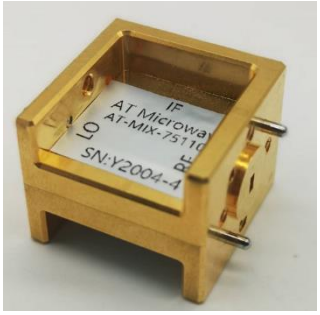
AT-MIX-5075H

Full V Band Balance Mixer

2020-11-24

50-75GHz Balance Mixer WR-15



Description:

AT-MIX-5075H is an up and down balance mixer covering E band based on GaAs MMIC technology. IF input is balanced and can range from DC to 26GHz with SMA Female connector

.

LO/RF frequency range is 50-75GHz with WR-15 waveguide. LO-RF isolation features -28dBc typical. AT-AM4-5075-15 or AT-AM6-5766-13 can be used as a LO Driver.

More information, please visit www.atmicrowave.com

Feature

- ✓ RF/LO: 50-75GHz
- ✓ IF: DC-26GHz
- ✓ Low Conversion Loss
- ✓ Low LO power requirement
- ✓ High RF/LO Isolation

Application

- ✓ V band Imaging
- ✓ Automotive Test
- ✓ Test Equipment
- ✓ ROF (RF Over Fiber)
- ✓ Radar System

Electrical Specifications

Parameter	Min	Typical	Max
RF Frequency		50-75GHz	
LO Frequency		50-75GHz	
IF Range		DC-26.5GHz	
Conversion Loss (Note1)		-8dB	-13
LO Driver	+10	+13dBm	+16
RF/LO Isolation (Note2)		-28dB	
Bias		NO	
Spec Temp		25C	

Note1: down-convertor, RF-LO=1GHz

Note2: Up-convertor test, IF=1GHz, RF=LO+IF

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Mechanical Information

Item	Description
RF Port	WR-15
LO Port	WR-15
IF Port	SMA Female (Note)
Case Material	Copper
Finish	Gold Plated
Weight (Without Heatsink)	30g
Size:	25x25x20mm

Note: 2.92mm Female is available according to request.

Absolute Maximum Ratings Table

Parameter	**Value**
IF Port Power	+0dBm
RF Port Power	+10dBm
LO Port Power	+20dBm
Operating Temperature	0 to +50C
Storage Temperature	-65 to +150C

Notes:

1. Datasheet may be changed according to update of MMIC, Raw materials , process, and so on.
2. This data is only for reference, not for guaranteed specifications.
3. Please contact AT Microwave team to make sure you have the most current data.

Order Information

Part Number	Description
AT-MIX-5075H	Standard products, IF=SMA Female
AT-MIX-5075H-29F	IF=2.92mm Female.

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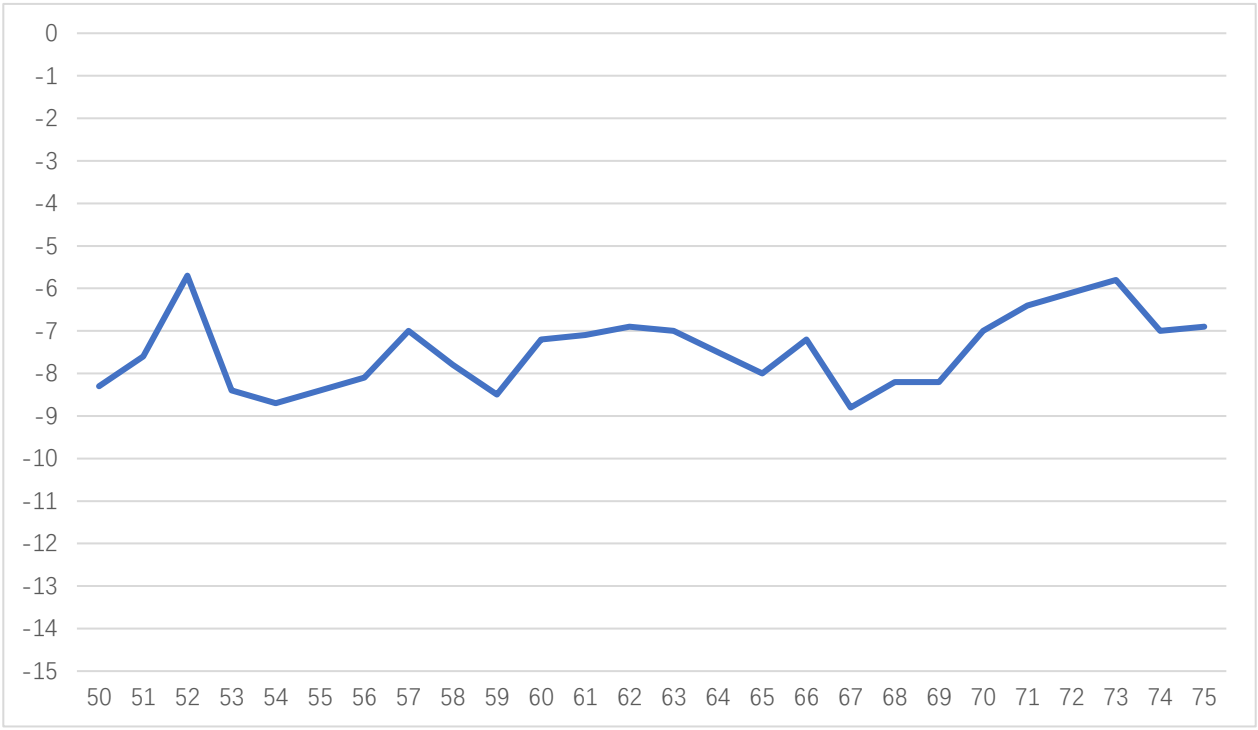
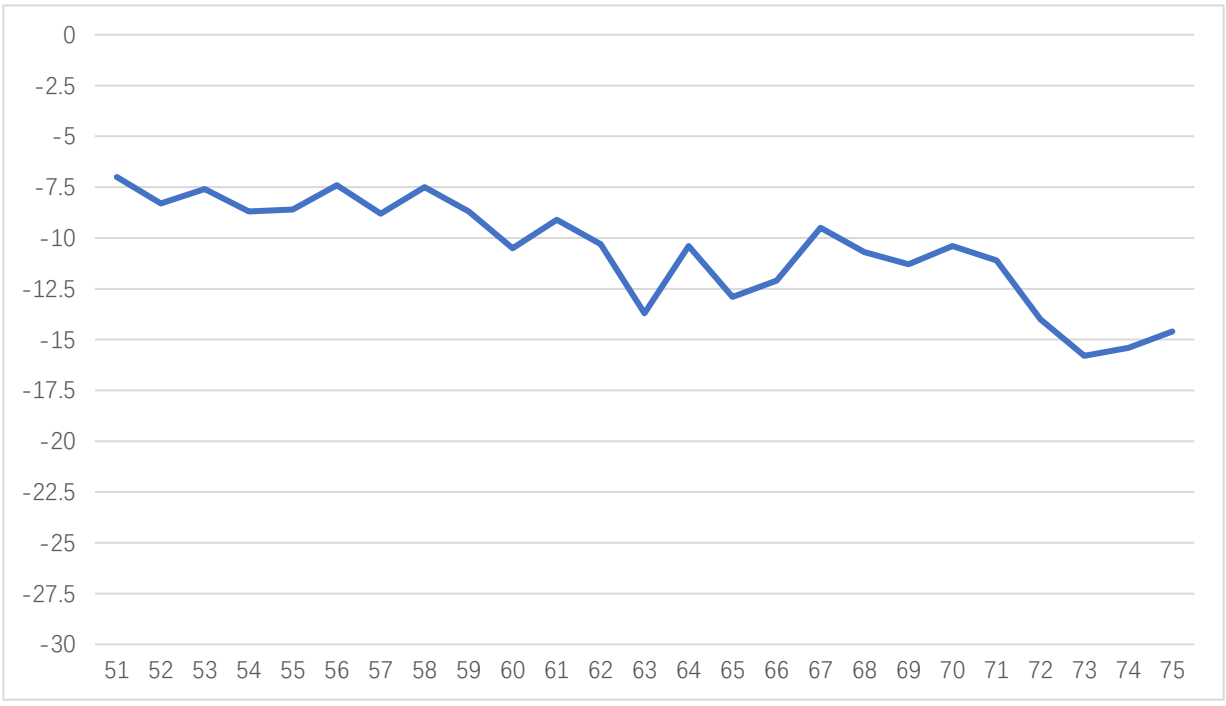
Down-Convertor Test

LO=+13dBm, RF-LO=1GHz, Down-convertor test, 25C

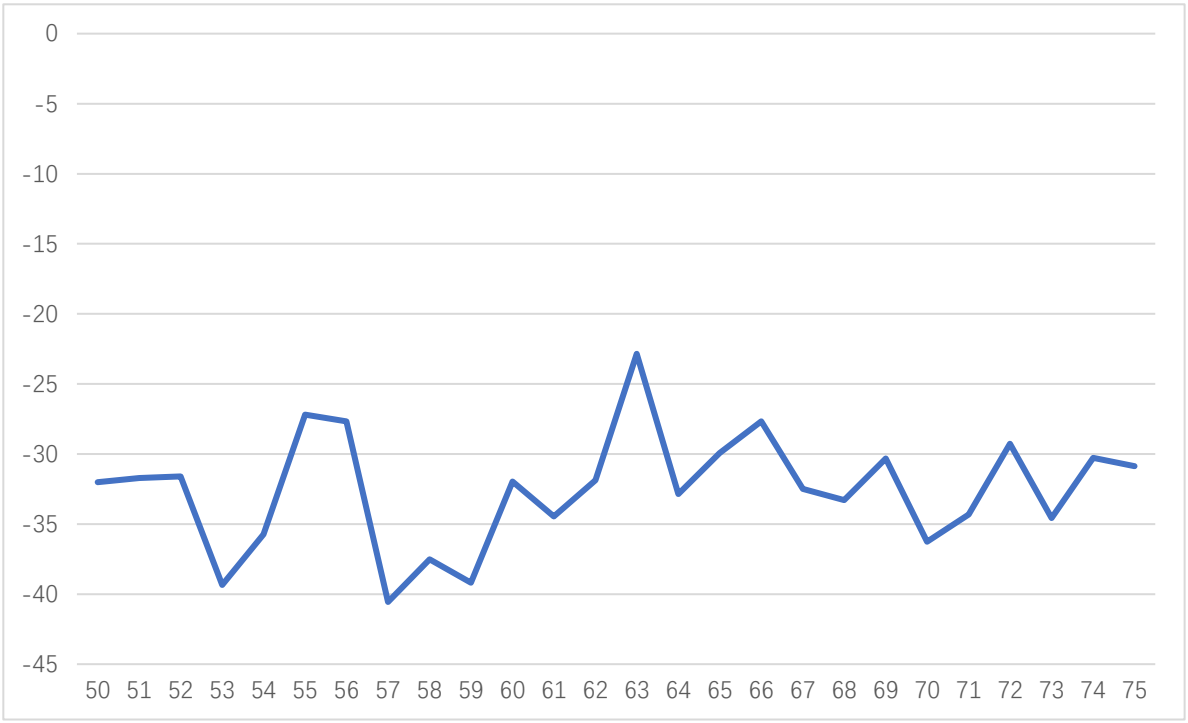


Conversion Loss vs Frequency, IF=1GHz



IF Response vs Frequency, LO=50GHz

Up-Convertor Test



LO/RF isolation, IF=1GHz, LO=+13dBm

Application Note

Mixer is a three port component with RF, LO and IF ports. Normally, a mixer can be used both up and down converter application. Take up converter for example:

General Balance Mixer

For general balance mixer, RF=LO +/- IF. There will be both high end LO+IF and Low End LO-IF.
Take for example, IF=2GHz, LO=60GHz, so there will be 58GHz and 62GHz at RF port with same power level.

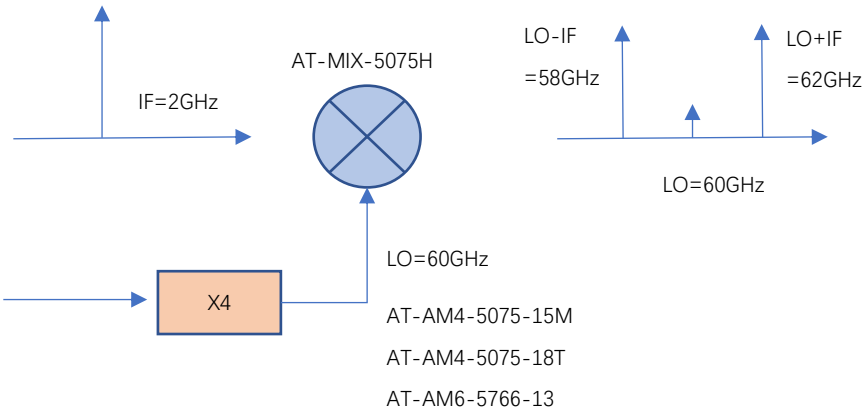


Figure A: General Balance Mixer with Both High and Low Side Output

IQ Mixer used as side suppression Mixer

When IF=2GHz, 90 degree hybrid is used at IF port, when IF applies to Input 1 Port of hybrid, you will have high end frequency RF=LO+IF=62GHz, while have side suppression (say -25dBc) at Low end frequency 58GHz. When you need low end frequency 58GHz, and make side suppression for high end frequency 62GHz, just applies IF to Input 2 of the hybrid.

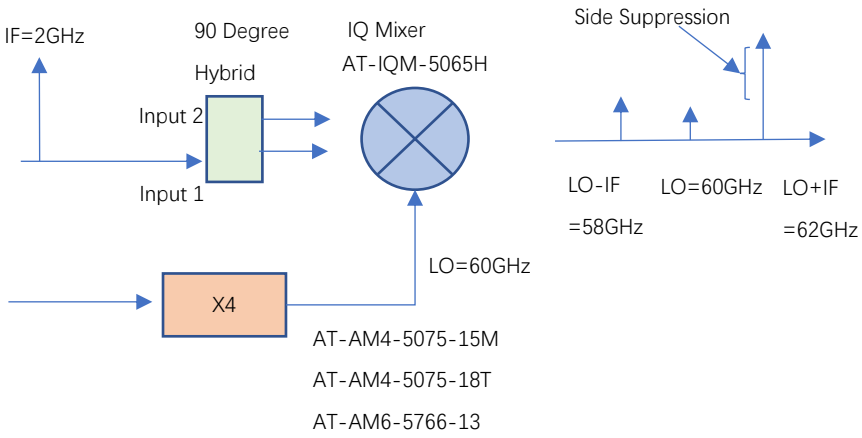


Figure B: IQ Mixer works as side suppression mixer

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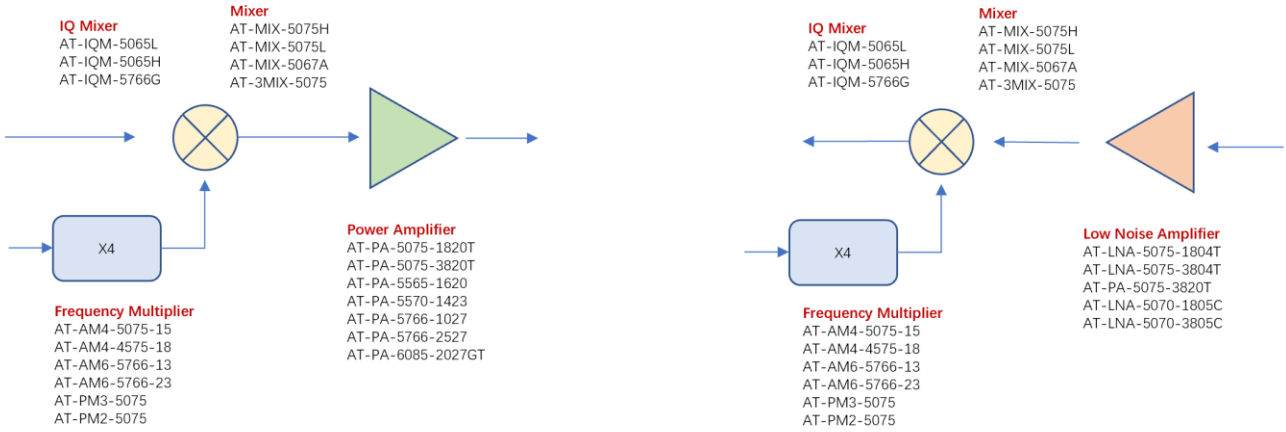
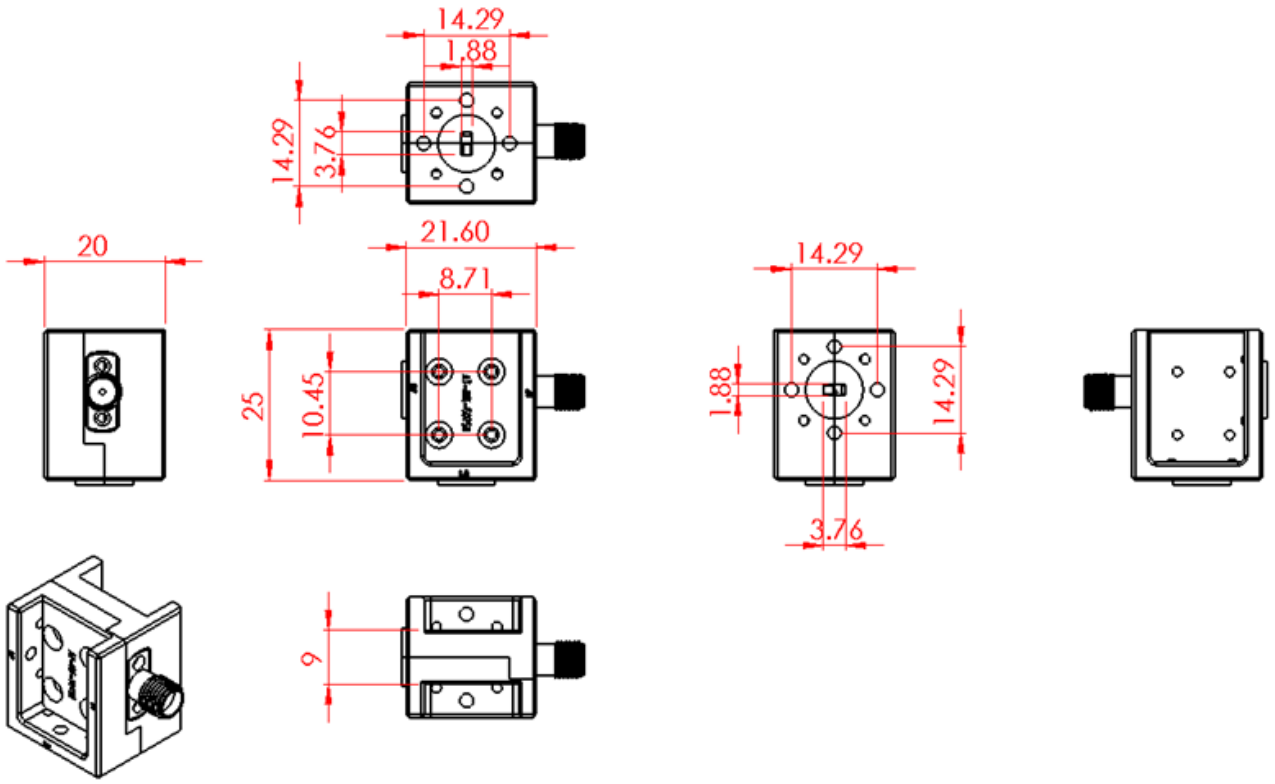
Full V Band Balance Mixer

V Band 50-75GHz



Dimension (Unit: mm)



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