

High Dynamic Range Low Noise Amplifier

815-915 MHz

AM50-0001

Features

- Low Noise Figure, 1.5 dB
- High Dynamic Range, 15 dBm Input IP_3
- High Gain, 14.5 dB
- Single Supply +5 VDC
- DC Decoupled RF Input and Output
- No External RF Tuning Elements Necessary
- Low Cost SOIC-8 Plastic Package

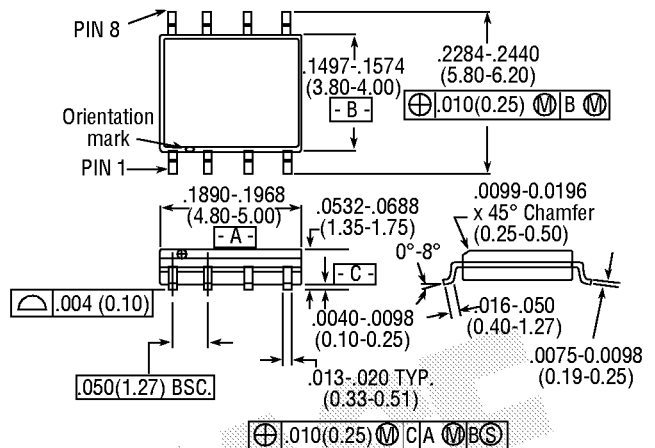
Description

M/A-COM's AM50-0001 is a high dynamic range GaAs MMIC low noise amplifier in a low cost SOIC 8-lead surface mount plastic package. The AM50-0001 employs a fully monolithic design which eliminates the need for external tuning networks. It is biased using a single 5V supply.

The AM50-0001 is ideally suited for use where low noise figure, high gain, high dynamic range, and low power consumption are required. Typical applications include receiver front ends in AMPS, JTACS, NTACS and NTT base stations as well as ISM receivers. They are also useful as standard gain blocks, buffer amps, driver amps, and IF amps in both fixed and portable systems.

The AM50-0001 is fabricated using a mature 0.5 micron gate length GaAs process. The process features full passivation for increased performance reliability.

SO-8



8-Lead SOP outline dimensions
Narrow body .150
(All dimensions per JEDEC No. MS-012-AA, Issue C)
Dimensions in () are in mm. Unless Otherwise Noted: .xxx = +/- 0.010 (.xx = +/- 0.25)
.xx = +/- 0.02 (.x = +/- 0.5)

Target Electrical Specifications¹, $T_A = +25^\circ\text{C}$, $V_{DD} = 5\text{ V}$, 815 - 915 MHz, $P_{IN} = -30\text{ dBm}$

Parameter	Units	Min.	Typ.	Max.
Gain	dB	13.0	14.5	
Noise Figure	dB		1.5	1.8
Input VSWR			1.5:1	
Output VSWR			1.3:1	
Output 1 dB Compression Point	dBm		16.5	
Input IP_3	dBm		15	
Impedance	Ω		50	
Reverse Isolation	dB		23	
Bias Current	mA		50	80

1. This Advanced Data Sheet contains technical information and target specifications for a product which M/A-COM is considering for development. This does not constitute a commitment to supply.

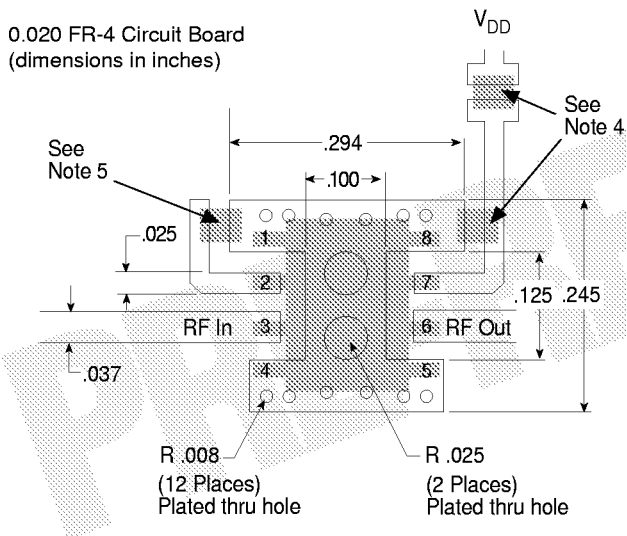
Absolute Maximum Ratings

Parameter	Absolute Maximum ¹
Input Power	+17 dBm
V _{DD}	+10 VDC
Current ²	150 mA
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to +150°C

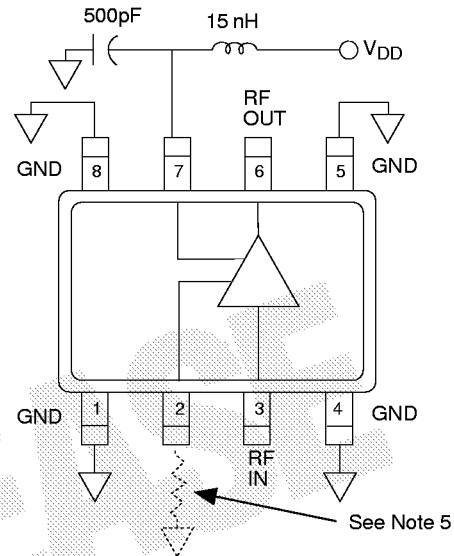
1. Operation of this device above any one of these parameters may cause permanent damage.
2. Only if pin no.2 is used to increase current (see note 5).

Recommended PCB Configuration

0.020 FR-4 Circuit Board
(dimensions in inches)



Functional Diagram



3. Pins 1,4,5, and 8 must be RF and DC grounded as shown.
4. Pin 3 is the RF input; pin 6 is the RF output. V_{DD} is applied on pin 7. This pin must be bypassed with a 500 pF surface mount MLC capacitor mounted as close as possible to pin 7, and RF decoupled with a chip inductor, minimum value 15 nH (as shown in the Recommended PCB Configuration).
5. Pin 2 allows use of an external resistor to ground for optional, higher current bias. For nominal current operation no resistor is used. For increased current operation connect a 10-40 ohm chip resistor (as shown in the Recommended PCB Configuration).

Typical Performance @ +25°C, V_{DD} = +5 V