v02.0701

HMC279MS8G

GaAs MMIC DRIVER AMPLIFIER 2.5 - 4.2 GHz

Typical Applications

The HMC279MS8G is ideal for:

- 2.6 - 2.7 GHz MMDS
- 3.5 GHz Wireless Local Loop
- 3.7 - 4.2 GHz Satellite (Receive and Transmit Bands)

Features

High Gain: 36 dB

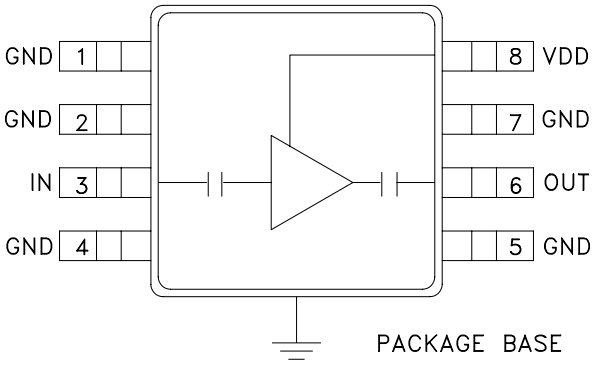
Psat Output Power: +14 dBm

Single Supply: +3V @ 60 mA

Ultra Small Package: MSOP8G

No External Matching Required

Functional Diagram



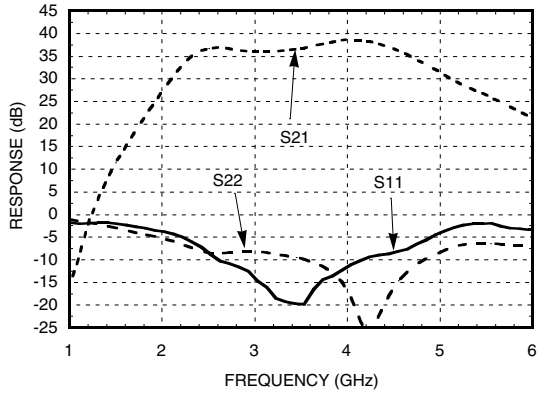
General Description

The HMC279MS8G is a +3V GaAs MMIC driver amplifier covering the 2.5 - 4.2 GHz frequency range. The device is packaged in a low cost, surface mount MSOP plastic package with an exposed base paddle for improved RF ground. The amplifier provides greater than 36dB gain and +14 dBm P1dB while operating from a single +3V supply at only 60mA. No external components are required and the amplifier occupies less than 0.023 sq. in. (14.6 sq. mm). All data is taken with the amplifier assembled into a 50 ohm test fixture with the exposed ground paddle connected to RF ground.

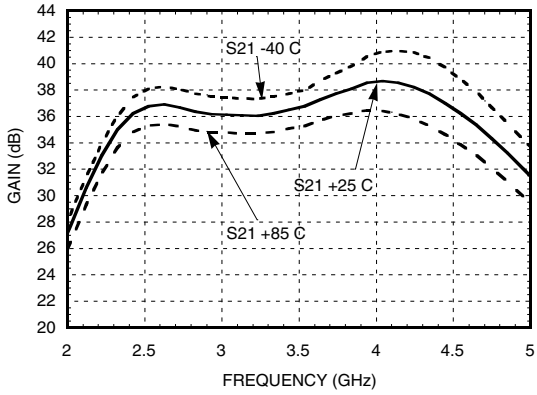
Electrical Specifications, T_A = +25° C, Vdd= +3V

Parameter	Min.	Typ.	Max.	Min.	Typ.	Max.	Units
Frequency Range		2.5 - 3.7			3.7 - 4.2		GHz
Gain	33	36	40	35	38	41	dB
Gain Variation over Temperature		±0.03	±0.045		±0.03	±0.045	dB/°C
Input Return Loss	5	10		6	11		dB
Output Return Loss	5	9		8	13		dB
Reverse Isolation	44	52		42	48		dB
Output Power for 1 dB Compression (P1dB)	8	12		9	12		dBm
Saturated Output Power (Psat)	11	14		11	14		dBm
Output Third Order Intercept (IP3)	17	22		15	20		dBm
Noise Figure		5	8		5	8	dB
Supply Current (Idd)		60			60		mA

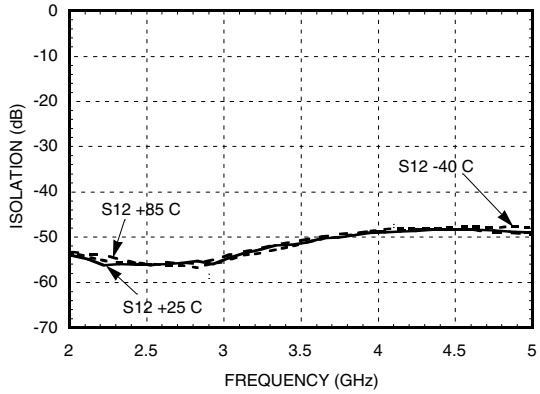
Broadband Gain & Return Loss



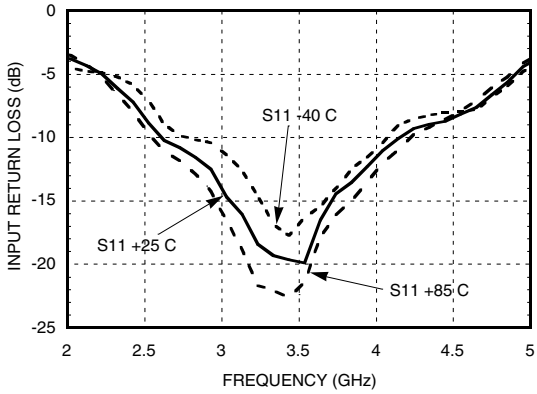
Gain vs. Temperature



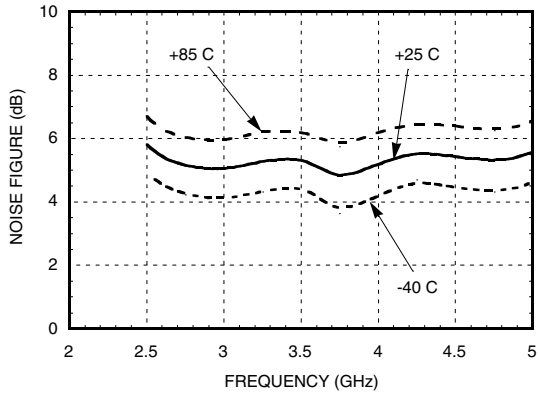
Reverse Isolation vs. Temperature



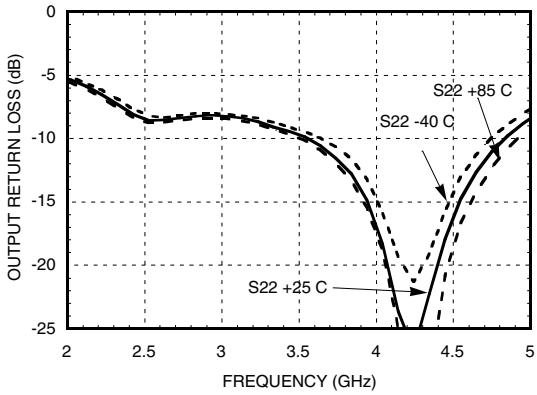
Input Match vs. Temperature



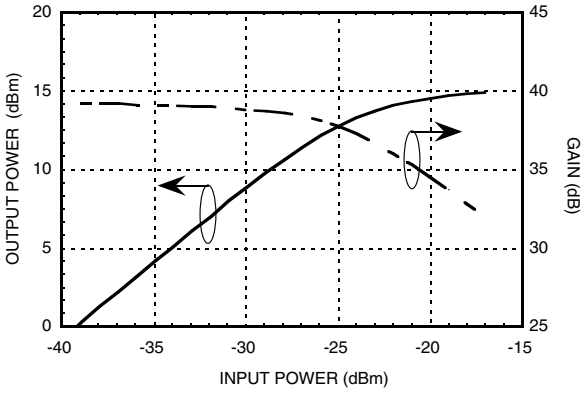
Noise Figure vs. Temperature



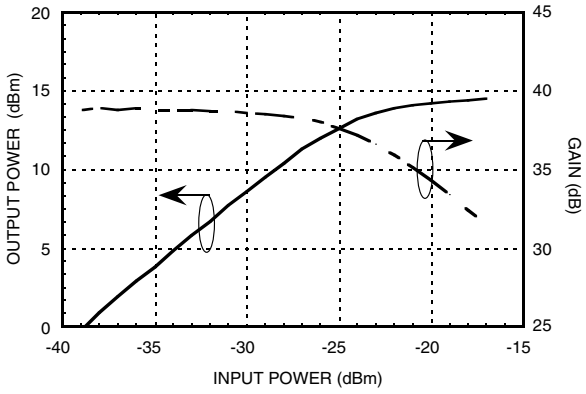
Output Match vs. Temperature



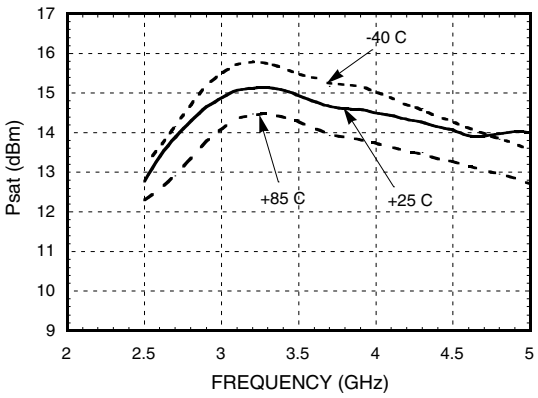
Power Compression @ 3.5 GHz



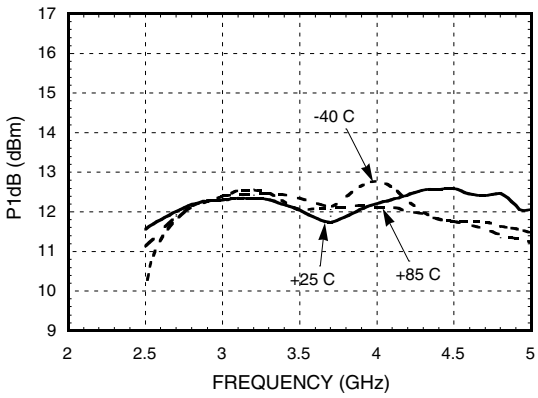
Power Compression @ 4 GHz



Psat vs. Temperature



P1dB vs. Temperature



Output IP3 vs. Temperature

	Frequency (GHz)		
Temperature	3.4	3.8	4.2
-40 °C	23.80	22.13	23.92
+25 °C	24.00	23.42	20.82
+85 °C	25.58	24.83	22.23
All levels in dBm			

Spur Data @ P1dB Output (3.8 GHz)

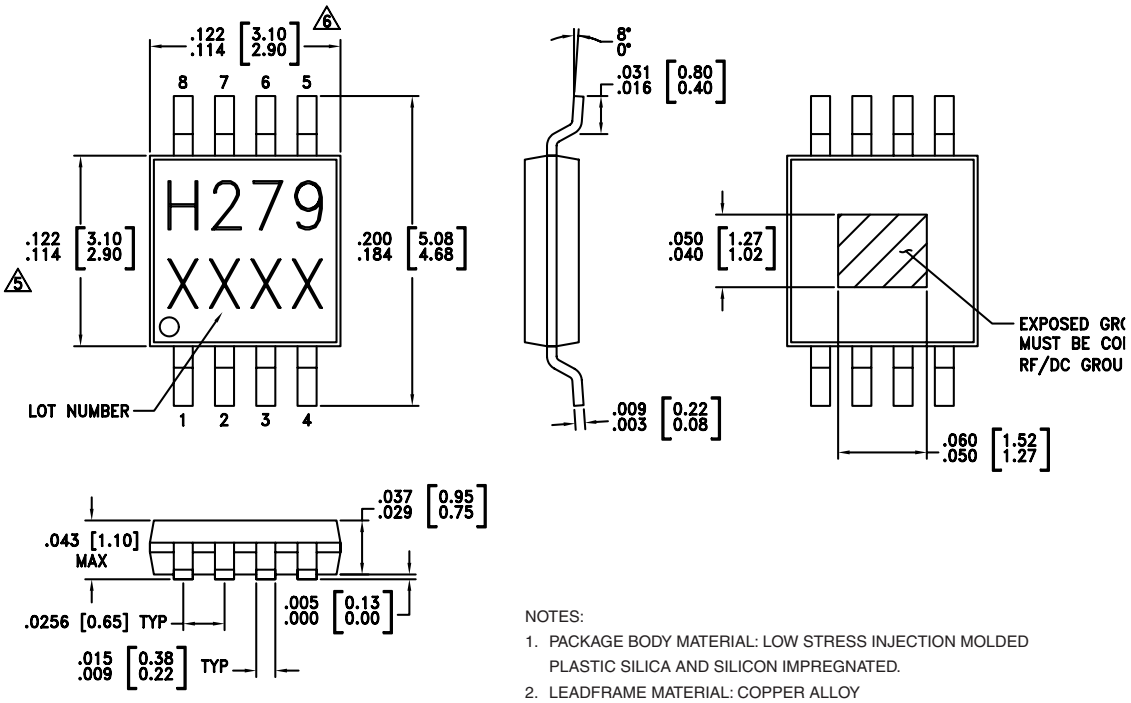
Spur Data at P1dB				
2FO	3FO	4FO	5FO	6FO
-31	-46.5	-56.5	-92.3	-102.33
All power levels are in dBc with respect to the output power (FO)				

Absolute Maximum Ratings

Drain Bias Voltage (Vdd)	+8.0 Vdc
RF Input Power (Vdd = + 3.0 Vdc)	-10 dBm
Channel Temperature	150 °C
Continuous Pdiss (T = 85 °C) (derate 20 mW/°C above 85 °C)	1.3 W
Thermal Resistance (channel to ground paddle)	50 °C/W
Storage Temperature	-65 to +150 °C
Operating Temperature	-40 to +85 °C

ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS

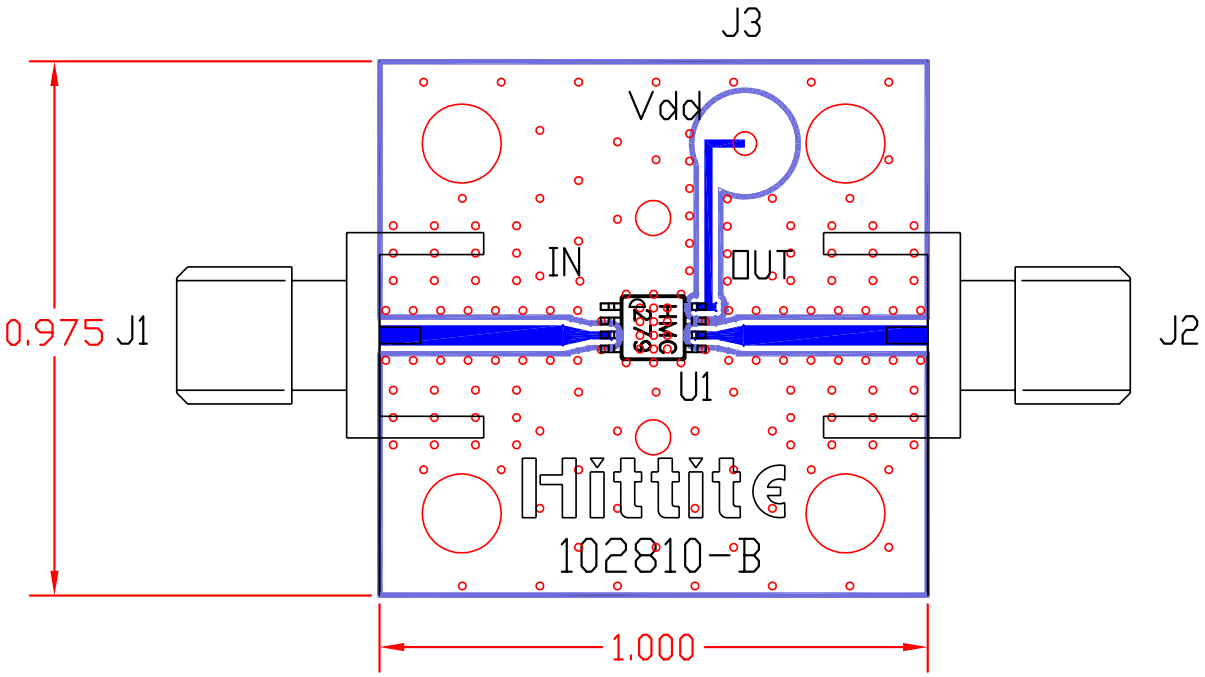
Outline Drawing



NOTES:

1. PACKAGE BODY MATERIAL: LOW STRESS INJECTION MOLDED PLASTIC SILICA AND SILICON IMPREGNATED.
2. LEADFRAME MATERIAL: COPPER ALLOY
3. LEADFRAME PLATING: Sn/Pb SOLDER
4. DIMENSIONS ARE IN INCHES [MILLIMETERS].
5. DIMENSION DOES NOT INCLUDE MOLDFLASH OF 0.15mm PER SIDE.
6. DIMENSION DOES NOT INCLUDE MOLDFLASH OF 0.25mm PER SIDE.
7. ALL GROUND LEADS AND GROUND PADDLE MUST BE SOLDERED TO PCB RF GROUND.
8. CLASSIFIED AS MOISTURE SENSITIVITY LEVEL (MSL) 1.

Evaluation PCB



List of Material

Item	Description
J1, J2	PC Mount SMA Connector
J3	DC Pin
U1	HMC279MS8G Amplifier
PCB*	102810 Evaluation Board
*Circuit Board Material: Roger 4350	

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 circuit board shown is available from Hittite upon request.

Notes: