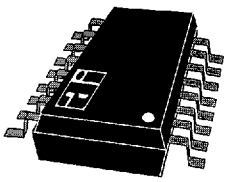
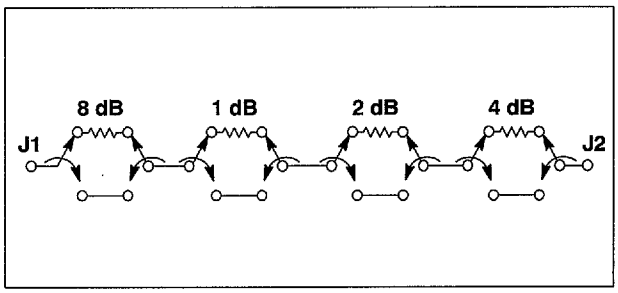
GaAs MMIC FET 4 Bit Digital Attenuator In 16 Lead SOIC 1, 2, 4, 8 dB Bits DC–2 GHz

AT002D8–25

Features



- 1, 2, 4, 8 dB Bits
- Designed for Commercial Applications
- Surface Mount 16 Lead SOIC
- Low Power Consumption



Description

The AT002D8–25 is a MMIC FET Digital Attenuator consisting of four monolithic attenuators with LSB of 1 dB and a total attenuation of 15 dB with all attenuators connected. Attenuator bits are switched with –5 and 0 volts.

The attenuator is packaged in the plastic 16 lead plastic SOIC.

Electrical Specifications at 25°C

Insertion Loss[1]	DC–0.5 GHz	2.5	dB	Max
	DC–1 GHz	3.0	dB	Max
	DC–2 GHz	4.0	dB	Max
Attenuation Range[2]	DC–1 GHz 10% or ± 0.5 dB whichever is greater DC–2 GHz 15% or ±0.5 dB whichever is greater			
VSWR (I/O)	DC–0.5 GHz	1.5:1		Max
	DC–2 GHz	1.8:1		Max

1. Insertion loss changes by 0.003 dB/°C.
2. Attenuation value referenced above insertion loss.
3. Measured with 1 ns risetime pulse and 500 MHz bandwidth.

Operating Characteristics at 25°C

Impedance		50 Ohms Nominal		
Switching Characteristics				
RISE, FALL (10/90% or 90/10% RF)		10	ns	Typ
ON, OFF (50% CTL to 90/10% RF)		20	ns	Typ
Video Feedthru[3]		20	mV	Typ
Input Power for 1 dB Compression				
Control Voltages (Vdc)	**0/–5**	**0/–8**		
0.5–1 GHz	+24	+27	dBm	Typ
0.001 GHz	+14	+17	dBm	Typ
Intermodulation Intercept Point for two–tone input power up to +13 dBm				
Intercept Points	**IP2**	**IP3**		
0.5–1 GHz	62	43	dBm	Typ
0.001 GHz	51	32	dBm	Typ
Control Voltages				
V_O (Low)	0 to –0.2V at 20 µA Max			
V_O (High)	–5V at 50 µA to –9V at 200 µA Max			

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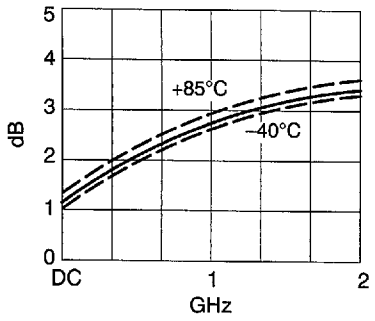
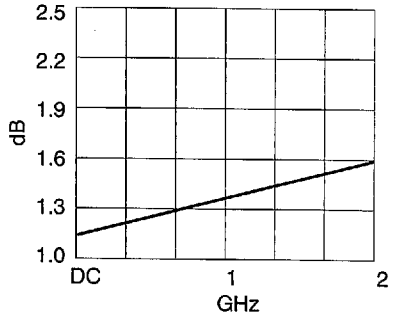
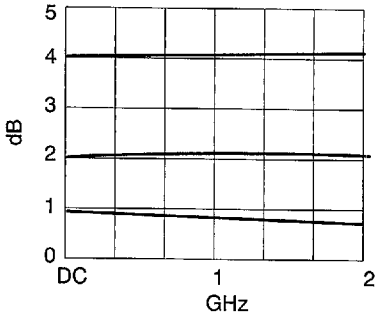
Typical Performance Data



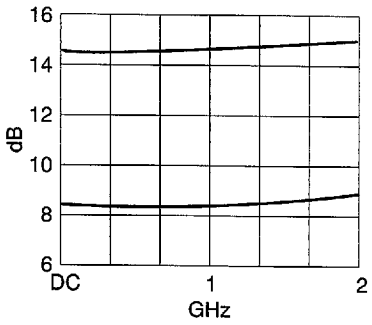
Insertion Loss vs. Frequency



VSWR vs. Frequency (All States)



1, 2, 4 dB Bits



8, 15 dB Bits

Absolute Maximum Ratings

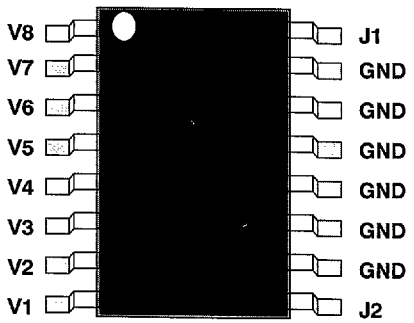
RF Input Power:	2W > 500 MHz 0/–8V 0.5W @ 50 MHz 0/–8V
Control Voltage:	+0.2V, –10V
Operating Temperature:	–40°C to 85°C
Storage Temperature:	–65°C to 150°C
Θ_{JC}:	25°C/W

Note: Exceeding these parameters may cause irreversible damage.

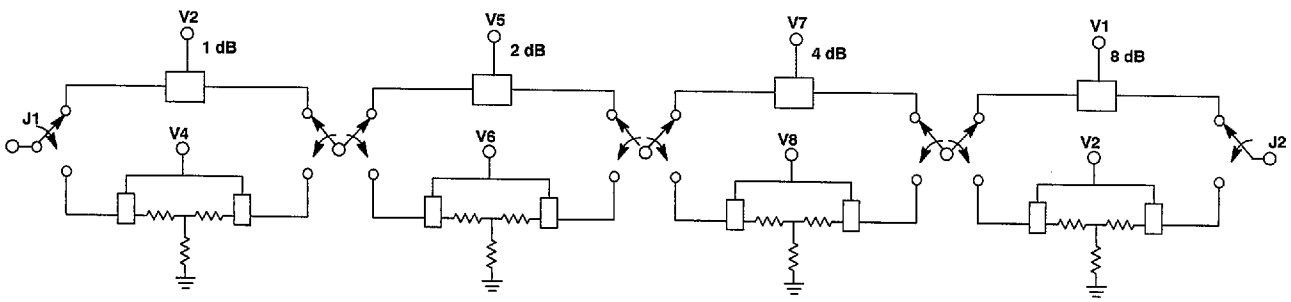
Truth Table

V1	V2	V3	V4	V5	V6	V7	V8	Condition
8 dB Bit		1 dB Bit		2 dB Bit		4 dB Bit		
0	–5	0	–5	0	–5	0	–5	Insertion Loss
0	–5	–5	0	0	–5	0	–5	1 dB State
0	–5	0	–5	–5	0	0	–5	2 dB State
0	–5	0	–5	0	–5	–5	0	4 dB State
–5	0	0	–5	0	–5	0	–5	8 dB State
–5	0	–5	0	–5	0	–5	0	15 dB Max Atten.

Pin Out



Functional Schematic



RF GaAs MMIC Products in Metal Packages

Numerical Index

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