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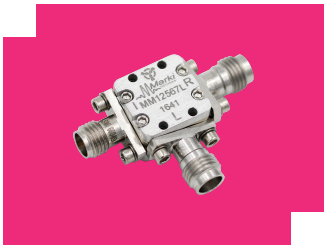
MM1-2567LS

GaAs DOUBLE-BALANCED MIXER

DEVICE OVERVIEW

General Description

The MM1-2567LS is a passive GaAs double balanced MMIC mixer suitable for both up and down-conversion applications. As with all Marki Microwave mixers, it features excellent conversion loss, isolation and spurious performance across a broad bandwidth and in a small form factor. The MM1-2567LS is available in a connectorized package. Owing to its passive balun circuitry, the mixer can be used in two different configurations: Configuration A for highest efficiency and Configuration B for the best spurious performance and lowest LO drive.



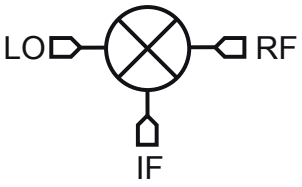
Features

- Connectorized Package
- Broadband Performance
- Excellent Unit-to-Unit Repeatability
- Extremely Low LO Drive Operation

Applications

- Test and Measurement Equipment
- Fixed RF up converters
- Electronic warfare equipment

Functional Block Diagram



Part Ordering Options

Part Number	Description	Package	Connectors	Green Status	Product Lifecycle	Export Classification
MM1-2567LS	GaAs DOUBLE-BALANCED MIXER	S	Standard	REACH RoHS	Released	EAR99

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Table Of Contents

Revision History

Revision Code	Revision Date	Comment
A	2025-07-17	Updated Port Configuration Diagram

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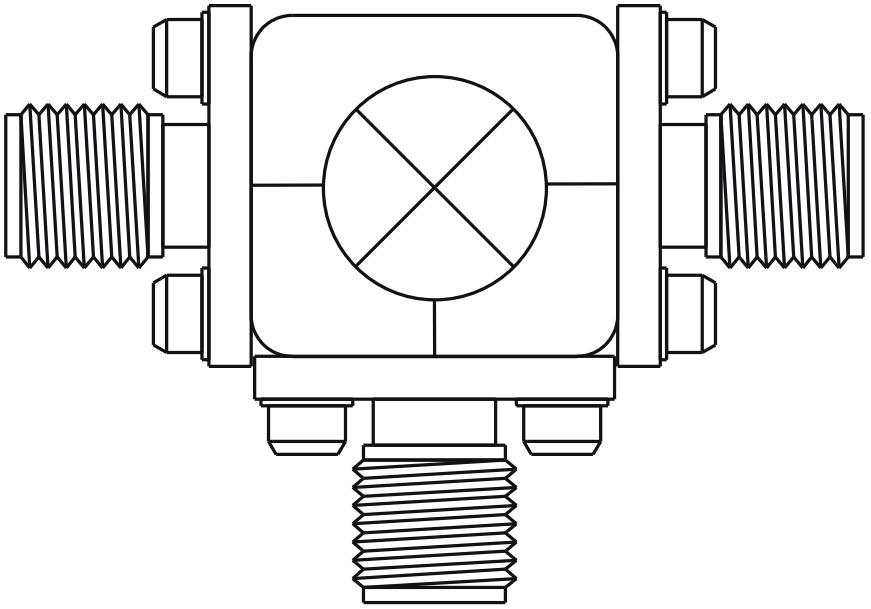
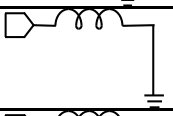
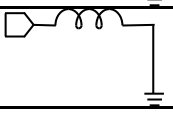
Port Configuration and Functions

Port Diagram



Port Functions

Configuration A

Port	Function	Connector Type	Description	Equivalent Circuit for Package
Port 1	IF	2.92F	Port 1 is DC coupled to the diodes. Blocking capacitor is optional.	
Port 2	LO	1.85F	Port 2 is DC short to ground and AC matched to 50 Ohms from 25 to 67 GHz. Blocking capacitor is optional.	
Port 3	RF	1.85F	Port 3 is DC short to ground and AC matched to 50 Ohms from 25 to 67 GHz. Blocking capacitor is optional.	

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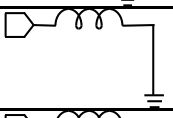
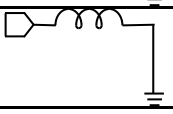
Configuration B

Port	Function	Connector Type	Description	Equivalent Circuit for Package
Port 1	IF	2.92F	Port 1 is DC coupled to the diodes. Blocking capacitor is optional.	
Port 2	RF	1.85F	Port 2 is DC short to ground and AC matched to 50 Ohms from 25 to 67 GHz. Blocking capacitor is optional.	
Port 3	LO	1.85F	Port 3 is DC short to ground and AC matched to 50 Ohms from 25 to 67 GHz. Blocking capacitor is optional.	

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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
Port 1 DC Current	30	mA
Port 2 DC Current	21	mA
Port 3 DC Current	30	mA
RF Power Handling (RF+LO), 100°C	23	dBm
RF Power Handling (RF+LO), 25°C	28	dBm

Package Information

Parameter	Details	Rating
Dimensions	-	14.22 x 13.21mm

Recommended Operating Conditions

Parameter	Min	Nominal	Max	Unit
LO Input Power	6	-	16	-

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Electrical Specifications

Specifications guaranteed from -55 to +100°C, measured in a 50Ω system. Specifications are shown for Configurations A (B).

Parameter	Port Configuration	Test Conditions	Min	Typ	Max	Unit
Conversion Loss	A	LO/RF=25-60 GHz	-	9	16	dB
Input 1 dB Compression	A	LO/RF=25-67 GHz IF=DC-30 GHz LO Drive Level= 10-16	-	1	-	dBm
Input IP3	A	LO/RF=25-67 GHz IF=DC-30 GHz LO Drive Level= 10-16	-	9	-	dBm
Isolation, LO to RF	A	-	-	33	-	dB
Conversion Loss	B	LO/RF=25-60 GHz	-	15	21	dB
Input 1 dB Compression	B	LO/RF=25-67 GHz IF=DC-30 GHz LO Drive Level= 6-12	-	5	-	dBm
Input IP3	B	LO/RF=25-67 GHz IF=DC-30 GHz LO Drive Level= 6-12	-	15	-	dBm
IF Frequency Range	-	-	0	-	30	GHz
LO Frequency Range	-	-	25	-	67	GHz
RF Frequency Range	-	-	25	-	67	GHz

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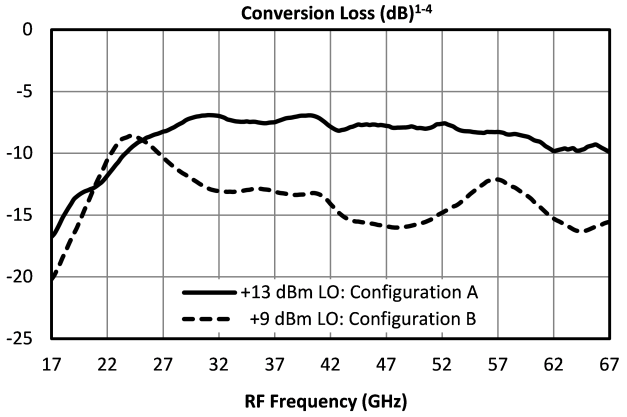
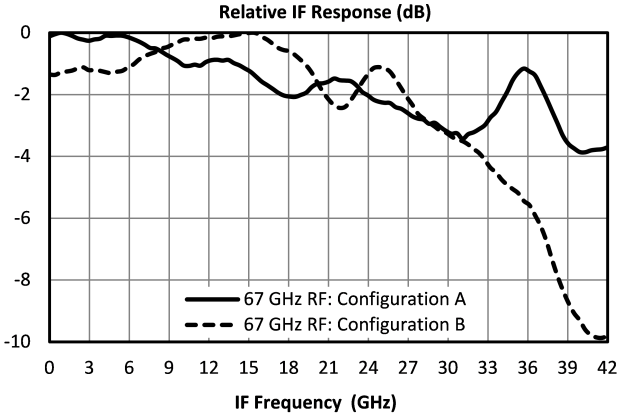
Typical Performance

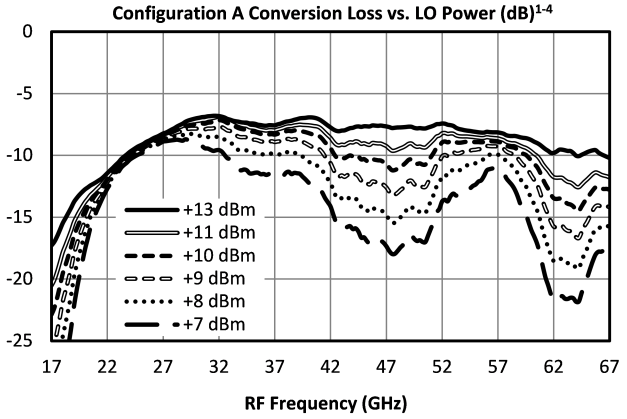
Conversion Loss (dB)[1-4]



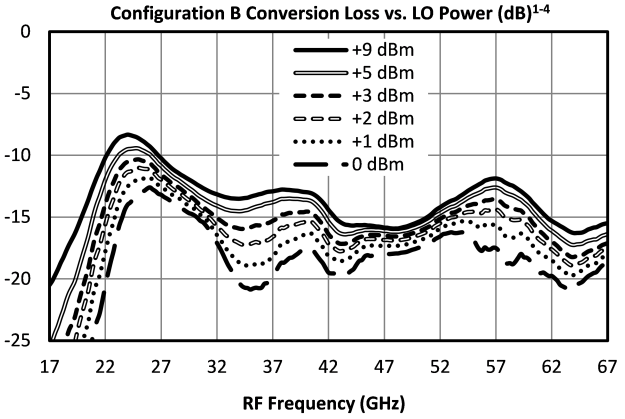
Relative IF Response (dB)



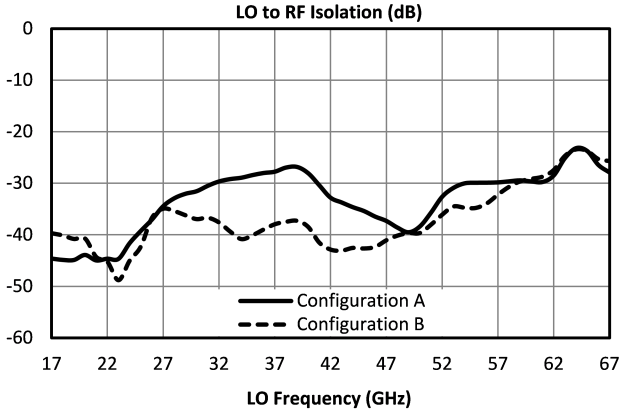
Configuration A Conversion Loss vs. LO Power (dB)[1-4]



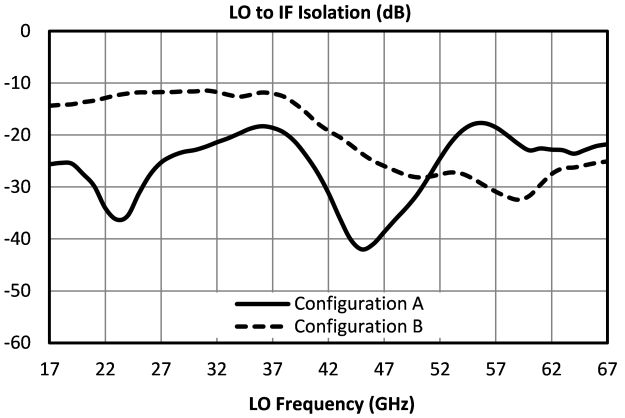
Configuration B Conversion Loss vs. LO Power (dB)[1-4]



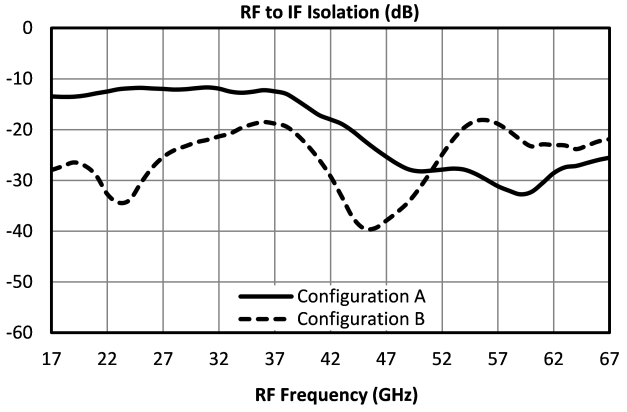
LO to RF Isolation (dB)



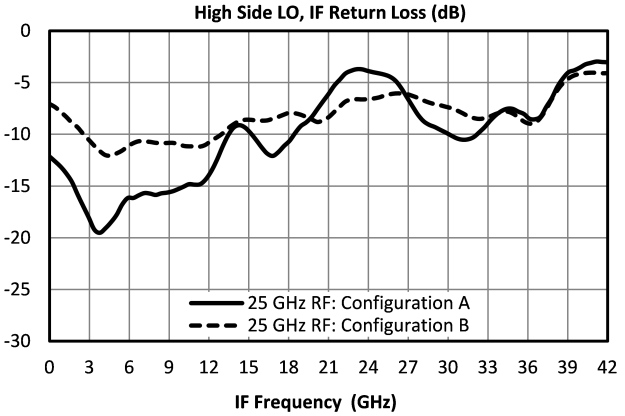
LO to IF Isolation (dB)



RF to IF Isolation (dB)



High Side LO, IF Return Loss (dB)



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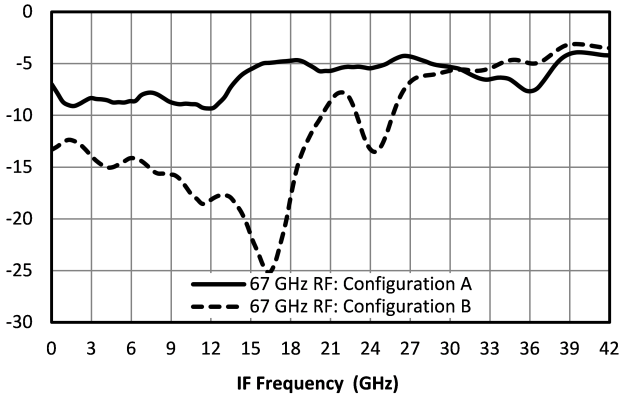
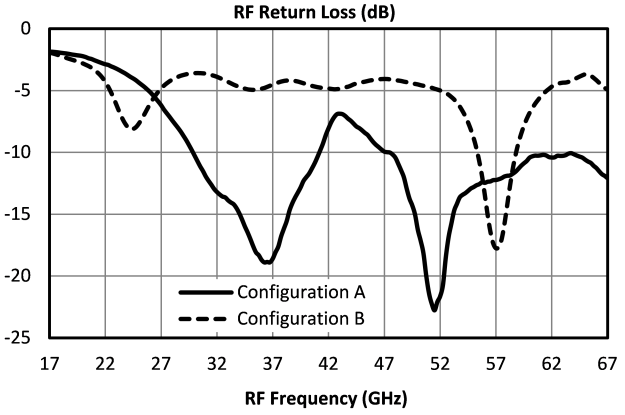
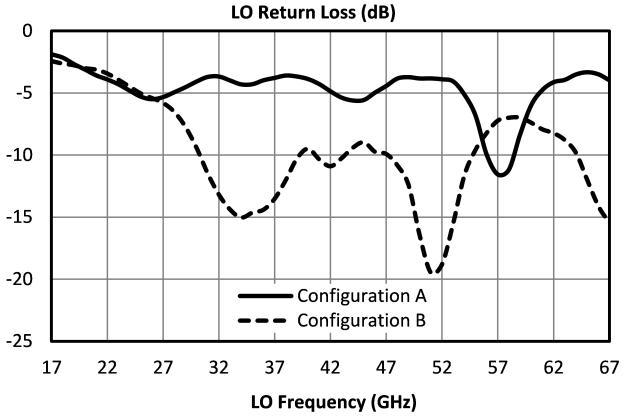
Low Side LO, IF Return Loss (dB)



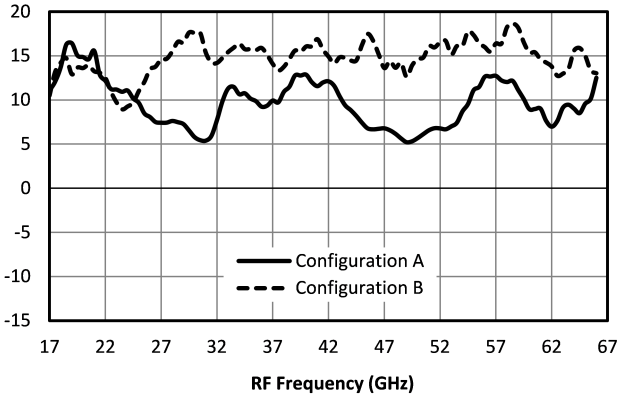
RF Return Loss (dB)



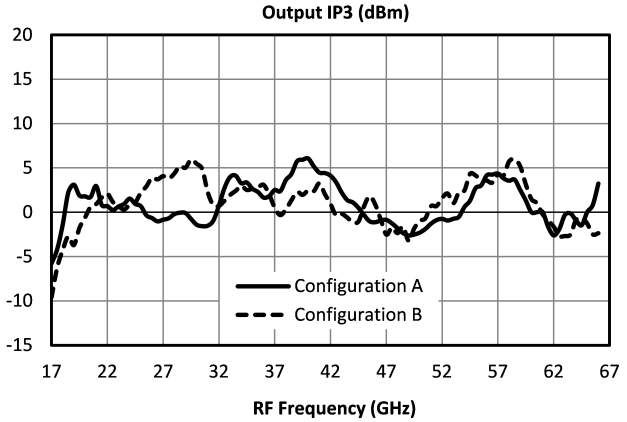
LO Return Loss (dB)



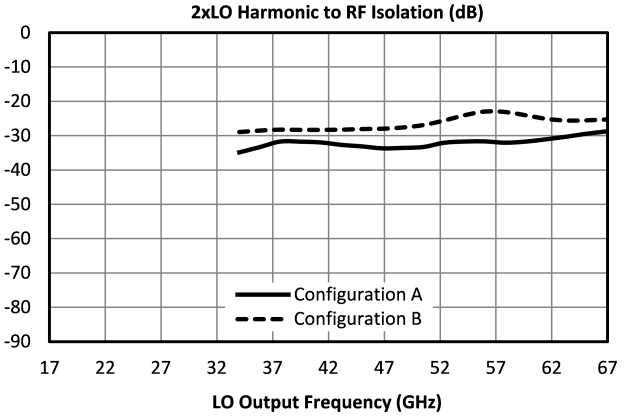
Input IP3 (dBm)



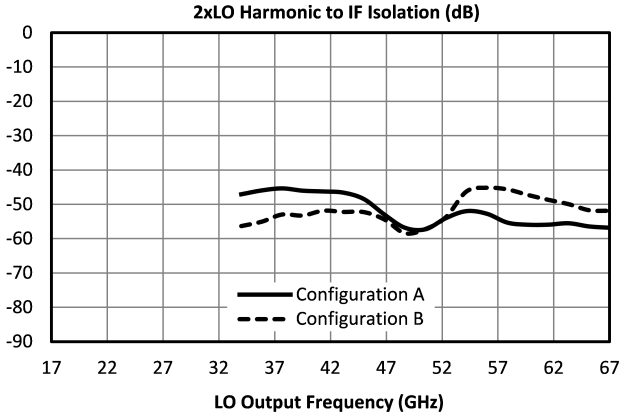
Output IP3 (dBm)



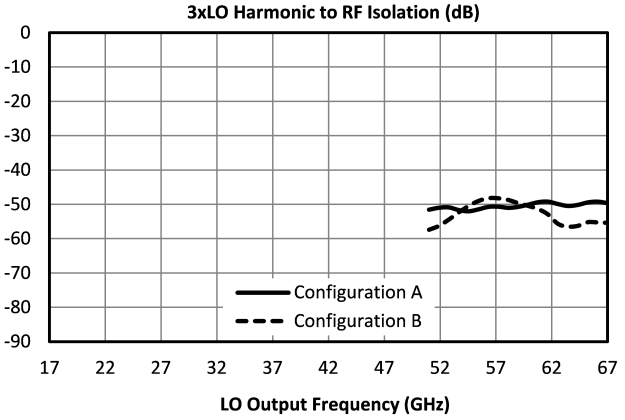
2xLO Harmonic to RF Isolation (dB)



2xLO Harmonic to IF Isolation (dB)



3xLO Harmonic to RF Isolation (dB)



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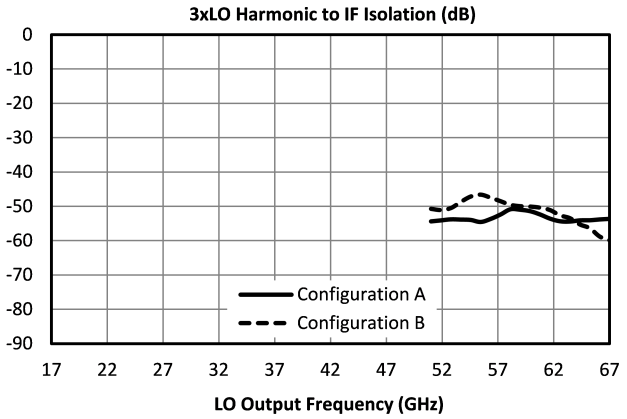

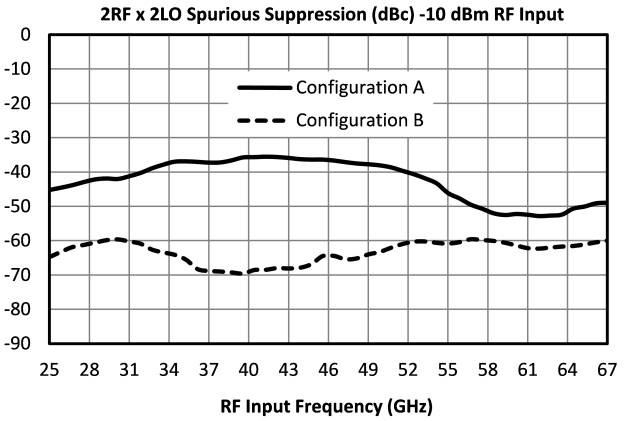

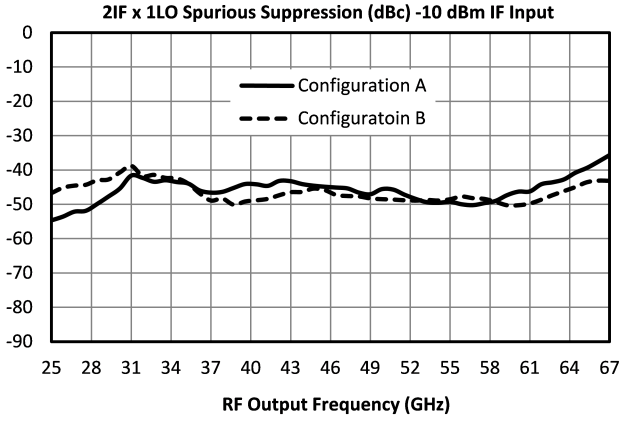

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Spur Table

Downconversion Spurious Suppression

Spurious data is taken by selecting RF and LO frequencies (+mLO+nRF) within the RF/LO bands, to create a spurious output within the IF output band. The mixer is swept across the full spurious band and the mean is calculated. The numbers shown in the table below are for a -10 dBm RF input. Spurious suppression is scaled for different RF power levels by (n-1), where "n" is the RF spur order. For example, the 2RFx2LO spur is 43 dBc for the A configuration for a -10 dBm input, so a -20 dBm RF input creates a spur that is (2-1) x (-10 dB) dB lower, or 53 dBc.

Typical Downconversion Spurious Suppression (dBc): L Diode, A Configuration (B Configuration) [4]

-10 dBm RF Input	0xLO	1xLO	2xLO	3xLO	4xLO	5xLO
1xRF	14 (13)	Reference	24 (27)	11 (16)	35 (36)	26 (29)
2xRF	57 (60)	36 (42)	43 (63)	31 (50)	41 (52)	38 (49)
3xRF	83 (77)	51 (49)	48 (73)	50 (69)	53 (73)	51 (68)
4xRF	107 (105)	94 (85)	80 (104)	78 (108)	79 (103)	73 (101)
5xRF	120 (116)	114 (108)	103 (108)	105 (123)	90 (119)	91 (118)

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Upconversion Spurious Suppression

Spurious data is taken by mixing an input within the IF band, with LO frequencies (+mLO+nIF), to create a spurious output within the RF output band. The mixer is swept across the full spurious output band and the mean is calculated. The numbers shown in the table below are for a -10 dBm IF input. Spurious suppression is scaled for different IF input power levels by (n-1), where "n" is the IF spur order. For example, the 2IFx1LO spur is typically 46 dBc for the A configuration for a -10 dBm input, so a -20 dBm IF input creates a spur that is (2-1) x (-10 dB) dB lower, or 56 dBc.

Typical Upconversion Spurious Suppression (dBc): L Diode, A Configuration (B Configuration) [4]

-10 dBm IF Input	0xLO	1xLO	2xLO	3xLO	4xLO	5xLO
1xIF	12 (19)	Reference	16 (28)	10 (14)	38 (50)	29 (29)
2xIF	39 (45)	46 (48)	40 (37)	50 (44)	41 (39)	51 (52)
3xIF	62 (67)	54 (53)	53 (61)	58 (57)	54 (63)	44 (51)
4xIF	95 (96)	95 (92)	82 (83)	91 (88)	76 (75)	84 (85)
5xIF	113 (111)	109 (106)	102 (102)	105 (105)	101 (103)	91 (92)

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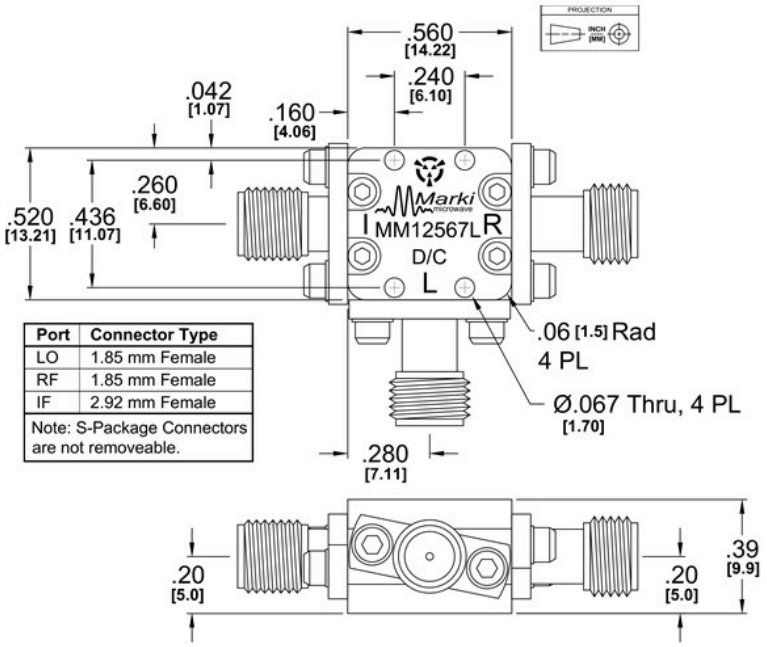
Mechanical Data

Outline Drawing

Download : Outline 2D Drawing | Outline 3D Drawing | Outline 3D STP



Port	Connector Type
LO	1.85 mm Female
RF	1.85 mm Female
IF	2.92 mm Female
Note: S-Package Connectors are not removeable.	

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