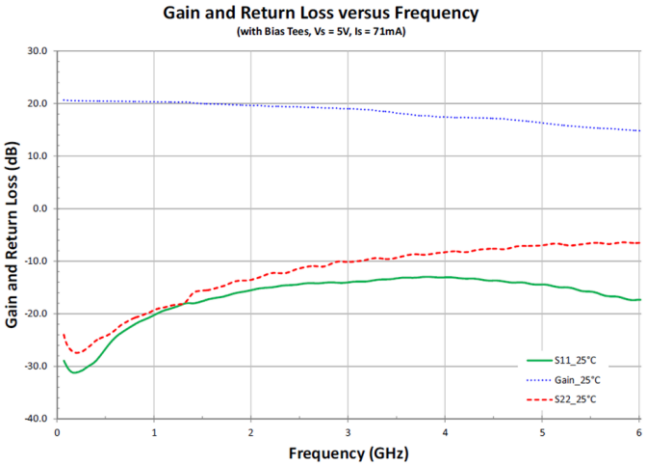
SBB5082S

InGaP HBT Active Bias Gain Block
50MHz to 6000MHz

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

RFMD's SBB5082S 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 SBB5082S 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.



Features

- Single Fixed 5V Supply
- Patented Self Bias Circuit and Thermal Design
- Hermetic Package for High-Reliability Applications
- OIP3 = 35dBm at 1950MHz
- P1dB = 19dBm at 1950MHz

Applications

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

Ordering Information

SBB5082S	Hermetic Package

RF Micro Devices Inc. 7628 Thorndike Road, Greensboro, NC 27409-9421
DS131119
For sales or technical support, contact RFMD at +1.336.678.5570 or customerservice@rfmd.com.

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	

For reliable continuous operation, the device voltage and current must not exceed the maximum operating values specified in the Absolute Maximum Ratings table above.

Bias conditions should also satisfy the following expression: $I_D V_D < (T_J - T_L) / R_{TH}$, j - l

Caution! ESD sensitive device.

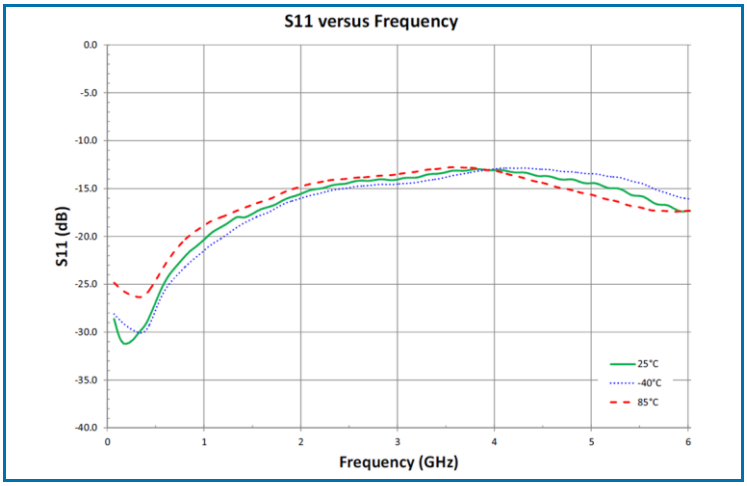
RFMD Green: RoHS compliant per EU Directive 2011/65/EU, halogen free per IEC 61249-2-21, <1000ppm each of antimony trioxide in polymeric materials and red phosphorus as a flame retardant, and <2% antimony solder.

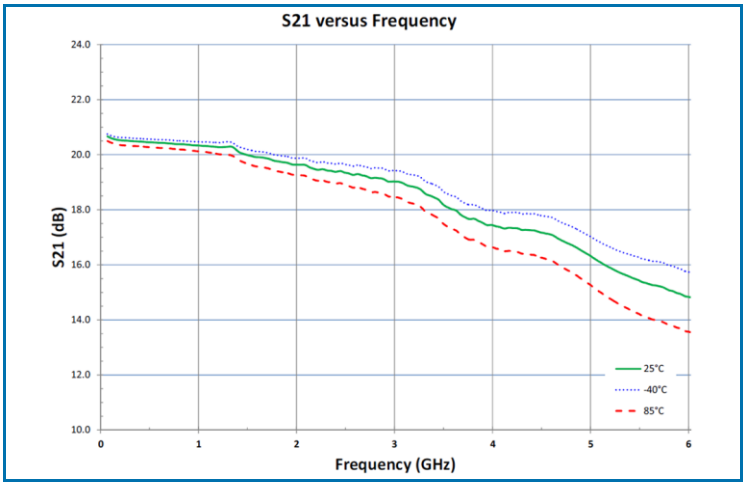
Exceeding any one or a combination of the Absolute Maximum Rating conditions may cause permanent damage to the device. Extended application of Absolute Maximum Rating conditions to the device may reduce device reliability. Specified typical performance or functional operation of the device under Absolute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

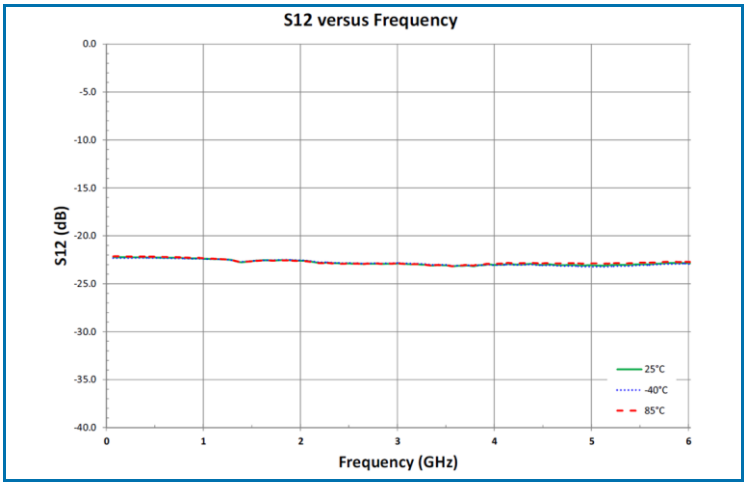
Nominal Operating Parameters

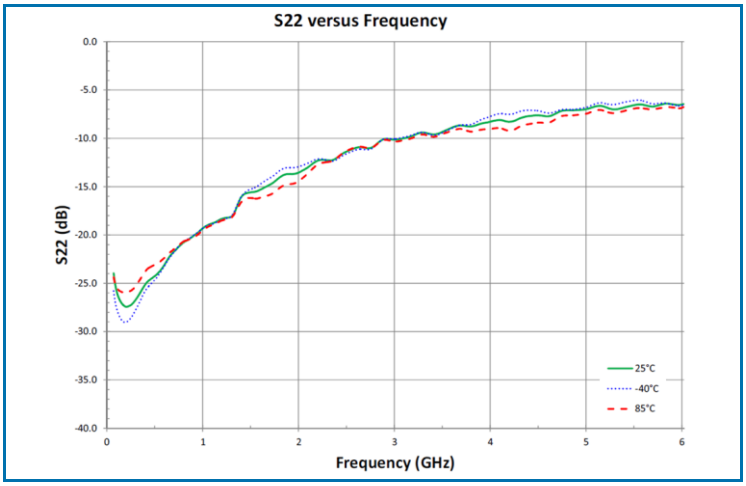
Parameter	Specification			Unit	Condition
	Min	Typ	Max		
General Performance					**Test Conditions: V_D = 5V, I_D = 71mA Typ. OIP3 Tone Spacing = 1MHz, P_{OUT} per tone = 0dBm, T_L = 25°C, Z_S = Z_L = 50Ω, Tested with Bias Tees**
Small Signal Gain	18	20	22	dB	1950MHz
		17		dB	4GHz
Output Power at 1dB Compression	18	19	22	dBm	1950MHz
OIP3	33	35		dBm	F1 = 1950MHz, F2 = 1951MHz
Input Return Loss	10	15		dB	1950MHz
		13		dB	4GHz
Output Return Loss	10	14		dB	1950MHz
		8		dB	4GHz
Reverse Isolation	17	22.5		dB	1950MHz
Noise Figure		4.2	6.0	dB	1600MHz
Operating Voltage		5.0		V	
Operating Current	60	71	92.0	mA	
Thermal Resistance		87		°C/W	Junction to case

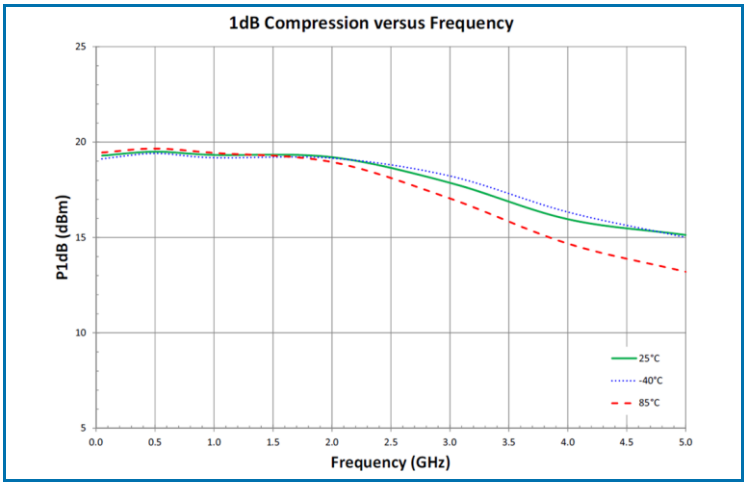
Typical Performance

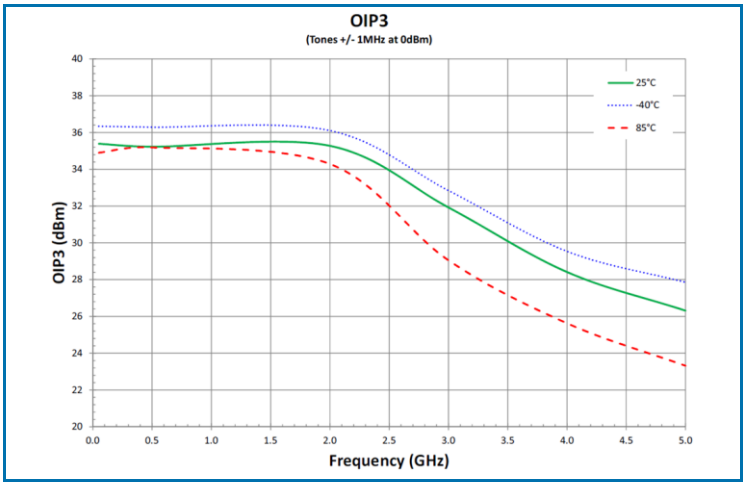




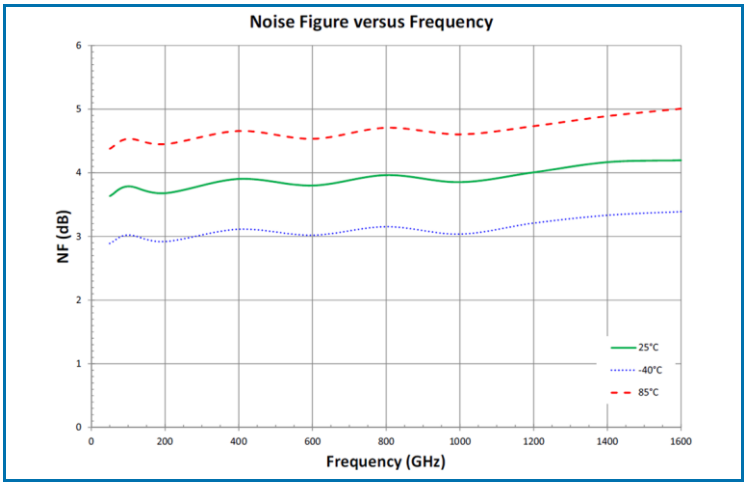


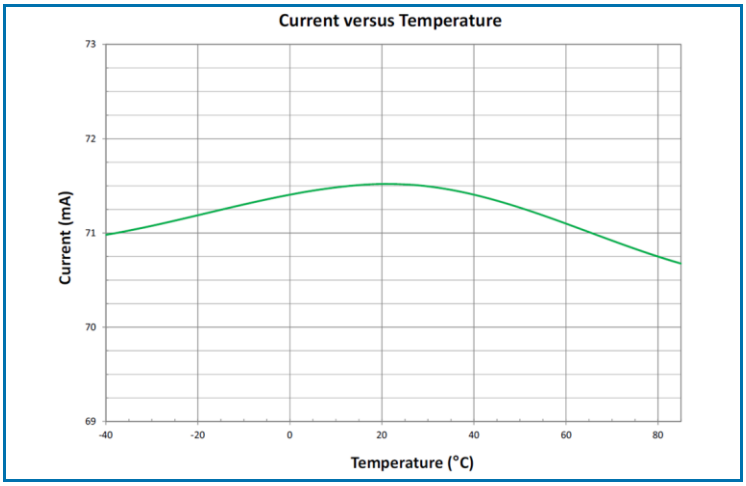


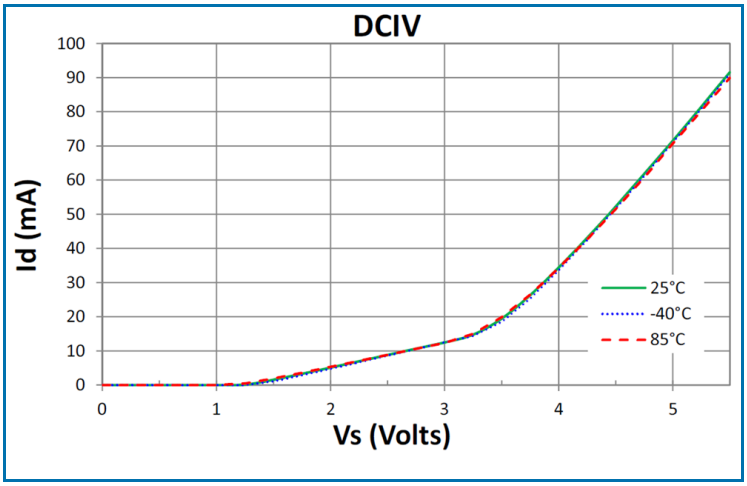


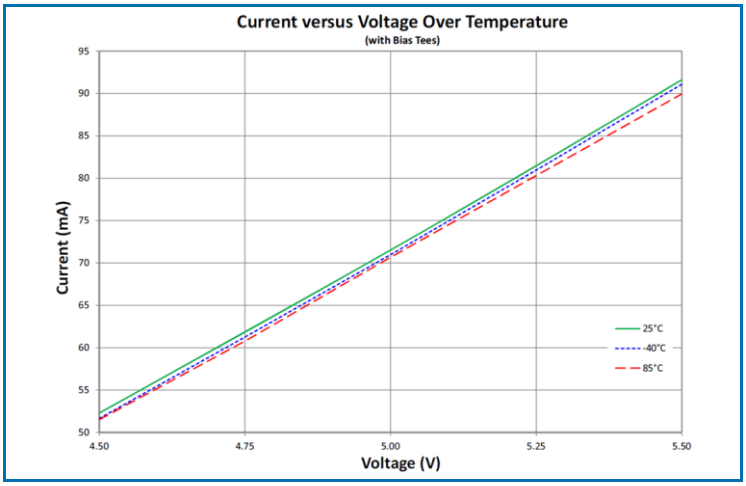


Typical Performance (continued)

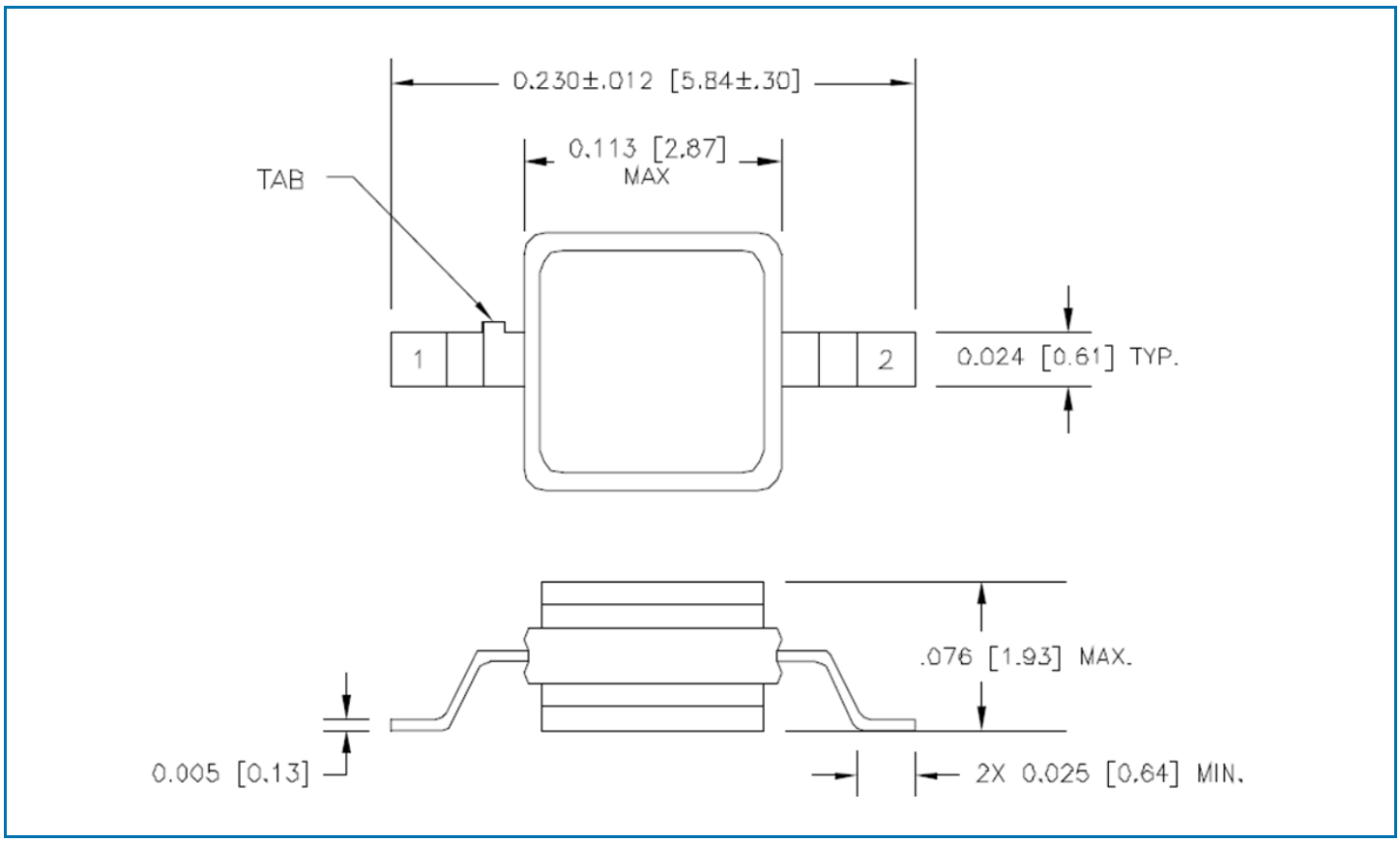








Package Drawing



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