MAAVSS0008

Voltage Variable Absorptive Attenuator
30 dB, 0.5 - 2.0 GHz

Rev. V3

Features

- Single Positive Voltage Control: 0 to +5 Volts
- 30 dB Voltage Variable Attenuation
- ± 2 dB Linearity from BSL
- Low DC Power Consumption
- Temperature Range: -40°C to +85°C
- Fast Switching Speed
- Lead-Free SOIC-8 Package
- 100% Matte Tin Plating over Copper
- Halogen-Free "Green" Mold Compound
- 260°C Reflow Compatible
- RoHS* Compliant Version of AT-110-2

Description

M/A-COM's MAAVSS0008 is a GaAs MMIC voltage variable absorptive attenuator in a lead-free SOIC-8 surface mount plastic package. The MAAVSS0008 is ideally suited for use where linear attenuation fine tuning and very low power consumption are required.

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

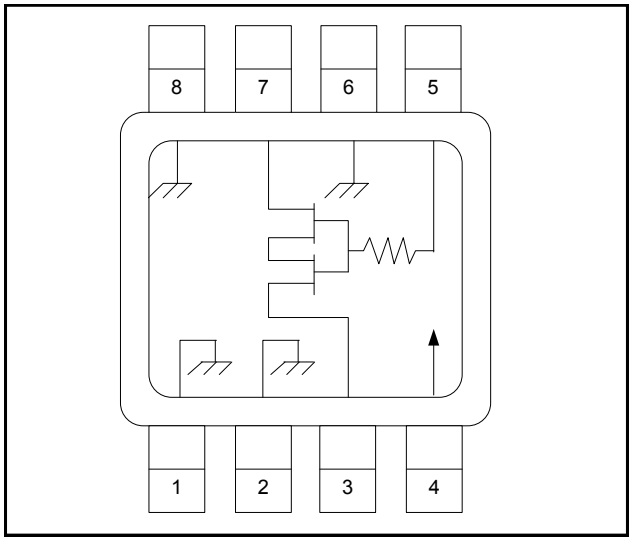
The MAAVSS0008 is fabricated with a monolithic GaAs MMIC using a mature 1-micron process. The process features full chip passivation for increased performance and reliability.

Ordering Information [1,2]

Part Number	Package
MAAVSS0008	Bulk Packaging
MAAVSS0008TR	1000 piece reel
MAAVSS0008SMB	Sample Board

1. Reference Application Note M513 for reel size information.
2. All sample boards include 5 loose parts.

Functional Schematic [3,4,5]



3. V_{CC} = +5 VDC ± 0.5 VDC @ 300 µA maximum.
4. V_C = 0 VDC to +5 VDC @ 6.6 mA maximum.
5. External DC blocking capacitors are required on all RF ports.

Pin Configuration

Pin No.	Function	Pin No.	Function
1	Ground	5	V_C
2	Ground	6	Ground
3	RF Port	7	RF Port
4	V_{CC}	8	Ground

Absolute Maximum Ratings [6,7]

Parameter	Absolute Maximum
Input Power	+21 dBm
Supply Voltage V_{CC}	-1 V ≤ V_{CC} ≤ +8 V
Control Voltage V_C	-1 V ≤ V_C ≤ V_{CC} + 0.5 V
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to +150°C

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

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

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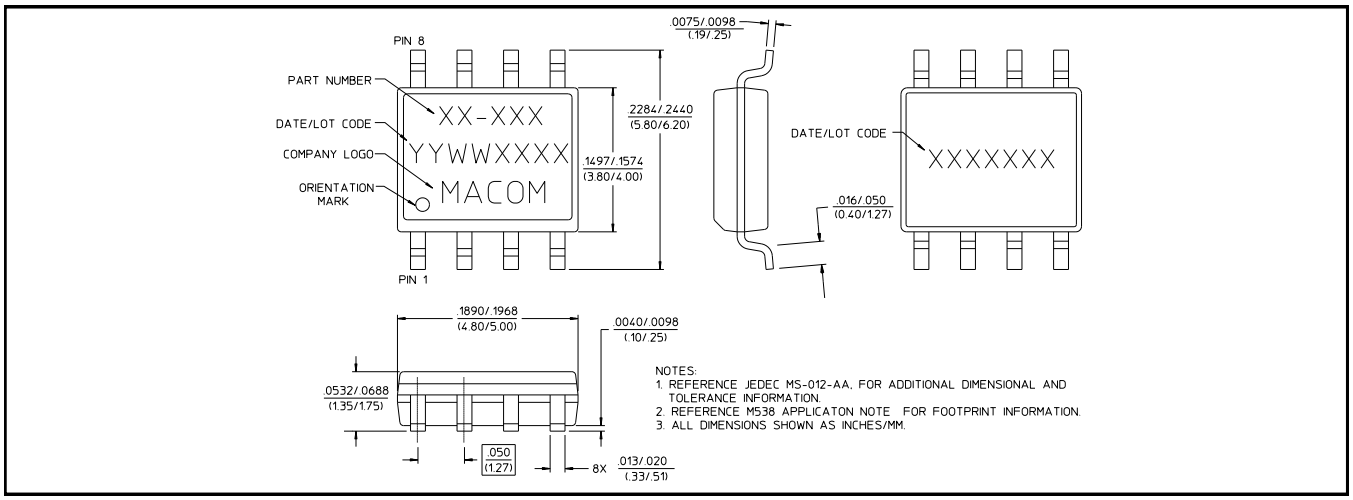
Electrical Specifications[8]: T_A = 25°C, Z_0 = 50 Ω

Parameter	Test Conditions	Units	Min.	Typ.	Max.
Insertion Loss	0.5 - 1.0 GHz 1.0 - 2.0 GHz	dB dB	— —	2.8 3.3	3.0 3.6
Attenuation	1.0 GHz 1.0 - 2.0 GHz	dB dB	37.5 25	— —	— —
Flatness (Peak to Peak)	0.5 - 1.0 GHz 1.0 - 2.0 GHz	dB dB	— —	± 0.5 ± 1.2	± 0.8 ± 1.5
VSWR	—	Ratio	—	2:1	—
Trise, Tfall	10% to 90% RF, 90% to 10% RF	µS	—	0.2	—
Ton, Toff	50% Control to 90% RF, 50% Control to 10% RF	µS	—	0.2	—
Transients	In-band	mV	—	70	—

8. External DC blocking capacitors are required on all RF ports.

Lead-Free SOIC-8†



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

Handling Procedures

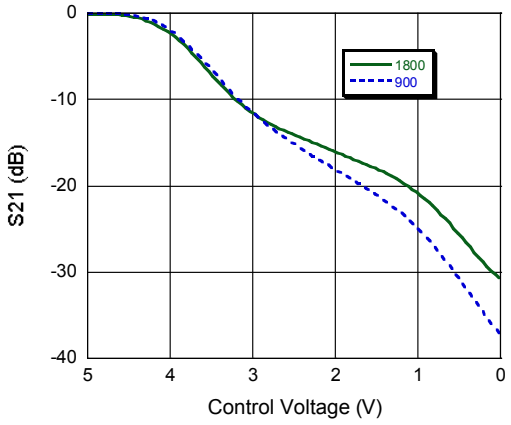
Please observe the following precautions to avoid damage:

Static Sensitivity

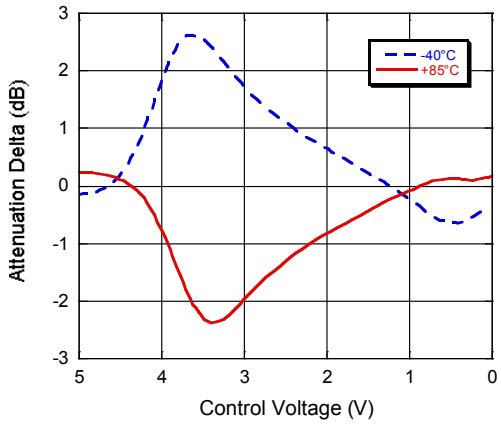
Gallium Arsenide Integrated Circuits are sensitive to electrostatic discharge (ESD) and can be damaged by static electricity. Proper ESD control techniques should be used when handling these devices.

Typical Performance Curves @ 25°C

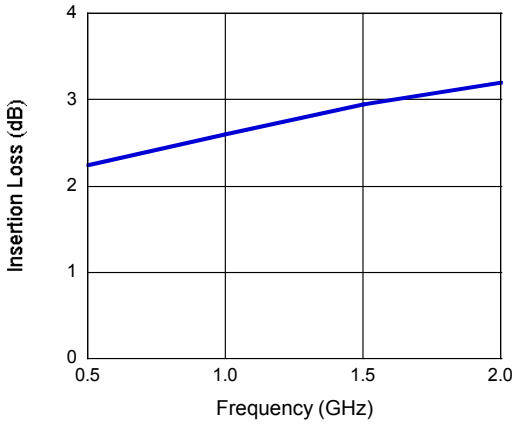
Attenuation vs. Control Voltage, F = 900, 1800 MHz



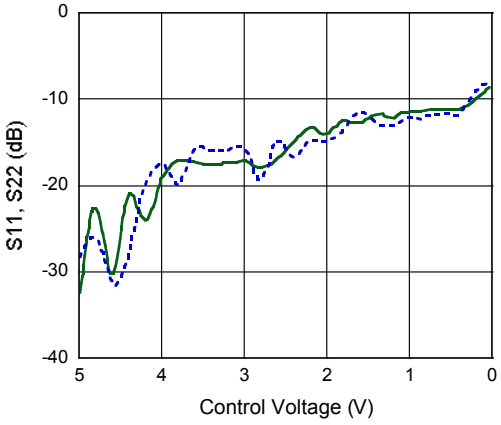
Attenuation vs. Temperature
Normalized to +25°C, F = 900 MHz



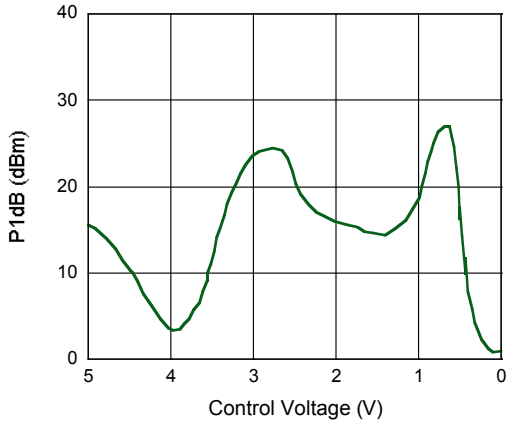
Insertion Loss vs. Frequency



Return Loss vs. Control Voltage, F = 900 MHz



1 dB Compression vs. Control Voltage. F = 900 MHz



IP3 vs. Control Voltage