



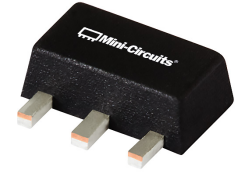
FLAT GAIN, HIGH DYNAMIC RANGE

Monolithic Amplifier **PGA-106W-75+**

75Ω 0.95 to 2.15 GHz

THE BIG DEAL

- High IP3, +36 dBm typ. at 1.5 GHz
- Gain, 15.9 dB typ. at 1.5 GHz
- High P_{OUT} P1dB +19.5 dBm typ. at 1.5 GHz
- Low Noise Figure, 3.6 dB at 1.5 GHz
- Protected under US Patent 8,803,612



Generic photo used for illustration purposes only

CASE STYLE: DF782

+RoHS Compliant

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

APPLICATIONS

- 75 ohm Satellite L-band
- DBS

PRODUCT OVERVIEW

PGA-106W-75+ (RoHS compliant) is an advanced wideband amplifier fabricated using E-PHEMT* technology and offers extremely high dynamic range over a broad frequency range with low noise figure and flat gain. Lead finish is SnAgNi. It has repeatable performance from lot to lot and is enclosed in a SOT-89 package for very good thermal performance.

KEY FEATURES

| Feature | Advantages |
|---|---|
| Broad Band: 0.95 to 2.15 GHz | Covers satellite IF band |
| High IP3 Versus DC power Consumption: +36 dBm typical | The PGA-106W-75+ matches industry leading IP3 performance relative to device size and power consumption. The combination of the design and E-PHEMPT structure provides enhanced linearity over a broad frequency range as evidence in the IP3 being typically 13-15 dB above the P 1dB point. This feature makes this amplifier ideal for use in CATV applications. |
| High IP2 +51-+57 dBm | Suppresses second order product on wideband applications such as CATV |
| Low Noise Figure: 3.6 dB at 1.5 GHz | Low noise figure performance in combination with the high output IP3 results in high dynamic range. |

*Enhanced mode pseudomorphic High Electron Mobility Transistor.

REV. B
ECO-011959
PGA-106W-75+
MCL NY
240807





FLAT GAIN, HIGH DYNAMIC RANGE

Monolithic Amplifier **PGA-106W-75+**

Mini-Circuits

75Ω 0.95 to 2.15 GHz

ELECTRICAL SPECIFICATIONS¹ AT +25°C, 75Ω AND +5.0V, UNLESS NOTED OTHERWISE

| Parameter | Condition (GHz) | Without Ext. mat ¹ | | | With Ext. mat ² | Units |
|---|-----------------|-------------------------------|-------|------|----------------------------|-------|
| | | Min. | Typ. | Max. | Typ. | |
| Frequency Range | | 0.95 | | 2.15 | | GHz |
| Gain | 0.95 | — | 16.9 | — | 17.3 | dB |
| | 1.5 | 14.3 | 15.9 | 17.5 | 16.4 | |
| | 2.15 | — | 14.7 | — | 15.7 | |
| Input Return Loss | 0.95 | | 12.2 | | 21.2 | dB |
| | 1.5 | | 9.5 | | 15.3 | |
| | 2.15 | | 7.6 | | 11.8 | |
| Output Return Loss | 0.95 | | 14.8 | | 15.9 | dB |
| | 1.5 | | 10.5 | | 14.2 | |
| | 2.15 | | 7.6 | | 12.7 | |
| Reverse Isolation | 1.5 | | 25.4 | | 29.4 | dB |
| Output Power @1 dB compression | 0.95 | | +18.8 | | +19.2 | dBm |
| | 1.5 | | +19.5 | | +19.8 | |
| | 2.15 | | +21.5 | | +19.6 | |
| Output IP3 | 0.95 | | +35.8 | | +36.3 | dBm |
| | 1.5 | | +35.6 | | +35.0 | |
| | 2.15 | | +35.6 | | +34.6 | |
| Output IP2 ³ | 0.95 | | +57.2 | | +55.4 | dBm |
| | 1.5 | | +53.2 | | +52.1 | |
| | 2.15 | | +50.8 | | +61.3 | |
| Noise Figure | 0.95 | | 3.1 | | 3.1 | dB |
| | 1.5 | | 3.6 | | 3.5 | |
| | 2.15 | | 3.9 | | 3.9 | |
| Device Operating Voltage (Vd) | | +4.8 | +5.0 | +5.2 | | V |
| Device Operating Current | | — | 116 | 132 | | mA |
| Device Current Variation vs. Temperature ⁵ | | | 97 | | | μA/°C |
| Device Current Variation vs Voltage | | | 0.05 | | | mA/mV |
| Thermal Resistance ⁴ | | | 76 | | | °C/W |

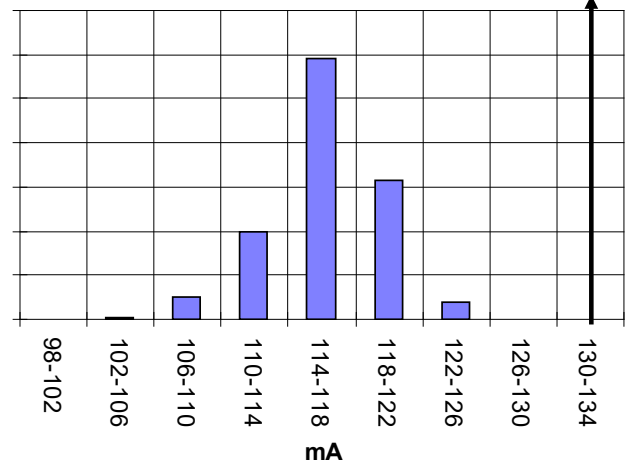
1. Measured on Mini-Circuits Characterization Test board TB-587+. See Characterization Test Circuit (Fig. 1a)
2. Measured on Mini-Circuits characterization Eval Board TB-696+ see characterization test circuit. (Fig. 1b)
3. Output IP2 measured at sum frequency of the two tones (f_{meas}=f₁+f₂).
4. Junction to ground lead.
5. (Current at 85°C - Current at -45°C)/130

ABSOLUTE MAXIMUM RATINGS

| Parameter | Ratings |
|-------------------------------------|---|
| Operating Temperature (ground lead) | -40°C to +85°C |
| Storage Temperature | -65°C to +150°C |
| Operating Current at +5.0V | 170 mA |
| Power Dissipation | 0.85 W |
| Input Power (CW) | +26 dBm (5 minutes) +14 dBm (continuous) |
| DC Voltage on Pin 3 | +6 V |

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

HISTOGRAM





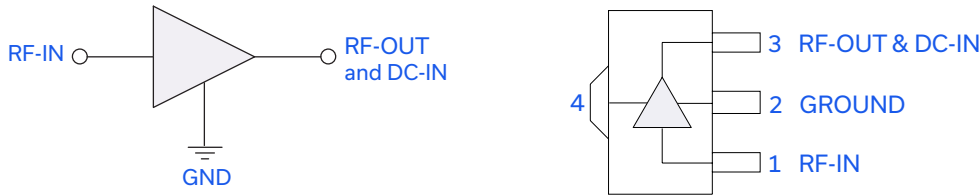
FLAT GAIN, HIGH DYNAMIC RANGE

Monolithic Amplifier **PGA-106W-75+**

Mini-Circuits

75Ω 0.95 to 2.15 GHz

SIMPLIFIED SCHEMATIC AND PIN DESCRIPTION



| Function | Pin Number | Description |
|------------------|------------|---|
| RF-IN | 1 | RF input pin. This pin requires the use of an external DC blocking capacitor chosen for the frequency of operation. |
| RF-OUT and DC-IN | 3 | RF output and bias pin. DC voltage is present on this pin; therefore a DC blocking capacitor is necessary for proper operation. An RF choke is needed to feed DC bias without loss of RF signal due to the bias connection, as shown in "Recommended Application Circuit", Fig. 2 |
| GND | 2,4 | Connections to ground. Use via holes as shown in "Suggested Layout for PCB Design" to reduce ground path inductance for best performance. |

CHARACTERIZATION TEST CIRCUIT (FIG 1A)

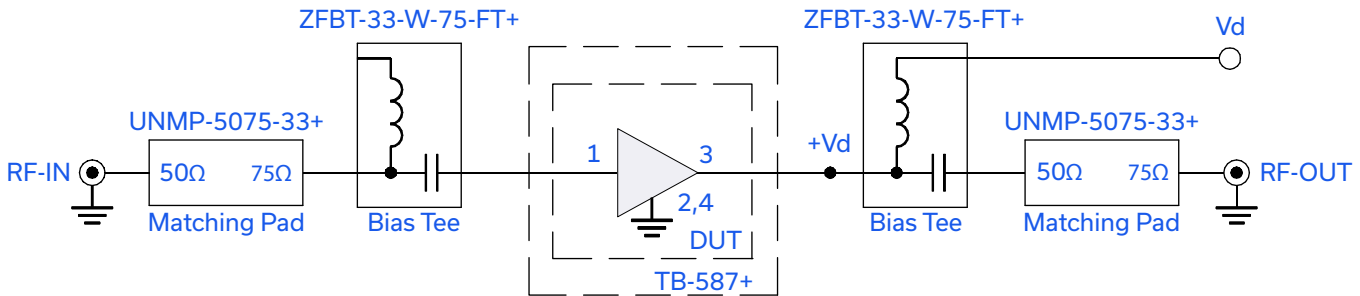


Fig 1a, 1b. Block Diagram of Test Circuit used for characterization. DUT tested on Mini-Circuits Characterization Test board TB-587+ (Fig 1a) and Eval board TB-696+ (Fig 1b).

Gain, Return loss, Output power at 1dB compression (P1 dB), output IP3 (OIP3), output IP2 (OIP2) and noise figure measured using Agilent's N5242A PNA-X microwave network analyzer.

Conditions:

1. Gain and Return loss: $P_{IN} = -25\text{dBm}$
2. Output IP3 (OIP3): Two tones, spaced 1 MHz apart, 5 dBm/tone at output.
3. Output IP2 (OIP2): Two tones, spaced 11 MHz apart, 5 dBm/tone at output.



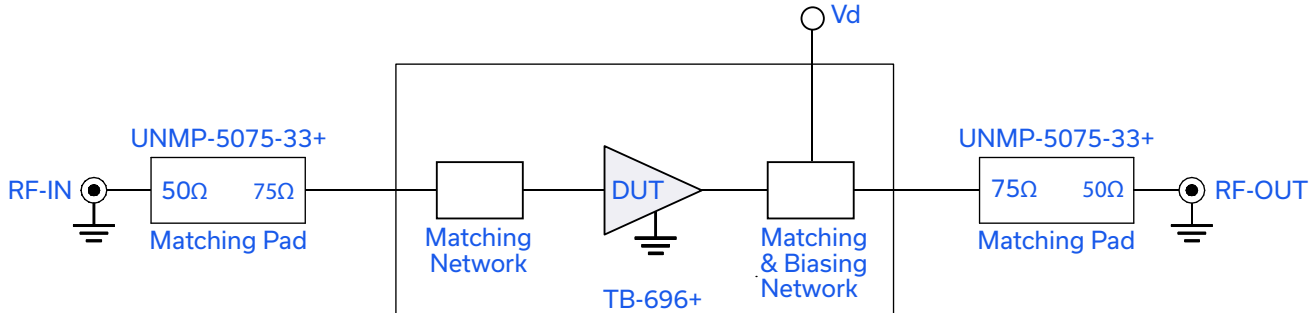


FLAT GAIN, HIGH DYNAMIC RANGE

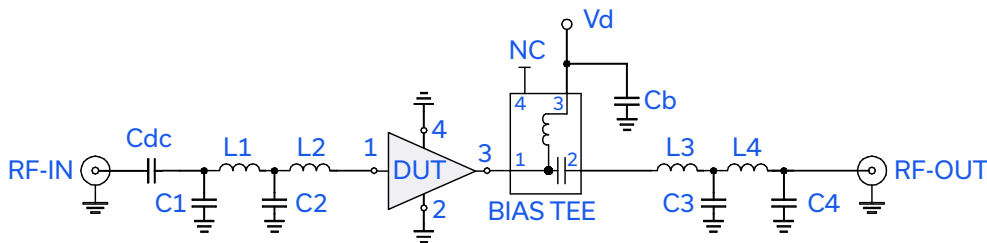
Monolithic Amplifier **PGA-106W-75+**

75Ω 0.95 to 2.15 GHz

CHARACTERIZATION TEST CIRCUIT (FIG 1B)



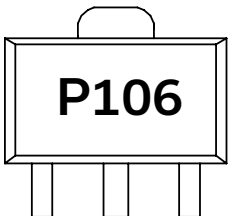
RECOMMENDED APPLICATION CIRCUIT (TB-696+)



| Component | Value |
|------------|------------------------|
| DUT | PGA-106W-75+ |
| Bias Tee | Mini-Circuits TCBT-14+ |
| Cdc | 2400 pF |
| Cb | 0.1 μF |
| C1 | 0.4 pF |
| C2, C3 | 1.0 pF |
| C4 | 0.3 pF |
| L1, L2, L4 | 6.2 nH |
| L3 | 4.7 nH |

Fig 2. Evaluation board includes case, connectors, and components soldered to PCB

PRODUCT MARKING



Marking may contain other features or characters for internal lot control



FLAT GAIN, HIGH DYNAMIC RANGE

Monolithic Amplifier **PGA-106W-75+**

75Ω 0.95 to 2.15 GHz

Mini-Circuits

ADDITIONAL DETAILED TECHNICAL INFORMATION IS AVAILABLE ON OUR DASHBOARD. [CLICK HERE](#)

| | |
|---|--|
| Performance Data | Data Table Swept Graphs S-Parameter (S2P Files) Data Set (.zip file) |
| Case Style | DF782 (SOT 89) Plastic package, exposed paddle lead finish: tin-silver over nickel |
| Tape & Reel Standard quantities available on reel | F55 7" reels with 20, 50, 100, 200, 500 or 1K devices |
| Suggested Layout for PCB Design | PL-379 |
| Evaluation Board | TB-696+ |
| Environmental Ratings | ENV08T1 |

ESD RATING

Human Body Model (HBM): Class 1B (500<1000) in accordance with ANSI/ESD STM 5.1 - 2001

Machine Model (MM): Class class M1 (50V) in accordance with ANSI/ESD STM5.2-1999

MSL RATING

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

NOTES

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



Typical Performance Data

NOTE: Use PDF Bookmarks to view DATA at required conditions

Definitions:

Input Return Loss = -S11 (dB)

Gain(Power Gain) = S21 (dB)

Reverse Isolation = -S12 (dB)

Output Return Loss = -S22 (dB)

TEST CONDITIONS: Vd = 5.00V, Id = 118.89mA @ 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) |
| 700.0 | 17.32 | 24.24 | 14.39 | 17.94 | 1.29 | 0.81 | 37.65 | 20.00 | 3.17 |
| 800.0 | 17.19 | 24.33 | 13.96 | 17.47 | 1.30 | 0.82 | 37.40 | 19.71 | 3.80 |
| 900.0 | 17.04 | 24.46 | 13.90 | 16.83 | 1.32 | 0.83 | 37.01 | 19.22 | 3.31 |
| 950.0 | 16.96 | 24.53 | 13.40 | 16.26 | 1.33 | 0.84 | 37.14 | 19.08 | 3.24 |
| 1000.0 | 16.87 | 24.60 | 12.75 | 15.47 | 1.33 | 0.85 | 36.85 | 19.09 | 3.28 |
| 1050.0 | 16.78 | 24.68 | 12.33 | 14.68 | 1.34 | 0.85 | 36.54 | 19.03 | 3.32 |
| 1100.0 | 16.69 | 24.77 | 12.11 | 14.10 | 1.35 | 0.85 | 36.59 | 19.06 | 3.37 |
| 1200.0 | 16.51 | 24.95 | 11.35 | 13.32 | 1.38 | 0.87 | 36.53 | 19.29 | 3.53 |
| 1300.0 | 16.31 | 25.16 | 11.05 | 12.99 | 1.42 | 0.87 | 36.66 | 19.82 | 3.63 |
| 1400.0 | 16.12 | 25.37 | 11.35 | 12.75 | 1.47 | 0.88 | 36.65 | 20.12 | 3.69 |
| 1500.0 | 15.94 | 25.58 | 10.25 | 11.82 | 1.47 | 0.90 | 36.68 | 19.83 | 3.69 |
| 1600.0 | 15.75 | 25.83 | 9.60 | 10.68 | 1.48 | 0.90 | 36.34 | 19.68 | 3.52 |
| 1700.0 | 15.52 | 26.11 | 9.10 | 9.89 | 1.52 | 0.90 | 36.14 | 19.55 | 3.67 |
| 1800.0 | 15.33 | 26.41 | 8.97 | 9.68 | 1.59 | 0.90 | 36.03 | 19.83 | 3.73 |
| 1900.0 | 15.17 | 26.69 | 8.99 | 9.76 | 1.65 | 0.91 | 36.45 | 20.44 | 4.58 |
| 2000.0 | 15.01 | 27.01 | 8.49 | 9.38 | 1.68 | 0.92 | 36.41 | 21.55 | 4.16 |
| 2050.0 | 14.92 | 27.20 | 8.46 | 9.07 | 1.71 | 0.92 | 36.70 | 21.85 | 4.08 |
| 2100.0 | 14.85 | 27.28 | 8.35 | 8.74 | 1.71 | 0.92 | 36.51 | 22.01 | 3.94 |
| 2150.0 | 14.78 | 27.45 | 7.96 | 8.31 | 1.70 | 0.92 | 36.77 | 21.89 | 3.94 |
| 2200.0 | 14.72 | 27.58 | 7.44 | 7.91 | 1.67 | 0.92 | 36.82 | 21.69 | 3.75 |
| 2300.0 | 14.62 | 27.89 | 7.29 | 7.60 | 1.73 | 0.90 | 36.77 | 21.04 | 3.62 |
| 2400.0 | 14.53 | 28.42 | 7.31 | 7.58 | 1.84 | 0.91 | 36.59 | 19.76 | 3.66 |

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: Vd = 4.75V, Id = 107.36mA @ 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) |
| 700.0 | 17.29 | 24.22 | 14.34 | 17.84 | 1.29 | 0.81 | 38.64 | 19.85 | 3.11 |
| 800.0 | 17.16 | 24.32 | 13.91 | 17.36 | 1.30 | 0.82 | 38.39 | 19.58 | 3.73 |
| 900.0 | 17.01 | 24.43 | 13.89 | 16.72 | 1.32 | 0.83 | 38.30 | 19.12 | 3.25 |
| 950.0 | 16.93 | 24.50 | 13.40 | 16.16 | 1.33 | 0.84 | 38.25 | 18.96 | 3.18 |
| 1000.0 | 16.84 | 24.57 | 12.74 | 15.37 | 1.33 | 0.85 | 37.54 | 18.95 | 3.20 |
| 1050.0 | 16.75 | 24.65 | 12.31 | 14.61 | 1.34 | 0.85 | 37.60 | 18.88 | 3.25 |
| 1100.0 | 16.66 | 24.74 | 12.09 | 14.03 | 1.35 | 0.85 | 37.24 | 18.93 | 3.33 |
| 1200.0 | 16.47 | 24.93 | 11.37 | 13.27 | 1.38 | 0.87 | 37.30 | 19.14 | 3.47 |
| 1300.0 | 16.28 | 25.12 | 11.05 | 12.95 | 1.42 | 0.87 | 37.24 | 19.66 | 3.53 |
| 1400.0 | 16.09 | 25.33 | 11.37 | 12.71 | 1.46 | 0.88 | 36.93 | 19.92 | 3.61 |
| 1500.0 | 15.91 | 25.54 | 10.29 | 11.78 | 1.47 | 0.90 | 37.11 | 19.63 | 3.59 |
| 1600.0 | 15.72 | 25.77 | 9.63 | 10.66 | 1.48 | 0.90 | 36.81 | 19.52 | 3.42 |
| 1700.0 | 15.49 | 26.06 | 9.14 | 9.88 | 1.52 | 0.90 | 36.21 | 19.33 | 3.53 |
| 1800.0 | 15.30 | 26.34 | 9.03 | 9.68 | 1.58 | 0.90 | 36.35 | 19.54 | 3.68 |
| 1900.0 | 15.14 | 26.61 | 9.05 | 9.76 | 1.64 | 0.91 | 36.59 | 20.13 | 4.50 |
| 2000.0 | 14.98 | 26.92 | 8.55 | 9.39 | 1.67 | 0.92 | 36.54 | 21.20 | 4.12 |
| 2050.0 | 14.89 | 27.11 | 8.55 | 9.07 | 1.70 | 0.92 | 36.64 | 21.47 | 3.95 |
| 2100.0 | 14.81 | 27.18 | 8.44 | 8.74 | 1.70 | 0.91 | 36.27 | 21.61 | 3.87 |
| 2150.0 | 14.75 | 27.34 | 8.03 | 8.32 | 1.69 | 0.91 | 36.74 | 21.51 | 3.87 |
| 2200.0 | 14.69 | 27.46 | 7.50 | 7.92 | 1.66 | 0.91 | 36.97 | 21.33 | 3.70 |
| 2300.0 | 14.59 | 27.76 | 7.38 | 7.62 | 1.72 | 0.90 | 36.89 | 20.70 | 3.57 |
| 2400.0 | 14.50 | 28.28 | 7.38 | 7.59 | 1.82 | 0.90 | 36.81 | 19.52 | 3.57 |

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: Vd = 5.25V, Id = 130.45mA @ 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) | | | (dBm) | (dBm) | (dB) |
| 700.0 | 17.33 | 24.24 | 14.40 | 18.02 | 1.29 | 0.81 | 35.90 | 20.01 | 3.24 |
| 800.0 | 17.19 | 24.35 | 13.95 | 17.54 | 1.31 | 0.82 | 35.32 | 19.70 | 3.84 |
| 900.0 | 17.05 | 24.47 | 13.90 | 16.90 | 1.32 | 0.83 | 34.88 | 19.17 | 3.38 |
| 950.0 | 16.97 | 24.54 | 13.40 | 16.33 | 1.33 | 0.84 | 34.82 | 19.05 | 3.30 |
| 1000.0 | 16.88 | 24.62 | 12.72 | 15.54 | 1.33 | 0.85 | 34.66 | 19.07 | 3.33 |
| 1050.0 | 16.79 | 24.70 | 12.29 | 14.75 | 1.34 | 0.85 | 34.44 | 19.00 | 3.38 |
| 1100.0 | 16.70 | 24.80 | 12.08 | 14.15 | 1.36 | 0.85 | 34.27 | 19.04 | 3.45 |
| 1200.0 | 16.52 | 24.98 | 11.34 | 13.35 | 1.38 | 0.87 | 34.53 | 19.30 | 3.60 |
| 1300.0 | 16.32 | 25.20 | 10.99 | 13.00 | 1.42 | 0.88 | 34.99 | 19.84 | 3.71 |
| 1400.0 | 16.13 | 25.40 | 11.28 | 12.76 | 1.47 | 0.88 | 35.10 | 20.15 | 3.72 |
| 1500.0 | 15.95 | 25.63 | 10.20 | 11.83 | 1.47 | 0.90 | 35.13 | 19.91 | 3.75 |
| 1600.0 | 15.76 | 25.87 | 9.51 | 10.70 | 1.49 | 0.90 | 34.70 | 19.72 | 3.52 |
| 1700.0 | 15.54 | 26.19 | 9.03 | 9.89 | 1.53 | 0.90 | 34.57 | 19.67 | 3.74 |
| 1800.0 | 15.34 | 26.48 | 8.92 | 9.67 | 1.60 | 0.90 | 34.60 | 20.00 | 3.83 |
| 1900.0 | 15.18 | 26.78 | 8.90 | 9.75 | 1.66 | 0.91 | 35.10 | 20.64 | 4.63 |
| 2000.0 | 15.02 | 27.11 | 8.43 | 9.38 | 1.70 | 0.93 | 35.72 | 21.81 | 4.26 |
| 2050.0 | 14.93 | 27.31 | 8.40 | 9.07 | 1.73 | 0.92 | 35.88 | 22.12 | 4.15 |
| 2100.0 | 14.85 | 27.37 | 8.28 | 8.74 | 1.72 | 0.92 | 35.82 | 22.30 | 4.02 |
| 2150.0 | 14.78 | 27.55 | 7.88 | 8.32 | 1.71 | 0.92 | 36.13 | 22.18 | 4.01 |
| 2200.0 | 14.73 | 27.68 | 7.35 | 7.91 | 1.69 | 0.92 | 36.31 | 21.96 | 3.79 |
| 2300.0 | 14.62 | 28.02 | 7.24 | 7.60 | 1.76 | 0.90 | 36.16 | 21.27 | 3.74 |
| 2400.0 | 14.53 | 28.59 | 7.20 | 7.55 | 1.87 | 0.91 | 35.54 | 19.89 | 3.76 |

Typical Performance Data

Definitions:

Input Return Loss = -S11 (dB)

Gain(Power Gain) = S21 (dB)

Reverse Isolation = -S12 (dB)

Output Return Loss = -S22 (dB)

TEST CONDITIONS: Vd = 5.00V, Id = 109.09mA @ 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) |
| 700.0 | 17.52 | 24.08 | 13.87 | 17.16 | 1.25 | 0.79 | 40.41 | 20.56 | 2.09 |
| 800.0 | 17.41 | 24.16 | 13.68 | 16.96 | 1.27 | 0.79 | 39.68 | 20.29 | 2.68 |
| 900.0 | 17.30 | 24.25 | 14.32 | 17.51 | 1.29 | 0.81 | 39.13 | 19.84 | 2.20 |
| 950.0 | 17.22 | 24.30 | 13.80 | 16.58 | 1.29 | 0.82 | 38.99 | 19.67 | 2.12 |
| 1000.0 | 17.13 | 24.38 | 13.03 | 15.40 | 1.29 | 0.83 | 38.59 | 19.66 | 2.16 |
| 1050.0 | 17.05 | 24.46 | 12.61 | 14.49 | 1.29 | 0.83 | 38.48 | 19.59 | 2.17 |
| 1100.0 | 16.96 | 24.54 | 12.33 | 13.85 | 1.30 | 0.83 | 38.03 | 19.64 | 2.22 |
| 1200.0 | 16.79 | 24.71 | 10.75 | 12.48 | 1.30 | 0.85 | 38.65 | 19.88 | 2.41 |
| 1300.0 | 16.60 | 24.90 | 10.38 | 12.27 | 1.34 | 0.85 | 38.81 | 20.41 | 2.47 |
| 1400.0 | 16.42 | 25.10 | 11.24 | 12.35 | 1.40 | 0.85 | 38.35 | 20.67 | 2.53 |
| 1500.0 | 16.28 | 25.27 | 10.80 | 12.22 | 1.42 | 0.87 | 38.34 | 20.35 | 2.57 |
| 1600.0 | 16.14 | 25.45 | 10.46 | 11.73 | 1.43 | 0.88 | 38.18 | 20.29 | 2.24 |
| 1700.0 | 15.96 | 25.68 | 9.84 | 10.29 | 1.43 | 0.88 | 37.35 | 20.07 | 2.45 |
| 1800.0 | 15.80 | 25.95 | 9.01 | 9.59 | 1.44 | 0.89 | 37.82 | 20.22 | 2.50 |
| 1900.0 | 15.65 | 26.22 | 8.45 | 8.81 | 1.44 | 0.88 | 38.49 | 20.81 | 3.46 |
| 2000.0 | 15.46 | 26.51 | 7.62 | 8.11 | 1.45 | 0.88 | 39.13 | 21.88 | 3.03 |
| 2050.0 | 15.35 | 26.74 | 7.50 | 7.99 | 1.49 | 0.88 | 38.70 | 22.15 | 2.83 |
| 2100.0 | 15.26 | 26.82 | 7.62 | 7.82 | 1.52 | 0.87 | 38.37 | 22.26 | 2.72 |
| 2150.0 | 15.19 | 26.97 | 7.60 | 7.53 | 1.54 | 0.86 | 38.46 | 22.10 | 2.72 |
| 2200.0 | 15.13 | 27.16 | 7.42 | 7.48 | 1.56 | 0.86 | 38.33 | 21.89 | 2.54 |
| 2300.0 | 15.16 | 27.21 | 8.01 | 8.05 | 1.63 | 0.87 | 38.07 | 21.35 | 2.23 |
| 2400.0 | 15.03 | 27.85 | 8.33 | 8.04 | 1.74 | 0.89 | 37.76 | 20.20 | 2.39 |

Typical Performance Data

Definitions:

Input Return Loss = -S11 (dB)

Gain(Power Gain) = S21 (dB)

Reverse Isolation = -S12 (dB)

Output Return Loss = -S22 (dB)

TEST CONDITIONS: Vd = 4.75V, Id = 97.15mA @ 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) | | | (dBm) | (dBm) | (dB) |
| 700.0 | 17.46 | 24.04 | 13.77 | 16.86 | 1.25 | 0.78 | 40.11 | 20.26 | 2.05 |
| 800.0 | 17.35 | 24.13 | 13.57 | 16.67 | 1.27 | 0.79 | 39.71 | 20.02 | 2.66 |
| 900.0 | 17.24 | 24.21 | 14.23 | 17.21 | 1.29 | 0.81 | 39.38 | 19.61 | 2.16 |
| 950.0 | 17.16 | 24.26 | 13.72 | 16.33 | 1.29 | 0.82 | 38.83 | 19.42 | 2.07 |
| 1000.0 | 17.08 | 24.35 | 12.96 | 15.17 | 1.29 | 0.83 | 38.44 | 19.38 | 2.09 |
| 1050.0 | 16.99 | 24.42 | 12.52 | 14.29 | 1.29 | 0.83 | 38.49 | 19.31 | 2.15 |
| 1100.0 | 16.91 | 24.51 | 12.27 | 13.65 | 1.30 | 0.83 | 38.31 | 19.36 | 2.19 |
| 1200.0 | 16.73 | 24.68 | 10.71 | 12.31 | 1.29 | 0.85 | 38.74 | 19.60 | 2.33 |
| 1300.0 | 16.54 | 24.87 | 10.32 | 12.12 | 1.34 | 0.85 | 38.76 | 20.12 | 2.40 |
| 1400.0 | 16.36 | 25.06 | 11.18 | 12.21 | 1.40 | 0.85 | 38.39 | 20.34 | 2.46 |
| 1500.0 | 16.22 | 25.23 | 10.75 | 12.09 | 1.42 | 0.87 | 38.08 | 20.03 | 2.46 |
| 1600.0 | 16.08 | 25.41 | 10.42 | 11.60 | 1.43 | 0.88 | 37.69 | 20.00 | 2.21 |
| 1700.0 | 15.91 | 25.64 | 9.81 | 10.18 | 1.42 | 0.88 | 37.48 | 19.73 | 2.36 |
| 1800.0 | 15.74 | 25.90 | 8.99 | 9.50 | 1.43 | 0.89 | 38.08 | 19.84 | 2.47 |
| 1900.0 | 15.59 | 26.13 | 8.45 | 8.73 | 1.43 | 0.88 | 38.46 | 20.41 | 3.38 |
| 2000.0 | 15.41 | 26.43 | 7.59 | 8.03 | 1.44 | 0.88 | 38.19 | 21.36 | 2.94 |
| 2050.0 | 15.30 | 26.69 | 7.50 | 7.92 | 1.49 | 0.88 | 38.22 | 21.57 | 2.80 |
| 2100.0 | 15.20 | 26.77 | 7.60 | 7.75 | 1.51 | 0.87 | 37.77 | 21.65 | 2.63 |
| 2150.0 | 15.13 | 26.93 | 7.58 | 7.47 | 1.53 | 0.85 | 38.09 | 21.53 | 2.74 |
| 2200.0 | 15.08 | 27.08 | 7.41 | 7.43 | 1.56 | 0.86 | 37.73 | 21.37 | 2.43 |
| 2300.0 | 15.12 | 27.18 | 7.96 | 8.00 | 1.63 | 0.87 | 37.87 | 20.89 | 2.17 |
| 2400.0 | 14.98 | 27.75 | 8.35 | 7.98 | 1.73 | 0.89 | 37.62 | 19.80 | 2.29 |

Typical Performance Data

Definitions:

Input Return Loss = -S11 (dB)

Gain(Power Gain) = S21 (dB)

Reverse Isolation = -S12 (dB)

Output Return Loss = -S22 (dB)

TEST CONDITIONS: Vd = 5.25V, Id = 121.46mA @ 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) |
| 700.0 | 17.57 | 24.12 | 13.97 | 17.44 | 1.25 | 0.79 | 40.33 | 20.73 | 2.13 |
| 800.0 | 17.46 | 24.20 | 13.76 | 17.22 | 1.27 | 0.79 | 39.79 | 20.45 | 2.75 |
| 900.0 | 17.35 | 24.28 | 14.42 | 17.78 | 1.29 | 0.81 | 38.90 | 19.97 | 2.22 |
| 950.0 | 17.27 | 24.34 | 13.88 | 16.84 | 1.29 | 0.82 | 38.80 | 19.81 | 2.13 |
| 1000.0 | 17.18 | 24.42 | 13.10 | 15.62 | 1.29 | 0.83 | 38.37 | 19.82 | 2.17 |
| 1050.0 | 17.10 | 24.50 | 12.66 | 14.69 | 1.29 | 0.83 | 38.17 | 19.75 | 2.25 |
| 1100.0 | 17.01 | 24.58 | 12.37 | 14.02 | 1.30 | 0.83 | 37.87 | 19.80 | 2.29 |
| 1200.0 | 16.84 | 24.75 | 10.81 | 12.62 | 1.30 | 0.85 | 38.05 | 20.04 | 2.46 |
| 1300.0 | 16.65 | 24.95 | 10.42 | 12.40 | 1.34 | 0.85 | 38.37 | 20.58 | 2.54 |
| 1400.0 | 16.46 | 25.14 | 11.28 | 12.49 | 1.40 | 0.85 | 38.05 | 20.87 | 2.60 |
| 1500.0 | 16.32 | 25.30 | 10.83 | 12.36 | 1.42 | 0.87 | 38.00 | 20.56 | 2.56 |
| 1600.0 | 16.19 | 25.49 | 10.49 | 11.86 | 1.44 | 0.89 | 37.53 | 20.47 | 2.30 |
| 1700.0 | 16.01 | 25.74 | 9.85 | 10.39 | 1.43 | 0.88 | 37.40 | 20.28 | 2.46 |
| 1800.0 | 15.85 | 25.99 | 9.02 | 9.68 | 1.44 | 0.89 | 37.63 | 20.50 | 2.58 |
| 1900.0 | 15.70 | 26.25 | 8.46 | 8.89 | 1.44 | 0.89 | 37.84 | 21.12 | 3.52 |
| 2000.0 | 15.52 | 26.53 | 7.59 | 8.16 | 1.45 | 0.88 | 38.30 | 22.27 | 3.09 |
| 2050.0 | 15.40 | 26.77 | 7.49 | 8.05 | 1.49 | 0.88 | 38.58 | 22.59 | 2.92 |
| 2100.0 | 15.31 | 26.87 | 7.60 | 7.87 | 1.52 | 0.87 | 38.01 | 22.73 | 2.76 |
| 2150.0 | 15.24 | 27.00 | 7.58 | 7.57 | 1.53 | 0.86 | 38.09 | 22.54 | 2.78 |
| 2200.0 | 15.18 | 27.20 | 7.39 | 7.52 | 1.56 | 0.86 | 37.99 | 22.31 | 2.56 |
| 2300.0 | 15.22 | 27.27 | 7.97 | 8.11 | 1.63 | 0.88 | 37.66 | 21.71 | 2.27 |
| 2400.0 | 15.08 | 27.90 | 8.32 | 8.10 | 1.75 | 0.89 | 36.91 | 20.46 | 2.40 |

Typical Performance Data

Definitions:

Input Return Loss = -S11 (dB)

Gain(Power Gain) = S21 (dB)

Reverse Isolation = -S12 (dB)

Output Return Loss = -S22 (dB)

TEST CONDITIONS: Vd = 5.00V, Id = 123.72mA @ 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) |
| 700.0 | 16.99 | 24.26 | 14.00 | 17.23 | 1.31 | 0.82 | 32.13 | 19.26 | 4.09 |
| 800.0 | 16.85 | 24.38 | 13.52 | 16.72 | 1.33 | 0.84 | 31.71 | 18.94 | 4.67 |
| 900.0 | 16.68 | 24.52 | 13.20 | 15.34 | 1.36 | 0.84 | 31.23 | 18.39 | 4.25 |
| 950.0 | 16.60 | 24.60 | 12.84 | 15.31 | 1.37 | 0.85 | 31.35 | 18.29 | 4.18 |
| 1000.0 | 16.52 | 24.68 | 12.47 | 15.43 | 1.38 | 0.86 | 31.20 | 18.33 | 4.17 |
| 1050.0 | 16.44 | 24.77 | 12.27 | 15.10 | 1.40 | 0.87 | 30.97 | 18.25 | 4.24 |
| 1100.0 | 16.34 | 24.85 | 12.15 | 14.52 | 1.41 | 0.87 | 30.84 | 18.29 | 4.31 |
| 1200.0 | 16.14 | 25.06 | 11.39 | 13.92 | 1.44 | 0.89 | 31.01 | 18.58 | 4.52 |
| 1300.0 | 15.93 | 25.30 | 11.06 | 13.07 | 1.48 | 0.90 | 31.41 | 19.10 | 4.60 |
| 1400.0 | 15.72 | 25.54 | 10.99 | 12.10 | 1.52 | 0.90 | 31.79 | 19.36 | 4.67 |
| 1500.0 | 15.51 | 25.81 | 9.58 | 10.93 | 1.51 | 0.92 | 31.85 | 19.19 | 4.69 |
| 1600.0 | 15.27 | 26.10 | 8.70 | 9.68 | 1.53 | 0.91 | 31.47 | 18.94 | 4.49 |
| 1700.0 | 15.00 | 26.48 | 8.48 | 9.45 | 1.62 | 0.91 | 31.48 | 18.98 | 4.66 |
| 1800.0 | 14.77 | 26.81 | 8.73 | 9.40 | 1.73 | 0.90 | 31.55 | 19.33 | 4.80 |
| 1900.0 | 14.58 | 27.17 | 9.14 | 10.27 | 1.87 | 0.93 | 32.03 | 19.97 | 5.60 |
| 2000.0 | 14.43 | 27.50 | 8.91 | 10.38 | 1.93 | 0.96 | 32.84 | 21.03 | 5.22 |
| 2050.0 | 14.35 | 27.69 | 8.79 | 9.77 | 1.94 | 0.95 | 33.02 | 21.33 | 5.11 |
| 2100.0 | 14.29 | 27.75 | 8.36 | 9.17 | 1.89 | 0.95 | 33.23 | 21.50 | 4.97 |
| 2150.0 | 14.24 | 27.93 | 7.67 | 8.49 | 1.84 | 0.96 | 33.66 | 21.41 | 5.11 |
| 2200.0 | 14.18 | 28.07 | 6.98 | 7.81 | 1.77 | 0.95 | 33.80 | 21.24 | 4.79 |
| 2300.0 | 14.16 | 28.31 | 6.40 | 6.73 | 1.71 | 0.90 | 33.84 | 20.53 | 4.55 |
| 2400.0 | 13.78 | 29.19 | 6.56 | 6.67 | 2.00 | 0.89 | 33.14 | 19.16 | 4.90 |

Typical Performance Data

Definitions:

Input Return Loss = -S11 (dB)

Gain(Power Gain) = S21 (dB)

Reverse Isolation = -S12 (dB)

Output Return Loss = -S22 (dB)

TEST CONDITIONS: Vd = 4.75V, Id = 112.67mA @ 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) |
| 700.0 | 17.00 | 24.25 | 14.01 | 17.16 | 1.31 | 0.82 | 34.14 | 19.24 | 4.00 |
| 800.0 | 16.86 | 24.35 | 13.52 | 16.67 | 1.33 | 0.84 | 33.76 | 18.94 | 4.64 |
| 900.0 | 16.68 | 24.51 | 13.22 | 15.30 | 1.35 | 0.84 | 33.32 | 18.44 | 4.17 |
| 950.0 | 16.60 | 24.58 | 12.88 | 15.29 | 1.37 | 0.85 | 33.45 | 18.33 | 4.08 |
| 1000.0 | 16.52 | 24.66 | 12.50 | 15.42 | 1.38 | 0.86 | 33.13 | 18.35 | 4.13 |
| 1050.0 | 16.44 | 24.73 | 12.31 | 15.08 | 1.39 | 0.87 | 32.93 | 18.28 | 4.18 |
| 1100.0 | 16.35 | 24.82 | 12.20 | 14.49 | 1.41 | 0.87 | 32.74 | 18.31 | 4.26 |
| 1200.0 | 16.14 | 25.02 | 11.44 | 13.91 | 1.43 | 0.89 | 32.88 | 18.56 | 4.46 |
| 1300.0 | 15.93 | 25.26 | 11.12 | 13.06 | 1.47 | 0.90 | 33.12 | 19.06 | 4.49 |
| 1400.0 | 15.72 | 25.49 | 11.06 | 12.09 | 1.51 | 0.90 | 33.37 | 19.29 | 4.57 |
| 1500.0 | 15.51 | 25.73 | 9.63 | 10.92 | 1.50 | 0.92 | 33.41 | 19.07 | 4.64 |
| 1600.0 | 15.27 | 26.04 | 8.77 | 9.69 | 1.52 | 0.90 | 33.04 | 18.87 | 4.37 |
| 1700.0 | 15.00 | 26.39 | 8.55 | 9.48 | 1.61 | 0.91 | 32.93 | 18.83 | 4.58 |
| 1800.0 | 14.77 | 26.73 | 8.82 | 9.44 | 1.72 | 0.90 | 32.95 | 19.13 | 4.72 |
| 1900.0 | 14.59 | 27.04 | 9.23 | 10.33 | 1.85 | 0.93 | 33.15 | 19.74 | 5.50 |
| 2000.0 | 14.43 | 27.36 | 9.03 | 10.41 | 1.91 | 0.96 | 33.77 | 20.78 | 5.14 |
| 2050.0 | 14.36 | 27.56 | 8.91 | 9.79 | 1.92 | 0.95 | 34.04 | 21.05 | 4.97 |
| 2100.0 | 14.30 | 27.61 | 8.48 | 9.19 | 1.87 | 0.95 | 34.12 | 21.21 | 4.89 |
| 2150.0 | 14.24 | 27.79 | 7.76 | 8.50 | 1.81 | 0.96 | 34.50 | 21.15 | 4.89 |
| 2200.0 | 14.19 | 27.92 | 7.08 | 7.82 | 1.75 | 0.95 | 34.68 | 20.97 | 4.72 |
| 2300.0 | 14.17 | 28.15 | 6.51 | 6.74 | 1.69 | 0.90 | 34.84 | 20.26 | 4.46 |
| 2400.0 | 13.79 | 29.01 | 6.65 | 6.71 | 1.97 | 0.89 | 34.34 | 18.99 | 4.79 |

Typical Performance Data

Definitions:

Input Return Loss = -S11 (dB)

Gain(Power Gain) = S21 (dB)

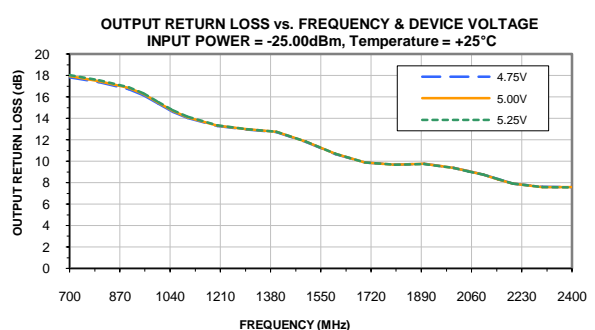
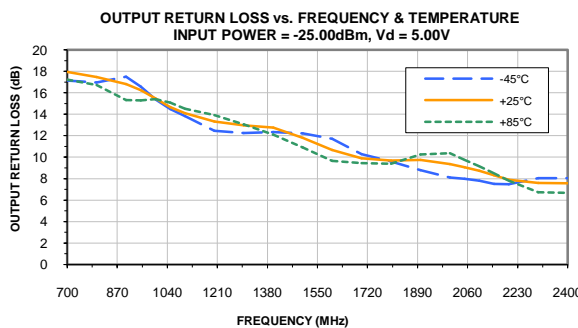
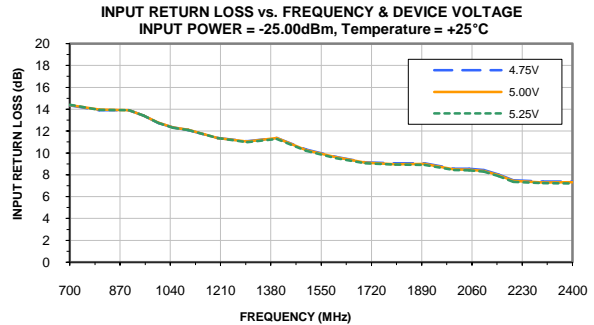
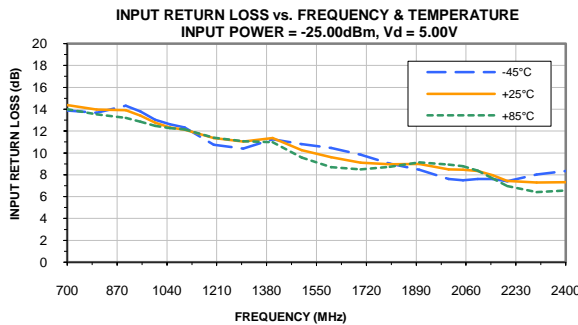
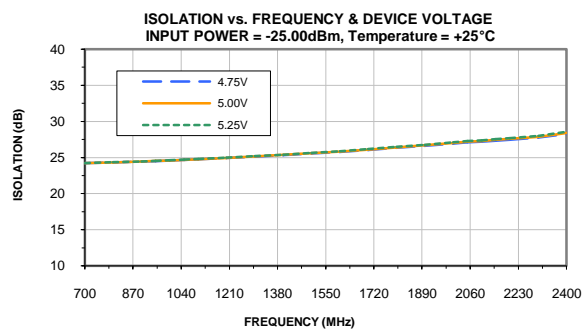
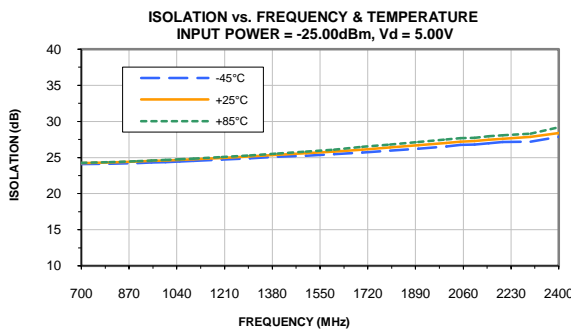
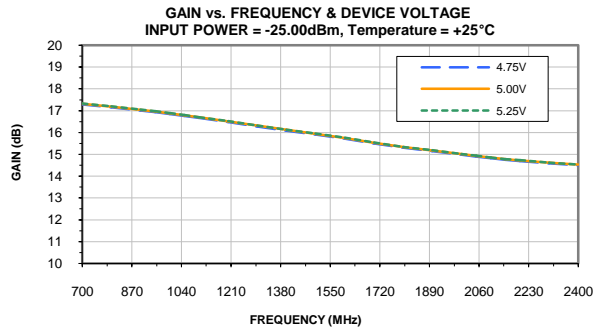
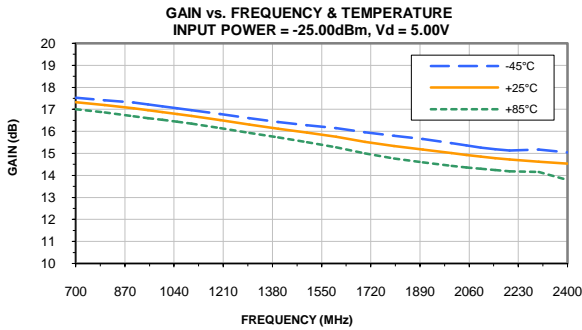
Reverse Isolation = -S12 (dB)

Output Return Loss = -S22 (dB)

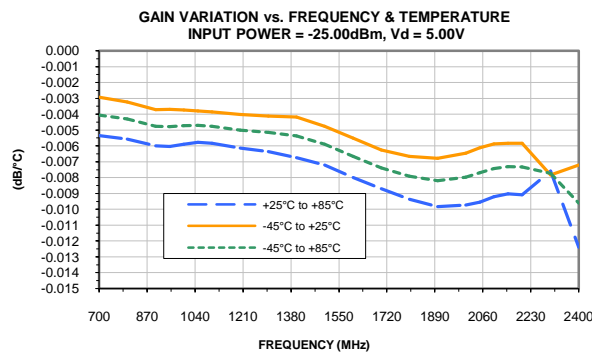
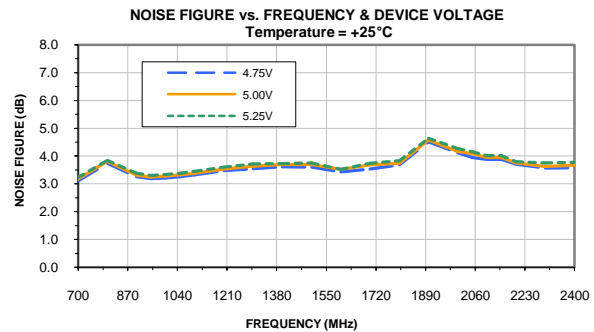
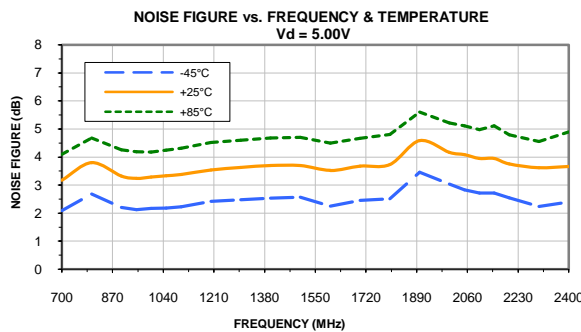
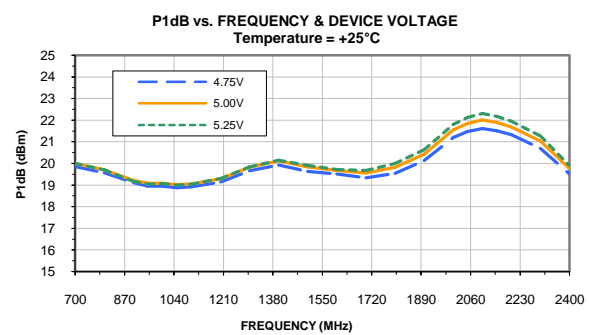
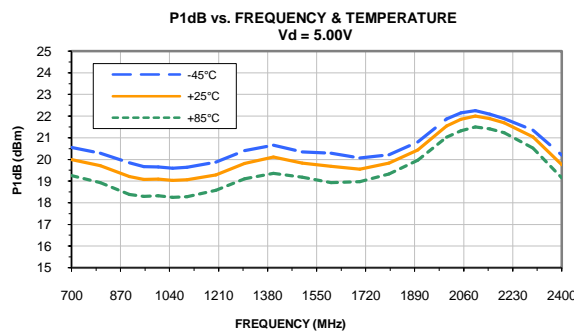
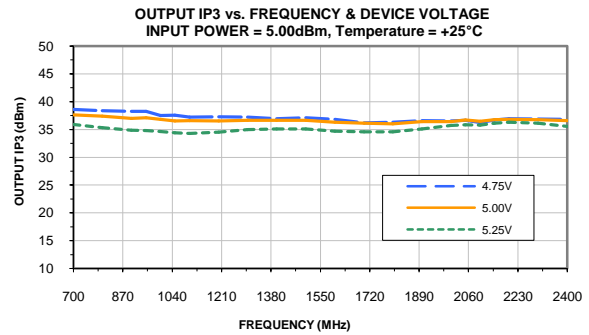
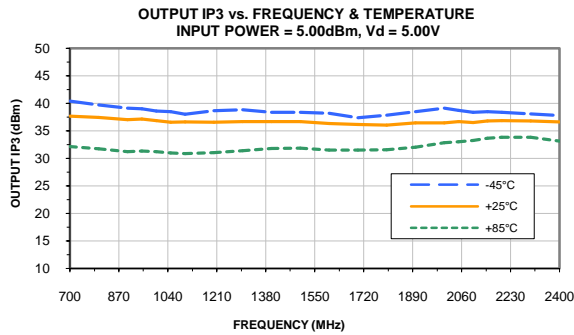
TEST CONDITIONS: Vd = 5.25V, Id = 134.58mA @ Temperature = +85°C

| 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) |
| 700.0 | 16.93 | 24.29 | 13.92 | 17.31 | 1.32 | 0.83 | 29.64 | 19.02 | 4.18 |
| 800.0 | 16.79 | 24.41 | 13.44 | 16.82 | 1.34 | 0.84 | 29.23 | 18.65 | 4.79 |
| 900.0 | 16.62 | 24.56 | 13.10 | 15.41 | 1.37 | 0.85 | 28.82 | 18.07 | 4.40 |
| 950.0 | 16.54 | 24.64 | 12.74 | 15.37 | 1.38 | 0.85 | 28.91 | 17.98 | 4.27 |
| 1000.0 | 16.46 | 24.72 | 12.38 | 15.49 | 1.40 | 0.87 | 28.78 | 18.00 | 4.34 |
| 1050.0 | 16.37 | 24.80 | 12.20 | 15.17 | 1.41 | 0.87 | 28.56 | 17.89 | 4.40 |
| 1100.0 | 16.28 | 24.90 | 12.05 | 14.57 | 1.42 | 0.88 | 28.49 | 17.97 | 4.45 |
| 1200.0 | 16.08 | 25.12 | 11.29 | 13.98 | 1.45 | 0.89 | 28.68 | 18.37 | 4.65 |
| 1300.0 | 15.87 | 25.35 | 10.95 | 13.12 | 1.49 | 0.90 | 29.08 | 18.92 | 4.73 |
| 1400.0 | 15.66 | 25.61 | 10.86 | 12.13 | 1.53 | 0.90 | 29.49 | 19.22 | 4.79 |
| 1500.0 | 15.45 | 25.87 | 9.45 | 10.95 | 1.52 | 0.92 | 29.57 | 19.12 | 4.84 |
| 1600.0 | 15.21 | 26.20 | 8.59 | 9.68 | 1.55 | 0.91 | 29.25 | 18.80 | 4.57 |
| 1700.0 | 14.94 | 26.57 | 8.37 | 9.45 | 1.64 | 0.91 | 29.26 | 18.98 | 4.80 |
| 1800.0 | 14.71 | 26.94 | 8.63 | 9.39 | 1.76 | 0.91 | 29.44 | 19.36 | 4.92 |
| 1900.0 | 14.52 | 27.28 | 9.01 | 10.28 | 1.90 | 0.94 | 29.97 | 20.05 | 5.65 |
| 2000.0 | 14.36 | 27.63 | 8.78 | 10.40 | 1.96 | 0.96 | 30.87 | 21.10 | 5.35 |
| 2050.0 | 14.29 | 27.83 | 8.65 | 9.78 | 1.97 | 0.96 | 31.25 | 21.42 | 5.29 |
| 2100.0 | 14.23 | 27.87 | 8.24 | 9.19 | 1.92 | 0.96 | 31.49 | 21.60 | 5.15 |
| 2150.0 | 14.17 | 28.10 | 7.52 | 8.51 | 1.87 | 0.96 | 31.98 | 21.51 | 5.24 |
| 2200.0 | 14.11 | 28.24 | 6.86 | 7.82 | 1.81 | 0.96 | 32.06 | 21.34 | 4.89 |
| 2300.0 | 14.09 | 28.49 | 6.28 | 6.71 | 1.74 | 0.91 | 31.86 | 20.63 | 4.70 |
| 2400.0 | 13.71 | 29.40 | 6.43 | 6.65 | 2.04 | 0.90 | 31.18 | 19.18 | 5.09 |

Typical Performance Curves



Typical Performance Curves



Outline Dimensions



PCB Land Pattern



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

| CASE # | A | B | C | D | E | F | G | H | J | K | L | M |
|--------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| DF782 | .102 (2.59) | .090 (2.29) | .181 (4.60) | .173 (4.39) | .063 (1.60) | .167 (4.24) | .155 (3.94) | .059 (1.50) | .118 (3.00) | .015 (0.38) | .041 (1.04) | .016 (0.41) |

| CASE # | N | P | Q | WT. GRAM |
|--------|----------------|----------------|----------------|----------|
| DF782 | .019 (0.48) | .065 (1.65) | .062 (1.57) | .2 |

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

Notes:

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



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Tape & Reel Packaging TR-F55

DEVICE ORIENTATION IN T&R



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

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



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

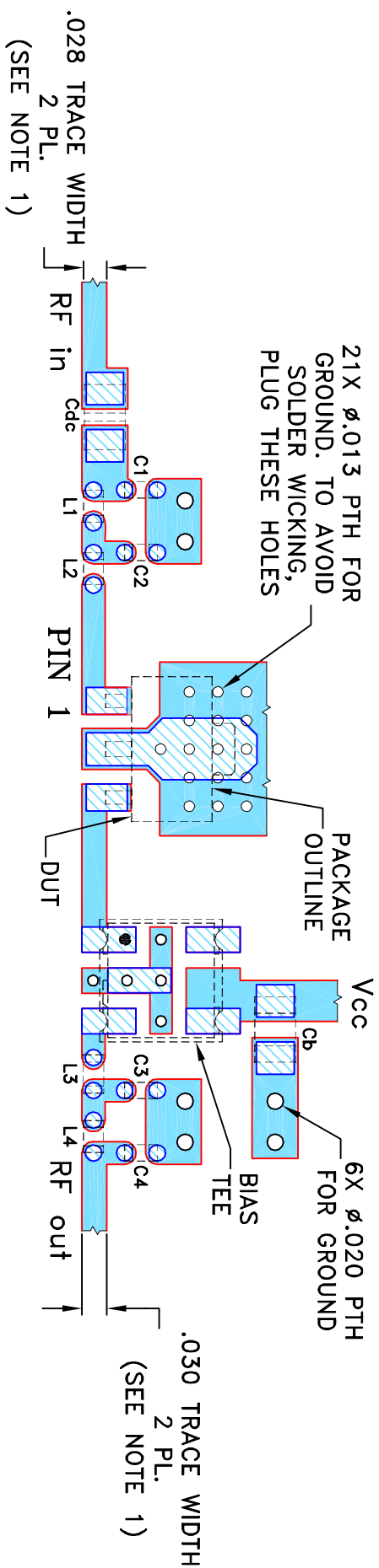
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| REVISIONS | | | | | |
|-----------|---------|-------------|----------|----|------|
| REV | ECN No. | DESCRIPTION | DATE | DR | AUTH |
| OR | M138185 | NRE RELEASE | 08/08/12 | AV | DJ |
| | | | | | |
| | | | | | |

**SUGGESTED MOUNTING CONFIGURATION
FOR DF782 CASE STYLE, "04AM03" PIN CODE**




| COMPONENT | SIZE |
|--------------|------|
| C1-C4, L1-L4 | 0402 |
| CDC, CB | 0805 |

- NOTES:**
- TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .030" ± .0015"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
 - BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.
 - CHIP COMPONENT FOOT PRINTS SHOWN FOR REFERENCE. FOR COMPONENT VALUES REFER TO TB-670+.

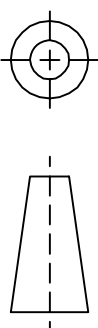
 DENOTES PCB COPPER LAYOUT WITH SMOBC
 DENOTES SOLDER MASK OVER BARE COPPER
 DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

| UNLESS OTHERWISE SPECIFIED | INITIALS | DATE |
|----------------------------|----------|----------|
| DIMENSIONS ARE IN INCHES | AV | 08/02/12 |
| TOLERANCES ON: | IL | 08/08/12 |
| 2 PL. DECIMALS ± .005 | DJ | 08/08/12 |
| 3 PL. DECIMALS ± | | |
| ANGLES ± | | |
| FRACTIONS ± | | |


 13 Neptune Avenue
 Brooklyn NY 11235

PL, 04AM03, 75, DF782, TB-670+

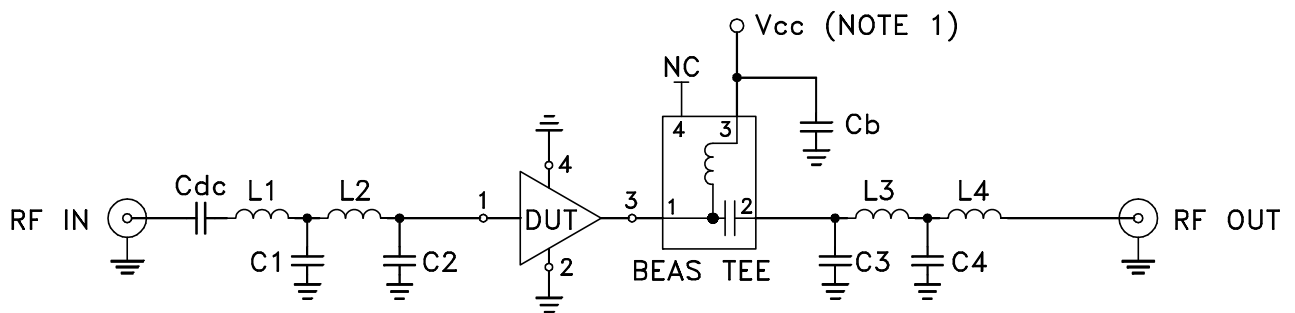
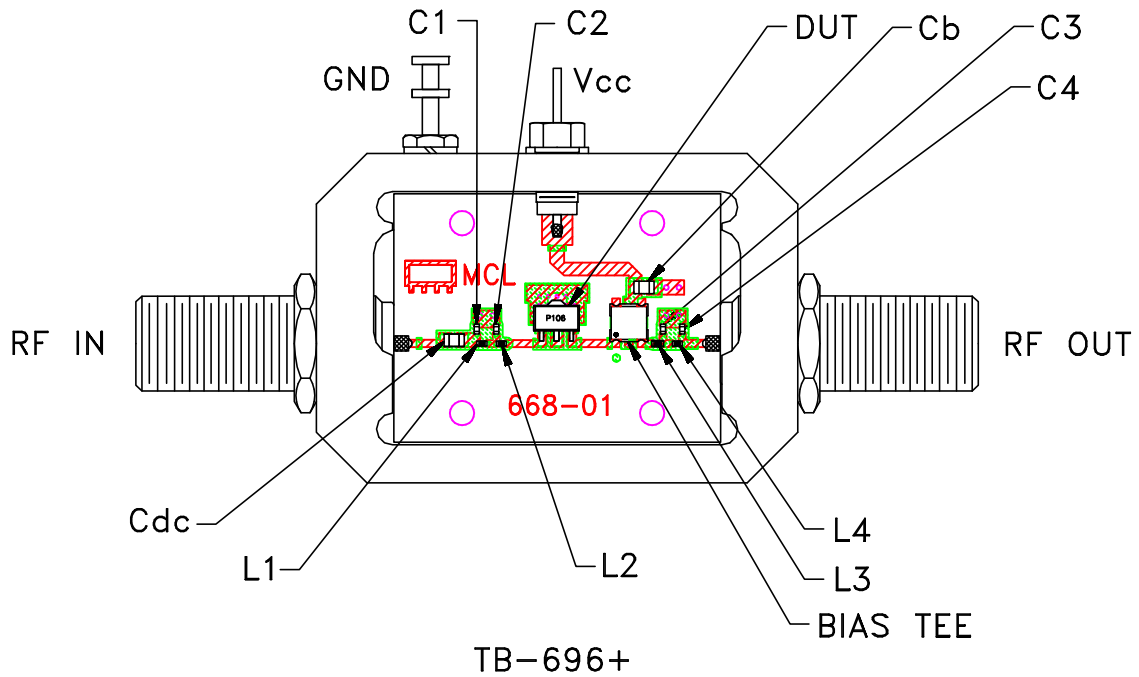
THIRD ANGLE PROJECTION



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|----------------------------------|--------|------------|-------------|--------|
| Mini-Circuits® | SIZE | CODE IDENT | DRAWING NO: | REV: |
| ASHEETL1.DWG REV:A DATE:01/12/95 | A | 15542 | 98-PL-379 | OR |
| FILE: 98PL379 | SCALE: | 5:1 | SHEET: | 1 OF 1 |

Evaluation Board and Circuit



| COMPONENT | VALUE | SIZE |
|-----------|------------------------|------|
| DUT | PGA-106W-75+ | - |
| BIAS TEE | Mini-Circuits TCBT-14+ | - |
| Cdc | 2400 pF | 0805 |
| Cb | 0.1 uF | 0805 |
| C1 | 0.4 pF | 0402 |
| C2,C3 | 1.0 pF | 0402 |
| C4 | 0.3 pF | 0402 |
| L1,L2,L4 | 6.2 nH | 0402 |
| L3 | 4.7nH | 0402 |

Schematic Diagram

NOTES:

1. Vcc voltage: $+5 \pm 0.2V$.
2. F Type Female 75 Ohm connectors.
3. PCB material: Rogers R04350 or equivalent, dielectric constant=3.5, dielectric thickness=.030 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 |



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