

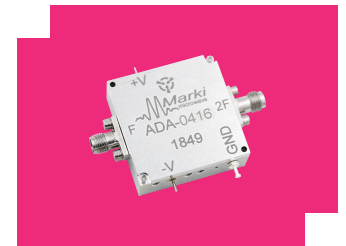
ADA-0416

MMIC Amplifier/Doubler/Amplifier

DEVICE OVERVIEW

General Description

The ADA-0416 can be used as a frequency extender to enhance the frequency range of a <8 GHz synthesizer up to 16 GHz. Useful for lab testing, test and measurement, and prototype systems. It consists of an input buffer amplifier, doubler, and output buffer amplifier to provide a +16 dBm output (suitable for driving most mixers) from a 0-6 dBm input. In addition to operation as a module, it is suitable as a reference design for prototyping using only commercially available surface mount products.



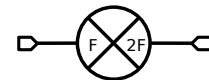
Features

N/A

Applications

N/A

Functional Block Diagram



Part Ordering Options

Part Number	Description	Connectors	Green Status	Product Lifecycle	Export Classification
ADA-0416	MMIC Amplifier/Doubler/Amplifier	<u>Standard</u>	REACH RoHS	Released	EAR99

Table Of Contents

- **Device Overview**
 - General Description
 - Features
 - Applications
 - Functional Block Diagram
- **Port Configuration and Functions**
 - Port Diagram
 - Port Functions
- **Revision History**
- **Specifications**
 - Absolute Maximum Ratings
 - Package Information
 - Electrical Specifications
 - Typical Performance Plots
- **Mechanical Data**
 - Outline Drawing

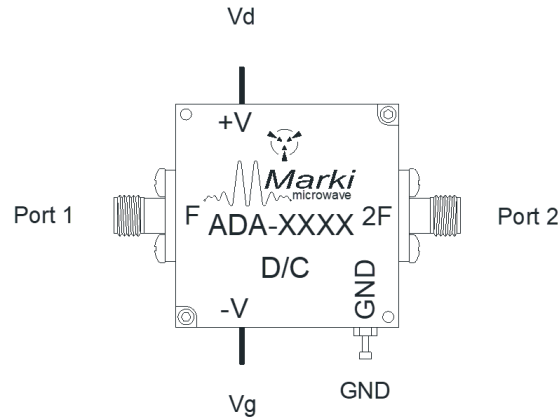
Revision History

Revision Code	Revision Date	Comment
-	2018-12-01	Datasheet Initial Release
A	2019-12-01	Modified bias current

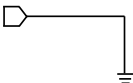
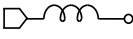
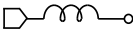
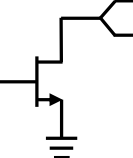
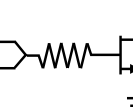
Port Configuration and Functions

Port Diagram

A top-down view of the ADA-0416 outline drawing is shown below.



Port Functions

Port	Function	Connector Type	Description	DC Equivalent Circuit
GND	Ground	-	Ground path is provided through the metal housing and outer ground lug.	
Port 1	Input	SMAF	This pin is DC open and matched to 50 Ω.	
Port 2	Output	SMAF	This pin is DC open and matched to 50 Ω.	
Vd	Positive bias	-	Drain bias port.	
Vg	Negative bias	-	Gate control for the amplifier	

Specifications

Absolute Maximum Ratings

The Absolute Maximum Ratings indicate limits beyond which damage may occur to the device. If these limits are exceeded, the device may be inoperable or have a reduced lifetime.

Parameter	Maximum Rating	Unit
Maximum Operating Temperature	85	°C
Maximum Storage Temperature	150	°C
Minimum Operating Temperature	-55	°C
Minimum Storage Temperature	-65	°C
Negative Bias Current	10	mA
Negative Bias Voltage	-2	V
Positive Bias Current	550	mA
Positive Bias Voltage	9	V
Power Dissipation	4	W
RF Input Power	20	dBm

Package Information

Parameter	Details	Rating
ESD	250 to < 500 Volts	HBM Class 1A
Dimensions	-	34.39x34.39 mm

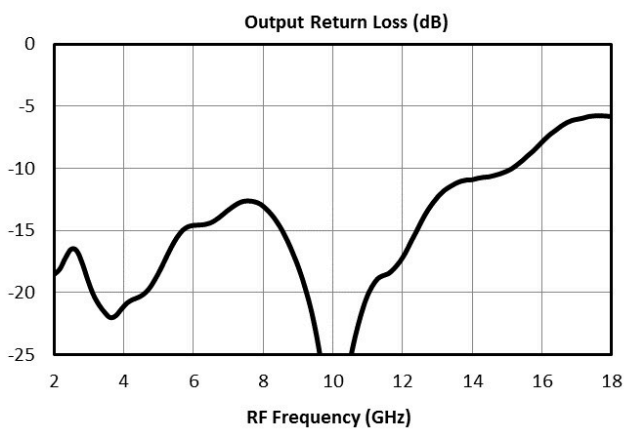
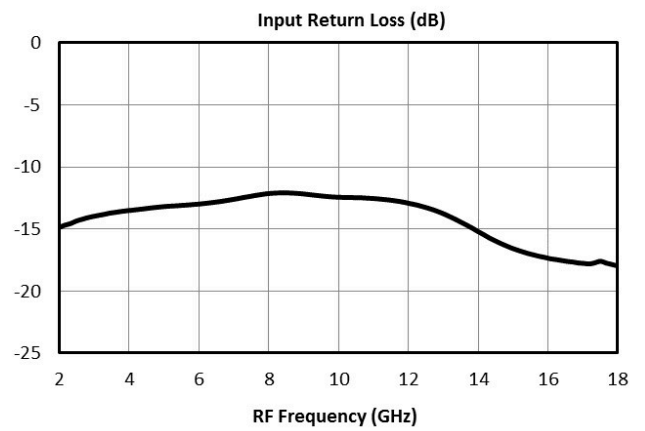
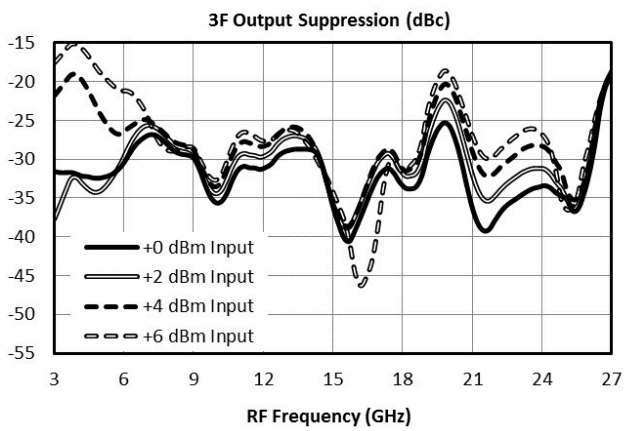
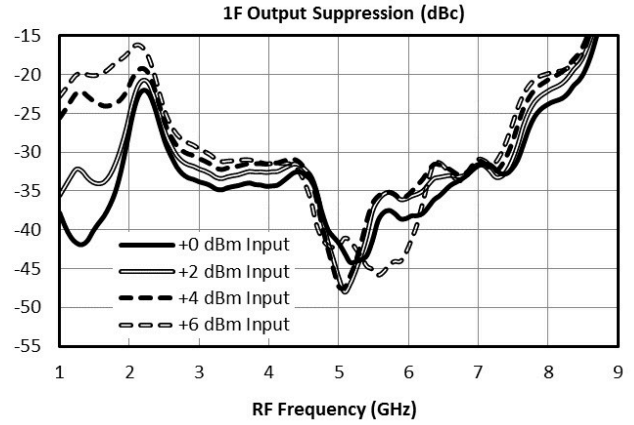
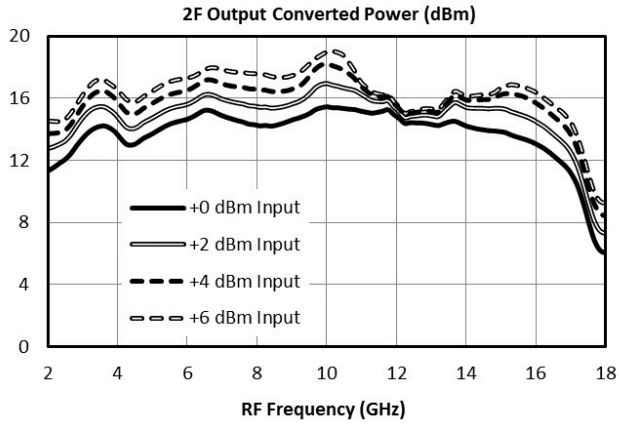
Electrical Specifications

The electrical specifications apply at TA=+25°C in a 50Ω system.

Parameter	Test Conditions	Minimum Frequency (GHz)	Maximum Frequency (GHz)	Min	Typ	Max	Unit
Current Consumption	VD: +7V	-	-	-	420	-	mA
Current Consumption ¹	VG: -0.15V	-	-	-	5	-	mA
Input Power	-	2	8	-	6	-	dBm
Output Converted Power, 2F (out)	RF In = 0 dBm	4	16	12	13	-	dBm
Output Converted Power, 2F (out)	RF In = +2 dBm	4	16	12	14	-	dBm
Output Converted Power, 2F (out)	RF In = +4 dBm	4	16	12	15	-	dBm
Output Converted Power, 2F (out)	RF In = +6 dBm	4	16	12	16	-	dBm
Suppression, 1F	-	2	8	-	30	-	dBc
Suppression, 3F	-	6	24	-	26	-	dBc
Input Frequency Range	-	-	-	2	-	8	GHz
Output Frequency Range	-	-	-	4	-	16	GHz

^[1] Suppression and current consumption will vary with negative bias voltage. Optimal performance is at approximately -0.15 V.

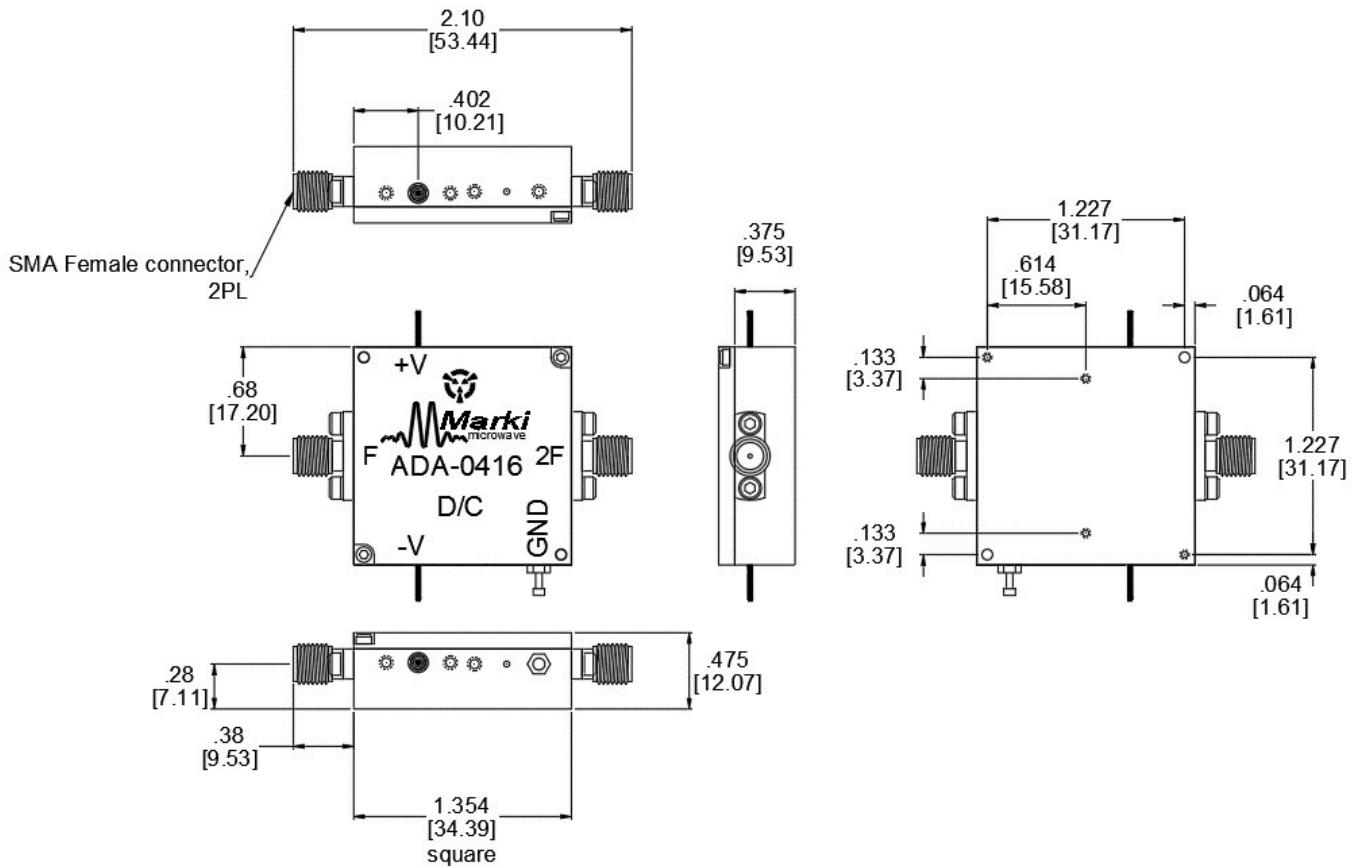
Typical Performance Plots



Mechanical Data

Outline Drawing

Download : [Outline 2D Drawing](#) | [Outline 3D Drawing](#) | [Outline 3D STP](#)



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