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SBB-2082S

50MHz TO 850MHz, InGaP HBT AMPLIFIER

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

Product Description

RFMD's SBB-2082S is a high performance InGaP HBT utilizing a Darlington configuration with an active bias network. The active bias network provides stable current over temperature and process Beta variations. Designed to run directly form a 5V supply, the SBB-2082S does not require a dropping resistor as compared to typical Darlington amplifiers. The SBB-2082S product is designed for high linearlty 5V gain block applications that require small size and minimal external components. It is internally matched to 50Ω.
RFMD can provide various levels of device screening for military or Hi-Rel applications.
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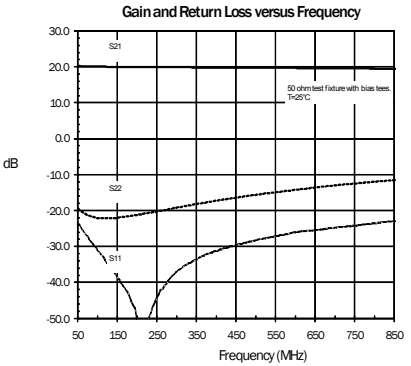
Optimum Technology Matching® Applied

- ☐ GaAs HBT
- ☐ GaAs MESFET
- ✓ InGaP HBT
- ☐ SiGe BiCMOS
- ☐ Si BiCMOS
- ☐ SiGe HBT
- ☐ GaAs pHEMT
- ☐ Si CMOS
- ☐ Si BJT
- ☐ GaN HEMT
- ☐ RF MEMS



Features

- Hermetic Package for Hi Rel Applications
- Single Fixed 5V Supply
- Patented Thermal Design and Bias Circuit
- OIP3=40.5dBm at 70MHz
- P1dB=19.5dBm at 70MHz

Applications

- Military Communications
- Aerospace and Defense
- PA Driver Amp

Parameter	Specification			Unit	Condition
	Min.	Typ.	Max.		
Frequency of Operation	50		850	MHz	
Supply Voltage		5.0		V	
Supply Current	75	86	98	mA	
Small Signal Gain	18.5	20.2		dB	Freq=100MHz
		19.8		dB	Freq=500MHz
Output Power at 1dB Compression	18.0	19.5		dBm	Freq=70MHz
Output Third Order Intercept Point	38.5	40.5		dBm	F1=70MHz, F2=71MHz
Input Return Loss	9.5	25		dB	Freq=100MHz
		25.0		dB	Freq=500MHz
Output Return Loss	9.5	20		dB	Freq=100MHz
		15.0		dB	Freq=500MHz
Reverse Isolation	19	22		dB	Freq=100MHz
		22.0		dB	Freq=500MHz
Noise Figure		3.1		dB	Freq=500MHz
Thermal Resistance		45		°C/W	Junction to lead

Test Conditions: Z_O=50Ω, V_D=5V, I_D=86mA, T=25°C, OIP3 P_{OUT}/tone=0dBm, 50Ω test fixture with bias tees.

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Absolute Maximum Ratings

Parameter	Rating	Unit
Total Current (I_D)	110	mA
Device Voltage (V_D)	5.5	V
RF Input Power	+24	dBm
Operating Lead Temperature (T_L)	-40 to +85	°C
Storage Temperature Range	-55 to +150	°C
Operating Junction Temp (T_J)	+150	°C
Moisture Sensitivity Level	Hermetic	
ESD Rating - Human Body Model (HBM)	Class 2	

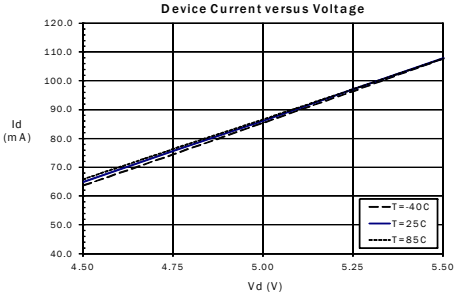
Operation of this device beyond any one of these limits may cause permanent damage. For reliable continuous operation, the device voltage and current must not exceed the maximum operating values specified in the table on page one.

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

Caution! ESD sensitive device.

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.

RoHS status based on EUDirective2002/95/EC (at time of this document revision).



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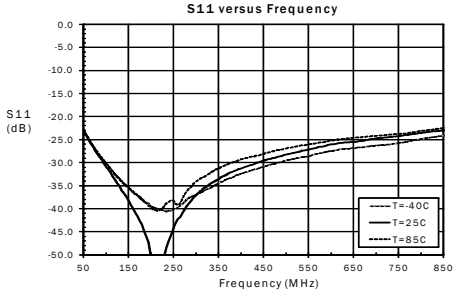
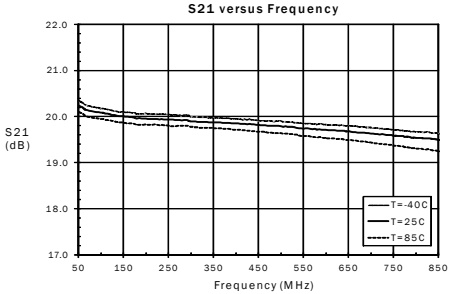
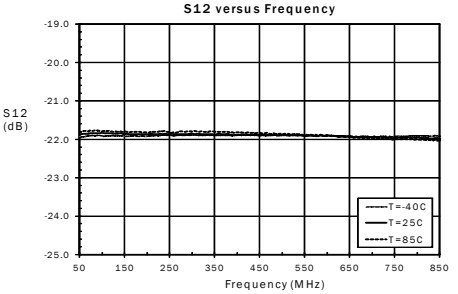
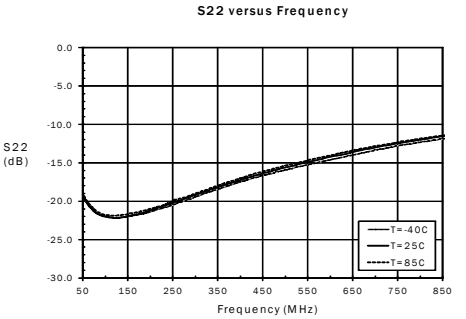
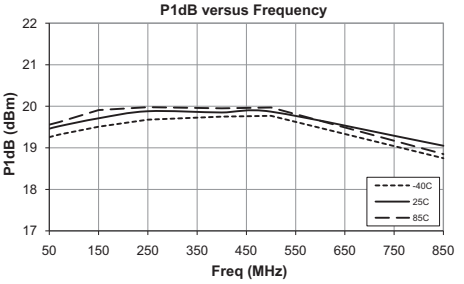
Typical Performance (50Ω test fixture with bias tees) V_S=5.0V

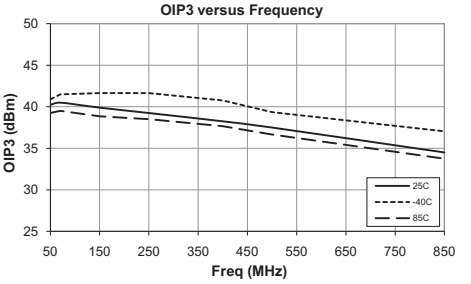


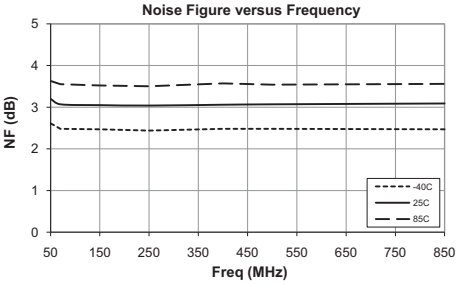




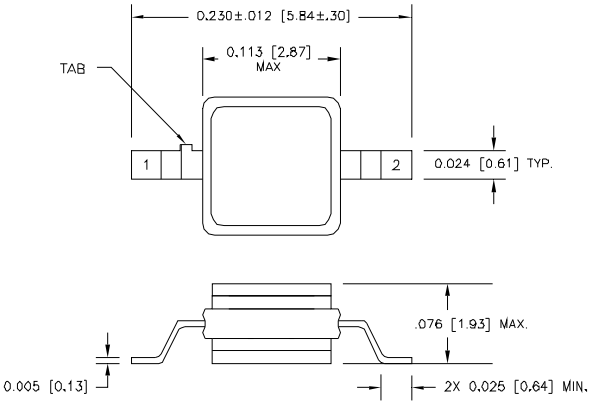








Package Dimensions

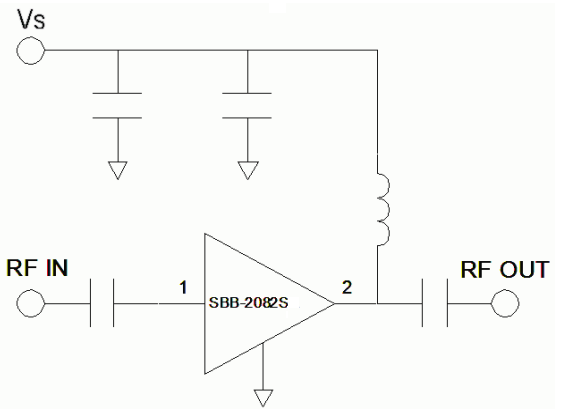


Package Pin Description

Pin	Function	Description
1	RF IN	This pin is DC coupled and matched to 50Ω. An external DC block is required.
2	RF OUT	This pin is DC coupled and matched to 50Ω. DC bias is applied through this pin.
Package Paddle	GND	Package backside must be connected to RF/DC ground.

Notes:
1. Dimensions in inches [millimeters].
2. Package material: Ceramic
3.Lead finish: Gold.

Typical Application Schematic



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Package Marking
Ordering Information

Part Number	Description
SBB-2082S	Two lead hermetic package.

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