

A82-1 / SMA82-1

Cascadable Amplifier 20 to 250 MHz

Rev. V3

Features

- HIGH REVERSE ISOLATION: >34 dB (TYP.)
- HIGH OUTPUT POWER: +15 dBm (TYP.)
- HIGH GAIN: 19.0 dB (TYP.)
- LOW OUTPUT VSWR: 1.1:1 (TYP.)

Description

The A82-1 RF amplifier is a discrete hybrid design, which uses thin film manufacturing processes for accurate performance and high reliability.

The 2 stage silicon bipolar feedback amplifier design displays impressive performance over a broadband frequency range. An isolation transformer is used in the feedback loop, with the benefit of high reverse isolation.

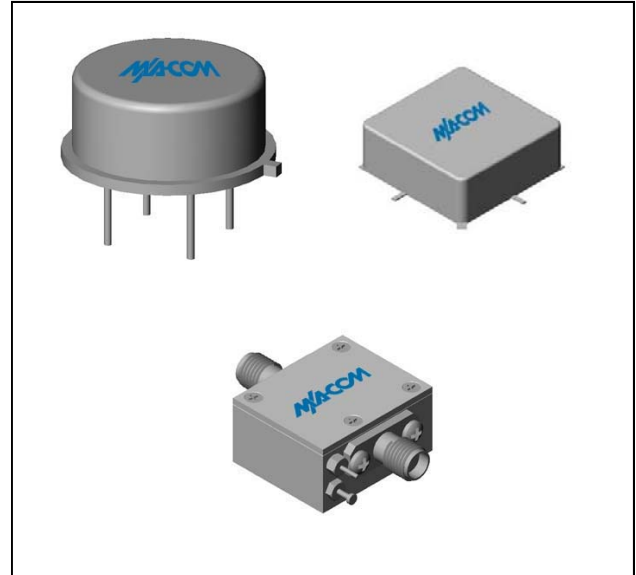
Both TO-8 and Surface Mount packages are hermetically sealed, and MIL-STD-883 environmental screening is available.

Ordering Information

Part Number	Package
A82-1	TO-8
SMA82-1	Surface Mount
CA82-1**	SMA Connectorized

**The connectorized version is not RoHs compliant.

Product Image



Electrical Specifications: $Z_0 = 50\Omega$, $V_{CC} = +15 V_{DC}$

Parameter	Units	Typical	Guaranteed	
		25°C	0° to 50°C	-54° to +85°C*
Frequency	MHz	10-300	20-250	20-250
Small Signal Gain (min)	dB	19.0	17.5	17.0
Gain Flatness (max)	dB	±0.3	±0.7	±1.0
Reverse Isolation	dB	34		
Noise Figure (max)	dB	2.8	3.5	4.0
Power Output @ 1 dB comp. (min)	dBm	15.0	14.0	13.0
IP3	dBm	+26		
IP2	dBm	+31		
Second Order Harmonic IP	dBm	+36		
VSWR Input / Output (max)		1.4:1 / 1.1:1	1.9:1 / 1.4:1	2.0:1 / 1.5:1
DC Current @ 15 Volts (max)	mA	50	52	54

Absolute Maximum Ratings

Parameter	Absolute Maximum
Storage Temperature	-62°C to +125°C
Case Temperature	125°C
DC Voltage	+17 V
Continuous Input Power	+10 dBm
Short Term Input power (1 minute max.)	50 mW
Peak Power (3 µsec max.)	0.5 W
"S" Series Burn-In Temperature (case)	125°C

Thermal Data: $V_{CC} = +15 V_{DC}$

Parameter	Rating
Thermal Resistance θ_{jc}	144°C/W
Transistor Power Dissipation P_d	0.273 W
Junction Temperature Rise Above Case T_{jc}	39°C

* Over temperature performance limits for part number CA82-1, guaranteed from 0°C to +50°C only.

ADVANCED: Data Sheets contain information regarding a product M/A-COM Technology Solutions is considering for development. Performance is based on target specifications, simulated results, and/or prototype measurements. Commitment to develop is not guaranteed.

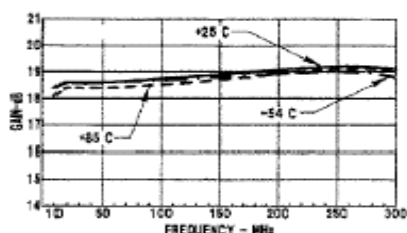
PRELIMINARY: Data Sheets contain information regarding a product M/A-COM Technology Solutions has under development. Performance is based on engineering tests. Specifications are typical. Mechanical outline has been fixed. Engineering samples and/or test data may be available. Commitment to produce in volume is not guaranteed.

• **North America** Tel: 800.366.2266 • **Europe** Tel: +353.21.244.6400
• **India** Tel: +91.80.4155721 • **China** Tel: +86.21.2407.1588
Visit www.macomtech.com for additional data sheets and product information.

M/A-COM Technology Solutions Inc. and its affiliates reserve the right to make changes to the product(s) or information contained herein without notice.

Rev. V3

Outline Drawing: TO-8 *

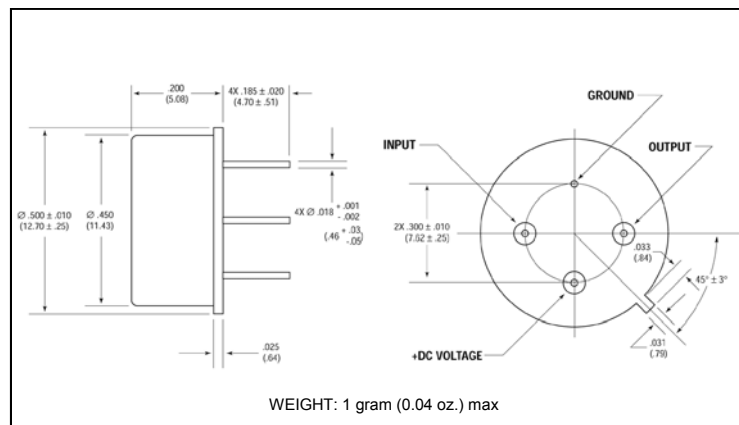


Frequency (MHz)	Noise Figure (dB)
10	3.8
50	3.9
100	4.0
150	4.1
200	4.15
250	4.2
300	4.25

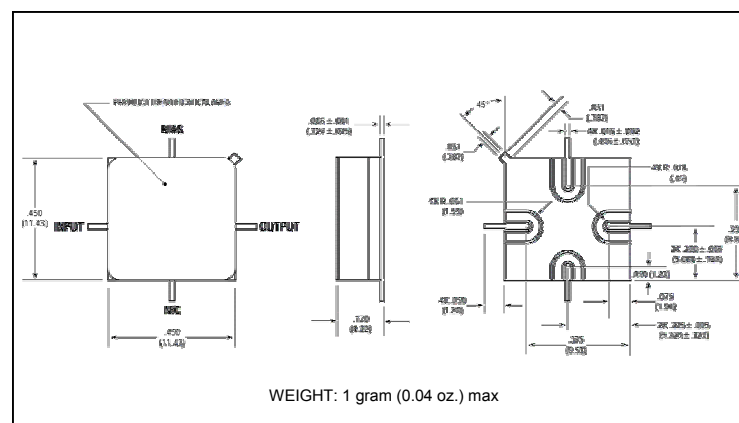
The graph shows the intensity of two-tone signals in dB versus frequency in MHz. The y-axis ranges from 20 to 70 dB, and the x-axis ranges from 10 to 300 MHz. There are four curves: a solid line for the 2nd order two-tone signal, a dashed line for the 2nd harmonic, a solid line for the 3rd order two-tone signal, and a dashed line for the 3rd harmonic. The 2nd order two-tone signal starts at approximately 55 dB at 10 MHz and decreases to about 25 dB at 300 MHz. The 2nd harmonic starts at approximately 45 dB at 10 MHz and decreases to about 20 dB at 300 MHz. The 3rd order two-tone signal starts at approximately 25 dB at 10 MHz and decreases to about 15 dB at 300 MHz. The 3rd harmonic starts at approximately 20 dB at 10 MHz and decreases to about 15 dB at 300 MHz.

Frequency (MHz)	2nd Order Two-Tone (dB)	2nd Harmonic (dB)	3rd Order Two-Tone (dB)	3rd Harmonic (dB)
10	55	45	25	20
50	50	40	22	18
100	45	35	20	17
150	40	30	18	16
200	35	25	17	15
250	30	22	16	15
300	25	20	15	15

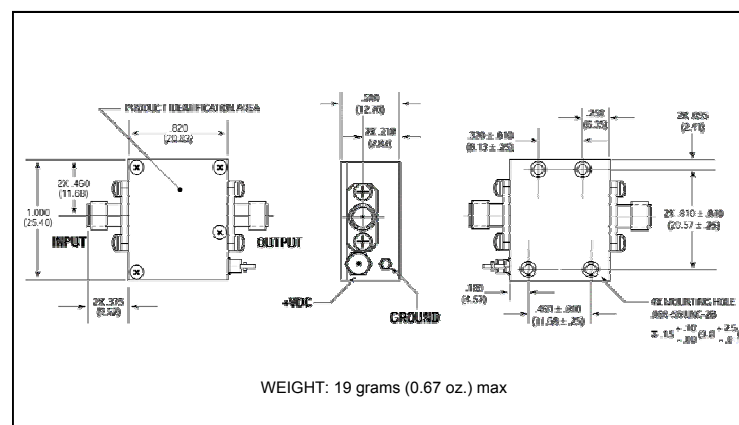
The graph shows the Noise Spectral Density (NSD) in dBm/Hz on the y-axis (ranging from 1.0 to 3.0) versus Frequency in MHz on the x-axis (ranging from 10 to 300). Two curves are plotted: a dashed line for the 'INPUT' and a solid line for the 'OUTPUT'. The input NSD starts at approximately 1.1 dBm/Hz at 10 MHz, rises to about 1.4 dBm/Hz at 150 MHz, and then slightly decreases to 1.3 dBm/Hz at 300 MHz. The output NSD starts at approximately 1.0 dBm/Hz at 10 MHz, rises to about 1.2 dBm/Hz at 150 MHz, and then slightly decreases to 1.1 dBm/Hz at 300 MHz. The difference between the input and output NSD is approximately 0.3 dBm/Hz across the entire frequency range.



Outline Drawing: Surface Mount *



Outline Drawing: SMA Connectorized *



* Dimensions are inches (millimeters) ± 0.015 (0.38) unless otherwise specified.