



Absorptive Digital Control Attenuator 0.1-40GHz

Features

- Ultra Wide Band Operation 0.1-40GHz
- 1dB LSB Steps to 31dB
- Single Positive Control Line Per Bit
- Customization available upon request



Parameters	Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	Units
Frequency Range	0.1-18			18-30			30-40			GHz
Attenuation Range	30	31		28	30		28	30		dB
Attenuation Flatness: (Referenced to Insertion Loss)		±0.75	±1.0		±1.0	±2.0		±2.0	±3.0	dB
Control Bits			5			5			5	Bit
Control Step size	1			1			1			dB
Insertion Loss		4.5	5		7	7.5		8	9	dB
Insertion Loss Temperature Coefficient		0.003			0.003			0.003		dB/ °C
Input VSWR(All Atten. States)		1.3	1.7		1.6	2		1.8	2.2	: 1
Output VSWR (All Atten. States)		1.3	1.7		1.6	2		1.8	2.2	: 1
Input 0.1 dB Compression Point (P0.1dB)		25			25			25		dBm
Input IP3		43			43			43		dBm
Switching Speed			200			200			200	ns
Weight	0.9 Max.									ounces
Impedance	50									Ω
Bias Current (+5V / -5V)	10/10									mA
Input / Output Connectors	2.92mm-Female									
Interface and control connector	MICRO-D9(Female)									
Finish	Gold Plated									
Material	Aluminum									
Sealing	Hermetically Sealed (optional)									



Absolute Maximum Ratings

Biasing	+5V±10%/-5V±10%
RF Input power	+25dBm

Ordering Information

Part No.	Description
DBDA0500104000B	0.1-40GHz Digital Control Attenuator

Environmental Specifications

Operational Temperature	-40°C~+85°C
Storage Temperature	-50°C~+105°C
Altitude	30,000 ft. (Epoxy Sealed Controlled environment)
	60,000 ft. 1.0psi min (Hermetically Sealed Un-controlled environment) (Optional)
Vibration	25g RMS (15 degrees 2KHz) endurance, 1 hour per axis
Humidity	100% RH at 35°C, 95%RH at 40°C
Shock	20G for 11msec half sine wave, 3 axis both directions

Outline Drawing:

All Dimensions in mm (inches)

The drawing shows three views of the attenuator: a top view, a side view, and a pin configuration diagram. The top view shows a rectangular package with dimensions 32 [1.26] mm height, 28 [1.10] mm width, and 24 [0.94] mm width between ports. It features two SMA ports labeled IN and OUT, and four mounting holes with a diameter of 2.8 [0.11] mm. The side view shows a height of 10 [0.39] mm and a width of 28 [1.10] mm. The pin configuration diagram shows a MICRO-D9 (Female) connector with pins 1 through 9, labeled as +5V, -5V, GND, C1, C2, C3, C4, C5, and NC. The pin pitch is 1.27 [0.05] mm. The package also has a 2-56 THREAD DP3.5 [0.138] mm feature.

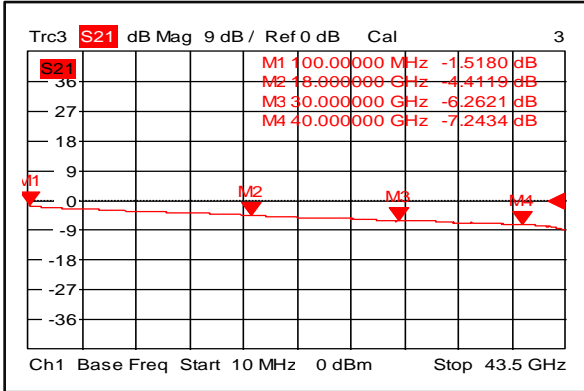
MICRO-D9(Female)

TruthTable

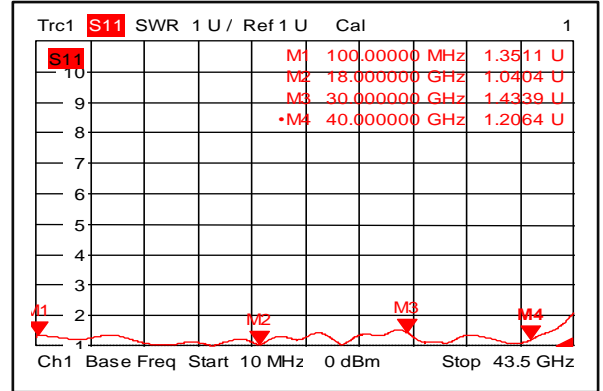
TTL Control Voltage					Low(0)=0~0.8V High(1)=2.8~5V
Control Voltage Input					Attenuation state
C5	C4	C3	C2	C1	
1	1	1	1	1	Reference IL
1	1	1	1	0	1dB
1	1	1	0	1	2dB
1	1	0	1	1	4dB
1	0	1	1	1	8dB
0	1	1	1	1	16dB
0	0	0	0	0	31dB



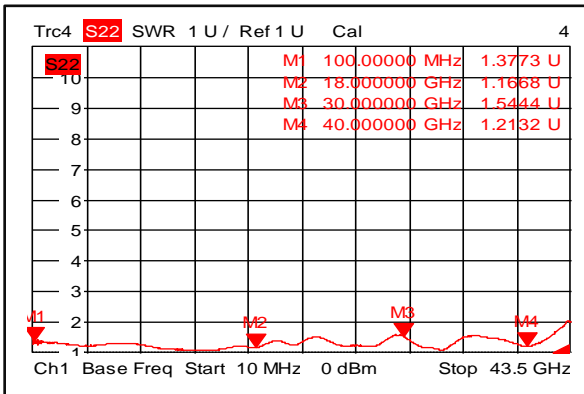
Insertion Loss @+25°C



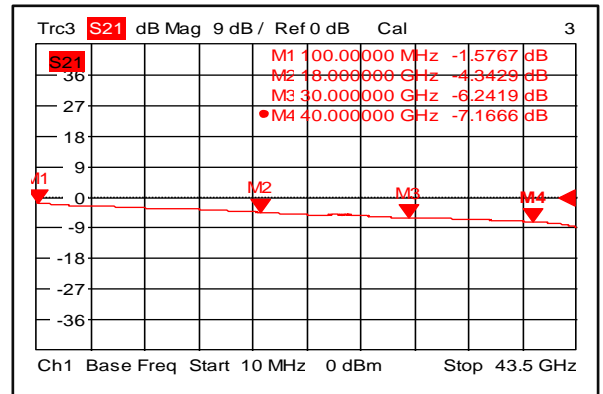
Input VSWR @+25°C



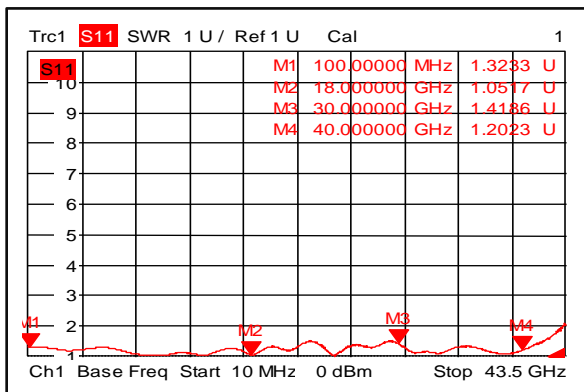
Output VSWR @+25°C



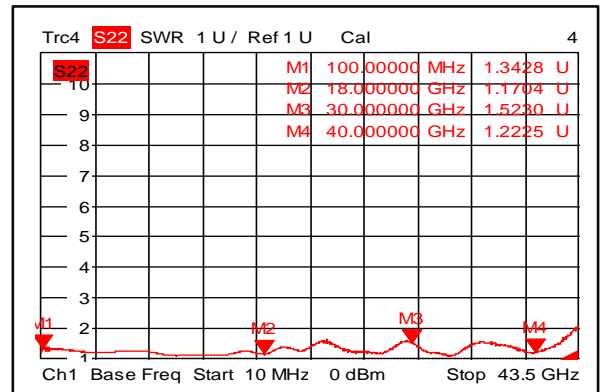
Insertion Loss @-40°C



Input VSWR @-40°C

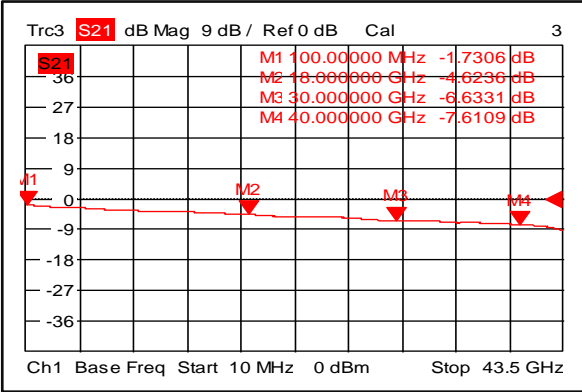


Output VSWR @-40°C

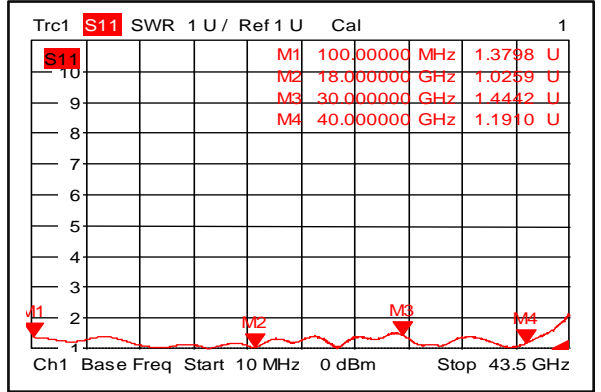




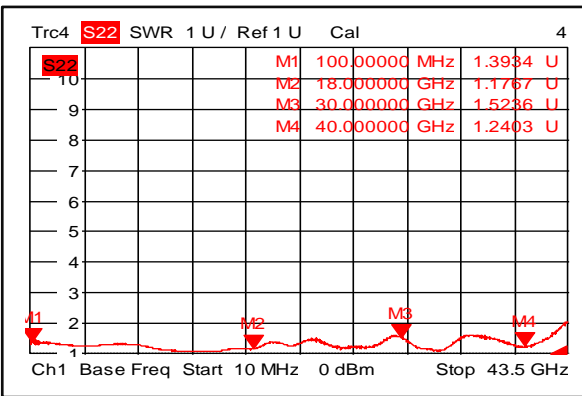
Insertion Loss @+85°C



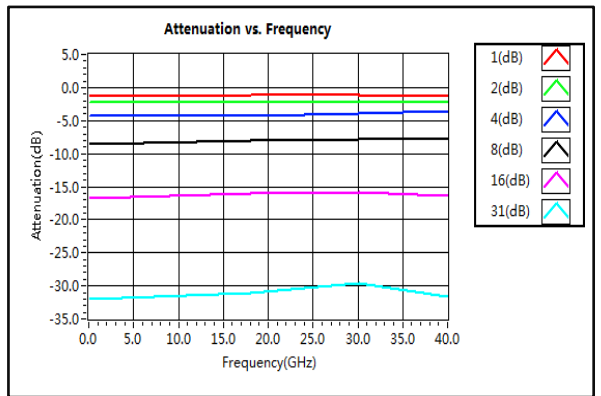
Input VSWR @+85°C



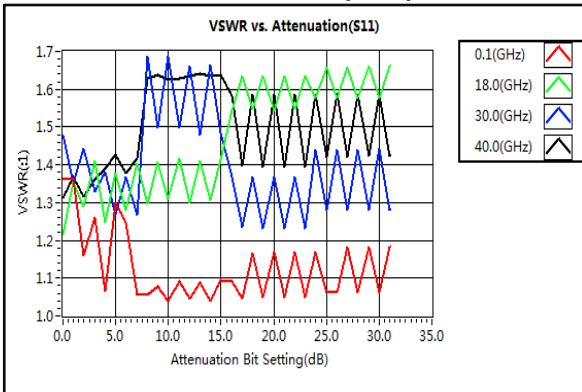
Output VSWR @+85°C



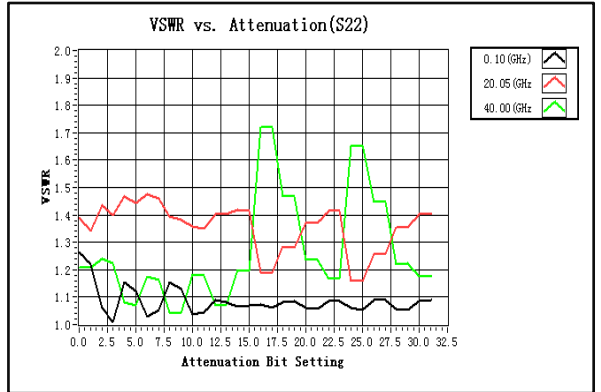
Attenuation vs. Frequency



VSWR vs. Attenuation(S11)

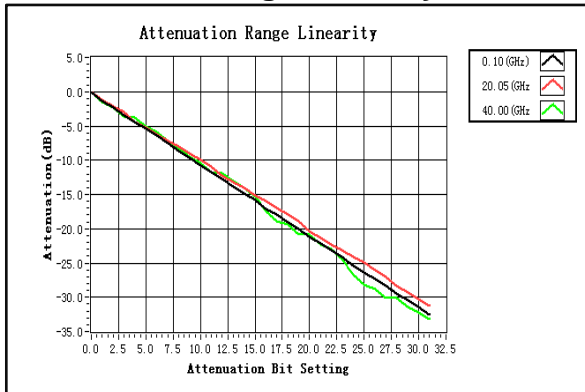


VSWR vs. Attenuation(S22)

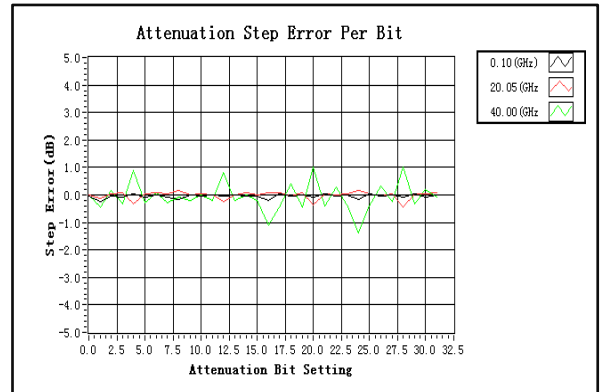




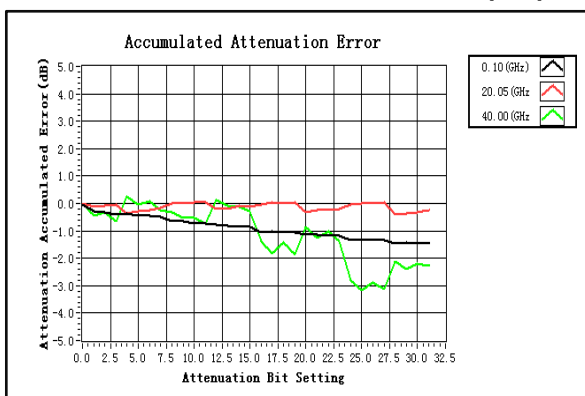
Attenuation Range Linearity



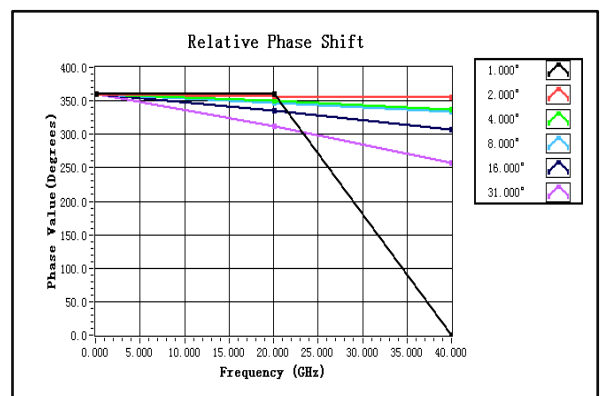
Attenuation Step Error Per Bit (dB)



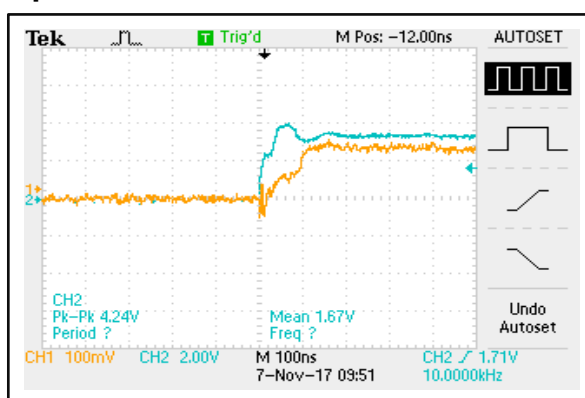
Accumulated Attenuation Error (dB)



Relative Phase Shift



Speed



Speed

