

Voltage Variable Absorptive Attenuator, 800 - 1000 MHz

Rev. V2

Features

- Input IP3: +35 dBm Min (Full Attenuation Range)
- Input IP3 is **15 -20 dB** Better than GaAs
- Linear Operation: +20 dBm Typ.
- Plastic, 28 Lead, 6 mm CSP, SMT Package
- 35 dB Dynamic Range (With 30 mA Bias Current)
- Single Control Voltage
- 50 ohm Impedance
- Linear Driver, MADR-007098-000100, Available
- Test Boards are Available
- Tape and Reel Packaging Available
- 100% Matte Tin Plating over Copper
- Halogen-Free "Green" Mold Compound
- 260°C Reflow Compatible
- RoHS* Compliant Version of MAAVCC0001

Description

M/A-COM's MAAV-007092-000100 is a PIN diode based voltage variable attenuator. This device is in a 6mm square, 28 lead, plastic CSP Package, suitable for surface mounting on PCBs. These attenuators have linear operating power and input intercept point levels 15 - 20 dB better than GaAs FET MMIC voltage variable attenuators. They are ideally suited for use where low distortion, high linear operating power and high dynamic range are required. These devices are optimized for the GSM frequency band, but exhibit excellent performance and repeatability over the entire specified frequency band. The MAAV-007092-000100 is ideally suited for wireless communications systems.

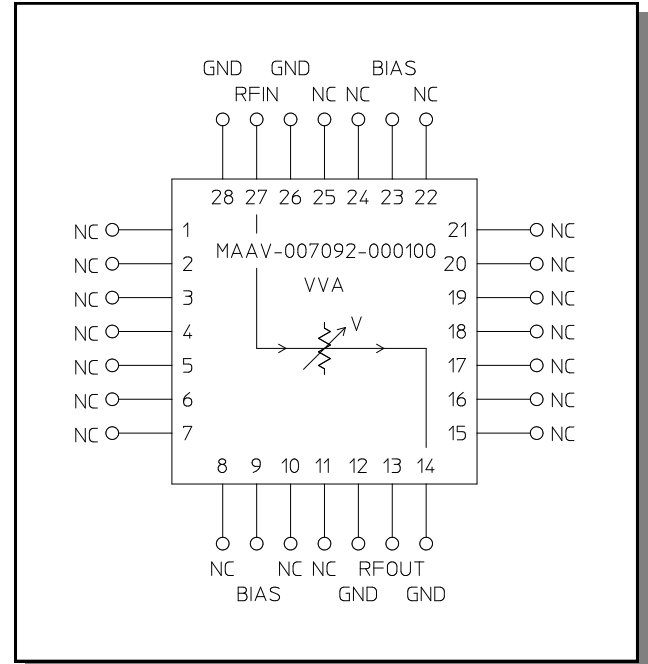
Ordering Information

Part Number	Package
MAAV-007092-000100	Bulk Packaging
MAAV-007092-0001TR	1000 piece reel
MAAV-007092-0001TB	Sample Test Board

Note: Reference Application Note M513 for reel size information.

* Restrictions on Hazardous Substances, European Union Directive 2002/95

Functional Schematic



Pin Configuration²

Pin #	Function	Pin #	Function
1	N/C	15	N/C
2	N/C	16	N/C
3	N/C	17	N/C
4	N/C	18	N/C
5	N/C	19	N/C
6	N/C	20	N/C
7	N/C	21	N/C
8	N/C	22	N/C
9	BIAS ¹	23	BIAS ¹
10	N/C	24	N/C
11	N/C	25	N/C
12	GND	26	GND
13	RF OUT	27	RF IN
14	GND	28	GND

1. Bias current may be applied to Pin 9 or 23. However, the unused Pin must be isolated.
2. The exposed pad centered on the package bottom must be connected to RF and DC ground. (For PQFN Packages)

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Electrical Specifications: $T_A = 25^\circ\text{C}$

Parameter	Test Conditions	Frequency	Units	Min.	Typ.	Max.
Insertion Loss	0 volts	800-1000 MHz	dB	—	3.6	4.2
		925 - 960 MHz	dB	—	3.5	3.9
Attenuation (Above Loss)	10 mA bias current	800-1000 MHz	dB	30	34	—
		925 - 960 MHz	dB	30	34	—
Attenuation Flatness	0 to 30 dB attenuation	800-1000 MHz	dB	—	2.3	3.0
		925 - 960 MHz	dB	—	0.4	0.8
VSWR	0 to 30 dB attenuation	800-1000 MHz	Ratio	—	1.5:1	1.9:1
		925 - 960 MHz	Ratio	—	1.3:1	1.8:1
Switching Speed	50% Control to 90%/10% RF	800-1000 MHz	μs	—	—	10.0
Linear Operation	—	800-1000 MHz	dBm	—	+20	—
Input IP_3	Two-tone inputs up to +10 dBm	800-1000 MHz	dBm	+35	+40	—
I_{Control}	—	800-1000 MHz	mA	—	—	30

Absolute Maximum Ratings ^{3,4}

Parameter	Absolute Maximum
Max. Input Power	+27 dBm
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to +125°C

- Exceeding any one or combination of these limits may cause permanent damage to this device.
- M/A-COM does not recommend sustained operation near these survivability limits.

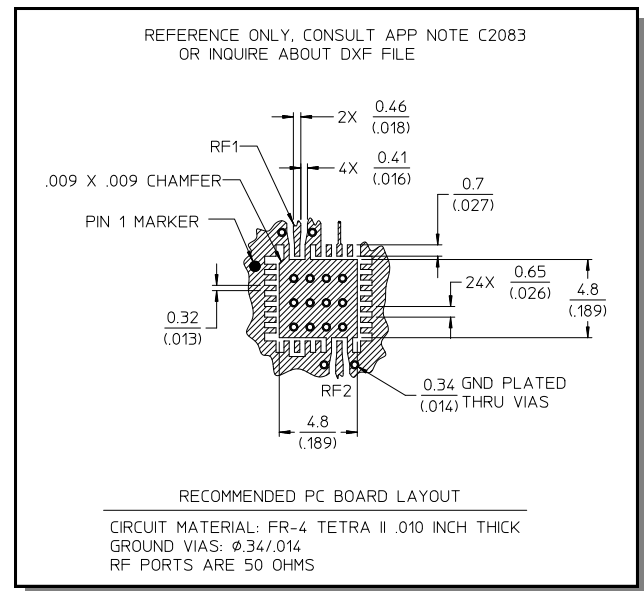
Handling Procedures

Please observe the following precautions to avoid damage:

Static Sensitivity

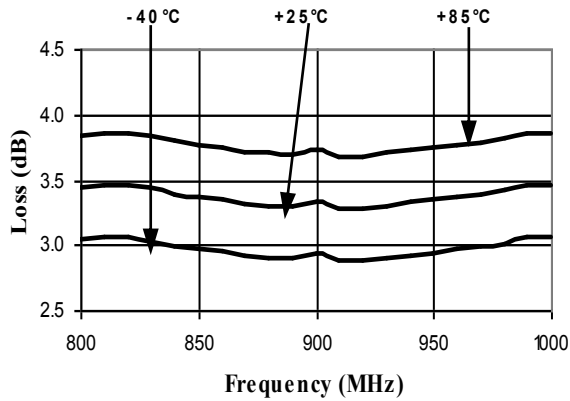
Gallium Arsenide Integrated Circuits are sensitive to electrostatic discharge (ESD) and can be damaged by static electricity. Proper ESD control techniques should be used when handling these devices.

Recommended PCB Layout

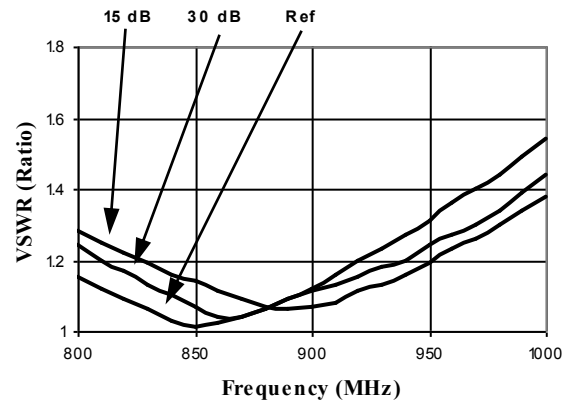


Typical Performance Curves

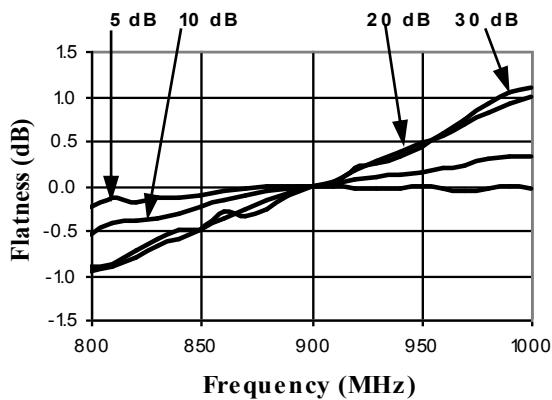
Insertion Loss



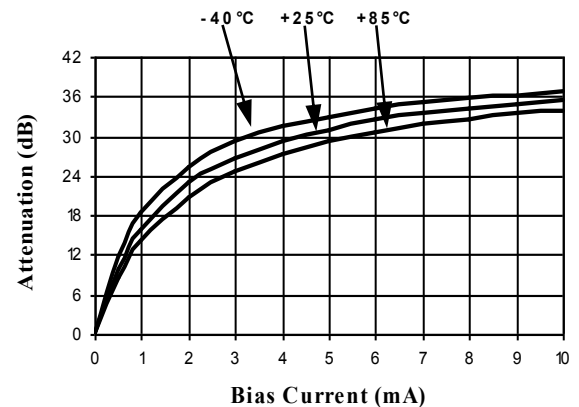
Typical VSWR @ +25°C



Attenuation Flatness @ +25°C



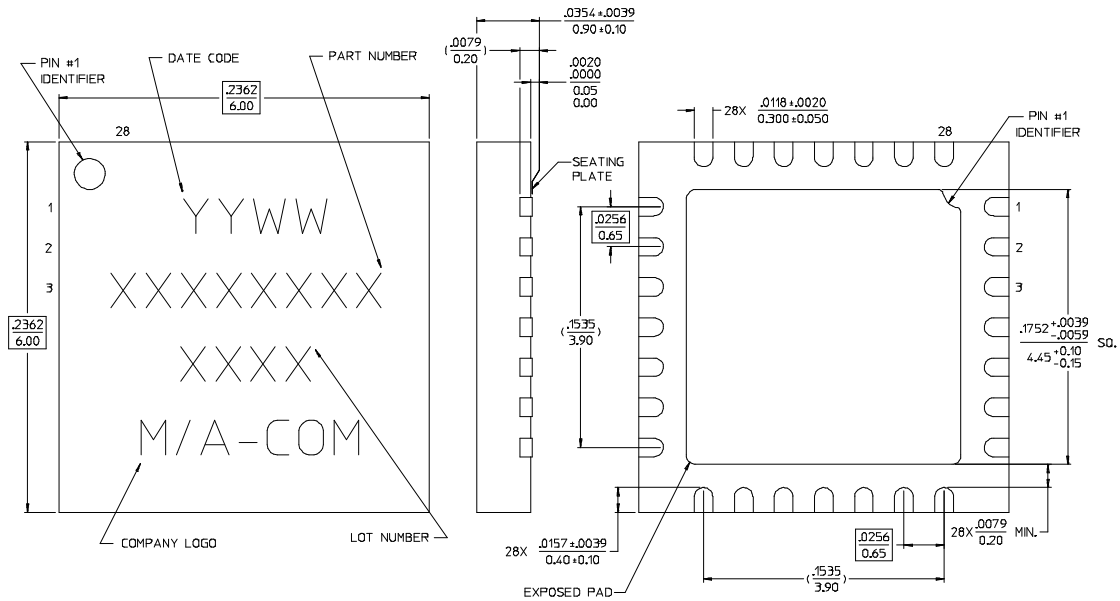
Attenuation vs. Bias Current, Frequency = 1000 MHz



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CSP-8, 28 Lead, 6mm



NOTES:

1. REFERENCE JEDEC MO-220-VJJC-4 FOR ADDITIONAL DIMENSIONAL AND TOLERANCE INFORMATION.
2. ALL DIMENSIONS SHOWN AS in/mm.
3. REFERENCE S2083 APPLICATION NOTE FOR PCB FOOTPRINT INFORMATION.

Package outline conforms to JEDEC standard MO-220B.

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