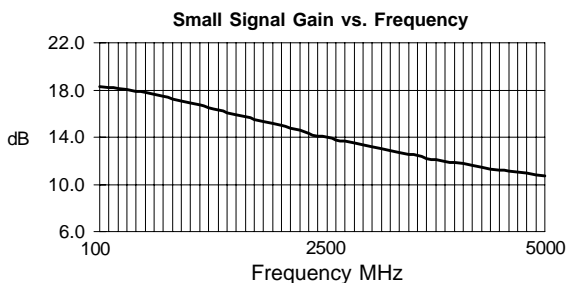


Product Description

Stanford Microdevices' SGA-3386 is a high performance cascadeable 50-ohm amplifier designed for operation at voltages as low as 2.7V. This RFIC uses the latest Silicon Germanium Heterostructure Bipolar Transistor (SiGe HBT) process featuring 1 micron emitters with F_T up to 65 GHz.

This circuit uses a darlington pair topology with resistive feedback for broadband performance as well as stability over its entire temperature range. Internally matched to 50 ohm impedance, the SGA-3386 requires only DC blocking and bypass capacitors for external components.



Electrical Specifications at $T_a = 25^\circ\text{C}$

Symbol	Parameters: Test Conditions: $Z_0 = 50 \text{ Ohms}$, $f = \text{DC-3600 MHz}$		Units	Min.	Typ.	Max.
P_{1dB}	Output Power at 1dB Compression	$f = \text{DC-2400 MHz}$	dBm		12.0	
S_{21}	Small Signal Gain	$f = \text{DC-1000 MHz}$ $f = 1000\text{-}2000 \text{ MHz}$ $f = 2000\text{-}5000 \text{ MHz}$	dB dB dB	15.5	17.4 16.2 12.5	
S_{12}	Reverse Isolation	$f = \text{DC-1000 MHz}$ $f = 1000\text{-}2000 \text{ MHz}$ $f = 2000\text{-}5000 \text{ MHz}$	dB dB dB		21.0 21.0 19.5	
S_{11}	Input VSWR	$f = \text{DC-5000 MHz}$	-		1.35:1	
S_{22}	Output VSWR	$f = \text{DC-5000 MHz}$	-		1.35:1	
IP_3	Third Order Intercept Point	$f = \text{DC-2400 MHz}$	dBm		25.0	
NF	Noise Figure	$f = \text{DC-1000 MHz}$ $f = 1000\text{-}2400 \text{ MHz}$	dB dB		3.0 3.4	
T_D	Group Delay	$f = 1000 \text{ MHz}$	pS		110.0	
V_D	Device Voltage		V	2.2	2.5	2.8
I_D	Device Current		mA		35.0	

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SGA-3386

DC-3600 MHz Silicon Germanium Cascadeable Gain Block

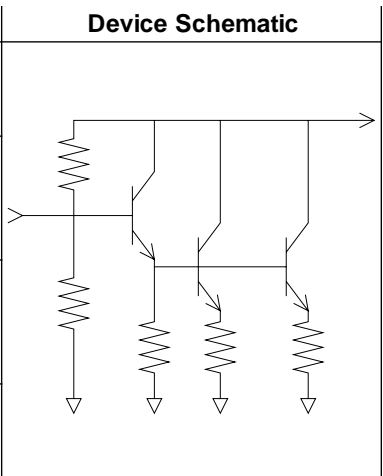


Product Features

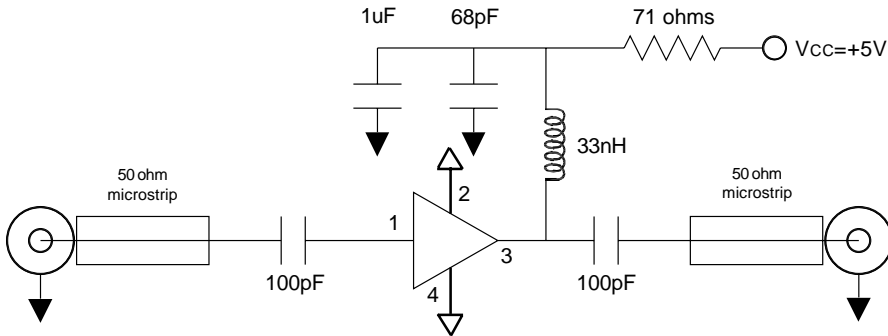
- DC-3600 MHz Operation
- Single Voltage Supply
- High Output Intercept: +25dBm typ. at 850 MHz
- Low Current Draw: 35mA at 2.5V typ.
- Low Noise Figure: 3.0dB typ. at 850 MHz

Applications

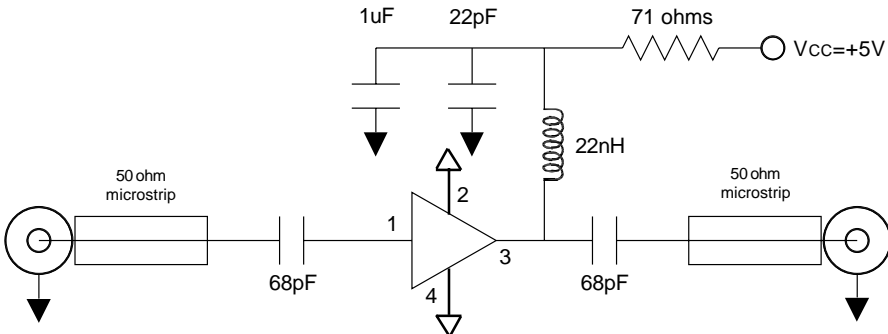
- Oscillator Amplifiers
- PA for Low Power Applications
- IF/RF Buffer Amplifier
- Drivers for CATV Amplifiers

Pin #	Function	Description	Device Schematic
1	RF IN	RF input pin. This pin requires the use of an external DC blocking capacitor chosen for the frequency of operation.	
2	GND	Connection to ground. Use via holes for best performance to reduce lead inductance as close to ground leads as possible.	
3	RF OUT/ BIAS	RF output and bias pin. DC voltage is present on this pin, therefore a DC blocking capacitor is necessary for proper operation.	
4	GND	Sames as Pin 2	

Application Schematic for +5V Operation at 900 MHz



Application Schematic for +5V Operation at 1900 MHz



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Absolute Maximum Ratings

Parameter	Value	Unit
Supply Current	70	mA
Operating Temperature	-40 to +85	C
Maximum Input Power	+13	dBm
Storage Temperature Range	-40 to +85	C
Operating Junction Temperature	+150	C

Caution:



Operation of this device above any one of these parameters may cause permanent damage. Appropriate precautions in handling, packaging and testing devices must be observed.

Part Number Ordering Information

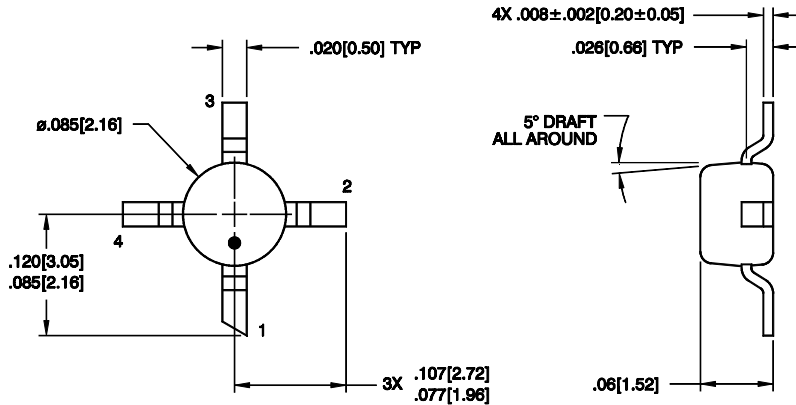
Part Number	Reel Size	Devices/Reel
SGA-3386-TR1	7"	1000
SGA-3386-TR2	7"	3000
SGA-3386-TR3	13"	5000

Recommended Bias Resistor Values

Supply Voltage(Vs)	4V	5V	7.5V	9V	12V
Rbias (Ohms)	43	71	143	186	271

For 7.5V operation or higher, a resistor with a power handling capability of 1/2W or greater is recommended.

Package Dimensions



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