

## GaAs MMIC Digital Attenuator Chip, DC-18GHz

### Performance characteristics

Frequency range: DC-18GHz

Insertion loss: 1.7dB typ

Attenuation range: 30dB

Bit Count: 1 digit

Additional phase shift: -3.3~2.3°

50Ohm input/output

Chip size: 1.36x 0.92 x 0.1mm

### Product Introduction

GDA-0018-1A is a GaAs MMIC 1-bit Digital attenuator chip, with a frequency range of DC~18GHz, insertion loss of 1.7dB, switching speed of 20ns, and 0/-5V control. The chip through-hole metallization process ensures good grounding, and the back is metallized, suitable for eutectic sintering or conductive adhesive bonding processes.

Use restriction parameters1	
Control voltage range	-8V~+0.5V
Maximum input power	+27dBm
working temperature	-55 ~ +85°C
Storage temperature	-65 ~ +150°C

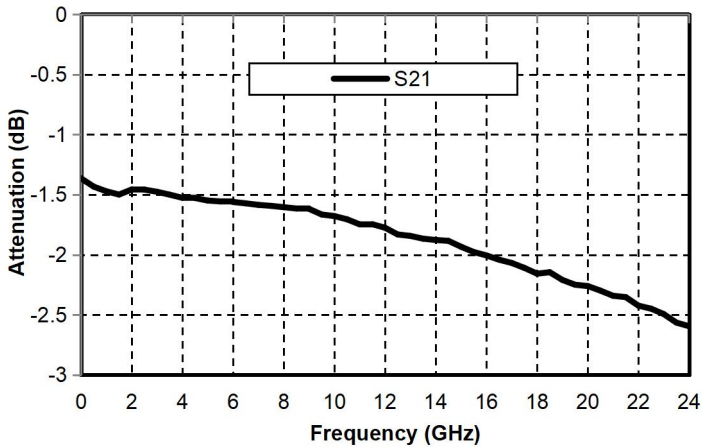
【1】 Exceeding any of the above maximum limits may result in permanent damage.

Electrical parameters(Ta=+25° C)				
Index	Minimum value	Typical value	Maximum value	Unit
Frequency range	DC~18			GHz
Insertion loss	-	1.7	2.1	dB
Attenuation range	30			dB
Attenuation number	1			bite
Attenuation step	30			dB
Attenuation accuracy (all frequency bands)	-0.3 ~ 0.6			dB
Phase fluctuation (full frequency band)	-3.3 ~ 2.3			degree
Input return loss	-	20	-	dB
Output Return Loss	-	20	-	dB
Switching speed	-	20	-	ns
P-1dB	-	23	-	dBm

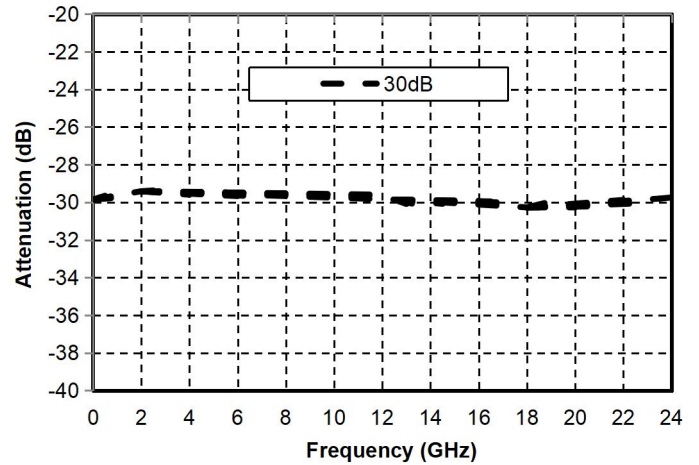
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### Main indicator testing curve

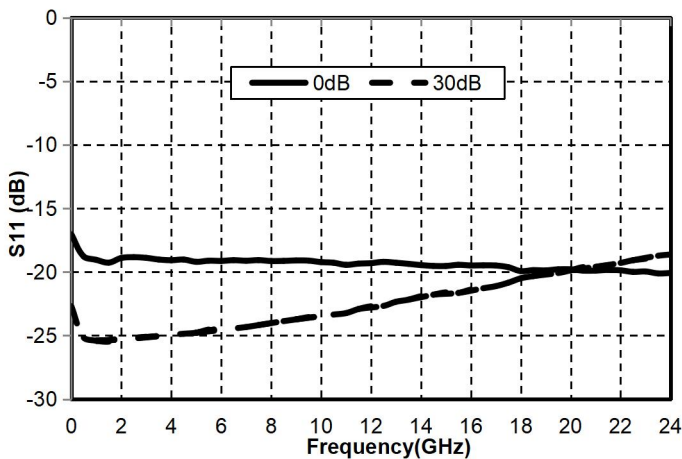
Insertion loss vs. frequency



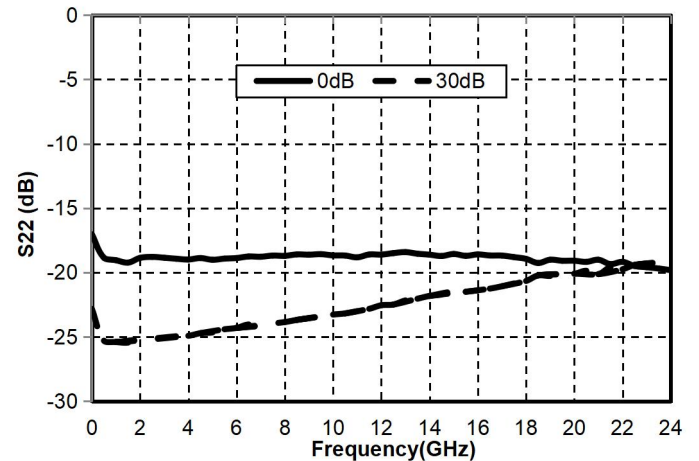
Reference attenuation state vs. frequency



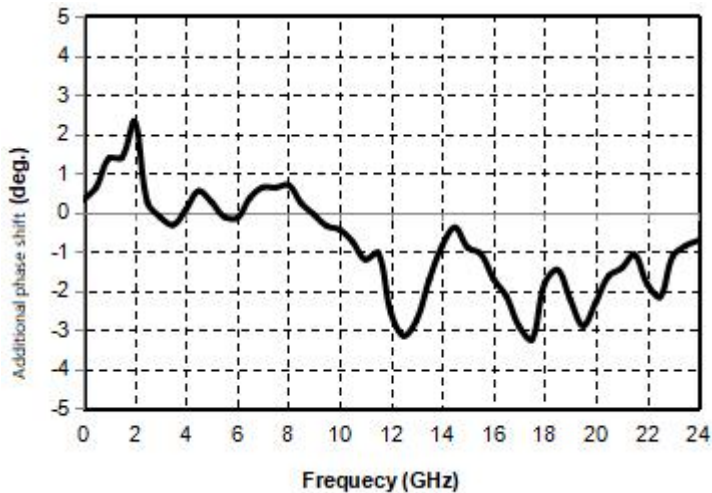
Input Echo vs. Frequency



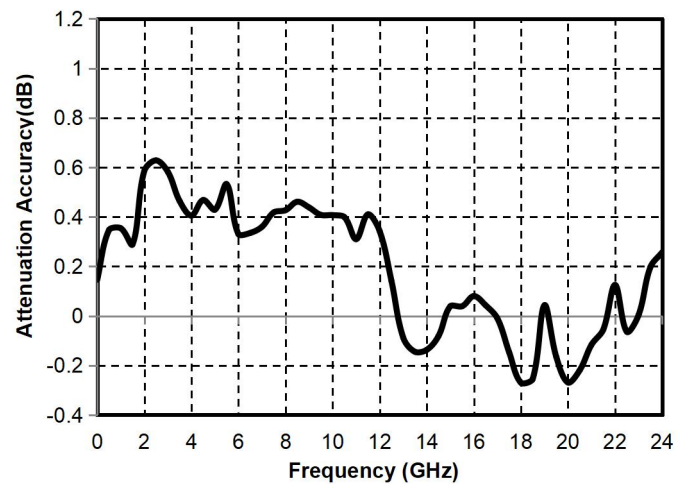
Output Echo vs. Frequency



Attenuation additional phase shift vs. frequency

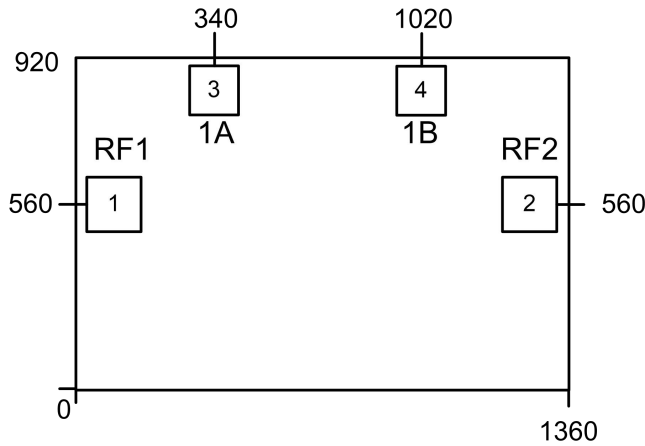


Attenuation accuracy vs. frequency



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External structure<sup>2</sup>



[2]The units in the figure are all micrometers.

### Definition of bonding pressure point

Bond point number	Functional symbols	Function Description
1	RF1	The signal input terminal is externally connected to a 50 ohm circuit, and there is no integrated DC isolation capacitor inside the chip
2	RF2	The signal output terminal is externally connected to a 50 ohm circuit, and there is no integrated DC isolation capacitor inside the chip
3、4	VC	Attenuation control pads, refer to the truth table for attenuation control
Chip bottom	GND	The bottom of the chip needs to have sufficient and good contact with RF and DC ground

### Truth table

1A	1B	Attenuation state
-5V	0V	30dB attenuation state
0V	-5V	0 state

## Suggested assembly diagram

