



3 Volt, 2 Watt Cellular T/R Changeover Switch DC - 2.0 GHz



Features

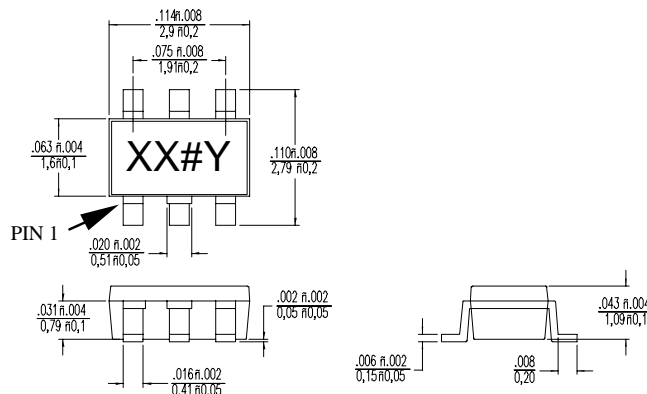
- Low Cost Plastic SOT-26 Package
- Low Insertion Loss < 0.6 dB @ 900 MHz
- Low Power Consumption < 20 μ A @ +3V
- Very High Intercept Point: 52 dBm IP₃
- Both Positive and Negative 3 to 8 V Control
- For AMPS, NAMPS, ETACS, NMT, GSM, PCN, PDC and DECT Applications

Description

M/A-COM's SW-392 is a GaAs Monolithic switch in a low cost SOT-26 surface mount plastic package. The SW-392 is ideally suited for applications where very low power consumption (<20 μ A @ 3V), low intermodulation products, very small size and low cost required. Typical application is an Internal/External antenna select switch for portable telephones and data radios. In addition, because of its low loss, good isolation, and inherent speed, the SW-392 can be used in power applications up to 2 Watts in systems such as cellular, PCN, GSM and other analog/digital wireless communications systems.

The SW-392 is fabricated using a mature 1-micron gate length GaAs MESFET process. The process features full chip passivation for increased performance and reliability.

SOT-26¹



1. Dimensions are in: inches/mm

Ordering Information

Part Number	Package
SW-392 PIN	SOT-26 Plastic Package
SW-392TR	Forward Tape and Reel ¹

1. Refer to Application Note M513 for reel size information.

Electrical Specifications: T_A = +25°C¹

Parameter	Test Conditions	Units	Min.	Typ.	Max.
Insertion Loss	DC - 1.0 GHz	dB		0.55	0.65
	1.0 - 2.0 GHz	dB		0.8	1.0
Isolation	DC - 1.0 GHz	dB	15	17	
	1.0 - 2.0 GHz	dB	8	10	
VSWR	DC - 2.0 GHz			1.3:1	
1 dB Compression	Input Power (3V Control) 0.9 GHz	dBm		35	
	Input Power (5V Control) 0.9 GHz	dBm		37	
T _{rise} , T _{fall}	10% to 90% RF, 90% to 10% RF	μ S		15	
T _{on} , T _{off}	50% Control to 90% RF, Control to 10% RF	μ S		20	
Transients	In-band	mV		60	
Input IP ₂	2-Tone, 5 MHz spacing, +10 dBm (+13 dBm total) 0.9 GHz	dBm		95	
Input IP ₃	2-Tone, 5 MHz spacing, +10 dBm (+13 dBm total) 0.9 GHz	dBm		52	

1. All measurements at 1 GHz in a 50 Ω system unless otherwise specified. Loss varies at 0.003 dB/°C.

Absolute Maximum Ratings¹

Parameter	Absolute Maximum
Max. Input Power (0.5 - 2.5 GHz)	
3V Control	+34 dBm
5V Control	+37 dBm
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to +150°C
Thermal Temperature	$\theta_{jc} = +87^\circ\text{C/W}$

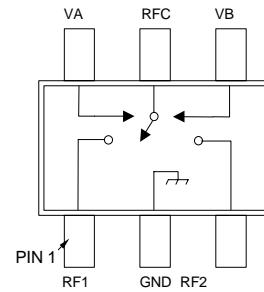
- Exceeding any one or a combination of these limits may cause permanent damage.
- Thermal resistance is given for $T_A = +25^\circ\text{C}$.

Truth Table

Mode (Control)	Control A	Control B	RFC - RF1	RFC - RF2
Positive ¹	0±0.2V	+3V to +8V	Off	On
	+3 to +8V	0±0.2V	On	Off
Positive/ Negative ^{1,2}	-Vc±0.2V	+Vc	On	Off
	+Vc	-Vc±0.2V	Off	On
Negative ³	0±0.2V	-3V to -8V	On	Off
	-3V to -8V	0±0.2V	Off	On

- External DC blocking capacitors are required on all RF ports.
- $-V_c + V_c \leq 8\text{ V}$.
- If negative control is used, DC blocking capacitors are not required on RF ports.

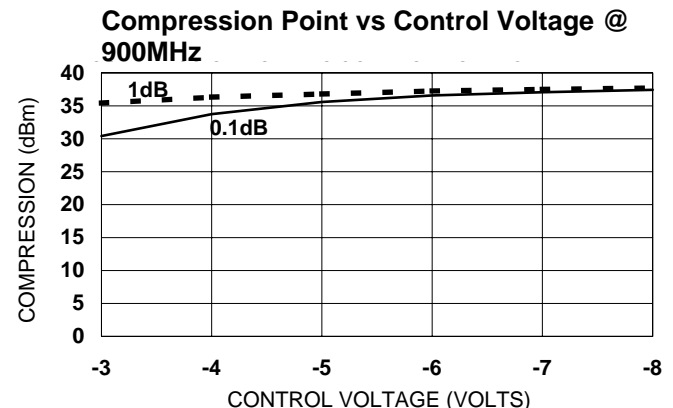
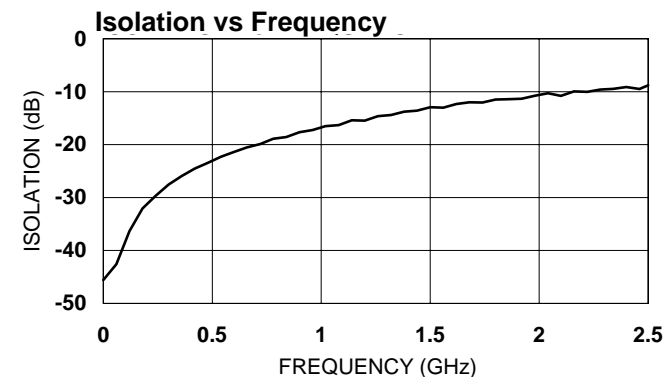
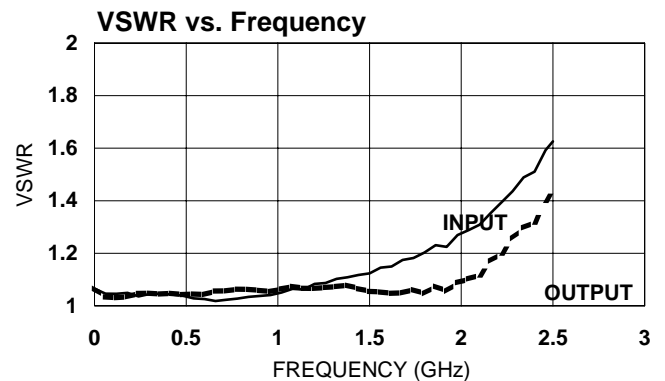
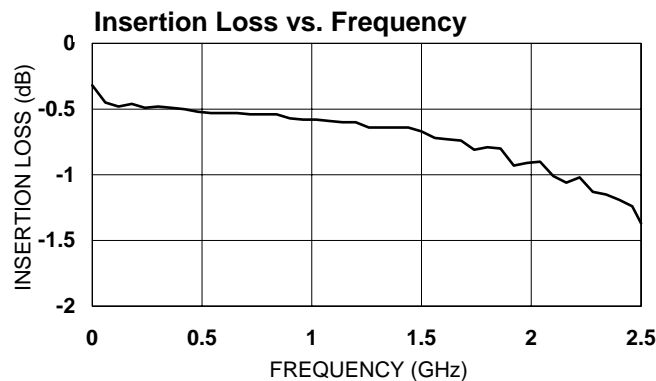
Functional Schematic



Two Tone IP₃ Measurements

Control Voltage (VDC)	Input Power (dBm)	3rd Order Intermodulation Products (dBc)	IP ₃ (dBm)	Second Harmonic (dBc)
0,3	27	33	43	64
	0,5	27	66	61
	0,8	27	66	60
0,3	28	31	43	61
	0,5	28	61	58
	0,8	28	66	61
0,3	29	31	44	59
	0,5	29	55	58
	0,8	29	66	61
0,3	30	30	45	53
	0,5	30	47	59
	0,8	30	65	63

Typical Performance Curves



V2.00