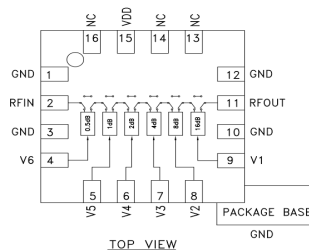


**Performance Characteristics:**

- Frequency band: 2.4~8GHz
- Insertion loss: 3.4 dB
- Attenuation range: 0.5 to 31.5dB
- Input/output voltage standing wave ratio: 1.4/1.3
- Package size: 3mmx3mm

**Functional Diagram**



**Product Description:**

CW425SP3 is a GaAs MMIC 6-bit CNC attenuator chip with a frequency coverage range of 2.4 to 8GHz and less than 4dB of insertion loss. The CW425SP3 uses +5V/0V logic control with a switching speed of less than 20ns.

**Electrical parameters:** (  $T_A=25^{\circ}C$ ,  $V_C=+5V/0V$  )

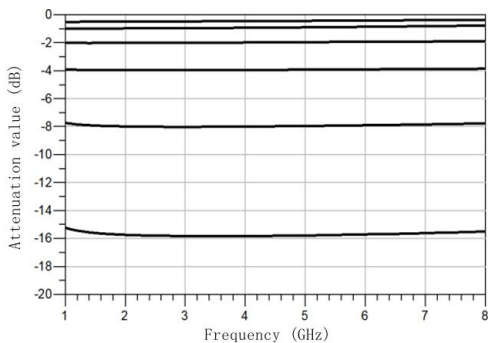
Indicators		Minimum	Typical value	Maximum value	Units
Frequency range		2.4~8			GHz
Insertion loss		-	3.4	4	dB
Attenuation range		-	31.5	-	dB
Attenuation accuracy	0.5dB	0.3	0.5	0.7	dB
	1dB	0.7	1	1.2	dB
	2dB	1.7	2	2.3	dB
	4dB	3.7	4	4.3	dB
	8dB	7.6	8	8.3	dB
	16dB	15.4	16	16.3	dB
Enter the standing wave ratio		-	1.4	-	dB
Output standing wave ratio		-	1.3	-	dB

**Use limiting parameters:**

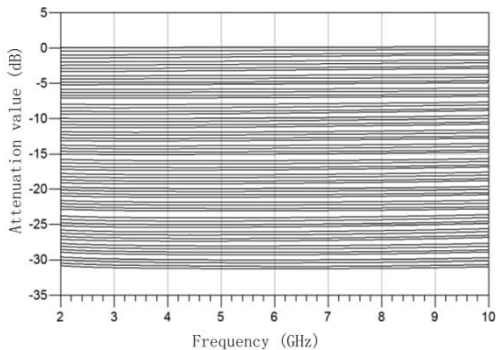
Control voltage range	Vdd+0.5V
Storage temperature	-65°C~150°C
Service temperature	-55°C~125°C

**Typical curve:**

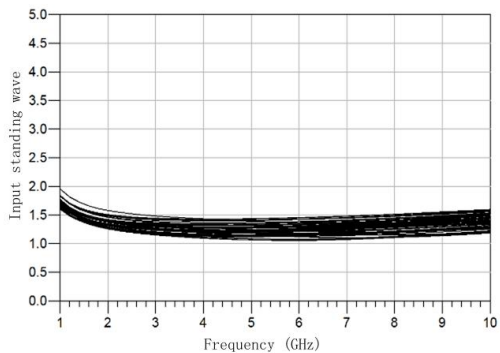
Insertion loss vs. frequency



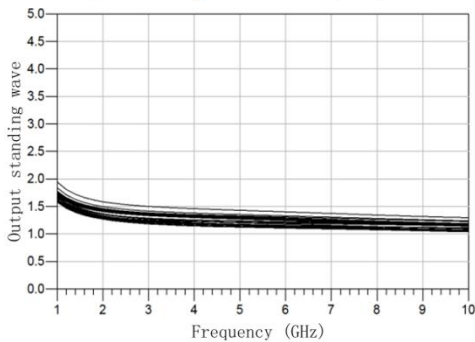
full attenuated state VS. Frequency



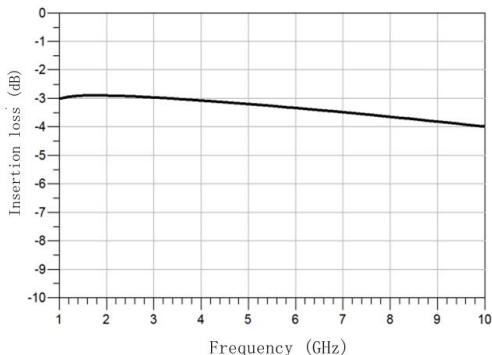
Input standing wave vs. Frequency



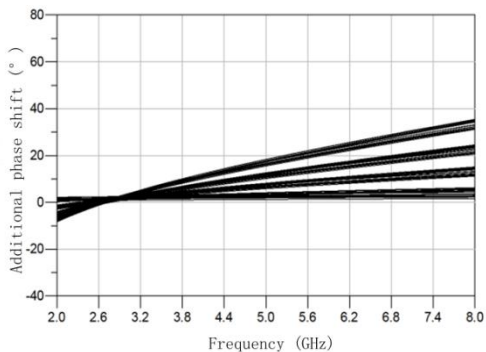
Output standing wave VS. Frequency



Insertion loss vs. frequency



additional phase shift VS. Frequency

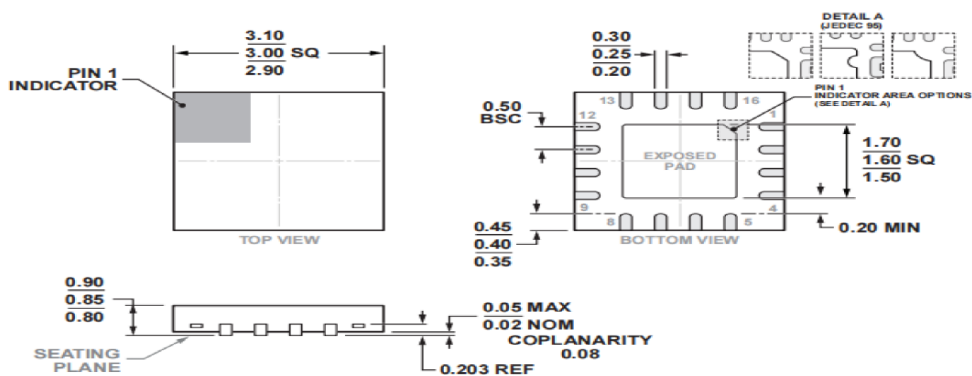


**Truth table:**

16dB	8dB	4dB	2dB	1dB	0.5dB	Status
V1	V2	V3	V4	V5	V6	
High	High	High	High	High	High	Reference state
High	High	High	High	High	Low	0.5dB
High	High	High	High	Low	High	1dB
High	High	High	Low	High	High	2dB
High	High	Low	High	High	High	4dB
High	Low	High	High	High	High	8dB
Low	High	High	High	High	High	16dB
Low	Low	Low	Low	Low	Low	31.5dB


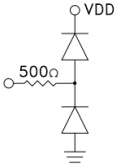
Note: Low=0~0.2V; High=Vdd±0.2V (Vdd=+3.3V~+5V)

**Outline Drawing**



COMPLIANT TO JEDEC STANDARDS MO-220-VEED-4

## Pin Descriptions

Pin Number	Function	Description	Interface Schematic
1, 3, 10, 12	GND	Package bottom has an exposed metal paddle that must also be connected to RF ground.	
2, 11	RFIN, RFOUT	This pin is DC coupled and matched to 50 Ohm. Blocking capacitors are required.	
4, 5, 6, 7, 8, 9	V1 - V6	See truth table and control voltage table.	
13, 14, 16	NC	This pin should be connected to PCB RF ground to maximize performance.	
15	VDD	Supply Voltage	

## Instructions:

**Storage:** The chip must be placed in a container with electrostatic protection and stored in a nitrogen environment.

**Cleaning treatment:** The bare chip must be operated and used in a purified environment. It is forbidden to use liquid cleaning agent to clean the chip.

**Electrostatic protection:** Strictly comply with the ESD protection requirements to avoid electrostatic damage to the components.

**General operation:** Use vacuum chuck or precision pointed tweezers to pick up the chip. Avoid touching the surface of the chip with tools or fingers during handling.

**Mounting operation:** The chip can be installed using AuSn solder eutectic welding or conductive adhesive bonding process. The mounting surface must be clean and flat.

**Bonding operation:** Input and output with 2 (recommended diameter of 25um gold wire) bonding wire, bonding wire length less than 250um is optimal. It is recommended to use the smallest possible ultrasonic energy. Bonding begins at the pressure point on the chip and ends at the package (or substrate).