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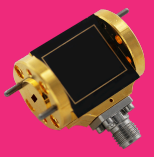
MXDB-1500WG

WR-15 Waveguide double balanced mixer

DEVICE OVERVIEW

General Description

MXDB-1500WG is a double balanced mixer that features excellent conversion loss, great isolations, and spurious performance across the bandwidth. The MXDB-1500WG works well as both an up and down converter. The MXDB-1500WG is recommended for WR-15 frequency band conversion applications that require high linearity.



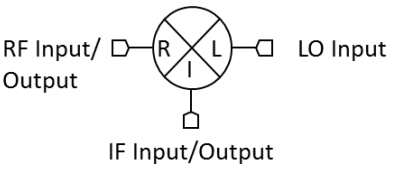
Features

- Full band, high linearity mmWave frequency conversion
- Up or down conversion
- UG-385/U flanges, RF and LO ports
- 1.85mm Female IF port connector

Applications

N/A

Functional Block Diagram



Part Ordering Options

Part Number	Description	Package	Green Status	Product Lifecycle	Export Classification
MXDB-1500WG	WR-15 Waveguide double balanced mixer	WR-15		Released	EAR99

Table Of Contents

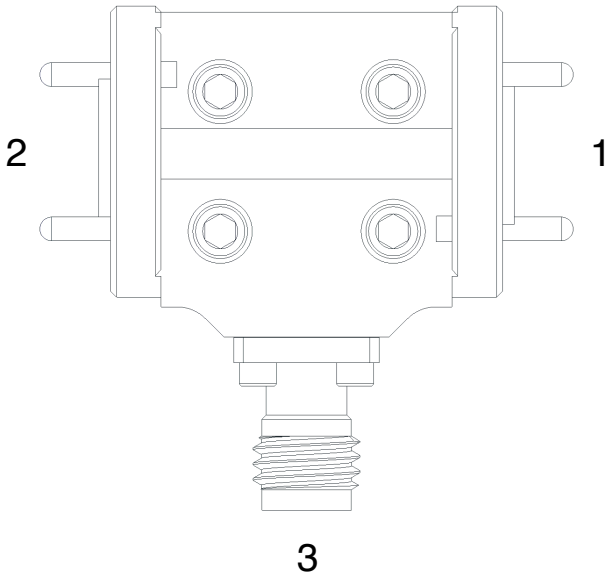
Revision History

Revision Code	Revision Date	Comment
-	2024-10-17	Initial Release

Port Configuration and Functions

Port Diagram

The port diagram below is shown as a top-down view.



Port Functions

Configuration A

Port	Function	Connector Type	Description	Equivalent Circuit for Package
Port 1	RF Input / Output	WR-15-UG-385/U	WR-15 RF Input/Output Port	-
Port 2	LO Input	WR-15-UG-385/U	WR-15 LO Input Port	-
Port 3	IF Input / Output	1.85F	1.85mmF IF Input/Output Port	-

Configuration B

Port	Function	Connector Type	Description	Equivalent Circuit for Package
Port 1	LO Input	WR-15-UG-385/U	WR-15 LO Input Port	-
Port 2	RF Input / Output	WR-15-UG-385/U	WR-15 RF Input / Output Port	-
Port 3	IF Input / Output	1.85F	1.85mm IF Input / Output Port	-

Specifications

Absolute Maximum Ratings

The Absolute Maximum Ratings indicate limits beyond which damage may occur to the device. If these limits are exceeded, the device may be inoperable or have a reduced lifetime.

Parameter	Maximum Rating	Unit
Maximum Operating Temperature	100	°C
Maximum Storage Temperature	125	°C
Minimum Operating Temperature	-55	°C
Minimum Storage Temperature	-65	°C
Power Handling, at any Port	30	dBm

Package Information

Parameter	Details	Rating
ESD	250 to < 500 Volts	HBM Class 1A
Weight	Package name: WR-15	17.6g

Recommended Operating Conditions

Parameter	Min	Nominal	Max	Unit
Ambient Temperature	-55	25	100	°C
LO Input Power	12	14	-	-

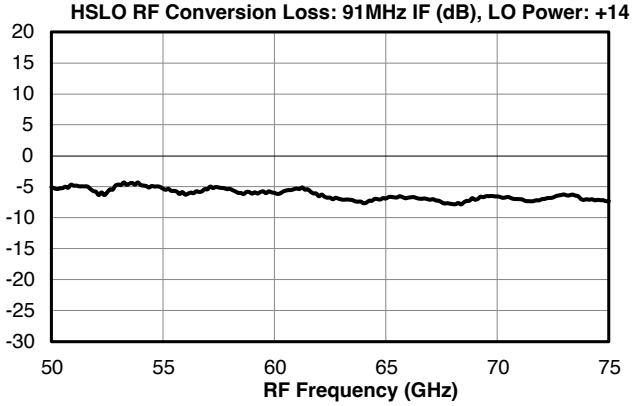
Electrical Specifications

Parameter	Port Configuration	Test Conditions	Min	Typ	Max	Unit
Conversion Loss (CL) [1]	-	RF/LO = 50-75GHz, IF = DC-25GHz	-	7.2	-	dB
IF Frequency Range	-	-	0	-	25	GHz
Isolation, LO to IF	-	LO/IF = 50-75GHz	-	32	-	dB
Isolation, LO to RF	-	LO/RF = 50-75GHz	-	35	-	dB
Isolation, RF to IF	-	RF/IF = 50-75GHz	-	36	-	dB
LO Frequency Range	-	-	50	-	75	GHz
Noise Figure [2]	-	RF/LO = 50-75GHz, IF = DC-25GHz	-	7.2	-	dB
RF Frequency Range	-	-	50	-	75	GHz

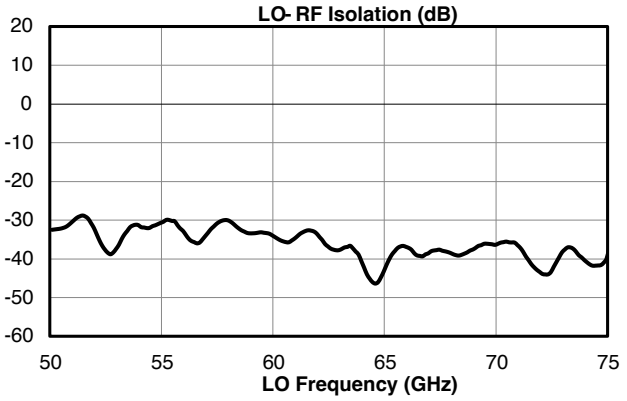
[1] Measured as a down converter with fixed 91MHz IF.
[2] Mixer Noise Figure typically measures within 0.5dB of conversion loss for IF frequencies greater than 5MHz.

Typical Performance Plots

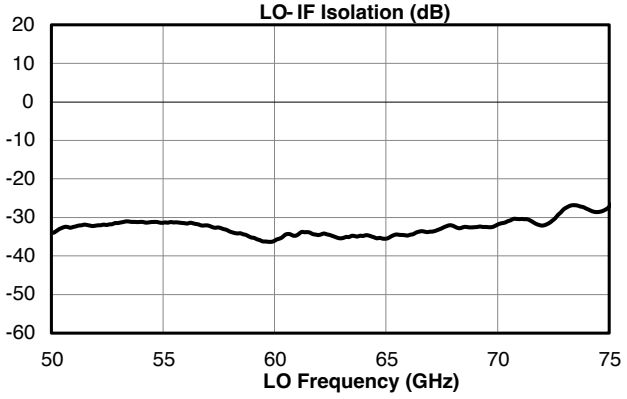
HSLO RF Conversion Loss: 91MHz IF (dB), LO Power: +14 dBm



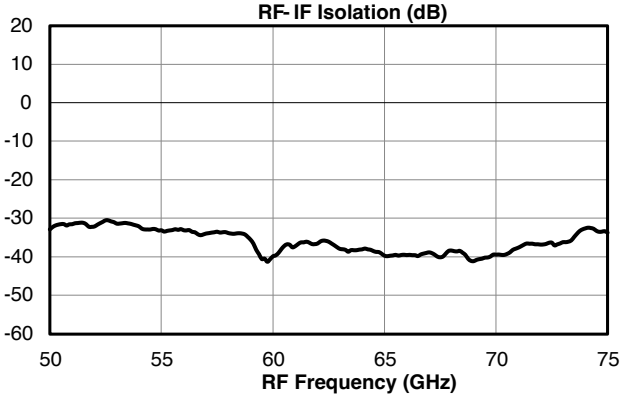
LO- RF Isolation (dB)



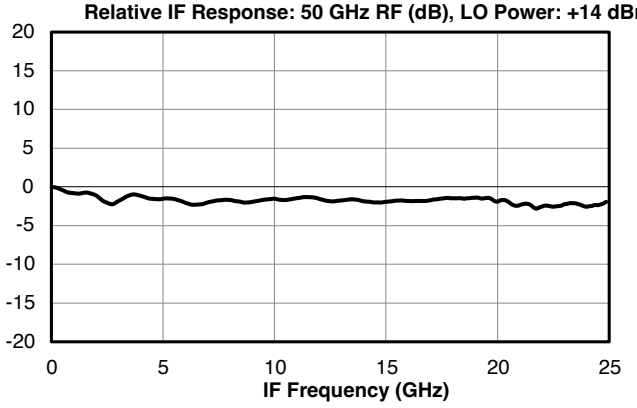
LO- IF Isolation (dB)



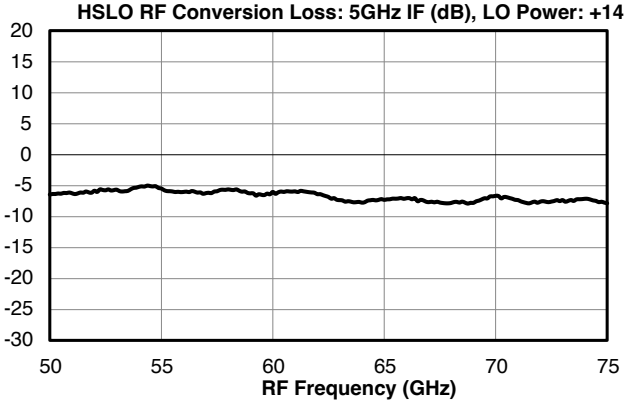
RF- IF Isolation (dB)



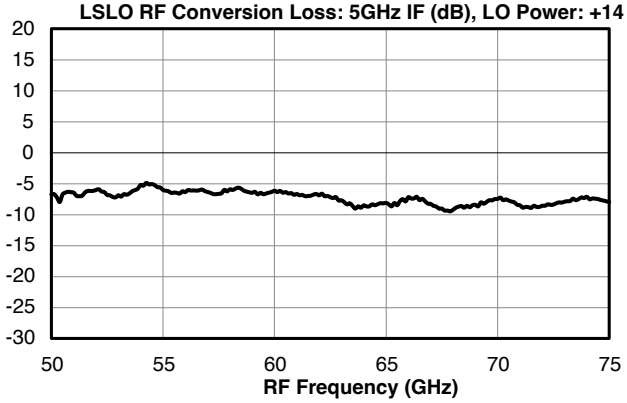
Relative IF Response: 50 GHz RF (dB), LO Power: +14 dBm



HSLO RF Conversion Loss: 5GHz IF (dB), LO Power: +14 dBm



LSLO RF Conversion Loss: 5GHz IF (dB), LO Power: +14 dBm



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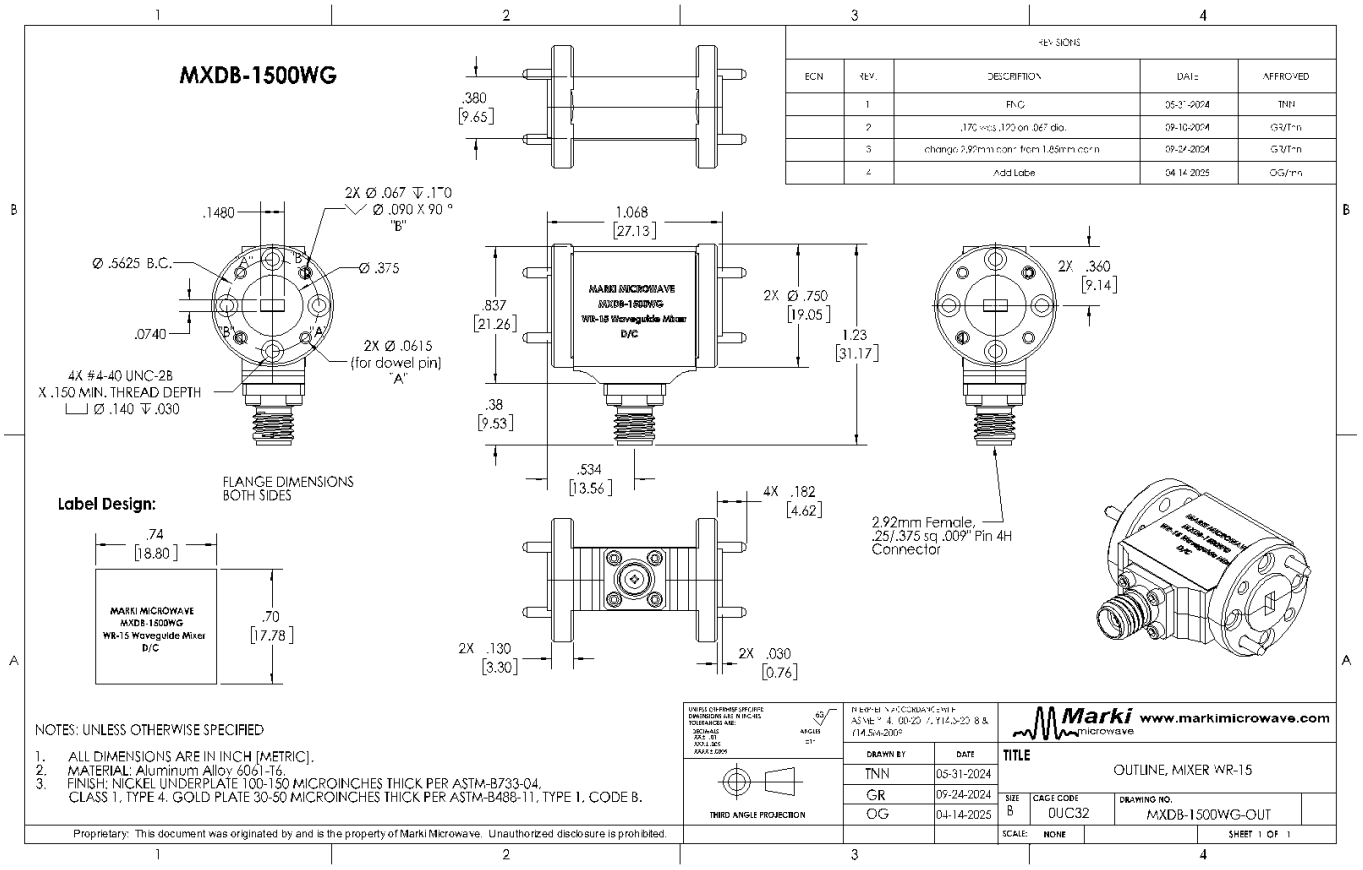
Mechanical Data

Outline Drawing

Download : Outline 2D Drawing | Outline 3D STP



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