

**3 Volt Voltage Variable Attenuator  
25 dB, DC-2.5 GHz**

**AT-255  
V7**

**Features**

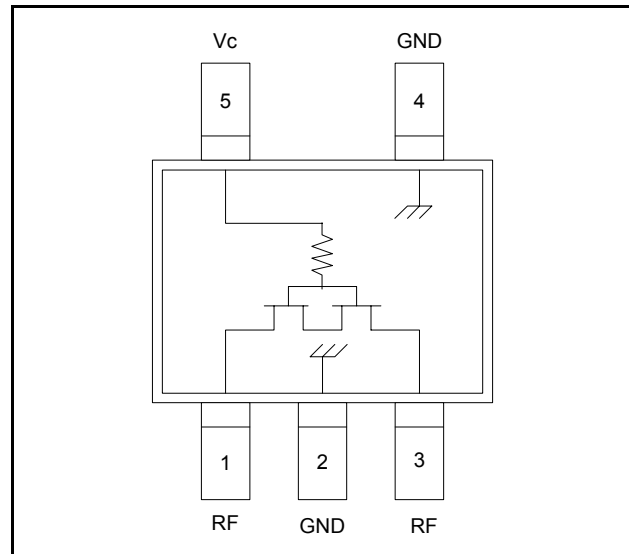
- Single Voltage Control: 0 to -3 Volts
- 25 dB Attenuation Range at 0.9 GHz
- Low DC Power Consumption
- SOT-25 Plastic Package
- Tape and Reel Packaging Available

**Description**

M/A-COM's AT-255 is a GaAs MMIC voltage variable absorptive attenuator in a low cost SOT-25 surface mount plastic package. The AT-255 is ideally suited for use where variable attenuation, fine tuning, and very low power consumption are required.

Typical applications include radio, cellular, GPS equipment and automatic gain/level control circuits. The AT-255 is fabricated using a mature 1-micron GaAs MESFET process. The process features full chip passivation for increased performance and reliability.

**Functional Schematic <sup>1</sup>**



1.  $V_c = -3\text{ V to }0\text{ V @ }25\ \mu\text{A maximum.}$

**Pin Configuration**

Pin No.	Function	Pin No.	Function
1	RF Port	4	Ground
2	Ground	5	$V_c$
3	RF Port		

**Ordering Information**

Part Number	Package
AT-255	SOT-25 Plastic
AT-255TR	1000 piece reel

Note: Reference Application Note M513 for reel size information.

**Absolute Maximum Ratings <sup>2</sup>**

Parameter	Absolute Maximum
Input Power	+21 dBm
Control Voltage $V_c$	-8 V to +0.5 V
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to +150°C

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

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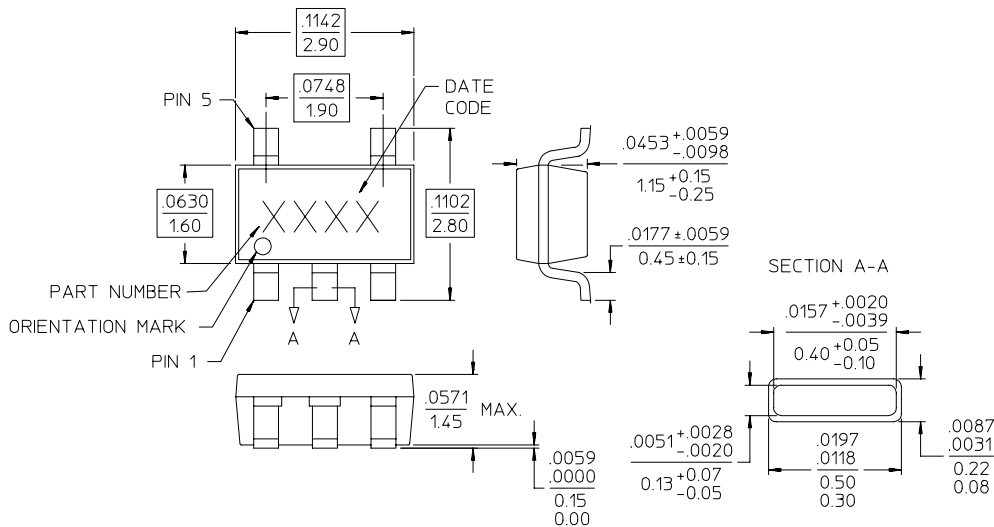
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**Electrical Specifications:  $T_A = 25^\circ\text{C}$ ,  $Z_0 = 50 \Omega$**

Parameter	Test Conditions	Units	Min	Typ	Max
Insertion Loss <sup>3</sup>	DC—2.0 GHz	dB	—	3.6	4.2
Attenuation	DC—1.0 GHz	dB	23	25	—
	1.0—2.0 GHz	dB	18	20	—
Flatness (Peak-to-Peak)	0.5—1.0 GHz	dB	—	$\pm 7$	$\pm 10$
	1.0—2.0 GHz	dB	—	$\pm 5$	$\pm 8$
VSWR	DC—2.0 GHz	Ratio	—	3:1	—
Trise, Tfall	10% to 90% RF, 90% to 10% RF	nS	—	10	—
Ton, Toff	50% Control to 90% RF, 50% Control to 10% RF	nS	—	20	—
Transients	In Band	mV	—	10	—

3. Insertion loss varies 0.003 dB/°C.

**SOT-25**



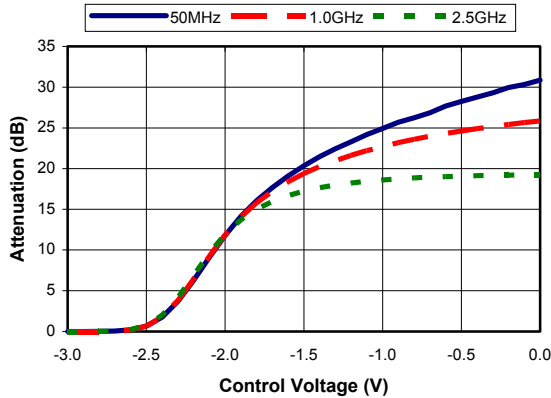
- NOTES: 1. REFERENCE JEDEC MO-178-AA FOR ADDITIONAL DIMENSIONAL AND TOLERANCE INFORMATION.  
2. REFERENCE M538 APPLICATION NOTE FOR PCB FOOTPRINT INFORMATION.  
3. ALL DIMENSIONS SHOWN AS INCHES/MM.

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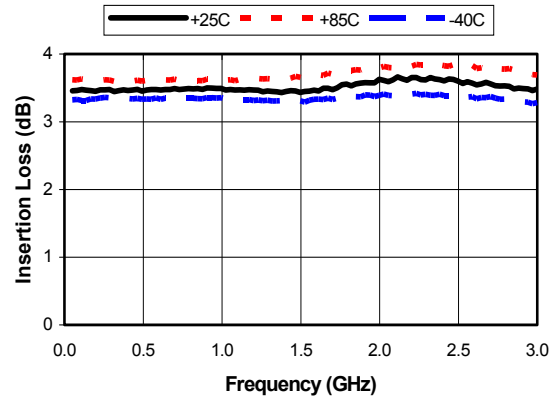
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**Typical Performance Curves**

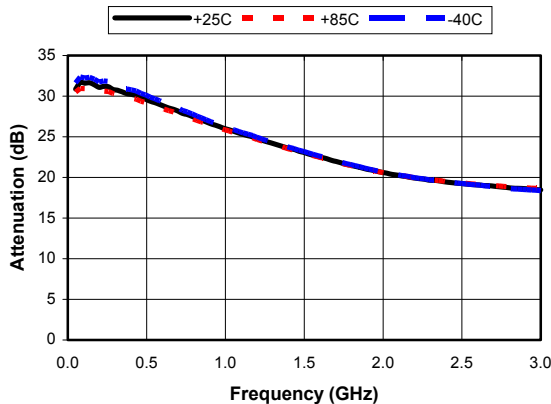
**Relative Attenuation vs. Control Voltage**



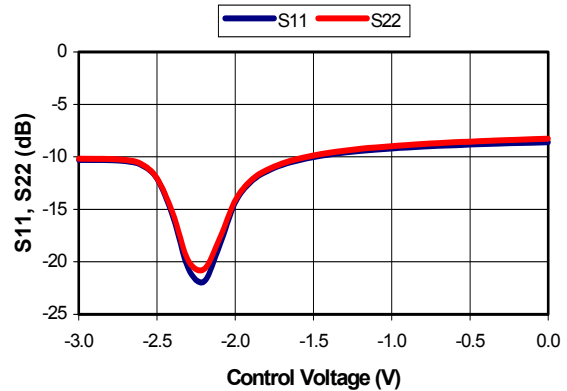
**Insertion Loss vs. Frequency**



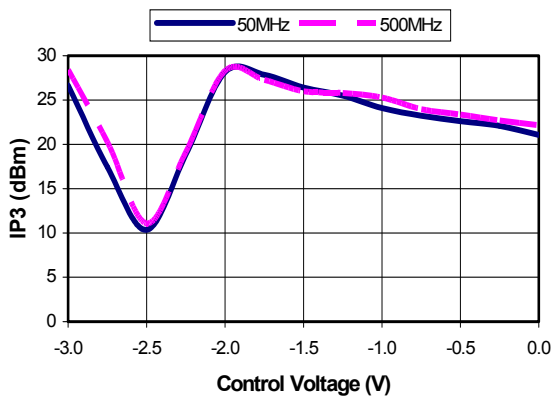
**Maximum Relative Attenuation vs. Frequency**



**Return Loss vs. Control Voltage @ 900 MHz**



**Input IP3 vs. Control Voltage**



**Input P1dB vs. Control Voltage**

