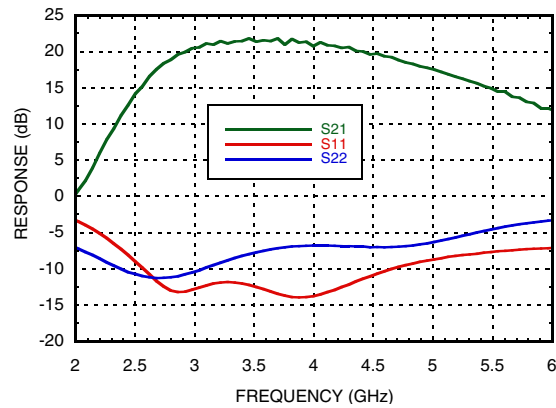
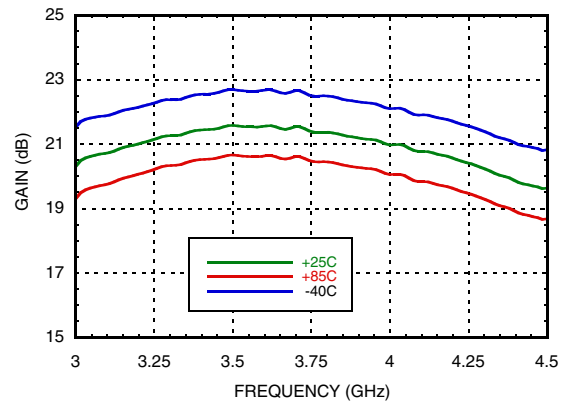
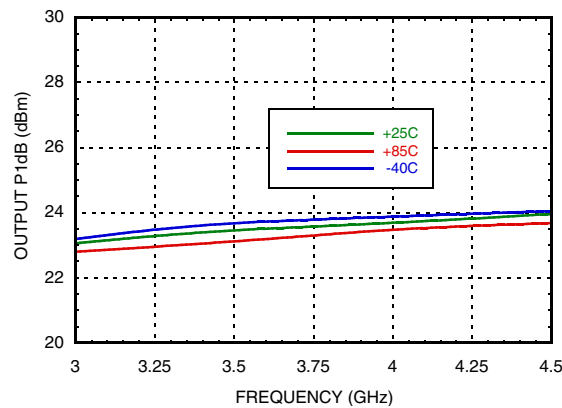
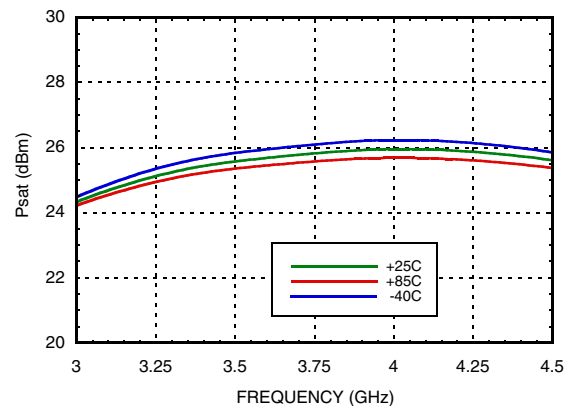
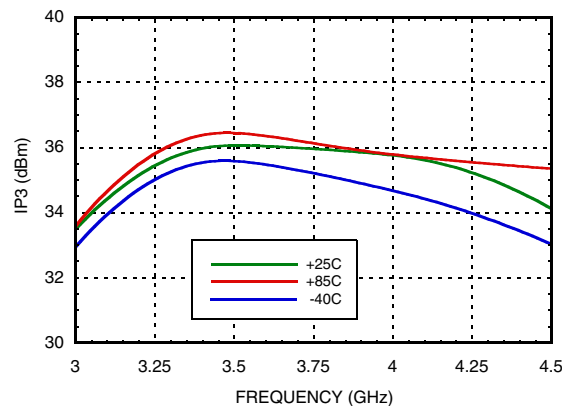
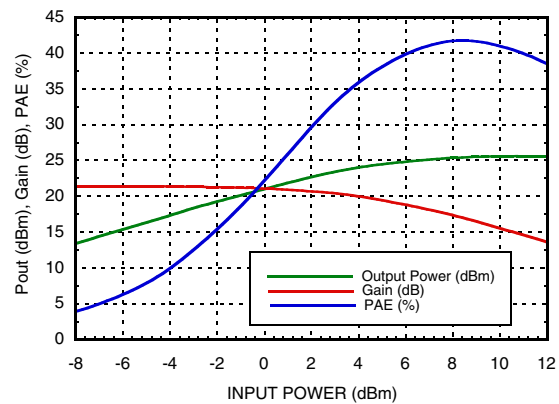
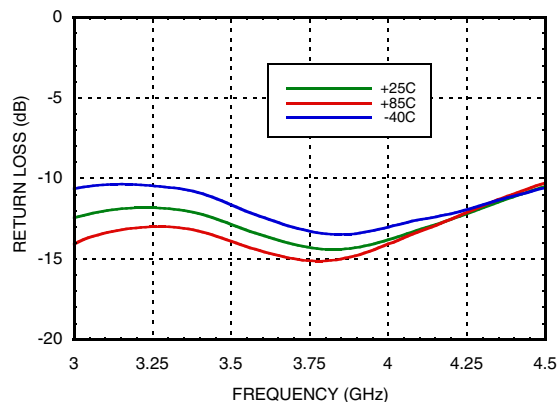
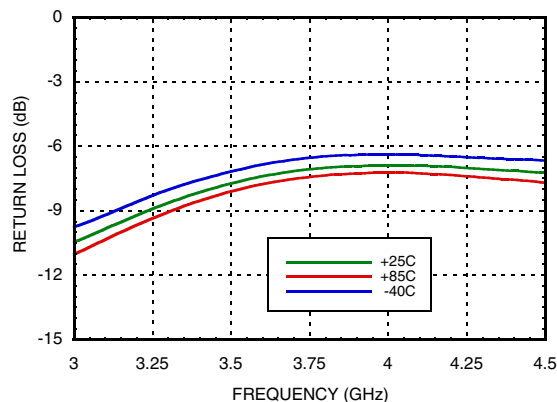
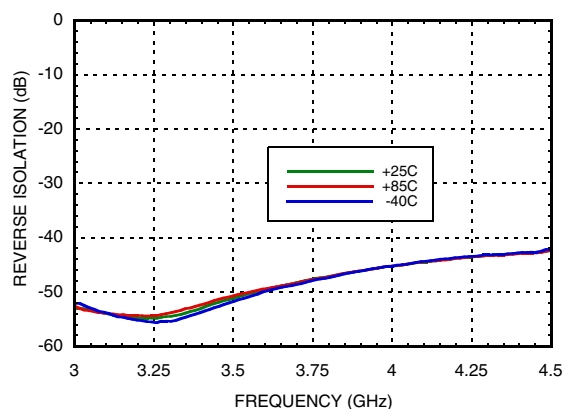
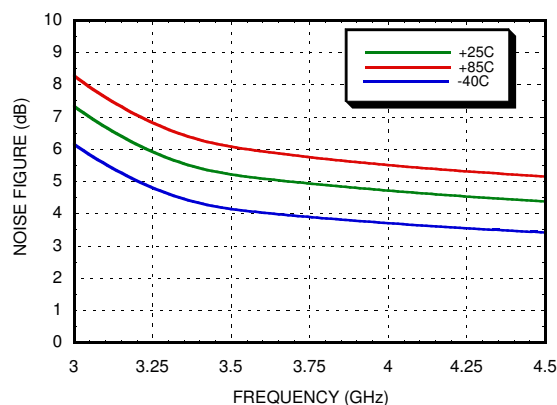
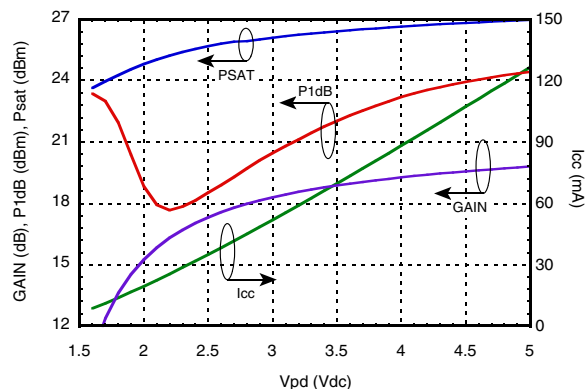
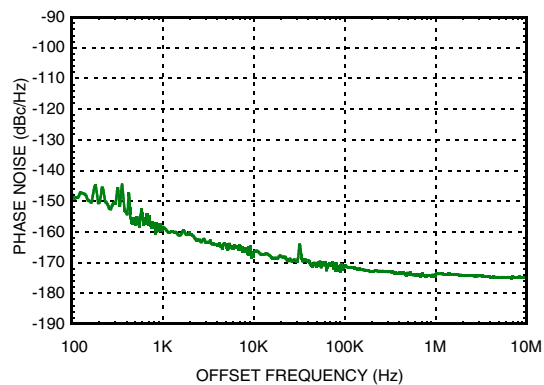


## GaAs InGaP HBT MMIC DRIVER AMPLIFIER, 3.0 - 4.5 GHz

**Broadband Gain & Return Loss**

**Gain vs. Temperature**

**P1dB vs. Temperature**

**Psat vs. Temperature**

**Output IP3 vs. Temperature**

**Power Compression @ 3.5 GHz**


## GaAs InGaP HBT MMIC DRIVER AMPLIFIER, 3.0 - 4.5 GHz

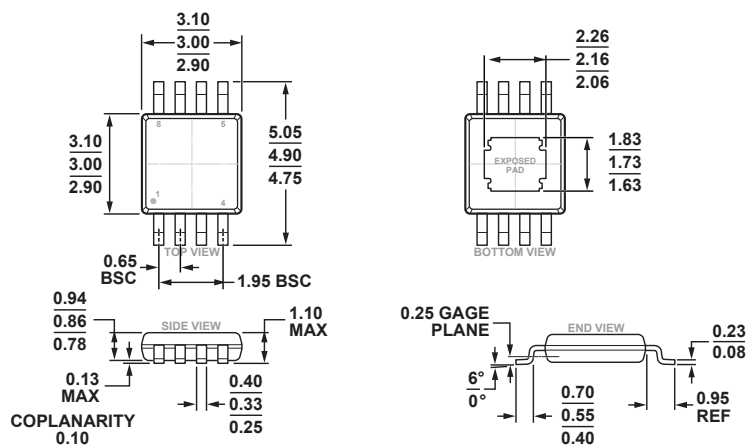
**Input Return Loss vs. Temperature**

**Output Return Loss vs. Temperature**

**Reverse Isolation vs. Temperature**

**Noise Figure vs. Temperature**

**Gain, Power & Quiescent Supply  
Current vs. V<sub>pd</sub> @3.5 GHz**

**Additive Phase Noise Vs Offset Frequency,  
RF Frequency = 4 GHz,  
RF Input Power = 10 dBm (P<sub>sat</sub>)**


**GaAs InGaP HBT MMIC DRIVER  
AMPLIFIER, 3.0 - 4.5 GHz**
**Absolute Maximum Ratings**

|                                                                           |                |
|---------------------------------------------------------------------------|----------------|
| Collector Bias Voltage (Vcc)                                              | +5.5 Vdc       |
| Control Voltage Range (Vpd)                                               | +5.5 Vdc       |
| RF Input Power (RFIN)(Vs = Vpd = +5Vdc)                                   | +15 dBm        |
| Junction Temperature                                                      | 150 °C         |
| Continuous P <sub>diss</sub> (T = 85 °C)<br>(derate 14 mW/°C above 85 °C) | 0.916 W        |
| Thermal Resistance<br>(junction to ground paddle)                         | 71 °C/W        |
| Storage Temperature                                                       | -65 to +150 °C |
| Operating Temperature                                                     | -40 to +85 °C  |
| ESD Sensitivity (HBM)                                                     | Class 1A       |



**ELECTROSTATIC SENSITIVE DEVICE  
OBSERVE HANDLING PRECAUTIONS**

**Outline Drawing**


COMPLIANT TO JEDEC STANDARDS MO-187-AA-T

8-Lead Mini Small Outline Package with Exposed Pad [MINI\_SO\_EP]  
(RH-8-1)

Dimensions shown in millimeters.

**Package Information**

| Part Number            | Package Body Material                              | Lead Finish   | MSL Rating          | Package Marking <sup>[3]</sup> |
|------------------------|----------------------------------------------------|---------------|---------------------|--------------------------------|
| HMC326MS8G             | Low Stress Injection Molded Plastic                | Sn/Pb Solder  | MSL1 <sup>[1]</sup> | H326<br>XXXX                   |
| HMC326MS8GE            | RoHS-compliant Low Stress Injection Molded Plastic | 100% matte Sn | MSL1 <sup>[2]</sup> | H326<br>XXXX                   |
| HMC326MS8GETR          | RoHS-compliant Low Stress Injection Molded Plastic | 100% matte Sn | MSL1 <sup>[2]</sup> | H326<br>XXXX                   |
| HMC326MS8GTR           | Low Stress Injection Molded Plastic                | Sn/Pb Solder  | MSL1 <sup>[1]</sup> | H326<br>XXXX                   |
| 104356 -<br>HMC326MS8G | Evaluation Board                                   |               |                     |                                |

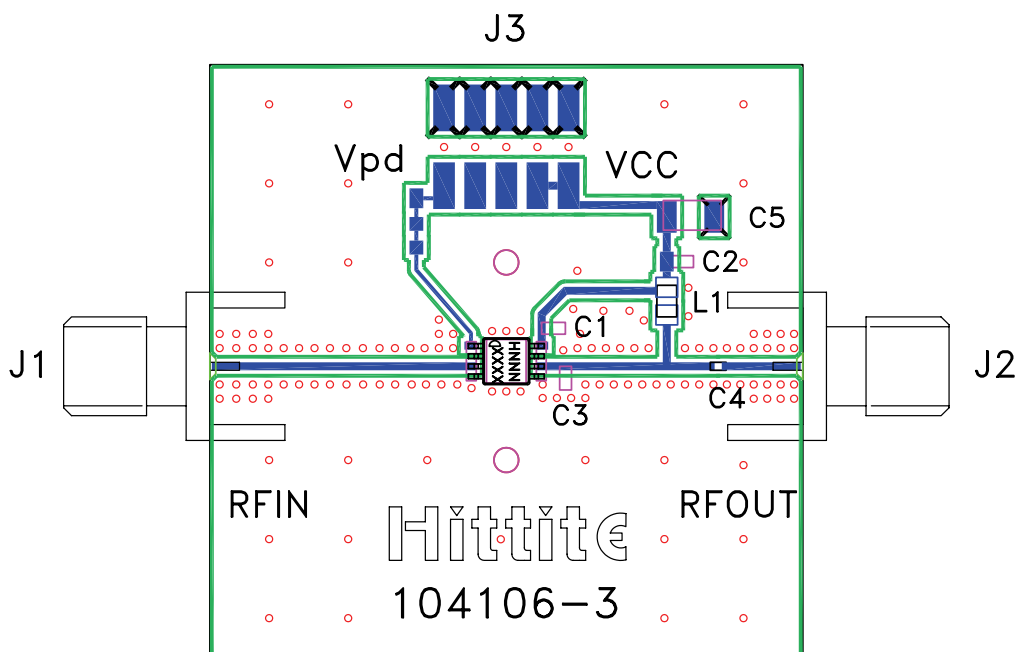
[1] Max peak reflow temperature of 235 °C

[2] Max peak reflow temperature of 260 °C

[3] 4-Digit lot number XXXX

## GaAs InGaP HBT MMIC DRIVER AMPLIFIER, 3.0 - 4.5 GHz

### Evaluation PCB



### List of Materials for Evaluation PCB 104356 <sup>[1]</sup>

| Item    | Description                        |
|---------|------------------------------------|
| J1 - J2 | PCB Mount SMA RF Connector         |
| J3      | 2mm DC Header                      |
| C1 - C2 | 330 pF Capacitor, 0603 Pkg.        |
| C3      | 0.7 pF Capacitor, 0603 Pkg.        |
| C4      | 3.0 pF Capacitor, 0402 Pkg.        |
| C5      | 2.2 $\mu$ F Capacitor, Tantalum    |
| L1      | 3.3 nH Inductor, 0805 Pkg.         |
| U1      | HMC326MS8G / HMC326MS8GE Amplifier |
| PCB [2] | 104106 Eval Board                  |

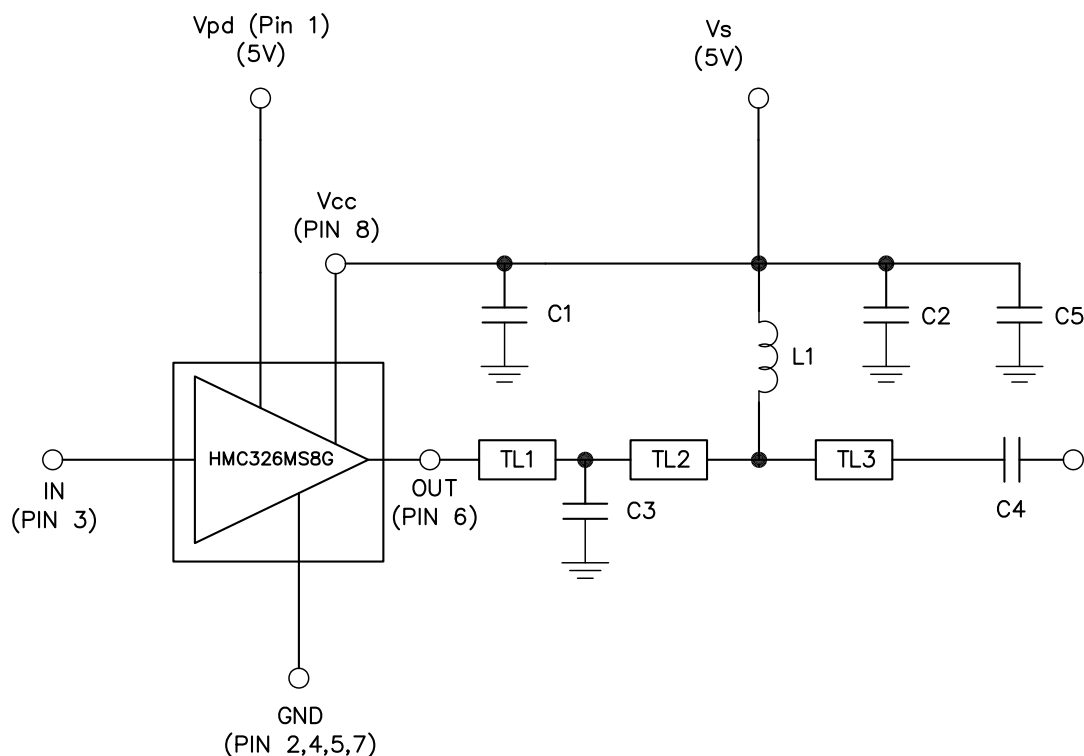
[1] Reference this number when ordering complete evaluation PCB

[2] Circuit Board Material: Rogers 4350, 10 mil thick,  $\epsilon_r = 3.48$

The circuit board used in the final application should use RF circuit design techniques. Signal lines should have 50 Ohm impedance while the package ground leads and exposed paddle should be connected directly to the ground plane similar to that shown. A sufficient number of via holes should be used to connect the top and bottom ground planes. The evaluation board should be mounted to an appropriate heat sink. The evaluation circuit board shown is available from Analog Devices upon request.

## GaAs InGaP HBT MMIC DRIVER AMPLIFIER, 3.0 - 4.5 GHz

### Application Circuit



|                              | TL1                                              | TL2                                               | TL3                                                |
|------------------------------|--------------------------------------------------|---------------------------------------------------|----------------------------------------------------|
| Impedance                    | 50 ohm                                           | 50 ohm                                            | 50 ohm                                             |
| Physical Length              | 0.0614"                                          | 0.2561"                                           | 0.110"                                             |
| Electrical Length @ 3.75 GHz | 10.7°                                            | 44.6°                                             | 19.2°                                              |
| Measurement                  | Center of package pin to center of capacitor C3. | Center of capacitor C3 to center TL for inductor. | Center of TL for inductor to edge of capacitor C4. |

PCB Material: 10 mil Rogers 4350 or Arlon 25FR

| Recommended Component Values |             |
|------------------------------|-------------|
| L1                           | 3.3 nH      |
| C1 - C2                      | 330 pF      |
| C3                           | 0.7 pF      |
| C4                           | 3.0 pF      |
| C5                           | 2.2 $\mu$ F |