

High Dynamic Range LNA

800 - 1000 MHz

AM50-0011

Features

- Ideal for Base Station Applications
- High Gain
- Low Noise Figure
- High Input IP₃
- Single +5 V Supply Voltage

Description

M/A-COM's AM50-0011 is a high dynamic range, GaAs MMIC, low noise amplifier in a low-cost SOT-26 package. It employs external matching to obtain optimum noise figure and intercept performance. The AM50-0011 may be operated with supply voltages of +5 V.

The AM50-0011 is ideally suited for use where low noise figure, high gain, and high dynamic range are required. Typical applications included receiver front ends in AMPS, GSM and ETACS base stations. It may also be used as an IF amplifier in certain other communication systems.

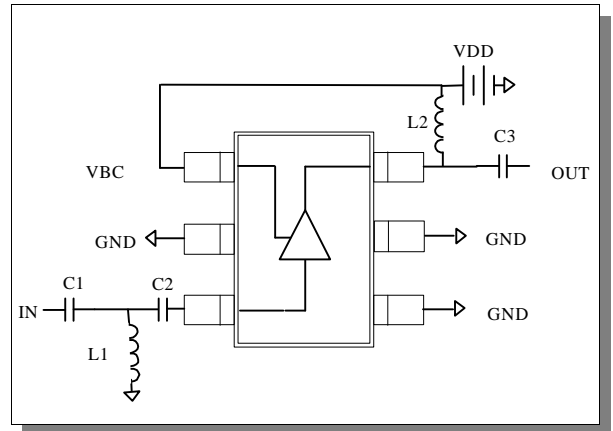
M/A-COM fabricates the AM50-0011 using a low-cost 0.5-micron gate E-D SAGFET GaAs process that features full passivation for reliability and performance. M/A-COM fully tests all assembled GaAs IC's for RF and DC performance against guaranteed specifications using automated RF IC handling and test equipment before shipping to customers.

Absolute Maximum Ratings ¹

Parameter	Absolute Maximum
Supply Voltage	6 volts
RF Input Power	8 dBm
Operating Temperature	-40° to +85 °C
Storage Temperature	-65° to +150 °C

1. Exceeding any one or combination of these limits may cause permanent damage.
2. Minimum MTTF is 1x10⁶ 85°C, at +5 V and 75 mA

Functional Schematic



Pin Configuration

PIN No.	PIN	Description
1	VBC	Bias Control Voltage
2	GND	Ground
3	RF IN	RF Input
4	GND	Ground
5	GND	Ground
6	RF OUT	RF Output

Part	Value
L1	7.5 nH
L2	68 nH
C1	33 pF
C2	100 pF
C3	100 pF

Electrical Specifications: $T_A = 25\text{ }^\circ\text{C}$, $Z_0 = 50\text{ }\Omega$, $F = 900\text{ MHz}$, $P_{IN} = -25\text{ dBm}$, $V_{BC} = 5\text{ V}$, Supply Voltage = 5 V^1

Parameter	Units	Min.	Typ.	Max.
Gain	dB	15	16	17
Noise Figure	dB		0.8	1.3
Output P_{1dB}	dBm		15.5	
Supply Current	mA		52	75
Input IP_3	dBm	12	14.4	
Input V_{SWR}			1.8:1	
Output V_{SWR}			1.9:1	

1. All measurements are taken into a 50-ohm system unless otherwise specified.

Typical S-Parameters at 5.0 Volts

Frequency MHz	S11		S21		S12		S22	
	Mag	Ang	Mag	Ang	Mag	Ang	Mag	Ang
200	0.48	-49.66	9.34	154.18	0.03	27.77	0.22	176.29
300	0.51	-66.15	8.88	142.56	0.04	22.36	0.25	168.84
400	0.53	-79.22	8.21	134.07	0.04	29.75	0.23	165.03
500	0.54	-91.86	7.60	125.78	0.05	36.41	0.26	155.77
600	0.57	-101.06	7.12	117.55	0.05	33.59	0.26	152.78
700	0.58	-110.79	6.46	110.04	0.06	33.73	0.27	147.26
800	0.59	-117.54	6.05	104.16	0.06	33.13	0.27	141.77
900	0.60	-124.29	5.55	97.31	0.06	34.47	0.28	135.23
1000	0.61	-129.68	5.18	92.23	0.07	33.42	0.28	130.14
1100	0.63	-135.05	4.83	86.25	0.08	31.44	0.29	124.27
1200	0.64	-139.81	4.49	81.33	0.08	33.56	0.30	117.78
1300	0.64	-144.08	4.19	76.49	0.08	32.18	0.31	110.61
1400	0.66	-147.34	3.94	71.84	0.09	29.66	0.32	105.59
1500	0.66	-151.48	3.69	67.45	0.09	28.63	0.34	99.61
1600	0.67	-154.72	3.49	62.89	0.10	28.38	0.36	96.38
1700	0.68	-158.72	3.23	59.27	0.10	27.84	0.39	92.40
1800	0.68	-162.04	3.04	55.70	0.10	26.22	0.40	89.88
1900	0.69	-164.46	2.88	52.15	0.10	25.25	0.41	88.46
2000	0.69	-166.68	2.74	48.73	0.11	23.15	0.42	85.35
2100	0.69	-169.52	2.59	45.76	0.11	23.26	0.43	83.28
2200	0.69	-171.95	2.49	41.82	0.11	21.07	0.44	78.45
2300	0.69	-173.86	2.37	38.64	0.12	19.72	0.44	76.69
2400	0.70	-175.94	2.25	35.32	0.12	18.62	0.44	72.60
2500	0.70	-177.82	2.17	31.63	0.12	15.49	0.43	67.17
2600	0.71	-179.80	2.06	27.98	0.12	14.81	0.45	62.63
2700	0.72	178.28	1.96	24.6	0.12	11.42	0.45	56.21
2800	0.72	176.15	1.87	21.63	0.13	10.29	0.47	51.44
2900	0.72	174.28	1.77	18.68	0.13	9.49	0.49	48.17
3000	0.73	172.15	1.69	15.50	0.13	7.26	0.52	43.42

Specifications subject to change without notice.

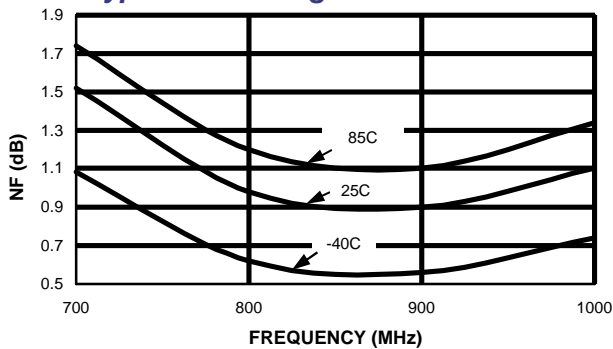
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Visit www.macom.com for additional data sheets and product information.

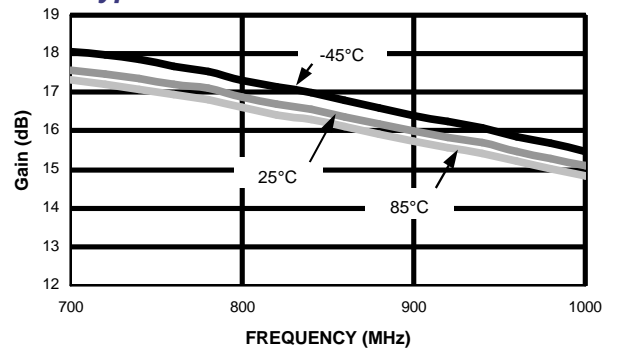


Typical Performance Curves at $V_{DD} = 5$ Volts

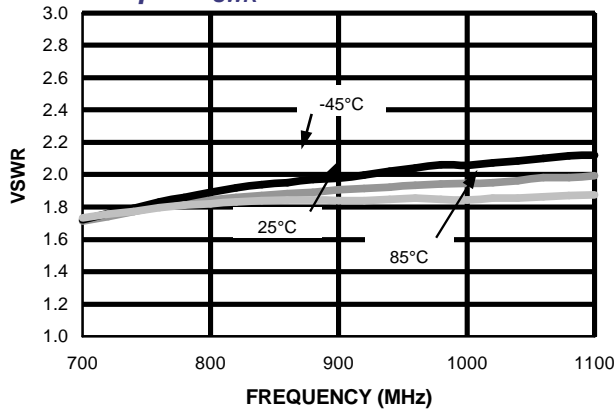
Typical Noise Figure



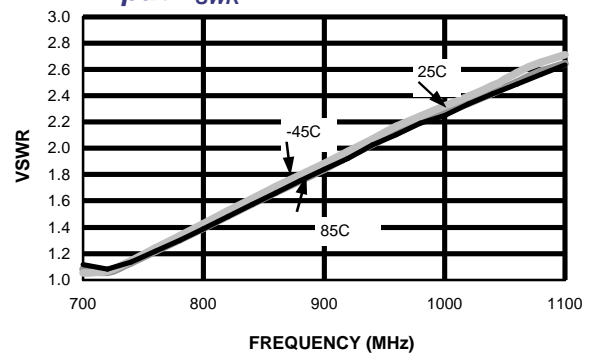
Typical Gain



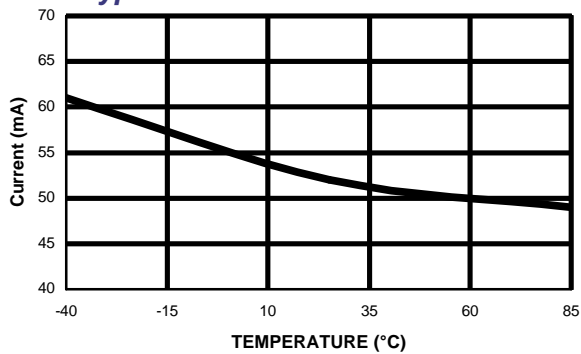
Output V_{SWR}



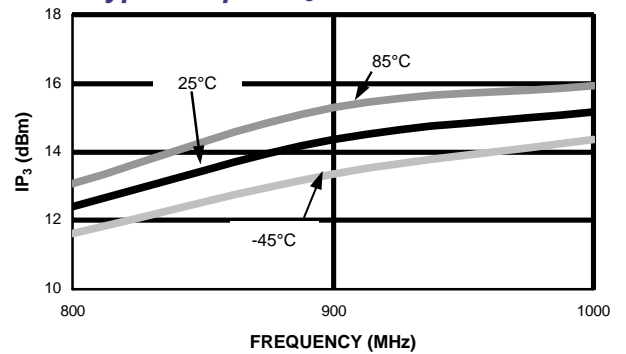
Input V_{SWR}



Typical Current



Typical Input IP_3

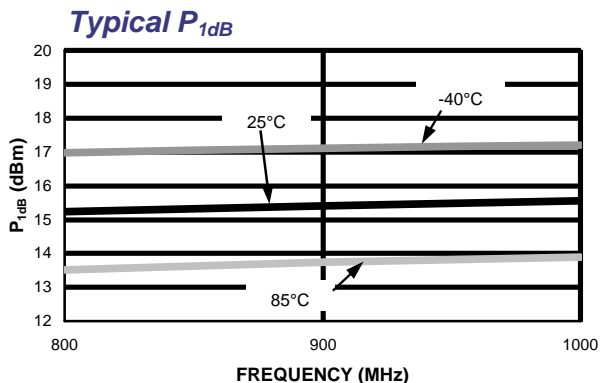


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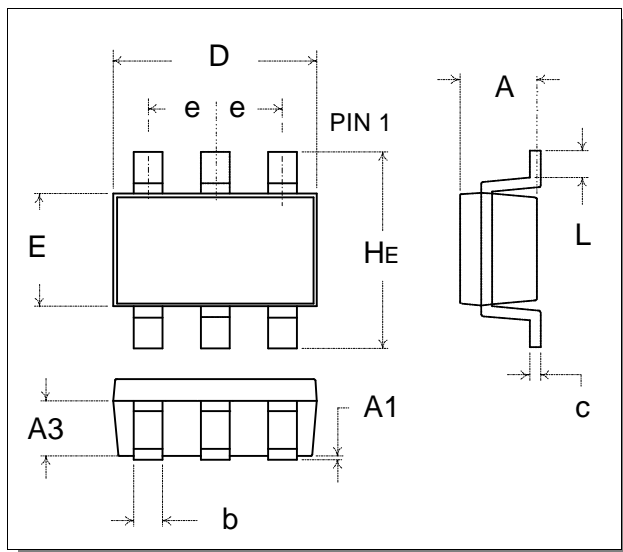
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Typical Performance Curves at $V_{DD} = 5$ Volts (Cont'd)



SOT-26¹



1. See EIAJ ED-7500A, SC-74 for additional dimensional and tolerance information.

SOT-26

Dim	Measurement (mm)		
	Min.	Nom.	Max.
A	0.90	1.10	1.30
A1	0	0.05	0.10
A3	0.62	0.79	1.89
b	0.35	0.40	0.50
c	0.10	0.15	0.25
D	2.70	2.90	3.10
e		0.95	
E	1.50	1.60	1.80
HE	2.6	2.80	3.00
L	0.20	-	-

Ordering Information

Part Number	Package
AM50-0011TR	1000 Tape and Reel ¹
AM50-0011TR 3000	3000 Tape and Reel ¹
AM50-0011SMB	Sample Test Board

1. If specific reel size is required, consult factory for part number assignment.

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