1 Watt, T/R Diversity Switch 2.4 - 2.5 GHz

SW-356

V 2.00

Features

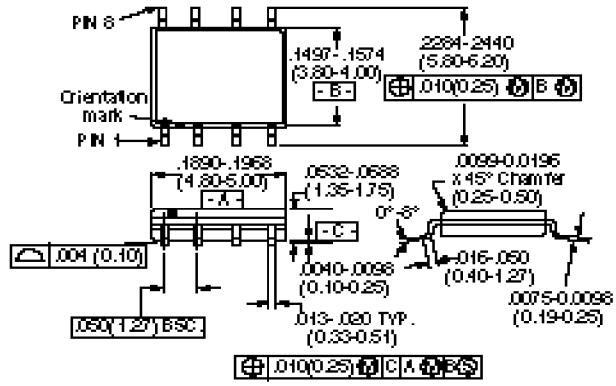
- Low Cost Plastic SOIC 8 Package Available in Tape and Reel
- Positive Control Applied @ RF Common
- High Intercept Point: 45 dBm IP_3
- Very Low Power Consumption: 50 µW
- No Power Consumption in Tx Mode (Vctl = 0 V)
- 2.4 to 2.5 GHz ISM Applications

Description

The SW-356[2] is a GaAs MMIC SPDT switch in a low cost SOIC 8-lead surface mount plastic package. The SW-356 switch is controlled by applying a single 0/+5 V control signal on the RF common port through an external RF choke or bias resistor. Typical applications are T/R, diversity, or antenna select switches for 2.4 to 2.5 GHz ISM applications, up to a power level of 1 W. The RF and control signal can be applied on the same wire, making this switch ideal for applications where the antenna (or in the case of diversity, the two antennas) location is a distance away from the transmitter.

The SW-356 is fabricated with monolithic GaAs MMICs using a mature 1 micron process. The process features full passivation for increased performance and reliability.

SO-8



8-Lead SOP outline dimensions
Narrow body .150
(All dimensions per JEDEC No. MS-012-AA, Issue C)
Dimensions in ( ) are in mm.
Unless Otherwise Noted: .xxx = ±0.010 (.xx = ±0.25)
.xx = ±0.02 (.x = ±0.5)

Electrical Specifications[1], T_A = +25°C

Parameter	Test Conditions			Units	Min.	Typ.	Max.
Insertion Loss		RFC-Rx	2.3-2.5 GHz	dB		1.2	1.5
		RFC-Tx	2.3-2.5 GHz	dB		1.2	1.5
		RFC-Rx	2.0-2.8 GHz	dB		1.5	1.7
		RFC-Tx	2.0-2.8 GHz	dB		1.5	1.7
Isolation		RFC-Rx	2.0-2.8 GHz	dB	18	22	
		RFC-Tx	2.3-2.5 GHz	dB	14	14.5	
		RFC-RF1	2.5-2.8 GHz	dB	15	16	
		RFC-Tx	2.5-2.8 GHz	dB	12	13	
VSWR		Input On	2.3-2.5 GHz			1.1	1.3
		Input On	2.0-2.8 GHz			1.25	1.4
		Output On	2.3-2.5 GHz			1.2	1.35
		Output On	2.0-2.8 GHz			1.4	1.5
1 dB Compression		RF1 On (0 V)	2.4 GHz	dBm	27	30	
		RF2 On (5 V)	2.4 GHz	dBm	27	30	
IP_3	Two Tone @ +10 dBm	RF1 On (0 V)	F1 = 2.0 GHz	dBm		45	
	Each Tone		F2 = 2.005 GHz	dBm		45	
	Two Tone @ +10 dBm	RF2 On (5 V)	F1 = 2.0 GHz	dBm		40	
	Each Tone		F2 = 2.005 GHz	dBm		40	
Trise, Tfall	10-90% RF and 90-10% RF			nS		10	
Ton, Toff	50% Vctl to 90% RF and 50% Vctl to 10% RF			nS		20	

1. All specifications apply when operated with bias voltages of 0 and +5 V at 2.4 GHz in a 50 Ω system, unless otherwise specified.
2. SW-356 replaces SW-029.

Absolute Maximum Ratings[1]

Parameter	Absolute Maximum
Max Input Power (2.0 - 3.0 GHz)	
3 V Control and Supply	+24 dBm
5 V Control and Supply	+34 dBm
Operating Temperature	-40C° to +85°C
Storage Temperature	-65°C to +150°C

1. Operation of this device above any one of these parameters may cause permanent damage.

Ordering Information

Part Number	Package
SW-356 PIN	SOIC 8-Lead Plastic
SW-356TR	Forward Tape & Reel *
SW-356RTR	Reverse Tape & Reel *

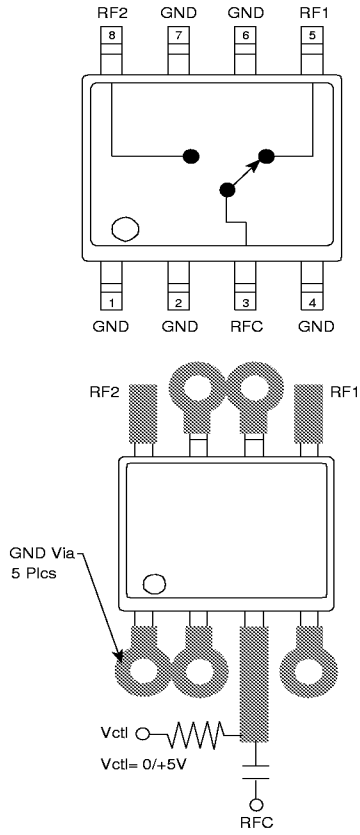
* If specific reel size is required, consult factory for part number assignment.

Truth Table

Vctl[2]	RFC-RF2	RFC-RF1
0 V	Off	On
5 V	On	Off

2. Through a bias tee at RF common.
0 V – -0.2 V @ 20 μA max.
5 V – +5 V @ 20 μA typ to +8 V @ 480 μA max.

Functional Schematic



Typical Performance @ +25°C