GaAs IC 5 Bit Digital Attenuator
1 dB LSB DC–2 GHz

Alpha

AD260-85

Features

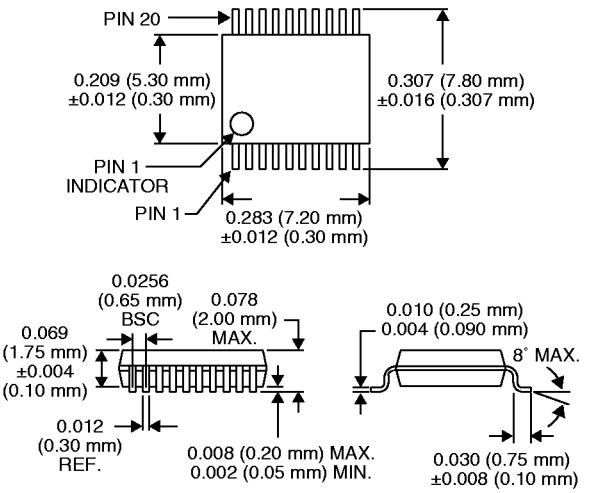
- Attenuation 1.0 dB Steps to 31 dB with High Accuracy
- Low DC Power Consumption
- Low Cost SSOP-20 Plastic Package

Description

The AD260-85 is a 5 bit, GaAs IC FET digital attenuator in a low cost SSOP-20 package. This attenuator has an LSB of 1 dB and a total attenuation of 31 dB.

The AD260-85 is particularly suited where high attenuation accuracy, low insertion loss and low intermodulation products are required. Typical applications include cellular radio, wireless data, wireless local loop and other gain level control circuits.

SSOP-20



Electrical Specifications at 25°C (0, -5 V)

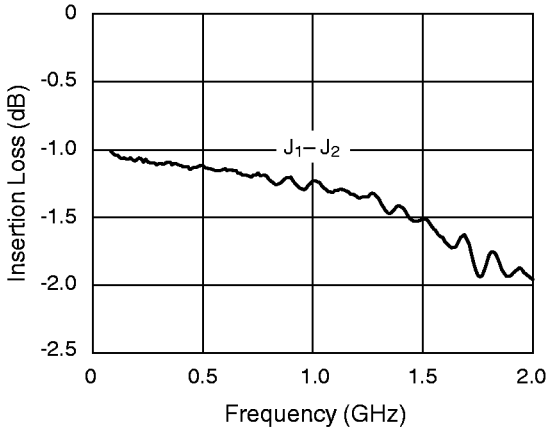
Parameter[1]	Frequency[2]	Min.	Typ.	Max.	Unit
Insertion Loss[3]	DC–0.5 GHz DC–1.0 GHz DC–2.0 GHz		1.5 1.8 2.2	1.8 2.2 2.5	dB dB dB
Attenuation Range			31		dB
Attenuation Accuracy[4]	DC–1.0 GHz DC–2.0 GHz	± (0.2 + 3% of Attenuation Setting in dB) ± (0.4 + 5% of Attenuation Setting in dB)			dB dB
VSWR (I/O)	DC–2.0 GHz		1.5:1	1.8:1	

Operating Characteristics at 25°C (0, -5 V)

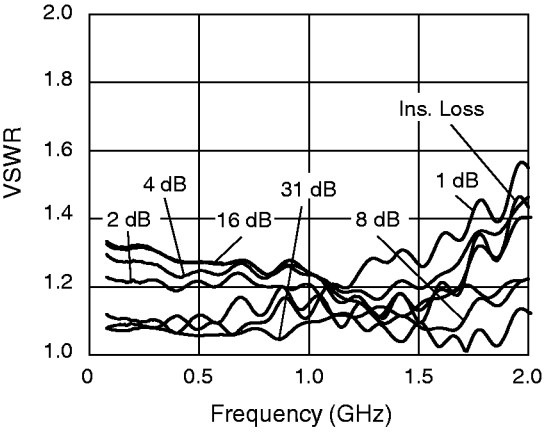
Parameter	Condition	Frequency	Min.	Typ.	Max.	Unit
Switching Characteristics[5]	Rise, Fall (10/90% or 90%/10% RF) On, Off (50% CTL to 90%/10% RF) Video Feedthru			15 25 25		nS nS mV
Input Power for 1 dB Compression		0.5–2.0 GHz 0.05 GHz		+27 +20		dBm dBm
Intermodulation Intercept Point (IP3)	For Two-tone Input Power +5 dBm	0.5–2.0 GHz 0.05 GHz		+45 +33		dBm dBm
Control Voltages	V_{Low} = 0 to 0.2 V @ 20 µA Max. V_{High} = -5 V @ 300 µA Max.					

1. All measurements made in a 50 Ω system, unless otherwise specified.
2. DC = 300 kHz.
3. Insertion loss changes by 0.003 dB/°C.
4. Attenuation referenced to insertion loss.
5. Video feedthru measured with 1 ns risetime pulse and 500 MHz bandwidth.

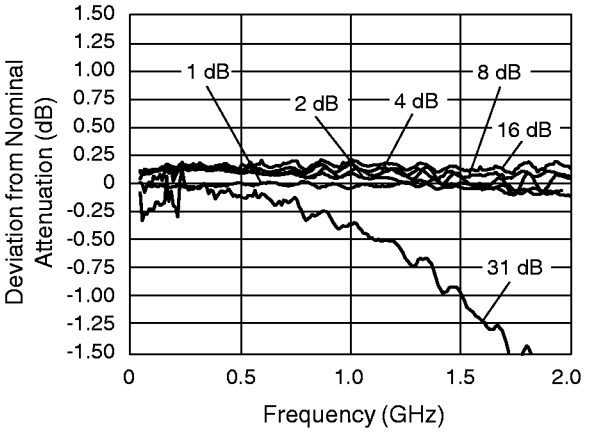
Typical Performance Data



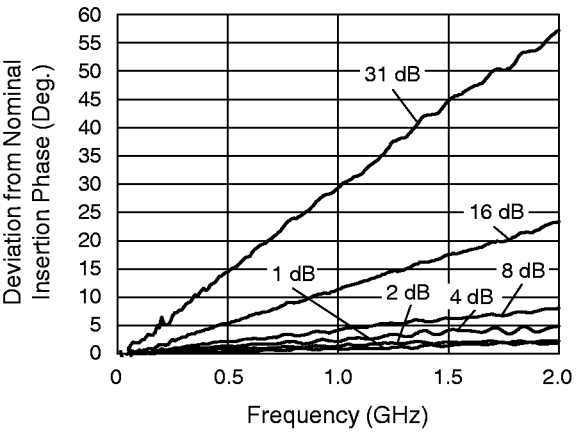
Insertion Loss vs. Frequency



VSWR vs. Frequency



Attenuation Accuracy vs. Frequency



Attenuation Phase Accuracy vs. Frequency

Truth Table

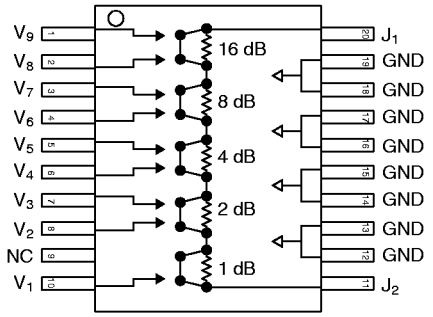
V_1	V_2	V_3	V_4	V_5	V_6	V_7	V_8	V_9	Attenuation J_1-J_2
1 dB Bit	2 dB Bit		4 dB Bit		8 dB Bit		16 dB Bit		
-5	-5	0	-5	0	-5	0	-5	0	Reference I.L.
0	-5	0	-5	0	-5	0	-5	0	1 dB
-5	0	-5	-5	0	-5	0	-5	0	2 dB
-5	-5	0	0	-5	-5	0	-5	0	4 dB
-5	-5	0	-5	0	0	-5	-5	0	8 dB
-5	-5	0	-5	0	-5	0	0	-5	16 dB
0	0	-5	0	-5	0	-5	0	-5	31 dB Max. Atten.

Absolute Maximum Ratings

Characteristic	Value
RF Input Power	2.0 W > 500 MHz 0/-8 V 0.5 W > 50 MHz 0/-8 V
Control Voltage	+0.2 V, -8 V
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to +150°C
Θ_{JC}	85°C/W

Note: Exceeding these ratings may cause irreversible damage.

Pin Out


V9
V8
V7
V6
V5
V4
V3
V2
NC
V1
16 dB
8 dB
4 dB
2 dB
1 dB
J1
GND
GND
GND
GND
GND
GND
GND
GND
J2