

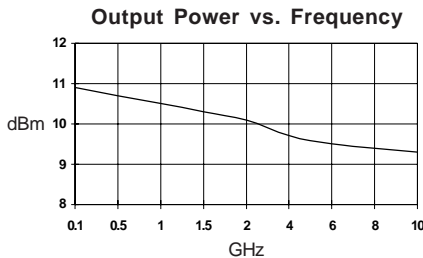
Product Description

Stanford Microdevices' SNA-376 is a GaAs monolithic broadband amplifier (MMIC) housed in a low-cost surface mountable stripline package. This amplifier provides 22dB of gain when biased at 35mA and 4V.

External DC decoupling capacitors determine low frequency response. The use of an external resistor allows for bias flexibility and stability.

These unconditionally stable amplifiers are designed for use as general purpose 50 ohm gain blocks. Also available in chip form (SNA-300), its small size (0.33mm x 0.33mm) and gold metallization make it an ideal choice for use in hybrid circuits.

The SNA-376 is available in tape and reel at 1000, 3000 and 5000 devices per reel.



Electrical Specifications at Ta = 25C

Symbol	Parameters: Test Conditions: Id = 35 mA, Zo = 50 Ohms		Units	Min.	Typ.	Max.
G _p	Small Signal Power Gain	f = 0.1-1.0 GHz f = 1.0-2.0 GHz f = 2.0-3.0 GHz	dB	21.0 20.0 19.0	23.0 22.0 21.0	
G _F	Gain Flatness	f = 0.1-3.0 GHz	dB		+/- 1.5	
BW _{3dB}	3dB Bandwidth		GHz		3.0	
P _{1dB}	Output Power at 1dB Compression:	f = 2.0 GHz	dBm		10.0	
NF	Noise Figure	f = 2.0 GHz	dB		4.0	5.0
VSWR	Input / Output	f = 0.1-3.0 GHz			1.5:1	
IP ₃	Third Order Intercept Point	f = 2.0 GHz	dBm		23.0	
T _D	Group Delay	f = 2.0 GHz	psec		100	
ISOL	Reverse Isolation	f = 0.1-3.0 GHz	dB		22.0	
VD	Device Voltage		V	3.5	4.0	4.5
dG/dT	Device Gain Temperature Coefficient		dB/degC		-0.003	
dV/dT	Device Voltage Temperature Coefficient		mV/degC		-4.0	

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SNA-376

DC-3 GHz, Cascadable GaAs MMIC Amplifier



Product Features

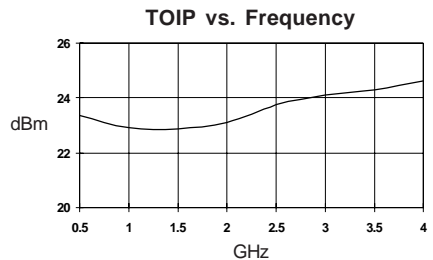
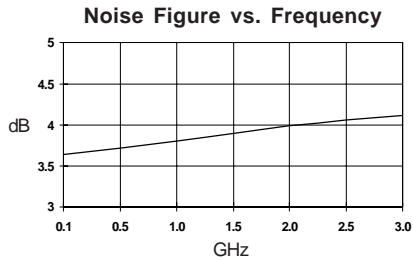
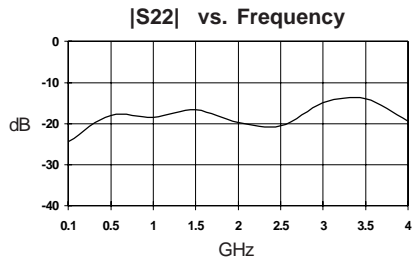
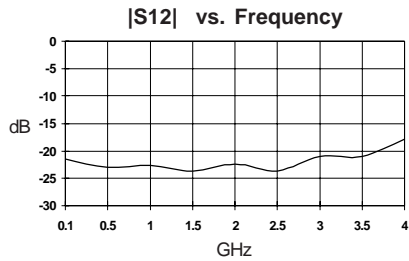
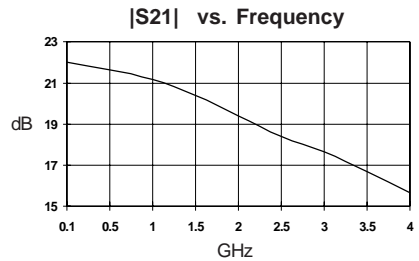
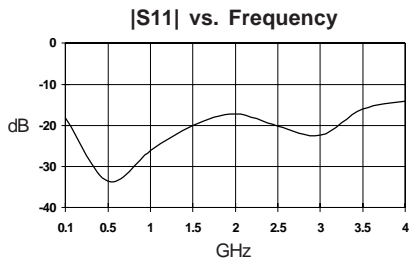
- Cascadable 50 Ohm Gain Block
- 22dB Gain, +10dBm P1dB
- 1.5:1 Input and Output VSWR
- Operates From Single Supply
- Low Cost Stripline Mount Ceramic Package
- Hermetically Sealed

Applications

- Narrow and Broadband Linear Amplifiers
- Commercial and Industrial Applications

SNA-376 DC-3 GHz Cascadable MMIC Amplifier

Typical Performance at 25° C ($V_{ds} = 4.0V$, $I_{ds} = 35mA$)



Typical S-Parameters $V_{ds} = 4.0V$, $I_{ds} = 35mA$

Freq GHz	S11	S11 Ang	S21	S21 Ang	S12	S12 Ang	S22	S22 Ang
.100	0.156	137	13.945	177	0.091	49	0.114	145
.250	0.196	125	13.921	171	0.089	25	0.201	131
.500	0.245	108	13.853	133	0.056	-21	0.238	112
1.00	0.250	45	12.767	89	0.058	-41	0.254	54
1.50	0.235	-17	11.604	45	0.063	-67	0.262	-4
2.00	0.201	-70	10.635	4	0.068	-90	0.255	-56
4.00	0.077	3	7.199	-152	0.086	153	0.174	68
6.00	0.109	-28	5.010	64	0.094	33	0.251	-122
8.00	0.250	174	3.981	-84	0.099	-93	0.107	6

(S-Parameters include the effects of two 1.0 mil diameter bond wires, each 20 mils long, connected to the gate and drain pads on the die)

Absolute Maximum Ratings

Parameter	Absolute Maximum
Device Current	75mA
Power Dissipation	300mW
RF Input Power	20mW
Junction Temperature	+200C
Operating Temperature	-45C to +85C
Storage Temperature	-65C to +150C

Notes:

1. Operation of this device above any one of these parameters may cause permanent damage.

MTTF vs. Temperature @ Id = 35mA

Lead Temperature	Junction Temperature	MTTF (hrs)
+55C	+120C	10000000
+90C	+155C	1000000
+125C	+190C	100000

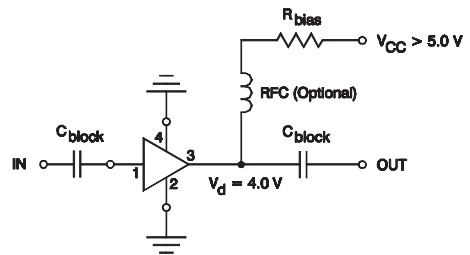
Thermal Resistance (Lead-Junction): 457° C/W

Part Number Ordering Information

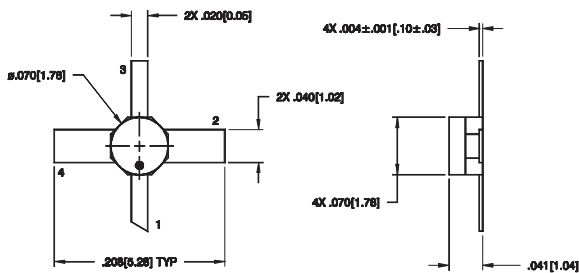
Part Number	Devices Per Reel	Reel Size
SNA-376-TR1	1000	7"
SNA-376-TR2	3000	13"
SNA-376-TR3	5000	13"

Recommended Bias Resistor Values

Supply Voltage (Vs)	5V	7.5V	9V	12V	15V	20V
Rbias (Ohms)	29	100	143	229	314	457



Typical Biasing Configuration



Pin Designation	
1	RF in
2	GND
3	RF out and Bias
4	GND

Typical Performance at 25° C

