AVANTEK

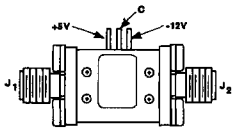
AHS Series
Thin-Film Switches
Single Pole Single Throw
2 to 18 GHz

FEATURES

- Full Band 2 to 18 GHz Performance
- Low Loss/High Isolation Options
- Reliable Thin-Film Construction
- Removable SMA Connectors
- Low Insertion Loss
- Low VSWR
- High Isolation
- High Speed

APPLICATIONS

- Receiver Selection
- Antenna Selection
- Signal Sampling
- Active Protection Circuits
- Local Oscillator Selection
- Channelized Receivers



SPST, p. 16–40

DESCRIPTION

The AHS-0 Series (low loss) and the AHS-1 Series (high isolation) are designed to operate over the full 2 to 18 GHz band while providing excellent insertion loss, VSWR and isolation performance. They are available with high speed hybrid TTL driver assemblies and have maximum switching times under 25 nsec. The RF circuitry is fabricated using thin-film hybrid construction on ceramic substrates for high reliability. The AHS-0 Series uses two PIN diodes in a shunt configuration for very low insertion loss; the AHS-1 Series uses four shunt diodes to achieve excellent isolation over the entire 2 to 18 GHz band.

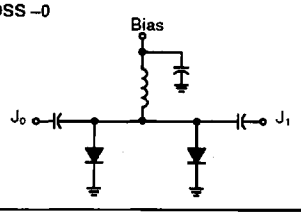
AVANPAK™ THIN-FILM PIN-DIODE SWITCHES (Guaranteed Specifications at +25°C Case Temperature)

Frequency	2.0 to 4.0 GHz			4.0 to 8.0 GHz			8.0 to 12.0 GHz			12.0 to 18.0 GHz		
Type and Model	Insertion Loss (dB) Max.	VSWR Max.	Isolation (dB) Min.	Insertion Loss (dB) Max.	VSWR Max.	Isolation (dB) Min.	Insertion Loss (dB) Max.	VSWR Max.	Isolation (dB) Min.	Insertion Loss (dB) Max.	VSWR Max.	Isolation (dB) Min.
Single Pole Single Throw (SPST), Low Loss — Speed < 25 nsec.												
AHS0402-00X	0.9	1.8	40	—	—	—	—	—	—	—	—	—
AHS0802-00X	0.9	1.8	40	1.2	1.8	40	—	—	—	—	—	—
AHS1202-00X	0.9	1.8	40	1.2	1.8	40	1.7	1.8	40	—	—	—
AHS1802-00X	0.9	1.8	40	1.2	1.8	40	1.7	1.8	40	2.1	1.8	40
Single Pole Single Throw (SPST), High Isolation — Speed < 25 nsec.												
AHS0402-1XX	1.1	1.8	60	—	—	—	—	—	—	—	—	—
AHS0802-1XX	1.1	1.8	60	1.4	1.8	60	—	—	—	—	—	—
AHS1202-1XX	1.1	1.8	60	1.4	1.8	60	1.9	1.8	60	—	—	—
AHS1802-1XX	1.1	1.8	60	1.4	1.8	60	1.9	1.8	60	2.4	1.8	60

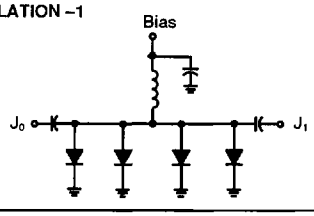
NOTES:
1. See next page for Model Number descriptions.
2. Speed is defined as 50% input trigger to 90% RF change including driver delay. Rise and fall times < 10 nanoseconds typical.
3. Switching speed measurements are made using detected video with RF input power of +10 dBm at a frequency of 10 GHz.
4. Isolation is measured at +10 dBm input power. All other specifications are measured at 0 dBm input power.
5. Operating temperature: –55° to +100°C.

SCHEMATICS

LOW LOSS –0



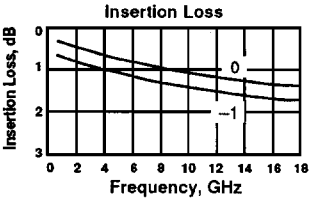
HIGH ISOLATION –1

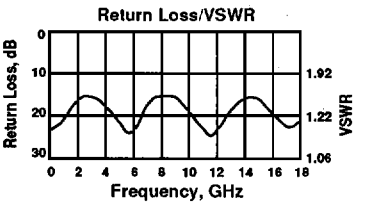


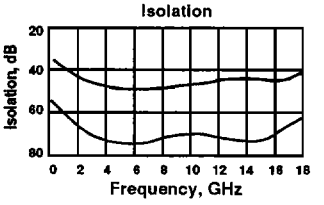
WEIGHT: (typical) AHS-0: With Connectors and Spacer = 11.5 grams; Without Connectors and Spacer = 5.5 grams
AHS–1: With Connectors and Spacer = 12.5 grams; Without Connectors and Spacer = 6.5 grams

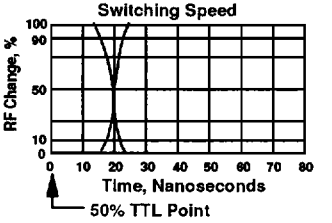
MAXIMUM RATINGS

DC Voltage	+5.5 V/–16.5V
Rf Input Power (CW/Pulse)	
Into "ON" PATH	1 W CW/10 W 1 µsec Pulse Width
Into "OFF" PATH	1 W CW/10 W 1 µsec Pulse Width
Operating Case Temperature	125°C
Storage Temperature	150°C
"R" Series Burn-In Temperature	125°C









MODEL NUMBERING DESCRIPTION

TYPICAL PART NUMBER

AHS1202-124

- Type (Single Throw)
- Upper Frequency, GHz
- Lower Frequency, GHz
- Connector Option
- Driver Option
- Isolation Option:
  - 0 = Low Loss
  - 1 = High Isolation

CONNECTOR OPTION TABLE		
Dash No.	J1	J2
XX1	FEM	FEM
XX2	NONE	NONE
XX3	MALE	MALE
XX4	MALE	FEM
XX5	FEM	MALE

DRIVER OPTION TABLE		
	Control Input C	
Dash No.	ON	OFF
X0X	–10V	+40 mA
X1X	TTL LO	TTL HI
X2X	TTL HI	TTL LO

Driver Bias: +5 ±0.5V at 75 mA maximum
–5 to –15V at 75 mA maximum
TTL LO = 0 to .8V at 1.6 mA maximum sink
TTL HI = 2.0 to 0.5V at 40 µA maximum source

Driverless Operation (–X0X): External current limiting required for positive voltage supply. For example, +5V supply requires a 100Ω resistor connected from supply to control pin to limit control pin current to +40 mA. Different resistance values can be calculated to accommodate other voltage supplies.