

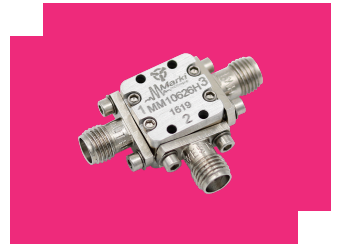
MM1-0626HS

GaAs MMIC Double Balanced Mixer

DEVICE OVERVIEW

General Description

The MM1-0626H is a passive double balanced MMIC mixer. It features excellent conversion loss, superior isolations and spurious performance across a broad bandwidth, in a highly miniaturized form factor. Accurate, nonlinear simulation models are available for Microwave Office® through the Marki Microwave PDK. The MM1-0626H is available as a wire bondable chip or an SMA connectorized package. The MM1-0626H is a superior alternative to Marki Microwave carrier and packaged M1 and M3 mixers.



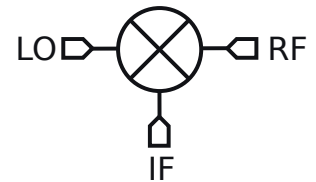
Features

- CAD Optimized for Superior Isolation and Spurious Response
- Broadband Performance
- Excellent Unit-to-Unit Repeatability
- Fully nonlinear software models available with Marki PDK for Microwave Office®
- RoHS Compliant

Applications

- Test and Measurement Equipment
- SATCOM
- Radar Systems

Functional Block Diagram



Part Ordering Options

Part Number	Description	Package	Connectors	Green Status	Product Lifecycle	Export Classification
MM1-0626HS	GaAs MMIC Double Balanced Mixer	S	<u>Standard</u>	REACH RoHS	Released	EAR99

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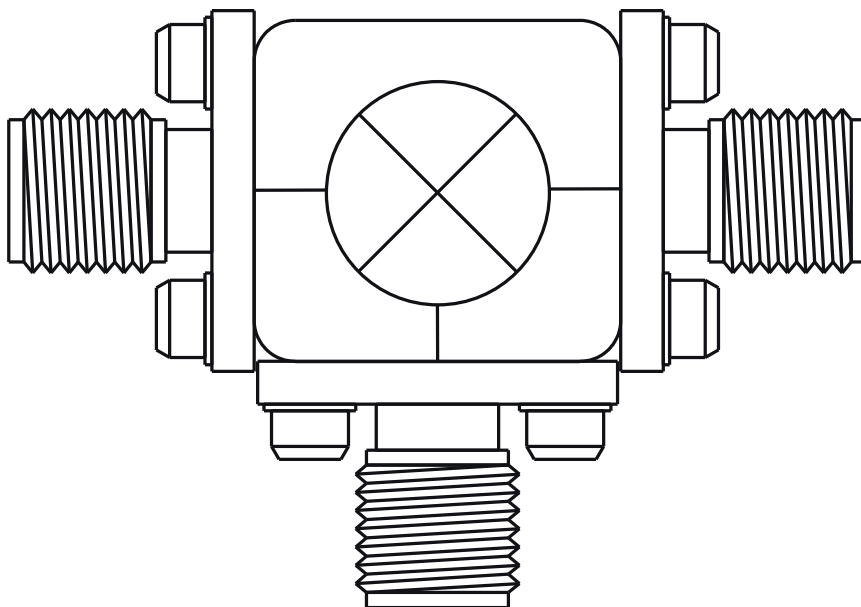
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Revision History

Revision Code	Revision Date	Comment
A	2017-11-01	Die shrunk from 1.48 x 1.18 mm ² to 1.37 x 1.17 mm ² . CH package tolerance added.
B	2021-12-01	CH Package Outline Drawing Updated to include die number and logo

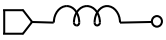
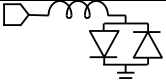
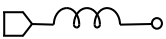
Port Configuration and Functions

Port Diagram

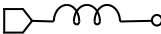
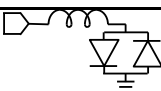
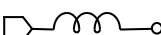


Port Functions

Configuration A

Port	Function	Connector Type	Description	DC Equivalent Circuit
Port 1	LO	SMAF	Port 1 is DC open and AC matched to 50 Ohms from 6 to 26.5 GHz. Blocking capacitor is optional.	
Port 2	IF	SMAF	Port 2 is DC coupled to the diodes. Blocking capacitor is optional.	
Port 3	RF	SMAF	Port 3 is DC open and AC matched to 50 Ohms from 6 to 26.5 GHz. Blocking capacitor is optional.	

Configuration B

Port	Function	Connector Type	Description	DC Equivalent Circuit
Port 1	RF	SMAF	Port 1 is DC open and AC matched to 50 Ohms from 6 to 26.5 GHz. Blocking capacitor is optional.	
Port 2	IF	SMAF	Port 2 is DC coupled to the diodes. Blocking capacitor is optional.	
Port 3	LO	SMAF	Port 3 is DC open and AC matched to 50 Ohms from 6 to 26.5 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
Port 2 DC Current	15	mA
RF Power Handling (RF+LO), 100°C	20	dBm
RF Power Handling (RF+LO), 25°C	32	dBm

Package Information

Parameter	Details	Rating
Dimensions	-	14.22 x 13.21mm

Recommended Operating Conditions

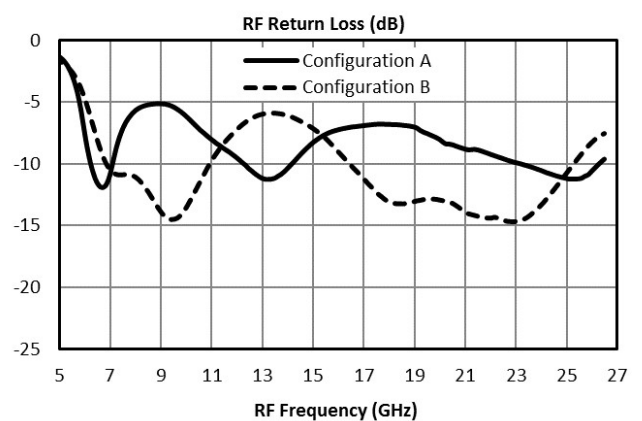
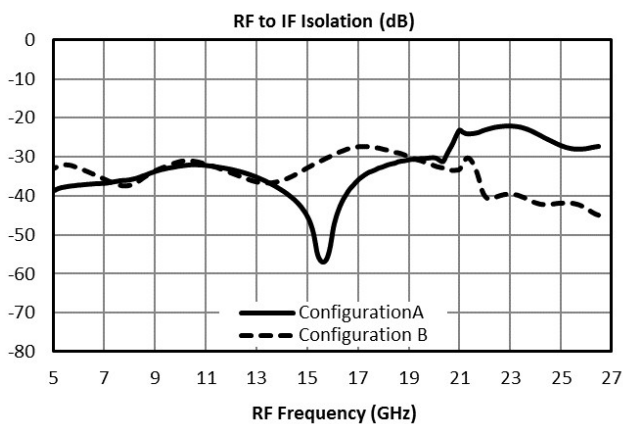
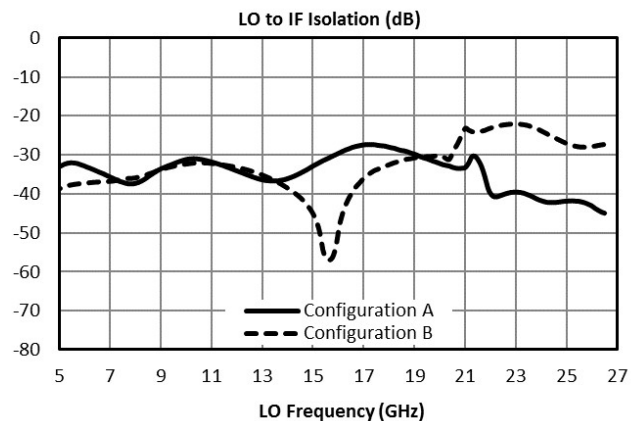
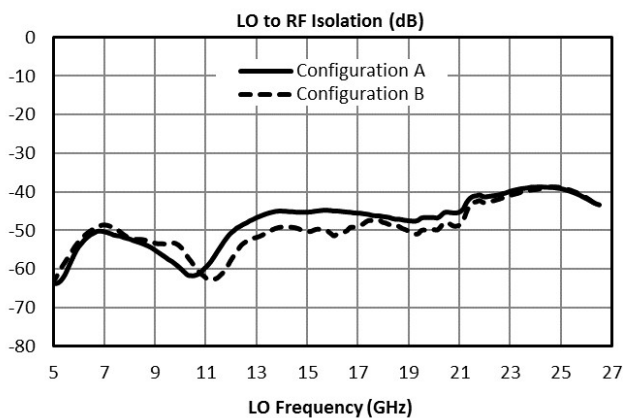
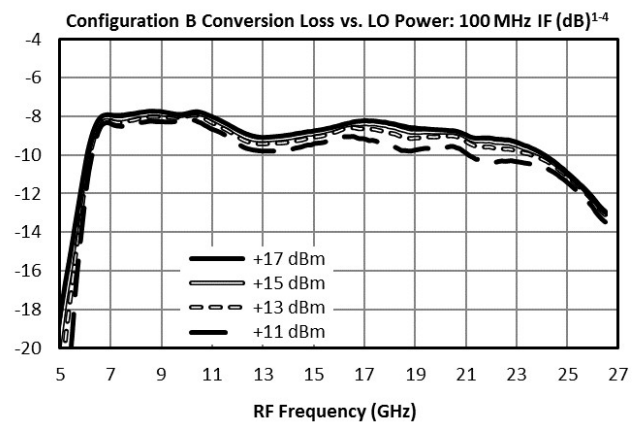
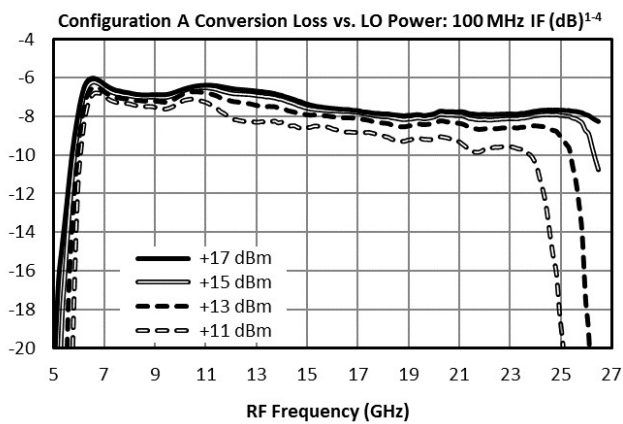
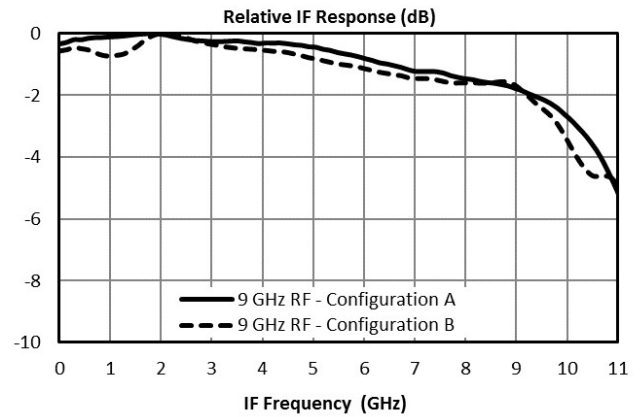
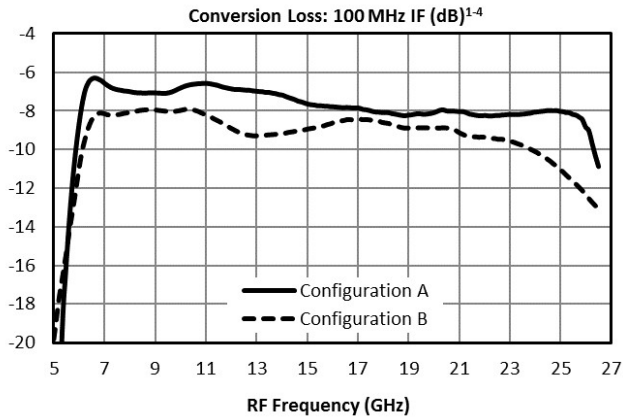
Parameter	Min	Nominal	Max	Unit
LO Input Power	13	-	20	-

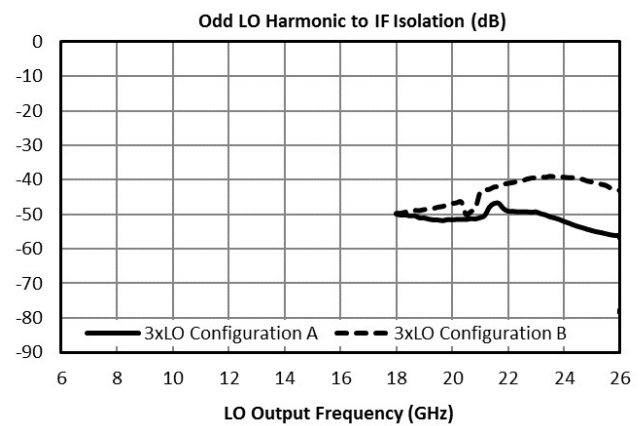
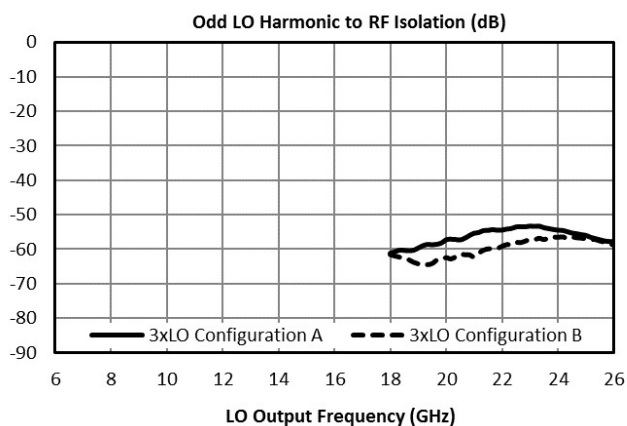
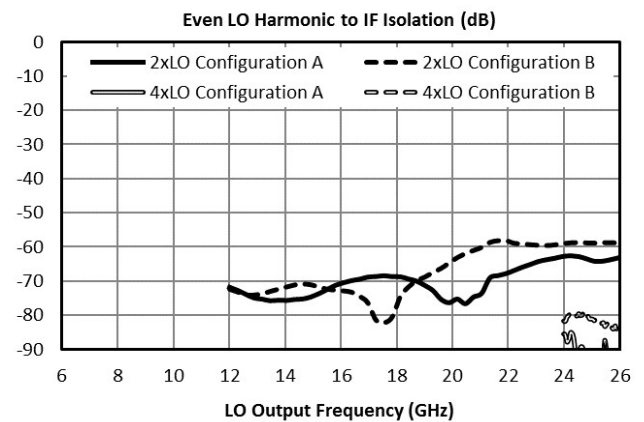
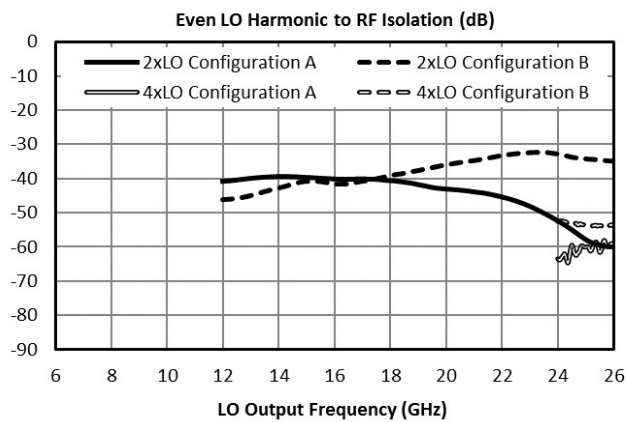
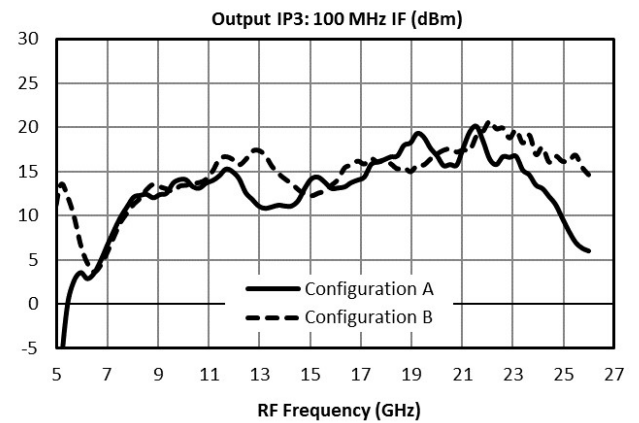
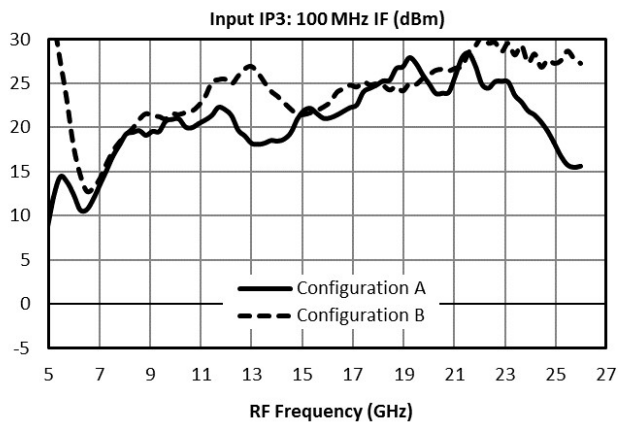
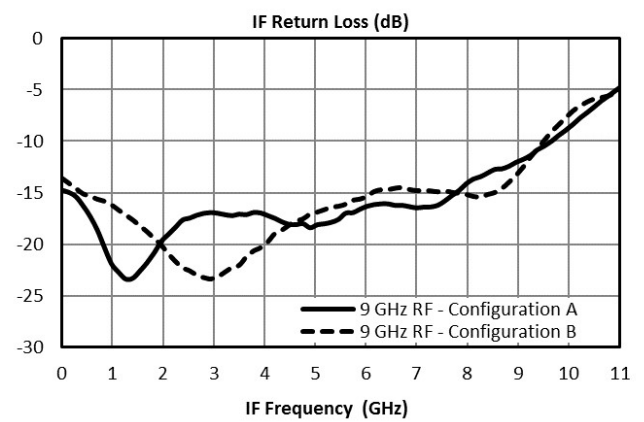
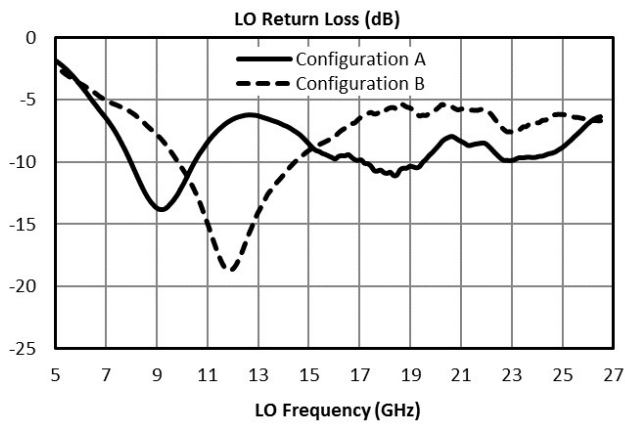
Electrical Specifications

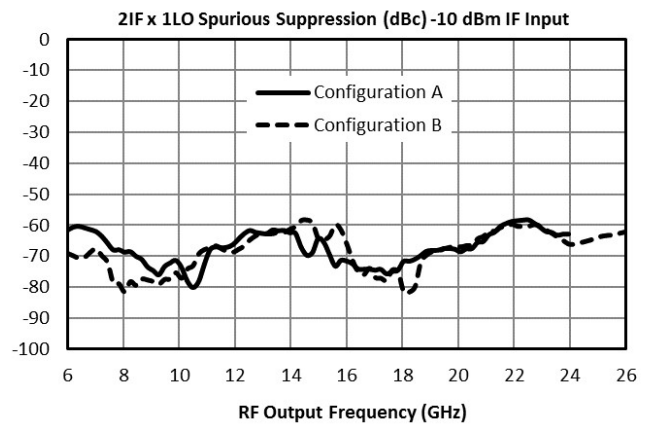
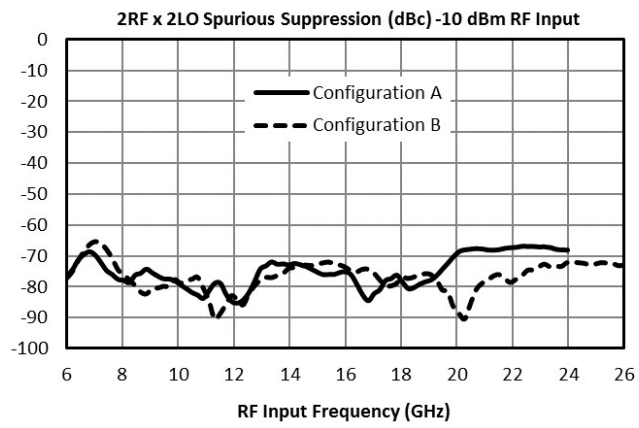
Specifications guaranteed from -55 to +100°C, measured in a 50Ω system. All bare die are 100% DC tested and 100% visually inspected. RF testing is performed on a sample basis to verify conformance to datasheet guaranteed specifications. Consult factory for more information.

Parameter	Port Configuration	Test Conditions	Min	Typ	Max	Unit
Conversion Loss	A	LO/RF=6-26.5 IF=DC-9GHz LO drive level=15dBm	-	7.5	-	dB
Input IP3	A	LO/RF=6-26.5GHz IF=DC-9GHz LO drive level=13-20dBm	-	21	-	dBm
Input P1dB	A	LO/RF=6-26.5GHz IF=DC-9GHz LO drive level=13-20dBm	-	9	-	dBm
Conversion Loss	B	LO/RF=6-26.5GHz IF=DC-9GHz LO drive level=15dBm	-	9	-	dB
Input IP3	B	LO/RF=6-26.5GHz IF=DC-9GHz LO drive level=13-20dBm	-	23	-	dBm
Input P1dB	B	LO/RF=6-26.5GHz IF=DC-9GHz LO drive level=13-20dBm	-	9	-	dBm
IF Frequency Range	-	-	0	-	9	GHz
LO Frequency Range	-	-	6	-	26.5	GHz
LO-IF Isolation	-	LO/RF=6-26.5GHz IF=DC-9GHz LO drive level=13-20dBm	-	34	-	dB
LO-RF Isolation	-	LO/RF=6-26.5GHz IF=DC-9GHz LO drive level=13-20dBm	-	47	-	dB
RF Frequency Range	-	-	6	-	26	GHz
RF Frequency Range	-	-	6	-	26.5	GHz
RF-IF Isolation	-	LO/RF=6-26.5GHz IF=DC-9GHz LO drive level=13-20dBm	-	35	-	dB

Typical Performance







Spur Table

Downconversion Spurious Suppression

Spurious data is taken by selecting RF and LO frequencies ($+mLO+nRF$) within the 6 to 26 GHz RF/LO bands, which create a 91 MHz IF spurious output. 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 $2RF \times 2LO$ spur is 75 dBc for the A configuration for a -10 dBm input, so a -20 dBm RF input creates a spur that is $(2-1) \times (-10 \text{ dB})$ dB lower, or 85 dBc.

Typical Downconversion Spurious Suppression (dBc): A Configuration (B Configuration), Sine Wave LO

-10 dBm RF Input	0xLO	1xLO	2xLO	3xLO	4xLO	5xLO
1xRF	25 (26)	Reference	31 (45)	13 (12)	34 (47)	15 (18)
2xRF	76 (77)	70 (54)	75 (77)	68 (58)	74 (78)	69 (67)
3xRF	112 (112)	62 (64)	86 (95)	72 (81)	82 (96)	68 (73)
4xRF	136 (139)	116 (100)	117 (118)	118 (108)	115 (119)	116 (107)
5xRF	N/A	114 (134)	126 (134)	117 (125)	128 (132)	115 (126)

Specifications are subject to change without notice. Contact Marki Microwave for the most recent specifications and data sheets.

Upconversion Spurious Suppression

Spurious data is taken by mixing a 91 MHz IF with LO frequencies ($+mLO+nIF$), which creates an RF within the 6 to 26 GHz RF 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 67 dBc for the A configuration for a -10 dBm input, so a -20 dBm IF input creates a spur that is $(2-1) \times (-10 \text{ dB})$ dB lower, or 77 dBc.

Typical Upconversion Spurious Suppression (dBc): A Configuration (B Configuration), Sine Wave LO

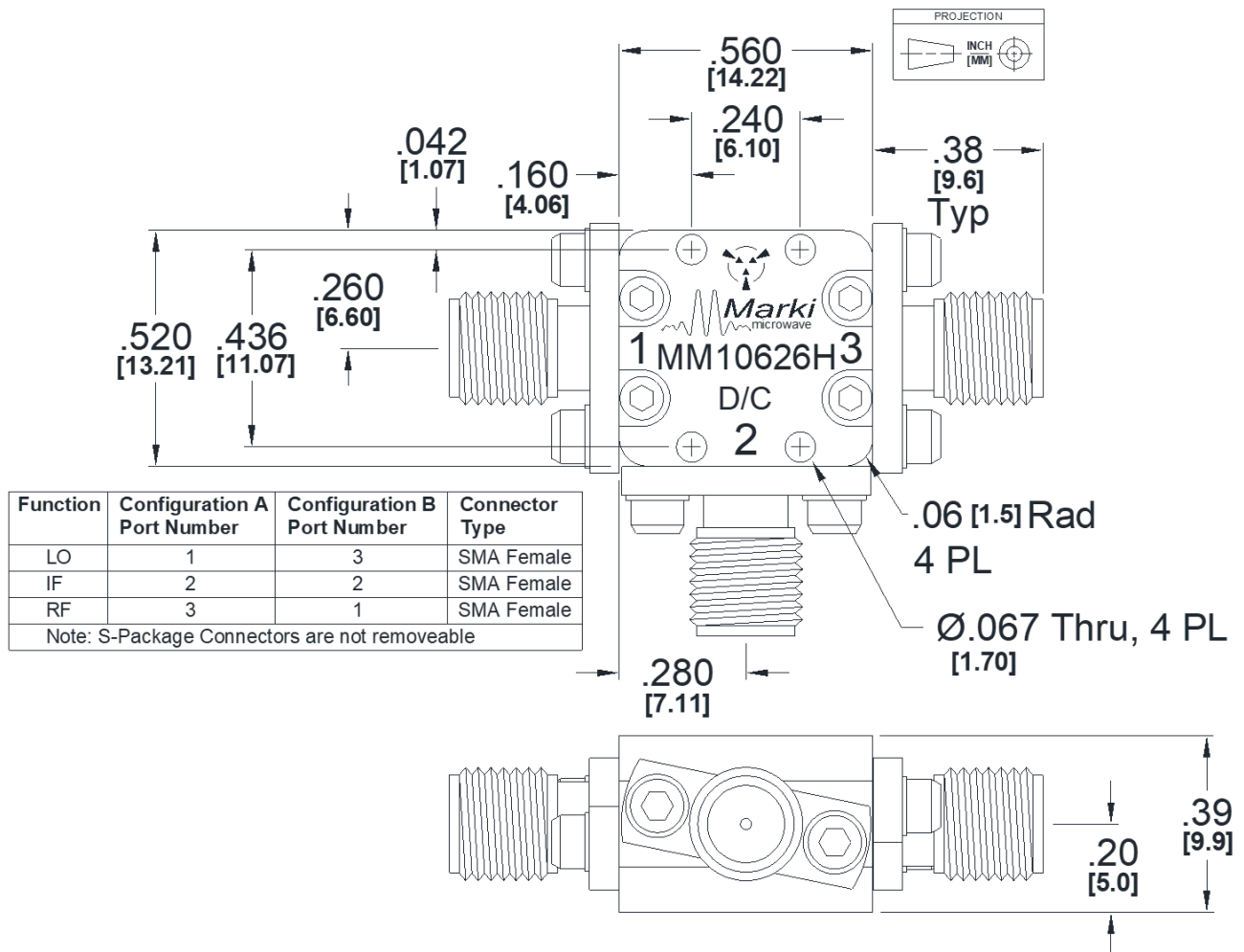
-10 dBm RF Input	0xLO	1xLO	2xLO	3xLO	4xLO	5xLO
1xIF	29 (24)	Reference	32 (47)	10 (10)	31 (55)	22 (25)
2xIF	71 (59)	67 (68)	66 (56)	68 (72)	62 (59)	68 (67)
3xIF	111 (112)	69 (70)	78 (91)	60 (64)	78 (92)	66 (68)
4xIF	125 (103)	117 (116)	108 (100)	114 (118)	105 (103)	113 (115)
5xIF	130 (144)	113 (116)	122 (130)	112 (119)	120 (133)	110 (111)

Specifications are subject to change without notice. Contact Marki Microwave for the most recent specifications and data sheets.

Mechanical Data

Outline Drawing

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



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