High Power GaAs SPDT Switch
DC - 2.5 GHz

SW-279

V2.00

Features

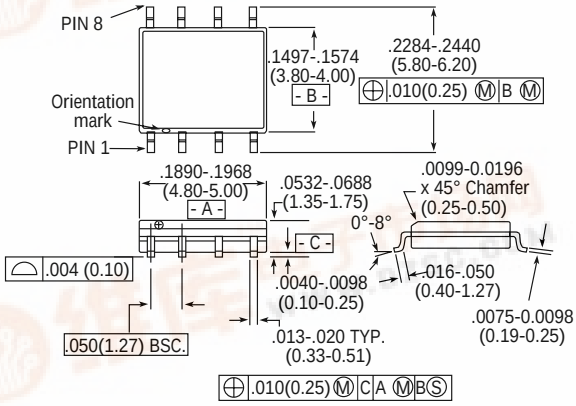
- +36 dBm Typ. 1 dB Compression Point, -8V Supply
- +65 dBm Typ. 3rd Order Intercept Point, -8V Supply
- Low Insertion Loss: 0.4 dB Typical
- Low Power Consumption: 100 µW
- Fast Switching Speed
- Low Cost SOIC8 Plastic Package
- Tape and Reel Packaging Available[1]

Description

M/A-COM's SW-279 is a GaAs MMIC SPDT switch in a low cost SOIC 8-lead surface mount plastic package. The SW-279 is ideally suited for use where very low power consumption is required. Typical applications include transmit/receive switching, switch matrices, and filter banks in systems such as: radio and cellular equipment, PCM, GPS, fiber optic modules, and other battery powered radio equipment.

The SW-279 is fabricated with a monolithic GaAs MMIC using a mature 1 micron process. The process features full chip 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)

Ordering Information

Model No.	Package
SW-279 PIN	SOIC 8 Lead
SW-279TR	Forward Tape & Reel
SW-279RTR	Reverse Tape & Reel

Electrical Specifications, T_A = +25°C

Parameter	Test Conditions[2]		Unit	Min.	Typ.	Max
Insertion Loss		DC – 2.0 GHz DC – 1.0 GHz DC – 0.5 GHz DC – 0.1 GHz	dB dB dB dB		0.6 0.4 0.35 0.2	0.8 0.6 0.5 0.4
Isolation		DC – 2.0 GHz DC – 1.0 GHz DC – 0.5 GHz DC – 0.1 GHz	dB dB dB dB	14 28 35 35	16 32 38 38	
VSWR		DC – 2.0 GHz			1.2:1	
Trise, Tfall Ton, Toff Transients	10% to 90% RF, 90% to 10% RF 50% Control to 90% RF, 50% Control to 10% RF In Band		nS nS mV		30 35 12	
One dB Compression Point	Input Power (5V Supply/Control) Input Power (8V Supply/Control)	0.9 GHz 0.9 GHz	dBm dBm		33 35.8	
3rd Order Intercept	Measured Relative (5V Supply/Control) to Input Power (8V Supply/Control) (for two-tone input power up to +10 dBm)	0.9 GHz 0.9 GHz	dBm dBm		61 65	

1. Refer to "Tape and Reel Packaging" Section, or contact factory.
2. All specifications apply when operated with bias voltages of 0V for Vin Low and 5 to 10V for Vin Hi, and 50 Ohm impedance at all RF ports, unless otherwise specified. High power (greater than 1W) handling specifications apply to cold switches only. For input powers under 1W, hot switching can be used. The high control voltage must be within +/- 0.2V of the supply voltage. The RF ports must be blocked outside of the package from ground or any other voltage.

Absolute Maximum Ratings

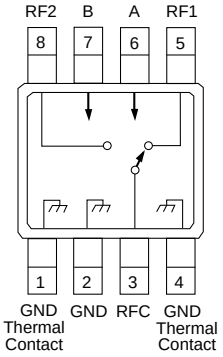
Parameter	Absolute Maximum[1]
Max. Input Power	
0.5 – 2.0 GHz	
5V Control and Supply	+37 dBm
8V Control and Supply	+40 dBm
10V Control and Supply	+42 dBm
Power Dissipation	1.0 W
Control Voltage	-12V, +1V
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to +150°C
Thermal Resistance[2]: θ_{jc} = 87 °C/W	

1. Operation of this device above any one of these parameters may cause permanent damage.
2. Thermal resistance is given for T_A = 25°C. T_{CASE} is the temperature of leads 1 and 4.

Pin Configuration

Pin No.	Description
1	GND, Thermal Contact
2	GND
3	RF Common
4	GND, Thermal Contact
5	RF1
6	A
7	B
8	RF2

Functional Schematic



Two Tone IP_3 Measurements

Bias Voltage	Input Power (dBm)	3rd Order Intermodulation Products (dBC)	IP_3 (dBm)	Second Harmonic (dBc)
0,-5V	+27	-34	+44	-61
0,-6V	+27	-49	+51	-61
0,-7V	+27	-64	+59	-63
0,-8V	+27	-65	+59	-63
0,-10V	+27	-66	+60	-63
0,-5V	+28	-30	+43	-58
0,-6V	+28	-41	+48.5	-58
0,-7V	+28	-52	+54	-57
0,-8V	+28	-60	+58	-57
0,-10V	+28	-60	+58	-57
0,-5V	+29	-28	+43	-54
0,-6V	+29	-34	+46	-54
0,-7V	+29	-44	+51	-54
0,-8V	+29	-52	+55	-54
0,-10V	+29	-52	+55	-54
0,-5V	+30	-26	+43	-52
0,-6V	+30	-32	+46	-51
0,-7V	+30	-38	+49	-51
0,-8V	+30	-44	+52	-51
0,-10V	+30	-44	+52	-51

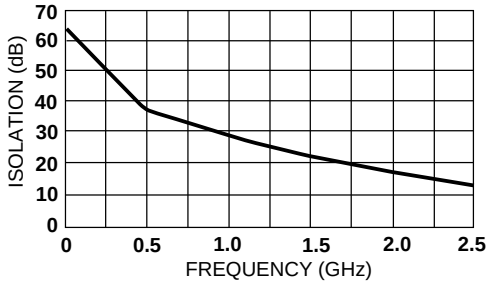
Truth Table

Control Inputs[1]		Condition of Switch RF Common to Each RF Port	
A	B	RF1	RF2
1	0	On	Off
0	1	Off	On

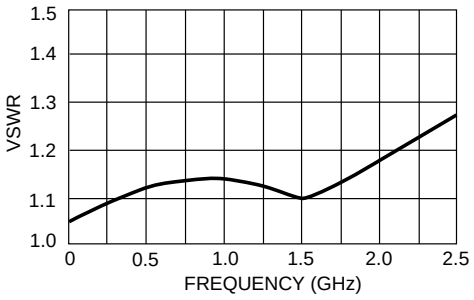
1. 0 – 0 to -0.2V @ 20 µA max.
   1 – -5V @ 50 µA Typ to -10V @ 800 µA max.

Typical Performance

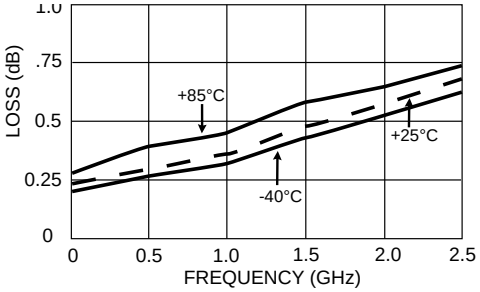
ISOLATION vs FREQUENCY



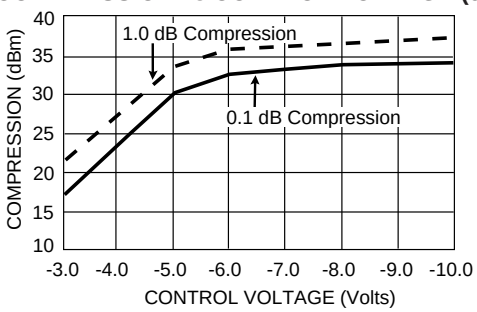
VSWR vs FREQUENCY



ISERTION LOSS vs FREQUENCY



COMPRESSION vs CONTROL VOLTAGE (900 MHZ)



North America: Tel. (800) 366-2266 ■ Asia/Pacific: Tel. +81 3 3263 8761 ■ Europe: Tel. +44 (1344) 869 595
Fax (800) 618-8883 Fax +81 3 3263 8769 Fax +44 (1344) 300 020