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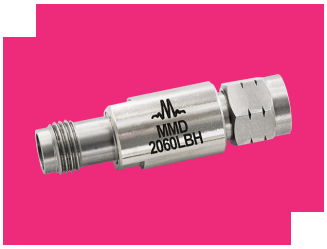
MMD-2060LBH

GaAs MMIC Doubler, 20 - 60 GHz Output Frequency

DEVICE OVERVIEW

General Description

The MMD-2060LBH is a MMIC doubler fabricated with GaAs Schottky diodes. This part operates over a 10 to 30 GHz input frequency range or a doubled output frequency range of 20 to 60 GHz. It features excellent 11 dB conversion loss, superior 48 dB 1F and 54 dB 3F isolations, and harmonic suppressions across a broad bandwidth. Available in a compact inline connectorized bullet housing. For wire-bondable die, see MMD-2060LCH.



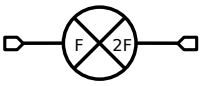
Features

- High Fundamental Rejection
- 2F Conversion Loss, 11 dB Typical
- Low Input Drive, +3 dBm Typical
- mmWave Output Frequencies
- Compact Inline Bullet Housing

Applications

- High frequency synthesis
- LO signal chain

Functional Block Diagram



Part Ordering Options

Part Number	Description	Package	Connectors	Green Status	Product Lifecycle	Export Classification
MMD-2060LBH	GaAs MMIC Doubler, 20 - 60 GHz Output Frequency	BH	-	REACH RoHS	Released	EAR99

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Table Of Contents

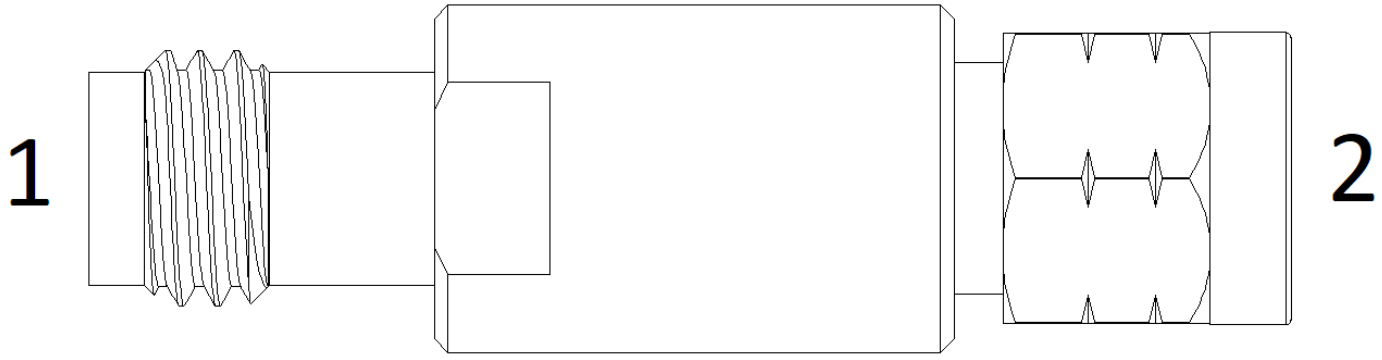
Revision History

Revision Code	Revision Date	Comment
-	2025-12-01	Initial Release

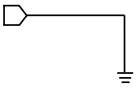
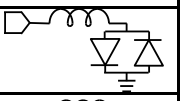
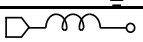
Port Configuration and Functions

Port Diagram

The MMD-2060LBH should only be used in the forward direction, with the input and output ports given in Port Functions.



Port Functions

Port	Function	Connector Type	Description	DC Equivalent Circuit
GND	Ground	-	BH package ground provided through metal housing and outer coax conductor	
Port 1	1F Input	1.85F	Input 1x Frequency Port. Port 1 is DC coupled to the diodes for the BH package. Blocking capacitor is optional.	
Port 2	2F Output	1.85M	2x Input Frequency output port. Port 2 is DC open for the BH package.	

Specifications

Absolute Maximum Ratings

The Absolute Maximum Ratings indicate limits beyond which damage may occur to the device. All Absolute Maximum Ratings are individual and should not be met in parallel. 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	125	°C
Minimum Operating Temperature	-55	°C
Minimum Storage Temperature	-65	°C
Port 1 DC Current	25	mA
Power Handling, at any Port	23	dBm

Package Information

Parameter	Details	Rating
ESD	250 to < 500 Volts	HBM Class 1A
Weight	Package name: BH	10g
Dimensions	-	32.8 x 9.5 mm

Recommended Operating Conditions

The Recommended Operating Conditions indicate the limits, inside which the device should be operated, to guarantee the performance given in Electrical Specifications Operating outside these limits may not necessarily cause damage to the device, but the performance may degrade outside the limits of the electrical specifications. For limits, above which damage may occur, see Absolute Maximum Ratings.

Parameter	Min	Nominal	Max	Unit
Operating Temperature	-55	25	85	°C
Input Power	3	-	10	dBm

Electrical Specifications

The electrical specifications apply at TA=+25°C in a 50Ω system. Typical data shown is for the connectorized BH package doubler used in the forward direction with a +3 dBm sine wave input.

Parameter	Test Conditions	Minimum Frequency (GHz)	Maximum Frequency (GHz)	Min	Typ	Max	Unit
Conversion Loss	Second Harmonic Output	-	-	-	11	-	dB
Input Frequency Range	-	-	-	10	-	30	GHz
Output Frequency Range	-	-	-	20	-	60	GHz
Isolation, 1F [1]	Input=10-30 GHz Output=10-30 GHz	-	-	-	48	-	dB
Isolation, 3F [2]	Input=10-20 GHz Output=30-60 GHz	-	-	-	54	-	dB
Isolation, 4F [3]	Input=10-15 GHz Output=40-60 GHz	-	-	-	25	-	dB
Suppression, 1F [4]	Input=10-30 GHz Output=10-30 GHz	-	-	-	36	-	dBc
Suppression, 3F [5]	Input=10-20 GHz Output=30-60 GHz	-	-	-	42	-	dBc
Suppression, 4F [6]	Input=10-15 GHz Output=40-60 GHz	-	-	-	13	-	dBc

[1][2][3] Isolation is defined as the harmonic power relative to the 1F fundamental input power.
[4][5][6] Suppressions and isolations measured with an input source with >60dBc (relative to fundamental input) harmonic suppression. Suppression is defined as the harmonic power relative to the 2F doubled output power.

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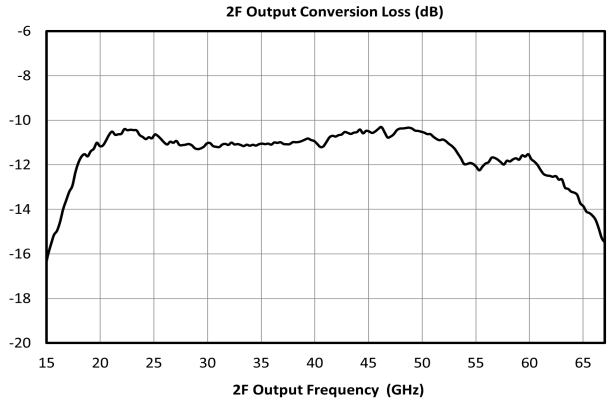
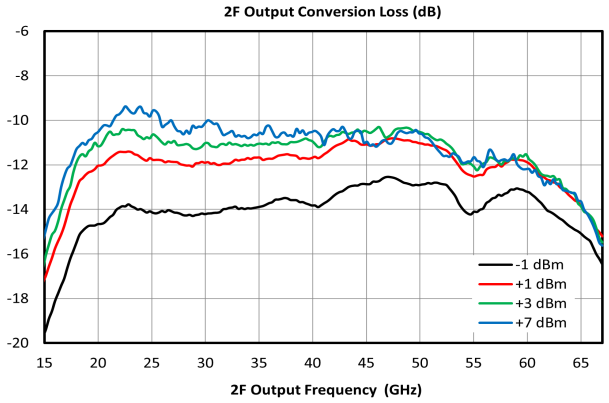
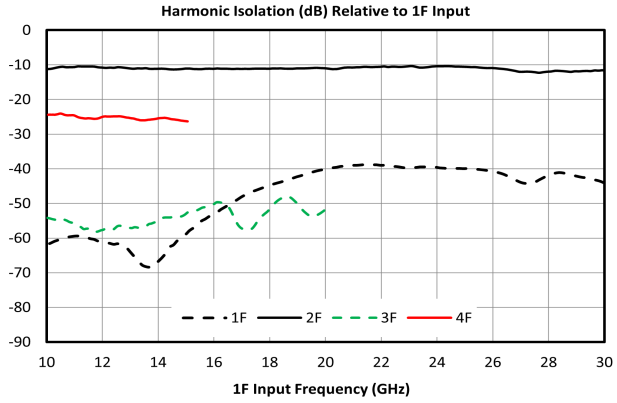
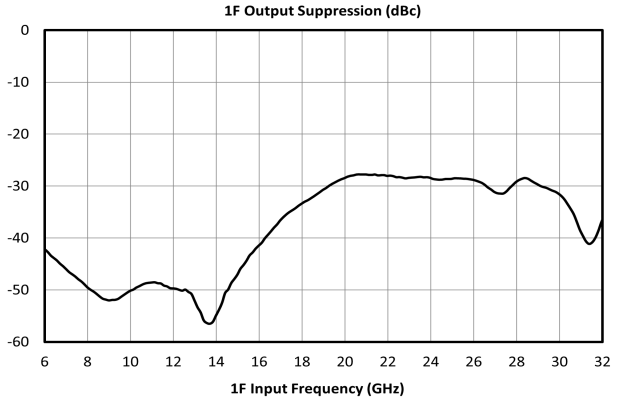
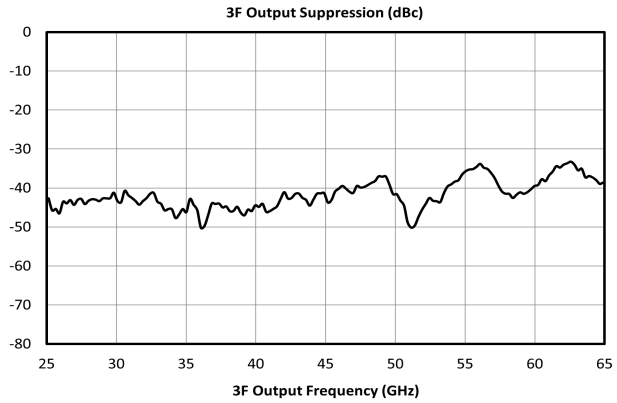
Typical Performance Plot

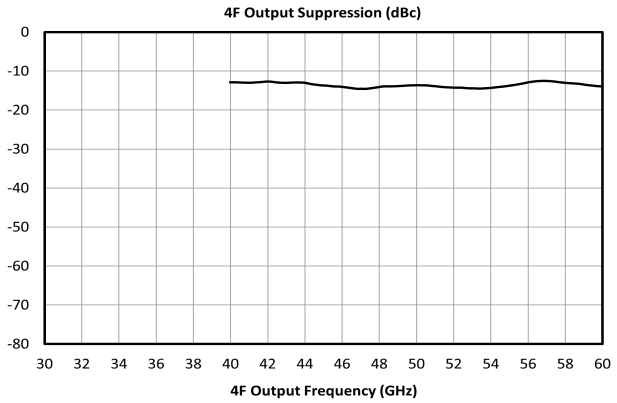


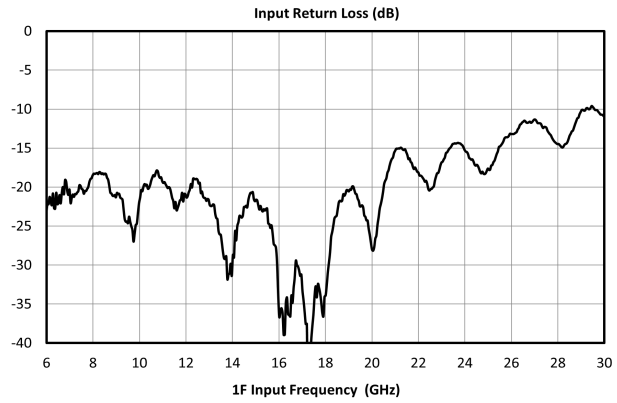












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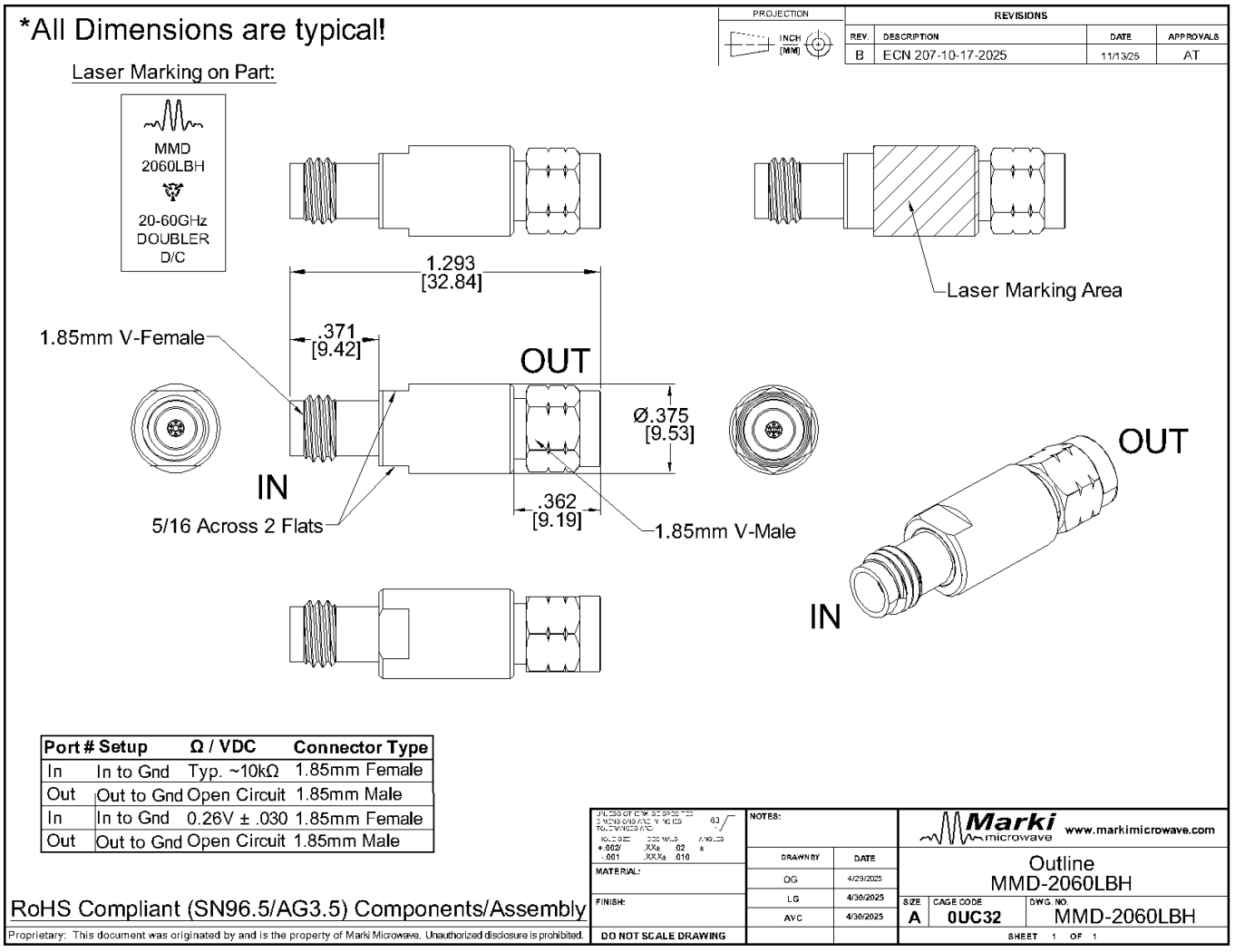
Mechanical Data

Outline Drawing

Download : Outline 2D Drawing



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