Features

- **50Ω Terminated Switch**
- **Low Insertion Loss:** 0.70 dB @ 2.7 GHz
  0.90 dB @ 3.8 GHz
  1.10 dB @ 5.8 GHz
- **Isolation:** 31.0 dB @ 2.7 GHz
  28.0 dB @ 3.8 GHz
  25.0 dB @ 5.8 GHz
- **Low DC Power Consumption**
- **Miniature USON6L (1.5x1.5x0.4 mm)**
  Using Lead (Pb) free materials with RoHS compliant
- **PHEMT process**

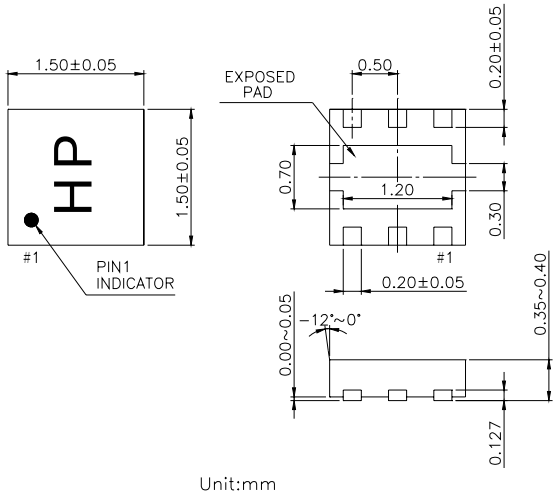
Description

The HWS531 is a GaAs PHEMT MMIC SPDT switch with 50 Ω termination operating at 0.5 -6.0 GHz in a low cost miniature USON6L (1.5x1.5x0.4 mm) plastic lead (Pb) free package. The HWS531 features low insertion loss and high isolation with very low DC power consumption. This switch can be used in WiMAX or IEEE 802.11a/b/g/n WLAN PC card and access point applications as transmit/receive switch, antenna diversity switch, or band-selection switch.

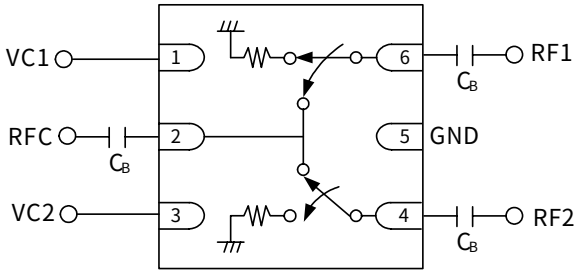
Absolute Maximum Ratings

Parameter	Absolute Maximum
RF Input Power	+40 dBm @ +3V
Control Voltage	+6V
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to +150°C
Electrostatic Discharge Machine Model	Class M1

USON6L (1.5x1.5X0.4 mm)



Pin Out (Top View)



Note:

1. DC blocking capacitors C_B=8pF are required on all RF ports for operating frequency > 2GHz.
2. C_B=47pF for operating frequency < 2GHz.
3. Exposed pad in the bottom must be connected to ground by via holes.

Logic Table for Switch On-Path

VC1	VC2	RFC-RF1	RFC-RF2
1	0	On	Off
0	1	Off	On

'1' = +2.5V to +5V
'0' = 0V to +0.2V

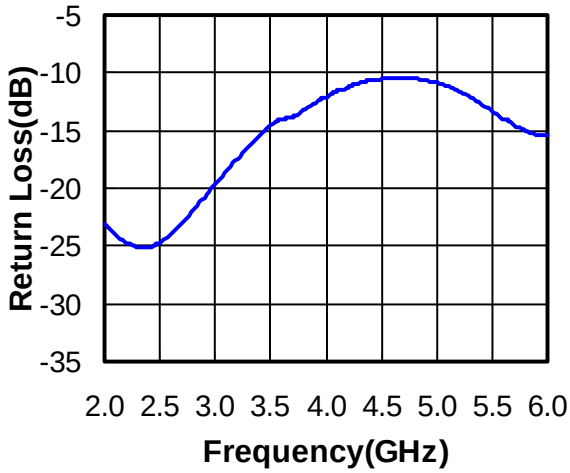
Electrical Specifications at 25°C with 0, +3V Control Voltages

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Insertion Loss	0.50-6.00 GHz 0.50-2.70 GHz 2.70-3.80 GHz 3.80-5.85 GHz		1.10 0.70 0.90 1.10	 0.90 1.10 1.30	dB dB dB dB
Isolation	0.50-6.00 GHz 0.50-2.70 GHz 2.70-3.80 GHz 3.80-5.85 GHz	 28.0 25.0 20.0	25.0 31.0 28.0 25.0		dB dB dB dB
Return Loss (On Port)	0.50-6.00 GHz		11		dB
Return Loss (Off Port)	Isolated output RF1 or RF2: 2.30-2.70 GHz 2.70-3.80 GHz 4.90-5.85 GHz		 12 15 15		 dB dB dB
Input Power for One dB Compression	2.5 GHz @0/+3V		 39		 dBm
Second Harmonic	Pin=25 dBm		-75		dBc
Third Harmonic	Pin=25 dBm		-75		dBc
Switching Time	10% to 90%, 90% to 10% RF		300		ns
Control Current	@+3V		5	100	uA

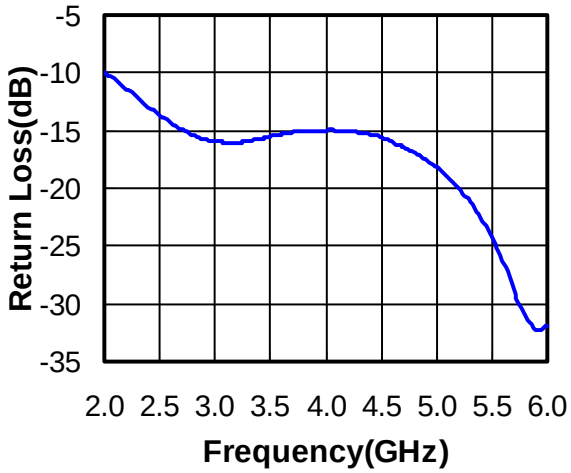
Note: All measurements made in a 50 ohm system with 0/+3.0V control voltages, unless otherwise specified.

Typical Performance Data with 8pF Capacitors @ +25°C

RFC/RF1/RF2 (On State)
Return Loss vs. Frequency

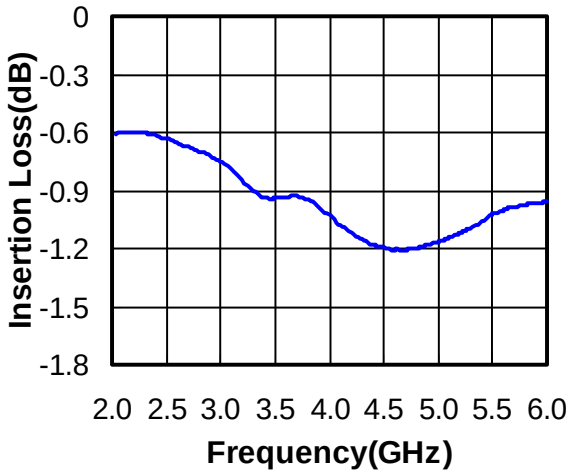


RF1/RF2 (Off State)
Return Loss vs. Frequency



Typical Performance Data with 8pF Capacitors @ +25°C

RFC→RF1/RF2
Insertion Loss vs. Frequency



RFC→RF1/RF2
Isolation vs. Frequency