The Digital Attenuator Specification Sheet

Number of Sections

Equal to the number of **bits**.

Bandwidth (Hz)

This device, like all other devices, can effectively operate only within a finite **bandwidth** (e.g., 2-5 GHz or 300-400 MHz).

Port Impedance (Γ, return loss, VSWR)

Insertion Loss (dB)

This is defined as the attenuation of the device in its **minimum** attenuation state (i.e., no attenuators are selected). Ideally, this would be 0 dB. However, the insertion loss of the **switches** makes this ideal value unachievable.

Typically, insertion loss will be equal to approximately 1 dB per bit. In other words a 6-bit attenuator will have an insertion loss of 6dB.

Maximum Attenuation (dB)

The attenuation of the device with **all** fixed attenuators selected. This value is therefore the sum (in dB) of every fixed attenuator, **plus** the insertion loss discussed above. Remember, the insertion loss of the switches is prevalent regardless of the attenuator state.

Attenuation Step Size (dB)

The vast majority of digital attenuators have attenuation states that are separated by a **fixed** value (e.g., 0.5, 1.0, or 2 dB).
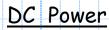
Maximum Input power (dBm)

Digital attenuators have a **maximum** input power.

Switching Speed (seconds)

The state of a microwave switch **cannot** change instantaneously. It takes some small but non-zero amount of time to change from one attenuation state to another. Typical values range from 0.1 to 20.0 μseconds.

Switch Logic

See microwave switch spec sheet.

DC Power

See microwave switch spec sheet.