

SMD & DIP Variable Attenuator

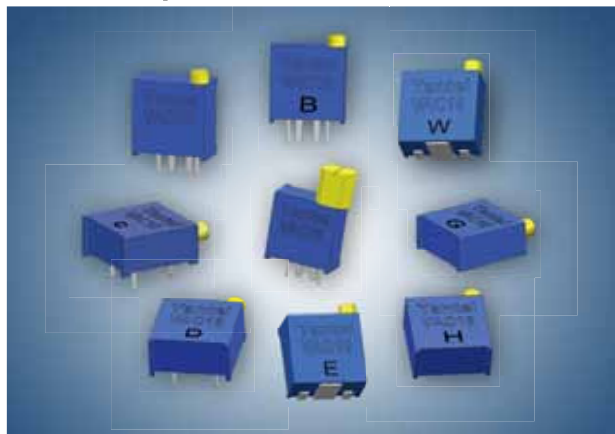
可变衰减器

VAC Series, Continuous 连续式(DC ~ 2GHz)

Patent product

Yantel

Key Patents Lead Microwave Tech



Features

- Continuous variable : 0~15dB
- Power rating : 1W
- Able to be mounted soldered on the PCB
- Wide frequency range: DC ~ 2GHz available
- Low VSWR
- Low insertion loss
- High performance, competitive price
- Wide attenuation range
- Impedance: 50Ω or 75Ω
- Operating temperature:-40°C ~ +105°C
- Compared with digital attenuators, zero distortion, no extra IP3, lower noise, higher reliability.
- Thick film
- Customized attenuation values available
- SMD package, DIP package

Continuous Type Spec.

Part No.	VAC18*	VAC18B*	VAC18X*	VAC18C*	VAC18D*	VAC18Z*	VAC18E*	VAC18F*	VAC18W*
Attenuation Range (dB)	0~15	0~15	0~8	0~15	0~15	0~8	0~15	0~15	0~8
Attenuation Accuracy (dB)	DC~1GHz	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	1~2GHz	1.5	1.6	1.5	1.5	1.6	1.5	1.6	1.5
Typ. VSWR:1	DC~1GHz	1.3	1.35	1.35	1.3	1.35	1.35	1.3	1.35
	1~2GHz	1.5	1.55	1.55	1.5	1.55	1.55	1.5	1.55
Impedance (Ω)	50 Ω	75 Ω	50 Ω	50 Ω	75 Ω	50 Ω	50 Ω	75 Ω	50 Ω
Power rating (w)	1	1	1	1	1	1	1	1	1
Dimensions (mm)	9.5×10×5	9.5×10×5	9.5×10×5	9.5×10×5	9.5×10×5	9.5×10×5	9.5×10×5	9.5×10×5	9.5×10×5
	Soldering	DIP	DIP	DIP	DIP	DIP	SMD	SMD	SMD
Product photo									
	VAC18	VAC18BH	VAC18X	VAC18C	VAC18DH	VAC18Z	VAC18E	VAC18FH	VAC18W

Note: * : "H" represents a handling shaft, * : no code represents without handling shaft.

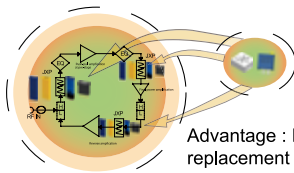
VAD/VAC Applications:

- CATV Amplifier, Optical Workstation, Optical Transceiver



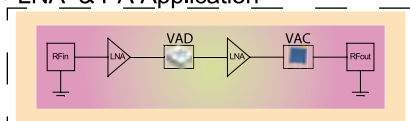
Advantage : Adjust the gain of each power amplifier, meeting the requirement "gain fluctuation within 1dB range" for multi-channel power amplifiers.

- Replacing JXP Fixed Attenuator (in CATV)



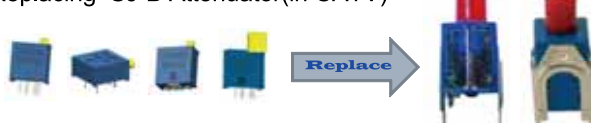
Advantage : Reduce components count as a replacement of JXP fixed attenuators, cut cost and simplify operation.

- LNA & PA Application



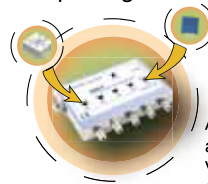
Advantage: Accurate gain adjustment for RF signal, available in accurate adjustment of small attenuation for pre-stage amplifier and accurate adjustment of big attenuation for final amplifier.

- Replacing SJ-B Attenuator(in CATV)



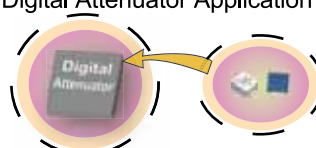
Advantage : Ultra small size and excellent RF Performance(Low VSWR, low insertion loss, high attenuation accuracy)at 1GHz, 1.5GHz & 2GHz, catering for the miniaturization and higher frequency trend in CATV application.

- Replacing Potentiometer(in CATV)



Advantage : Operate from DC to 3GHz, high attenuation accuracy, available in step and continuous types. Low VSWR, low insertion loss. Effectively tune the gain flatness in CATV bandwidth. Ideal for CATV equalizer.

- Digital Attenuator Application



Advantage: Compared with digital attenuators, zero distortion, no extra IP3, lower noise, higher reliability.

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SMD & DIP Variable Attenuator

可变衰减器

VAD Series, Step 步进式(DC ~ 3GHz)

Patent product

Yantel

Key Patents Lead Microwave Tech



Features

- Step variable
- SMD package, ultra-small size, able to be mounted
- Wide frequency range: DC ~ 3GHz
- Low VSWR
- Low insertion loss
- High performance, competitive price
- Wide attenuation range
- Step attenuation values flexible and selectable
- Power handling: 125mW
- Impedance: 50Ω or 75Ω
- Operating temperature: -40°C ~ +105°C
- Compared with digital attenuators, zero distortion, no extra IP3, lower noise, higher reliability.
- At least 360 times (60 circles, 6 times as a circle) tuning operation
- Customized attenuation values available

Model Description

VAD ** ** * ** *
 Attenuation Range Step value Impedance Package shaft

e.g.: VAD0102BDH

Attenuation Range :01 represent 0~1dB,

Step value :02 represent step value 0.2dB,

Impedance: "B" represents 75Ω impedance, "no code" represents 50Ω impedance.

Package: "DL" represents lateral DIP package, "D" represents vertical DIP package, "no code" represents SMD package.

shaft: "H" represents a handling shaft, "no code" represents without handling shaft.

	VADXXX (50Ω)	VADXXXB (75Ω)	VADXXXH (50Ω)	VADXXXBH (75Ω)
SMD Type				
Vertical DIP Type				
Lateral DIP Type				



Free Samples and Evaluation boards are available upon request.

Step Type Spec.

• Frequency range: DC ~ 2.5GHz • Power rating: 125mW • Impedance: 50Ω or 75Ω Dimensions(mm):10X11X6

Part No.	Attenuation Range(dB)	Step Value (dB)	Impedance (Ω)	Typ.VSWR:1		Insertion Loss at 0 dB DC-2 GHz(dB)	Attenuation Accuracy(dB) DC-2GHz
				DC-2GHz	2GHz-2.5GHz		
VAD0102***	0~1	0.2	50	1.30	1.40	0.35	1
VAD0203***	0~1.8	0.3	50	1.35	1.45	0.35	1
VAD0204***	0~2.0	0.4	50	1.35	1.45	0.35	1
VAD0305***	0~2.5	0.5	50	1.35	1.45	0.35	1
VAD0306***	0~3	0.6	50	1.35	1.45	0.35	1
VAD0510***	0~5	1	50	1.4	1.6	0.35	1.3
VAD0815***	0~7.5	1.5	50	1.45	1.65	0.35	1.5
VAD1020***	0~10	2	50	1.45	1.65	0.35	1.3
VAD1325***	0~12.5	2.5	50	1.5 (at 1.0GHz)	-	0.35	1.2 (at 1.0GHz)
VAD1530***	0~15	3	50	1.5 (at 1.0GHz)	-	0.35	1.2 (at 1.0GHz)
Application1A	0~15	1	50	1.5 (at 1.0GHz)	-	0.35	1.2 (at 1.0GHz)
Application2A	0~20	1	50	1.5 (at 1.0GHz)	-	0.35	1.2 (at 1.0GHz)
VAD0102B***	0~1	0.2	75	1.3	1.45	0.3	0.5
VAD0203B***	0~1.8	0.3	75	1.3	1.45	0.3	0.5
VAD0204B***	0~2.0	0.4	75	1.35	1.45	0.3	0.5
VAD0305B***	0~2.5	0.5	75	1.35	1.45	0.3	0.6
VAD0306B***	0~3	0.6	75	1.35	1.45	0.3	0.6
VAD0510B***	0~5	1	75	1.35	1.45	0.3	1
VAD0815B***	0~7.5	1.5	75	1.35	1.45	0.3	1
VAD1020B***	0~10	2	75	1.35	1.45	0.3	1.2
VAD1325B***	0~12.5	2.5	75	1.6 (at 1.5GHz)	-	0.3	1 (at 1.0GHz)
VAD1530B***	0~15	3	75	1.45 (at 1.0GHz)	-	0.3	1 (at 1.0GHz)
Application1B	0~15	1	75	1.45 (at 1.0GHz)	-	0.3	1 (at 1.0GHz)
Application2B	0~20	1	75	1.45 (at 1.0GHz)	-	0.3	1 (at 1.0GHz)

Option: VAD in DIP Package is available with a handling shaft. Part number with a suffix H represents VAD with a handling shaft. For example, VAD1530BH is 0-15dB,3dB/step,75ohm,DIP,with handling shaft.

Application Note:

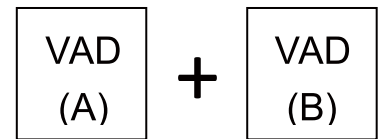
Example 1:

You need 2 sets(pieces) of VAD,it can meet the attenuation range:0 to 17 dB by 1dB/step

VAD(A): 0,1,2,3,4,5dB;
VAD(B): 0, 6,12,12,12,12dB;

You can get the attenuation value are:A+B=M dB

Application 1: When A=0, 1, 2, 3, 4, or 5dB, B=0dB, then M=A+B=0, 1, 2, 3, 4 or 5dB;
Application 2: When A=0, 1, 2, 3, 4, or 5dB, B=6dB, then M=A+B=6, 7, 8, 9, 10 or 11dB;
Application 3: When A=0, 1, 2, 3, 4, or 5dB, B=12dB, then M=A+B=12, 13, 14, 15, 16 or 17dB;



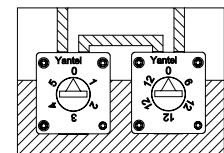
Example 2:

You need 2 sets(pieces) of VAD,it can meet the attenuation range:0 to 20 dB by 1dB/step

VAD(A): 0,1,2,3,4,5dB;
VAD(B): 0, 6,12,15,15,15dB;

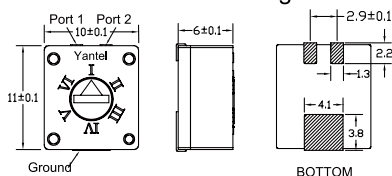
You can get the attenuation value are:A+B=M dB

Application 1: When A=0, 1, 2, 3, 4, or 5dB, B=0dB, then M=A+B=0, 1, 2, 3, 4 or 5dB;
Application 2: When A=0, 1, 2, 3, 4, or 5dB, B=6dB, then M=A+B=6, 7, 8, 9, 10 or 11dB;
Application 3: When A=0, 1, 2, 3, 4, or 5dB, B=12dB, then M=A+B=12, 13, 14, 15, 16 or 17dB;
Application 4: When A=0, 1, 2, 3, 4, or 5dB, B=15dB, then M=A+B=15, 16, 17, 18, 19 or 20dB;

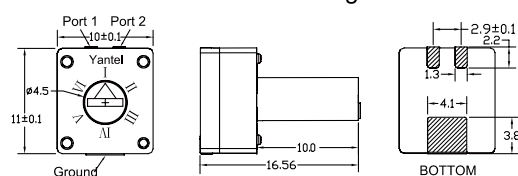


Outline Dimensions (unit: mm)

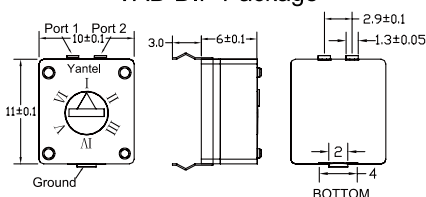
VAD SMD Package



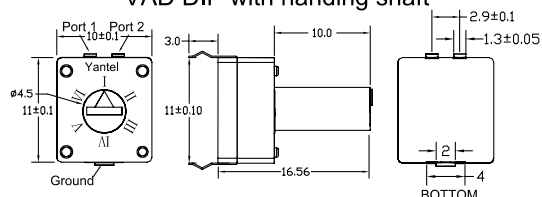
VAD-with handling shaft



VAD DIP Package



VAD DIP with handling shaft



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