MILLER MMIC

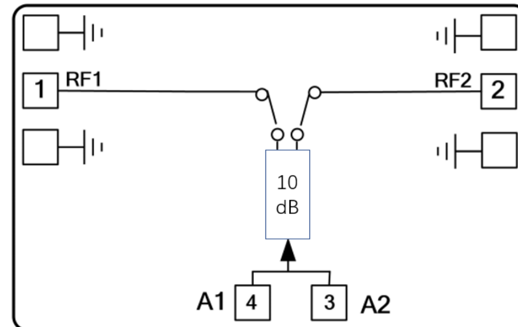
V1.0.0

GaAs MMIC Digital Attenuator
10dB, 1bit DC-20GHz

MM5506 GaAs MMIC Digital Attenuator 10dB 1 Bit DC-20GHz

Features

- Frequency: DC-20GHz
- IL: 1.4dB typ.
- Att. Range: 10dB
- Control bits: 1bit
- Input /Output Return Loss: 20dB typ.
- Power Supply: -5 V
- Control Level: -5/0 V
- Die Size: 1.0 x 1.0 x 0.1 mm



Typical Applications

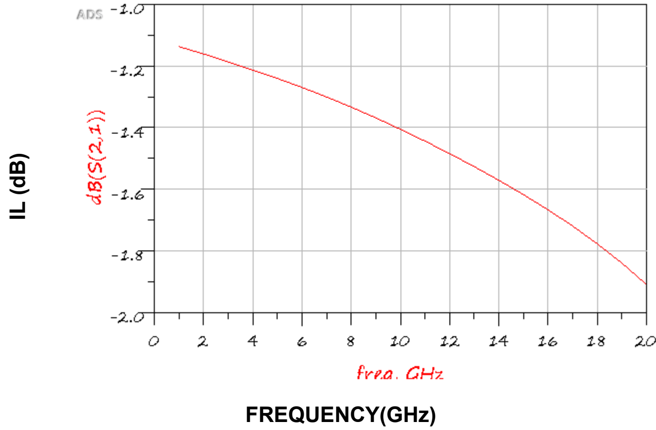
- Test Instrumentation
- Microwave Radio & VSAT
- Military & Space
- Telecom Infrastructure
- Fiber Optics

Electrical Specifications

TA = +25℃, VEE = -5V

Parameters	Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	Units
Frequency		DC-6			6-18			18-20		GHz
IL		1.2			1.4			1.4		dB
ATT Range		10.2			10			9.8		dB
Attenuation accuracy					±0.2dB					dB
Input RL		20			20			20		dB
Output RL		20			20			20		dB
Input P1dB					24 (typ.)					dBm
Switch time					30 (typ.)					ns

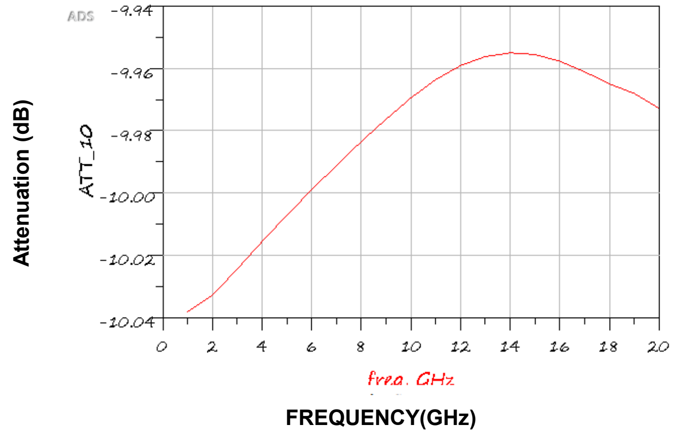
IL vs. Frequency



IL (dB)

FREQUENCY(GHz)

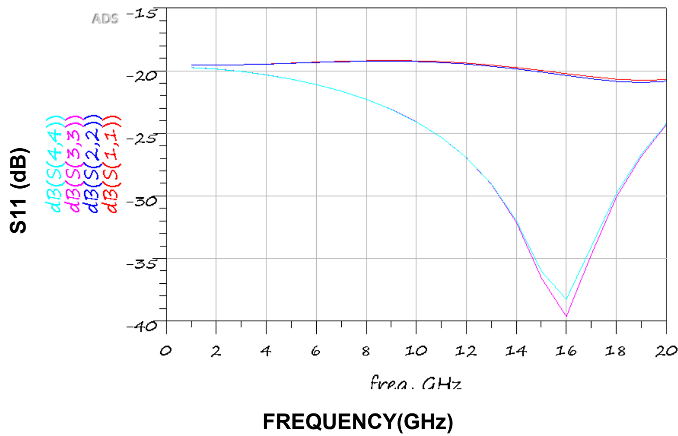
Att. vs. Fequency



Attenuation (dB)

FREQUENCY(GHz)

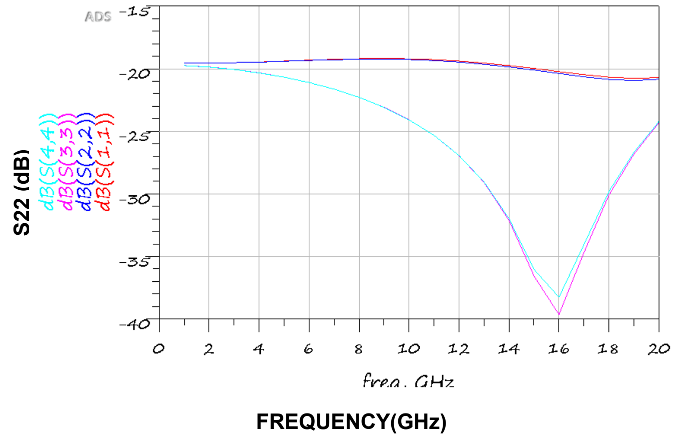
Input RL vs. Frequency



S11 (dB)

FREQUENCY(GHz)

Output RL vs. Frequency



S22 (dB)

FREQUENCY(GHz)

Additional phase shift vs. Frequency

Additional phase shift (deg.)

FREQUENCY(GHz)

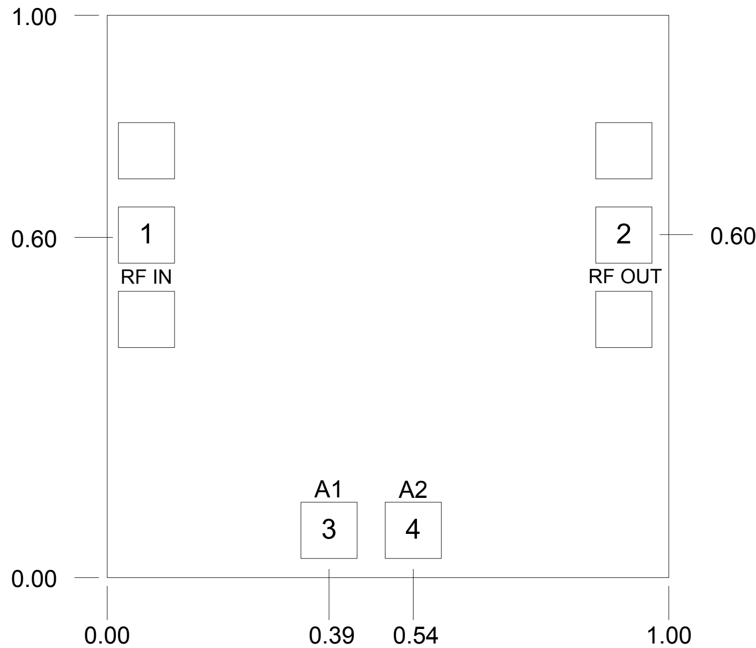
Attenuation accuracy vs. Frequency

Attenuation accuracy (dB)

FREQUENCY(GHz)

Outline Drawing:

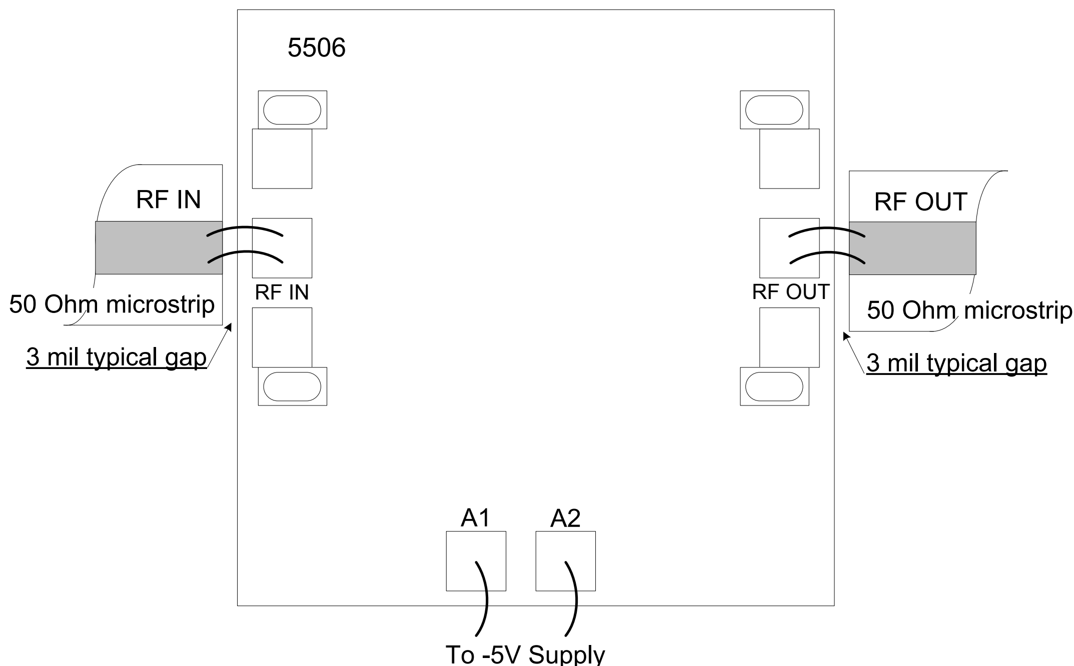
All Dimensions in mm



Pad	Function	Description
1,2	RF1, RF2	50 ohm circuit matched, and there is no blocking capacitor integrated inside the chip
3,4	A1, A2	Contorl ports, see below the truth table
Bottom of chip	GND	The bottom of the chip should be in good contact with the RF and DC ground

Status	A1	A2
Reference	0V	-5V
10dB	-5V	0V

Assembly Drawing



Notes:

1. Die thickness: 100um
2. Typical bond pad is 100*100 μm^2
3. Bond pad metalization: Gold
4. Backside metalization: Gold
5. Backside of the die (GND)
6. No connection required for unlabeled bond pads
7. Internal DC Block at both input and output.
8. Input/Output use two 25um gold wire, length less than 250um is recommended.

Maximum Ratings:

1. Input power: +24dBm
2. Operating temperature: -55℃ to +85℃
3. Storage temperature: -65℃ to +150℃