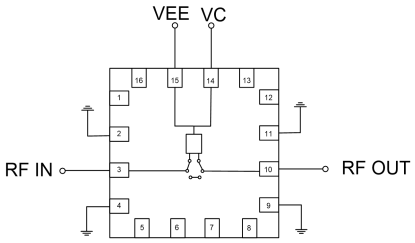
GDA-0007-1A-CQ3

GaAs MMIC 1 Digital Attenuator Chip, DC-7GHz

Performance characteristics

Frequency range: DC-7GHz
Insertion loss: 2.0dB@7GHz
Attenuation range: 32dB
Bit count: 1
Additional phase shift: 3°
50Ohm input/output
Chip size: QFN 3X3

Functional Block Diagram



Product Introduction

GDA-0007-1A-CQ3 is a GaAs MMIC 1-bit CNC attenuator chip, with a frequency range ranging from DC to 7GHz and an insertion loss of 2.0dB. The integrated driver inside the chip is powered by -5V and controlled by 0/+5V. The amplifier adopts a 3X3mm surface mount lead-free ceramic tube shell, 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	-	2.0	-	dB
Attenuation range		32		dB
Attenuation number		1		bite
Attenuation accuracy (all frequency bands)		1.0		dB
Phase fluctuation (full frequency band)		3.0		degree
Input return loss	-	20	-	dB
Output Return Loss	-	20	-	dB
Switching speed	-	40	-	ns

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P-1dB	-	23	-	dBm
Power supply voltage		-5		V
Control voltage		0/+5		V

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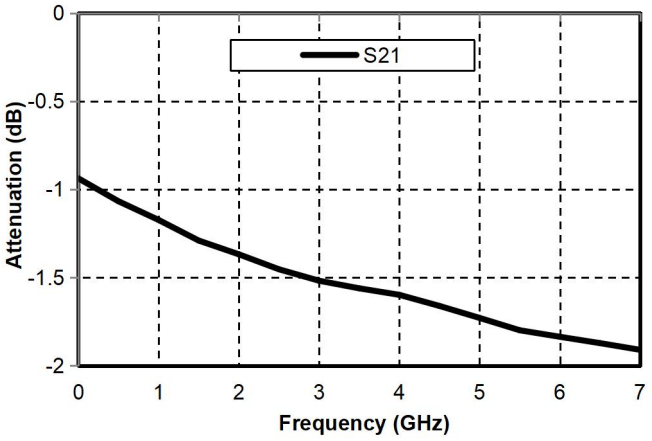
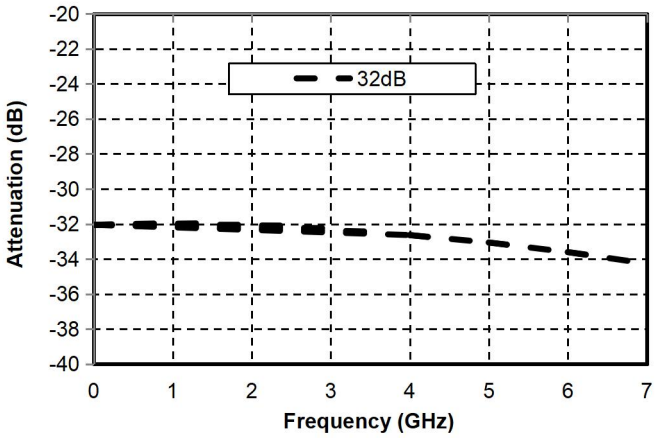
Main indicator testing curve

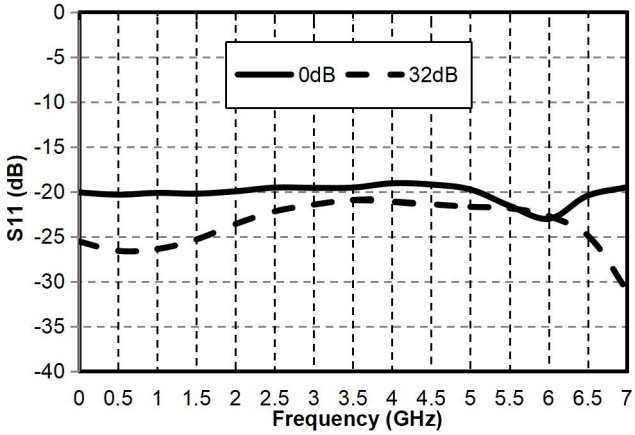
Insertion loss vs. frequency



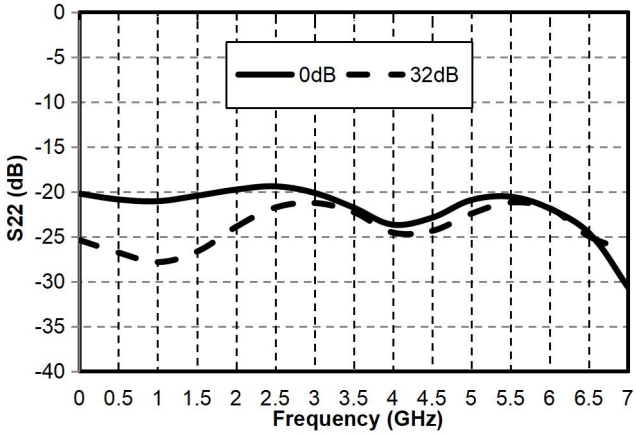
Reference attenuation state vs. frequency



Input Echo vs. Frequency

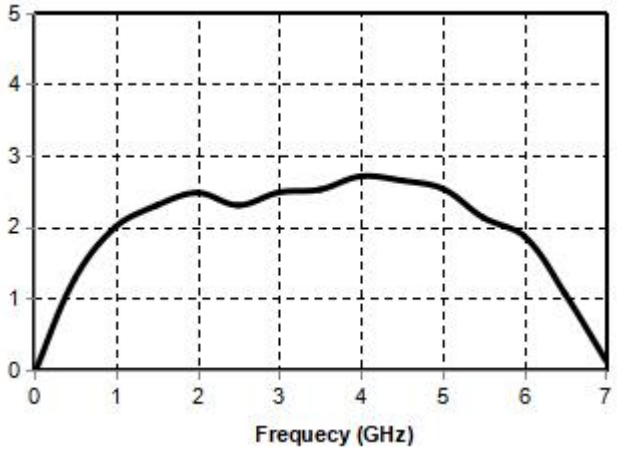


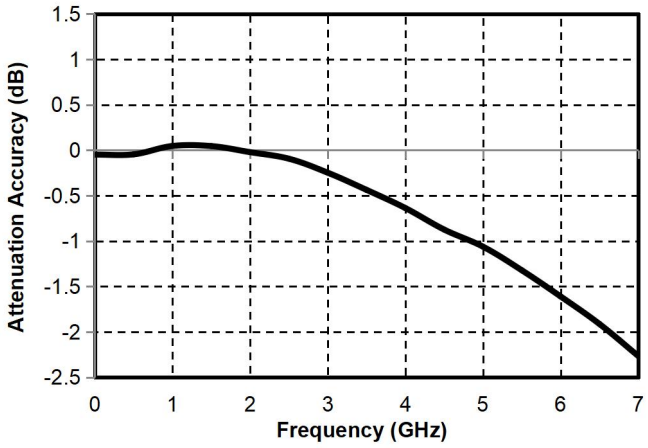
Output Echo vs. Frequency



Attenuation additional phase shift vs. frequency

Attenuation accuracy vs. frequency





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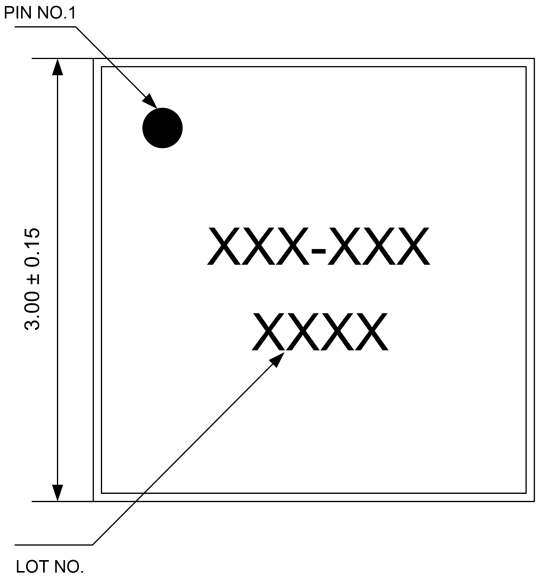
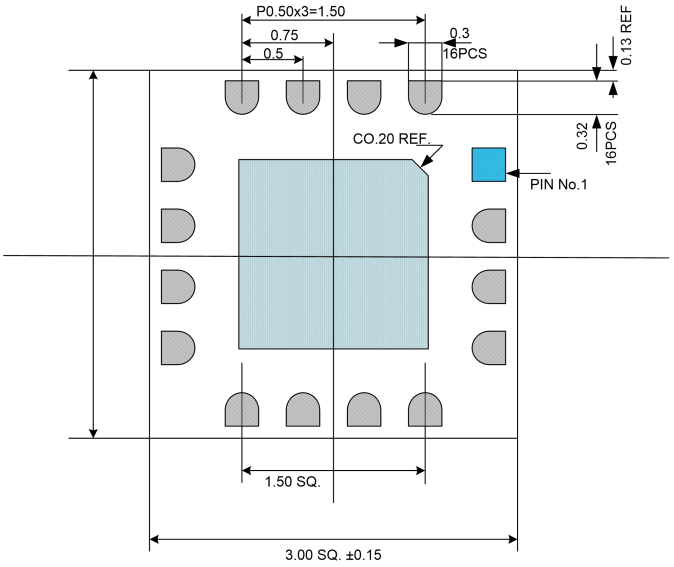
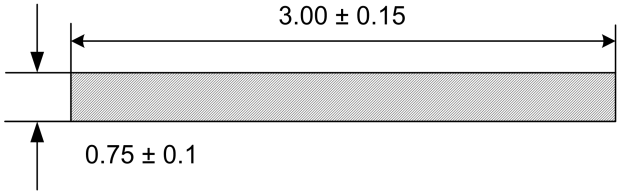
External structure



vertical view



Top view



Side view

The units in the figure are all millimeters, with an unspecified tolerance of ± 0.15mm		
Pin number	Functional symbols	Function Description

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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
10	RF2	The signal output terminal is externally connected to a 50 ohm circuit, and there is no integrated DC isolation capacitor inside the chip
14	VC	Control Port
15	VEE	Bias voltage
2、4、9、11	GND	The pins should have sufficient and good contact with the RF and DC ground
Chip bottom	GND	The bottom of the chip needs to have sufficient and good contact with RF and DC ground
other	NC	No welding required, can be grounded

Truth table	
Attenuation state	VC
0dB	0V
32dB	5V

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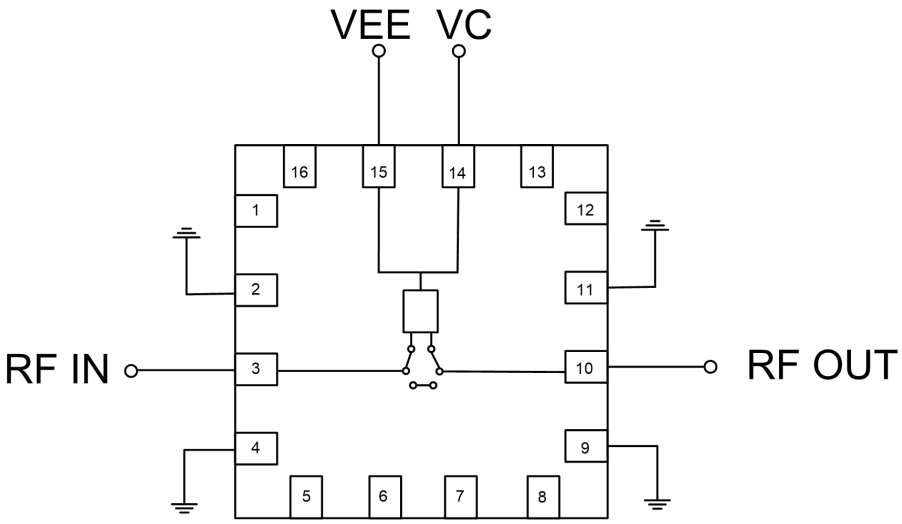
control voltage	
State	Bias condition
Low (0)	0 ~ 2.7V
High (1)	3 .5~ 5V

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 ROSH specifications
- Lead frame material: copper alloy
- Lead surface coating: gold, with a gold layer thickness greater than 0.3um MIN
- Maximum reflow soldering peak temperature: 260 ℃