GDA-0020-1C-10-PD

GaAs MMIC 1-bit Digital Attenuator Chip, DC-20GHz

Performance characteristics

Frequency range: DC-20GHz
Insertion loss: 1.1dB typ
Attenuation range: 0~10dB
Bit Count: 1 digit
Additional phase shift: 2.5°
50Ohm input/output
Chip size: 1.04 x 1.08 x 0.1mm

Product Introduction

GDA-0020-1C-10-PD is a GaAs MMIC 1-bit Digital Attenuator Chip, with a frequency range of DC-20GHz, insertion loss of 1.1dB, attenuation range of 0-10dB, switching speed of 20ns. The integrated logic of the chip adopts -5V power supply 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. This CNC attenuator can operate up to 40GHz.

Usage restriction parameter[1]	
Control voltage range	-0.5V～+6V
Power supply voltage range	-6V
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，VEE=-5V，VC=0/+5V)				
Index	Minimum value	Typical value	Maximum value	Unit
Frequency range		DC~20		GHz
Insertion loss	-	1.1	-	dB
Attenuation range		0~10		dB
Attenuation number		1		bite
Attenuation step		10		dB
Attenuation accuracy (all frequency bands)		-0.0 ~ 0.6		dB
Phase fluctuation (full frequency band)		-2.0 ~ 0.3		degree
Input return loss	-	20	-	dB

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Output Return Loss	-	20	-	dB
Switching speed	-	20	-	ns
P-1dB	-	23	-	dBm
Power supply voltage	-	-5	-	V
Control voltage	0	-	+5	V
Current	-	2	-	mA

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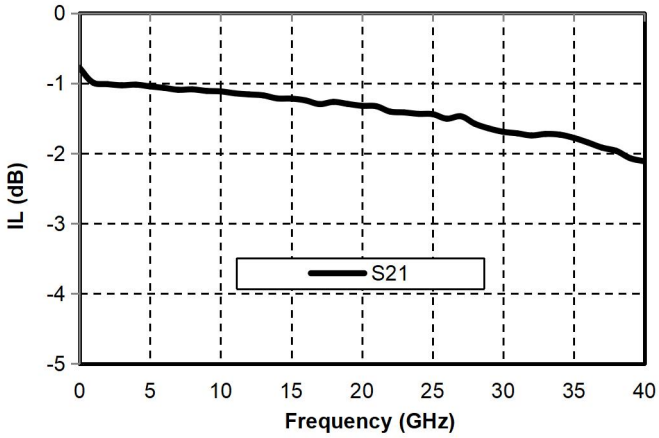
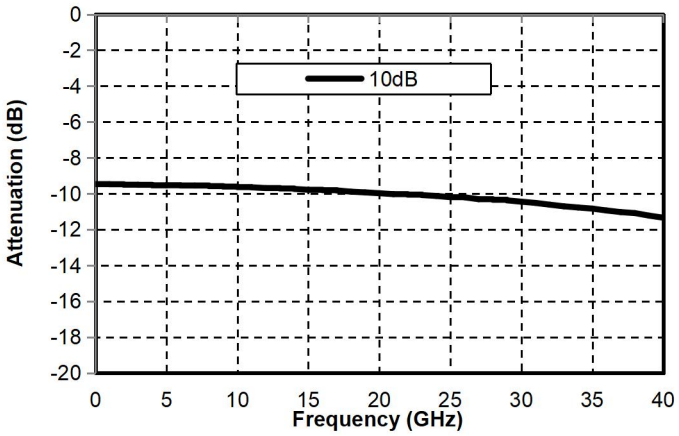
Main indicator testing curve

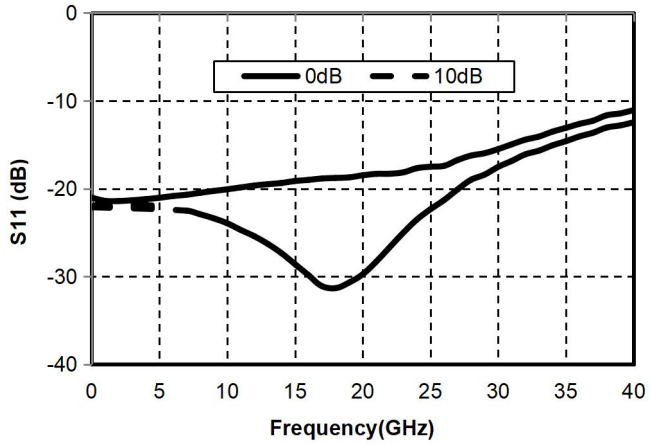
Insertion loss vs. Frequency



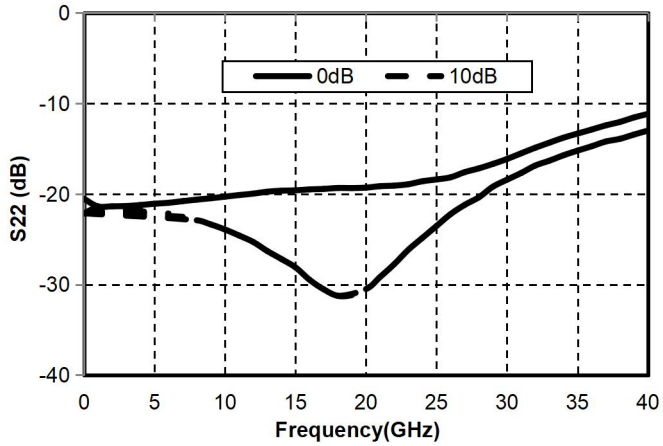
Reference attenuation state vs. Frequency



Input echo vs. Frequency

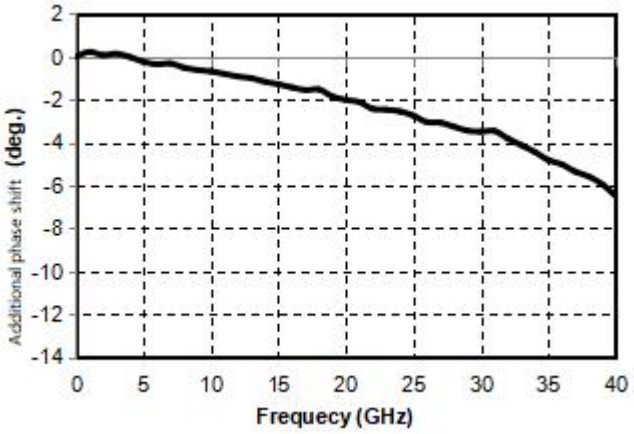


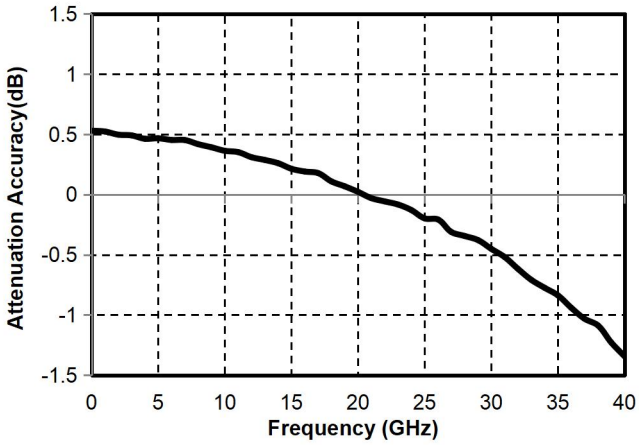
Output echo vs. Frequency



Attenuation additional phase shift vs. Frequency

Attenuation accuracy vs. Frequency





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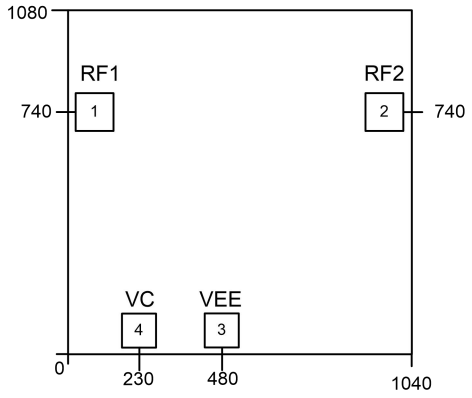
External structure[2]



[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 end is connected to a 50 ohm circuit externally, and there is no integrated DC isolation capacitor inside the chip
2	RF2	The signal end is connected to a 50 ohm circuit externally, and there is no integrated DC isolation capacitor inside the chip
3	VEE	Power supply end
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		
Supply voltage	Control input	Attenuation state
VEE	IN	/
-5V	0V	Initial state N=0: attenuation amount is 0
-5V	+5V	Attenuation state N=1: Attenuation amount is 10

Suggested assembly diagram