

SBB-3082S

InGaP HBT Active Bias Gain Block
50MHz to 6000MHz

RFMD's SBB-3082S is a high-performance InGaP HBT MMIC amplifier utilizing 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-3082S 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.



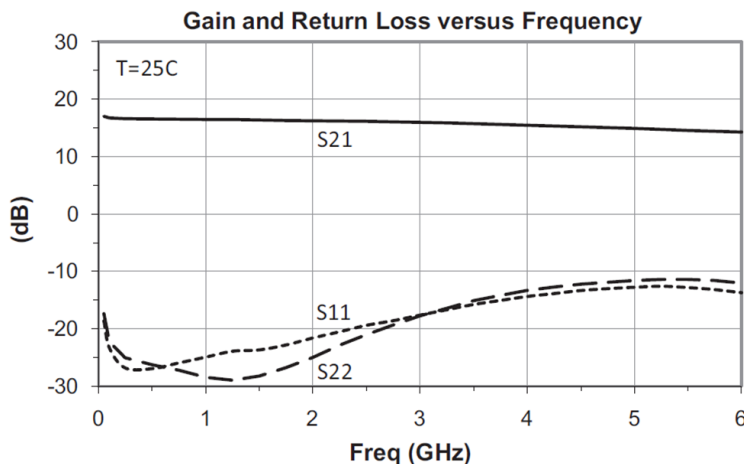
Package: Hermetic, 2-pin,
5.8mm x 2.8mm

Features

- Single Fixed 5V Supply
- Patented Self Bias Circuit and Thermal Design
- Hermetic Package for High-Reliability Applications
- OIP3 = 29dBm at 1.15GHz
- PIdB = 15.1 at 1.15GHz

Applications

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



Ordering Information

SBB-3082S Hermetic Package

Absolute Maximum Ratings

Parameter	Rating	Unit
Device Current (I_D)	100	mA
Device Voltage (V_D)	6	V
RF Input Power	+20	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.



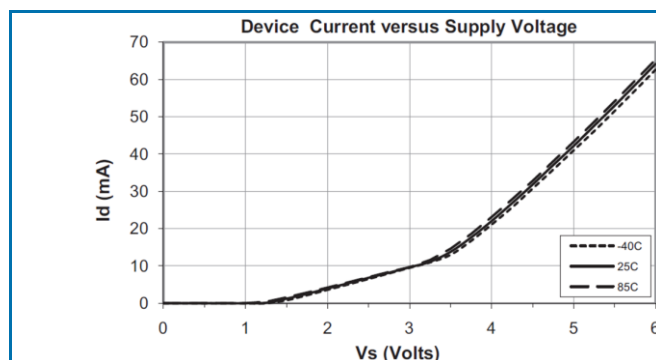
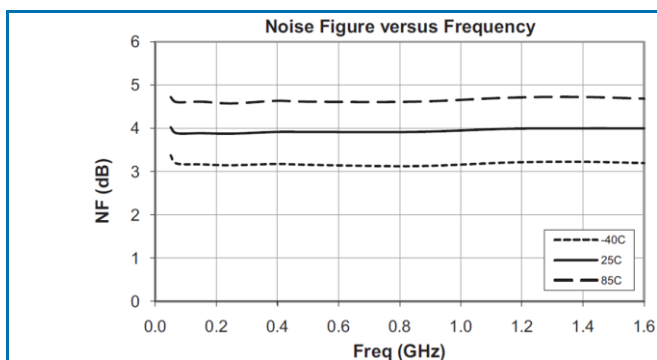
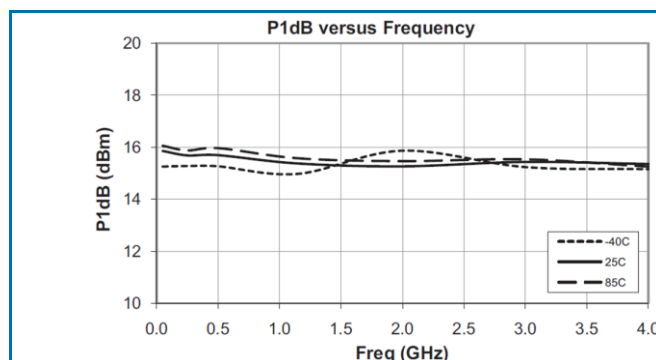
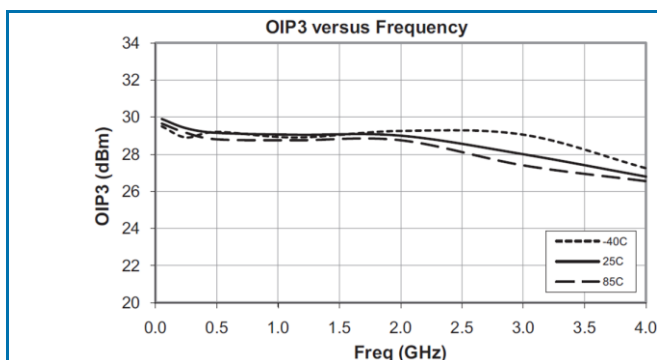
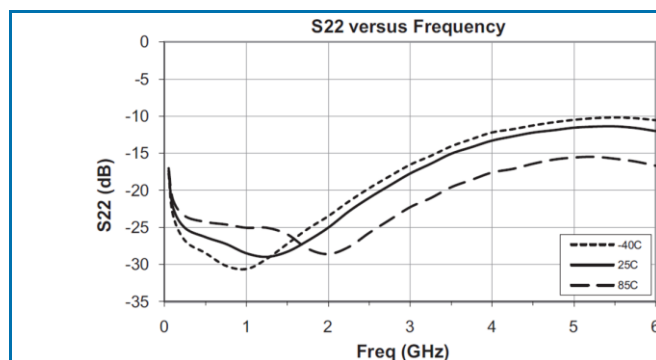
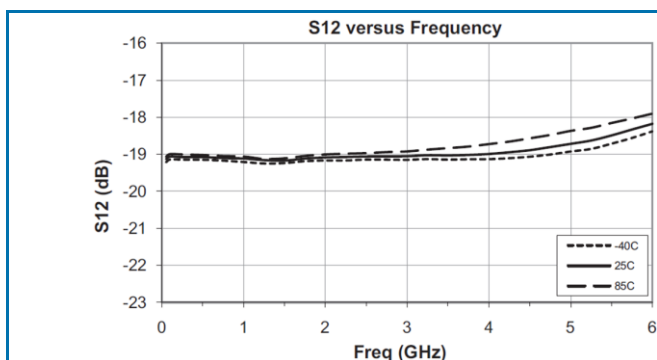
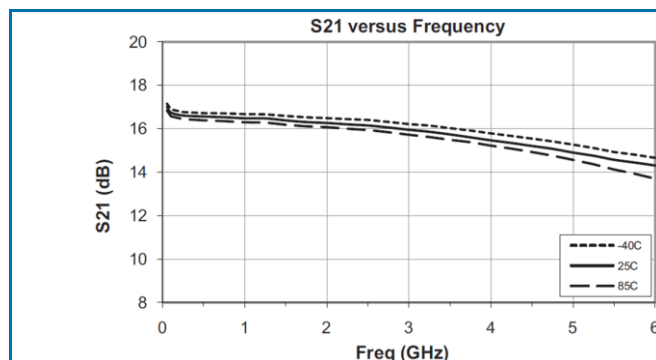
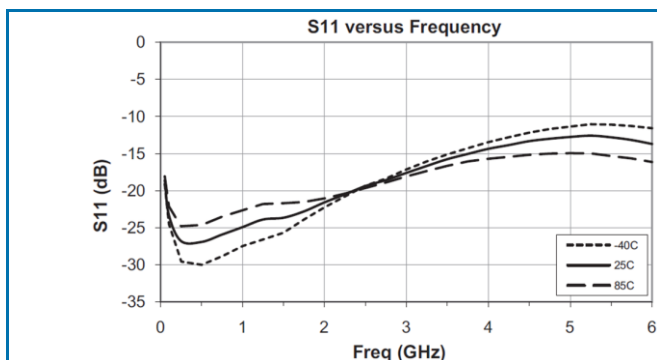
RFMD Green: RoHS compliant per EU Directive 2011/65/EU, halogen free per IEC 61249-2-21, <1000ppm each of antimony trioxide in polymeric materials and red phosphorus as a flame retardant, and <2% antimony solder.

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.

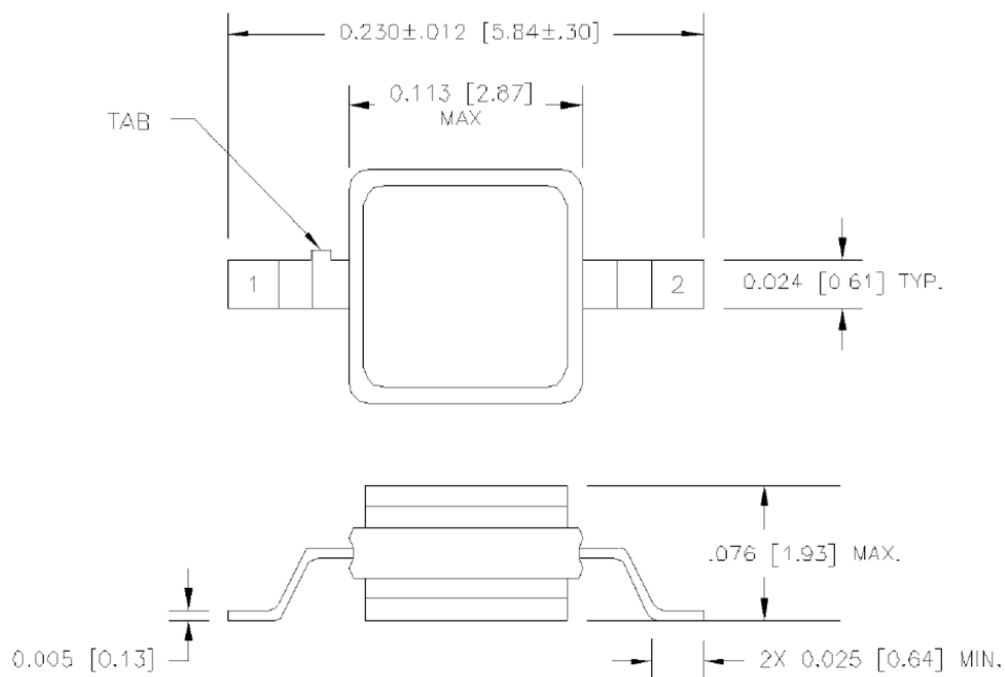
Nominal Operating Parameters

Parameter	Specification			Unit	Condition
	Min	Typ	Max		
General Performance					Typical Performance with Bias Tees, $V_D = 5V$ with $R_{DC} = 20\Omega$, $I_D = 42mA$, OIP3 Pout = 0dBm/tone, $T = 25^\circ C$
Small Signal Gain	15	16.4	21	dB	Frequency Range 1.0GHz to 1.3GHz
		15.4		dB	4GHz
Output Power at 1dB Compression	14.5	15.1	18.5	dBm	1.150GHz
OIP3	27.5	29.0		dBm	$F_1 = 1150MHz$, $F_2 = 1151MHz$
Input Return Loss	17	21		dB	1.0GHz to 1.3GHz
		14		dB	4GHz
Output Return Loss	17	25.0		dB	1.0GHz to 1.3GHz
		13		dB	4GHz
Reverse Isolation	17	19		dB	1.150GHz
Noise Figure		4.0	5.0	dB	1.150GHz
Operating Voltage		4.2		V	$R_{DC} = 20\Omega$, $V_S = 5.0 V$
Operating Current	34	42	50	mA	$R_{DC} = 20\Omega$, $V_S = 5.0 V$
Thermal Resistance		99		°C/W	Junction to case

Typical Performance: (50Ω Test Fixture with Bias Tees) $V_S = 5.0V$, $R_{DC} = 20\Omega$



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