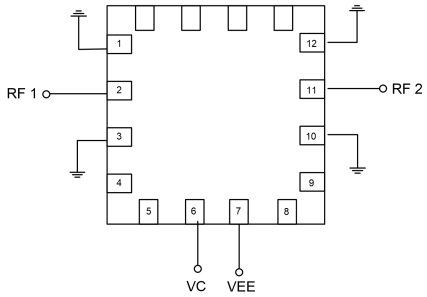
IDA-0020-1C-20-PD-CQ3

GaAs MMIC 1 Digital Attenuator Chip, DC-20GHz

Performance characteristics

Frequency range: DC-20GHz
Insertion loss: 2.2dB@20GHz
Attenuation range: 20dB
Bit count: 1
Attenuation accuracy: 1dB Additional phase shift: 3°
50Ohm input/output
Chip size: QFN 3X3

Functional Block Diagram



Product Introduction

GDA-0020-1C-20-PD-CQ3 is a GaAs MMIC 1-bit CNC attenuator chip, with a frequency range of DC~20GHz and insertion loss of 2.2dB. The integrated driver inside the chip is powered by -5V and controlled by 0/+5V (compatible with+3.3V). The amplifier adopts a 3X3mm surface mount lead-free ceramic tube shell, and the surface of the pin solder pads is treated with a gold plating process, 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~20		GHz
Insertion loss	-	2.2	-	dB
Attenuation range		20		dB
Attenuation number		1		bite
Attenuation accuracy (all frequency bands)		1.0		dB
Phase fluctuation (full frequency band)		3.0		degree
Input return loss	-	18	-	dB

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Output Return Loss	-	18	-	dB
Switching speed	-	20	-	ns
P-1dB @>1GHz	-	23	-	dBm
Power supply voltage	-	-5	-	V
Control voltage	0	-	+5	V
Current	-	2	-	mA

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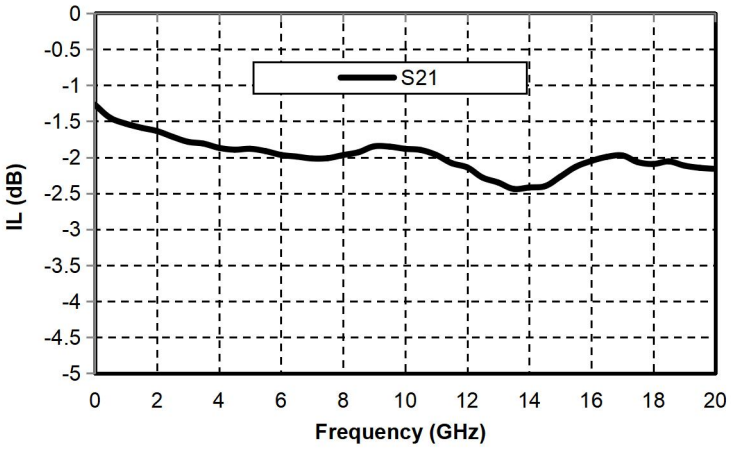
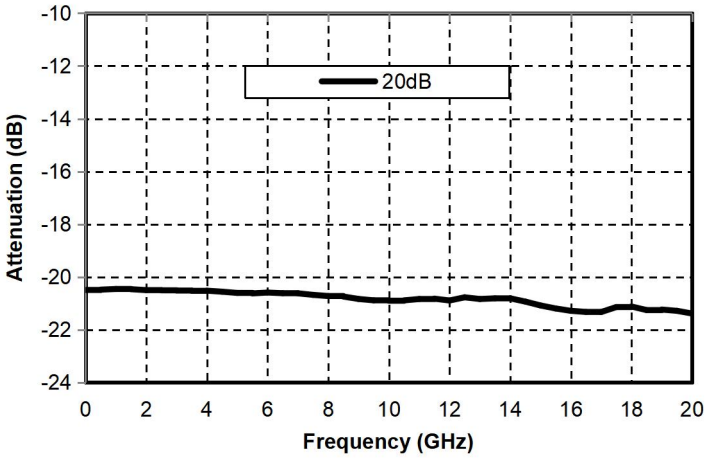
Main indicator testing curve

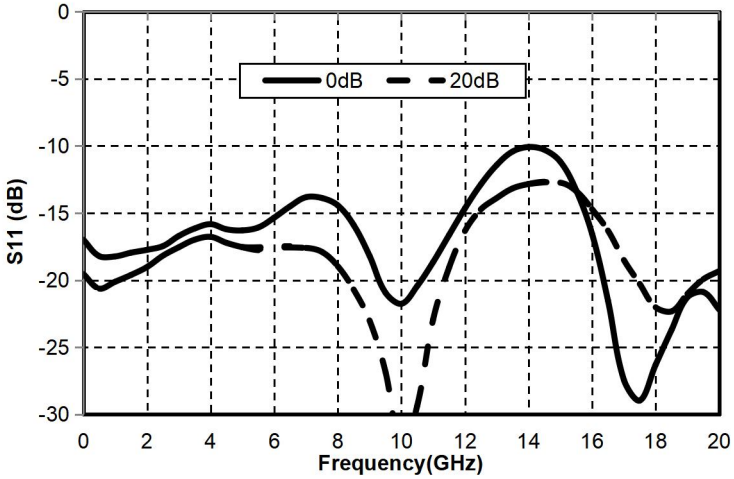
Insertion loss vs. frequency



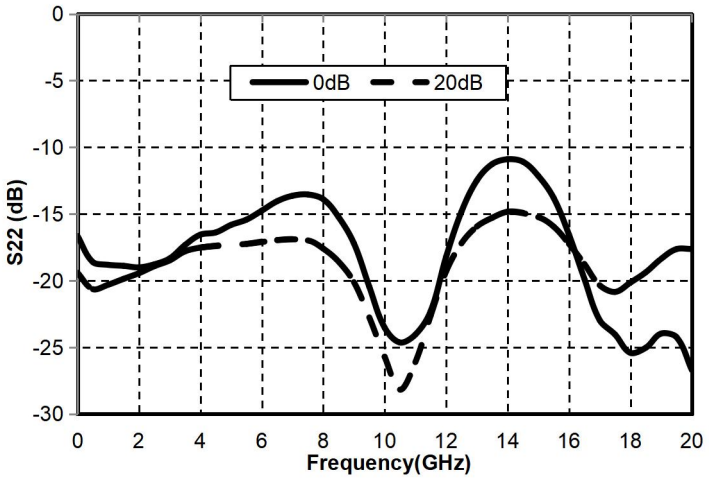
Reference attenuation state vs. frequency



Input Echo vs. Frequency



Output Echo vs. Frequency



Attenuation additional phase shift vs. frequency

Attenuation accuracy vs. frequency

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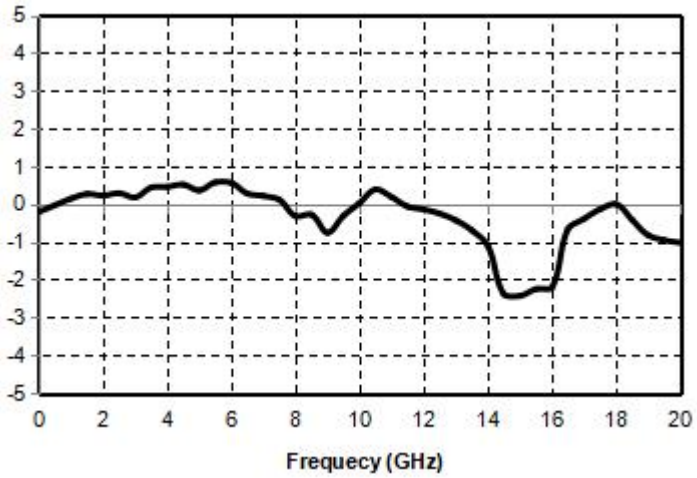

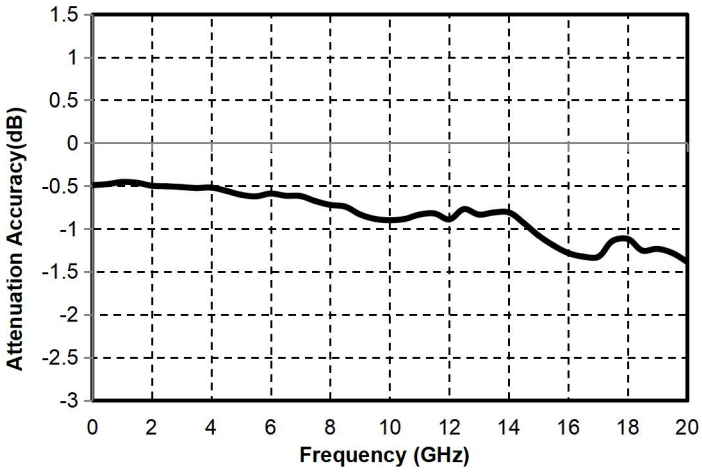

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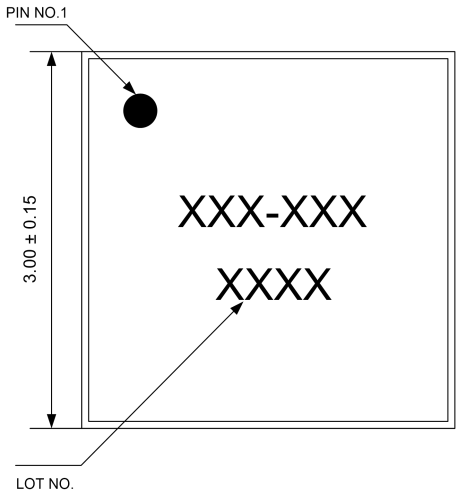
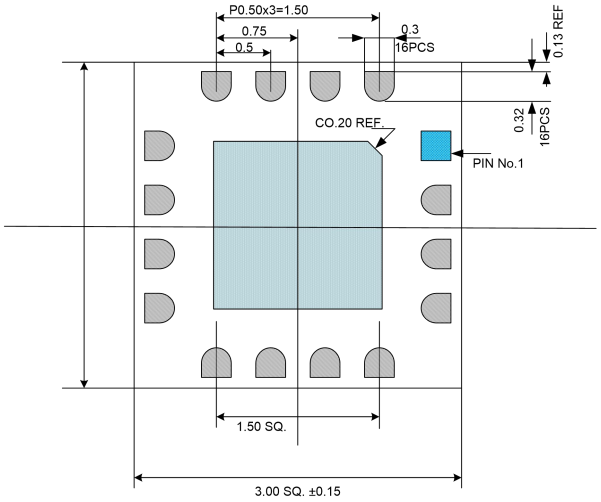
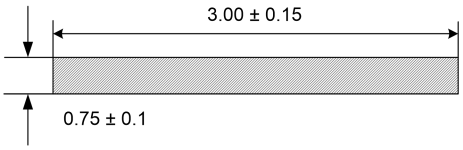
External structure



vertical view



Top view



Side view

The units in the figure are all millimeters, with an unspecified tolerance of ± 0.15mm

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Pin Definition

Bond point number	Functional symbols	Function Description
2	RFIN	The RF signal input terminal is externally connected to a 50 ohm circuit and requires an additional broadband DC isolation capacitor
11	RFOUT	The RF signal output terminal is externally connected to a 50 ohm circuit and requires an additional broadband DC isolation capacitor
6	VC	Attenuation control pads, see truth table for attenuation control details
7	VEE	Power supply terminal
1、3、10、12	GND	The pins need to be well grounded with RF and DC
Chip bottom	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

supply voltage	control input	Attenuation state
VEE	VC	/
-5V	0V	Initial state N=0: attenuation amount is 0
-5V	+5V	Attenuation state N=1: Attenuation amount is 20dB

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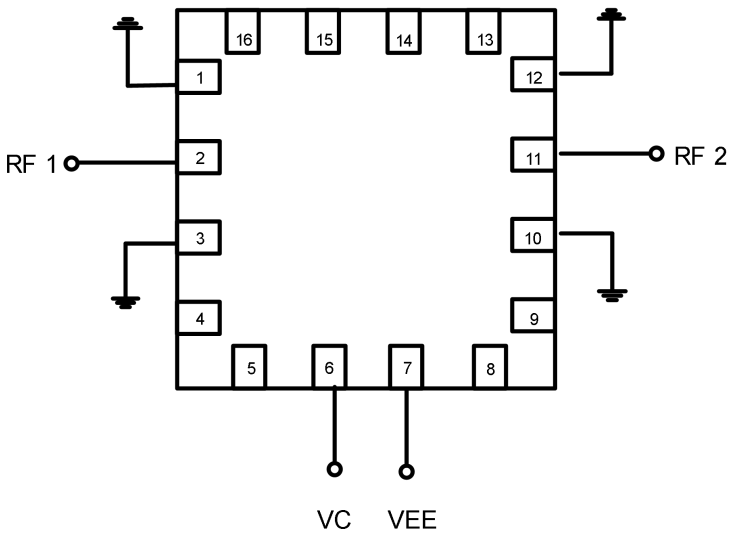
Recommended circuit



Precautions for use

- Sealing material: Ceramic material that meets ROSH specifications
- Lead surface coating: gold, with a gold layer thickness greater than 0.3um MIN
- Maximum reflow soldering peak temperature: 260 ℃

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