

Absolute Maximum Ratings ¹

Parameter	Absolute Maximum
V _{DD}	+10 VDC
Input Power	+17 dBm
Current ²	120 mA
Channel Temperature ³	+150°C
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to +150°C

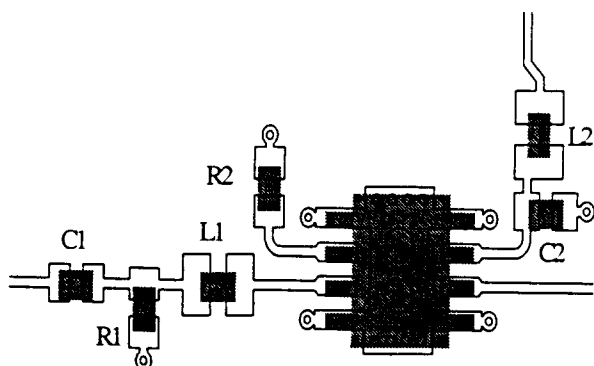
1. Exceeding any one or combination of these limits may cause permanent damage.
2. When pin #2 is used to increase current. (See note 5.)
3. Thermal resistance (θ_{jc}) = +88°C/W.

Pin Configuration

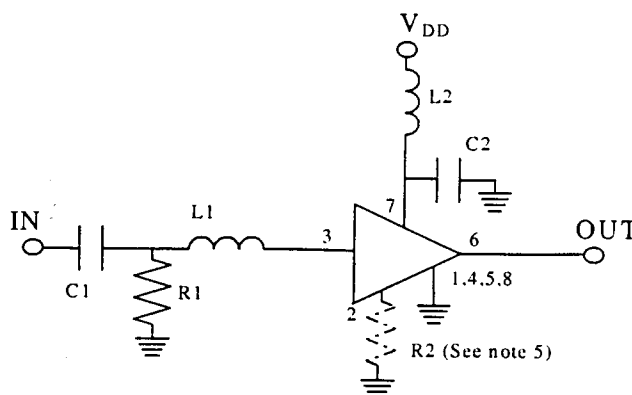
Pin No.	Pin Name	Description
1	GND	RF and DC Ground
2	R _{EXT}	External Current Control (optional)
3	IN	RF Input of the amplifier
4	GND	RF and DC Ground
5	GND	RF and DC Ground
6	OUT	RF Output of the amplifier
7	V _{DD}	Positive supply voltage
8	GND	RF and DC Ground

Recommended PCB Configuration

Layout View



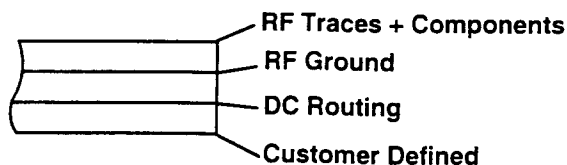
Functional Block Diagram

External Circuitry Parts List ⁴

Part	Value	Purpose
C1	47 pF	DC Block
C2	470 pF	By-Pass
L1	12 nH	Tuning
L2	12 nH	RF Choke
R1	5.1 k Ω	DC Return
R2	see note 5	Optional current control

4. All external circuitry parts are readily available, low cost surface mount components (.060 in. x .030 in. or .080 in. x .050 in.).
5. Pin 2 allows use of an external resistor to ground for optional, higher current. For 20 mA operation, no resistor is used.
For I_{DD} ~ 40 mA, R2 = 43 ohms;
I_{DD} ~ 60 mA, R2 = 15 ohms;
I_{DD} ~ 80 mA, R2 = 10 ohms.

Cross Section View



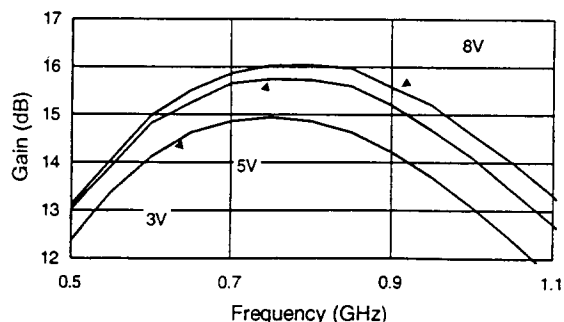
The PCB dielectric between RF traces and RF ground layers should be chosen to reduce RF discontinuities between 50 Ω lines and package pins. M/A-COM recommends an FR-4 dielectric thickness of 0.008" (0.20 mm) yielding a 50 Ω line width of 0.015" (0.38 mm). The recommended RF metalization thickness is 1 ounce copper.

Specifications Subject to Change Without Notice.

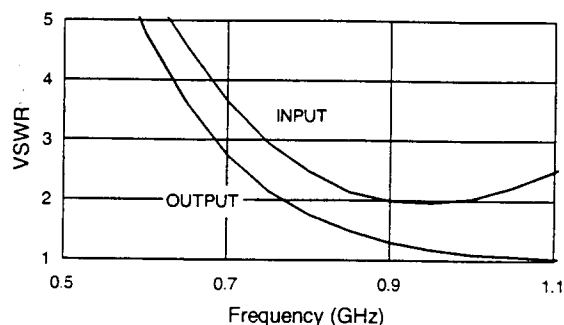
Typical Performance Data

Test Conditions: $T_A = +25^\circ\text{C}$, $Z_0 = 50\ \Omega$, $V_{DD} = 5\ \text{V}$, $I_{DD} = 60\ \text{mA}$ unless otherwise specified.

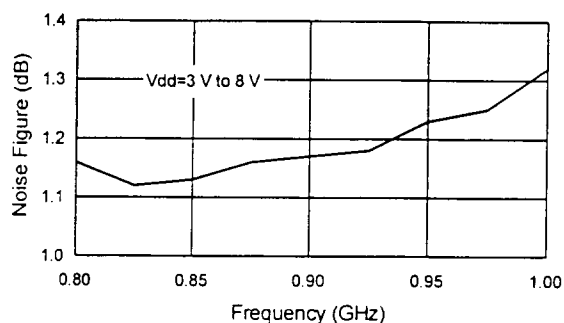
GAIN vs. FREQUENCY



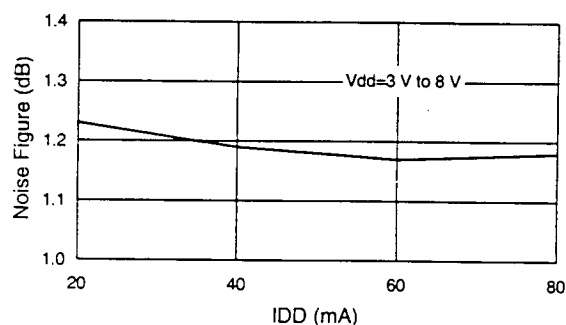
VSWR vs. FREQUENCY



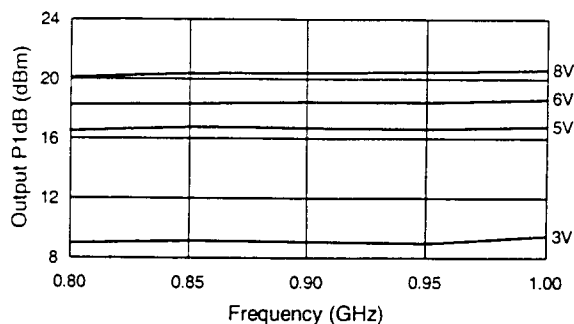
NOISE FIGURE vs. FREQUENCY



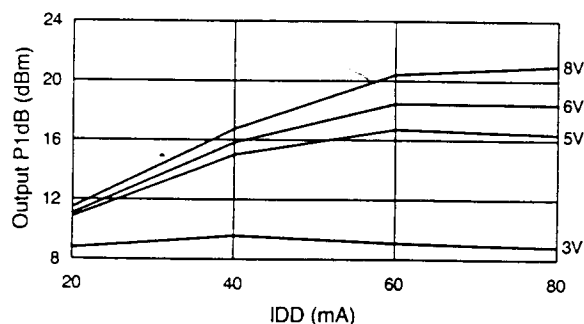
NOISE FIGURE vs. CURRENT, F=900 MHz



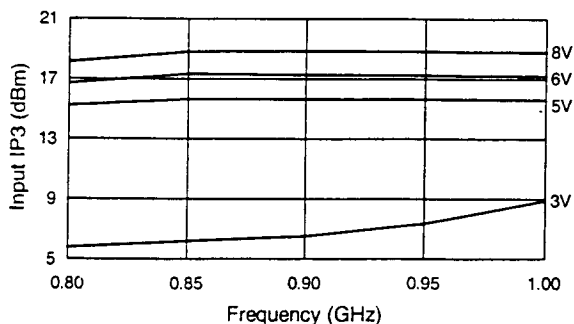
OUTPUT P1dB vs. FREQUENCY



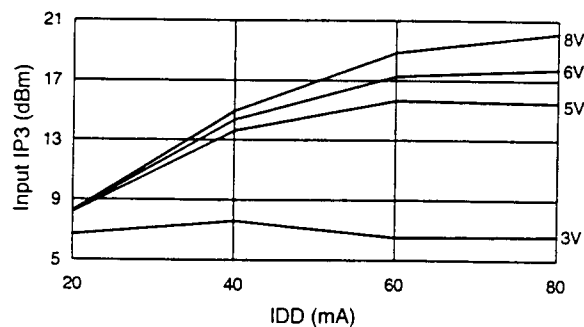
OUTPUT P1dB vs. CURRENT, F=900 MHz



INPUT IP3 vs. FREQUENCY



INPUT IP3 vs. CURRENT, F=900 MHz



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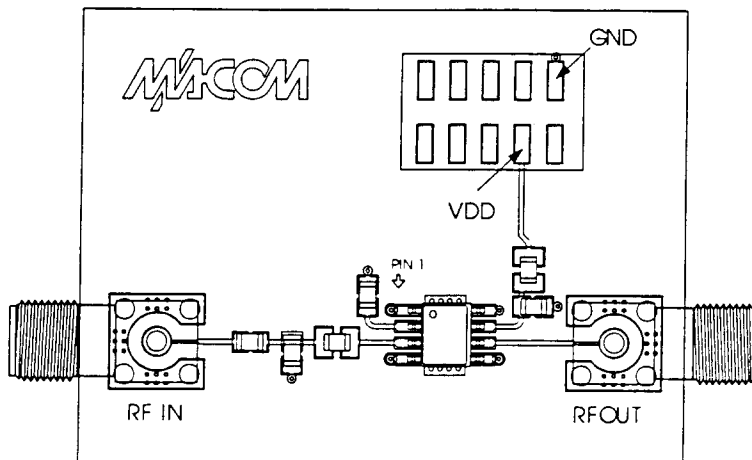
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Designer's Kit AM50-0003SMB

The AM50-0003SMB Designer's Kit allows for immediate evaluation of M/A-COM's AM50-0003. The Designer's Kit includes an AM50-0003, an evaluation board, and a floppy disk containing typical performance data and a DXF file of the recommended PCB layout.

The evaluation board consists of the recommended external surface mount circuitry, RF connectors, and a DC multi-pin connector, all mounted to a multi-layer FR-4 PCB. The AM50-0003SMB evaluation PCB is illustrated below with all functional ports labeled.



AM50-0003 EVALUATION BOARD

Evaluation PCB + RF Connector Losses

Port Reference	Approximate RF Loss
LNA Input	0.1 dB @ 900 MHz
LNA Output	0.1 dB @ 900 MHz

The DC connector on the Designer's Kit PCB allows convenient DC line access. This is accomplished by one or more of the following methods:

1. A mating female multi-pin connector (Newark Electronics Stock # 46F-4658, not included).
2. Wires soldered to the necessary pins (not included).
3. Clip leads (not included).

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