

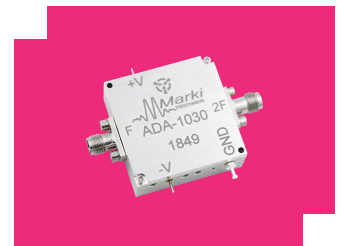
ADA-1030

MMIC Amplifier/Doubler/Amplifier

DEVICE OVERVIEW

General Description

The ADA-1030 can be used as a frequency extender to enhance the frequency range of a <15 GHz synthesizer up to 30 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.



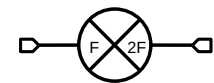
Features

N/A

Applications

N/A

Functional Block Diagram



Part Ordering Options

Part Number	Description	Package	Packing Size	Green Status	Product Lifecycle	Export Classification
ADA-1030	MMIC Amplifier/Doubler/Amplifier	-	-	RoHS	Released	EAR99

Table Of Contents

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

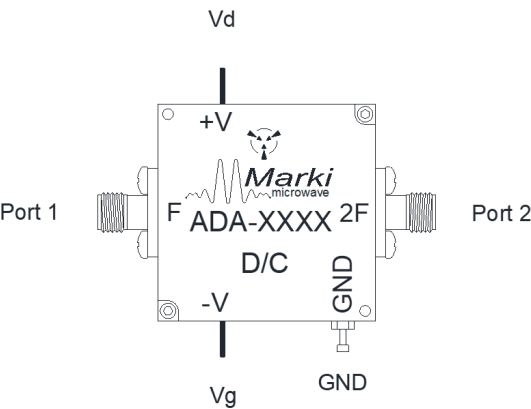
Revision History

Revision Code	Revision Date	Comment
-	2018-12-01	Datasheet Initial Release

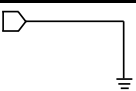
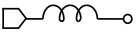
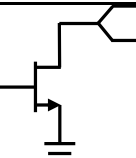
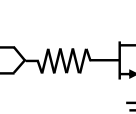
Port Configuration and Functions

Port Diagram

A top-down view of the ADA-1030 outline drawing is shown below.



Port Functions

Port	Function	Description	Equivalent Circuit for Package
GND	Ground	Ground path is provided through the metal housing and outer ground lug.	
Port 1	Input	Input 1x Frequency Port. This pin is DC open and matched to 50 Ω.	
Port 2	Output	2x Input Frequency output port. 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	4	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. Suppression is relative to doubled output power. Isolation is defined as relative to the fundamental input power.

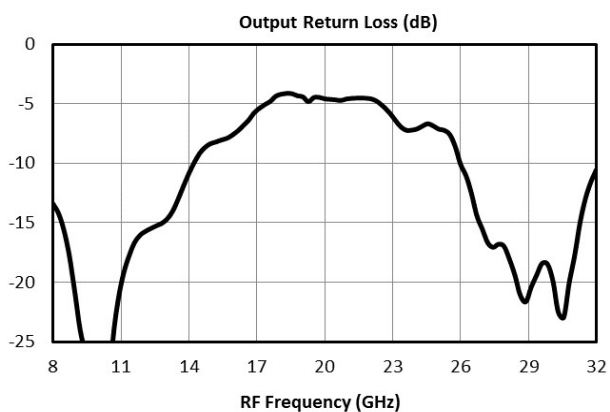
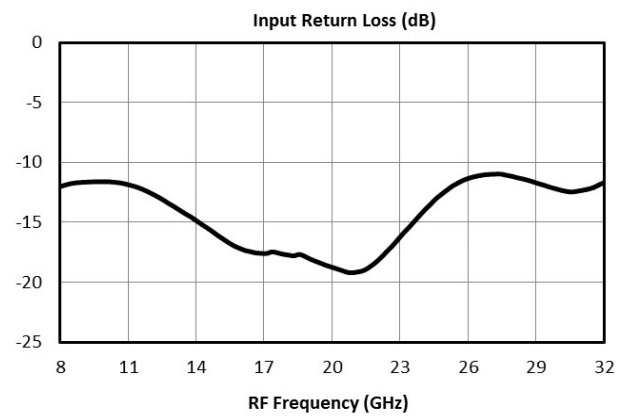
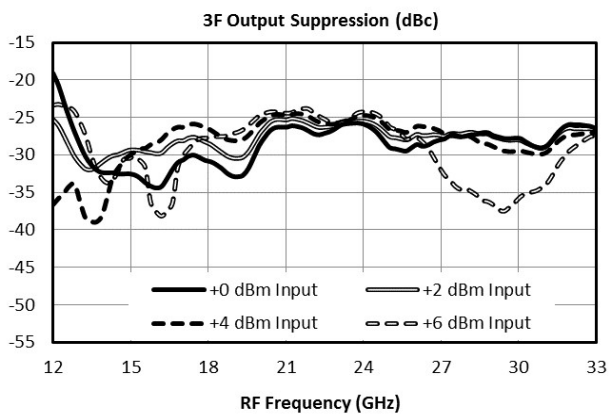
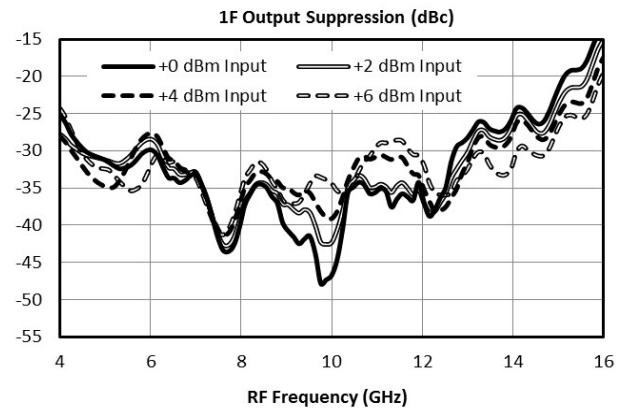
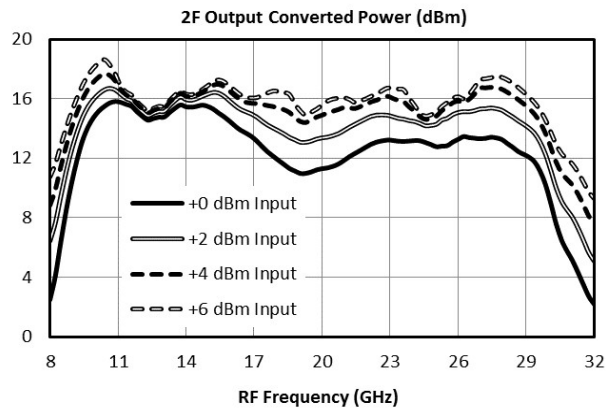
Parameter	Test Conditions	Minimum Frequency (GHz)	Maximum Frequency (GHz)	Min	Typ	Max	Unit
Bias Requirements, VD: +7 Volts DC ¹	-	-	-	-	300	-	mA
Bias Requirements, VG: -0.15 Volts DC ²	-	-	-	-	0	-	mA
Input, F (in) ³	-	5	15	-	6	-	dBm
Output Converted Power, 2F (out) 0 dBm Input Power	-	10	30	12	13	-	dBm
Output Converted Power, 2F (out) 2 dBm Input Power	-	10	30	12	14	-	dBm
Output Converted Power, 2F (out) 4 dBm Input Power	-	10	30	12	15	-	dBm
Output Converted Power, 2F (out) 6 dBm Input Power	-	10	30	12	16	-	dBm
Suppression, 1F	-	5	15	-	32	-	dBc
Suppression, 3F	-	15	30	-	27	-	dBc
Input Frequency Range	-	-	-	5	-	15	GHz
Output Frequency Range	-	-	-	10	-	30	GHz

^[1] The positive bias is from +3 to +7 Volts and the negative bias is from -0.25 to ground. The higher positive bias voltage, the better 2F output converted power will be, and the lower positive bias voltage, the better 1F, 3F harmonic suppression will be.

^[2] The positive bias is from +3 to +7 Volts and the negative bias is from -0.25 to ground. The higher positive bias voltage, the better 2F output converted power will be, and the lower positive bias voltage, the better 1F, 3F harmonic suppression will be. Suppression and current consumption will vary with negative bias voltage. Optimal performance is at approximately -0.15 V.

^[3] The higher input power the better 2F output power and the worse 1F/3F suppression will be.

Typical Performance Plots



DISCLAIMER

MARKI MICROWAVE, INC., ("MARKI") PROVIDES TECHNICAL SPECIFICATIONS AND DATA (INCLUDING DATASHEETS), APPLICATION OR OTHER DESIGN ADVICE, WEB TOOLS, AND OTHER INFORMATION AND RESOURCES "AS IS" AND WITH ALL FAULTS. MARKI DISCLAIMS ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR NON-INFRINGEMENT.

These resources are intended for developers skilled in the art designing with Marki products. You are solely responsible for (1) selecting the appropriate products for your application, (2) designing, validating, and testing your application, and (3) ensuring your application meets applicable standards and other requirements. Marki makes no guarantee regarding the suitability of its products for any particular purpose, nor does Marki assume any liability whatsoever arising out of your use or application of any Marki product.

Marki grants you permission to use these resources only for development of an application that uses Marki products. Other reproduction or use of these resources is strictly prohibited. No license is granted to any other Marki intellectual property or to any third-party intellectual property. Marki reserves the right to make changes to the product(s) or information contained herein without notice.

MARKI MICROWAVE and T3 MIXER are trademarks or registered trademarks of Marki Microwave, Inc. All other trademarks used are the property of their respective owners.

© 2018, Marki Microwave, Inc