

Broadband IF Driver Amplifier 50 - 2500 MHz

**MAAMSS0017
V4**

Features

- Low Cost Plastic SOT-89 Package
- Broadband Operation
- +38.5 dBm Output Intercept Point @ 250 MHz
- +19 dBm Output P1dB
- High Efficiency
- 50 Ω Input / Output Match
- 18 dB Typical Gain

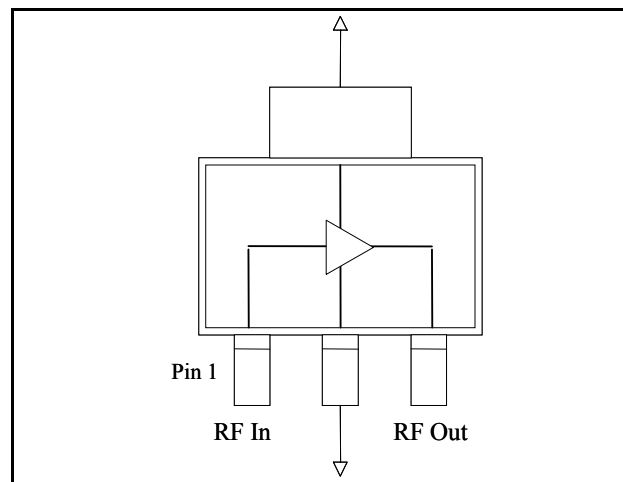
Description

M/A-COM's MAAMSS0017 driver amplifier is a GaAs MMIC which exhibits high OIP3 as well as high gain and low power consumption in a low-cost SOT-89 surface mount plastic package.

The MAAMSS0017 employs a monolithic single stage design featuring a convenient 50 Ω input / output impedance that minimizes the number of external components required. The device runs off a single +5 volt supply and draws 70 mA typically.

The MAAMSS0017 is fabricated using M/A-COM's iHBT process to realize low current and high power functionality. The process features full passivation for increased performance and reliability.

Functional Schematic



Pin Configuration

Pin No.	Function	Pin No.	Function
1	RF In	3	RF Out/Bias
2	GND		

Ordering Information ¹

Part Number	Package
MAAMSS0017TR	1000 Piece Tape and Reel
MAAMSS0017TR-3000	3000 Piece Tape and Reel
MAAMSS0017SMB	Sample Board (Includes 5 Samples)

1. Reference Application Note M513 for reel size information.

Maximum Operating Conditions ²

Parameter	Maximum Operating Conditions
Junction Temperature	125°C
RF Input Power	14 dBm

2. Operating at or within these conditions will ensure MTTF > 1 x 10⁶ hours.

Absolute Maximum Ratings ^{3,4}

Parameter	Absolute Maximum
RF Input Power ⁵	15 dBm
Voltage	6 Volts
Junction Temperature ⁶	+150°C
Operating Temperature	-40 °C to +85 °C
Storage Temperature	-65 °C to +150 °C

3. Exceeding any one or combination of these limits may cause permanent damage to this device.

4. M/A-COM does not recommend sustained operation near these survivability limits.

5. The MAAMSS0017 is designed to operate optimally at 10 dB backed off from its output P1dB. Driving the device at higher power levels could degrade performance.

6. Thermal Resistance = 110°C/W.

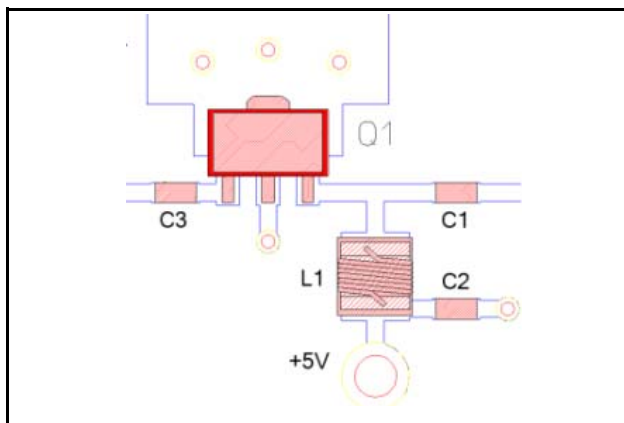
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Electrical Specifications: $T_A = 25^\circ\text{C}$, $V_{CC} = 5\text{ V}$, $Z_0 = 50\ \Omega$, $P_{IN} \leq -10\text{ dBm}$

Parameter	Test Conditions	Frequency	Units	Min	Typ	Max
Gain	—	250 MHz	dB	15.5	18	19.5
		50 - 600 MHz	dB	—	17	—
		600 - 1500 MHz	dB	—	12.5	—
		1500 - 2000 MHz	dB	—	10.5	—
		2000 - 2500 MHz	dB	—	8	—
Noise Figure	—	50 - 600 MHz	dB	—	4.8	—
		600 - 1500 MHz	dB	—	5.1	—
		1500 - 2500 MHz	dB	—	5.3	—
Input Return Loss	—	50 - 600 MHz	dB	—	10	—
		600 - 2500 MHz	dB	—	13	—
Output Return Loss	—	50 - 600 MHz	dB	—	10	—
		600 - 1500 MHz	dB	—	13	—
		1500 - 2500 MHz	dB	—	10	—
Output 1dB Compression	—	50 - 600 MHz	dBm	—	20	—
		600 - 2500 MHz	dBm	—	19	—
Output IP3	Two tone, $P_{IN} / \text{Tone} = -13\text{ dBm}$, Tone spacing = 10 MHz	250 MHz	dBm	35	38.5	—
		50 - 600 MHz	dBm	—	37	—
		600 - 2500 MHz	dBm	—	34	—
Current	$V_{CC} = 5\text{ V}$	—	mA	—	70	100

PCB Configuration



Component List

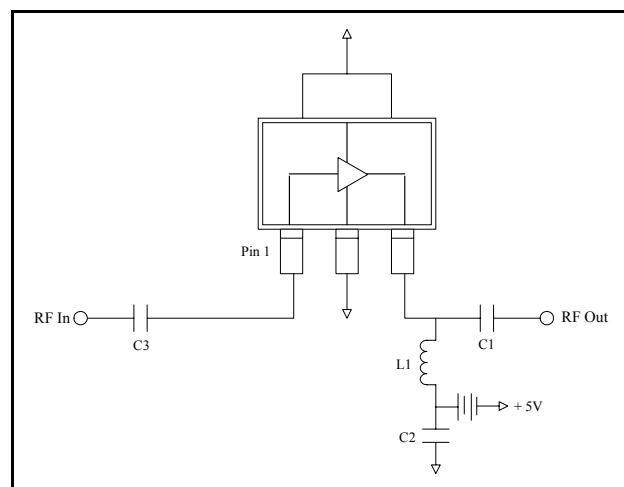
Part	Value	Package	Manufacturer
C1	150 pF	0603	Murata
C2	0.1 μF	0603	Murata
C3	1000 pF	0603	Murata
L1	180 nH	1008	Coilcraft

Operating the MAAMSS0017

The MAAMSS0017 can be damaged by electrostatic discharge (ESD). Use proper ESD control techniques when handling this device. To operate the MAAMSS0017, follow these steps.

1. Apply V_{CC} (5.0 V).
2. Set P_{IN} .
3. Turn off in reverse order.

Schematic Including Off-Chip Components

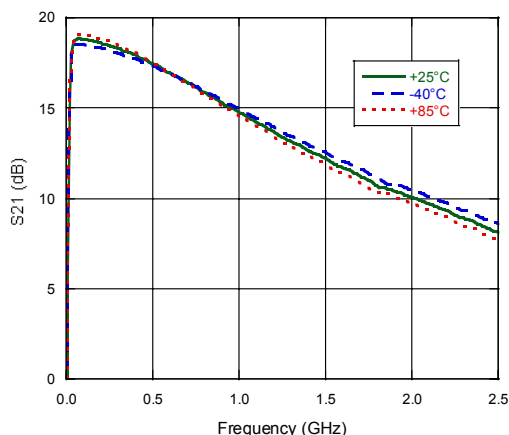


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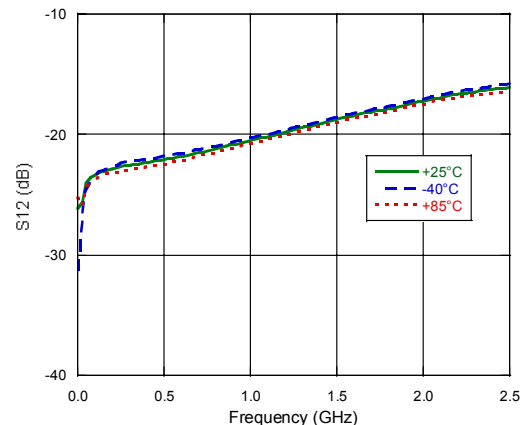
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Typical Performance Curves

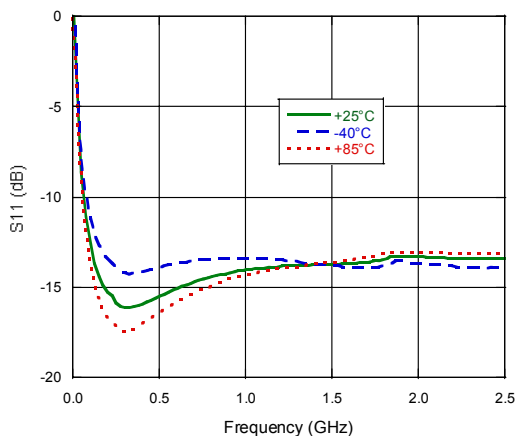
Gain



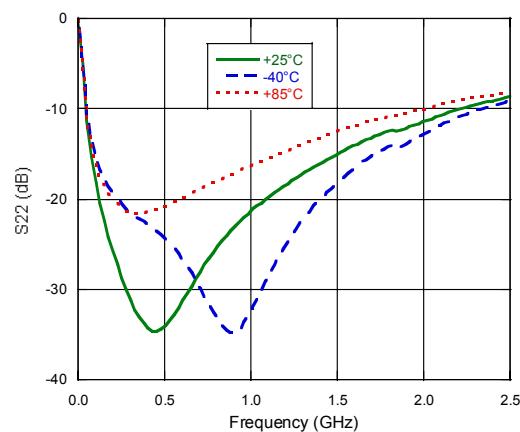
Reverse Isolation



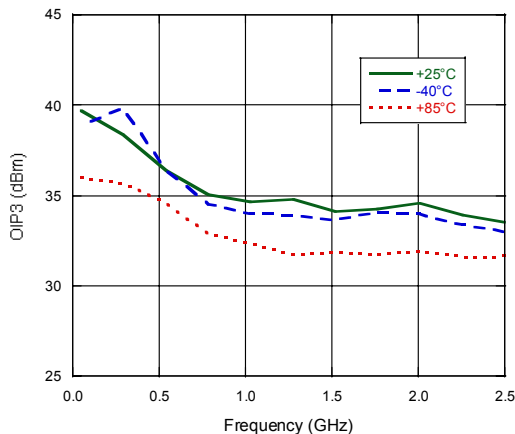
Input Return Loss



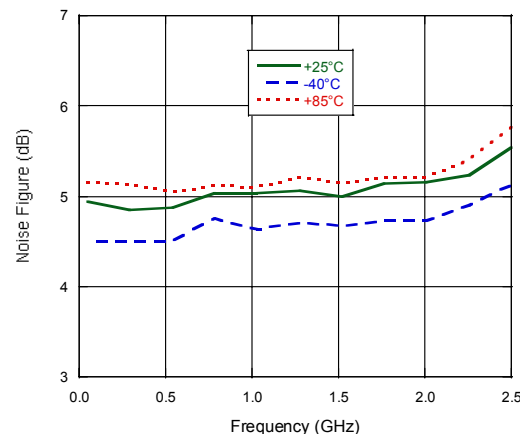
Output Return Loss



OIP3 ($P_{IN} = -13$ dBm / tone)



Noise Figure

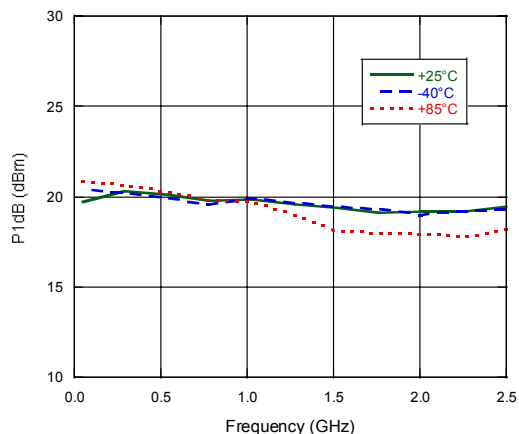


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Typical Performance Curves

P1dB



SOT-89 Plastic Package

