

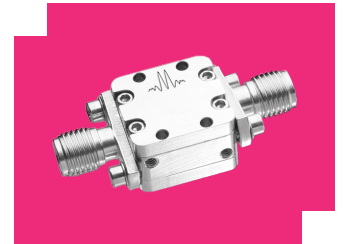
MMD-1030HS

GaAs MMIC Doubler

DEVICE OVERVIEW

General Description

The MMD-1030H is a passive double balanced MMIC doubler covering 10 to 30 GHz on the output. It features excellent conversion loss, superior isolations and harmonic suppressions across a broad bandwidth, in a highly miniaturized form factor. Accurate, nonlinear simulation models are available for Microwave Office® and ADS through the Marki Microwave PDK. The MMD-1030H is available as a wire bondable chip or a connectorized package. The MMD-1030H is a superior alternative to Marki Microwave carrier and packaged doublers.



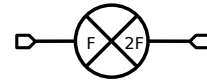
Features

- Compact Chip Style Package (0.054" x 0.046" x 0.004")
- CAD Optimized for Superior Suppressions and Efficiency
- Broadband Performance
- Excellent Unit-to-Unit Repeatability
- Fully nonlinear software models available with Marki PDK for Microwave Office® and ADS
- RoHS Compliant

Applications

N/A

Functional Block Diagram



Part Ordering Options

Part Number	Description	Package	Connectors	Green Status	Product Lifecycle	Export Classification
MMD-1030HS	GaAs MMIC Doubler	S	<u>Standard</u>	REACH RoHS	Released	EAR99

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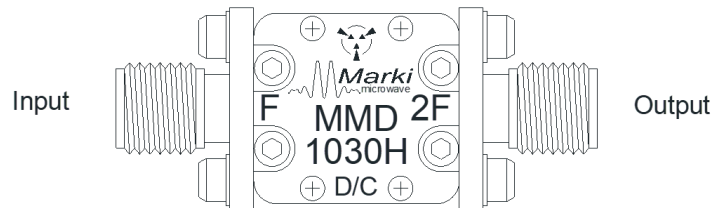
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Revision History

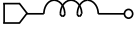
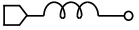
Revision Code	Revision Date	Comment
A	2019-02-01	Die resized from 1.47 x 0.82 mm ² to 1.38 x 1.17 mm ² . CH package tolerance added.

Port Configuration and Functions

Port Diagram



Port Functions

Port	Function	Connector Type	Description	DC Equivalent Circuit
2F	2F	2.92F	2x input frequency output port. The output port is DC open and AC matched to 50 Ohms from 10 to 30 GHz. Blocking capacitor is optional.	
F	1F	SMAF	Input 1x frequency port. The input port is DC open and AC matched to 50 Ohms from 5 to 15 GHz. Blocking capacitor is optional.	

Specifications

Absolute Maximum Ratings

Parameter	Maximum Rating	Unit
Maximum Operating Temperature	100	°C
Maximum Storage Temperature	125	°C
Minimum Operating Temperature	-55	°C
Minimum Storage Temperature	-65	°C
RF Power Handling, 100°C	20	dBm
RF Power Handling, 25°C	25	dBm

Package Information

Parameter	Details	Rating
Dimensions	-	14.22 x 13.21 mm

Electrical Specifications

Specifications guaranteed from -55 to +100°C, measured in a 50Ω system.

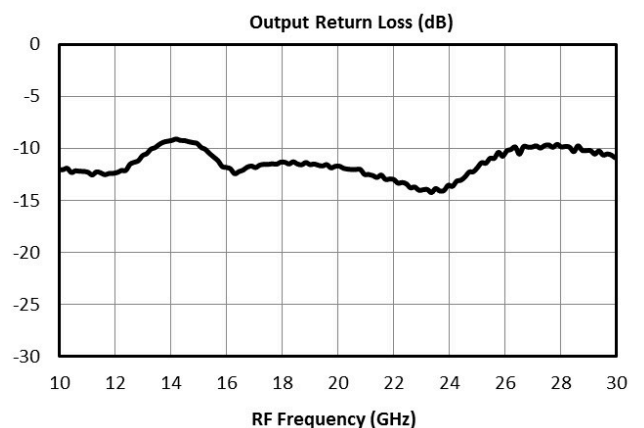
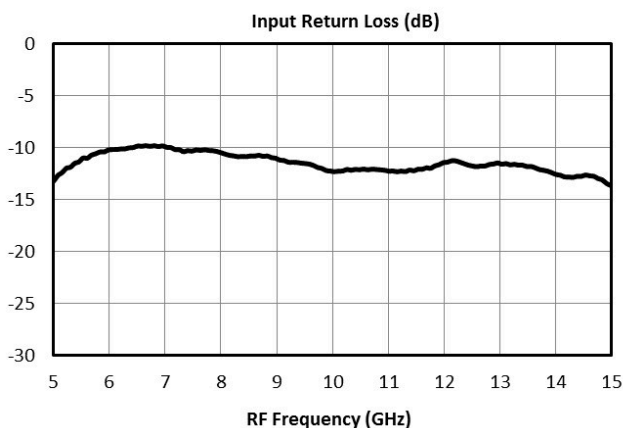
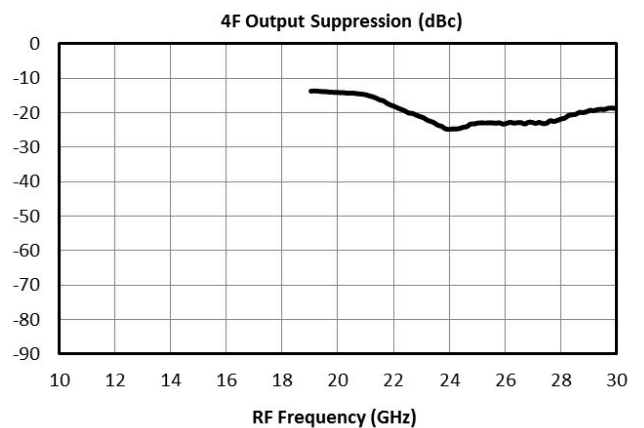
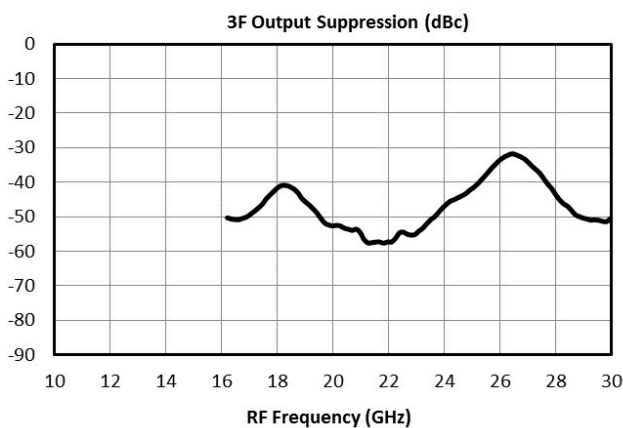
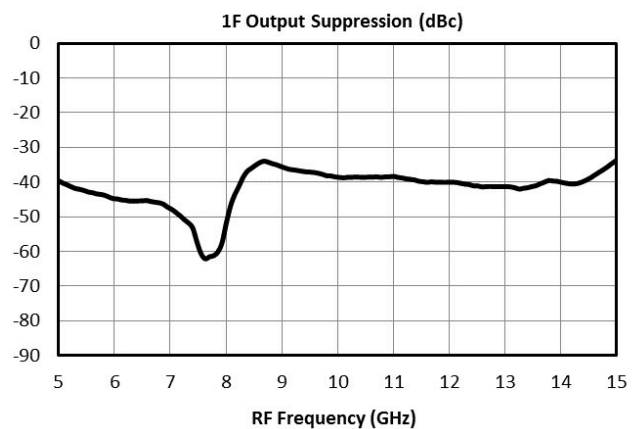
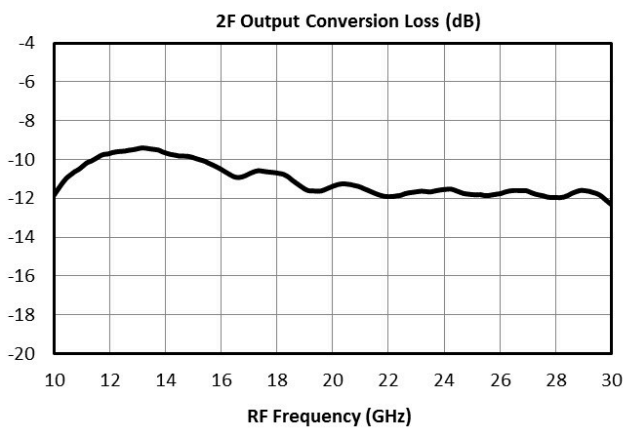
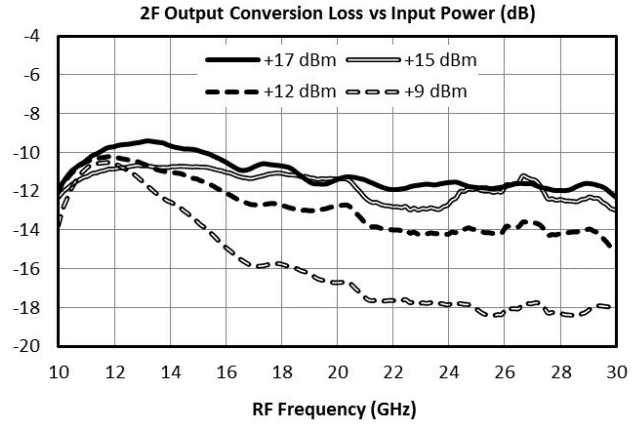
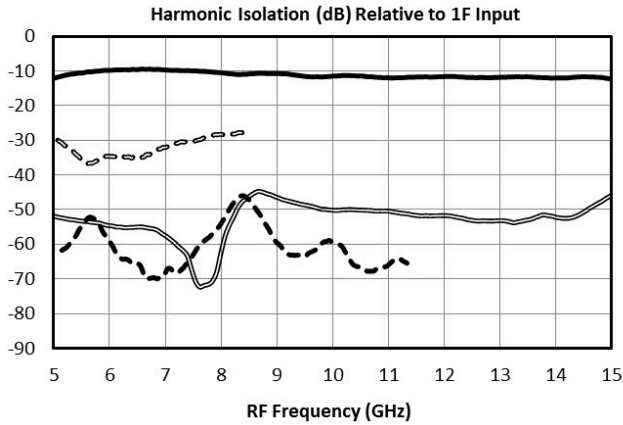
Parameter	Test Conditions	Minimum Frequency (GHz)	Maximum Frequency (GHz)	Min	Typ	Max	Unit
Conversion Loss	Second Harmonic Output	10	30	-	11.5	17	dB
Input Power	1F=5-15 GHz 2F=10-30 GHz	5	15	10	14	17	dBm
Isolation, 1F ¹	1F=5-15 GHz 2F=10-30 GHz	5	15	-	53	-	dB
Isolation, 3F ²	1F=5-15 GHz 2F=10-30 GHz	10	30	-	58	-	dB
Isolation, 4F ³	1F=5-15 GHz 2F=10-30 GHz	10	30	-	29	-	dB
Suppression, 1F ⁴	1F=5-15 GHz 2F=10-30 GHz	5	15	-	41	-	dB
Suppression, 3F ⁵	1F=5-15 GHz 2F=10-30 GHz	10	30	-	47	-	dB
Suppression, 4F ⁶	1F=5-15 GHz 2F=10-30 GHz	10	30	-	22	-	dB
Input Frequency Range	-	-	-	5	-	15	GHz
Output Frequency Range	-	-	-	10	-	30	GHz

[1][2][3] Isolation is defined as relative to the fundamental input power.

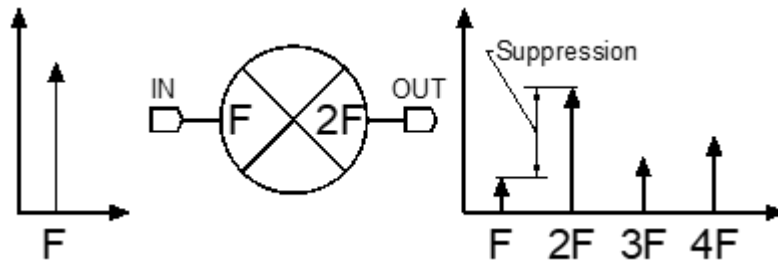
[4] Suppression is relative to doubled output power.

[5][6] Suppression is relative to doubled output power.

Typical Performance Plots



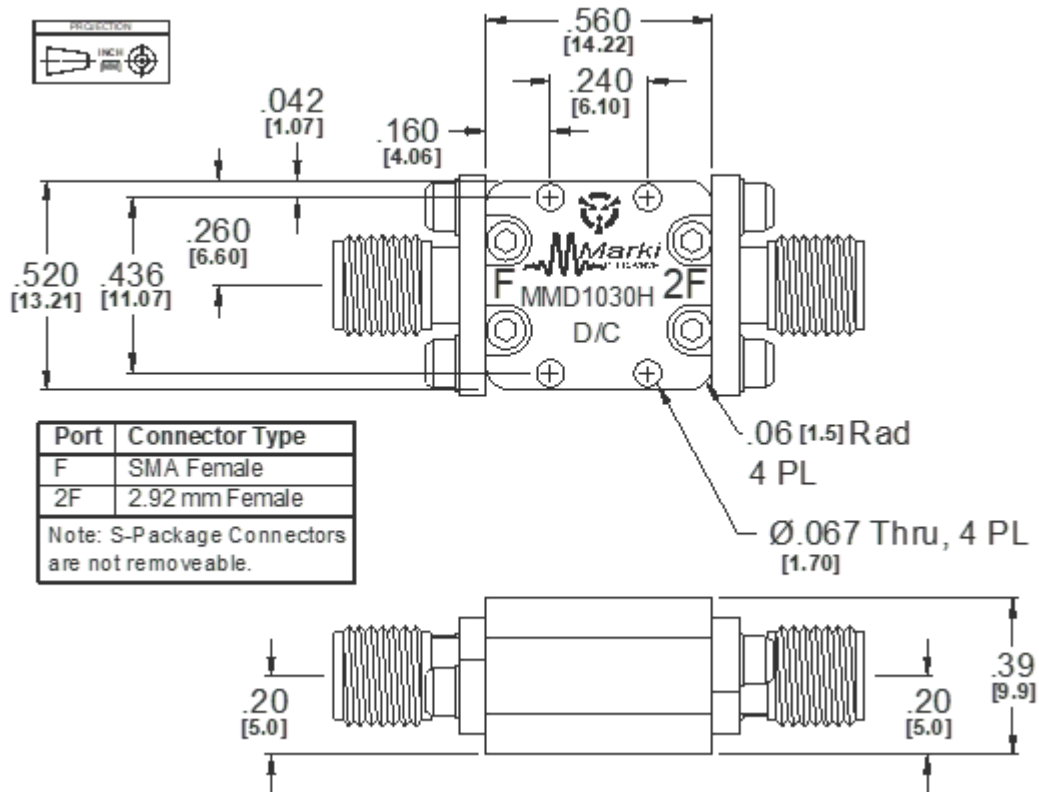
Application Circuit



Mechanical Data

Outline Drawing

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



Notes

1. Doubled Loss typically degrades less than 0.5 dB at +100°C and improves less than 0.5 dB at -55°C.
2. Unless otherwise specified, H-Diode data is taken with a +17 dBm input.
3. Specifications are subject to change without notice. Contact Marki Microwave for the most recent specifications and data sheets.
4. Catalog doubler circuits are continually improved. Configuration control requires custom model numbers and specifications.

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