

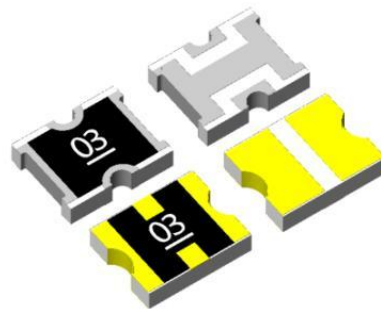
FA09 Series Thick Film Fixed Attenuators

1、Introduction

The FA09 series thick film fixed attenuator is a passive fixed attenuator fabricated by thick film technology. It features high reliability, small size, excellent frequency characteristics, no distortion and no phase shift. Widely used in microwave communication systems such as microwave power amplifiers, low noise amplifiers, T/R modules and active modules for gain adjustment. This series of products can directly replace the TS09 series fixed attenuators of American EMC Corporation.

2、Features

- ★ Attenuation Values Available: 1-10 in 1dB Increments
- ★ VSWR: ≤ 1.3 (typical)
- ★ Attenuation Accuracy: $\pm 0.5\text{dB}$
- ★ Maximum Operating Frequency: 20 GHz
- ★ Rated power: 0.2 W
- ★ Operating Temperature: -55°C to $+150^{\circ}\text{C}$
- ★ Mounting Options: Surface Mount or Wire Bondable



3、Applications

- ★ Microwave Communication Modules
- ★ Wireless Local Area Network
- ★ Electronic Countermeasure
- ★ Broadcasting and Television
- ★ Satellite Communication
- ★ Internet of Things

4、How To Order

Model	Frequency	Attenuation Value	Mounting Style	Lead Marking
FA09	20	03	W4	S
①	②	③	④	⑤

① FA09: Denotes Thick Film Fixed Attenuator, "FA" stands for fixed attenuator, and "09" is the series identification code.

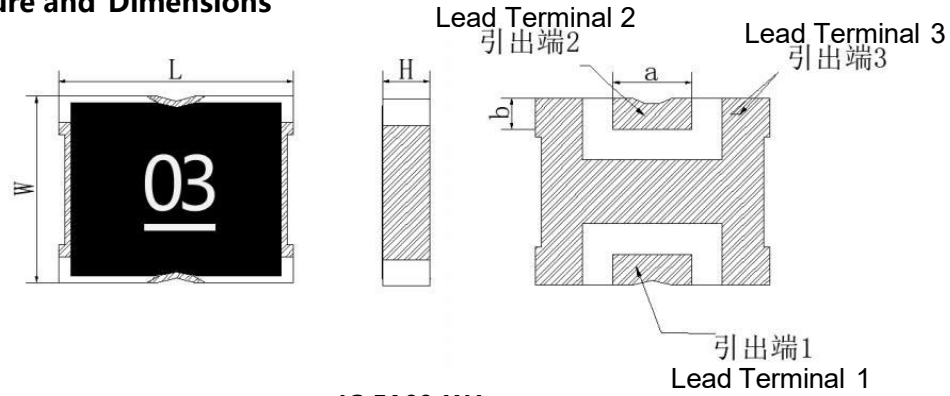
② Frequency: Represented by two significant digits, unit in GHz, e.g., 20 denotes 20GHz.

③ Attenuation Value: Represented by two significant digits, unit in dB, e.g., 03 denotes 3dB.

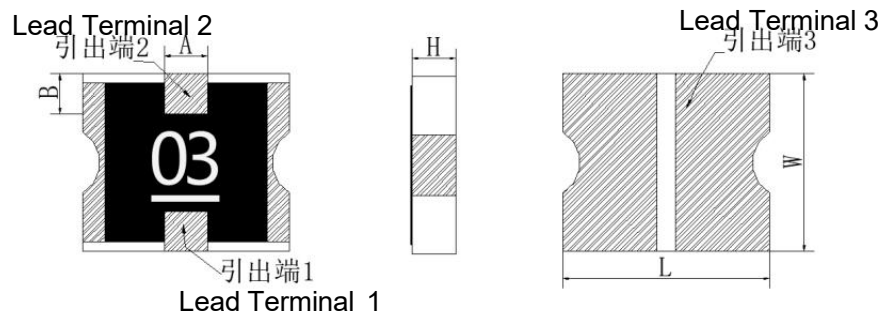
④ Mounting Style: "WB2" denotes gold electrode with double-sided edge wrapping to ground; "W4" denotes tin-lead electrode with four-sided edge wrapping.

⑤ Lead Marking: "S" indicates lead-containing material; gold-electrode versions do not carry this mark.

5、Structure and Dimensions



JC-FA09-W4



JC-FA09-WB2

Note: Attenuators are identified by a two-digit code followed underscore, e.g., "03" denotes 3dB, "10" denotes 10dB.

Dimensions Table

Series	Dimensions (mm)						
	L	W	H	A	B	a	b
FA09-W4	1.91 ±0.15	1.52 ±0.15	0.41 ±0.15	/	/	0.64 ±0.12	0.25± 0.12
FA09-WB2	1.78 ±0.15	1.52 ±0.15	0.41 ±0.15	0.38 ±0.15	0.38 ±0.15		/

Terminal Definitions

Lead Terminal No.	Function Symbol	Function Description
1	RF I/O	Signal Input/Output Terminal
2	RF I/O	Signal Input/Output Terminal
3	GND	Signal Ground Terminal

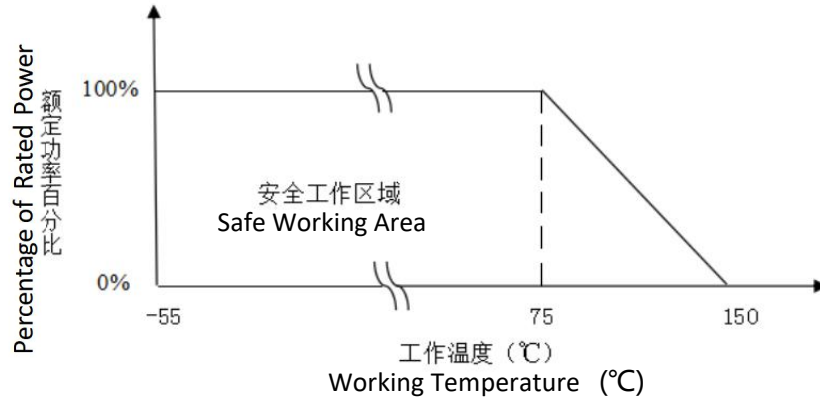
6、Selector Chart

Model	Frequency Range (GHz)	Attenuation Value (dB)	Rated Power (W)	Mounting Option
FA092000W4S	DC-20	0	0.2	SMT
FA092001W4S	DC-20	1	0.2	SMT
FA092002W4S	DC-20	2	0.2	SMT
FA092003W4S	DC-20	3	0.2	SMT
FA092004W4S	DC-20	4	0.2	SMT
FA092005W4S	DC-20	5	0.2	SMT
FA092006W4S	DC-20	6	0.2	SMT
FA092007W4S	DC-20	7	0.2	SMT
FA092008W4S	DC-20	8	0.2	SMT
FA092009W4S	DC-20	9	0.2	SMT
FA092010W4S	DC-20	10	0.2	SMT
FA092000WB2	DC-20	0	0.2	Micro-assembly
FA092001WB2	DC-20	1	0.2	Micro-assembly
FA092002WB2	DC-20	2	0.2	Micro-assembly
FA092003WB2	DC-20	3	0.2	Micro-assembly
FA092004WB2	DC-20	4	0.2	Micro-assembly
FA092005WB2	DC-20	5	0.2	Micro-assembly
FA092006WB2	DC-20	6	0.2	Micro-assembly
FA092007WB2	DC-20	7	0.2	Micro-assembly
FA092008WB2	DC-20	8	0.2	Micro-assembly
FA092009WB2	DC-20	9	0.2	Micro-assembly
FA092010WB2	DC-20	10	0.2	Micro-assembly

7、Main Parameter Curves

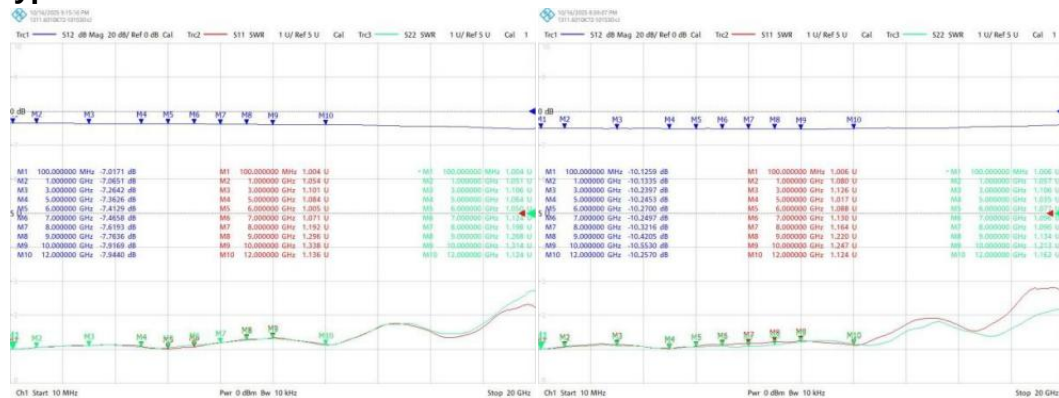
Power Derating Curve:

It can be used at full power when the temperature range is $-55^{\circ}\text{C} \sim 75^{\circ}\text{C}$. When temperature exceeds 75°C , power must be derated according to the specified curve.



Rated Power Derating Curve

Typical Test Datas:

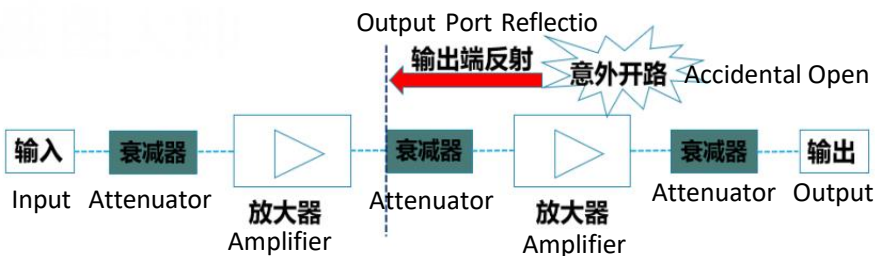


FA03-7dB

FA03-10dB

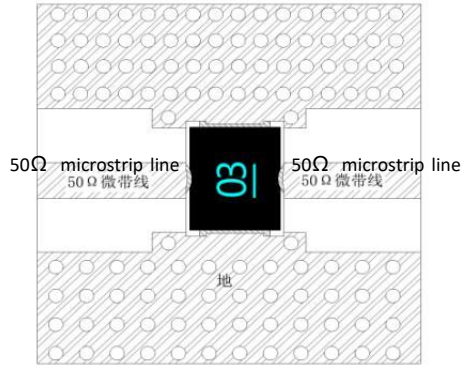
8、Typical Applications

Attenuators are used in radar, microwave communication and other fields, and play the role of power adjustment and isolation protection in microwave T/R modules and power modules.

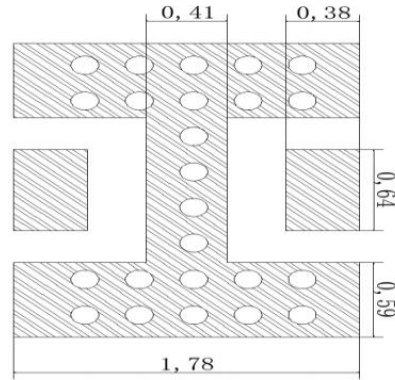


9、Mounting and Precautions

The recommended mounting method for products with W4 package structure is shown in the mounting diagram, and the recommended pad structure and dimensions are shown in the pad diagram and pad dimension table.



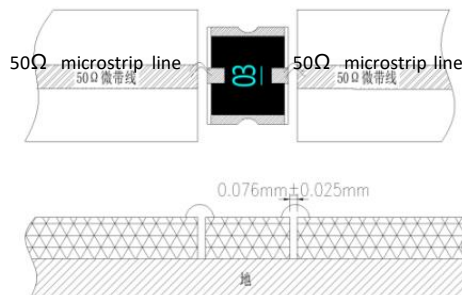
Mounting Diagram of W4 Structure



Pad Diagram of W4 Structure

Precautions:

- (1) Reflow soldering is recommended; the peak time of reflow is generally 15s ~ 60s, maximum no more than 90s, and the peak temperature shall not exceed 245°C.
- (2) For manual soldering, the tip diameter of the soldering iron shall not exceed 1mm; a temperature-controllable soldering iron is preferred, and the temperature of the soldering iron tip shall not exceed 300°C. If an ordinary soldering iron is used, its power should not be greater than 20W, and the soldering time should not exceed 5s.
- (3) Rework soldering should be used with caution.
- (4) The back of the attenuator with WB2 structure is bonded to the ground with high and low temperature resistant conductive adhesive (curing temperature $\leq 200^{\circ}\text{C}$), and the input and output terminals are mounted by gold wire or gold ribbon bonding.



Mounting Schematic for WB2 Structure