



Digital Attenuator, 31.5 dB, 6-Bit, TTL Driver DC - 2.0 GHz

Features

- Attenuation: 0.5 dB Steps to 31.5 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 AT65-0107 is a GaAs FET 6-bit digital attenuator with a 0.5 dB minimum step size and a 31.5 dB total attenuation range. This device is in a SOIC-24 wide body, plastic surface mount package. The AT65-0107 is ideally suited for use where accuracy, fast speed, very low power consumption and low costs are required.

Ordering Information

Part Number	Package
AT65-0107	Bulk Packaging
AT65-0107TR	Tape and Reel ¹
AT65-0107-TB	Units Mounted on Test Board

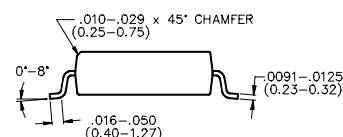
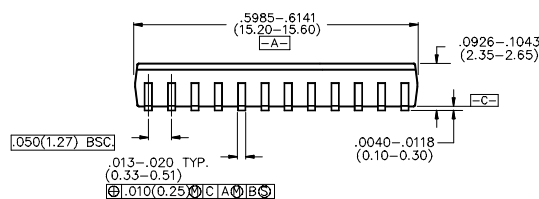
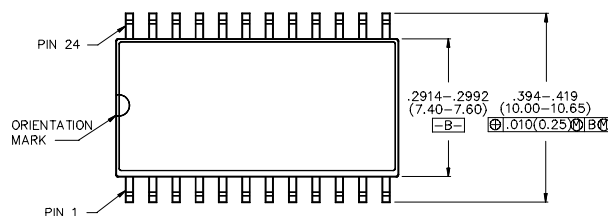
1. Check with the factory for available quantities and reel size.

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

Parameter	Test Conditions	Frequency	Units	Min	Typical	Max
Insertion Loss	—	DC - 1.0 GHz	dB	—	3.1	3.6
		DC - 2.0 GHz	dB	—	3.4	4.2
Attenuation Accuracy	Any Bit or Combination of Bits	DC - 2.0 GHz	dB	—	—	+(.6 +5% of atten.) -(.1 +1% of atten.)
VSWR	Full Range	DC - 2.0 GHz	Ratio	—	1.8:1	2:1
Switching Speed	50% Cntl to 90%/10% RF	—	nS	—	75	150
	10% to 90% or 90% to 10%	—	nS	—	20	50
1 dB Compression	—	50 MHz	dBm	—	+21	—
		0.5 - 2.0 GHz	dBm	—	+29	—

2. Decoupling capacitors (.01 μF) are required on Power Supply lines.

SOW-24



Package outline conforms to JEDEC standard MS-013AD.

Specifications subject to change without notice.

V 2.00

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Parameter	Test Conditions	Frequency	Units	Min	Typical	Max
Input IP_3	Two-tone inputs up to +5 dBm	50 MHz 0.5-2.0 GHz	dB dB	— —	+35 +48	— —
V_{cc} -Vee	— —	— —	V V	4.75 -5.25	5.0 -5.0	5.25 -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
-Iee	-Vee min to max, Logic "0" or "1"	—	mA	—	-0.2	-1

Absolute Maximum Ratings ³

Parameter	Absolute Maximum
Max. Input Power 0.05 GHz	+27 dBm
+Vcc	+5.5V
-Vee	-8.5V
Logic Voltages	-0.5 to $V_{cc} + 0.5\text{V}$
Control Voltage	-0.5V to $V_{cc} + 0.5\text{V}$
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to +125°C

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

Pin Configuration

Pin #	Function	Pin #	Function
1	GND	13	RF
2	GND	14	GND
3	GND	15	GND
4	C16	16	GND
5	C8	17	GND
6	-Vee	18	GND
7	+Vcc	19	GND
8	C4	20	GND
9	C2	21	GND
10	C1	22	GND
11	C0.5	23	GND
12	GND	24	RF

Truth Table

C16	C8	C4	C2	C1	C0.5	Attenuation
0	0	0	0	0	0	Loss, Reference
0	0	0	0	0	1	0.5 dB
0	0	0	0	1	0	1.0 dB
0	0	0	1	0	0	2.0 dB
0	0	1	0	0	0	4.0 dB
0	1	0	0	0	0	8.0 dB
1	0	0	0	0	0	16.0 dB
1	1	1	1	1	1	31.5 dB

0 = TTL Low; 1 = TTL High

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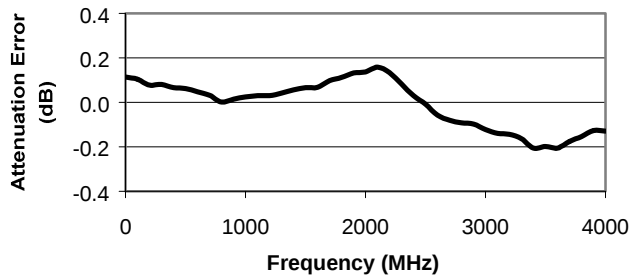
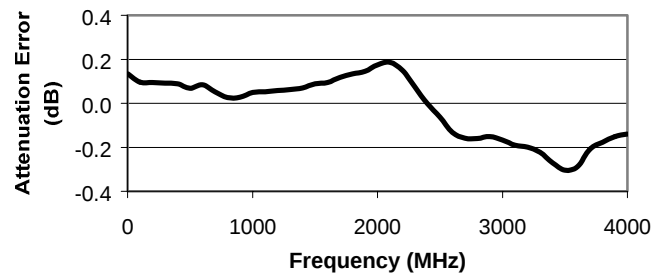
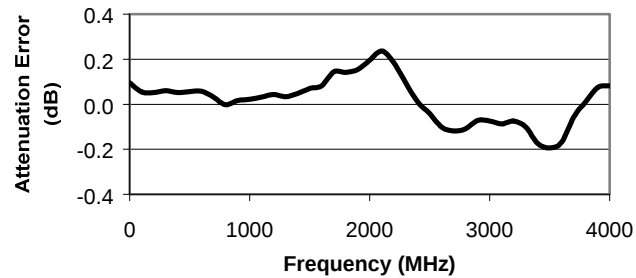
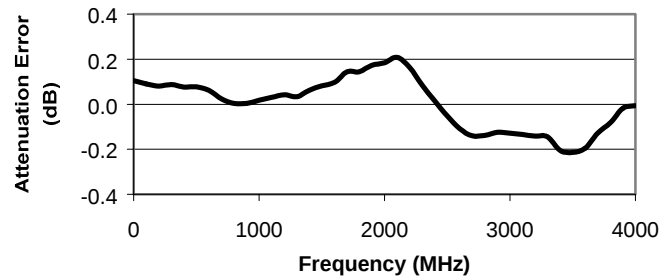
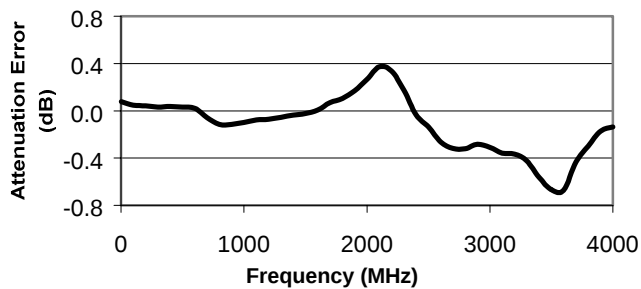
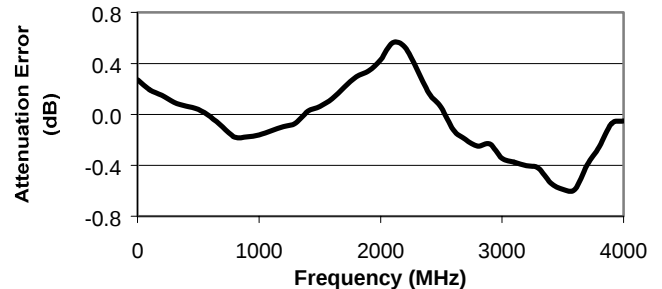
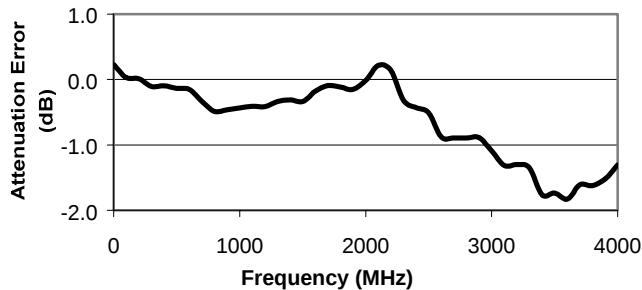
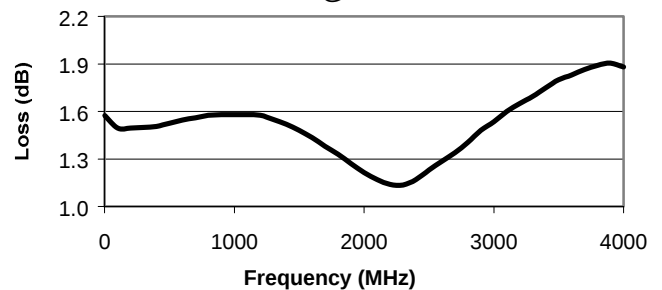
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Typical Performance

Attenuation Error
0.5 dB BitAttenuation Error
1 dB BitAttenuation Error
2 dB BitAttenuation Error
4 dB BitAttenuation Error
8 dB BitAttenuation Error
16 dB BitAttenuation Error
@ Max AttenuationVSWR
Loss @ RFin

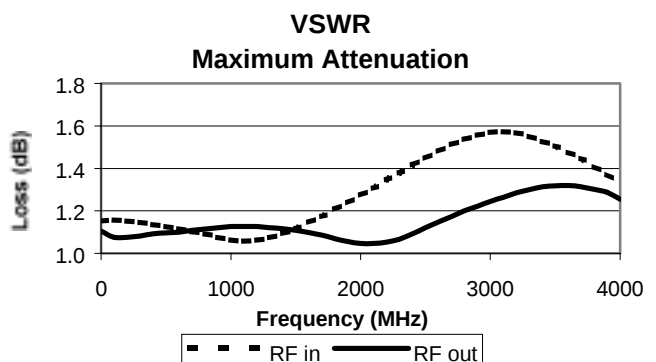
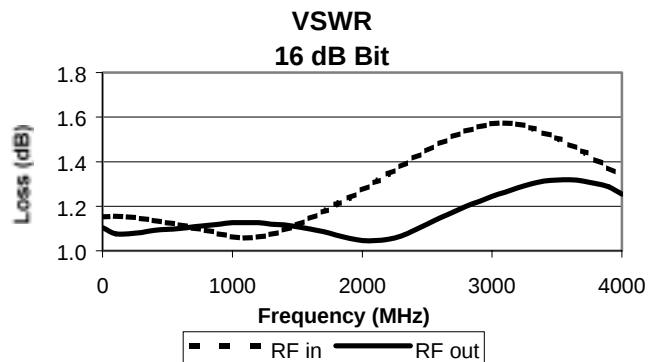
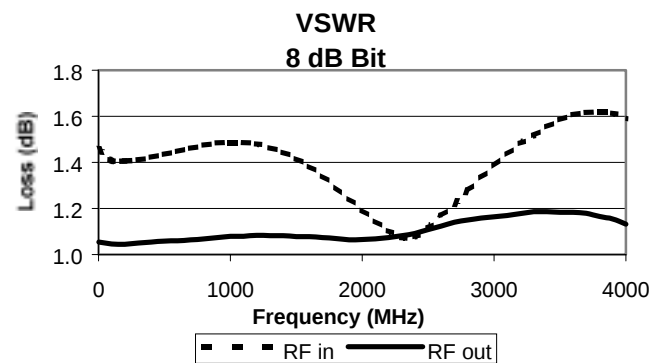
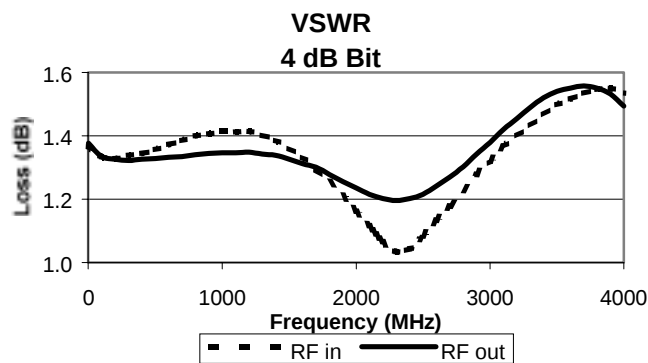
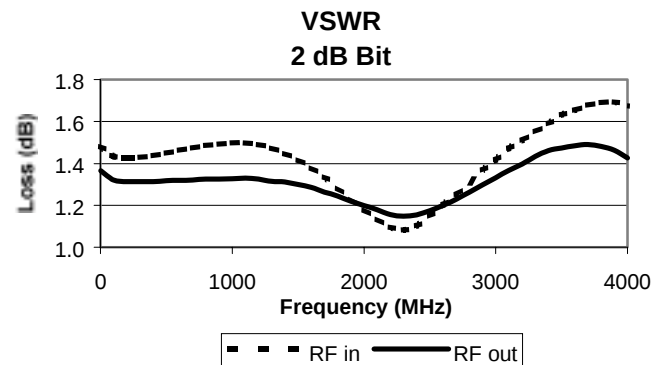
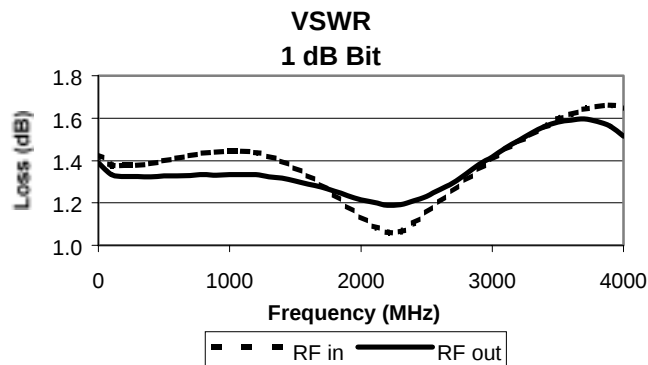
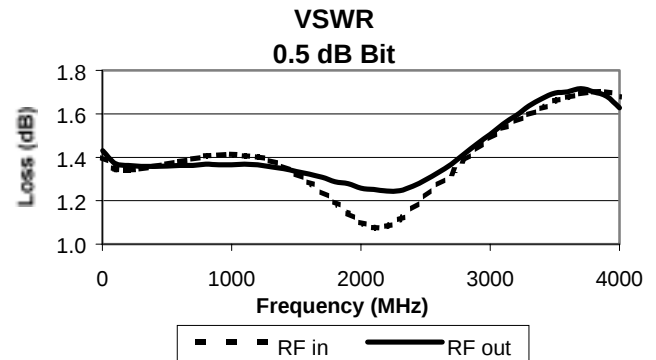
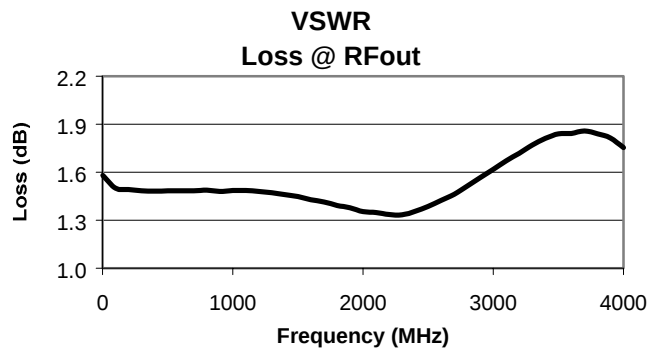
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