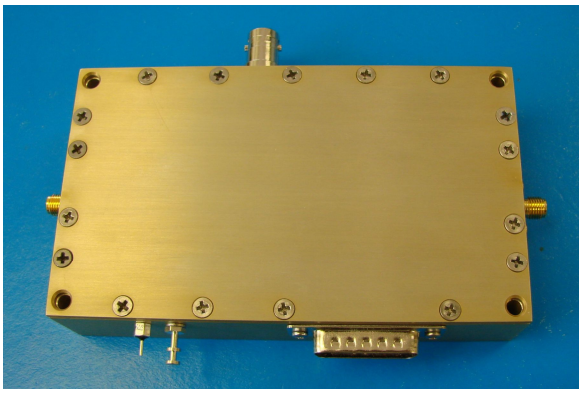
IPA Series — 500-2500MHz 8W RF Power Amplifier

Features

- Frequency Range: 500-2500MHz
- Small Signal Gain: 45dB
- Gain Control: 31.5dB
- P_{OUT}: +37dBm (5W)
- P_{SAT}: +39dBm (8W)
- Pulse Modulation
- DC Power: 28V @ 1300mA
- RF Connector: SMA-F



Typical Application Markets

- Cellular Communications (LTE)
- Radar (IFF, TACAN)
- Lab test equipment

Electrical Specifications @+25°C, Z_{in}=Z_{out}=50 Ω, Vsupply = +28VDC

Parameter	Unit	Minimum	Typical	Maximum
Frequency Range	MHz	500		2500
Gain (S21)	dB	45		
Gain Flatness	dB		±4.0	±5.0
Gain Control Range	dB		31.5	
Output Power P_{OUT} @1500MHz	dBm	+37	+38	
Output Power P_{SAT} @ 1500MHz	dBm	+39	+40	
Efficiency	%		30	
Noise Figure	dB		8.5	9.5
Isolation (S12)	dB		-55	
VSWR-Input (S11)	ratio:1		1.5:1	1.7:1
Pulse Modulation (BNC Input) Input Level = 5V Input Level = 0V Maximum Pulse Modulation Rate RF Turn On Time RF Turn Off Time	 MHz ns ns		 RF ON RF OFF 15 20 15	
DC Power Supply - voltage	V	24	28	32
DC Power Supply - current	mA		1300	1600
Size (RF/DC feedthru's excluded)	Inch/mm	4.75 x 2.75 x 0.75/120 x 70 x 19 (LxWxH)		
Weight	Oz	12 (340 grams)		

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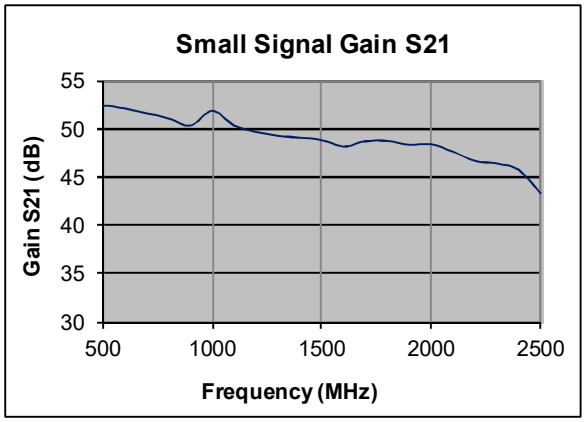
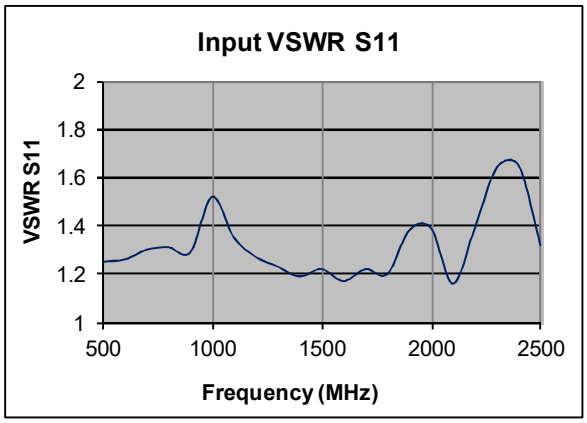
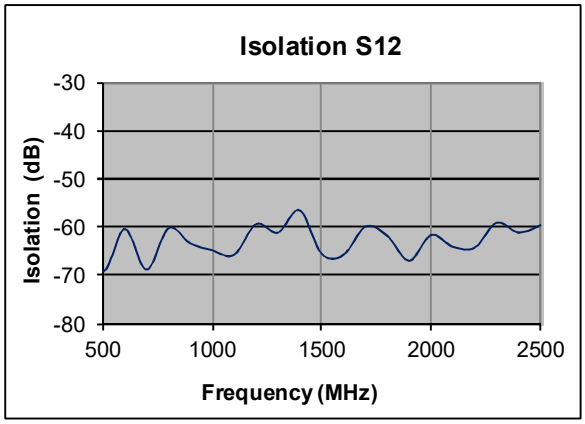
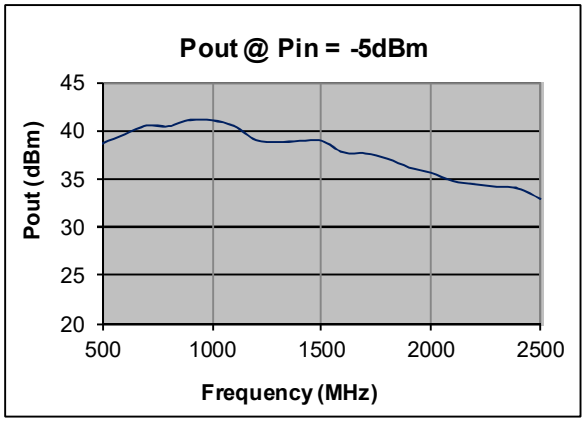
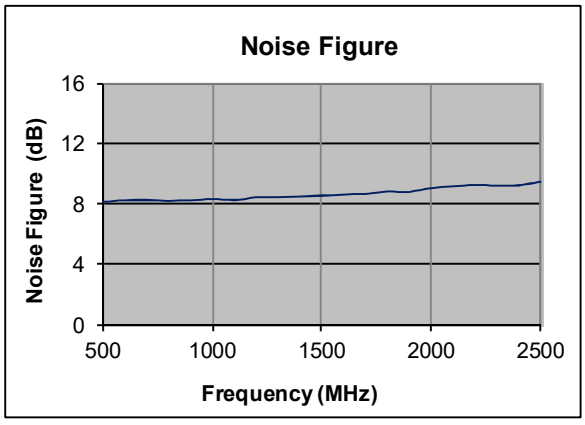
Typical Performance @ +25 °C

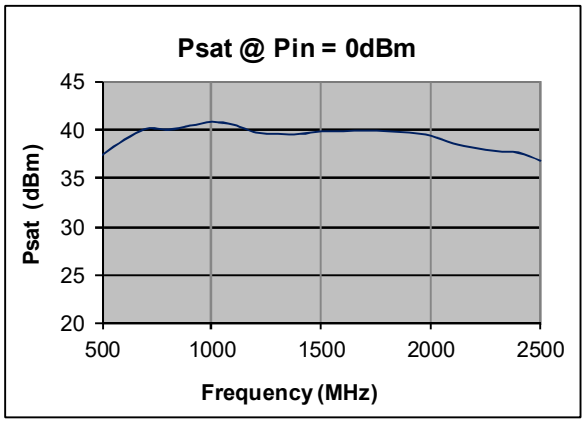












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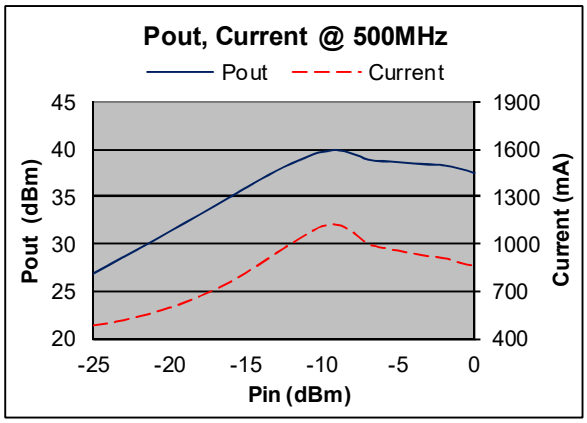

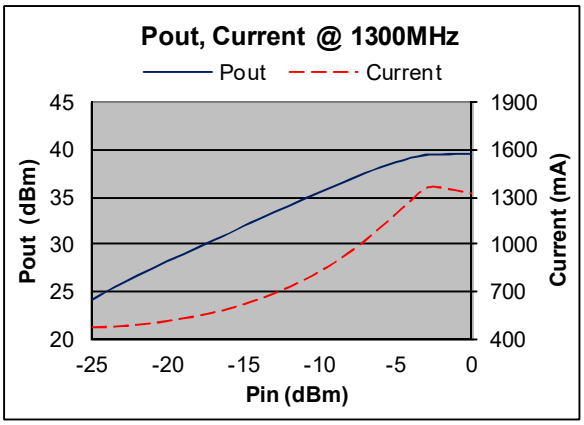

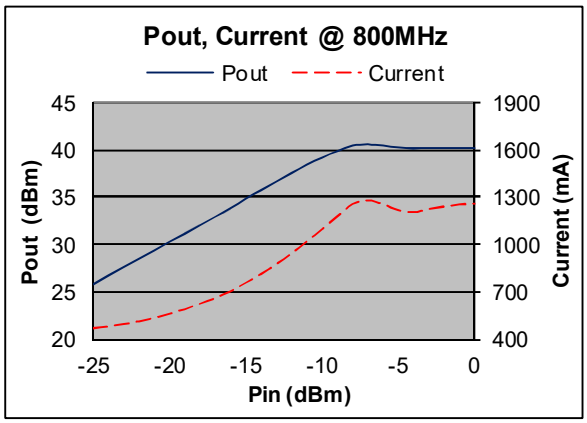

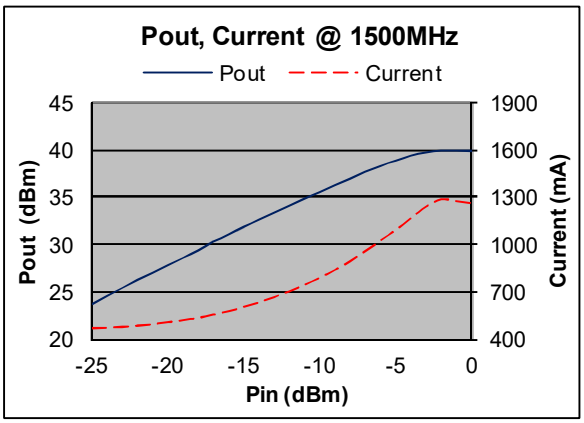

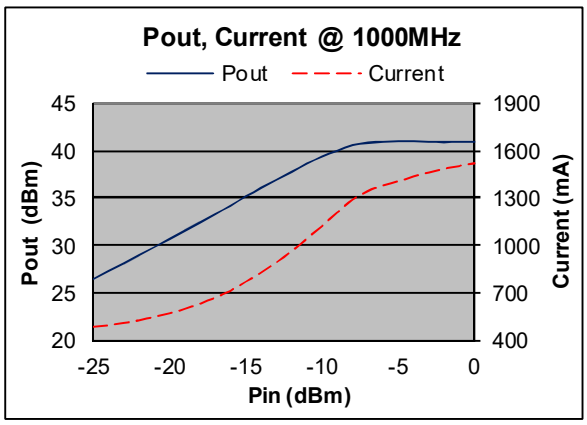

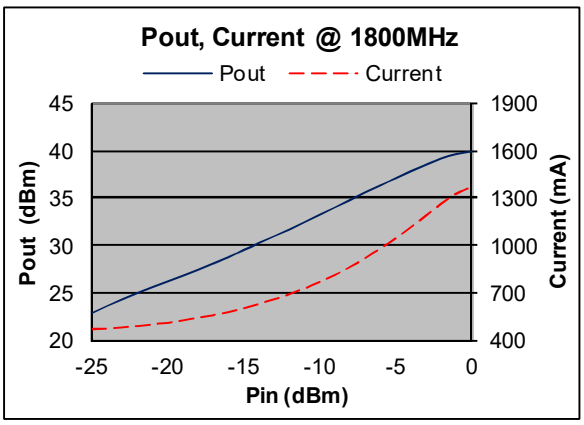

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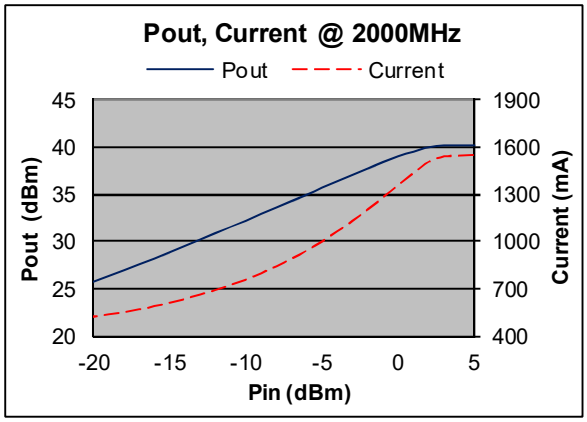
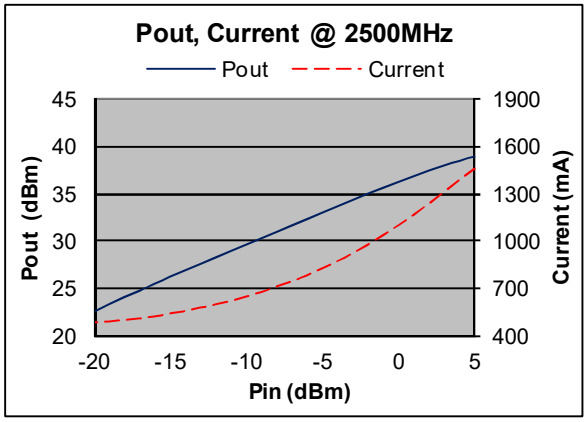
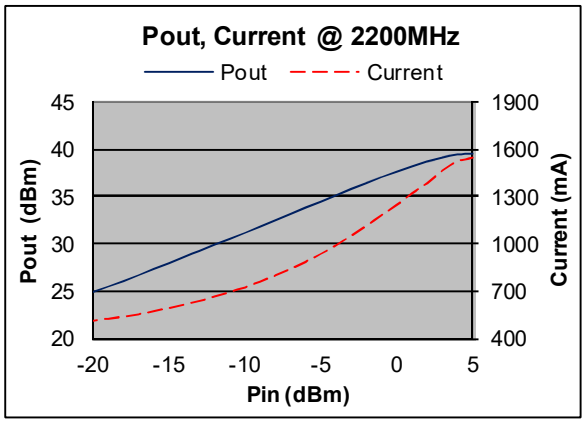
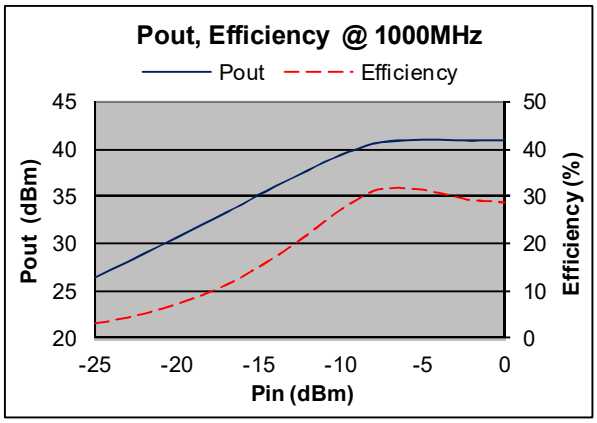
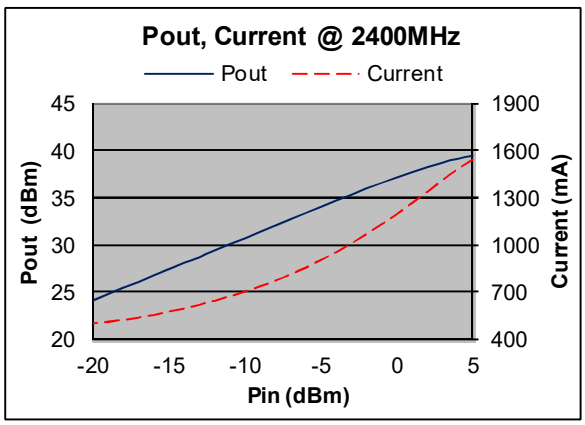
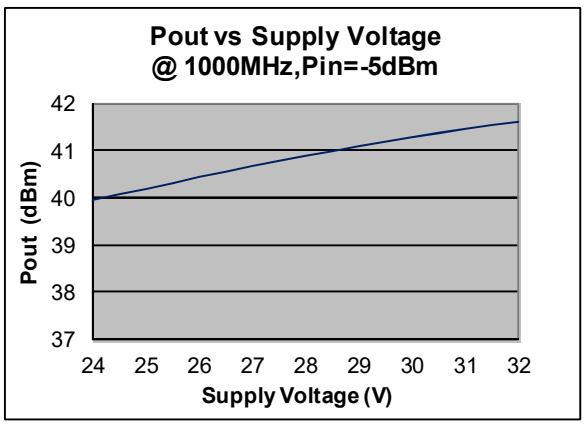




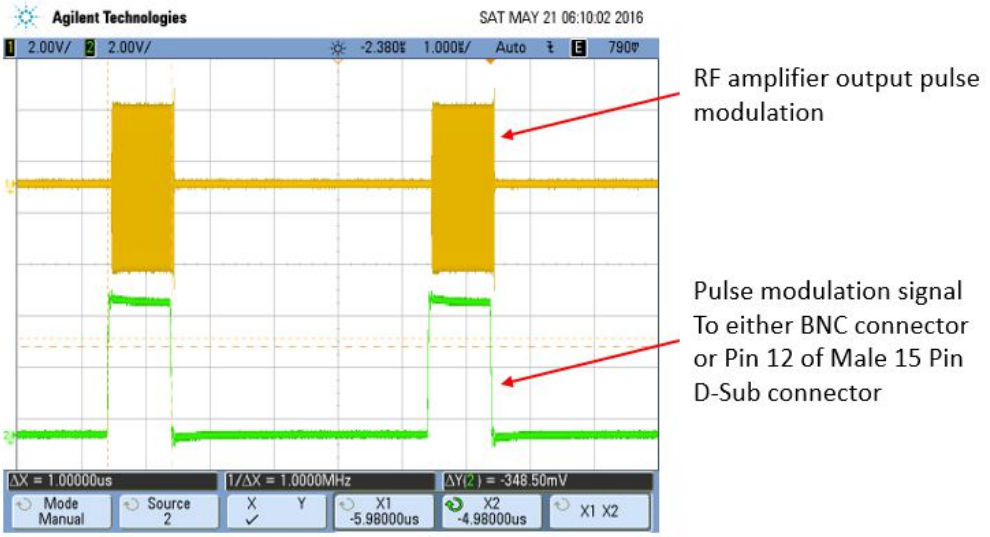




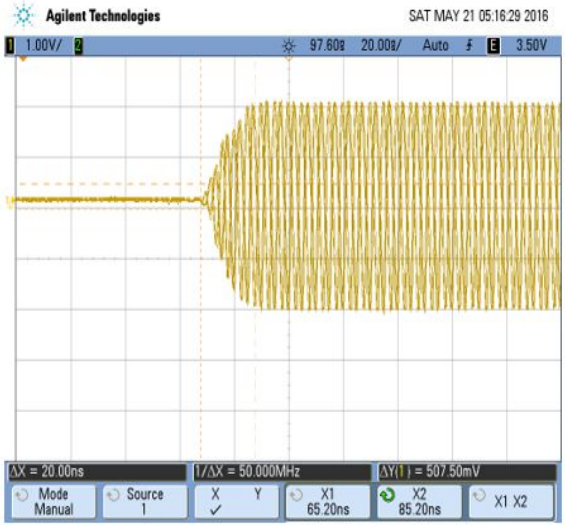




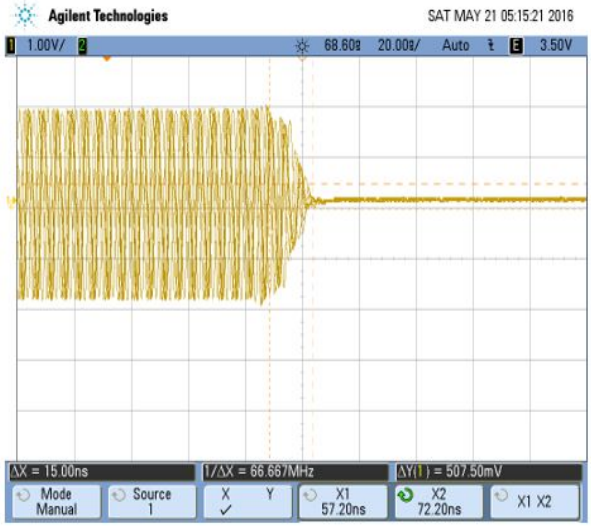
RF Amplifier Pulse Characteristics



RF Amplifier Pulse Modulation



RF Pulse Envelope Rise Time Characteristic



RF Pulse Envelope Fall Time Characteristic

Male 15 Pin D-Sub Amplifier Connector Control Interface

The RF Bay IPA amplifier series are designed to be used as either a traditional amplifier or one with sophisticated controls allowing the customer extensive flexibility in terms of control. Without any connections to the D-Sub connector, the default state of the IPA series product is a traditional amplifier with maximum gain setting. Each amplifier is design to allow the user the following control and sense functions across the connector interface:

- RF output signal attenuation control from 0 dB to 31.5 dB in 0.5 dB steps via a synchronous serial interface.
- RF signal pulse control from either the BNC connector or pin 12 of the DB15 connector interface
- Power Control to turn ON/OFF the amplifier
- Amplifier analog voltage temperature sensor output
- Alternate DC amplifier input bias

DB15 Connector Pin	Name	Description
1	GND	Ground
2	Temperature Sensor	0mV + 10.0mV/C (2 ºC to 150 ºC)
3	Power Control	0V – Amplifier OFF, 5V – Amplifier ON
4	NC	
5	NC	
6	NC	
7	NC	
8	NC	
9	Output DC bias	Voltage from case bias pin sent through one schottky diode drop to this pin at V_{supply}-0.3V
10	GND	Ground
11	Pulse Select	Selects RF amplifier pulsing signal from either BNC connector or Pin 12 (1)
12	Pulse Input	Digital Pulse input signal (TTL Compatible) (2)
13	LE	Latch Enable for amplifier digital attenuator (3)
14	Data	Serial 6-bit data to set digital attenuation in 0.5 dB LSB steps (3)
15	CLK	Serial synchronous clock for digital attenuator (3)

(1) BNC center pin has +5V DC (Logic 1) on when power amplifier is ON. When center pin is left high (Logic 1), RF amplifier output is enabled. When center pin is pulled to ground (Logic 0), RF amplifier output is disabled.

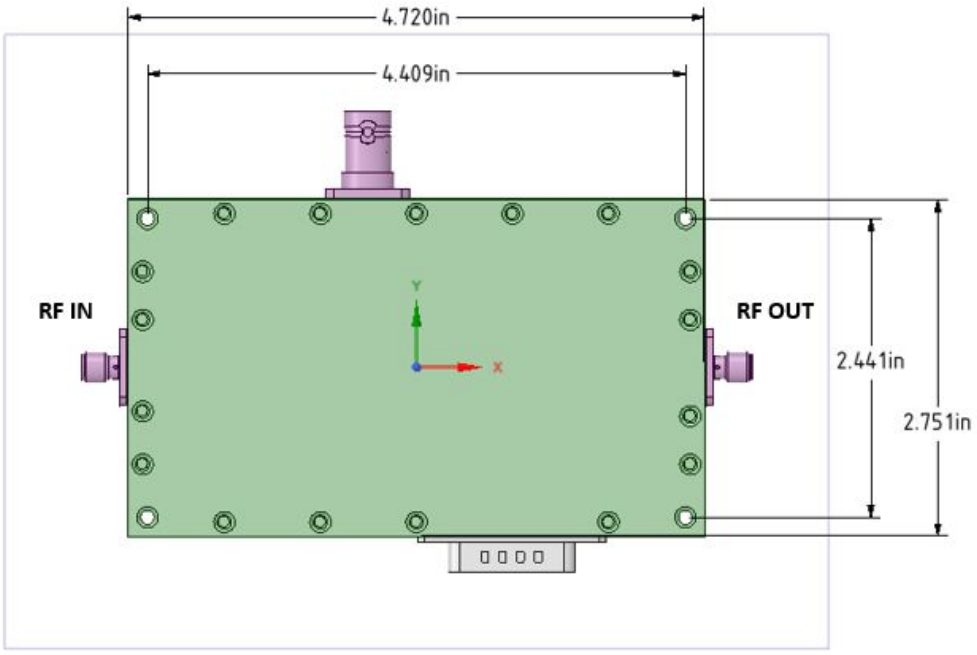
(2) This pin selects source of RF pulse modulation. When pin is pulled high (Logic 1), the pulse modulation is provided via the BNC connection. When pin is pulled low (Logic 0), the pulse modulation is provided via pin 12 (usually driven by digital circuitry).

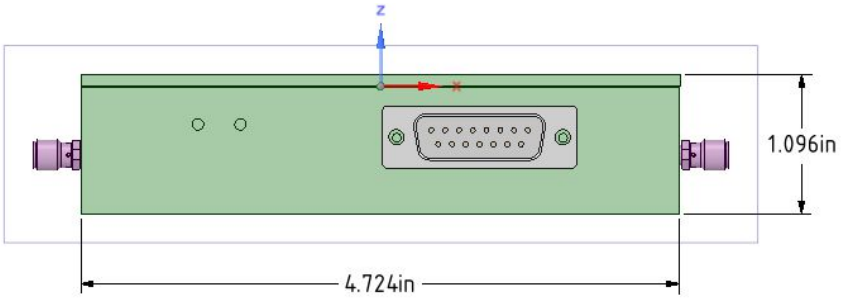
(3) Contact RF Bay to obtain technical specifications to program the amplifier's internal digital attenuator.

Absolute Maximum Ratings

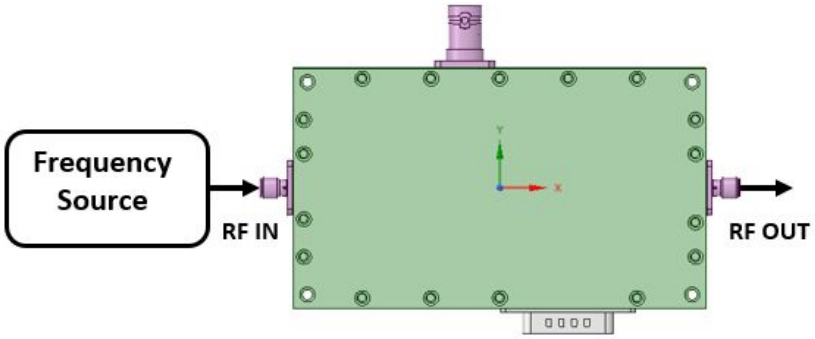
Parameter	Absolute Maximum
RF Input Power	+15dBm
Supply Voltage	+32V
Operating Temperature	-40 °C to +85 °C
Storage Temperature	-55 °C to +125 °C

Outline

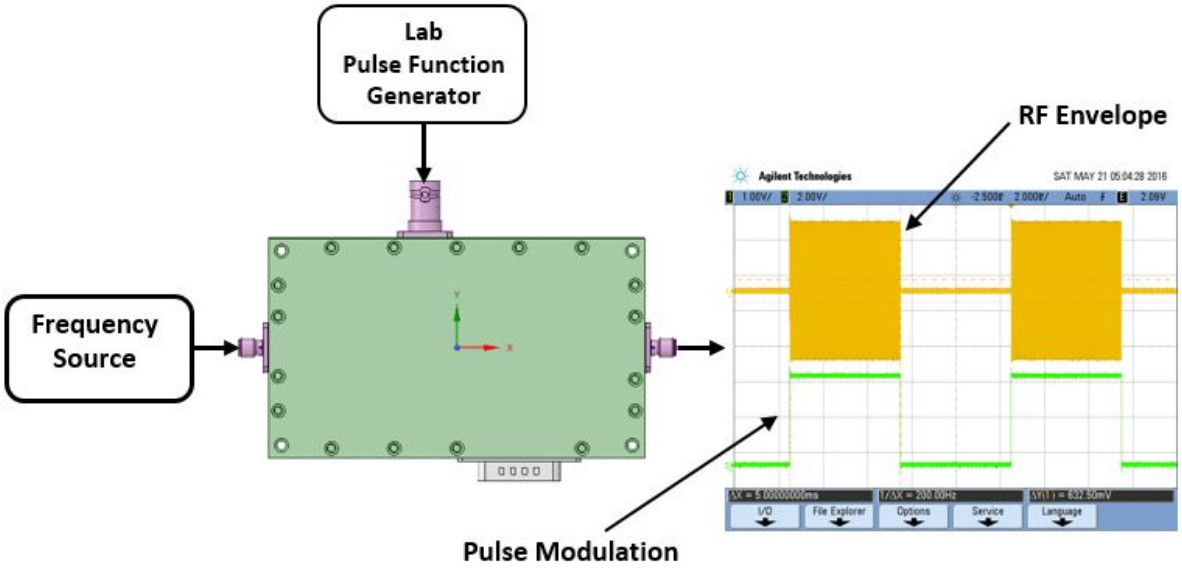




Typical Application Setups

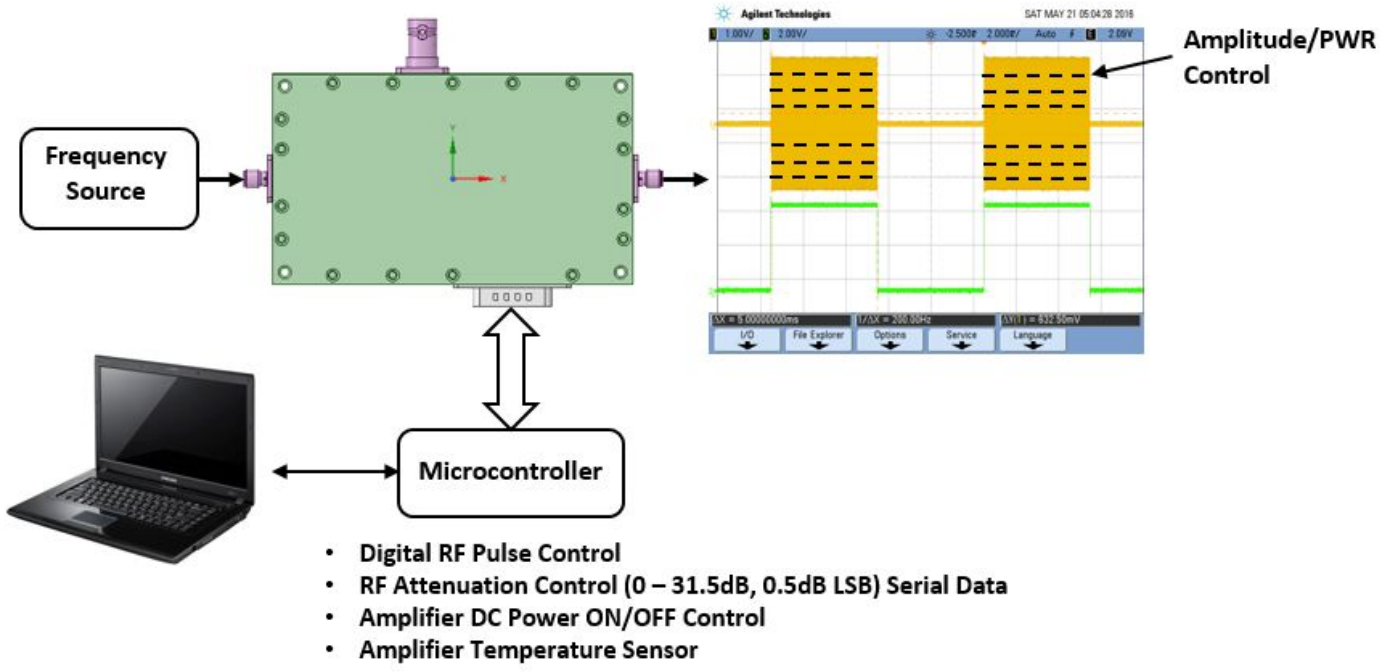


Setup 1: Fixed Gain



Setup 2: Pulse Modulation via BNC Connector

Typical Application Setups



Setup 3: Amplifier Control via 15 Pin D-Sub Connection

WARNING: 1) MUST USE HEAT SINK.
2) LOAD MUST BE CONNECTED TO AMPLIFIER OUTPUT AT ALL TIME IF DC POWER IS ON.