

**Digital Attenuator, 15.5 dB, 5-Bit, TTL Driver,
DC - 2.0 GHz**

**AT65-0283
V7**

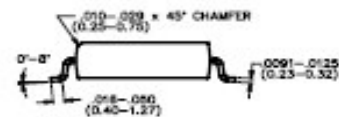
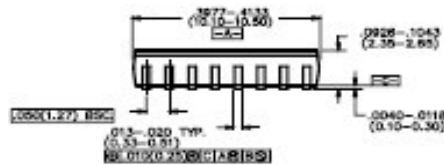
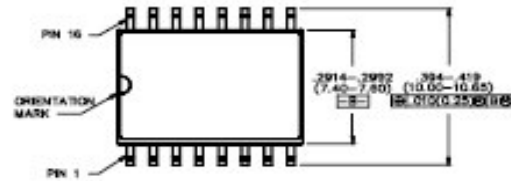
Features

- Attenuation: 0.5 dB Steps to 15.5 dB
- Low DC Power Consumption
- Plastic SOIC, Wide Body, SMT Package
- Integral TTL Driver
- 50 ohm Impedance
- Test Boards are Available
- Tape and Reel Packaging Available

Description

M/A-COM's AT65-0283 is a GaAs FET 5-bit digital attenuator with integral TTL driver. Step size is 0.5 dB providing a 15.5 dB total attenuation range. This device is in a SOIC-16 plastic surface mount package. The AT65-0283 is ideally suited for use where accuracy, fast speed, very low power consumption and low costs are required.

SOW-16



Package outline conforms to JEDEC standard MS-013AA.

Pin Configuration

Pin No.	Function	Pin No.	Function
1	RF	9	C18
2	GND	10	Vcc
3	GND	11	Vee
4	GND	12	C4
5	GND	13	C2
6	GND	14	C1
7	GND	15	C0.5
8	RF	16	GND

Absolute Maximum Ratings ¹

Parameter	Absolute Maximum
Max. Input Power 0.05 GHz 0.5 - 2.0 GHz	+27 dBm +34 dBm
+Vcc	+5.5V
-Vee	-8.5V
Control Voltage ²	-0.5 to Vcc to +0.5V
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to +125°C

1. Operation of this device above any one of these parameters may cause permanent damage.

2. Standard CMOS TTL interface, latch-up will occur if logic signal is applied prior to power supply.

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Electrical Specifications: T_A = 25°C

Parameter	Test Conditions	Frequency	Units	Min.	Typ.	Max.
Insertion Loss	—	DC - 1.0 GHz	dB	—	2.5	2.7
		DC - 2.0 GHz	dB	—	2.7	3.0
Attenuation Accuracy	Any Bit Any Combination of Bits	DC - 2.0 GHz	dB	—	—	±(.3 +4% of atten setting)
		DC - 2.0 GHz	dB	—	—	±(.3+6% of atten setting)
VSWR	Full Range	DC - 2.0 GHz	Ratio	—	1.5:1	2:1
Switching Speed ²	50% Cntl to 90%/10% RF 10% to 90% or 90% to 10%	—	nS	—	75	150
		—	nS	—	20	50
1 dB Compression	— —	50 MHz	dBm	—	+21	—
		0.5 - 2.0 GHz	dBm	—	+29	—
Input IP3	Two-tone inputs up to +5 dBm	50 MHz	dB	—	+35	—
		0.5 - 2.0 GHz	dB	—	+48	—
V _{cc}	—	—	V	4.75	5.0	5.5
-V _{ee}	—	—	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
I _{cc}	V _{cc} min to max, Logic "0" or "1"	—	mA	—	0.2	6
-I _{ee}	-V _{ee} min to max, Logic "0" or "1"	—	mA	—	-0.2	-1

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

Truth Table

C8	C4	C2	C1	C0.5	Attenuation
0	0	0	0	0	Loss, Reference
0	0	0	0	1	0.5 dB
0	0	0	1	0	1.0 dB
0	0	1	0	0	2.0 dB
0	1	0	1	0	4.0 dB
1	0	1	1	0	8.0 dB
1	1	1	1	1	15.5 dB

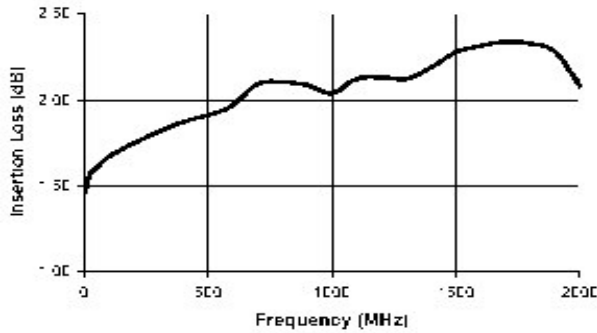
0 = TTL Low; 1 = TTL High

Ordering Information

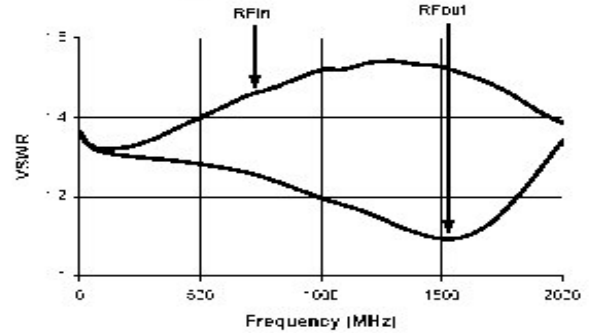
Part Number	Package
AT65-0283	Bulk Packaging
AT65-0283TR	Tape and Reel (1K Reel)
AT65-0283-TB	Unit Mounted on Test Board

Typical Performance Curves

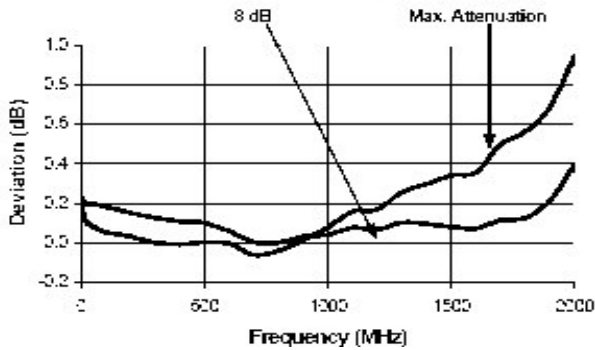
Insertion Loss



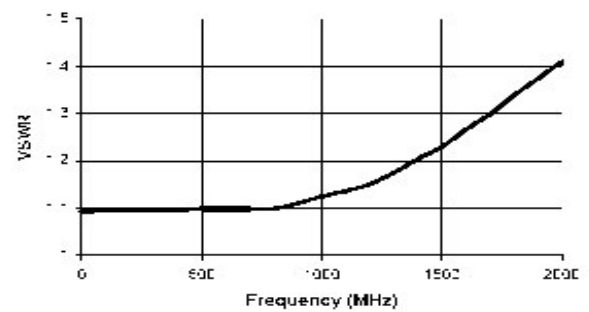
VSWR @ Insertion Loss



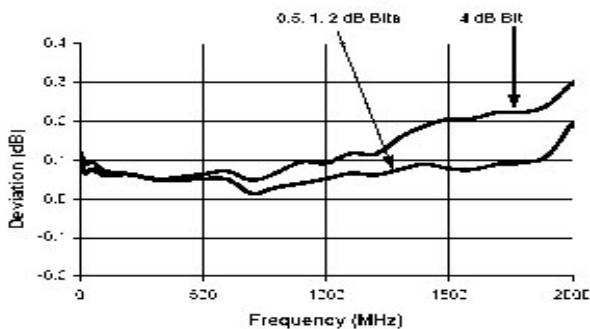
Attenuation Accuracy



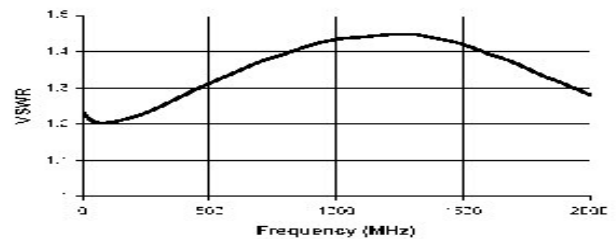
VSWR RFin, 0.5, 1, 2, 4, 8 dB Bits and Max Attenuation



Attenuation Accuracy



VSWR RFout, 0.5, 1, 2 & 4 dB Bits



VSWR RFout, 8 dB Bit & Max Attenuation

