tyco Electronics

RoHS Compliant

MACOM

GaAs SPDT Reflective Switch, 0.01 - 3.0 GHz

SW-137-PIN V3

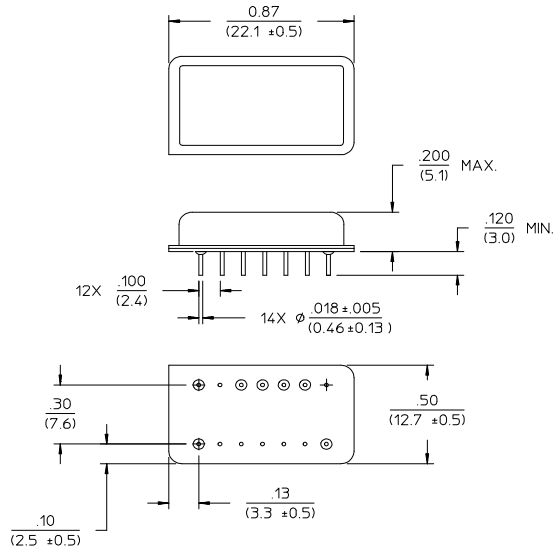
Features

- Isolation: 48 dB Typical at 1 GHz
- High Intercept Point Over Wide Bandwidth
- Trise, Tfall: 5 nS Typical
- DIP Package
- Integral TTL Driver (CMOS Compatible)
- 50 Ohm Nominal Impedance

Description

M/A-COM's SW-137 is a GaAs MMIC SPDT reflective switch with an integral Silicon ASIC driver. This device is in a 14-lead DIP package. These switches offer high intercept points over a wide bandwidth of operation, while maintaining low DC power dissipation. These switches exhibit excellent performance and repeatability from 0.01 to 3.0 GHz. The SW-137 is ideally suited for RF/IF communications applications. Contact the factory for environmental screening.

Functional Block Diagram



Dimensions in () are in mm
Unless Otherwise Noted: .XXX = ±0.010 (.XX = ±0.25)
.XX = ±0.02 (.X = ±0.5)
WEIGHT (APPROX): 0.14 OUNCES 4 GRAMS

Ordering Information

Part Number	Package
SW-137-PIN	DI-1

Note: Reference Application Note M513 for reel size information.
Note: Die quantity varies.

Truth Table

Control Inputs	Condition of Switch RF Common to each RF Port	
C1	RF1	RF2
Low	On	Off
High	Off	On

Absolute Maximum Ratings [2]

Parameter	Absolute Maximum
Max Input Power 0.05 GHz 0.5 - 3.0 GHz	 +27 dBm +34 dBm
Supply Voltages Vcc Vee	 -0.5V to +16.5 V -16.5V to +0.5V
Control Voltage	-0.5V to V_{CC} to +0.5V
Operating Temperature	-55°C to +125°C
Storage Temperature	-65°C to +150°C

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

Current (mA)

	± 9V	± 12V	± 15V
Vcc	8	11	15
Vee	4	7	9

* Restrictions on Hazardous Substances, European Union Directive 2002/95/EC.

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Electrical Specifications: T_A = -55°C to +85°C [1]

Parameter	Test Conditions	Frequency	Units	Min	Typ	Max
Reference Insertion Loss	—	0.01 - 0.5 GHz 0.01 - 1.0 GHz 0.01 - 2.0 GHz 0.01 - 3.0 GHz	dB dB dB dB	— — — —	— — — —	0.9 1.0 1.4 1.6
Isolation	—	0.01 - 0.5 GHz 0.01 - 1.0 GHz 0.01 - 2.0 GHz 0.01 - 3.0 GHz	dB dB dB dB	48 43 37 32	— — — —	— — — —
VSWR	—	0.01 - 0.5 GHz 0.01 - 1.0 GHz 0.01 - 2.0 GHz 0.01 - 3.0 GHz	Ratio Ratio Ratio Ratio	— — — —	— — — —	1.25:1 1.4:1 1.7:1 2.0:1
Trise, Tfall Ton, Toff Transients	10% to 90% 1.3V Control to 90/10% RF In-band (peak-peak)	— — —	nS nS mV	— — —	5 22 45	— — —
1 dB Compression		0.01 - 3.0 GHz	dBm	—	+25	—
Input IP_3	For two-tone Input power up to +5 dBm	0.01 - 3.0 GHz	dBm	—	+46	—
Input IP_2	For two-tone Input power up to +5 dBm	0.01 - 3.0 GHz	dBm	—	+76	—

1. All specifications apply when operated with bias voltages of +9V to +15V for Vcc and –9 to –15V for Vee and 50 Ohm impedance at all RF ports unless otherwise specified.

Electrical Specifications: T_A = 25°C

Parameter	Test Conditions	Frequency	Units	Min	Typ	Max
Vcc Vee		— —	V V	+9 -15	+12 -12	+15 -9
Icc	Vcc = +9 to +15V	—	mA	—	—	20.0
Iee	Vee = -9 to -15V	—	mA	—	—	15.0
Vctl Vctl	Low High	— —	V V	0.0 2.0	— —	0.8 5.0
Input Leakage Current (Low)	0 to 0.8V	—	µA	—	—	1.0
Input Leakage Current (High)	2.0 to 5.0V	—	µA	—	—	1.0

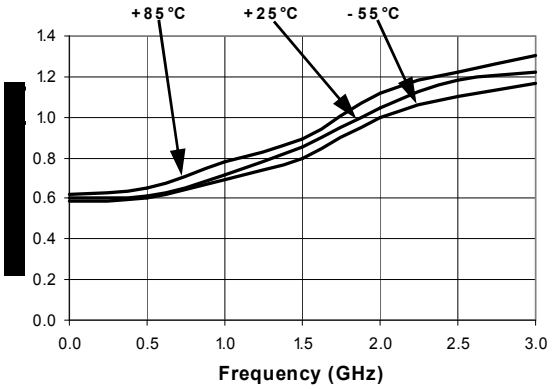
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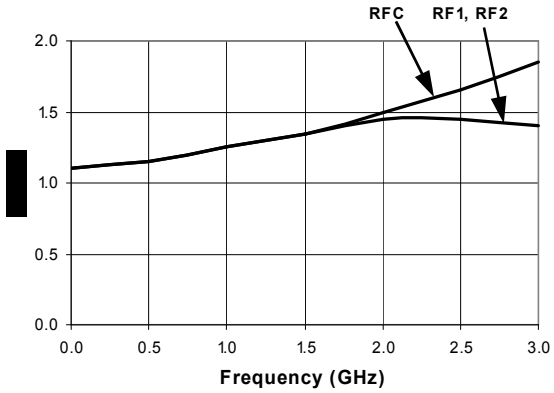
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Typical Performance Curves

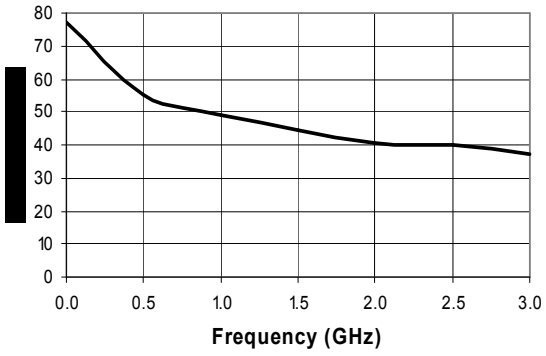
Insertion Loss vs. Frequency



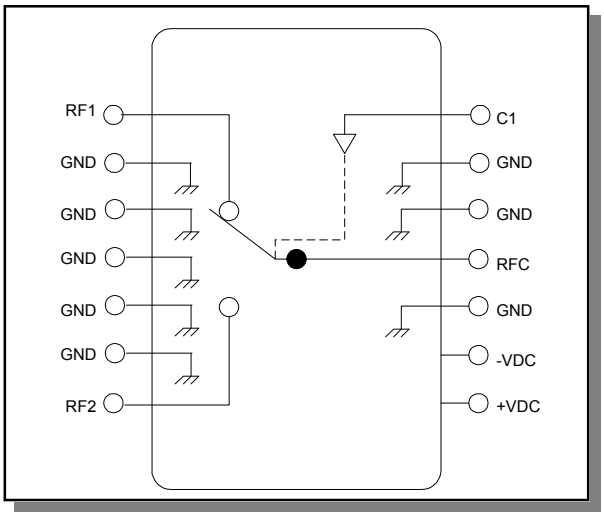
VSWR vs. Frequency



Isolation vs. Frequency



Functional Schematic (Top View)



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