Amplifier
2 - 18 GHz

ENGAD00028
Rev. V1

Features

- 2 to 18 GHz Band Coverage
- Small Signal Gain: >26 dB
- Noise Figure: >4 dB
- Output P1dB: >24 dB
- Solid State GaAs MMICs
- SMA Input/Output Interface
- Size: 1.12” x 0.95” x 0.50”
- RoHS* Compliant

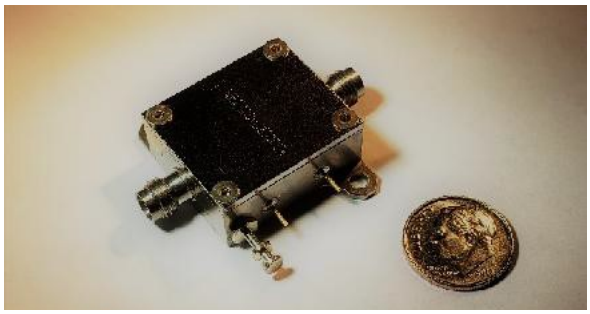
Applications

- Military & Commercial SATCOM
- Electronic Warfare Circuits
- Receive/Transmit Circuits
- Telecom Infrastructure
- Test & Measurement Systems

Description

The ENGAD00028 amplifier operates across 2 to 18 GHz with small signal gain greater than 26 dB, noise figure less than 4 dB and output P1dB greater than 24 dBm. The ENGAD00028 uses SMA interfaces for the RF input and output ports. The ENGAD00028 operates with +8 V and -5 V supply voltages with a typical DC current of 0.46 mA.

Functional Block Diagram



Ordering Information

Part Number	Package
ENGAD00028	bulk

* Restrictions on Hazardous Substances, compliant to current RoHS EU directive.

Electrical Specifications: Freq. = 2 - 18 GHz, T_A = +25°C, V_D = +8 V, V_G = -5 V

Parameter	Test Conditions	Units	Min.	Typ.	Max.
Small Signal Gain	—	dB	26	28	—
Gain Flatness	—	dB	-1.2	±0.8	+1.2
Noise Figure	2 - 3 GHz 3 - 18 GHz	dB	—	3.7 3.0	4.0 3.5
Isolation	—	dB	50	70	—
Output P1dB	—	dBm	24	26	—
DC Current	Small Signal	A	—	0.46	0.60

Recommended Operating Conditions

Parameter	Units	Min.	Typ.	Max.
Drain Voltage	V	+7.5	+8.0	+8.5
Gate Voltage	V	-5.1	-5.0	-4.9

Absolute Maximum Ratings[1,2]

Parameter	Absolute Maximum
Input Voltage	9 V
RF Input Power	20 dBm
Operating Temperature	+0°C to +70°C
Storage Temperature	-65°C to +125°C

1. Exceeding any one or combination of these limits may cause permanent damage to this device.
2. MACOM does not recommend sustained operation near these survivability limits.

Handling Procedures

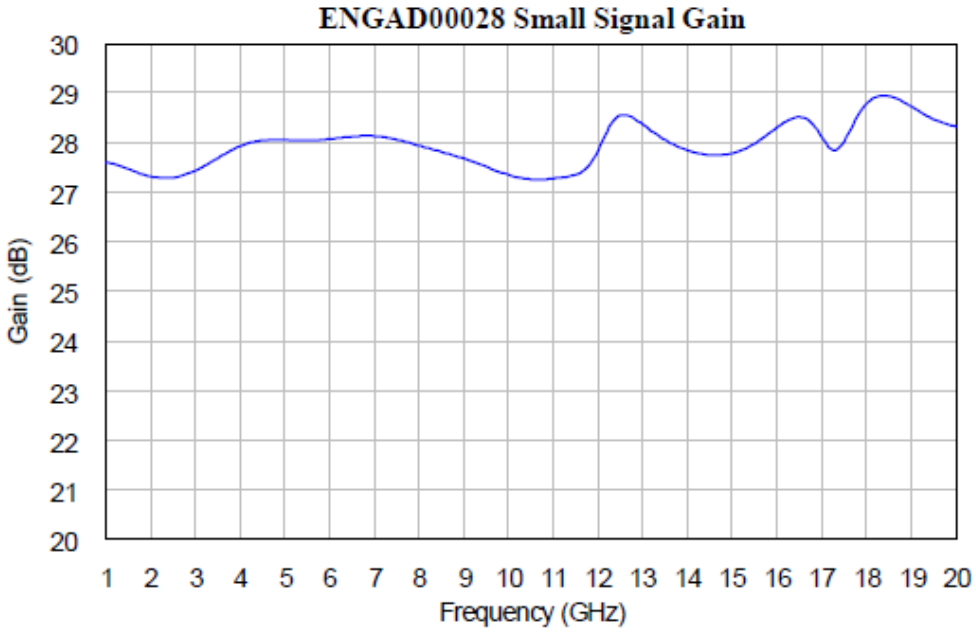
Please observe the following precautions to avoid damage:

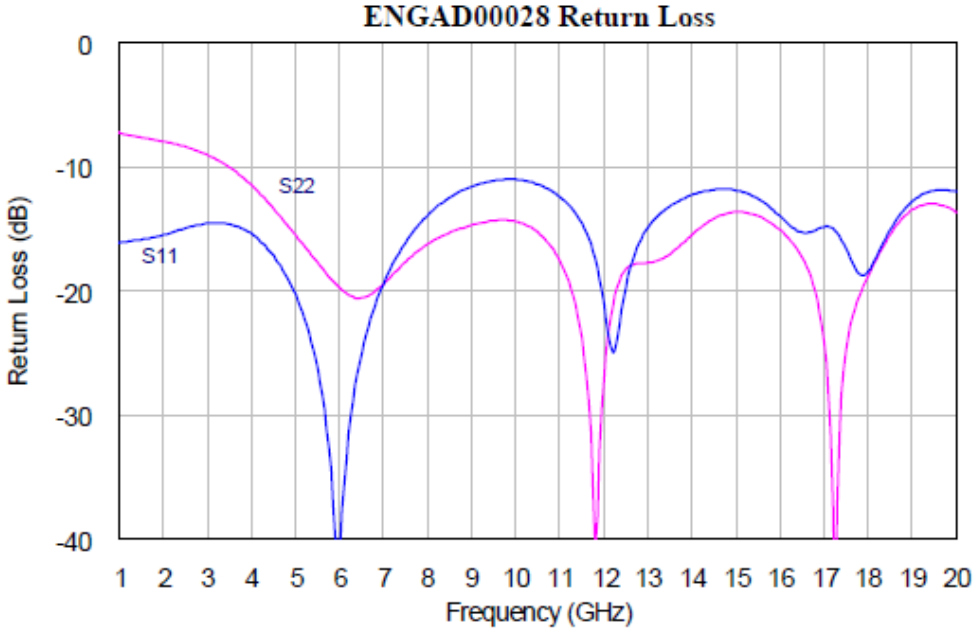
Static Sensitivity

These electronic devices are sensitive to electrostatic discharge (ESD) and can be damaged by static electricity. Proper ESD control techniques should be used when handling these devices.

Typical Performance

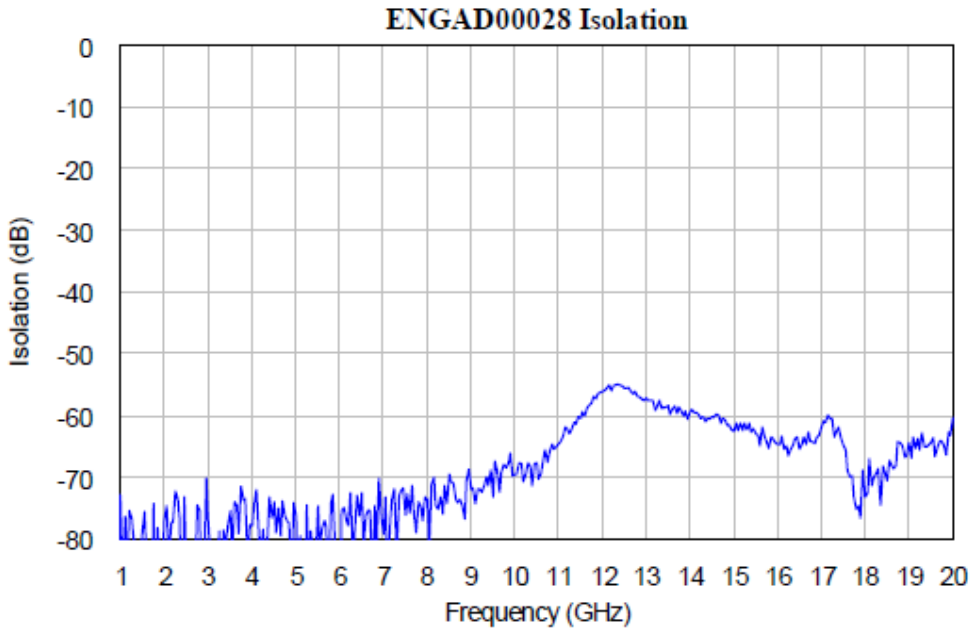
Small Signal Gain and Return Loss: T_A = 25°C, Vd = +8 V, Vg = -5 V, Id = 460 mA

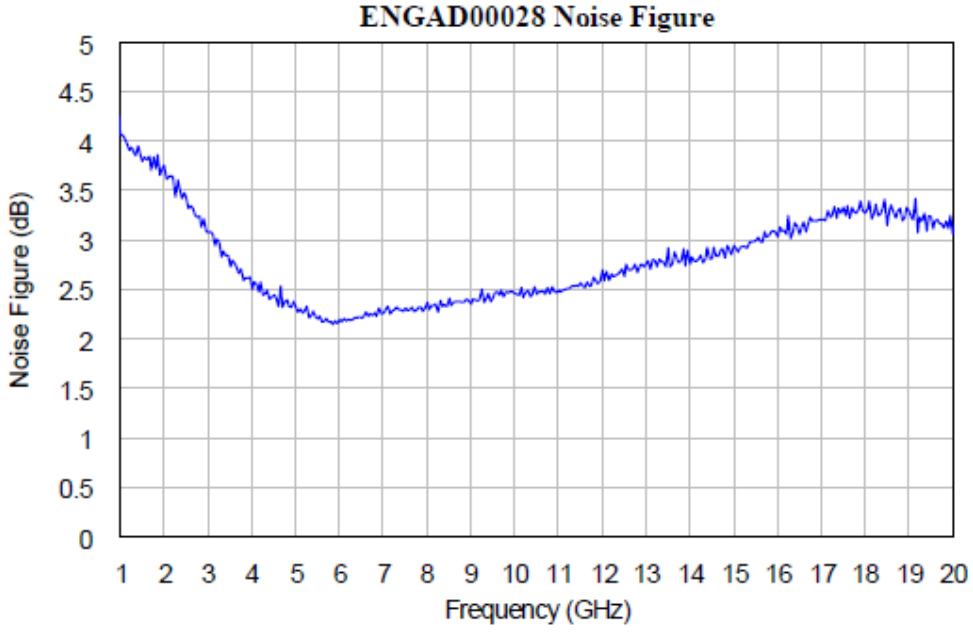




Typical Performance

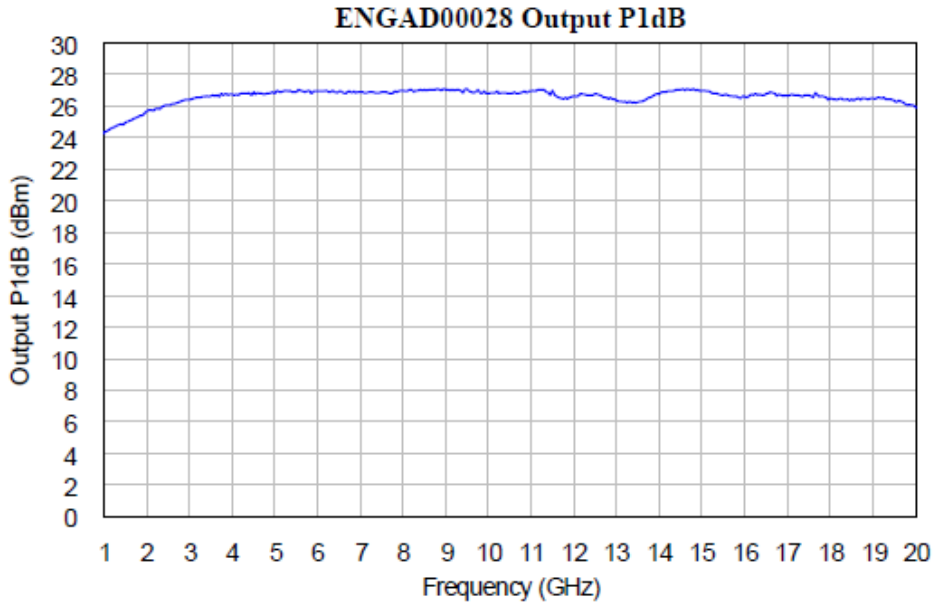
Isolation and Noise Figure: T_A = 25°C, Vd = +8 V, Vg = -5 V, Id = 460 mA

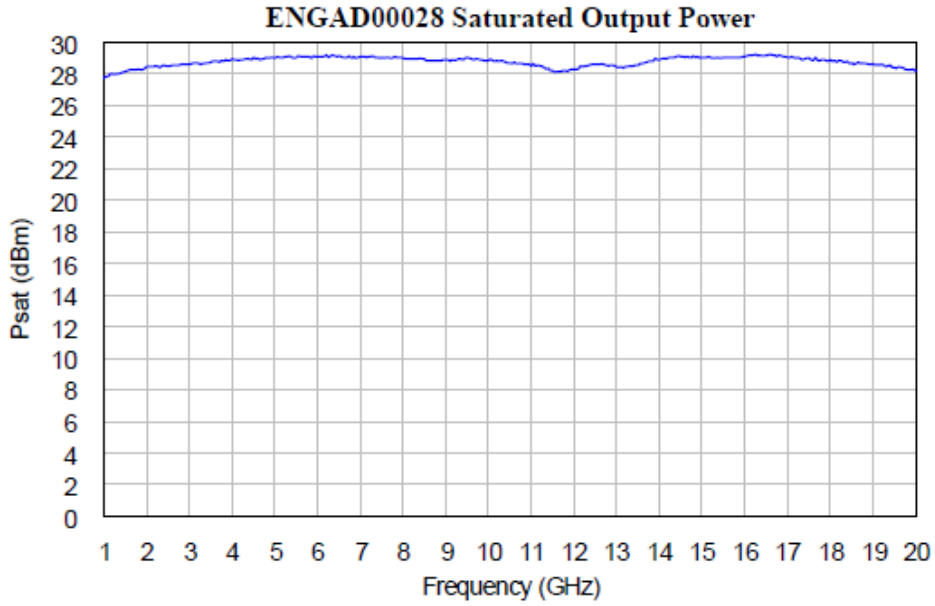




Typical Performance

Output P1dB and Saturated Output Power: T_A = 25°C, Vd = +8 V, Vg = -5 V





To prevent inadvertent damage to the amplifier, the following bias procedure is recommended.

Bias ON
1. Set +8V power supply current limit to 0.6A
2. Apply -5V to Vg
3. Apply +8V to Vd
4. Turn on RF signal

Bias OFF
1. Turn off RF signal
2. Set Vd to 0 V
3. Set Vg to 0 V

Outline Drawing