tyco Electronics

M/A-COM

Voltage Variable Absorptive Attenuator
35 dB, DC - 2.0 GHz

AT-635
V6

Features

- 35 dB Voltage Variable Attenuation at 1 GHz
- Single Voltage Control: 0 to -4 Volts
- Low DC Power Consumption
- Nanosecond Switching Speed
- Temperature Range: -40°C to +85°C
- SOIC-14 Plastic Package
- Tape and Reel Packaging Available

Description

M/A-COM's AT-635 is a GaAs MMIC voltage variable absorptive attenuator in a low cost SOIC 14-lead surface mount plastic package. The AT-635 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.

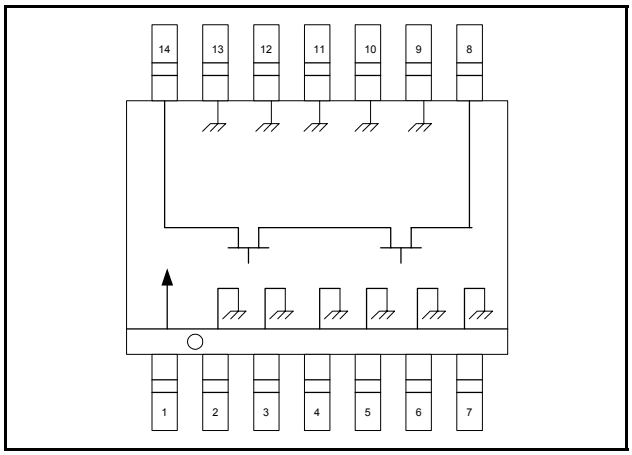
The AT-635 is fabricated with a monolithic GaAs MMIC using a mature 1-micron process. The process features full chip passivation for increased performance and reliability.

Ordering Information

Part Number	Package
AT-635	SOIC 14-Lead Plastic Package
AT-635TR	Tape and Reel

Note: Reference Application Note M513 for reel size information.

Functional Schematic



Pin Configuration

Pin No.	Function	Pin No.	Function
1	V_C	8	RF2
2	Ground	9	Ground
3	Ground	10	Ground
4	Ground	11	Ground
5	Ground	12	Ground
6	Ground	13	Ground
7	Ground	14	RF1

Absolute Maximum Ratings [1,2]

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

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

- **North America** Tel: 800.366.2266 / Fax: 978.366.2266
- **Europe** Tel: 44.1908.574.200 / Fax: 44.1908.574.300
- **Asia/Pacific** Tel: 81.44.844.8296 / Fax: 81.44.844.8298

Visit www.macom.com for additional data sheets and product information.

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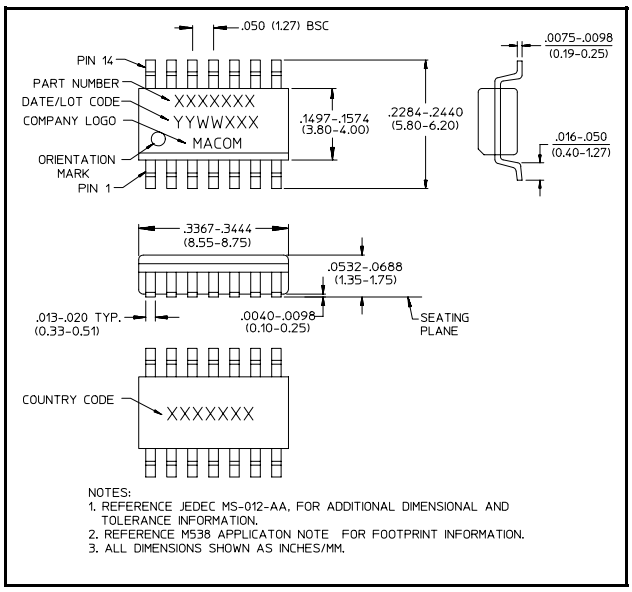
Electrical Specifications: T_A = 25°C, Z_0 = 50 Ω

Parameter	Test Conditions[3]	Units	Min.	Typ.	Max.
Insertion Loss	DC - 0.5 GHz 0.5 - 1.0 GHz 1.0 - 2.0 GHz	dB dB dB	— — —	6.7 7.2 7.5	7.0 7.4 7.8
Flatness (Peak to Peak)	10 dB Attenuation – DC - 2.0 GHz 20 dB Attenuation – DC - 2.0 GHz 30 dB Attenuation – DC - 2.0 GHz	dB dB dB	— — —	± 1.0 ± 1.2 ± 1.2	± 1.3 ± 1.5 ± 1.5
VSWR		Ratio	—	2.0:1	—
Trise, Tfall	10% to 90% RF, 90% to 10% RF	nS	—	2	—
Ton, Toff	50% Control to 90% RF, 50% Control to 10% RF	nS	—	4	—
Transients	In Band	mV	—	30	—
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	— —	34 47	— —
IP_3	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 [4] 36 [4]	— —

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

SOIC-14



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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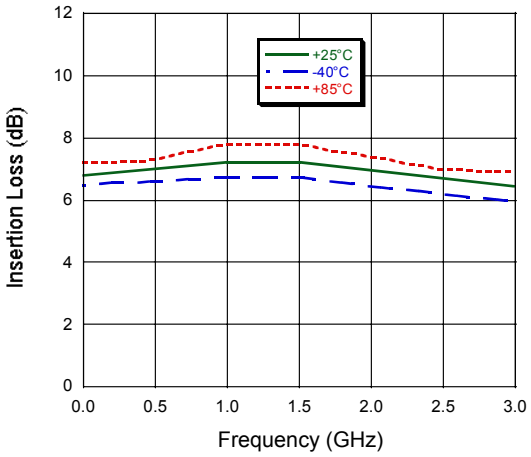
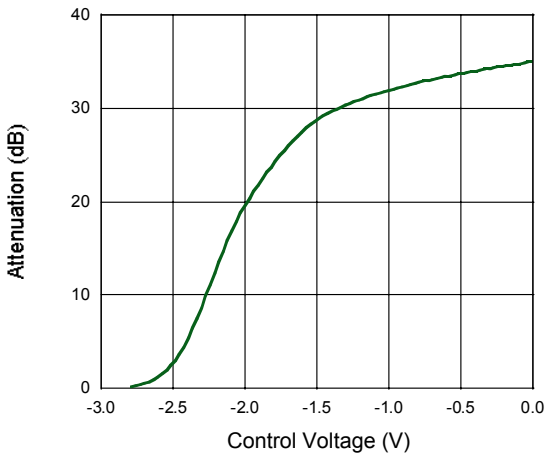
Typical Performance Curves

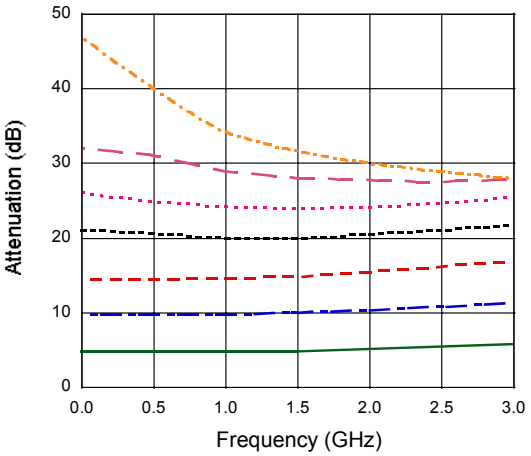
Insertion Loss vs. Frequency



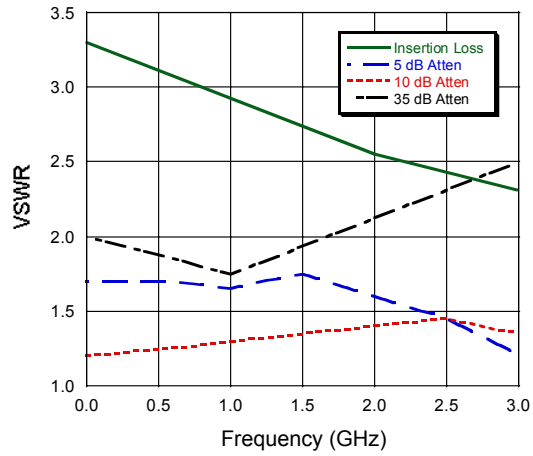
Attenuation vs. Control Voltage, F = 1 GHz



Attenuation vs. Frequency



VSWR vs. Frequency



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