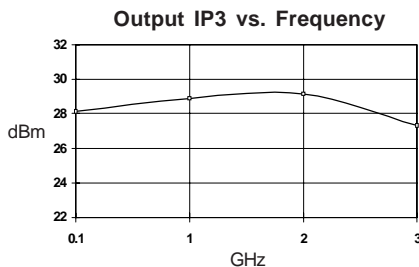


Product Description

Stanford Microdevices' SCA-16 is a high performance Gallium Arsenide Heterojunction Bipolar Transistor MMIC Amplifier. A Darlington configuration is utilized for broadband performance up to 3 GHz. The heterojunction increases breakdown voltage and minimizes leakage current between junctions. Cancellation of emitter junction non-linearities results in higher suppression of intermodulation products. Typical IP3 at 50mA is +28dBm.

These unconditionally stable amplifiers provides 15dB of gain and +14.5dBm of 1dB compressed power and requires only a single positive voltage supply. Only 2 DC-blocking capacitors, a bias resistor and an optional inductor are needed for operation.

This MMIC is an ideal choice for wireless applications such as cellular, PCS, CDPD, wireless data and SONET.



Electrical Specifications at Ta = 25C

Symbol	Parameters: Test Conditions: Id = 50 mA, Z ₀ = 50 Ohms		Units	Min.	Typ.	Max.
G _P	Power Gain	f = 0.1-2.0 GHz f = 2.0-3.0 GHz	dB dB	13	15 14	
G _F	Gain Flatness Gain Flatness over any 100 MHz band	f = 0.1-2.0 GHz	dB dB		+/- 0.7 +/- 0.1	
P _{1dB}	Output Power at 1dB Compression	f = 0.1-2.0 GHz	dBm		14.5	
NF	Noise Figure	f = 0.1-3.0 GHz	dB		5.5	
VSWR	Input and Output VSWR	f = 0.1-3.0 GHz	-		1.5	
IP ₃	Third Order Intercept Point Output Tone @ 0dBm 10 MHz Apart	f = 0.1-2.0 GHz	dBm		28.0	
T _D	Group Delay	f = 1.9 GHz	psec		100	
ISOL	Reverse Isolation	f = 0.1-3.0 GHz	dB		20	
VD	Device Voltage		V	3.5	4.0	4.5
dG/dT	Device Gain Temperature Coefficient		dB/degC		-0.0018	
dV/dT	Device Voltage Temperature Coefficient		mV/degC		-4.0	

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SCA-16

DC-3 GHz, Cascadable GaAs HBT MMIC Amplifier



Product Features

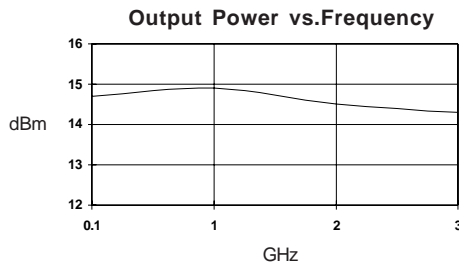
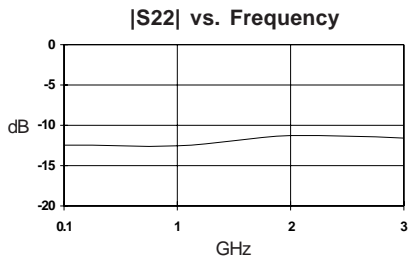
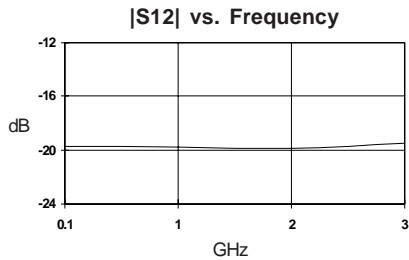
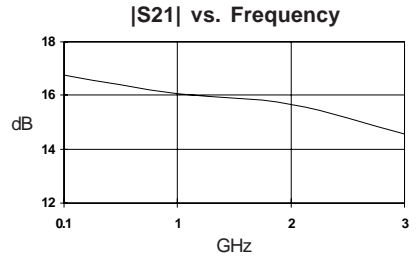
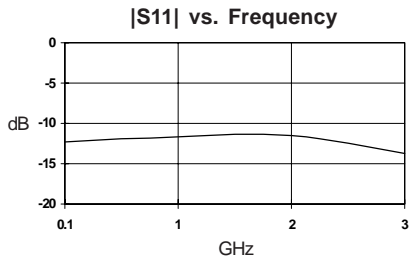
- High Output IP3 : +28dBm
- Flat Gain : +/- 0.7dB Over Full Band
- Cascadable 50 Ohm : 1.5:1 VSWR
- Patented GaAsHBT Technology
- Operates From Single Supply
- Low Thermal Resistance Package

Applications

- Cellular, PCS, CDPD
- Wireless Data, SONET

SCA-16 DC-3 GHz Cascadable MMIC Amplifier

Typical Performance at 25° C ($V_{ds} = 4.0V$, $I_{ds} = 50mA$)



Typical S-Parameters $V_{ds} = 4.0V$, $I_d = 50mA$

Freq GHz	S11	S11 Ang	S21	S21 Ang	S12	S12 Ang	S22	S22 Ang
.100	0.247	125	6.531	148	0.108	-42	0.212	124
.500	0.241	117	6.606	136	0.103	-31	0.206	117
.900	0.256	70	6.397	103	0.102	-55	0.228	71
1.00	0.260	58	6.362	93	0.103	-61	0.235	59
1.50	0.272	3	6.174	52	0.102	-93	0.260	3
2.00	0.265	-50	6.078	10	0.101	-122	0.273	-52
2.50	0.240	-104	5.638	-32	0.104	-153	0.274	-109
3.00	0.204	-160	5.343	-70	0.106	172	0.264	-167

(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)

