MILLER MMIC

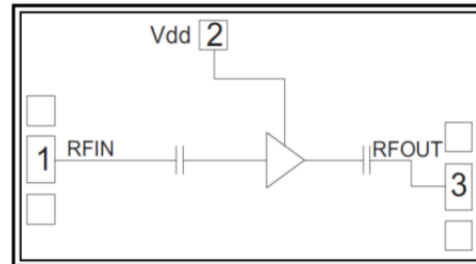
V1.0.0

GaAs MMIC
Low Noise Amplifier
26-40GHz

Features

- Singles Basing Voltage (Self Biased)
- Frequency: 26-40GHz
- Small Signal Gain: 21dB (positive slope)
- Noise Figure: 2.0dB typ. / 2.1dB max.
- P1dB: 3dBm
- Power Supply: +5 V/12 mA
- Input/Output: 50Ω
- Die Size: 1.6 x 0.8 x 0.09 mm

Functional Block Diagram



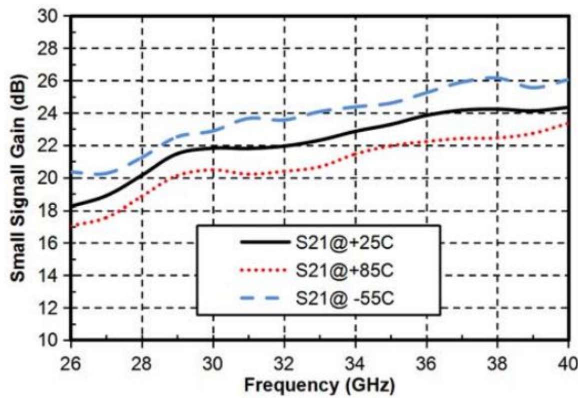
Typical Applications

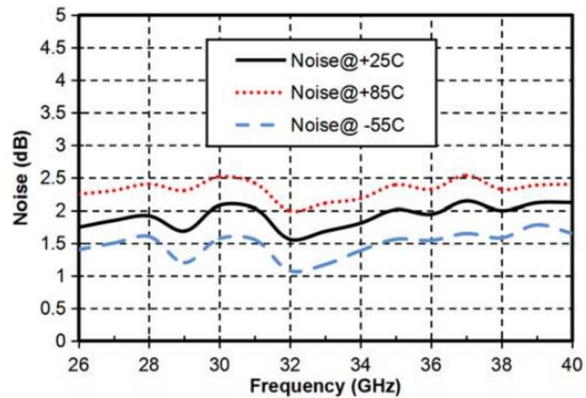
- Test Instrumentation
- Microwave Radio & VSAT
- Military & Space
- Telecom Infrastructure
- Fiber Optics

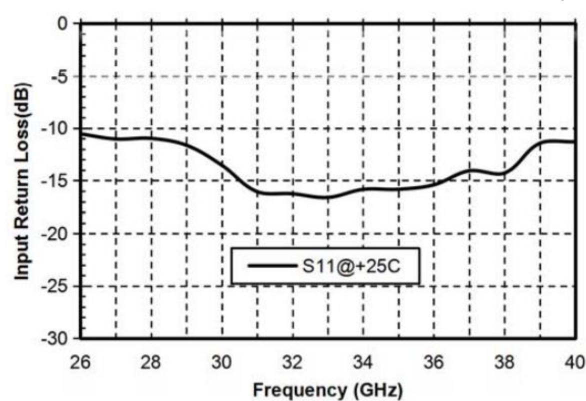
Electrical Specifications

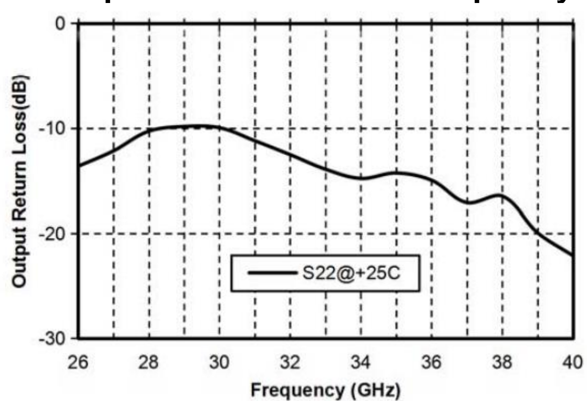
TA = +25ºC, Vd = +5V

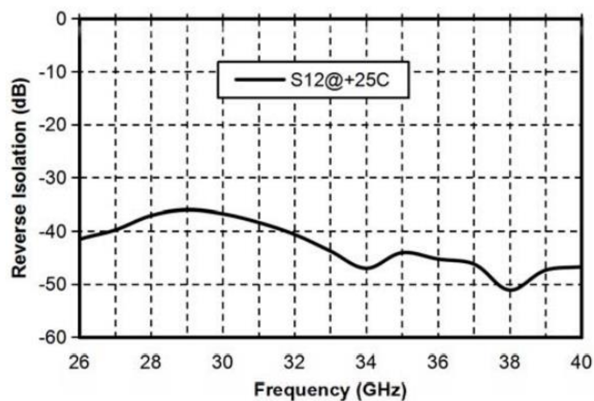
Parameters	Min.	Typ.	Max.	Units
Frequency		26-40		GHz
Small Signal Gain	17	21	24.5	dB
Gain Flatness		±4		dB
Noise Figure	1.7	2.0	2.1	dB
Output 1dB Compression (P1dB)	2	3	5	dBm
Saturated Output Power (Psat)	3.5	5	6.5	dBm
Input Return Loss	10	13	-	dB
Output Return Loss	10	14	-	dB
Static current		12		mA

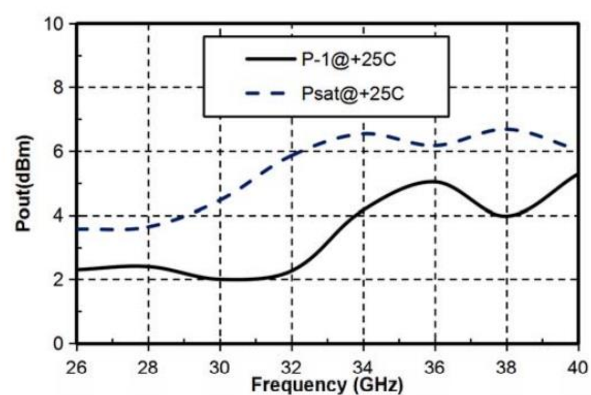

Gain vs. Temperature
Small Signall Gain (dB)
Frequency (GHz)
S21@+25C
S21@+85C
S21@ -55C


Noise Figure vs. Temperature
Noise (dB)
Frequency (GHz)
Noise@+25C
Noise@+85C
Noise@ -55C


Input Return Loss vs. Frequency
Input Return Loss(dB)
Frequency (GHz)
S11@+25C

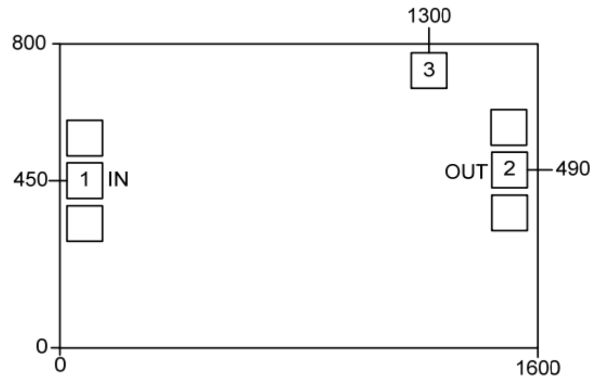

Output Return Loss vs. Frequency
Output Return Loss(dB)
Frequency (GHz)
S22@+25C


Reverse Isolation vs. Frequency
Reverse Isolation (dB)
Frequency (GHz)
S12@+25C


P1dB, Psat vs. Frequency
Pout(dBm)
Frequency (GHz)
P-1@+25C
Psat@+25C

Outline Drawing:

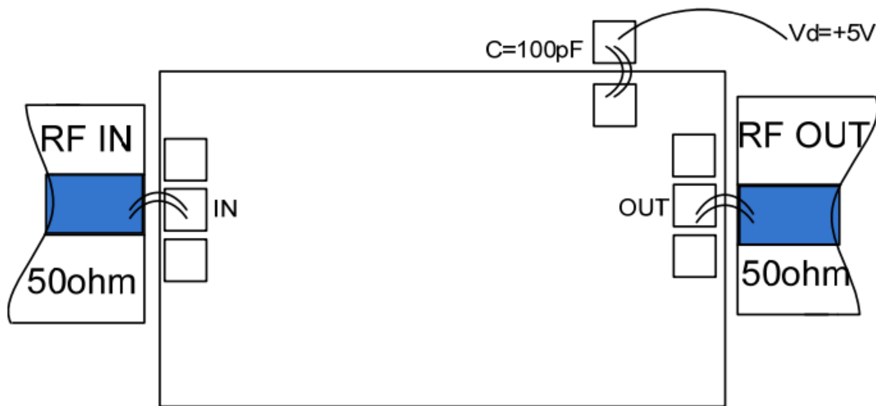
All Dimensions in µm



Pad Description

Pad	Function	Description
1	RF IN	RF signal input terminal, no blocking capacitor required.
2	RF OUT	RF signal output terminal, no blocking capacitor required.
3	Vd	Amplifier drain bias; external 100pF bypass capacitor required.
Die bottom	GND	Die bottom must be connected to RF/DC ground.

Assembly Drawing



Notes:
1. Die thickness: 100um
2. Typical bond pad is 100*100 μm²
3. Bond pad metalization: Gold
4. Backside metalization: Gold
5. Backside of the die (GND)
6. No connection required for unlabeled bond pads

Maximum Ratings:
1. Maximum drain voltage: +7V
2. Maximum input power: +20dBm
3. Operating temperature: -55℃ to +85℃
4. Storage temperature: -65℃ to +150℃