

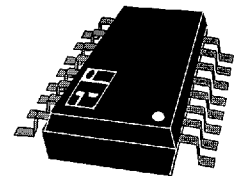
GaAs MMIC FET 4 Bit Digital Attenuator In 16 Lead SOIC 1, 2, 4, 8 dB Bits DC–2 GHz



AT002D8–25

Features

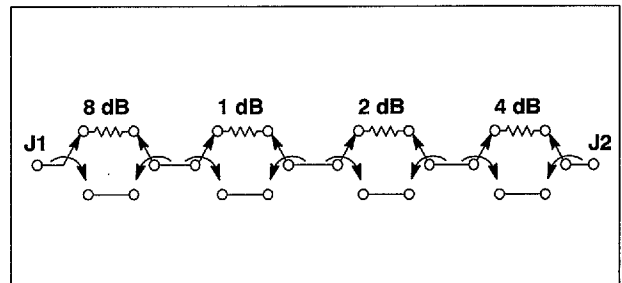
- 1, 2, 4, 8 dB Bits
- Designed for Commercial Applications
- Surface Mount 16 Lead SOIC
- Low Power Consumption



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		
	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.

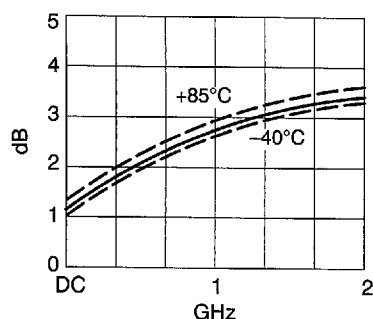
2. Attenuation value referenced above insertion loss.

3. Measured with 1 ns risetime pulse and 500 MHz bandwidth.

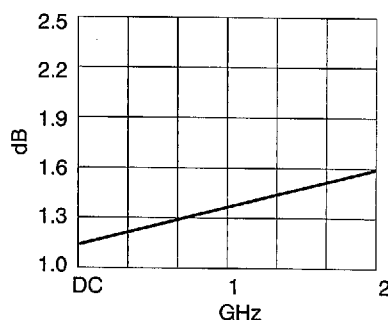
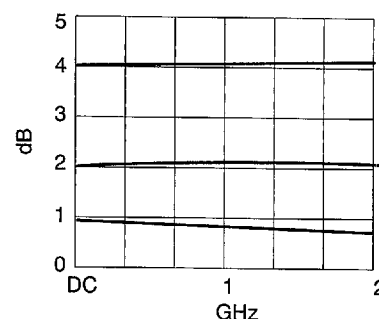
Operating Characteristics at 25°C

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			

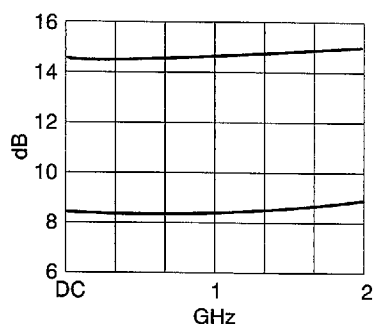
Typical Performance Data



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

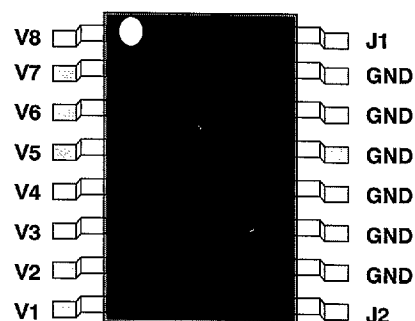
Θ_{JC} : 25°C/W

Note: Exceeding these parameters may cause irreversible damage.

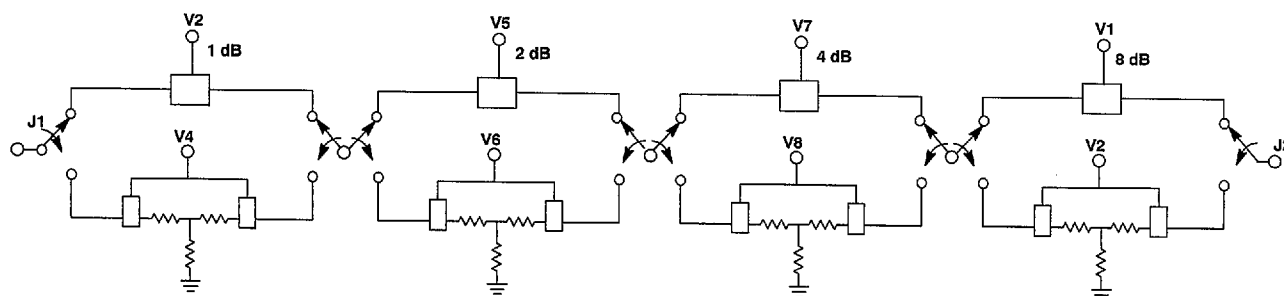
Truth Table

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

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