05 | 27.71 | 20.43 | 9.29 |
| 29000.0 | 21.65 | 53.46 | 12.13 | 17.43 | 18.00 | 1.04 | 27.65 | 20.21 | 9.25 |
| 29500.0 | 21.32 | 53.88 | 12.27 | 18.20 | 19.70 | 1.04 | 27.61 | 20.45 | 9.19 |
| 30000.0 | 20.98 | 54.62 | 11.71 | 17.05 | 21.96 | 1.05 | 27.63 | 20.53 | 9.19 |
| 30500.0 | 20.59 | 55.82 | 10.88 | 14.67 | 25.60 | 1.05 | 27.69 | 20.48 | 9.25 |
| 31000.0 | 20.27 | 56.79 | 10.31 | 12.49 | 28.70 | 1.03 | 27.85 | 20.14 | 9.37 |
| 31500.0 | 20.06 | 58.51 | 10.02 | 11.15 | 34.84 | 1.01 | 27.87 | 20.16 | 9.41 |
| 32000.0 | 19.98 | 60.84 | 10.39 | 10.61 | 45.85 | 1.00 | 27.91 | 19.95 | 9.39 |
| 32500.0 | 19.90 | 63.16 | 10.89 | 10.59 | 60.98 | 0.99 | 27.97 | 19.93 | 9.47 |
| 33000.0 | 19.88 | 61.38 | 11.82 | 11.04 | 51.10 | 0.98 | 27.86 | 19.79 | 9.41 |
| 34000.0 | 19.91 | 57.69 | 13.08 | 11.26 | 34.14 | 0.97 | 28.21 | 19.99 | 9.34 |
| 35000.0 | 19.87 | 56.65 | 13.03 | 9.97 | 29.45 | 0.95 | 28.04 | 20.44 | 9.36 |
| 36000.0 | 19.94 | 56.02 | 13.33 | 9.46 | 26.91 | 0.93 | 28.13 | 19.85 | 9.33 |
| 37000.0 | 19.85 | 57.58 | 13.98 | 10.59 | 33.79 | 0.95 | 29.17 | 20.08 | 9.37 |
| 38000.0 | 19.40 | 61.15 | 11.94 | 10.17 | 51.68 | 0.96 | 29.51 | 20.37 | 9.39 |
| 39000.0 | 18.48 | 68.14 | 9.52 | 8.08 | 114.26 | 0.94 | 31.46 | 20.57 | 9.62 |
| 40000.0 | 18.07 | 71.03 | 8.96 | 7.61 | 160.26 | 0.93 | 29.97 | 20.23 | 9.64 |
| 41000.0 | 18.73 | 62.23 | 10.70 | 9.23 | 60.37 | 0.95 | 29.59 | 20.26 | 9.42 |
| 42000.0 | 19.48 | 58.98 | 13.39 | 11.51 | 41.85 | 0.97 | 28.09 | 20.48 | 9.18 |
| 43000.0 | 19.66 | 65.11 | 13.06 | 10.46 | 81.04 | 0.96 | 27.74 | 19.92 | 8.95 |
| 44000.0 | 20.28 | 64.24 | 12.60 | 10.47 | 67.78 | 0.96 | 27.83 | 19.70 | 8.96 |
| 45000.0 | 22.03 | 55.10 | 14.50 | 13.43 | 20.76 | 0.99 | 28.70 | 19.66 | 8.95 |
| 46000.0 | 22.69 | 50.38 | 15.27 | 14.53 | 11.37 | 0.99 | 31.46 | 18.94 | 9.21 |
| 47000.0 | 19.57 | 47.87 | 11.66 | 18.89 | 11.95 | 1.05 | 33.65 | 18.22 | 10.08 |

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: VDD = 5.00V, IDD = 300mA, VG = -0.45V@ 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) |
| 18000.0 | 17.71 | 54.22 | 12.25 | 5.98 | 23.40 | 0.80 | 27.08 | 19.25 | 9.31 |
| 18500.0 | 19.47 | 53.80 | 12.66 | 7.44 | 20.14 | 0.87 | 27.29 | 19.66 | 9.17 |
| 19000.0 | 21.02 | 53.08 | 13.64 | 9.57 | 17.11 | 0.93 | 27.16 | 20.11 | 9.12 |
| 19500.0 | 22.24 | 52.46 | 15.28 | 11.88 | 14.78 | 0.96 | 27.49 | 20.53 | 9.06 |
| 20000.0 | 23.13 | 51.89 | 17.60 | 13.17 | 12.84 | 0.97 | 27.82 | 20.90 | 8.95 |
| 20500.0 | 23.70 | 51.83 | 18.58 | 13.32 | 11.98 | 0.97 | 28.25 | 21.09 | 9.02 |
| 21000.0 | 24.04 | 52.19 | 16.72 | 13.19 | 11.91 | 0.97 | 28.65 | 21.15 | 9.02 |
| 21500.0 | 24.29 | 53.67 | 14.26 | 13.02 | 13.48 | 0.98 | 28.75 | 21.27 | 9.05 |
| 22000.0 | 24.69 | 55.83 | 12.66 | 13.74 | 16.39 | 1.01 | 28.93 | 21.06 | 9.14 |
| 22500.0 | 24.92 | 55.37 | 11.28 | 15.46 | 15.03 | 1.04 | 28.89 | 21.38 | 9.13 |
| 23000.0 | 24.94 | 54.84 | 10.68 | 17.98 | 14.12 | 1.07 | 29.03 | 21.85 | 9.13 |
| 23500.0 | 24.79 | 54.35 | 10.51 | 21.90 | 13.63 | 1.08 | 28.90 | 21.95 | 9.18 |
| 24000.0 | 24.58 | 53.98 | 11.06 | 29.94 | 13.61 | 1.08 | 28.71 | 22.20 | 9.16 |
| 24500.0 | 24.28 | 53.84 | 12.00 | 39.50 | 14.10 | 1.06 | 28.41 | 22.10 | 9.19 |
| 25000.0 | 23.93 | 53.69 | 12.73 | 29.40 | 14.57 | 1.05 | 28.04 | 22.07 | 9.20 |
| 25500.0 | 23.48 | 53.56 | 12.76 | 27.70 | 15.10 | 1.05 | 27.76 | 22.14 | 9.23 |
| 26000.0 | 22.92 | 53.26 | 11.87 | 27.12 | 15.37 | 1.06 | 27.56 | 22.14 | 9.30 |
| 26500.0 | 22.31 | 52.96 | 10.95 | 23.46 | 15.60 | 1.07 | 27.40 | 22.31 | 9.40 |
| 27000.0 | 21.73 | 52.49 | 10.43 | 19.87 | 15.53 | 1.08 | 27.33 | 22.18 | 9.45 |
| 27500.0 | 21.21 | 52.34 | 10.29 | 17.35 | 16.00 | 1.07 | 27.07 | 22.11 | 9.49 |
| 28000.0 | 20.81 | 52.62 | 10.81 | 16.13 | 17.40 | 1.06 | 27.10 | 21.83 | 9.53 |
| 28500.0 | 20.47 | 53.21 | 11.46 | 15.87 | 19.62 | 1.04 | 26.99 | 21.23 | 9.51 |
| 29000.0 | 20.17 | 53.44 | 12.23 | 16.63 | 21.22 | 1.04 | 27.12 | 20.98 | 9.48 |
| 29500.0 | 19.87 | 53.90 | 12.40 | 17.42 | 23.32 | 1.04 | 27.00 | 21.23 | 9.41 |
| 30000.0 | 19.55 | 54.84 | 11.70 | 16.60 | 26.50 | 1.04 | 27.07 | 21.30 | 9.44 |
| 30500.0 | 19.17 | 55.78 | 10.92 | 14.41 | 29.95 | 1.04 | 27.12 | 21.22 | 9.49 |
| 31000.0 | 18.87 | 56.79 | 10.31 | 12.26 | 33.60 | 1.03 | 27.35 | 20.87 | 9.59 |
| 31500.0 | 18.67 | 58.62 | 10.04 | 10.90 | 41.26 | 1.01 | 27.39 | 20.86 | 9.62 |
| 32000.0 | 18.59 | 60.28 | 10.34 | 10.31 | 50.02 | 0.99 | 27.40 | 20.63 | 9.60 |
| 32500.0 | 18.53 | 63.45 | 10.85 | 10.26 | 73.26 | 0.98 | 27.48 | 20.58 | 9.65 |
| 33000.0 | 18.52 | 61.36 | 11.74 | 10.65 | 59.06 | 0.98 | 27.33 | 20.41 | 9.65 |
| 34000.0 | 18.57 | 57.79 | 12.88 | 10.82 | 39.84 | 0.96 | 27.80 | 20.54 | 9.63 |
| 35000.0 | 18.48 | 56.78 | 12.86 | 9.57 | 34.64 | 0.94 | 27.67 | 21.00 | 9.60 |
| 36000.0 | 18.48 | 55.54 | 13.12 | 9.08 | 29.69 | 0.92 | 27.75 | 20.49 | 9.54 |
| 37000.0 | 18.36 | 57.38 | 13.88 | 10.18 | 38.81 | 0.94 | 28.82 | 20.65 | 9.59 |
| 38000.0 | 17.86 | 61.07 | 11.86 | 9.82 | 60.51 | 0.96 | 29.23 | 20.83 | 9.61 |
| 39000.0 | 16.89 | 66.89 | 9.50 | 7.83 | 117.36 | 0.93 | 31.43 | 21.07 | 9.89 |
| 40000.0 | 16.52 | 74.85 | 9.03 | 7.37 | 294.93 | 0.92 | 29.98 | 20.75 | 9.92 |
| 41000.0 | 17.21 | 61.42 | 10.96 | 8.93 | 65.20 | 0.94 | 29.68 | 20.72 | 9.65 |
| 42000.0 | 17.96 | 57.82 | 13.79 | 11.16 | 43.51 | 0.96 | 28.16 | 20.99 | 9.47 |
| 43000.0 | 18.20 | 66.04 | 13.39 | 10.18 | 106.34 | 0.95 | 27.80 | 20.55 | 9.24 |
| 44000.0 | 18.95 | 63.61 | 12.88 | 10.16 | 73.17 | 0.95 | 27.82 | 20.31 | 9.23 |
| 45000.0 | 20.78 | 55.00 | 14.79 | 12.99 | 23.59 | 0.98 | 28.75 | 20.28 | 9.25 |
| 46000.0 | 21.40 | 50.50 | 15.25 | 14.09 | 13.33 | 0.99 | 32.17 | 19.61 | 9.58 |
| 47000.0 | 18.12 | 48.00 | 11.82 | 17.19 | 14.30 | 1.05 | 34.53 | 18.88 | 10.45 |

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: VDD = 3.00V, IDD = 300mA, VG = -0.45V@ 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) |
| 18000.0 | 32.01 | 55.27 | 14.88 | 5.53 | 5.07 | 0.74 | 21.52 | 13.38 | 7.56 |
| 18500.0 | 34.22 | 54.61 | 15.53 | 6.64 | 4.08 | 0.79 | 21.75 | 13.32 | 7.54 |
| 19000.0 | 36.04 | 54.37 | 16.40 | 8.81 | 3.62 | 0.86 | 22.17 | 13.31 | 7.43 |
| 19500.0 | 37.01 | 54.12 | 16.60 | 12.22 | 3.36 | 0.94 | 22.76 | 14.12 | 7.47 |
| 20000.0 | 37.44 | 53.58 | 16.96 | 15.73 | 3.11 | 0.98 | 23.32 | 14.63 | 7.45 |
| 20500.0 | 37.53 | 53.26 | 18.53 | 17.39 | 3.04 | 0.97 | 23.56 | 14.70 | 7.44 |
| 21000.0 | 37.55 | 53.15 | 19.21 | 17.97 | 3.02 | 0.97 | 23.23 | 14.32 | 7.47 |
| 21500.0 | 37.57 | 52.83 | 18.11 | 19.71 | 2.92 | 0.97 | 22.65 | 13.89 | 7.47 |
| 22000.0 | 37.60 | 52.67 | 16.21 | 20.06 | 2.84 | 0.98 | 22.43 | 13.98 | 7.54 |
| 22500.0 | 37.66 | 52.48 | 14.14 | 18.53 | 2.73 | 0.98 | 22.33 | 14.33 | 7.54 |
| 23000.0 | 37.69 | 51.96 | 11.81 | 16.09 | 2.48 | 0.99 | 22.62 | 14.48 | 7.50 |
| 23500.0 | 37.78 | 51.69 | 10.90 | 14.59 | 2.31 | 1.00 | 23.02 | 14.65 | 7.64 |
| 24000.0 | 37.95 | 51.44 | 10.69 | 14.20 | 2.15 | 1.02 | 23.20 | 14.74 | 7.58 |
| 24500.0 | 38.25 | 51.17 | 11.40 | 15.13 | 2.05 | 1.01 | 23.20 | 14.97 | 7.57 |
| 25000.0 | 38.63 | 50.81 | 12.57 | 15.33 | 1.97 | 0.97 | 23.12 | 15.04 | 7.57 |
| 25500.0 | 39.02 | 50.61 | 13.16 | 14.39 | 1.91 | 0.92 | 23.09 | 15.16 | 7.59 |
| 26000.0 | 39.25 | 50.47 | 10.85 | 12.55 | 1.75 | 0.93 | 23.28 | 15.21 | 7.52 |
| 26500.0 | 39.09 | 50.42 | 8.48 | 10.62 | 1.50 | 1.01 | 23.51 | 15.45 | 7.64 |
| 27000.0 | 38.77 | 50.58 | 7.18 | 10.03 | 1.42 | 1.07 | 23.67 | 15.28 | 7.72 |
| 27500.0 | 38.43 | 50.83 | 6.58 | 10.60 | 1.58 | 1.07 | 23.59 | 14.63 | 7.80 |
| 28000.0 | 38.18 | 50.93 | 6.95 | 11.44 | 1.81 | 1.02 | 23.42 | 14.47 | 7.81 |
| 28500.0 | 37.81 | 51.10 | 7.75 | 13.07 | 2.02 | 1.03 | 23.35 | 14.33 | 7.79 |
| 29000.0 | 37.24 | 51.65 | 8.39 | 14.55 | 2.25 | 1.07 | 23.27 | 13.92 | 7.73 |
| 29500.0 | 36.48 | 52.21 | 8.77 | 15.23 | 2.59 | 1.09 | 23.17 | 13.68 | 7.67 |
| 30000.0 | 35.71 | 52.99 | 8.98 | 14.81 | 3.14 | 1.08 | 23.45 | 13.75 | 7.84 |
| 30500.0 | 35.07 | 54.03 | 9.05 | 14.25 | 3.84 | 1.06 | 23.73 | 13.85 | 7.82 |
| 31000.0 | 34.58 | 54.86 | 9.50 | 13.79 | 4.51 | 1.04 | 23.66 | 13.89 | 7.83 |
| 31500.0 | 34.13 | 55.66 | 10.44 | 13.11 | 5.24 | 1.02 | 23.63 | 13.91 | 7.91 |
| 32000.0 | 33.74 | 57.06 | 11.36 | 13.15 | 6.47 | 1.02 | 23.52 | 13.94 | 7.84 |
| 32500.0 | 33.35 | 58.92 | 11.29 | 13.20 | 8.34 | 1.03 | 23.45 | 13.85 | 7.73 |
| 33000.0 | 32.88 | 59.87 | 11.14 | 11.88 | 9.70 | 1.00 | 23.40 | 14.13 | 7.75 |
| 34000.0 | 32.04 | 59.52 | 10.49 | 10.77 | 9.92 | 0.99 | 24.10 | 14.46 | 7.98 |
| 35000.0 | 31.95 | 59.49 | 13.82 | 12.98 | 10.82 | 0.99 | 24.15 | 14.71 | 7.97 |
| 36000.0 | 32.38 | 60.32 | 16.53 | 17.10 | 12.00 | 1.00 | 22.98 | 14.51 | 7.82 |
| 37000.0 | 32.85 | 61.97 | 13.41 | 14.26 | 13.11 | 1.01 | 22.73 | 14.28 | 8.06 |
| 38000.0 | 33.13 | 67.07 | 13.02 | 13.29 | 22.52 | 1.00 | 23.93 | 14.60 | 8.18 |
| 39000.0 | 33.30 | 70.61 | 13.82 | 14.48 | 33.90 | 1.00 | 25.72 | 14.85 | 8.12 |
| 40000.0 | 33.12 | 66.09 | 11.33 | 11.61 | 19.24 | 1.00 | 25.03 | 14.61 | 7.90 |
| 41000.0 | 32.95 | 61.77 | 9.32 | 9.33 | 10.83 | 0.98 | 25.42 | 14.91 | 7.92 |
| 42000.0 | 33.68 | 56.67 | 9.82 | 10.69 | 5.72 | 1.02 | 24.32 | 15.07 | 7.61 |
| 43000.0 | 34.86 | 54.94 | 9.84 | 11.05 | 4.27 | 1.00 | 23.49 | 14.43 | 7.28 |
| 44000.0 | 34.32 | 60.73 | 7.01 | 9.38 | 7.42 | 1.06 | 24.39 | 14.87 | 7.26 |
| 45000.0 | 34.06 | 61.45 | 7.01 | 9.89 | 8.57 | 1.06 | 24.98 | 14.81 | 7.30 |
| 46000.0 | 35.81 | 52.07 | 9.52 | 8.64 | 2.45 | 0.97 | 24.62 | 14.50 | 7.10 |
| 47000.0 | 39.70 | 44.91 | 15.74 | 6.38 | 1.04 | 0.40 | 19.69 | 14.83 | 6.94 |

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: VDD = 3.50V, IDD = 300mA, VG = -0.45V@ 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) |
| 18000.0 | 30.79 | 55.22 | 14.91 | 5.68 | 5.86 | 0.76 | 23.59 | 14.37 | 7.65 |
| 18500.0 | 32.82 | 54.54 | 15.43 | 6.90 | 4.79 | 0.81 | 23.99 | 14.41 | 7.59 |
| 19000.0 | 34.41 | 54.30 | 16.30 | 9.12 | 4.33 | 0.88 | 24.69 | 14.65 | 7.54 |
| 19500.0 | 35.32 | 54.04 | 16.56 | 12.35 | 4.04 | 0.95 | 25.18 | 15.04 | 7.49 |
| 20000.0 | 35.81 | 53.49 | 16.75 | 15.61 | 3.69 | 0.98 | 25.56 | 15.47 | 7.49 |
| 20500.0 | 35.99 | 53.19 | 18.34 | 16.78 | 3.55 | 0.98 | 25.77 | 15.74 | 7.44 |
| 21000.0 | 36.12 | 53.01 | 18.87 | 16.87 | 3.46 | 0.97 | 25.70 | 15.70 | 7.52 |
| 21500.0 | 36.23 | 52.82 | 17.54 | 17.90 | 3.35 | 0.97 | 25.10 | 15.59 | 7.57 |
| 22000.0 | 36.34 | 52.67 | 15.59 | 18.26 | 3.24 | 0.98 | 24.89 | 15.50 | 7.66 |
| 22500.0 | 36.48 | 52.60 | 13.58 | 17.82 | 3.11 | 0.99 | 24.85 | 15.65 | 7.60 |
| 23000.0 | 36.57 | 51.97 | 11.31 | 16.31 | 2.78 | 1.01 | 25.13 | 15.82 | 7.62 |
| 23500.0 | 36.69 | 51.78 | 10.55 | 15.26 | 2.61 | 1.02 | 25.39 | 15.95 | 7.73 |
| 24000.0 | 36.91 | 51.49 | 10.42 | 15.15 | 2.42 | 1.04 | 25.40 | 15.90 | 7.74 |
| 24500.0 | 37.19 | 51.23 | 11.20 | 16.49 | 2.33 | 1.03 | 25.13 | 15.89 | 7.76 |
| 25000.0 | 37.53 | 50.90 | 12.46 | 16.94 | 2.25 | 0.99 | 25.06 | 15.79 | 7.78 |
| 25500.0 | 37.83 | 50.81 | 13.00 | 15.89 | 2.21 | 0.96 | 25.15 | 15.89 | 7.79 |
| 26000.0 | 37.85 | 50.70 | 10.62 | 13.99 | 2.06 | 0.98 | 25.41 | 15.92 | 7.75 |
| 26500.0 | 37.51 | 50.72 | 8.37 | 12.11 | 1.87 | 1.06 | 25.56 | 15.93 | 7.85 |
| 27000.0 | 37.08 | 50.88 | 7.30 | 11.68 | 1.85 | 1.11 | 25.65 | 15.68 | 7.94 |
| 27500.0 | 36.63 | 51.12 | 6.83 | 12.53 | 2.04 | 1.12 | 25.64 | 15.55 | 8.01 |
| 28000.0 | 36.28 | 51.27 | 7.42 | 13.51 | 2.34 | 1.08 | 25.60 | 15.59 | 8.06 |
| 28500.0 | 35.88 | 51.40 | 8.46 | 15.41 | 2.63 | 1.06 | 25.48 | 15.52 | 8.10 |
| 29000.0 | 35.27 | 51.86 | 9.11 | 17.17 | 2.98 | 1.08 | 25.40 | 15.48 | 7.93 |
| 29500.0 | 34.53 | 52.58 | 9.33 | 17.60 | 3.48 | 1.09 | 25.22 | 15.50 | 7.87 |
| 30000.0 | 33.83 | 53.24 | 9.39 | 16.35 | 4.06 | 1.08 | 25.47 | 15.55 | 7.98 |
| 30500.0 | 33.21 | 54.16 | 9.35 | 15.06 | 4.84 | 1.07 | 25.61 | 15.64 | 7.89 |
| 31000.0 | 32.78 | 54.75 | 9.75 | 14.05 | 5.49 | 1.05 | 25.62 | 15.65 | 7.90 |
| 31500.0 | 32.39 | 56.14 | 10.75 | 13.06 | 6.79 | 1.02 | 25.56 | 15.65 | 7.93 |
| 32000.0 | 32.06 | 57.06 | 11.76 | 13.13 | 7.90 | 1.01 | 25.49 | 15.67 | 7.85 |
| 32500.0 | 31.76 | 59.44 | 11.57 | 13.18 | 10.68 | 1.02 | 25.39 | 15.55 | 7.79 |
| 33000.0 | 31.37 | 59.88 | 11.37 | 11.88 | 11.58 | 1.00 | 25.27 | 15.78 | 7.77 |
| 34000.0 | 30.63 | 59.96 | 10.57 | 10.62 | 12.25 | 0.99 | 25.62 | 15.98 | 7.94 |
| 35000.0 | 30.65 | 60.05 | 13.90 | 12.50 | 13.34 | 0.98 | 25.87 | 16.17 | 7.96 |
| 36000.0 | 31.16 | 60.24 | 16.66 | 16.15 | 13.62 | 0.99 | 24.71 | 15.95 | 7.66 |
| 37000.0 | 31.53 | 62.12 | 12.79 | 13.22 | 15.25 | 1.00 | 25.18 | 15.66 | 7.64 |
| 38000.0 | 31.66 | 66.38 | 12.29 | 11.84 | 23.91 | 0.99 | 25.97 | 15.77 | 7.54 |
| 39000.0 | 31.76 | 73.14 | 13.21 | 12.84 | 52.92 | 0.99 | 27.94 | 15.87 | 7.40 |
| 40000.0 | 31.44 | 70.24 | 10.68 | 10.37 | 36.21 | 0.98 | 27.35 | 15.69 | 7.20 |
| 41000.0 | 31.17 | 62.31 | 8.93 | 8.57 | 13.65 | 0.97 | 27.74 | 15.98 | 7.37 |
| 42000.0 | 31.93 | 57.69 | 9.85 | 10.18 | 7.80 | 1.00 | 27.04 | 16.22 | 7.07 |
| 43000.0 | 32.94 | 56.76 | 10.12 | 10.77 | 6.51 | 0.99 | 27.38 | 15.78 | 6.64 |
| 44000.0 | 32.42 | 61.55 | 7.50 | 9.66 | 10.45 | 1.05 | 28.45 | 16.39 | 6.60 |
| 45000.0 | 32.52 | 59.36 | 7.56 | 10.31 | 8.35 | 1.05 | 28.98 | 16.24 | 6.80 |
| 46000.0 | 34.57 | 50.97 | 10.70 | 9.08 | 2.63 | 0.96 | 28.95 | 15.93 | 7.06 |
| 47000.0 | 38.22 | 44.96 | 20.02 | 7.75 | 1.16 | 0.59 | 25.81 | 15.80 | 7.73 |

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: VDD = 4.00V, IDD =300mA, VG = -0.45V@ 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) |
| 18000.0 | 27.93 | 54.96 | 14.60 | 5.83 | 7.96 | 0.77 | 25.56 | 16.12 | 7.67 |
| 18500.0 | 29.77 | 54.41 | 15.01 | 7.07 | 6.69 | 0.82 | 26.03 | 16.44 | 7.55 |
| 19000.0 | 31.24 | 54.19 | 15.78 | 9.14 | 6.10 | 0.89 | 26.57 | 16.87 | 7.53 |
| 19500.0 | 32.16 | 53.92 | 16.14 | 11.99 | 5.66 | 0.95 | 27.00 | 17.33 | 7.51 |
| 20000.0 | 32.79 | 53.34 | 16.21 | 14.85 | 5.05 | 0.99 | 27.31 | 17.80 | 7.48 |
| 20500.0 | 33.17 | 53.10 | 17.65 | 15.68 | 4.78 | 0.98 | 27.53 | 18.03 | 7.53 |
| 21000.0 | 33.41 | 52.94 | 17.87 | 15.46 | 4.58 | 0.98 | 27.74 | 17.94 | 7.50 |
| 21500.0 | 33.63 | 52.75 | 16.39 | 15.96 | 4.38 | 0.98 | 27.93 | 17.74 | 7.57 |
| 22000.0 | 33.83 | 52.65 | 14.48 | 16.21 | 4.20 | 0.99 | 28.02 | 17.56 | 7.68 |
| 22500.0 | 33.98 | 52.64 | 12.65 | 16.48 | 4.05 | 1.01 | 28.17 | 17.74 | 7.68 |
| 23000.0 | 34.11 | 52.08 | 10.69 | 16.22 | 3.63 | 1.04 | 28.47 | 17.95 | 7.69 |
| 23500.0 | 34.27 | 51.85 | 10.15 | 16.12 | 3.41 | 1.05 | 28.58 | 18.21 | 7.74 |
| 24000.0 | 34.41 | 51.58 | 10.21 | 16.70 | 3.24 | 1.06 | 28.52 | 18.26 | 7.73 |
| 24500.0 | 34.60 | 51.35 | 11.16 | 18.96 | 3.18 | 1.05 | 28.43 | 18.26 | 7.71 |
| 25000.0 | 34.75 | 51.14 | 12.55 | 20.13 | 3.15 | 1.02 | 28.22 | 18.07 | 7.79 |
| 25500.0 | 34.75 | 51.12 | 13.01 | 18.82 | 3.19 | 1.01 | 28.02 | 18.15 | 7.74 |
| 26000.0 | 34.49 | 51.06 | 10.67 | 16.82 | 3.10 | 1.04 | 28.05 | 18.24 | 7.78 |
| 26500.0 | 33.94 | 51.18 | 8.61 | 14.94 | 3.06 | 1.10 | 28.00 | 18.32 | 7.90 |
| 27000.0 | 33.33 | 51.28 | 7.76 | 14.62 | 3.16 | 1.13 | 28.00 | 18.21 | 7.97 |
| 27500.0 | 32.82 | 51.54 | 7.43 | 15.58 | 3.45 | 1.14 | 28.06 | 18.10 | 8.02 |
| 28000.0 | 32.41 | 51.73 | 8.19 | 16.30 | 3.89 | 1.11 | 28.17 | 18.06 | 8.07 |
| 28500.0 | 31.99 | 51.82 | 9.36 | 18.10 | 4.36 | 1.08 | 28.15 | 17.92 | 8.08 |
| 29000.0 | 31.47 | 52.19 | 10.01 | 20.10 | 4.91 | 1.08 | 28.00 | 17.85 | 7.94 |
| 29500.0 | 30.86 | 52.80 | 10.04 | 20.05 | 5.59 | 1.09 | 27.87 | 17.85 | 7.86 |
| 30000.0 | 30.26 | 53.45 | 9.91 | 17.52 | 6.37 | 1.08 | 27.80 | 17.91 | 7.90 |
| 30500.0 | 29.77 | 54.27 | 9.69 | 15.43 | 7.30 | 1.07 | 27.96 | 17.93 | 7.91 |
| 31000.0 | 29.41 | 55.02 | 10.03 | 13.92 | 8.32 | 1.05 | 27.91 | 17.88 | 7.90 |
| 31500.0 | 29.12 | 56.27 | 10.99 | 12.70 | 10.00 | 1.01 | 27.93 | 17.75 | 7.98 |
| 32000.0 | 28.95 | 57.15 | 11.94 | 12.85 | 11.42 | 1.01 | 27.92 | 17.65 | 7.85 |
| 32500.0 | 28.75 | 59.30 | 11.79 | 12.90 | 14.87 | 1.01 | 27.77 | 17.49 | 7.77 |
| 33000.0 | 28.47 | 60.37 | 11.55 | 11.72 | 17.08 | 1.00 | 27.47 | 17.61 | 7.74 |
| 34000.0 | 27.92 | 60.71 | 10.62 | 10.26 | 18.11 | 0.98 | 28.04 | 17.82 | 7.98 |
| 35000.0 | 28.09 | 59.24 | 13.59 | 11.54 | 16.01 | 0.97 | 28.39 | 18.05 | 7.88 |
| 36000.0 | 28.63 | 59.02 | 15.87 | 14.23 | 15.55 | 0.98 | 28.20 | 17.62 | 7.64 |
| 37000.0 | 28.77 | 60.53 | 11.83 | 11.59 | 16.83 | 0.99 | 29.06 | 17.33 | 7.58 |
| 38000.0 | 28.68 | 64.52 | 11.41 | 10.20 | 25.94 | 0.97 | 29.67 | 17.53 | 7.53 |
| 39000.0 | 28.62 | 66.74 | 12.39 | 11.18 | 35.12 | 0.98 | 31.45 | 17.50 | 7.33 |
| 40000.0 | 28.09 | 76.53 | 10.05 | 9.15 | 104.45 | 0.97 | 30.83 | 17.44 | 7.12 |
| 41000.0 | 27.81 | 62.68 | 8.73 | 7.87 | 20.18 | 0.94 | 30.78 | 17.80 | 7.37 |
| 42000.0 | 28.61 | 59.44 | 10.16 | 9.70 | 13.97 | 0.98 | 29.67 | 18.16 | 7.03 |
| 43000.0 | 29.30 | 58.67 | 10.91 | 10.45 | 12.36 | 0.98 | 29.97 | 17.70 | 6.64 |
| 44000.0 | 29.06 | 62.89 | 8.41 | 10.02 | 18.87 | 1.03 | 30.84 | 18.17 | 6.58 |
| 45000.0 | 29.77 | 56.85 | 8.71 | 10.97 | 9.10 | 1.03 | 30.78 | 17.82 | 6.87 |
| 46000.0 | 32.18 | 50.28 | 13.04 | 10.04 | 3.46 | 0.94 | 30.01 | 17.35 | 7.26 |
| 47000.0 | 34.99 | 45.71 | 22.22 | 11.33 | 1.72 | 0.85 | 28.98 | 17.35 | 8.09 |

MMIC Amplifier

AVA-20453MP-D+

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: VDD = 4.50V, IDD = 300mA, VG = -0.45V@ 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) |
| 18000.0 | 24.61 | 54.93 | 14.07 | 5.83 | 11.56 | 0.77 | 25.76 | 18.25 | 7.79 |
| 18500.0 | 26.31 | 54.32 | 14.36 | 7.02 | 9.73 | 0.83 | 26.21 | 18.55 | 7.78 |
| 19000.0 | 27.72 | 54.02 | 15.11 | 8.87 | 8.79 | 0.89 | 26.67 | 18.89 | 7.65 |
| 19500.0 | 28.75 | 53.73 | 15.49 | 11.35 | 8.04 | 0.95 | 27.07 | 19.32 | 7.60 |
| 20000.0 | 29.50 | 53.24 | 15.49 | 13.82 | 7.19 | 0.98 | 27.36 | 19.75 | 7.55 |
| 20500.0 | 29.99 | 52.98 | 16.65 | 14.46 | 6.66 | 0.98 | 27.67 | 19.96 | 7.58 |
| 21000.0 | 30.37 | 52.90 | 16.71 | 14.16 | 6.32 | 0.98 | 27.95 | 19.90 | 7.63 |
| 21500.0 | 30.64 | 52.72 | 15.18 | 14.38 | 5.99 | 0.98 | 28.13 | 19.70 | 7.66 |
| 22000.0 | 30.87 | 52.71 | 13.43 | 14.58 | 5.77 | 1.00 | 28.53 | 19.52 | 7.79 |
| 22500.0 | 31.04 | 52.64 | 11.84 | 15.26 | 5.53 | 1.02 | 28.63 | 19.75 | 7.77 |
| 23000.0 | 31.15 | 52.16 | 10.20 | 15.97 | 5.02 | 1.05 | 28.72 | 20.04 | 7.78 |
| 23500.0 | 31.24 | 51.94 | 9.92 | 17.03 | 4.81 | 1.07 | 28.67 | 20.39 | 7.77 |
| 24000.0 | 31.30 | 51.80 | 10.23 | 18.71 | 4.76 | 1.08 | 28.66 | 20.56 | 7.82 |
| 24500.0 | 31.31 | 51.59 | 11.39 | 22.66 | 4.79 | 1.06 | 28.57 | 20.62 | 7.82 |
| 25000.0 | 31.27 | 51.42 | 12.97 | 25.22 | 4.87 | 1.04 | 28.52 | 20.42 | 7.93 |
| 25500.0 | 31.03 | 51.42 | 13.30 | 22.80 | 5.02 | 1.03 | 28.28 | 20.50 | 7.89 |
| 26000.0 | 30.53 | 51.53 | 10.95 | 20.65 | 5.16 | 1.06 | 28.09 | 20.61 | 7.89 |
| 26500.0 | 29.88 | 51.54 | 8.96 | 18.56 | 5.22 | 1.11 | 27.90 | 20.75 | 8.00 |
| 27000.0 | 29.27 | 51.61 | 8.21 | 17.95 | 5.45 | 1.13 | 27.73 | 20.70 | 8.08 |
| 27500.0 | 28.68 | 51.96 | 7.98 | 18.44 | 6.03 | 1.14 | 27.89 | 20.50 | 8.15 |
| 28000.0 | 28.30 | 51.95 | 8.84 | 17.94 | 6.52 | 1.11 | 27.91 | 20.37 | 8.19 |
| 28500.0 | 27.93 | 52.07 | 10.09 | 18.75 | 7.21 | 1.08 | 28.09 | 20.10 | 8.14 |
| 29000.0 | 27.46 | 52.50 | 10.69 | 20.44 | 8.15 | 1.07 | 27.95 | 19.92 | 8.05 |
| 29500.0 | 26.96 | 52.97 | 10.57 | 20.36 | 9.06 | 1.08 | 27.87 | 19.88 | 8.07 |
| 30000.0 | 26.49 | 53.69 | 10.23 | 17.65 | 10.16 | 1.08 | 27.83 | 19.91 | 7.99 |
| 30500.0 | 26.05 | 54.53 | 9.85 | 15.32 | 11.54 | 1.07 | 27.93 | 19.91 | 8.04 |
| 31000.0 | 25.77 | 54.90 | 10.07 | 13.58 | 12.37 | 1.05 | 27.88 | 19.77 | 8.02 |
| 31500.0 | 25.58 | 56.50 | 10.99 | 12.25 | 15.31 | 1.01 | 27.91 | 19.60 | 8.11 |
| 32000.0 | 25.50 | 57.21 | 11.94 | 12.42 | 17.03 | 1.00 | 27.95 | 19.46 | 7.95 |
| 32500.0 | 25.41 | 59.49 | 11.74 | 12.44 | 22.21 | 1.01 | 27.93 | 19.28 | 7.88 |
| 33000.0 | 25.19 | 60.69 | 11.49 | 11.40 | 25.64 | 0.99 | 27.85 | 19.38 | 7.87 |
| 34000.0 | 24.77 | 59.75 | 10.43 | 9.78 | 22.93 | 0.97 | 28.01 | 19.65 | 8.10 |
| 35000.0 | 24.96 | 58.51 | 13.01 | 10.52 | 20.56 | 0.96 | 28.21 | 19.86 | 8.02 |
| 36000.0 | 25.47 | 57.93 | 14.67 | 12.48 | 19.16 | 0.97 | 28.13 | 19.34 | 7.71 |
| 37000.0 | 25.33 | 59.95 | 10.93 | 10.28 | 22.46 | 0.98 | 28.93 | 19.38 | 7.68 |
| 38000.0 | 24.96 | 63.00 | 10.81 | 9.12 | 32.01 | 0.95 | 29.58 | 19.86 | 7.58 |
| 39000.0 | 24.81 | 65.52 | 12.01 | 10.15 | 46.00 | 0.96 | 31.14 | 19.83 | 7.42 |
| 40000.0 | 24.17 | 82.19 | 9.76 | 8.45 | 304.92 | 0.95 | 30.59 | 19.64 | 7.25 |
| 41000.0 | 23.90 | 64.43 | 8.87 | 7.47 | 38.12 | 0.92 | 30.61 | 19.90 | 7.45 |
| 42000.0 | 24.68 | 60.35 | 10.84 | 9.40 | 24.60 | 0.96 | 29.55 | 20.10 | 7.13 |
| 43000.0 | 25.35 | 59.32 | 11.82 | 10.25 | 21.19 | 0.96 | 29.51 | 19.48 | 6.74 |
| 44000.0 | 25.36 | 62.01 | 9.37 | 10.22 | 27.14 | 1.01 | 30.32 | 19.67 | 6.77 |
| 45000.0 | 26.53 | 56.26 | 9.90 | 11.48 | 12.86 | 1.02 | 30.17 | 19.18 | 7.07 |
| 46000.0 | 29.18 | 50.08 | 14.69 | 11.18 | 4.99 | 0.95 | 29.43 | 18.59 | 7.53 |
| 47000.0 | 30.79 | 46.94 | 16.68 | 16.20 | 3.12 | 0.98 | 28.15 | 18.74 | 8.38 |

MMIC Amplifier

AVA-20453MP-D+

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: VDD = 5.00V, IDD = 300mA, VG = -0.45V @ 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) |
| 18000.0 | 22.09 | 54.86 | 13.60 | 5.69 | 15.09 | 0.77 | 26.47 | 19.53 | 8.06 |
| 18500.0 | 23.77 | 54.29 | 13.85 | 6.80 | 12.75 | 0.82 | 26.91 | 19.87 | 8.05 |
| 19000.0 | 25.16 | 53.98 | 14.55 | 8.49 | 11.51 | 0.88 | 27.40 | 20.23 | 7.88 |
| 19500.0 | 26.25 | 53.69 | 14.95 | 10.74 | 10.49 | 0.94 | 27.76 | 20.67 | 7.81 |
| 20000.0 | 27.08 | 53.15 | 14.91 | 12.92 | 9.25 | 0.98 | 28.04 | 21.09 | 7.83 |
| 20500.0 | 27.64 | 52.91 | 15.94 | 13.44 | 8.52 | 0.98 | 28.32 | 21.30 | 7.77 |
| 21000.0 | 28.06 | 52.90 | 15.88 | 13.11 | 8.10 | 0.97 | 28.72 | 21.30 | 7.78 |
| 21500.0 | 28.37 | 52.75 | 14.41 | 13.27 | 7.65 | 0.98 | 29.09 | 21.15 | 7.83 |
| 22000.0 | 28.59 | 52.79 | 12.77 | 13.52 | 7.41 | 1.00 | 29.40 | 20.99 | 7.91 |
| 22500.0 | 28.77 | 52.76 | 11.35 | 14.43 | 7.14 | 1.02 | 29.75 | 21.23 | 7.95 |
| 23000.0 | 28.85 | 52.30 | 9.94 | 15.79 | 6.56 | 1.06 | 29.77 | 21.48 | 7.96 |
| 23500.0 | 28.89 | 52.09 | 9.84 | 17.84 | 6.40 | 1.08 | 29.51 | 21.82 | 8.03 |
| 24000.0 | 28.85 | 51.91 | 10.34 | 20.74 | 6.41 | 1.08 | 29.17 | 22.12 | 8.07 |
| 24500.0 | 28.74 | 51.72 | 11.66 | 26.98 | 6.58 | 1.06 | 28.89 | 22.26 | 8.09 |
| 25000.0 | 28.52 | 51.58 | 13.38 | 30.64 | 6.82 | 1.04 | 28.69 | 22.05 | 8.10 |
| 25500.0 | 28.16 | 51.74 | 13.52 | 25.88 | 7.24 | 1.04 | 28.40 | 22.11 | 8.15 |
| 26000.0 | 27.57 | 51.75 | 11.14 | 24.33 | 7.47 | 1.07 | 28.12 | 22.15 | 8.12 |
| 26500.0 | 26.87 | 51.82 | 9.16 | 22.38 | 7.73 | 1.11 | 27.85 | 22.25 | 8.22 |
| 27000.0 | 26.25 | 51.83 | 8.48 | 20.99 | 8.08 | 1.13 | 27.58 | 22.25 | 8.33 |
| 27500.0 | 25.69 | 52.11 | 8.25 | 20.07 | 8.81 | 1.14 | 27.50 | 21.96 | 8.39 |
| 28000.0 | 25.31 | 52.14 | 9.21 | 18.13 | 9.50 | 1.10 | 27.43 | 21.73 | 8.49 |
| 28500.0 | 24.95 | 52.27 | 10.45 | 18.07 | 10.42 | 1.07 | 27.31 | 21.41 | 8.39 |
| 29000.0 | 24.55 | 52.75 | 10.98 | 19.38 | 11.74 | 1.06 | 27.31 | 21.18 | 8.32 |
| 29500.0 | 24.11 | 53.00 | 10.80 | 19.48 | 12.64 | 1.07 | 27.24 | 21.18 | 8.23 |
| 30000.0 | 23.69 | 53.59 | 10.32 | 17.20 | 13.88 | 1.07 | 27.14 | 21.23 | 8.30 |
| 30500.0 | 23.31 | 54.43 | 9.89 | 14.98 | 15.60 | 1.07 | 27.13 | 21.20 | 8.23 |
| 31000.0 | 23.07 | 55.28 | 10.05 | 13.18 | 17.52 | 1.04 | 27.19 | 21.03 | 8.13 |
| 31500.0 | 22.93 | 56.72 | 10.95 | 11.82 | 21.09 | 1.01 | 27.21 | 20.84 | 8.30 |
| 32000.0 | 22.91 | 57.25 | 11.84 | 12.01 | 22.86 | 1.00 | 27.22 | 20.71 | 8.19 |
| 32500.0 | 22.88 | 59.84 | 11.68 | 12.01 | 30.73 | 1.00 | 27.20 | 20.54 | 8.12 |
| 33000.0 | 22.74 | 61.23 | 11.40 | 11.06 | 35.90 | 0.99 | 27.12 | 20.64 | 8.08 |
| 34000.0 | 22.33 | 59.96 | 10.19 | 9.33 | 30.50 | 0.97 | 27.19 | 20.95 | 8.16 |
| 35000.0 | 22.53 | 58.23 | 12.59 | 9.78 | 25.71 | 0.95 | 27.06 | 21.05 | 8.13 |
| 36000.0 | 22.95 | 57.80 | 13.90 | 11.45 | 24.64 | 0.97 | 26.94 | 20.57 | 7.86 |
| 37000.0 | 22.56 | 59.29 | 10.36 | 9.52 | 27.71 | 0.97 | 27.79 | 20.85 | 7.93 |
| 38000.0 | 22.09 | 62.13 | 10.62 | 8.54 | 39.34 | 0.94 | 28.11 | 21.26 | 7.84 |
| 39000.0 | 21.86 | 65.71 | 11.92 | 9.62 | 64.97 | 0.95 | 29.73 | 21.09 | 7.70 |
| 40000.0 | 21.13 | 81.79 | 9.65 | 8.04 | 405.39 | 0.93 | 29.21 | 20.90 | 7.51 |
| 41000.0 | 20.87 | 65.23 | 9.15 | 7.18 | 58.83 | 0.91 | 29.51 | 21.13 | 7.68 |
| 42000.0 | 21.71 | 60.06 | 11.47 | 9.15 | 33.69 | 0.94 | 28.56 | 21.11 | 7.34 |
| 43000.0 | 22.32 | 61.28 | 12.52 | 10.00 | 37.72 | 0.95 | 28.34 | 20.48 | 7.07 |
| 44000.0 | 22.55 | 63.04 | 10.12 | 10.13 | 43.07 | 0.99 | 28.87 | 20.55 | 7.03 |
| 45000.0 | 24.03 | 55.63 | 10.68 | 11.54 | 16.22 | 1.01 | 28.67 | 20.01 | 7.33 |
| 46000.0 | 26.75 | 50.34 | 15.09 | 11.72 | 6.88 | 0.95 | 28.15 | 19.35 | 7.71 |
| 47000.0 | 27.66 | 47.69 | 15.67 | 18.31 | 4.84 | 1.01 | 27.15 | 19.54 | 9.16 |

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: VDD = 3.00V, IDD = 300mA, VG = -0.45V @ 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) |
| 18000.0 | 21.74 | 55.07 | 15.36 | 7.55 | 18.51 | 0.85 | 21.96 | 14.42 | 9.17 |
| 18500.0 | 23.30 | 54.53 | 16.16 | 9.07 | 15.57 | 0.90 | 22.34 | 14.67 | 9.10 |
| 19000.0 | 24.55 | 54.15 | 16.80 | 10.94 | 13.64 | 0.94 | 23.03 | 14.93 | 8.99 |
| 19500.0 | 25.47 | 53.94 | 17.07 | 12.86 | 12.36 | 0.96 | 23.72 | 15.31 | 8.97 |
| 20000.0 | 26.15 | 53.74 | 16.83 | 14.58 | 11.34 | 0.98 | 24.19 | 15.64 | 8.99 |
| 20500.0 | 26.57 | 53.99 | 16.11 | 15.68 | 11.14 | 1.00 | 24.38 | 15.71 | 9.05 |
| 21000.0 | 26.94 | 54.31 | 15.09 | 16.32 | 11.05 | 1.01 | 23.72 | 15.45 | 8.98 |
| 21500.0 | 27.28 | 54.04 | 14.11 | 16.93 | 10.28 | 1.02 | 22.81 | 15.13 | 9.09 |
| 22000.0 | 27.52 | 53.94 | 12.94 | 17.35 | 9.81 | 1.03 | 22.71 | 14.96 | 9.21 |
| 22500.0 | 27.70 | 53.57 | 12.06 | 17.70 | 9.13 | 1.04 | 22.85 | 15.24 | 9.08 |
| 23000.0 | 27.80 | 52.90 | 11.45 | 17.93 | 8.27 | 1.05 | 23.34 | 15.59 | 9.07 |
| 23500.0 | 27.80 | 52.66 | 11.48 | 18.18 | 8.03 | 1.05 | 23.93 | 15.91 | 9.15 |
| 24000.0 | 27.75 | 52.50 | 11.97 | 18.85 | 8.00 | 1.05 | 24.16 | 15.93 | 9.22 |
| 24500.0 | 27.63 | 52.27 | 12.69 | 19.78 | 7.99 | 1.04 | 24.12 | 15.95 | 9.30 |
| 25000.0 | 27.41 | 52.02 | 13.22 | 20.84 | 8.04 | 1.04 | 24.08 | 15.76 | 9.29 |
| 25500.0 | 27.11 | 51.97 | 12.93 | 21.21 | 8.28 | 1.04 | 24.16 | 15.94 | 9.34 |
| 26000.0 | 26.71 | 51.93 | 11.86 | 20.39 | 8.49 | 1.05 | 24.51 | 16.15 | 9.32 |
| 26500.0 | 26.20 | 51.82 | 10.76 | 18.95 | 8.65 | 1.07 | 24.99 | 16.35 | 9.44 |
| 27000.0 | 25.71 | 51.91 | 9.94 | 17.68 | 9.01 | 1.08 | 25.27 | 16.30 | 9.50 |
| 27500.0 | 25.23 | 51.64 | 9.50 | 16.68 | 9.06 | 1.09 | 24.97 | 16.06 | 9.55 |
| 28000.0 | 24.82 | 51.85 | 9.52 | 16.16 | 9.76 | 1.08 | 24.51 | 15.93 | 9.57 |
| 28500.0 | 24.44 | 52.33 | 9.81 | 16.09 | 10.89 | 1.07 | 24.31 | 15.84 | 9.59 |
| 29000.0 | 24.07 | 52.77 | 10.54 | 16.24 | 12.19 | 1.06 | 24.10 | 15.96 | 9.56 |
| 29500.0 | 23.71 | 53.50 | 11.36 | 16.42 | 14.01 | 1.05 | 24.23 | 16.09 | 9.60 |
| 30000.0 | 23.40 | 54.25 | 12.04 | 16.42 | 15.96 | 1.04 | 24.99 | 16.15 | 9.46 |
| 30500.0 | 23.08 | 55.16 | 12.35 | 15.63 | 18.38 | 1.03 | 25.84 | 16.09 | 9.49 |
| 31000.0 | 22.81 | 56.66 | 12.29 | 14.35 | 22.33 | 1.02 | 26.78 | 15.91 | 9.39 |
| 31500.0 | 22.58 | 57.64 | 11.91 | 12.93 | 25.21 | 1.01 | 26.95 | 15.74 | 9.34 |
| 32000.0 | 22.39 | 59.31 | 11.74 | 11.71 | 30.56 | 0.99 | 26.46 | 15.66 | 9.35 |
| 32500.0 | 22.27 | 61.35 | 11.69 | 10.80 | 38.38 | 0.98 | 26.50 | 15.57 | 9.34 |
| 33000.0 | 22.21 | 62.08 | 11.73 | 10.32 | 41.64 | 0.97 | 26.29 | 15.77 | 9.36 |
| 34000.0 | 22.20 | 61.05 | 12.68 | 10.48 | 37.77 | 0.96 | 28.92 | 16.31 | 9.31 |
| 35000.0 | 22.39 | 58.29 | 14.13 | 11.61 | 27.86 | 0.97 | 28.87 | 16.58 | 9.29 |
| 36000.0 | 22.59 | 57.95 | 14.56 | 12.04 | 26.52 | 0.97 | 27.63 | 16.07 | 9.16 |
| 37000.0 | 22.40 | 59.07 | 12.61 | 10.80 | 29.56 | 0.97 | 29.94 | 16.02 | 9.12 |
| 38000.0 | 21.94 | 62.49 | 11.14 | 9.62 | 43.75 | 0.96 | 32.32 | 17.96 | 9.04 |
| 39000.0 | 21.52 | 69.44 | 10.86 | 9.24 | 100.77 | 0.95 | 35.12 | 17.57 | 8.95 |
| 40000.0 | 21.31 | 76.58 | 11.15 | 9.39 | 236.84 | 0.95 | 35.66 | 17.06 | 8.61 |
| 41000.0 | 21.50 | 63.67 | 11.63 | 9.73 | 53.51 | 0.95 | 35.61 | 16.75 | 8.60 |
| 42000.0 | 21.93 | 59.72 | 11.58 | 10.60 | 32.84 | 0.98 | 32.89 | 16.07 | 8.63 |
| 43000.0 | 22.25 | 60.52 | 10.55 | 11.52 | 34.79 | 1.01 | 29.78 | 14.82 | 8.58 |

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: VDD = 3.50V, IDD = 300mA, VG = -0.45V @ 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) |
| 18000.0 | 19.64 | 55.03 | 14.84 | 7.24 | 23.00 | 0.84 | 26.01 | 16.31 | 9.12 |
| 18500.0 | 21.22 | 54.45 | 15.64 | 8.63 | 19.23 | 0.89 | 26.90 | 16.57 | 9.27 |
| 19000.0 | 22.53 | 54.13 | 16.28 | 10.27 | 16.86 | 0.92 | 28.12 | 16.82 | 9.16 |
| 19500.0 | 23.53 | 53.88 | 16.55 | 11.91 | 15.11 | 0.95 | 28.98 | 17.18 | 9.09 |
| 20000.0 | 24.28 | 53.72 | 16.32 | 13.38 | 13.83 | 0.98 | 29.57 | 17.49 | 9.09 |
| 20500.0 | 24.80 | 53.93 | 15.61 | 14.39 | 13.39 | 0.99 | 29.80 | 17.62 | 9.17 |
| 21000.0 | 25.25 | 54.22 | 14.65 | 15.07 | 13.13 | 1.00 | 28.96 | 17.44 | 9.12 |
| 21500.0 | 25.63 | 54.06 | 13.68 | 15.79 | 12.32 | 1.01 | 27.02 | 17.14 | 9.19 |
| 22000.0 | 25.88 | 54.04 | 12.63 | 16.50 | 11.87 | 1.03 | 26.67 | 16.92 | 9.31 |
| 22500.0 | 26.07 | 53.69 | 11.88 | 17.33 | 11.09 | 1.04 | 26.75 | 17.22 | 9.20 |
| 23000.0 | 26.15 | 53.04 | 11.40 | 18.27 | 10.15 | 1.05 | 27.71 | 17.60 | 9.23 |
| 23500.0 | 26.10 | 52.81 | 11.51 | 19.46 | 9.98 | 1.06 | 28.56 | 18.00 | 9.19 |
| 24000.0 | 25.97 | 52.62 | 12.11 | 21.21 | 10.02 | 1.05 | 28.70 | 18.08 | 9.36 |
| 24500.0 | 25.75 | 52.47 | 12.88 | 23.34 | 10.24 | 1.05 | 28.57 | 18.06 | 9.40 |
| 25000.0 | 25.42 | 52.22 | 13.45 | 25.62 | 10.43 | 1.04 | 28.58 | 17.81 | 9.52 |
| 25500.0 | 25.01 | 52.23 | 13.18 | 26.84 | 10.93 | 1.04 | 28.50 | 17.95 | 9.49 |
| 26000.0 | 24.53 | 52.20 | 12.13 | 25.60 | 11.36 | 1.06 | 29.24 | 18.14 | 9.44 |
| 26500.0 | 23.97 | 52.10 | 11.01 | 22.91 | 11.70 | 1.07 | 29.42 | 18.36 | 9.58 |
| 27000.0 | 23.41 | 52.01 | 10.18 | 20.47 | 12.05 | 1.09 | 29.58 | 18.38 | 9.68 |
| 27500.0 | 22.89 | 52.08 | 9.71 | 18.40 | 12.66 | 1.09 | 29.42 | 18.10 | 9.71 |
| 28000.0 | 22.47 | 52.11 | 9.66 | 17.03 | 13.26 | 1.09 | 28.81 | 17.90 | 9.77 |
| 28500.0 | 22.08 | 52.61 | 10.00 | 16.28 | 14.80 | 1.07 | 28.01 | 17.76 | 9.75 |
| 29000.0 | 21.73 | 52.87 | 10.66 | 16.02 | 16.12 | 1.06 | 29.60 | 17.80 | 9.73 |
| 29500.0 | 21.42 | 53.66 | 11.52 | 16.06 | 18.59 | 1.04 | 29.79 | 17.90 | 9.71 |
| 30000.0 | 21.14 | 54.32 | 12.15 | 16.06 | 20.87 | 1.04 | 29.71 | 17.94 | 9.65 |
| 30500.0 | 20.86 | 55.07 | 12.37 | 15.42 | 23.44 | 1.03 | 29.67 | 17.88 | 9.61 |
| 31000.0 | 20.62 | 56.38 | 12.17 | 14.16 | 27.76 | 1.02 | 29.56 | 17.71 | 9.53 |
| 31500.0 | 20.42 | 57.93 | 11.80 | 12.67 | 33.22 | 1.01 | 29.61 | 17.55 | 9.56 |
| 32000.0 | 20.26 | 59.70 | 11.52 | 11.40 | 40.47 | 0.99 | 29.77 | 17.48 | 9.47 |
| 32500.0 | 20.19 | 61.17 | 11.48 | 10.48 | 47.28 | 0.98 | 29.74 | 17.38 | 9.52 |
| 33000.0 | 20.16 | 63.13 | 11.52 | 9.96 | 58.78 | 0.96 | 29.57 | 17.61 | 9.56 |
| 34000.0 | 20.22 | 60.59 | 12.44 | 9.97 | 44.35 | 0.95 | 29.55 | 18.08 | 9.43 |
| 35000.0 | 20.38 | 57.95 | 13.73 | 10.84 | 33.18 | 0.96 | 29.29 | 18.05 | 9.40 |
| 36000.0 | 20.48 | 57.47 | 13.86 | 11.18 | 31.34 | 0.96 | 29.67 | 17.56 | 9.28 |
| 37000.0 | 20.17 | 59.48 | 12.27 | 10.14 | 39.29 | 0.96 | 30.43 | 17.85 | 9.27 |
| 38000.0 | 19.62 | 62.55 | 11.03 | 9.11 | 56.57 | 0.95 | 30.59 | 18.30 | 9.21 |
| 39000.0 | 19.18 | 69.10 | 10.82 | 8.79 | 124.80 | 0.94 | 31.84 | 18.06 | 9.19 |
| 40000.0 | 18.98 | 73.87 | 11.22 | 8.97 | 223.98 | 0.94 | 31.33 | 17.89 | 8.82 |
| 41000.0 | 19.23 | 64.55 | 12.00 | 9.35 | 76.46 | 0.94 | 31.60 | 18.03 | 8.88 |
| 42000.0 | 19.71 | 59.79 | 11.97 | 10.08 | 42.57 | 0.96 | 30.77 | 17.83 | 8.80 |
| 43000.0 | 20.18 | 60.82 | 10.97 | 10.88 | 45.56 | 0.99 | 31.39 | 16.96 | 8.73 |

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: VDD = 4.00V, IDD = 300mA, VG = -0.45DV@ 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) |
| 18000.0 | 17.72 | 55.04 | 14.53 | 6.99 | 28.29 | 0.83 | 27.62 | 17.55 | 9.48 |
| 18500.0 | 19.31 | 54.57 | 15.27 | 8.28 | 23.92 | 0.88 | 28.07 | 17.90 | 9.40 |
| 19000.0 | 20.65 | 54.10 | 15.92 | 9.77 | 20.55 | 0.92 | 28.31 | 18.23 | 9.26 |
| 19500.0 | 21.69 | 53.91 | 16.21 | 11.23 | 18.46 | 0.94 | 28.44 | 18.63 | 9.28 |
| 20000.0 | 22.50 | 53.74 | 15.94 | 12.52 | 16.80 | 0.97 | 28.60 | 18.96 | 9.28 |
| 20500.0 | 23.11 | 53.91 | 15.28 | 13.43 | 16.05 | 0.98 | 28.84 | 19.11 | 9.29 |
| 21000.0 | 23.59 | 54.19 | 14.30 | 14.11 | 15.67 | 1.00 | 29.47 | 19.00 | 9.24 |
| 21500.0 | 24.00 | 54.07 | 13.37 | 14.86 | 14.73 | 1.01 | 30.49 | 18.76 | 9.31 |
| 22000.0 | 24.28 | 54.08 | 12.40 | 15.71 | 14.22 | 1.03 | 30.86 | 18.56 | 9.45 |
| 22500.0 | 24.44 | 53.78 | 11.73 | 16.84 | 13.44 | 1.04 | 30.85 | 18.88 | 9.33 |
| 23000.0 | 24.48 | 53.13 | 11.36 | 18.34 | 12.40 | 1.05 | 30.26 | 19.28 | 9.44 |
| 23500.0 | 24.41 | 52.96 | 11.58 | 20.49 | 12.36 | 1.06 | 29.59 | 19.78 | 9.32 |
| 24000.0 | 24.19 | 52.77 | 12.26 | 23.77 | 12.59 | 1.05 | 29.37 | 19.91 | 9.54 |
| 24500.0 | 23.89 | 52.66 | 13.08 | 28.42 | 13.04 | 1.05 | 29.34 | 19.89 | 9.50 |
| 25000.0 | 23.49 | 52.40 | 13.67 | 33.91 | 13.36 | 1.04 | 29.25 | 19.63 | 9.65 |
| 25500.0 | 22.99 | 52.41 | 13.41 | 36.16 | 14.14 | 1.04 | 28.98 | 19.72 | 9.58 |
| 26000.0 | 22.44 | 52.40 | 12.33 | 32.81 | 14.82 | 1.06 | 28.35 | 19.87 | 9.62 |
| 26500.0 | 21.87 | 52.23 | 11.19 | 27.18 | 15.21 | 1.07 | 28.07 | 20.06 | 9.72 |
| 27000.0 | 21.28 | 52.24 | 10.34 | 22.64 | 15.94 | 1.09 | 27.64 | 20.03 | 9.72 |
| 27500.0 | 20.76 | 52.24 | 9.88 | 19.30 | 16.61 | 1.09 | 27.68 | 19.72 | 9.85 |
| 28000.0 | 20.32 | 52.38 | 9.84 | 17.20 | 17.59 | 1.08 | 27.48 | 19.52 | 9.90 |
| 28500.0 | 19.93 | 53.03 | 10.16 | 15.97 | 19.91 | 1.07 | 27.60 | 19.31 | 9.98 |
| 29000.0 | 19.60 | 53.12 | 10.81 | 15.43 | 21.16 | 1.05 | 27.44 | 19.29 | 9.97 |
| 29500.0 | 19.31 | 53.82 | 11.64 | 15.33 | 24.10 | 1.04 | 27.46 | 19.34 | 9.89 |
| 30000.0 | 19.05 | 54.40 | 12.21 | 15.35 | 26.69 | 1.03 | 27.49 | 19.34 | 9.84 |
| 30500.0 | 18.81 | 55.33 | 12.38 | 14.87 | 30.47 | 1.02 | 27.53 | 19.27 | 9.78 |
| 31000.0 | 18.60 | 56.65 | 12.16 | 13.77 | 35.97 | 1.02 | 27.69 | 19.11 | 9.74 |
| 31500.0 | 18.40 | 57.82 | 11.71 | 12.35 | 41.12 | 1.00 | 27.78 | 18.92 | 9.81 |
| 32000.0 | 18.28 | 59.60 | 11.42 | 11.10 | 49.88 | 0.99 | 27.82 | 18.84 | 9.60 |
| 32500.0 | 18.21 | 61.53 | 11.35 | 10.16 | 61.26 | 0.97 | 27.85 | 18.69 | 9.59 |
| 33000.0 | 18.19 | 62.83 | 11.46 | 9.62 | 70.49 | 0.96 | 27.83 | 18.89 | 9.70 |
| 34000.0 | 18.27 | 60.49 | 12.25 | 9.51 | 54.00 | 0.94 | 28.07 | 19.26 | 9.65 |
| 35000.0 | 18.40 | 57.90 | 13.42 | 10.24 | 40.79 | 0.95 | 27.78 | 19.26 | 9.57 |
| 36000.0 | 18.38 | 57.33 | 13.56 | 10.56 | 38.67 | 0.95 | 27.90 | 18.86 | 9.53 |
| 37000.0 | 17.96 | 59.23 | 12.12 | 9.66 | 48.49 | 0.95 | 29.14 | 19.07 | 9.41 |
| 38000.0 | 17.36 | 62.02 | 10.98 | 8.74 | 68.03 | 0.94 | 29.47 | 19.45 | 9.42 |
| 39000.0 | 16.87 | 69.03 | 10.93 | 8.46 | 159.89 | 0.93 | 30.97 | 19.28 | 9.34 |
| 40000.0 | 16.71 | 91.66 | 11.48 | 8.68 | 2245.12 | 0.93 | 30.39 | 19.05 | 9.14 |
| 41000.0 | 17.03 | 63.78 | 12.32 | 9.06 | 89.77 | 0.93 | 31.09 | 19.22 | 9.07 |
| 42000.0 | 17.52 | 60.71 | 12.30 | 9.74 | 60.64 | 0.95 | 29.51 | 19.11 | 8.98 |
| 43000.0 | 18.11 | 62.49 | 11.44 | 10.52 | 70.10 | 0.98 | 29.37 | 18.35 | 8.86 |

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: VDD = 4.00V, IDD = 300mA, VG = -0.45DV@ 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) |
| 18000.0 | 16.45 | 55.19 | 14.36 | 6.72 | 32.74 | 0.82 | 26.74 | 18.32 | 9.85 |
| 18500.0 | 18.40 | 54.56 | 15.15 | 7.88 | 26.07 | 0.86 | 26.86 | 18.76 | 9.84 |
| 19000.0 | 19.82 | 54.12 | 15.83 | 9.25 | 22.29 | 0.90 | 27.07 | 19.16 | 9.47 |
| 19500.0 | 20.50 | 53.83 | 16.00 | 10.63 | 20.70 | 0.93 | 27.42 | 19.60 | 9.29 |
| 20000.0 | 21.60 | 53.63 | 15.80 | 11.79 | 18.17 | 0.96 | 27.66 | 19.94 | 9.38 |
| 20500.0 | 22.41 | 53.93 | 15.15 | 12.68 | 17.24 | 0.98 | 27.97 | 20.11 | 9.41 |
| 21000.0 | 22.51 | 54.22 | 14.14 | 13.33 | 17.63 | 0.99 | 28.22 | 20.07 | 9.35 |
| 21500.0 | 22.97 | 54.13 | 13.23 | 14.09 | 16.57 | 1.01 | 28.43 | 19.93 | 9.46 |
| 22000.0 | 23.61 | 54.11 | 12.37 | 15.15 | 15.36 | 1.02 | 28.45 | 19.80 | 9.61 |
| 22500.0 | 23.48 | 53.87 | 11.69 | 16.39 | 15.13 | 1.04 | 28.43 | 20.12 | 9.63 |
| 23000.0 | 23.42 | 53.30 | 11.37 | 18.23 | 14.28 | 1.05 | 28.27 | 20.50 | 9.53 |
| 23500.0 | 23.68 | 53.02 | 11.67 | 21.30 | 13.56 | 1.06 | 27.92 | 21.04 | 9.54 |
| 24000.0 | 23.30 | 52.90 | 12.36 | 26.17 | 14.20 | 1.06 | 27.66 | 21.21 | 9.68 |
| 24500.0 | 22.67 | 52.77 | 13.24 | 36.73 | 15.25 | 1.05 | 27.41 | 21.19 | 9.67 |
| 25000.0 | 22.70 | 52.50 | 13.85 | 38.95 | 14.82 | 1.04 | 27.01 | 20.93 | 9.77 |
| 25500.0 | 22.27 | 52.53 | 13.55 | 33.51 | 15.58 | 1.04 | 26.77 | 20.98 | 9.78 |
| 26000.0 | 21.09 | 52.57 | 12.46 | 32.90 | 17.68 | 1.06 | 26.67 | 21.06 | 9.83 |
| 26500.0 | 21.03 | 52.39 | 11.30 | 29.19 | 17.12 | 1.07 | 26.54 | 21.18 | 9.94 |
| 27000.0 | 20.60 | 52.28 | 10.42 | 23.48 | 17.38 | 1.09 | 26.59 | 21.12 | 10.02 |
| 27500.0 | 19.38 | 52.36 | 9.99 | 19.43 | 19.80 | 1.09 | 26.45 | 20.79 | 10.05 |
| 28000.0 | 19.06 | 52.41 | 9.94 | 16.94 | 20.45 | 1.08 | 26.65 | 20.57 | 10.12 |
| 28500.0 | 19.18 | 52.98 | 10.21 | 15.53 | 21.56 | 1.06 | 26.52 | 20.29 | 10.12 |
| 29000.0 | 18.24 | 53.29 | 10.86 | 14.80 | 25.13 | 1.04 | 26.77 | 20.23 | 10.05 |
| 29500.0 | 17.98 | 54.11 | 11.65 | 14.64 | 28.85 | 1.03 | 26.88 | 20.23 | 9.99 |
| 30000.0 | 18.27 | 54.51 | 12.23 | 14.76 | 29.46 | 1.02 | 26.98 | 20.19 | 9.86 |
| 30500.0 | 17.64 | 55.23 | 12.36 | 14.35 | 34.35 | 1.02 | 27.11 | 20.12 | 10.02 |
| 31000.0 | 17.30 | 56.72 | 12.08 | 13.36 | 41.89 | 1.01 | 27.35 | 19.95 | 9.78 |
| 31500.0 | 17.58 | 57.47 | 11.66 | 12.06 | 43.19 | 1.00 | 27.48 | 19.75 | 10.00 |
| 32000.0 | 17.30 | 59.93 | 11.36 | 10.83 | 57.55 | 0.98 | 27.45 | 19.65 | 9.87 |
| 32500.0 | 16.93 | 61.52 | 11.33 | 9.87 | 70.38 | 0.96 | 27.42 | 19.47 | 9.74 |
| 33000.0 | 17.33 | 62.04 | 11.37 | 9.34 | 70.37 | 0.95 | 27.30 | 19.63 | 9.84 |
| 34000.0 | 16.98 | 60.41 | 12.19 | 9.15 | 61.39 | 0.93 | 27.70 | 19.94 | 9.91 |
| 35000.0 | 17.53 | 57.89 | 13.34 | 9.87 | 44.55 | 0.94 | 27.46 | 19.97 | 9.81 |
| 36000.0 | 17.16 | 57.04 | 13.43 | 10.11 | 42.47 | 0.94 | 27.57 | 19.65 | 9.67 |
| 37000.0 | 16.52 | 58.61 | 12.00 | 9.30 | 52.68 | 0.94 | 29.05 | 19.80 | 9.68 |
| 38000.0 | 16.45 | 61.57 | 10.99 | 8.48 | 71.14 | 0.93 | 29.52 | 20.11 | 9.61 |
| 39000.0 | 15.41 | 68.00 | 11.02 | 8.18 | 166.42 | 0.91 | 30.87 | 20.01 | 9.57 |
| 40000.0 | 15.56 | 73.39 | 11.59 | 8.42 | 310.15 | 0.92 | 30.52 | 19.80 | 9.32 |
| 41000.0 | 16.07 | 63.31 | 12.52 | 8.79 | 94.38 | 0.92 | 30.34 | 19.94 | 9.23 |
| 42000.0 | 16.08 | 59.26 | 12.61 | 9.42 | 60.32 | 0.94 | 29.58 | 19.96 | 9.25 |
| 43000.0 | 17.38 | 60.83 | 11.63 | 10.13 | 62.58 | 0.96 | 29.37 | 19.26 | 9.07 |

Typical Performance Data

Definitions:

Input Return Loss = -S11 (dB)

Gain(Power Gain) = S21 (dB)

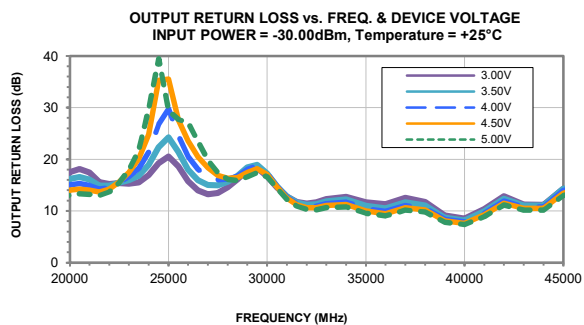
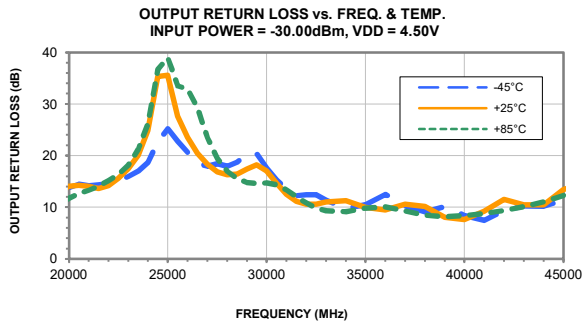
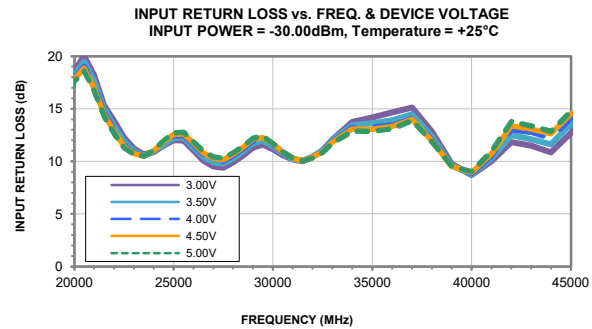
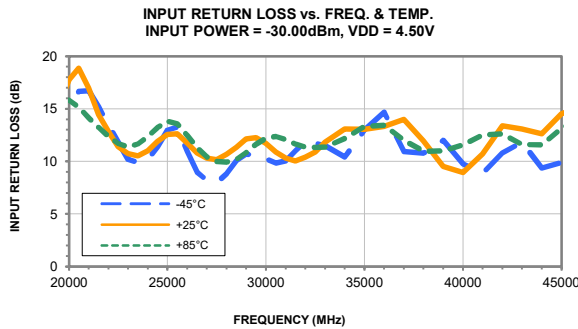
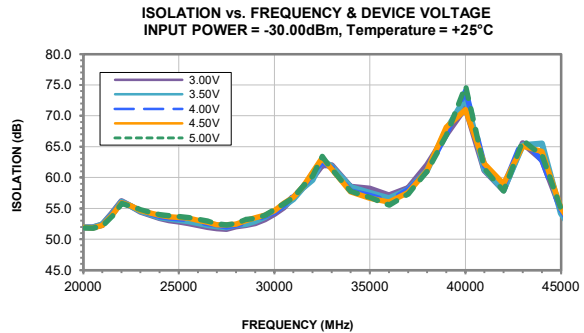
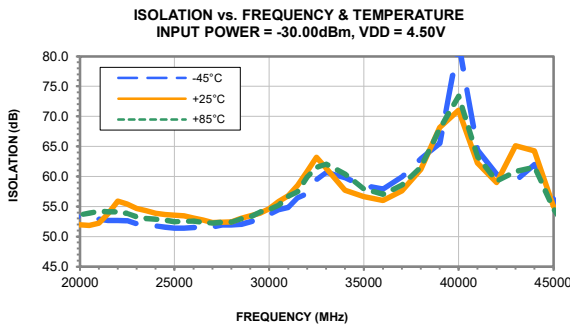
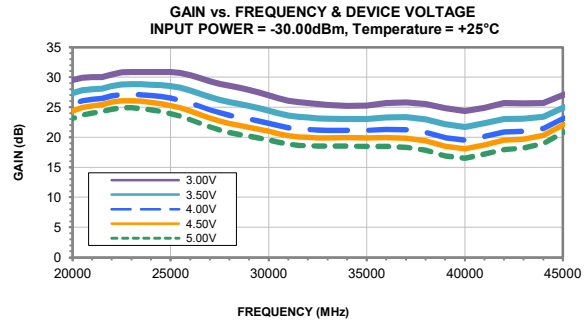
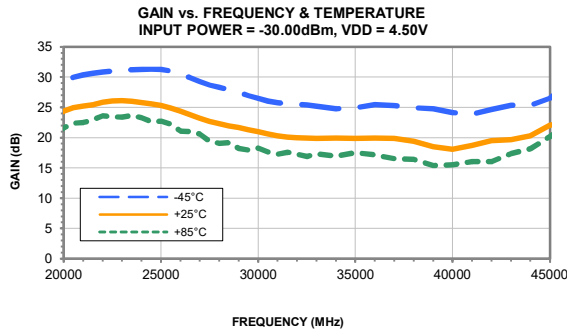
Reverse Isolation = -S12 (dB)

Output Return Loss = -S22 (dB)

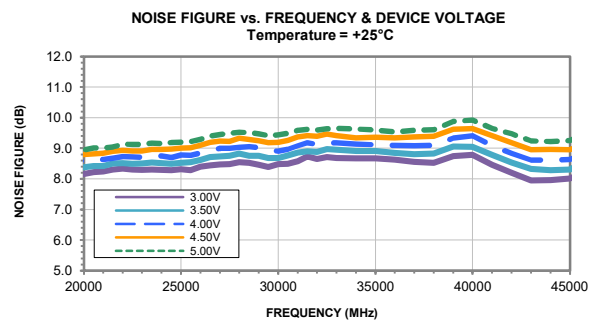
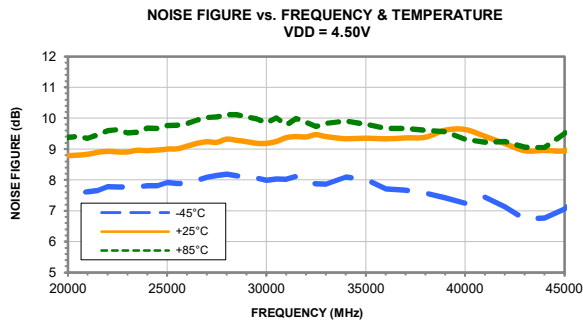
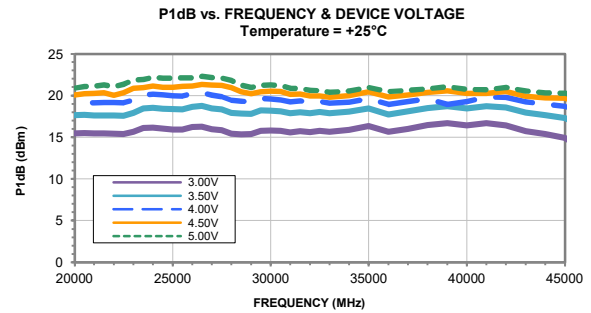
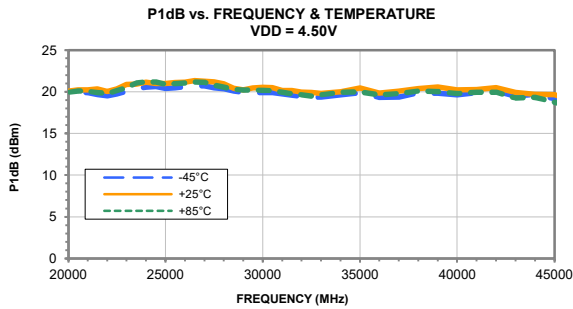
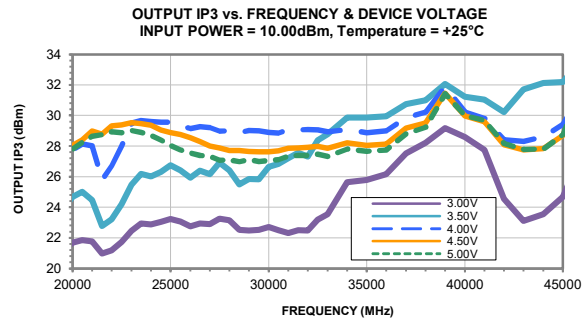
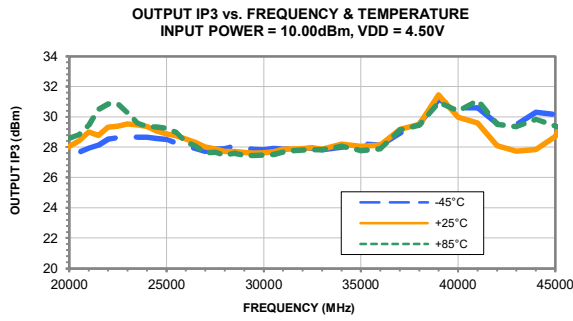
TEST CONDITIONS: VDD = 5.00V, IDD = 300mA, VG = -0.45V@ Temperature = +85°C

| 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) |
| 18000.0 | 16.05 | 55.20 | 14.42 | 6.31 | 33.39 | 0.80 | 26.69 | 18.90 | 9.75 |
| 18500.0 | 17.42 | 54.61 | 15.06 | 7.51 | 28.81 | 0.85 | 26.72 | 19.45 | 9.94 |
| 19000.0 | 19.33 | 54.13 | 15.86 | 8.61 | 23.15 | 0.88 | 26.74 | 19.90 | 9.58 |
| 19500.0 | 20.58 | 53.95 | 16.15 | 9.84 | 20.41 | 0.92 | 27.04 | 20.38 | 9.71 |
| 20000.0 | 20.93 | 53.67 | 15.72 | 11.10 | 19.46 | 0.95 | 27.33 | 20.74 | 9.54 |
| 20500.0 | 21.96 | 53.87 | 15.12 | 11.92 | 17.83 | 0.97 | 27.56 | 20.93 | 9.66 |
| 21000.0 | 22.73 | 54.30 | 14.24 | 12.64 | 17.24 | 0.98 | 27.75 | 20.95 | 9.62 |
| 21500.0 | 22.57 | 54.26 | 13.24 | 13.45 | 17.50 | 1.00 | 27.87 | 20.87 | 9.58 |
| 22000.0 | 22.92 | 54.24 | 12.37 | 14.47 | 16.77 | 1.02 | 27.76 | 20.80 | 9.77 |
| 22500.0 | 23.71 | 54.00 | 11.94 | 16.24 | 14.99 | 1.04 | 27.68 | 21.13 | 9.71 |
| 23000.0 | 23.06 | 53.43 | 11.47 | 18.18 | 15.13 | 1.05 | 27.59 | 21.43 | 9.77 |
| 23500.0 | 22.91 | 53.10 | 11.76 | 21.51 | 14.99 | 1.06 | 27.29 | 22.04 | 9.72 |
| 24000.0 | 23.45 | 52.99 | 12.57 | 28.38 | 14.16 | 1.05 | 26.98 | 22.24 | 9.90 |
| 24500.0 | 22.68 | 52.84 | 13.41 | 36.62 | 15.37 | 1.04 | 26.69 | 22.24 | 9.82 |
| 25000.0 | 21.92 | 52.63 | 14.00 | 29.19 | 16.47 | 1.04 | 26.51 | 21.95 | 10.01 |
| 25500.0 | 22.38 | 52.56 | 13.74 | 27.13 | 15.43 | 1.04 | 26.31 | 21.97 | 10.04 |
| 26000.0 | 21.67 | 52.69 | 12.59 | 27.55 | 16.79 | 1.05 | 26.33 | 22.00 | 9.99 |
| 26500.0 | 20.23 | 52.57 | 11.40 | 27.35 | 19.18 | 1.07 | 26.17 | 22.05 | 10.16 |
| 27000.0 | 20.60 | 52.48 | 10.48 | 23.11 | 17.81 | 1.08 | 26.29 | 21.95 | 10.13 |
| 27500.0 | 20.25 | 52.43 | 9.98 | 19.03 | 18.03 | 1.09 | 26.17 | 21.60 | 10.14 |
| 28000.0 | 18.67 | 52.56 | 9.94 | 16.49 | 21.71 | 1.08 | 26.40 | 21.35 | 10.30 |
| 28500.0 | 18.62 | 53.16 | 10.20 | 14.95 | 23.35 | 1.06 | 26.28 | 21.00 | 10.34 |
| 29000.0 | 18.99 | 53.33 | 10.78 | 14.28 | 23.03 | 1.04 | 26.52 | 20.90 | 10.26 |
| 29500.0 | 17.62 | 54.04 | 11.65 | 14.05 | 29.70 | 1.02 | 26.64 | 20.88 | 10.17 |
| 30000.0 | 17.39 | 54.33 | 12.22 | 14.12 | 31.76 | 1.02 | 26.73 | 20.81 | 10.17 |
| 30500.0 | 18.06 | 55.21 | 12.31 | 13.91 | 32.48 | 1.02 | 26.87 | 20.73 | 10.30 |
| 31000.0 | 16.92 | 56.67 | 12.05 | 13.01 | 43.29 | 1.01 | 27.21 | 20.56 | 10.03 |
| 31500.0 | 16.69 | 57.73 | 11.62 | 11.72 | 49.05 | 1.00 | 27.26 | 20.34 | 10.14 |
| 32000.0 | 17.34 | 59.68 | 11.33 | 10.57 | 55.40 | 0.98 | 27.25 | 20.21 | 10.02 |
| 32500.0 | 17.24 | 61.46 | 11.25 | 9.64 | 66.97 | 0.96 | 27.16 | 20.00 | 10.04 |
| 33000.0 | 16.46 | 62.50 | 11.37 | 9.06 | 81.24 | 0.94 | 26.98 | 20.14 | 10.16 |
| 34000.0 | 17.12 | 59.99 | 12.13 | 8.91 | 56.97 | 0.92 | 27.38 | 20.34 | 10.10 |
| 35000.0 | 17.09 | 57.35 | 13.37 | 9.53 | 43.62 | 0.93 | 27.18 | 20.39 | 9.95 |
| 36000.0 | 16.51 | 57.00 | 13.43 | 9.82 | 45.25 | 0.94 | 27.32 | 20.13 | 9.94 |
| 37000.0 | 16.93 | 58.66 | 12.24 | 9.16 | 50.47 | 0.93 | 28.92 | 20.21 | 9.81 |
| 38000.0 | 15.58 | 62.39 | 11.07 | 8.22 | 85.65 | 0.92 | 29.82 | 20.44 | 9.73 |
| 39000.0 | 15.02 | 68.61 | 11.13 | 7.97 | 185.57 | 0.91 | 30.80 | 19.86 | 9.77 |
| 40000.0 | 15.79 | 75.13 | 11.66 | 8.22 | 366.97 | 0.91 | 30.14 | 19.67 | 9.52 |
| 41000.0 | 15.16 | 62.71 | 12.67 | 8.52 | 97.07 | 0.91 | 30.26 | 19.87 | 9.51 |
| 42000.0 | 16.60 | 58.67 | 12.64 | 9.15 | 52.64 | 0.93 | 29.39 | 20.40 | 9.46 |
| 43000.0 | 17.16 | 59.61 | 11.61 | 9.77 | 55.29 | 0.96 | 29.21 | 19.84 | 9.32 |

Typical Performance Curves



Typical Performance Curves





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 -40° to 105° C or -55° to 105° C Ambient Environment | Refer to Individual Model Data Sheet |
| Storage Environment | 20° to 35° C and 40 to 60% humidity (In Factory Shipped Package) | Individual Model Data Sheet |