

SBB-4082S

InGaP HBT Active Bias Gain Block
50MHz to 6000MHz

RFMD's SBB-4082S is a high-performance InGaP HBT MMIC amplifier utilizing a Darlington configuration with an active bias network in a hermetic package. The active bias network provides stable current over temperature and Beta process variations. The SBB-4082S is designed for high linearity gain block military and industrial applications requiring excellent gain flatness, small size, minimal external components and hermetic packaging. RFMD can provide various levels of device screening for military or high-reliability space applications.



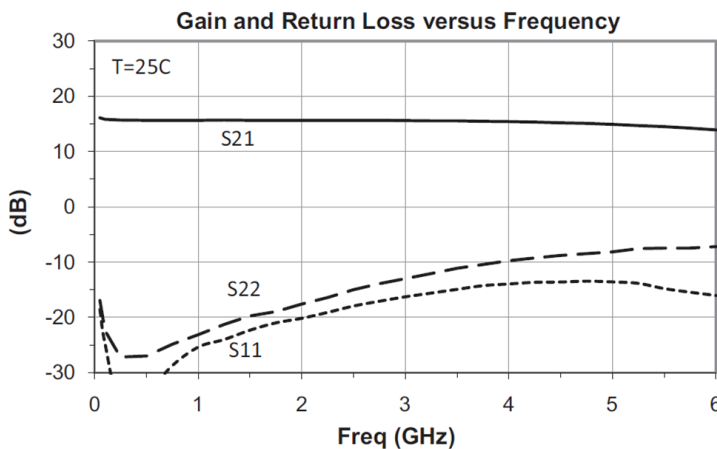
Package: Hermetic, 2-pin,
5.8mm x 2.8mm

Features

- Single Fixed 5V Supply
- Patented Self Bias Circuit and Thermal Design
- Hermetic Package for High-Reliability Applications
- OIP3 = 38dBm at 1150MHz
- PIdB = 19dBm at 1150MHz

Applications

- Military and Space Communications
- Industrial Applications
- Aerospace and Defense



Ordering Information

SBB-4082S Hermetic Package

Absolute Maximum Ratings

Parameter	Rating	Unit
Device Current (I_D)	100	mA
Device Voltage (V_D)	5.5	V
RF Input Power	+24	dBm
Junction Temperature (T_J)	+150	°C
Operating Temperature Range	-40 to +85	°C
Storage Temperature Range	-55 to +150	°C
Moisture Sensitivity Level	Hermetic	
ESD Rating - Human Body Model (HBM)	Class 1C	



Caution! ESD sensitive device.



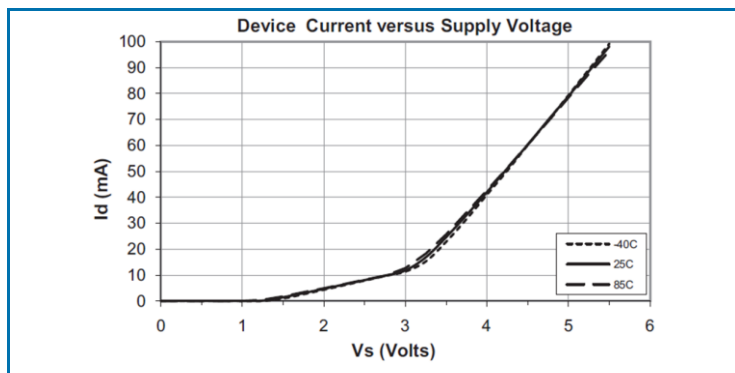
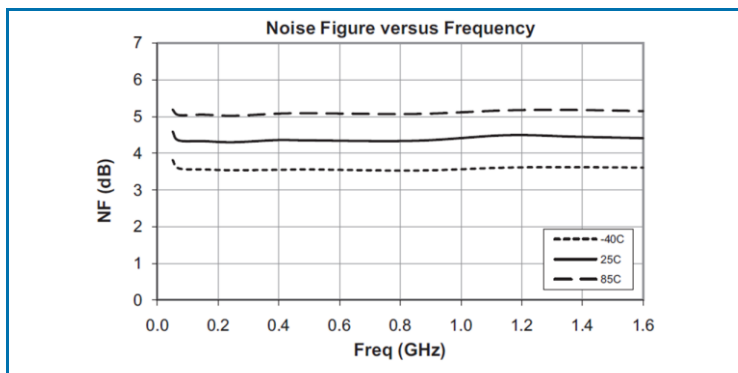
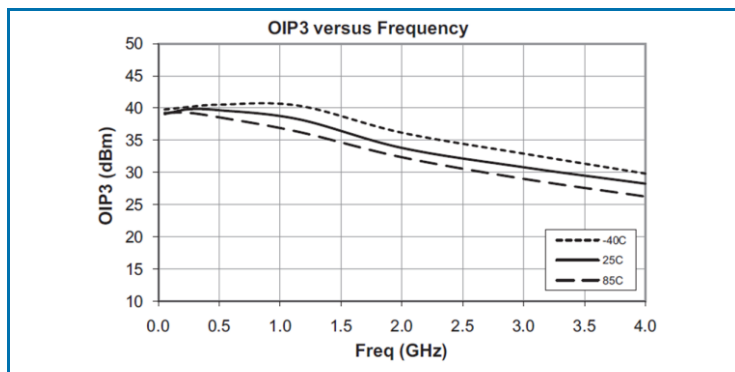
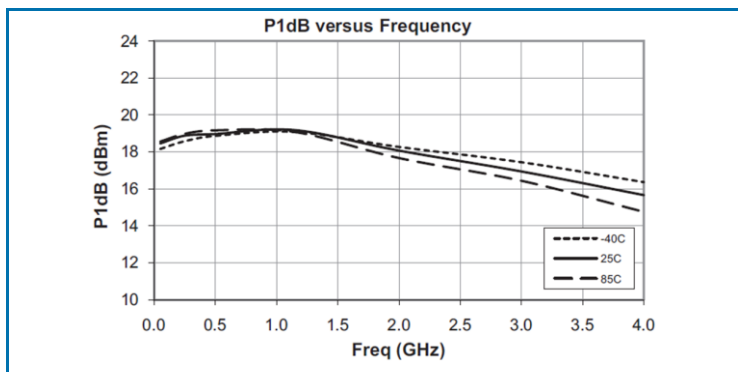
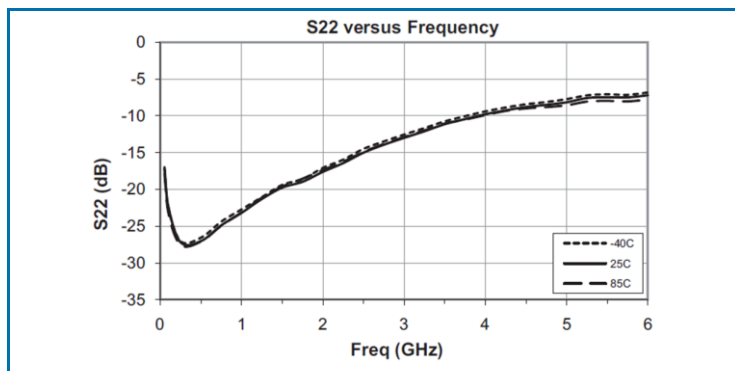
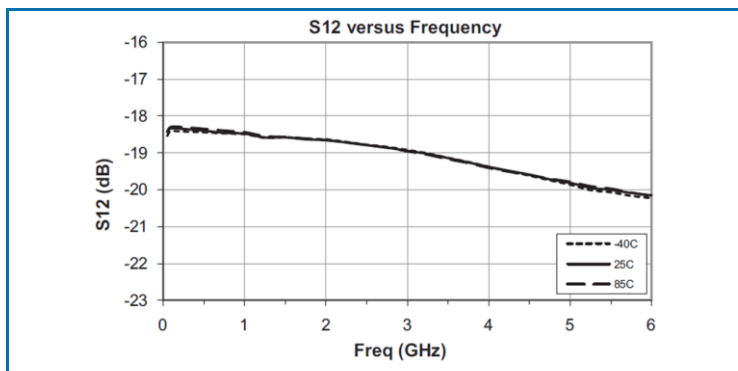
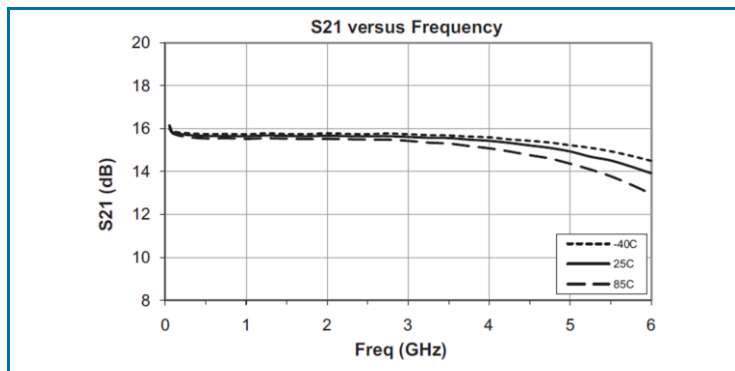
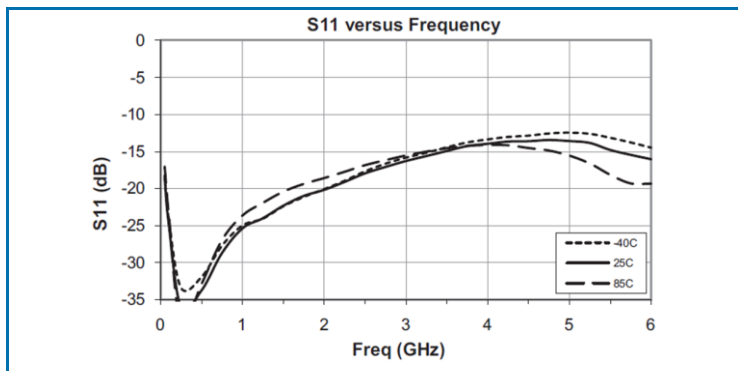
RFMD Green: RoHS compliant per EU Directive 2011/65/EU, halogen free per IEC 61249-2-21, <1000ppm each of antimony trioxide in polymeric materials and red phosphorus as a flame retardant, and <2% antimony solder.

Exceeding any one or a combination of the Absolute Maximum Rating conditions may cause permanent damage to the device. Extended application of Absolute Maximum Rating conditions to the device may reduce device reliability. Specified typical performance or functional operation of the device under Absolute Maximum Rating conditions is not implied.

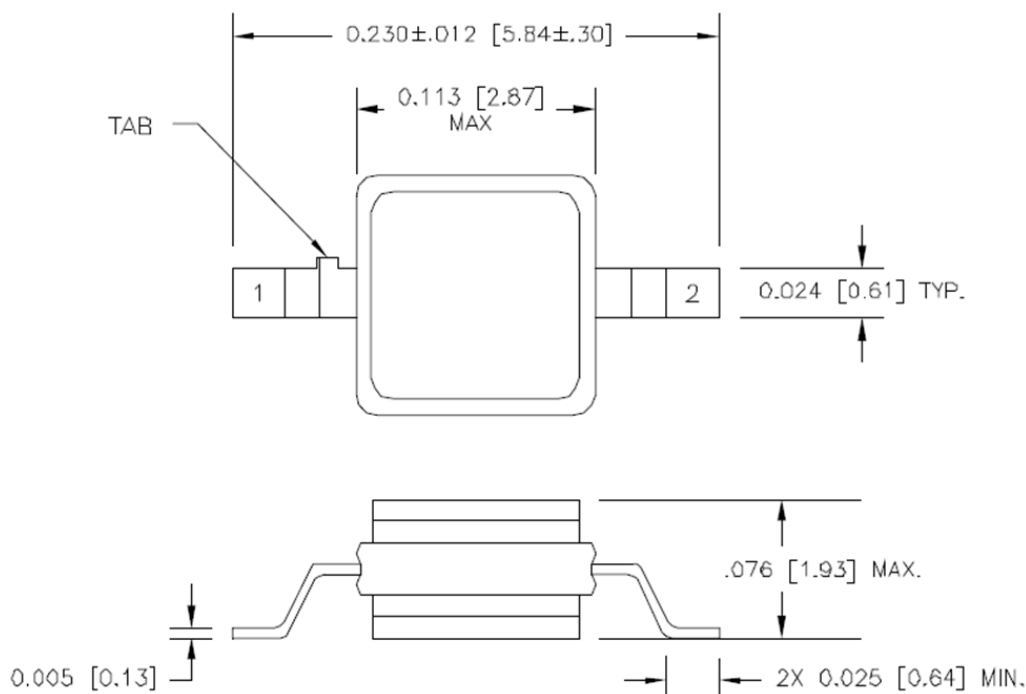
Nominal Operating Parameters

Parameter	Specification			Unit	Condition
	Min	Typ	Max		
General Performance					Test Conditions: $V_D = 5V$, $I_D = 80mA$ Typ. OIP₃ Tone Spacing = 1MHz, P_{OUT} per tone = 5dBm, $T_L = 25^\circ C$, $Z_S = Z_L = 50\Omega$, Tested with Bias Tees
Small Signal Gain	14	15.5	18	dB	1000MHz to 1300MHz
		15		dB	4GHz
Output Power at 1dB Compression	18	19	22	dBm	1150MHz
OIP ₃	33	38		dBm	F1 = 1150MHz, F2 = 1151MHz
Input Return Loss	11	20		dB	1000MHz to 1300MHz
		14		dB	4GHz
Output Return Loss	10	20		dB	1000MHz to 1300MHz
		10		dB	4GHz
Reverse Isolation	17	18.5		dB	1000MHz to 1300MHz
Noise Figure		4.5	6.0	dB	1150MHz
Operating Voltage		5.0		V	
Operating Current	58	80	92.0	mA	
Thermal Resistance		87		°C/W	Junction to case

Typical Performance



Package Drawing



Pin Names and Descriptions

Pin	Name	Description
1	RFIN	RF input pin. This pin requires the use of an external blocking capacitor chosen for the frequency of operation.
2	RFOUT/DC Bias	RF output and bias pin. This pin requires the use of an external blocking capacitor chosen for the frequency of operation.
Package Paddle	GND	Package backside must be connected to RF/DC ground.

Typical Application Schematic