

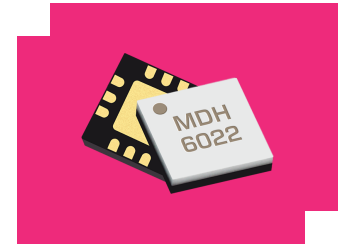
MMD-1030HSM

GaAs MMIC Doubler

DEVICE OVERVIEW

General Description

The MMD-1030HSM 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 small form factor. The MMD-1030HSM is available in a lead-free, RoHS compliant QFN surface mount package and is compatible with standard leaded and lead-free PCB reflow soldering processes. The MMD-1030HSM is a superior alternative to Marki Microwave carrier and packaged doublers.



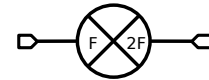
Features

- Compact 3mm QFN SMT Style Package
- Broadband Performance
- Excellent Unit-to-Unit Repeatability
- RoHS Compliant

Applications

N/A

Functional Block Diagram



Part Ordering Options

Part Number	Description	Package	Packing Size	Green Status	Product Lifecycle	Export Classification
MMD-1030HSM	GaAs MMIC Doubler	QFN	-	REACH RoHS	Released	EAR99
EVAL-MMD-1030H	Evaluation Board, GaAs MMIC 10 -30 GHz Doubler	EVAL	-	REACH RoHS	Released	EAR99
MMD-1030H-TR	Tape and Reel, GaAs MMIC Doubler	QFN	7"	REACH RoHS	Released	EAR99

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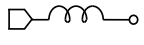

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Port Configuration and Functions

Port Functions

Port	Function	Description	DC Equivalent Circuit
Pin 2	F input	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.	
Pin 8	2F Output	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.	

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	-	3 x 3 mm
Moisture Sensitivity Level	-	MSL 1

Electrical Specifications

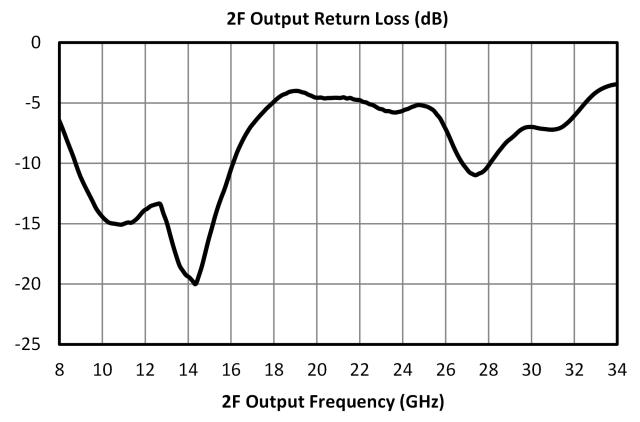
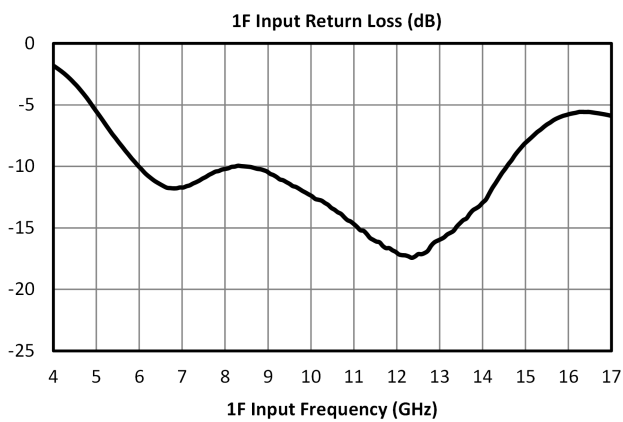
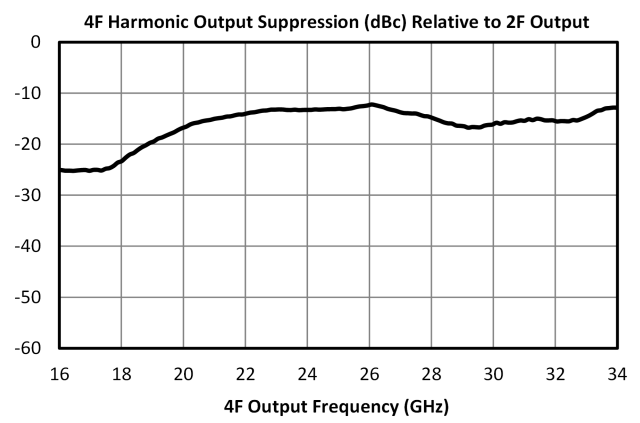
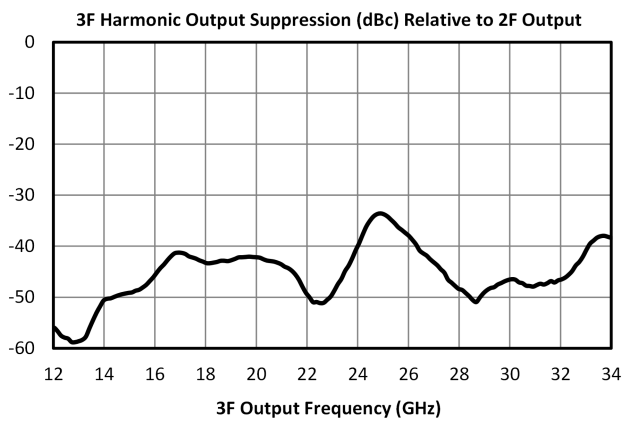
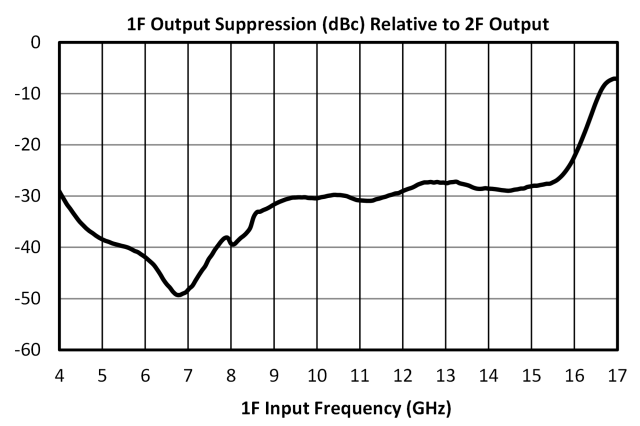
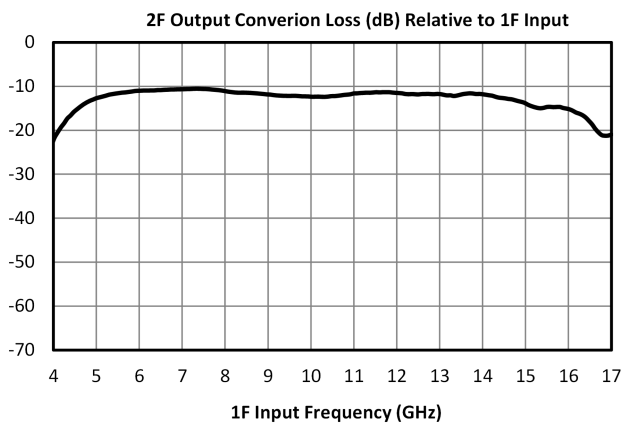
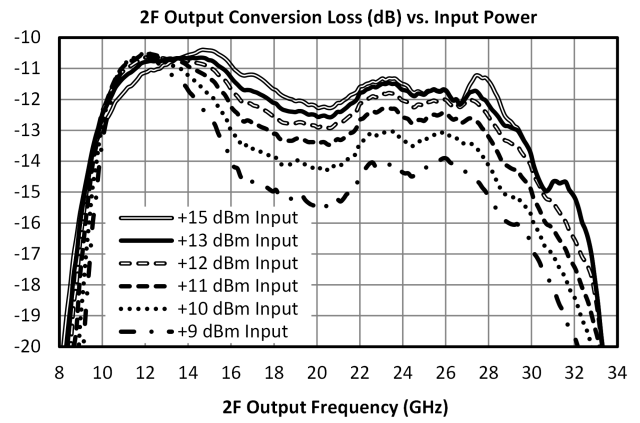
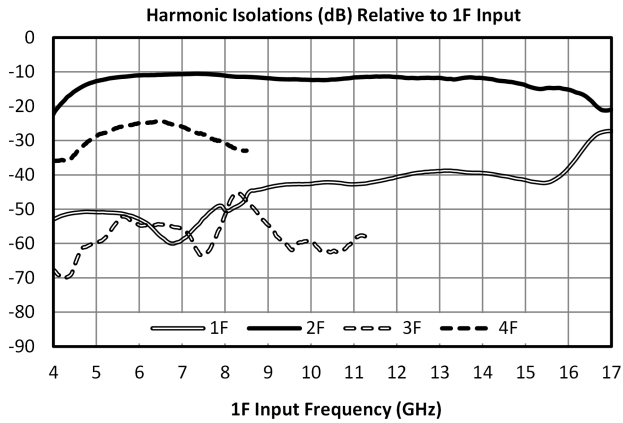
Specifications guaranteed from -55 to +100°C, measured in a 50Ω system. All bare die are 100% DC tested and 100% visual inspected. RF testing is performed on a sample basis to verify conformance to datasheet guaranteed specifications.

Parameter	Test Conditions	Minimum Frequency (GHz)	Maximum Frequency (GHz)	Min	Typ	Max	Unit
Conversion Loss	Second Harmonic Output	10	30	-	12	-	dB
Input Power	Input=5-15GHz Output=10-30GHz	5	15	10	14	17	dBm
Isolation, 1F ¹	Input=5-15GHz Output=10-30GHz	5	15	-	46	-	dB
Isolation, 3F ²	Input=5-15GHz Output=10-30GHz	10	30	-	57	-	dB
Isolation, 4F ³	Input=5-15GHz Output=10-30GHz	10	30	-	31	-	dB
Suppression, 1F ⁴	Input=5-15GHz Output=10-30GHz	5	15	-	34	-	dB
Suppression, 3F ⁵	Input=5-15GHz Output=10-30GHz	10	30	-	46	-	dB
Suppression, 4F ⁶	Input=5-15GHz Output=10-30GHz	10	30	-	19	-	dB
Input Frequency Range	-	-	-	5	-	15	GHz
Output Frequency Range	-	-	-	10	-	30	GHz

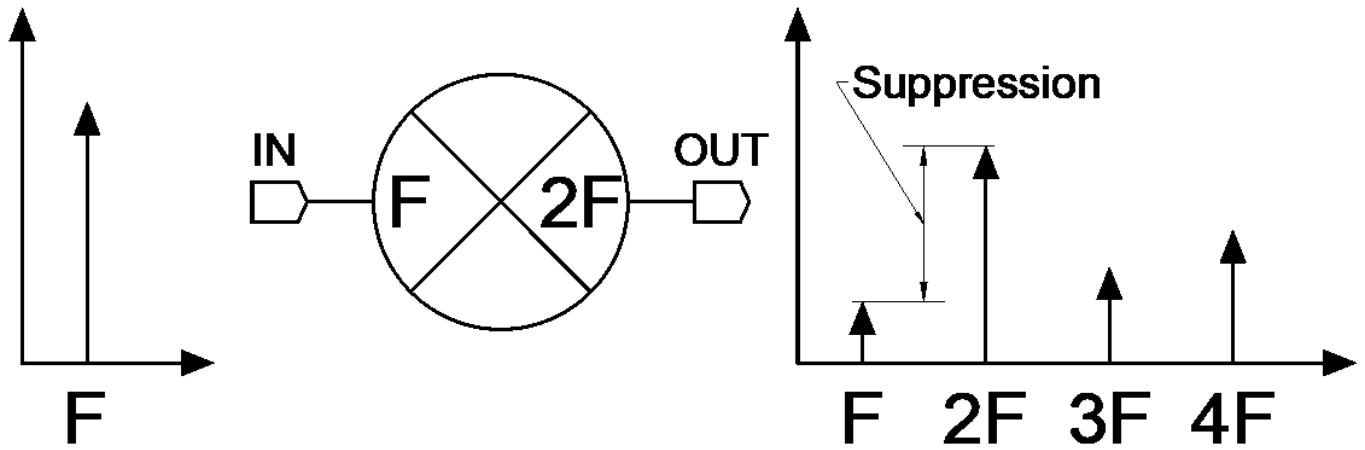
[1][2][3] Isolation is defined as relative to the fundamental input power.

[4][5][6] Suppression is relative to doubled output power.

Typical Performance Plots



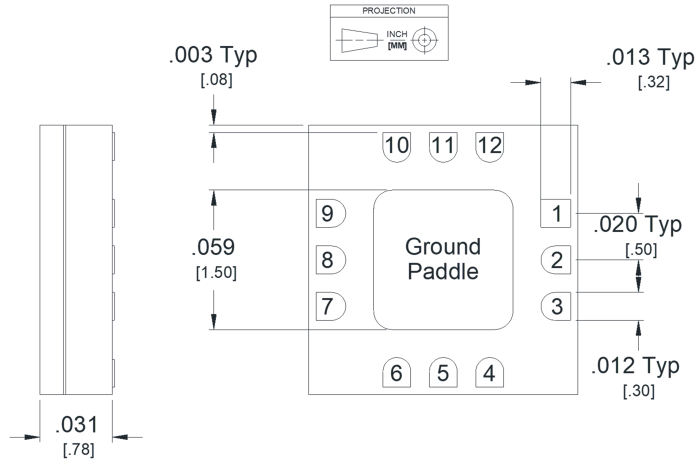
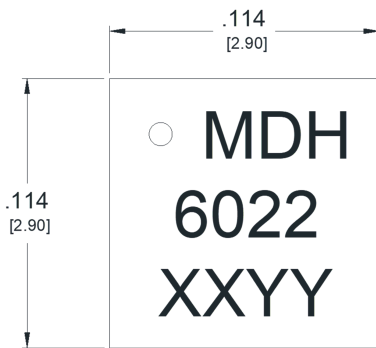
Application Circuit



Mechanical Data

Outline Drawing

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



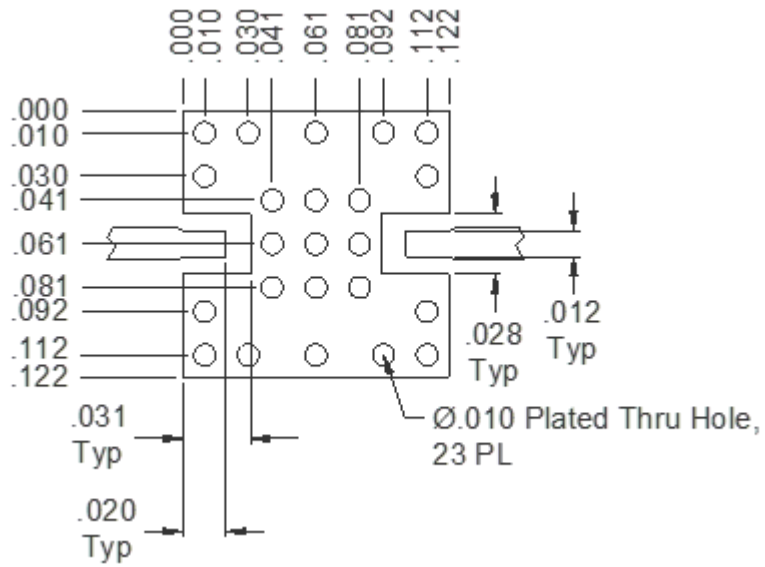
Pad #	Function
1	N/C
2	1F In
3	N/C
4	N/C
5	N/C
6	N/C
7	N/C
8	2F Out
9	N/C
10	N/C
11	N/C
12	N/C

Notes:

1. Substrate material is Ceramic.
2. Finish: dimension are in micrometer
Ni: 8.89um. Max. 1.27um. Min
Pd: 0.17um Max. 0.07um. Min.
Au: 0.254um. Max. 0.03um Min.
3. All unconnected pads should be connected to PCB RF ground.

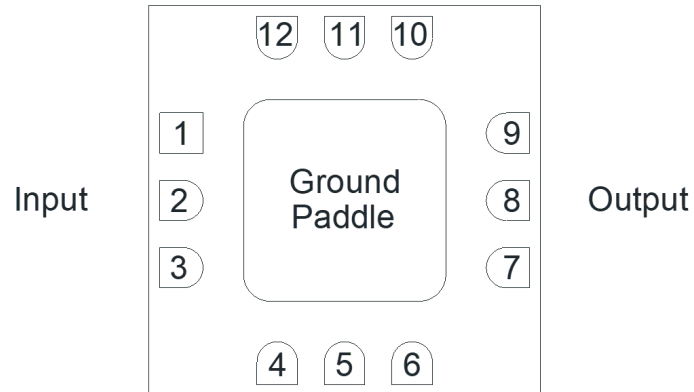
Footprint Image

Download : [Footprint Drawing](#)



Evaluation Board

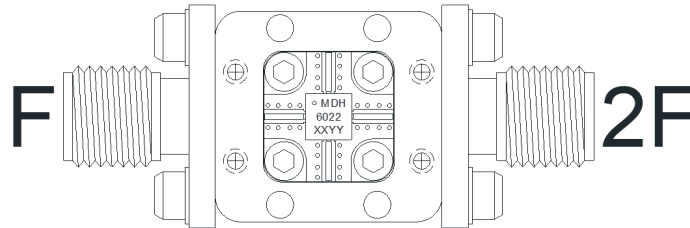
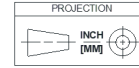
Evaluation Board Bill of Materials



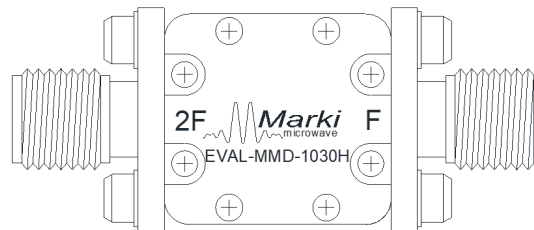
Evaluation Board - Outline Drawing

Port	Connector Type
F	SMA Female
2F	2.92 mm Female

Note: Eval Connectors are not removable.



Backside Label



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