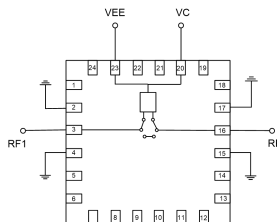


GaAs MMICNC Attenuator Chip, DC-7GHz

Performance Characteristics

Frequency range: DC-7GHz
 Insertion loss: 1.7dB@7GHz
 Attenuation range: 32dB
 Bit count: 1
 Additional phase shift: <math><0\sim-4^\circ</math>
 50Ohm input/output
 Chip size: QFN 4X4

Functional Block Diagram



Product Introduction

GDA-0007-1A-CQ4 is a GaAs MMIC 1-bit CNC attenuator chip, with a frequency range of DC-7GHz and insertion loss of 1.7dB. The integrated driver inside the chip adopts 0/+5V control. The amplifier adopts a 4X4mm surface mount lead-free ceramic casing, which can achieve airtight packaging. The surface of the pin pads is treated with gold plating technology, suitable for reflow soldering installation process.

Usage restriction parameter ¹	
Control voltage range	-0.5V~+5.5V
Power supply voltage	-6V
Maximum input power	+24dBm
Working temperature	-55 ~ +85°C
Storage temperature	-65 ~ +150°C

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

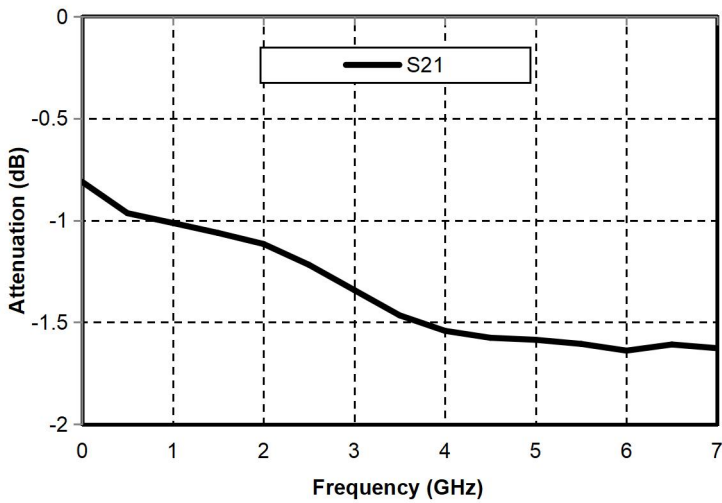
Electrical parameters(Ta=+25° C)				
Index	Minimum	Typical value	Maximum value	Unit
Frequency range	DC~7			GHz
Insertion loss	-	1.7	-	dB
Attenuation range	32			dB
Attenuation number	1			bite
Attenuation accuracy (all frequency bands)	1.5			dB
Phase fluctuation (full frequency band)	0~-4			degree
Input return loss	-	20	-	dB
Output Return Loss	-	20	-	dB
Switching speed	-	40	-	ns
P-1dB	-	23	-	dBm
Power supply voltage	-5			V

Control voltage		0/+5		V
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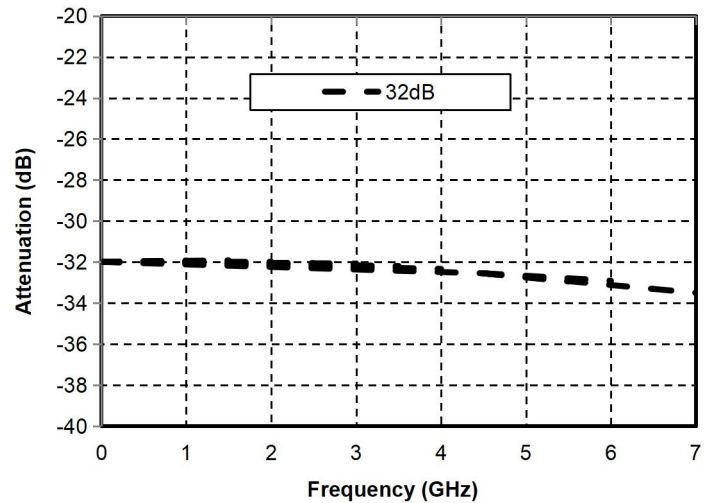
GaAs MMIC Attenuator Chip, DC-7GHz

Main indicator testing curve

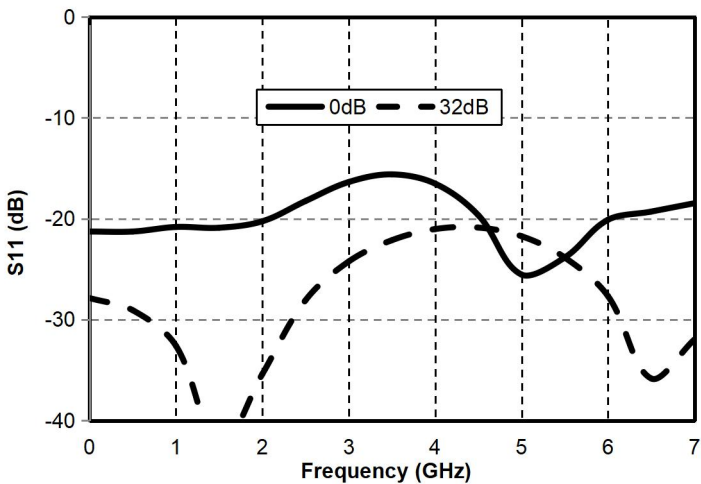
Insertion loss vs. frequency



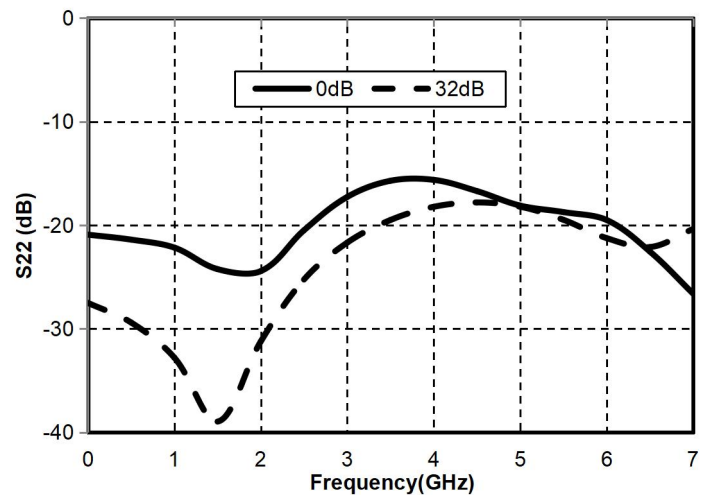
Reference attenuation state vs. frequency



Input Echo vs. Frequency

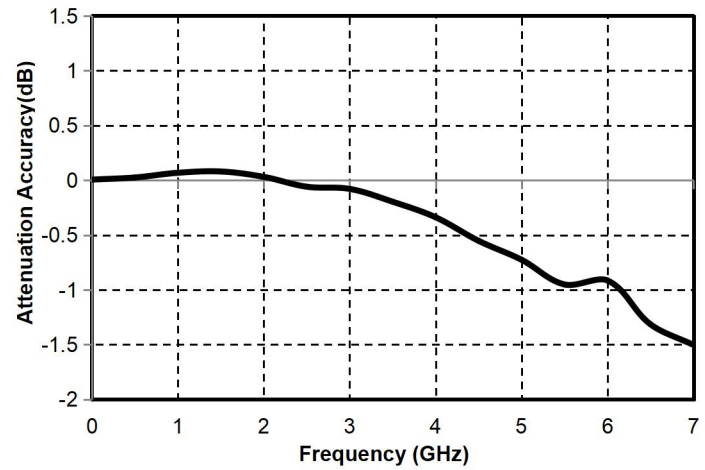
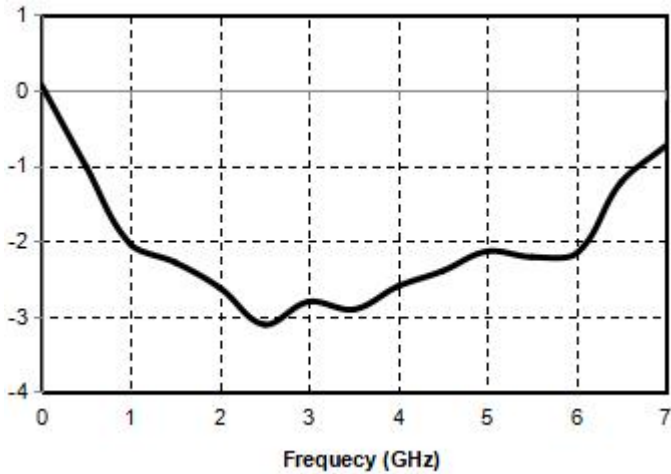


Output Echo vs. Frequency



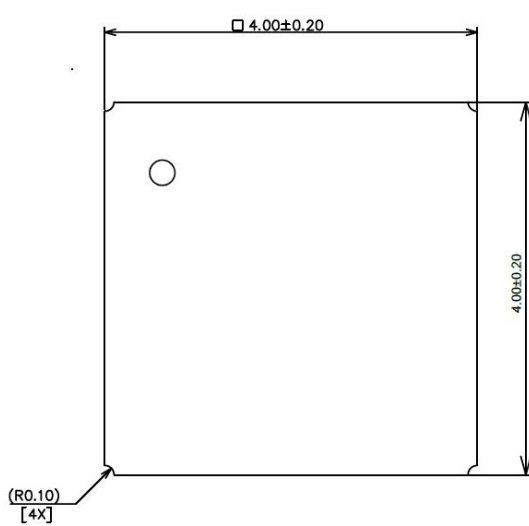
Attenuation additional phase shift vs. frequency

Attenuation accuracy vs. frequency

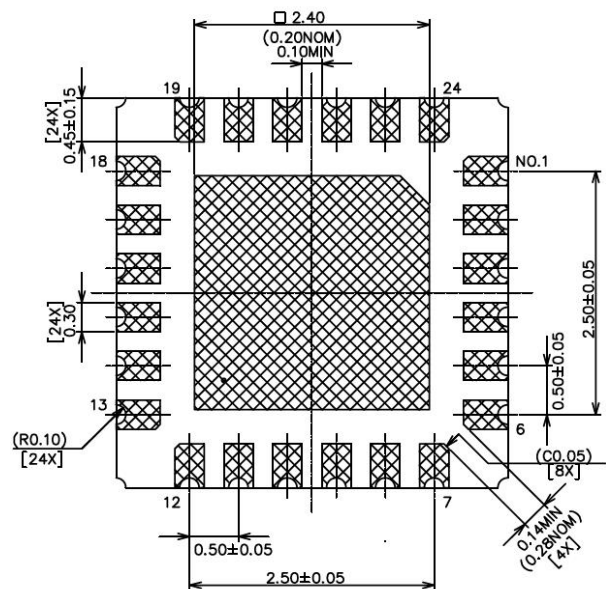


GaAs MMIC Attenuator Chip, DC-7GHz

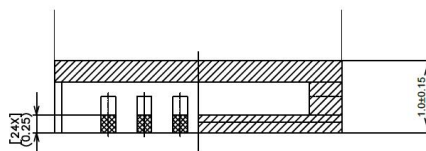
External structure



vertical view



Top view



Side view

The units in the figure are all millimeters.

Pin Definition

Pin number	Functional symbols	Function Description
3	RF1	The signal input terminal is externally connected to a 50 ohm circuit, and there is no integrated DC isolation capacitor inside the chip
16	RF2	The signal output terminal is externally connected to a 50 ohm circuit, and there is no integrated DC isolation capacitor inside the chip
20	VC	Control Port
23	VEE	Bias voltage
2、4、15、17	GND	The bottom of the chip needs to be well grounded with RF and DC
other	NC	No welding required, can be grounded

Truth table

Attenuation state	VC
0dB	0V
32dB	5V

GaAs MMIC Attenuator Chip, DC-7GHz

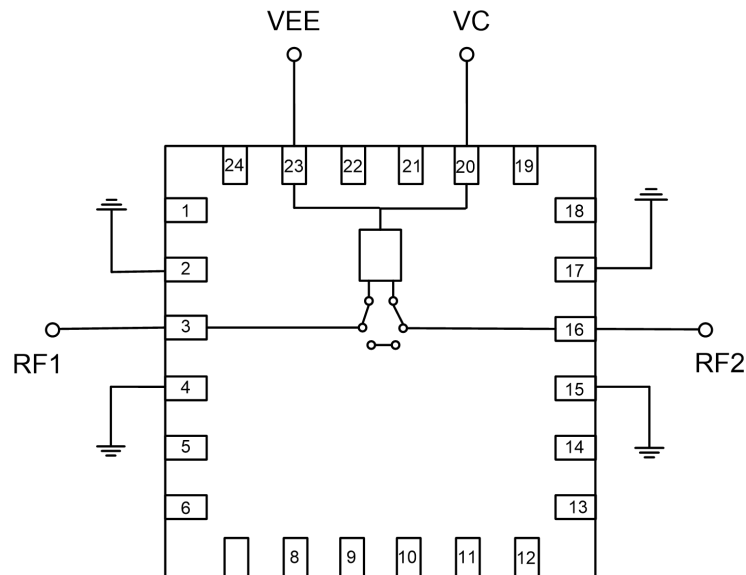
control voltage

State	Bias condition
Low (0)	0 ~ 2.7V
High (1)	3.5~ 5V

Bias voltage and current

VEE Range= -5Vdc±10%		
VEE (Vdc)	IEE (Typ.)(mA)	IEE (Max.)(mA)
-5V	1	1.3

Recommended circuit



Precautions for use

- Sealing material: Ceramic material that meets ROHS specifications
- Lead frame material: copper alloy
- Lead surface coating: gold, with a gold layer thickness greater than 1.5um
- Maximum reflow soldering peak temperature: 260 °C