The SSA series of solid state RF attenuators from dBm offers unprecedented reliability, fast switching speed (less than 20us), wide dynamic range (95dB), excellent frequency range (20 to 3000 MHz) and a unique digital control bus to permit dense physical packaging. It is ideally suited for OEM switch matrix applications. The solid state attenuators, originally developed for dBm’s product line of highly accurate, fast carrier/noise generators are now offered with a companion digital control bus and tray assembly to allow users to easily and cost effectively construct their own high speed RF mux of virtually any size. Fast update rates (1 KHz) with data strobing for simultaneous update of all attenuators is offered.

RF Attenuator
Each RF attenuator is constructed using MMIC GaAs technology and has a dynamic range of 95dB with a step size of 1dB. It is designed to handle high power levels (1dB compression point greater than +25 dBm) and is packaged in a compact 3.2” x 1.4” 0.75” housing. The solid state attenuators requires minimal DC power (360mW) and is controlled via a 7 bit parallel TTL word. SMA connectors are offered as standard.

Multi-channel Attenuator tray assembly
To simplify the construction of RF switch matrixes, a multi-channel attenuator (up to 16 channels) assembly tray with a high speed digital control board is offered. The tray provides a simple method to mount up to sixteen RF attenuators with a single digital control port and a single connector for DC power input. Multiple trays can be incorporated into a rack mount chassis. Each attenuator is independently controllable. A master strobe input allows all channels to be updated simultaneously. Up to sixteen assembly trays, each with up to 16 RF attenuators (16x16 mux) can easily be configured and controlled via a simple 8 bit parallel address and 8 bit parallel data bus. All attenuators can be continuously and simultaneously updated at a rate exceeding 1 KHz.

Applications
Typical applications for the SSA Series include:
- High speed switching/combining/attenuation wireless simulation system
- RF ATE test systems
- Cell phone and base station inter-op testing

Features
- High reliability - solid state design
- Wide frequency range
- Fast switching speeds
- Low amplitude ripple
- Fast update rates
- Dense packaging for RF multi-channel designs
Specifications

Multi-channel Attenuator Assembly

- No. of independent channels: 8 or 16
- Control interface bus: byte wide parallel latching, double buffered
  - Data: 8 bit parallel
  - Address: 8 bit
  - Byte write strobe: 1 bit
  - Master strobe: 1 bit
- Assembly size: 4.2” x 19” x 2” (160 cubic inches)
- DC Power:
  - +15V @ 35 mA (19mA for 8 channels)
  - -15V @ 360 mA (180 mA for 8 channels)
  - +5V @ 75 mA

Solid State Attenuator

- Attenuation Range: 0 to 95 dB
- Attenuation resolution: 1 dB
- Frequency Range: 20 MHz to 3,000 MHz
- Insertion loss: 7.5 dB (20 to 3,000 MHz)
- Amplitude ripple:
  - +/- 0.75 dB @ 0 dB attn, 20MHz to 3,000MHz
  - +/- 0.2 dB max, per 100MHz
- 1 dB Comp point:
  - > +25 dBm, 100 MHz to 3,000MHz,
  - > +19 dBm @ 20MHz
- Output 3rd order intercept:
  - +40 dBm typical @ 0 dB,
  - +35 dBm min any setting
- Noise Floor: < -170 dBm/Hz
- Switching speed: < 16 us 10% TTL to 90% RF
- RF rise/fall time: < 3us
- VSWR: 1.5:1, 100 to 3,000MHz
- Size: 3.2” x 1.4” x 0.75” (excluding RF connectors)
- Connectors: SMA(F)
- Control Interface: 7 bit parallel TTL, binary weighting
- DC Power:
  - +15V @ 2 mA
  - -15V @ 22 mA

Ordering Information

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Typical example of an 8 channel Attenuator Assembly (Cabling not shown)

Internal view of attenuator digital circuitry.

Internal view of attenuator RF circuitry.

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