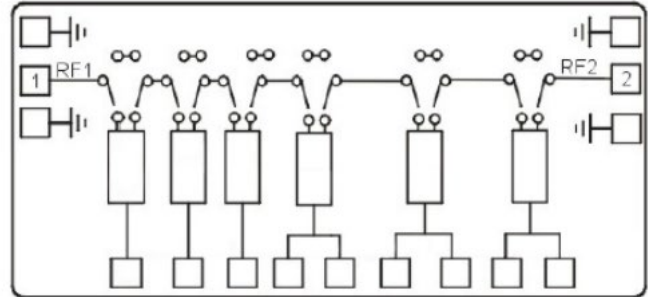


### Features

- Frequency: DC-40GHz
- IL: 5.5dB typ.
- Att. Range: 31.5dB
- Control bits: 6bits
- Input /Output Return Loss: 20dB Typ.
- Power Supply: -5 V
- Control Level: -5/0 V
- Die Size: 2.26 x 1.20 x 0.1 mm



### Typical Applications

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

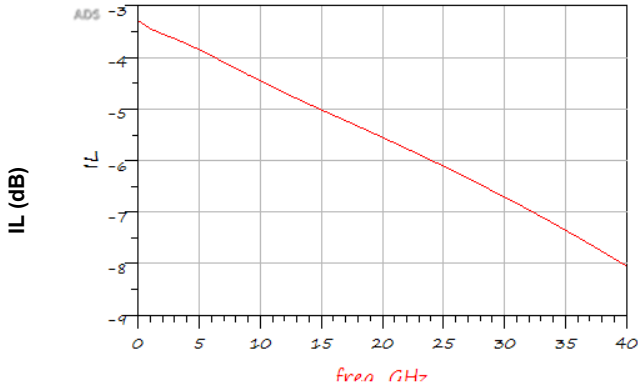
### Electrical Specifications

TA = +25°C, VEE = -5V

Parameters	Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	Units
Frequency	DC-6			6-18			18-40			GHz
IL					5.5					dB
ATT Range					31.5					dB
Attenuation accuracy	± 0.5dB									dB
Input RL		20			20			20		dB
Output RL		20			20			20		dB
Input P1dB	24 (typ.)									dBm
Switch time	30 (typ.)									ns

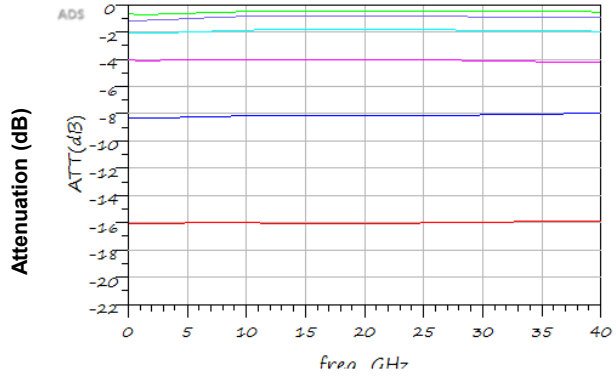


### IL vs. Frequency



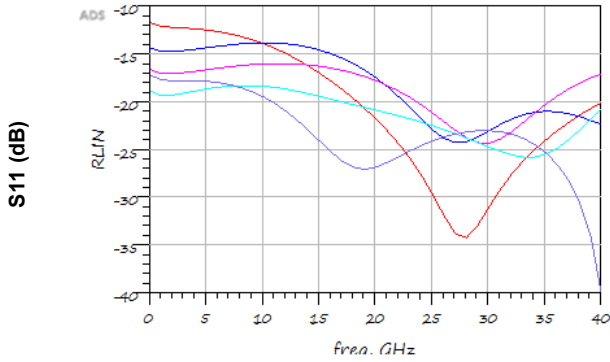
FREQUENCY(GHz)

### Att. vs. Frequency



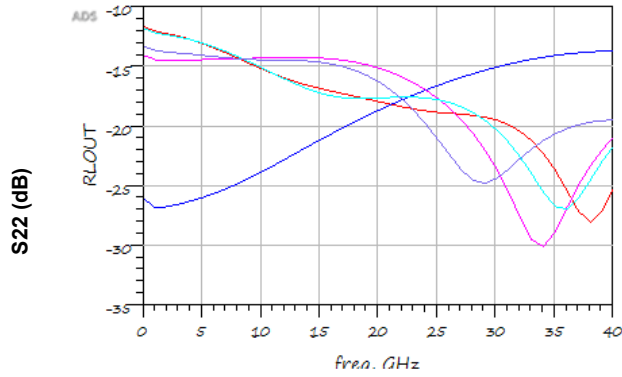
FREQUENCY(GHz)

### Input RL vs. Frequency



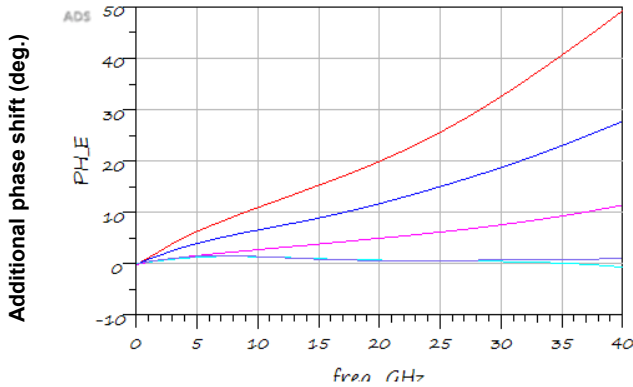
FREQUENCY(GHz)

### Output RL vs. Frequency



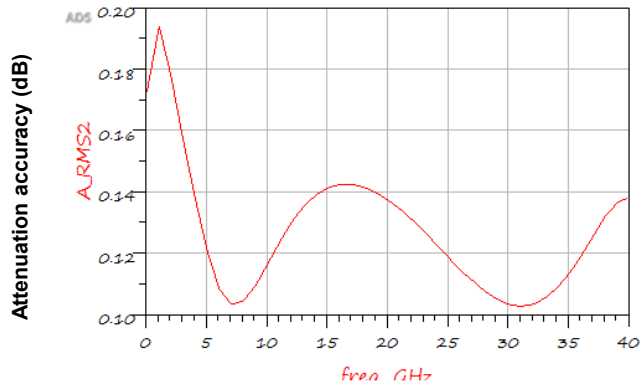
FREQUENCY(GHz)

### Additional phase shift vs. Frequency



FREQUENCY(GHz)

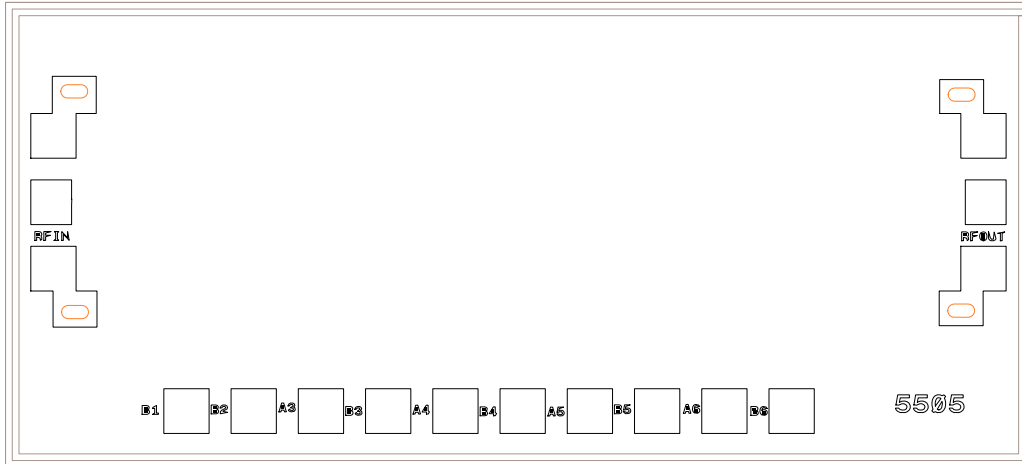
### Attenuation accuracy vs. Frequency



FREQUENCY(GHz)



**Outline Drawing:**  
All Dimensions in mm



1,2	RF1, RF2	50 ohm circuit matched, and there is no blocking capacitor integrated inside the chip
3,4...11,12	B1,A2,B2...	Control 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	B1	B2	A3	B3	A4	B4	A5	B5	A6	B6
Reference	-5	-5	0	-5	0	-5	0	-5	0	-5
0.5dB	0	-5	0	-5	0	-5	0	-5	0	-5
1dB	-5	0	0	-5	0	-5	0	-5	0	-5
2dB		-5	-5	0	0	-5	0	-5	0	-5
4dB		-5	0	-5	-5	0	0	-5	0	-5
8dB		-5	0	-5	0	-5	-5	0	0	-5
16dB		-5	0	-5	0	-5	0	-5	-5	0
31dB	0	0	-5	0	-5	0	-5	0	-5	0



**MILLER**  
MMIC

V1.0.0

GaAs MMIC Digital Attenuator  
31.5dB, 6bits DC-40GHz

MM5021T

GaAs MMIC Digital Attenuator 31.5dB 6 Bits DC-40GHz

## Assembly Drawing

### **Notes:**

1. Die thickness: 100um
2. Typical bond pad is 100\*100  $\mu\text{m}^2$
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°C to +85°C
3. Storage temperature: -65°C to +150°C