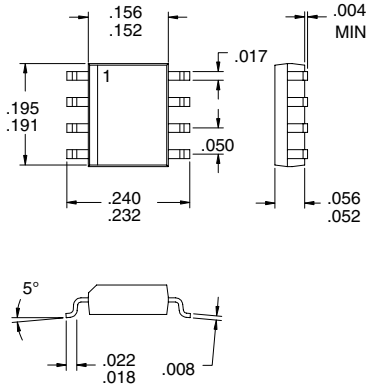
Typical Applications

- Power Control in Communication Systems
- CMOS Compatible Programmable Attenuator
- Commercial and Consumer Systems
- Portable Battery Powered Equipment

Product Description

The RF2421 is a monolithic switched attenuator. The device is built using a Gallium Arsenide process technology and has a single step attenuation of 10dB. The input and output of the device has a low VSWR 50Ω match. The RF output can drive up to +16dBm. This unit is intended for use in systems that require RF power control by digital means. No negative supply voltages are required, and the current consumption is less than 1μA when the attenuator is off.



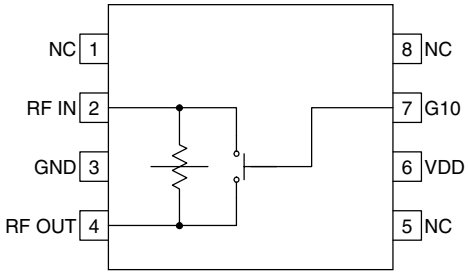
Package Style: SOP-8

Optimum Technology Matching® Applied

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

Features

- Single 2.7V to 6V Supply
- 10dB Single Step Attenuation
- 1 dB Insertion Loss
- 1-bit Digitally Controlled Attenuation
- Digitally Controlled Power Down Mode
- 500MHz to 3000 MHz Operation



Functional Block Diagram

Ordering Information

RF2421	10dB Switched Attenuator
RF2421 PCBA	Fully Assembled Evaluation Board

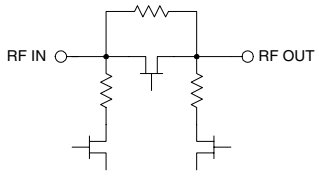
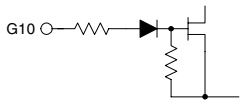
RF Micro Devices, Inc.
7625 Thorndike Road
Greensboro, NC 27409, USA
Tel (336) 664 1233
Fax (336) 664 0454
http://www.rfmd.com

Absolute Maximum Ratings

Parameter	Rating	Unit
Supply Voltage	-0.5 to +6.0	V_{DC}
Control Voltage	-0.5 to +6.0	V
Input RF Power	+20	dBm
Operating Ambient Temperature	-40 to +85	°C
Storage Temperature	-40 to +150	°C

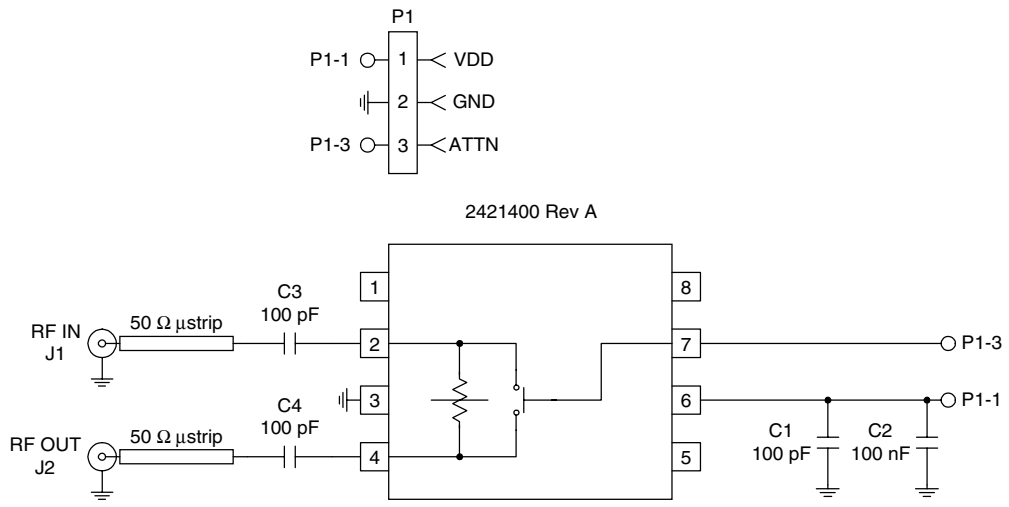
Caution! ESD sensitive device.

Parameter	Specification			Unit	Condition
	Min.	Typ.	Max.		
Overall					T=25°C, V_{DD}=5.0V, Freq=915MHz
Frequency Range		500 to 3000		MHz	
Insertion Loss		1.0	1.5	dB	V_{G10}=0V_{DC}
Insertion Loss	9.5	10	10.5	dB	V_{G10}=V_{DD}
Gain Flatness		0.25		dB	In any 50MHz band
Input					
Input Impedance		50		Ω	
Input VSWR			1.3:1		
Input 1dB Compression	+17			dBm	
Attenuation Control					
Attenuation "ON" Voltage	2.5	V_{DD}		V	Voltage supplied to input
Attenuation "OFF" Voltage			0.3	V	Voltage supplied to input
Current		0.4	0.5	mA	Into control line, V_{G10}=5V_{DC}
Response Time		<10		ns	
Output					
IM_3	-60			dBc	With 0dBm output in each of 2 tones
Harmonic Output	-40			dBc	
Output Impedance		50		Ω	
Output VSWR			1.3:1		
Power Supply					
Voltage		5		V	Specifications
	2.7	5	6.0	V	Operating Limits
Current			0.5	mA	Attenuation "ON"
			1	μA	Attenuation "OFF"

Pin	Function	Description	Interface Schematic
1	NC	Not internally connected. This pin can be grounded.	
2	RF IN	RF Input. This pin is not DC blocked, and an external blocking capacitor is recommended. The value depends on the frequency used.	
3	GND	Ground connection. Keep trace physically short and connect immediately to the ground plane for best performance.	
4	RF OUT	RF Output. This pin is not DC blocked, and an external blocking capacitor is recommended. The value depends on the frequency used.	See pin 2.
5	NC	Not internally connected. This pin can be grounded.	
6	VDD	Power supply pin. An external RF bypass capacitor is recommended.	
7	G10	Control pin for the 10dB attenuator. This pin has an internal pull-down resistor, so when the pin is not connected the attenuator will be turned off.	
8	NC	Not internally connected. This pin can be grounded.	

Evaluation Board Schematic

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



Evaluation Board Layout

Board Thickness 0.031”; Board Material FR-4