

**Performance features :**

- Frequency Band : DC~4GHz
- Insertion loss : 2dB
- Attenuation range : 0~31.5dB
- Stepping : 0.5dB
- Attenuation accuracy RMS : 0.23dB
- Input and output return loss : 15dB/15dB
- Control method : 0/-5V
- Switching time : 20ns
- Chip size : 2.1mm×0.95mm×0.1mm

**Product Description :**

The CW-DAT0004 is a GaAs MMIC 6-bit CNC attenuator chip with a frequency range covering DC~4GHz and a typical value of 2dB of insertion loss throughout the band with basic attenuation bits of 0.5dB, 1dB, 2dB, 4dB, 8dB and 16dB for a total attenuation of 31.5dB. The CW-DAT0004 is controlled by 0/-5V logic and There is no power consumption.

**Electrical parameters:** (  $T_A=25^{\circ}\text{C}$  , )

Indicators	Minimum value	Typical values	Maximum value	Unit
Frequency range	DC~4			GHz
Insertion loss	1.5	2	2.7	dB
Attenuation range	0	-	31.5	dB
Attenuation accuracy RMS	-	0.23	0.25	dB
Additional phase shift	-	±1	±4	Deg
Switching time	-	20	-	ns
Input return loss	14	15	-	dB
Output return loss	11	15	-	dB

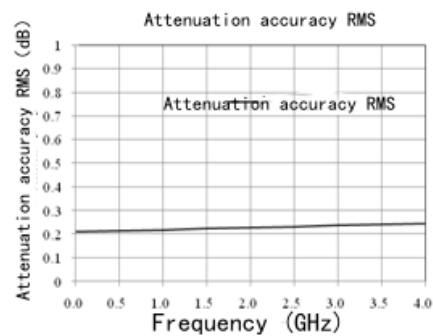
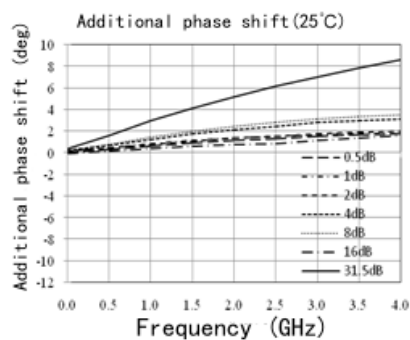
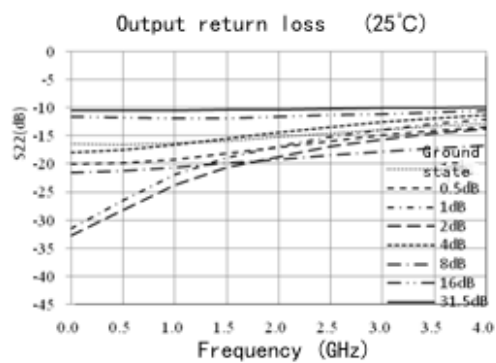
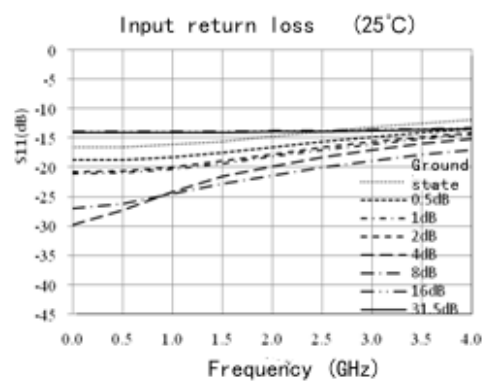
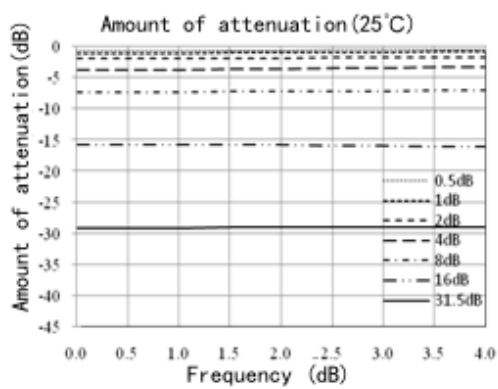
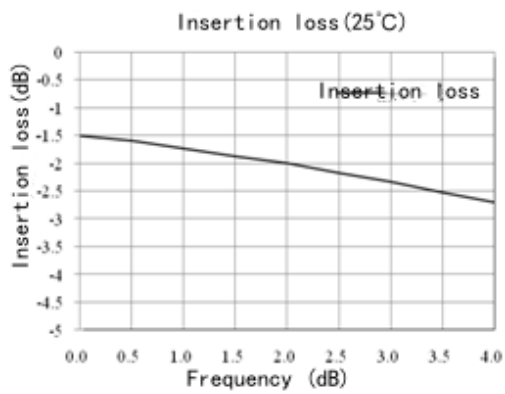
**Use of restriction parameters :** (Exceeding any of these maximum limits may result in permanent damage.)

Input power	+23dBm
Control voltage	+9V
Storage temperature	-65°C~150°C
Operating temperature	-55°C~125°C

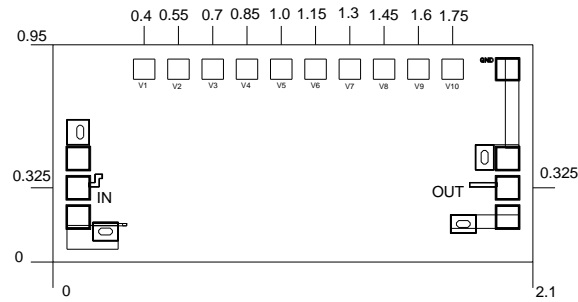
### Control truth table:

Control position attenuated state	16dB		8dB		0.5dB	4dB		2dB		1dB
	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10
Ground state	0V	-5V	0V	-5V	-5V	0V	-5V	0V	-5V	-5V
0.5dB	0V	-5V	0V	-5V	0V	0V	-5V	0V	-5V	-5V
1dB	0V	-5V	0V	-5V	-5V	0V	-5V	0V	-5V	0V
2dB	0V	-5V	0V	-5V	-5V	0V	-5V	-5V	0V	-5V
4dB	0V	-5V	0V	-5V	-5V	-5V	0V	0V	-5V	-5V
8dB	0V	-5V	-5V	0V	-5V	0V	-5V	0V	-5V	-5V
16dB	-5V	0V	0V	-5V	-5V	0V	-5V	0V	-5V	-5V
31.5dB	-5V	0V	-5V	0V	0V	-5V	0V	-5V	0V	0V

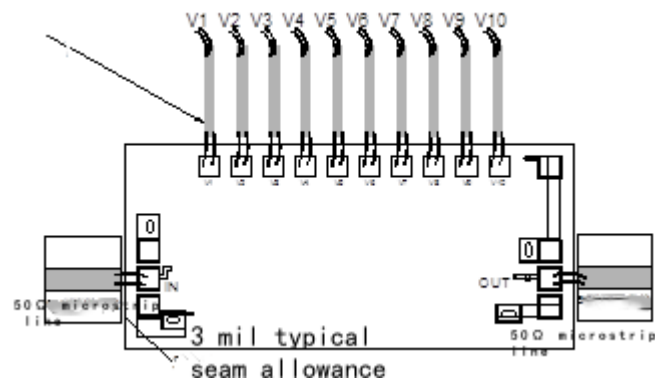
### Typical curves :



**Dimensional drawings :** (Unit mm)



**Suggested assembly drawing :**



**Instructions for use:**

**Storage:** The chips must be stored in a static-proof container and under nitrogen.

**Cleaning treatment:** Bare chips must be operated and used in a purified environment. It is forbidden to use liquid cleaning agents to clean the chips.

**ESD protection:** Please strictly comply with ESD protection requirements to avoid electrostatic damage to the device.

**Routine handling:** Please use vacuum grips or precision pointed tweezers to pick up the chips. Avoid touching the chip surface with tools or fingers during operation.

**Mounting operation:** Chip mounting can be done by eutectic soldering with AuSn solder or by bonding with conductive adhesive. The mounting surface must be clean and flat.

**Bonding operation:** 2 (25um diameter gold wire recommended) bonding wires are used for each input and output, with a bonding wire length of less than 250um being optimal. It is recommended to use the lowest possible ultrasonic energy. Bonding starts at the pressure point on the chip and ends at the package (or substrate).