

Digital Attenuator, 31 dB, 5-Bit, TTL Driver DC-2.0 GHz

V 6.00

AT65-0263

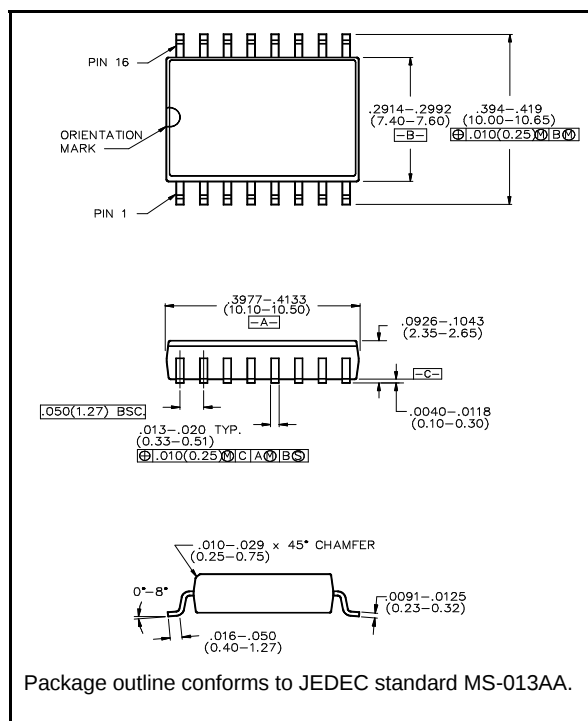
Features

- Attenuation: 1.0 dB Steps to 31 dB
- Low DC Power Consumption
- Plastic SOW, Wide Body, SMT Package
- Integral TTL Driver
- 50 ohm Impedance
- Test Boards are Available
- Tape and Reel Packaging Available

Description

M/A-COM's AT65-0263 is a GaAs FET 5-bit digital attenuator with integral TTL driver. Step size is 1.0 dB providing 31 dB total attenuation range. This device is in a SOW-16 plastic surface mount package. The AT65-0263 is ideally suited for use where accuracy, fast speed, very low power consumption and low costs are required.

SOW-16



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

Parameter	Test Conditions	Frequency	Units	Min	Typical	Max
Insertion Loss	—	DC-1.0 GHz DC-2.0 GHz	dB dB	— —	2.6 2.8	2.9 3.2
Attenuation Accuracy	Individual Bits 1-2-4-8-16 Any Combination of bits 3 - 29 dB Any Combination of bits 30 - 31 dB	DC-2.0 GHz DC-2.0 GHz DC-2.0 GHz	dB dB dB	— — —	— — —	$\pm(.5 + 5\% \text{ of atten setting})$ $\pm(.5 + 5\% \text{ of atten setting})$ $\pm(.7 + 7\% \text{ of atten setting})$
VSWR	Full Range	DC-2.0 GHz	Ratio	—	1.5:1	1.8:1
Switching Speed ¹	50% Cntl to 90%/10% RF 10% to 90% or 90% to 10%	— —	nS nS	— —	75 20	150 50
1 dB Compression	— —	50 MHz 0.5-2.0 GHz	dBm dBm	— —	+21 +29	— —
Input IP_3	Two-tone inputs up to +5 dBm	50 MHz 0.5-2.0 GHz	dB dB	— —	+35 +48	— —
Vcc	—	—	V	4.75	5.0	5.25
-Vee	—	—	V	-8.0	-5.0	-4.75
Logic "0"	Sink Current is 20 μA max.	—	V	0.0	-	0.8
Logic "1"	Source Current is 20 μA max.	—	V	2.0	-	5.0
Icc	Vcc min to max, Logic "0" or "1"	—	mA	—	0.2	6
-lee	-Vee min to max, Logic "0" or "1"	—	mA	—	-0.2	-1

1. Decoupling capacitors (.01 μF) are required on power supply lines.

Pin Configuration

Pin #	Function	Pin #	Function
1	RF	9	C16
2	GND	10	Vcc
3	GND	11	Vee
4	GND	12	C8
5	GND	13	C4
6	GND	14	C2
7	GND	15	C1
8	RF	16	GND

Truth Table

C16	C8	C4	C2	C1	Attenuation
0	0	0	0	0	Loss, Reference
0	0	0	0	1	1.0 dB
0	0	0	1	0	2.0 dB
0	0	1	0	0	4.0 dB
0	1	0	0	0	8.0 dB
1	0	0	0	0	16.0 dB
1	1	1	1	1	31.0 dB

0 = TTL Low; 1 = TTL High

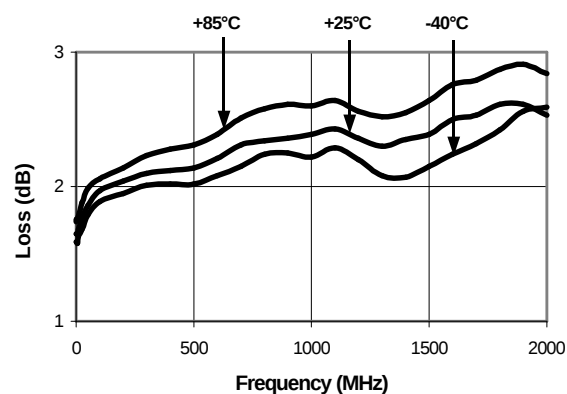
Absolute Maximum Ratings ²

Parameter	Absolute Maximum
Max. Input Power 0.05 GHz 0.5 - 2.0 GHz	+27 dBm +34 dBm
+Vcc	+5.5V
-Vee	-8.5V
Logic Voltages ³	-0.5 to Vcc + 0.5V
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to +125°C

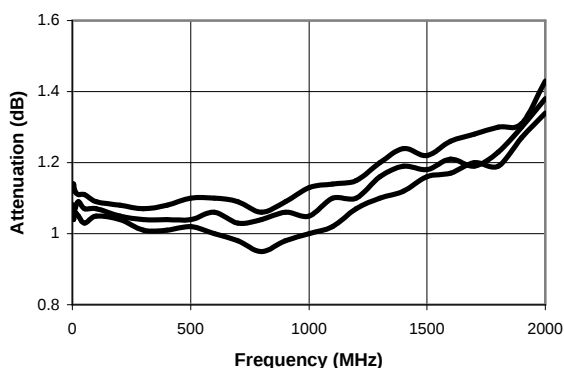
- Operation of this device above any one of these parameters may cause permanent damage.
- Standard CMOS TTL interface, latch-up will occur if logic signal is applied prior to power supply.

Typical Performance Curves

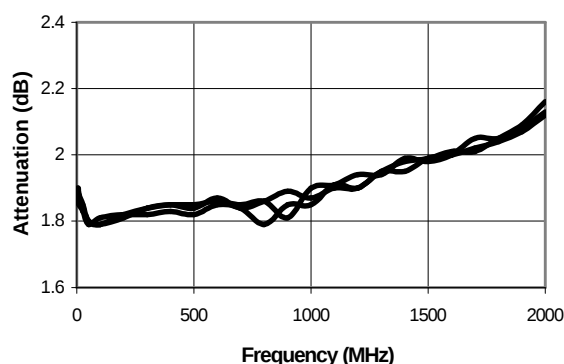
Insertion Loss @ R, H & C



1 dB Bit @ R, H & C



2 dB Bit @ R, H & C



Specifications subject to change without notice.

■ North America: Tel. (800) 366-2266
 ■ Asia/Pacific: Tel.+81-44-844-8296, Fax +81-44-844-8298
 ■ Europe: Tel. +44 (1344) 869 595, Fax+44 (1344) 300 020

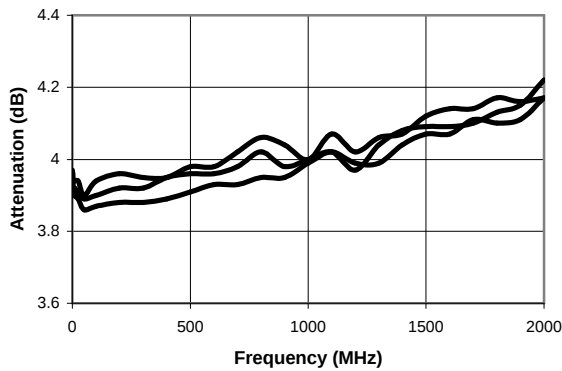
Visit www.macom.com for additional data sheets and product information.

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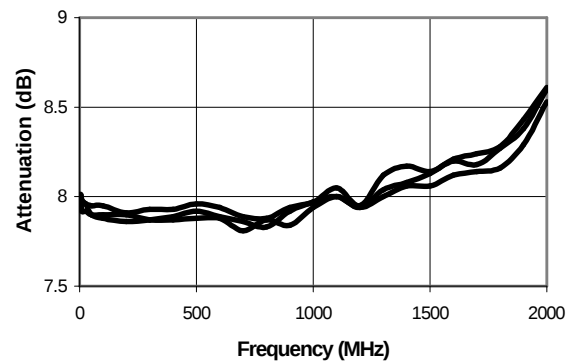
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Typical Performance Curves

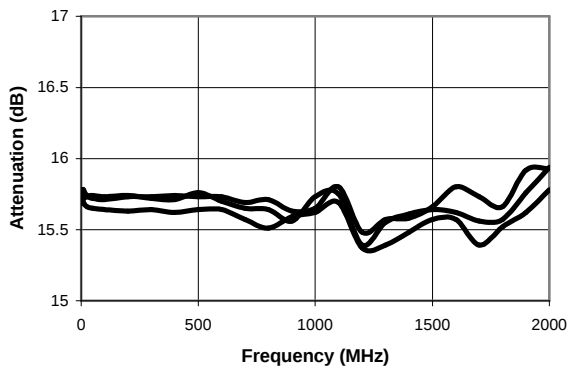
4 dB Bit @ R, H & C



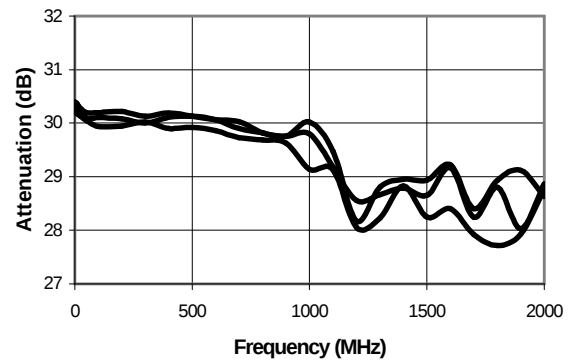
8 dB Bit @ R, H & C



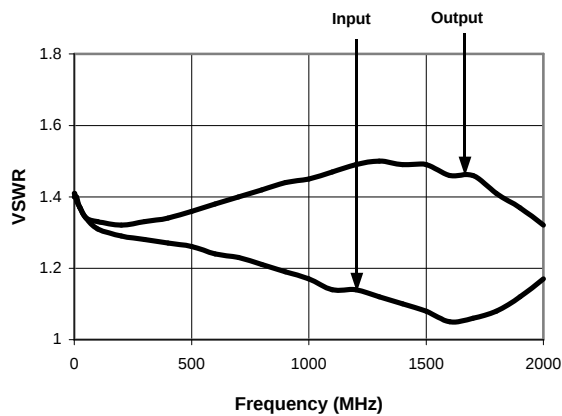
16 dB Bit @ R, H & C



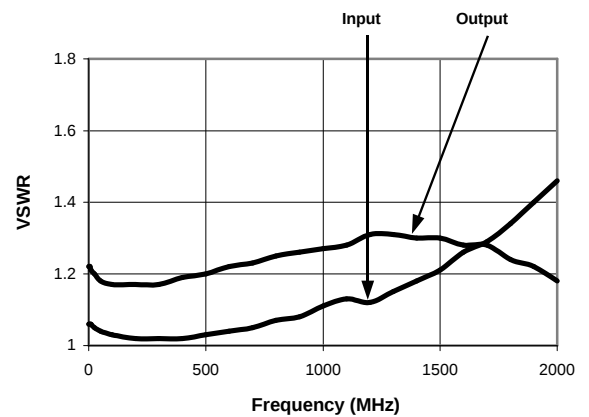
Max. Attenuation @ R, H & C



Maximum VSWR over Temp, Loss



Maximum VSWR over Temp, 1 dB Bit



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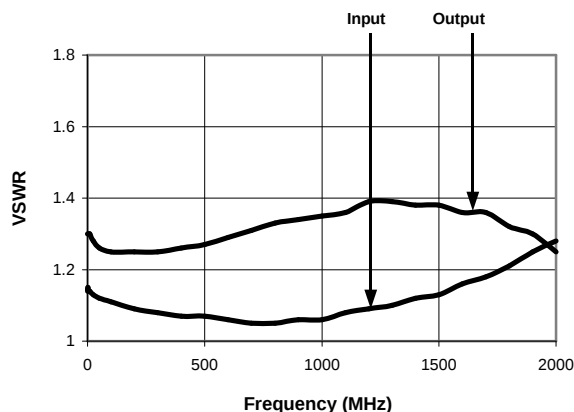
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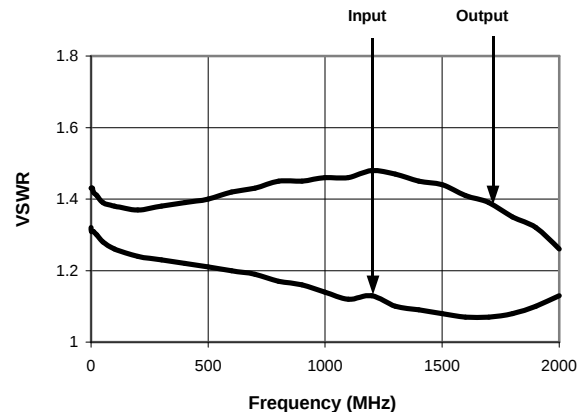
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Typical Performance Curves

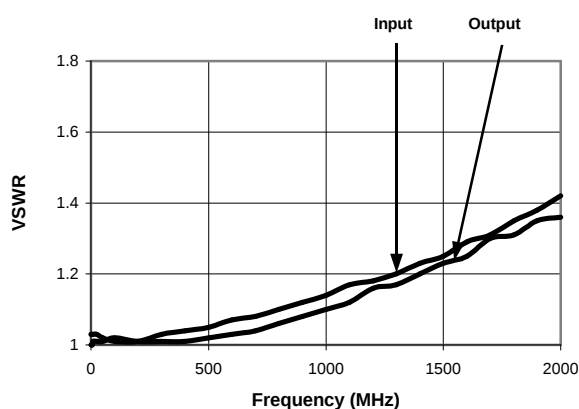
Maximum VSWR over Temp, 2 dB Bit



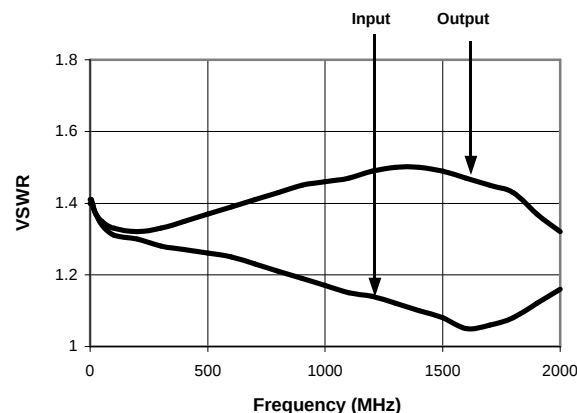
Maximum VSWR over Temp, 4 dB Bit



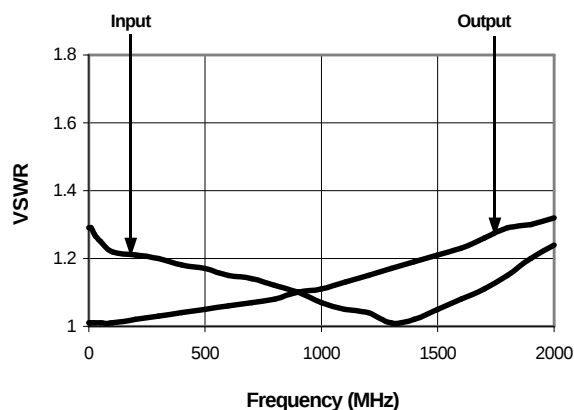
Maximum VSWR over Temp, 8 dB Bit



Maximum VSWR over Temp, 16 dB Bit



Maximum VSWR over Temp, Max Attenuation



Ordering Information

Part Number	Package
AT65-0263	Bulk Packaging
AT65-0263TR	Tape and Reel (1K Reel)
AT65-0263-TB	Units Mounted on Test Board

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