RF2436

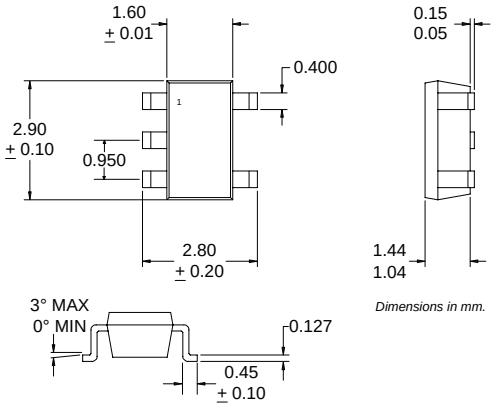
TRANSMIT/RECEIVE SWITCH

Typical Applications

- Cordless Phones
- Wireless Computer Peripherals
- Wireless Security Systems
- General Purpose RF Switching
- Commercial and Consumer Systems

Product Description

The RF2436 is a very low-cost transmit/receive GaAs MESFET switch. The device can handle power levels as high as +28dBm and spans a frequency range from DC to 2500MHz. The switch will operate from power supply voltages as low as 1.5V and as high as 6V with a CMOS logic driver for the control input. No negative voltage is required, and current consumption is very low. VSWR for the active channel (transmit or receive) is 1.1:1. The device is housed in a very small industry-standard SOT 5-lead plastic package.



Dimensions in mm.

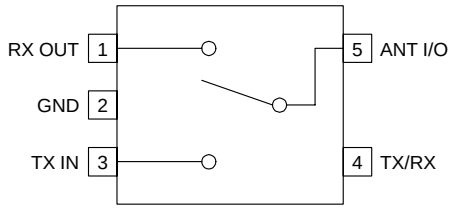
Package Style: SOT-5

Optimum Technology Matching® Applied

- ☐ Si BJT
- ☐ Si Bi-CMOS
- ☐ GaAs HBT
- ☐ SiGe HBT
- ☑ GaAs MESFET
- ☐ Si CMOS

Features

- Single Positive Power Supply
- Low Current Consumption
- 0.5dB Insertion Loss at 900MHz
- 24dB Crosstalk Isolation at 900MHz
- +27dBm Output P1dB



Functional Block Diagram

Ordering Information

RF2436	Transmit/Receive Switch
RF2436 PCBA	Fully Assembled Evaluation Board

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Absolute Maximum Ratings

Parameter	Rating	Unit
Supply Voltage	0 to +8.0	V_{DC}
Control Voltage	-1.0 to +6.0	V
Input RF Power	+30	dBm
Operating Ambient Temperature	-40 to +85	℃
Storage Temperature	-40 to +150	℃

Caution! ESD sensitive device.

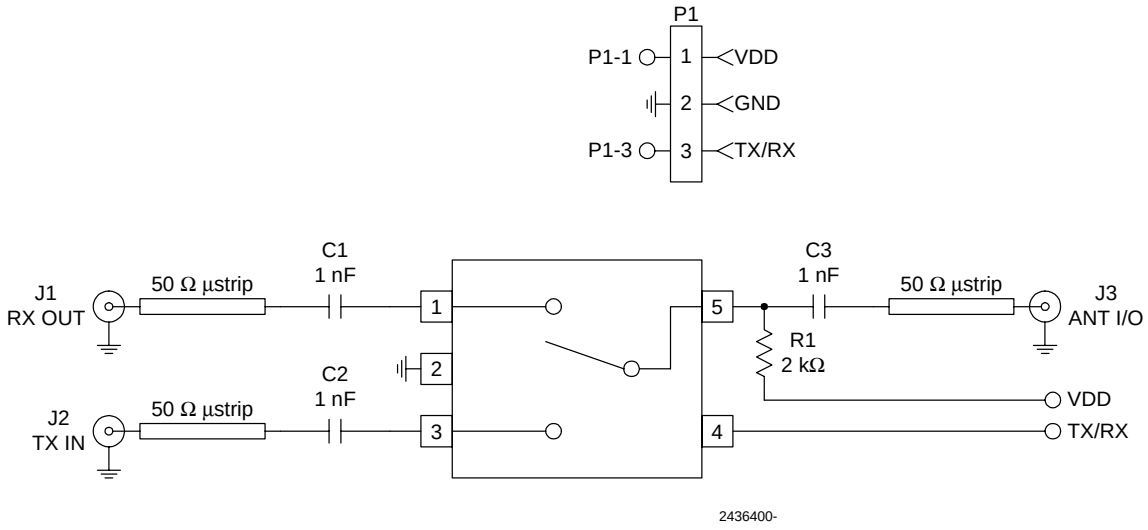
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Parameter	Specification			Unit	Condition
	Min.	Typ.	Max.		
Overall					T=25℃, V_{DD}=3.0V, Freq=900MHz
Frequency Range		DC to 2500		MHz	
Insertion Loss		1	2	dB	Transmit or receive mode.
Isolation	20	22		dB	Receive mode; ANT I/O to TX IN crosstalk
	20	24		dB	Transmit mode; ANT I/O to RXOUT crosstalk
RX OUT VSWR		1.1:1			Receive mode.
TX IN VSWR		1.1:1			Transmit mode.
Output P1dB		+27		dBm	
Output IP3		+39		dBm	
Control Logic					
CTRL Logic “Low” Voltage		0		V	Receive mode.
CTRL Logic “High” Voltage		0.7		V	Transmit mode.
Power Supply					
Voltage		3		V	Specifications
		1.5 to 6		V	Operating Limits
Current		5	10	µA	Receive mode.
		0.5	1	mA	Transmit mode.

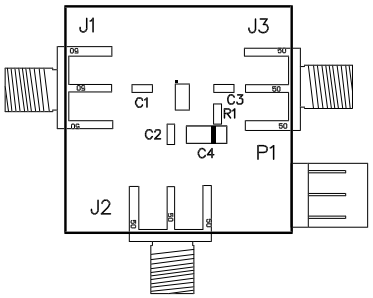
Pin	Function	Description	Interface Schematic
1	RX OUT	Output pin for Receive mode. VSWR is 1.1:1 when Receive mode is selected and highly capacitive when Transmit mode is selected.	
2	GND	Ground connection. For best performance, keep traces physically short and connect immediately to the ground plane.	
3	TX IN	Input pin for Transmit mode. The input VSWR is 1.1:1 when Transmit mode is selected and highly capacitive when Receive mode is selected.	
4	TX/RX	Transmit Mode/Receive Mode control pin. A “low” level chooses Receive mode; a “high” level chooses Transmit mode. CMOS logic may be used to drive the control input.	
5	ANT I/O	Input/Output pin from/to antenna and power supply pin. This pin must be biased with VDD through a resistor.	

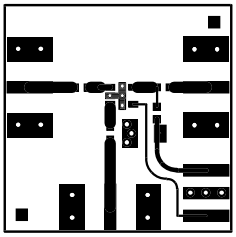
Evaluation Board Schematic

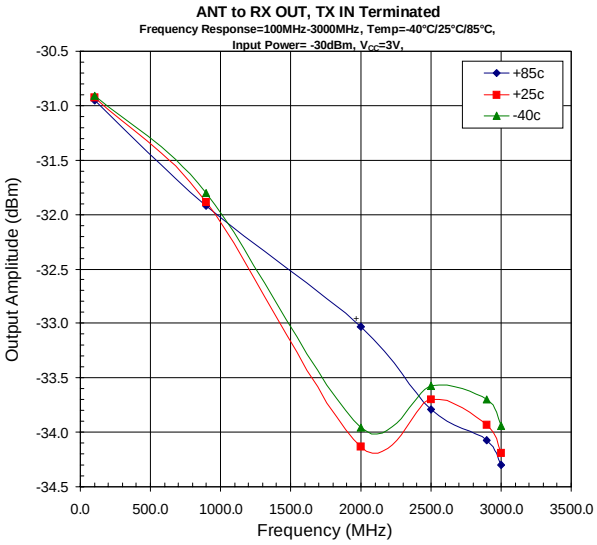
(Download Bill of Materials from www.rfmd.com.)

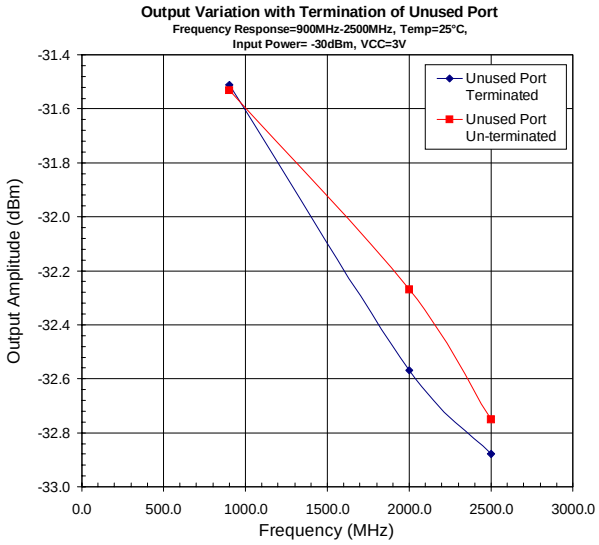


Evaluation Board Layout






ANT to RX OUT, TX IN Terminated
Frequency Response=100MHz-3000MHz, Temp=-40°C/25°C/85°C,
Input Power= -30dBm, VCC=3V,
+85c
+25c
-40c
Output Amplitude (dBm)
-30.5
-31.0
-31.5
-32.0
-32.5
-33.0
-33.5
-34.0
-34.5
0.0
500.0
1000.0
1500.0
2000.0
2500.0
3000.0
3500.0
Frequency (MHz)


Output Variation with Termination of Unused Port
Frequency Response=900MHz-2500MHz, Temp=25°C,
Input Power= -30dBm, VCC=3V
Unused Port Terminated
Unused Port Un-terminated
Output Amplitude (dBm)
-31.4
-31.6
-31.8
-32.0
-32.2
-32.4
-32.6
-32.8
-33.0
0.0
500.0
1000.0
1500.0
2000.0
2500.0
3000.0
Frequency (MHz)