MAAV-007941

Voltage Variable Absorptive Attenuator
12 dB, DC - 2.0 GHz

Rev. V1

Features

- 12 dB Voltage Variable Attenuation
- Low Intermodulation Products
- Low DC Power Consumption: 50 μW
- Single Voltage Control: 0 to -4 Volts
- Nanosecond Switching Speed
- Temperature Range: -40°C to +85°C
- Lead-Free SOIC-8 Plastic Package
- 100% Matte Tin Plating over Copper
- Halogen-Free "Green" Mold Compound
- 260°C Reflow Compatible
- RoHS* Compliant Version of AT-250

Description

M/A-COM's MAAV-007941 is a GaAs MMIC voltage variable absorptive attenuator in a low cost lead-free SOIC 8-lead surface mount plastic package. The MAAV-007941 is ideally suited for use where attenuation fine tuning, fast switching and very low power consumption are required.

Typical applications include radio, cellular, GPS equipment and other automatic gain/level control circuits.

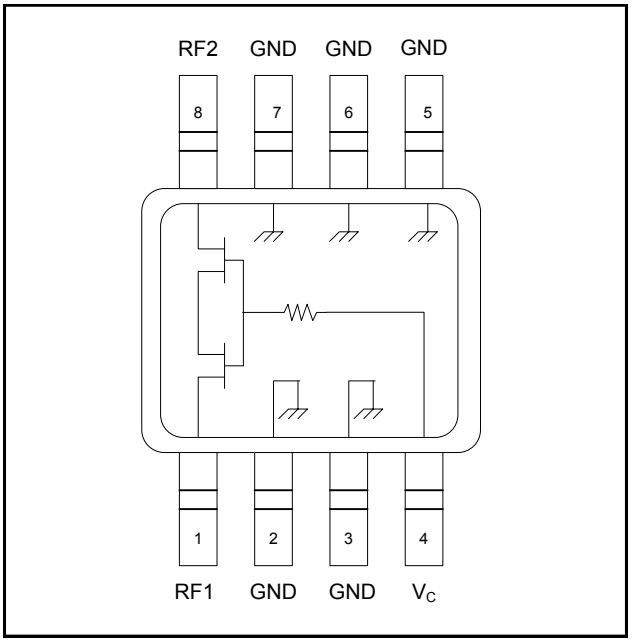
The MAAV-007941 is fabricated with a monolithic GaAs MMIC using a mature 1-micron process. The process features full chip passivation for increased performance and reliability.

Ordering Information [1]

Part Number	Package
MAAV-007941-000000	Bulk Packaging
MAAV-007941-TR3000	3000 piece reel

1. Reference Application Note M513 for reel size information.

Functional Schematic



Pin Configuration

Pin No.	Function	Pin No.	Function
1	RF1	5	Ground
2	Ground	6	Ground
3	Ground	7	Ground
4	V_C	8	RF2

Absolute Maximum Ratings [2]

Parameter	Absolute Maximum
Input Power	+21 dBm
Control Voltage	+5V, -8.5V
Operating Temperature	-40°C to +85°C
Storing Temperature	-65°C to +150°C

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

* Restrictions on Hazardous Substances, European Directive 2002/95/EC.

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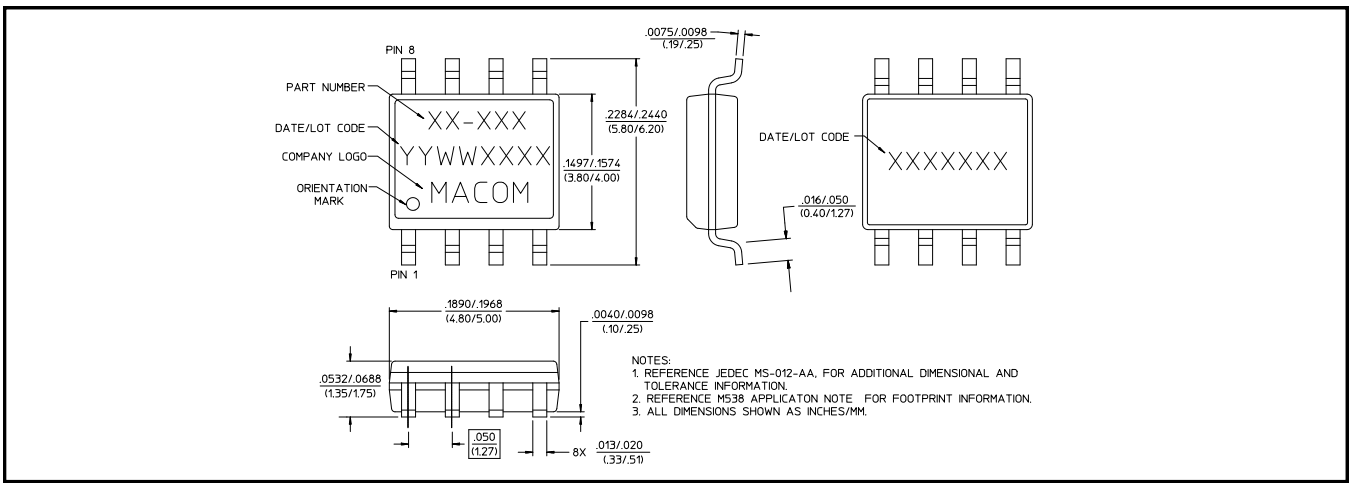
Electrical Specifications: T_A = 25°C, Z_0 = 50 Ω

Parameter	Test Conditions [3]	Units	Min.	Typ.	Max.
Insertion Loss	DC - 0.1 GHz DC - 0.5 GHz DC - 1.0 GHz DC - 2.0 GHz	dB dB dB dB	— — — —	2.9 3.0 3.2 3.4	3.1 3.2 3.5 3.8
Flatness (Peak to Peak)	DC - 0.1 GHz DC - 0.5 GHz DC - 1.0 GHz DC - 2.0 GHz	dB dB dB dB	— — — —	± 0.1 ± 0.2 ± 0.5 ± 1.2	± 0.3 ± 0.4 ± 0.8 ± 1.5
VSWR		Ratio	—	2.1:1	—
Trise, Tfall	10% to 90% RF, 90% to 10% RF	nS	—	3	—
Ton, Toff	50% Control to 90% RF, 50% Control to 10% RF	nS	—	5	—
Transients	In Band	mV	—	10	—
Power Handling	Linear Operation Absolute Maximum Input Power	dBm dBm	— —	13 21	— —
IP_2	0.05 GHz 0.5 - 2.0 GHz Measured Relative to Input Power (For two-tone Input Power Up to +5 dBm)	dBm dBm	28 40	34 47	— —
IP_3 [4]	0.05 GHz 0.5 - 2.0 GHz Measured Relative to Input Power (For two-tone Input Power Up to +5 dBm)	dBm dBm	18 18.5	31 36	— —

3. Control voltage: 0 to -4 volts @ 20 µA typical.
4. Typical readings are for levels above 6 dB attenuation. For levels below 6 dB, the minimum specification numbers apply.

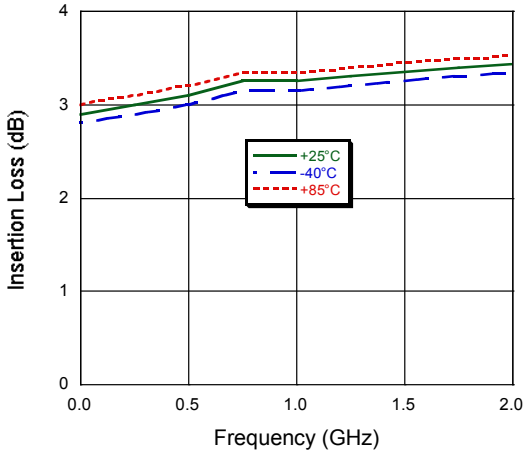
Lead-Free SOIC-8†



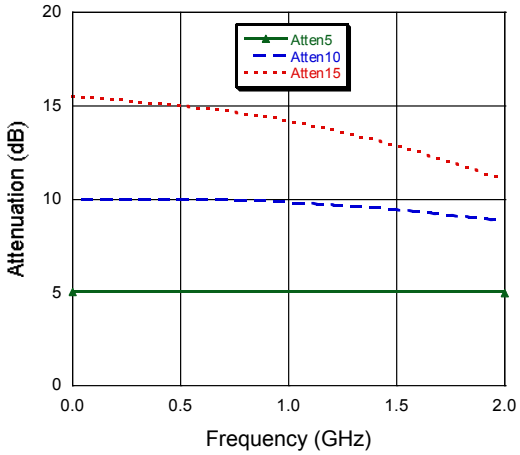
† Reference Application Note M538 for lead-free solder reflow recommendations.
Meets JEDEC moisture sensitivity level 1 requirements.

Typical Performance Curves

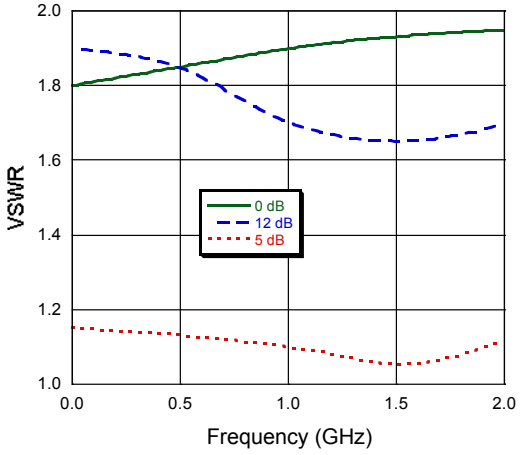
Insertion Loss vs. Frequency



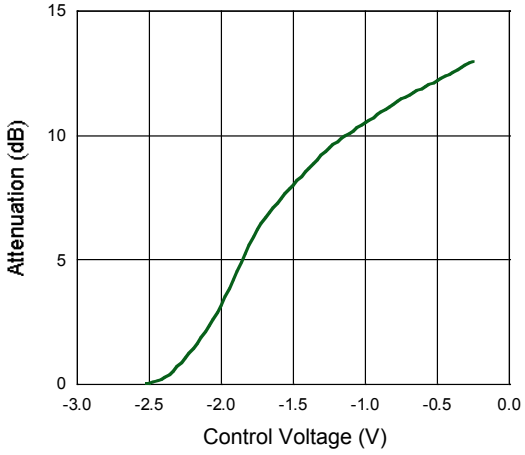
Attenuation vs. Frequency



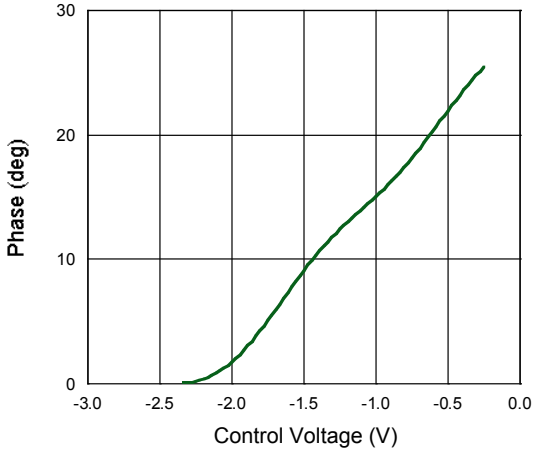
VSWR vs. Frequency



Attenuation vs. Control Voltage, F = 950 MHz



Phas



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.

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