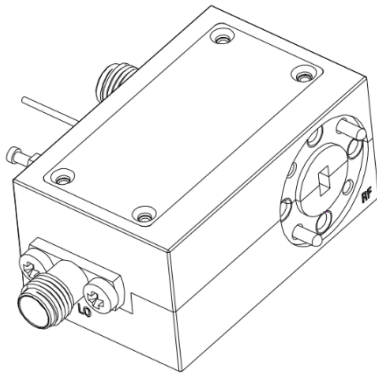


50-75GHz Balance Mixer WR-15

2023-5-5

With X4 AMC (Active Frequency Multiplier)



Description:

AT-4MIX-5075H is an up and down fundamental mixer covering V band based on GaAs MMIC technology with AMC(Active Frequency Multiplier) Chain.. IF Frequency range from DC to 25GHz with 2.92mmFemale connector

RF frequency range is 50-75GHz with WR-15 waveguide. 4xLO-RF isolation features -28dBc typical.

More information, please visit www.atmicrowave.com

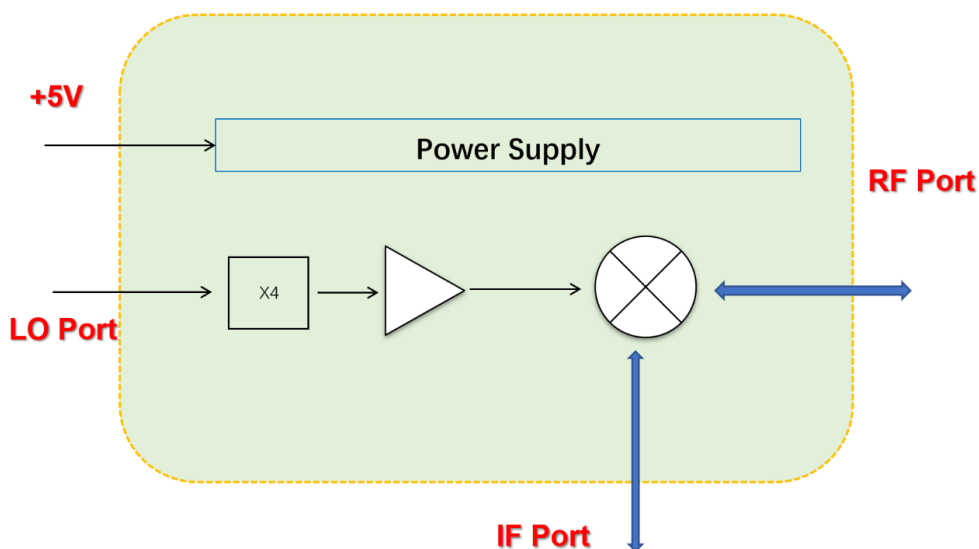
Feature

- ✓ RF: 50-75GHz
- ✓ LO: X4 AMC
- ✓ IF: DC-25GHz
- ✓ Low Conversion Loss
- ✓ Low LO power requirement

Application

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

Diagram Block





AT-4MIX-5075H

Full V Band Balance Mixer

Electrical Specifications

Parameter	Min	Typical	Max
RF Frequency	50GHz		75GHz
4XLO Frequency	45GHz		75GHz
LO Frequency	11.25GHz		18.75GHz
Multiplier Factor		X4	
Mixer Type		Fundamental Mixer	
LO Driver	+0	+3dBm	+5
IF Range		DC-25GHz	
Conversion Loss(IF=100MHz)		-8dB	-13
4XLO to RF Leakage		-15dBm	
LO to IF Isolation		-50dBc	
IF Port Input P1dB		+8dBm	
RF Port Input P1dB		+0dBm	
Power Supply		+5V	
Current		0.3A	
Spec Temp		25C	

Note, tested by IF=100MHz if not specified.





AT-4MIX-5075H

Full V Band Balance Mixer

Mechanical Information

Item	Description
RF Port	WR-15
LO Port	SMA Female
IF Port	2.92mm Female
Case Material	Copper
Finish	Gold Plated
Weight	150g
Size:	See outline

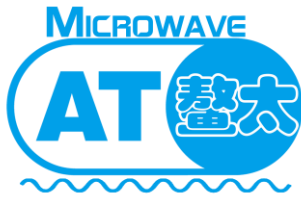
Absolute Maximum Ratings Table

Parameter	Value
IF Port Power	+10dBm
RF Port Power	+5dBm
LO Port Power	+10dBm
Operating Temperature	0 to +50C
Storage Temperature	-45 to +85C

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.



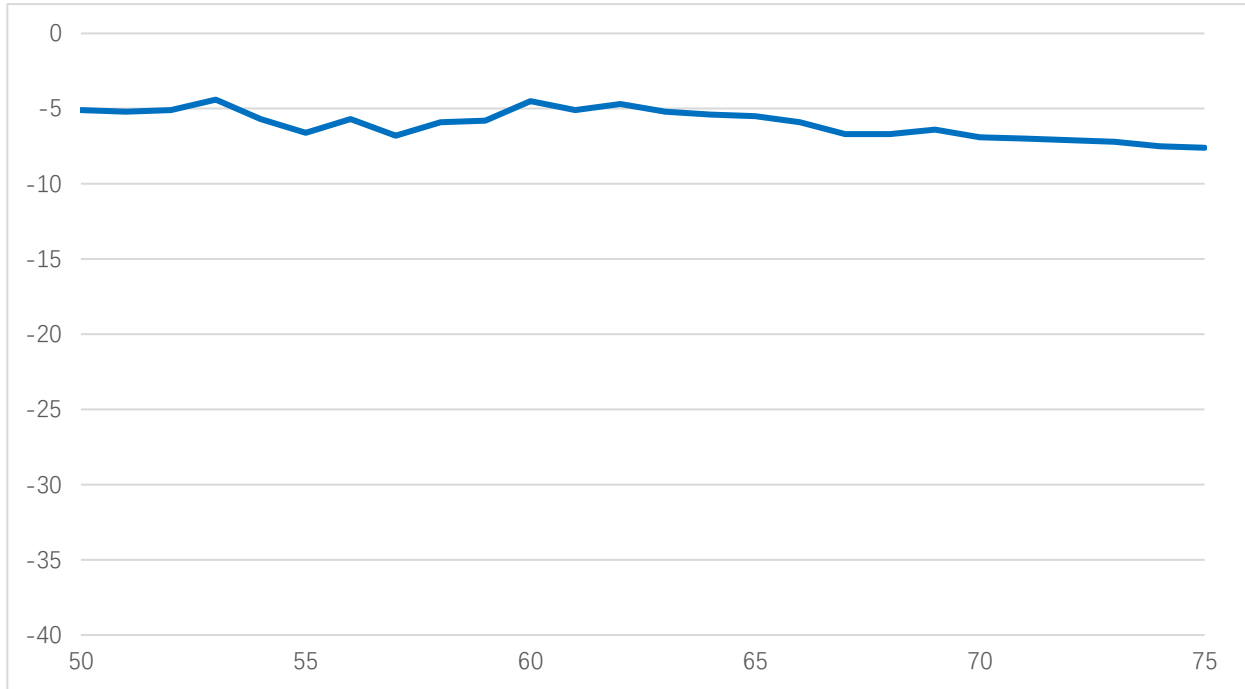


AT-4MIX-5075H

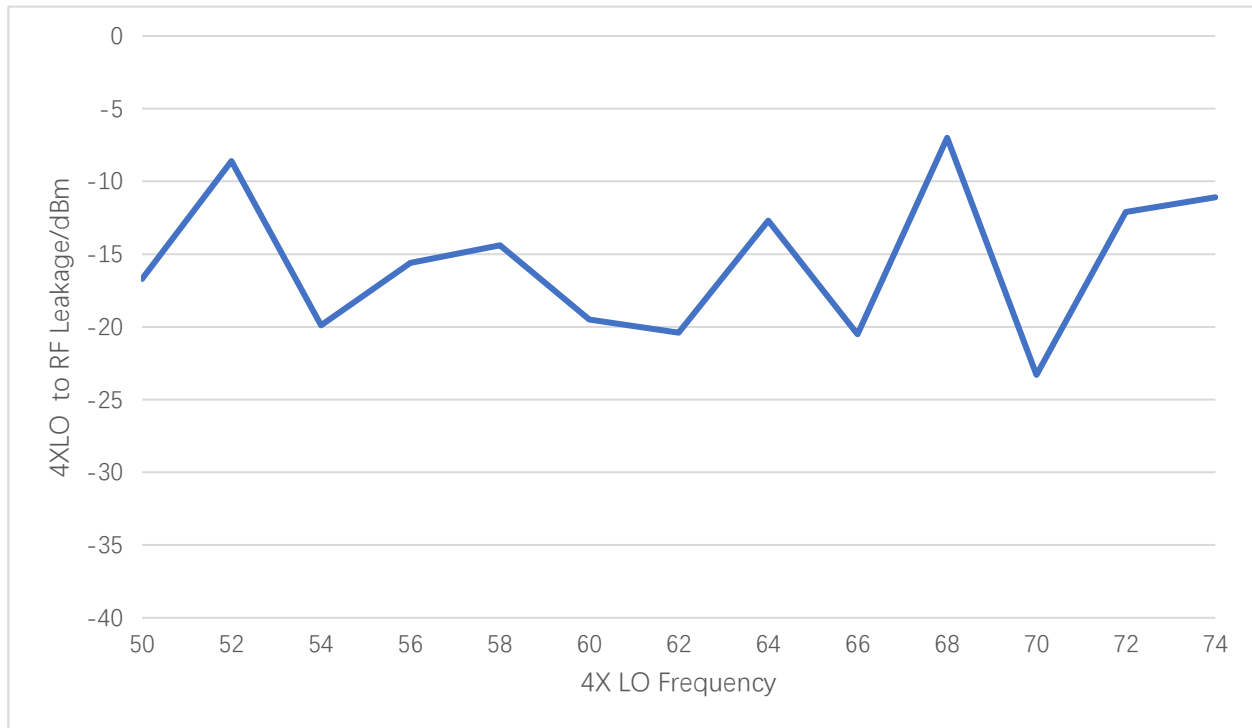
Full V Band Balance Mixer

Test Data (25C)

Please note that test curves will vary slightly from unit to unit.

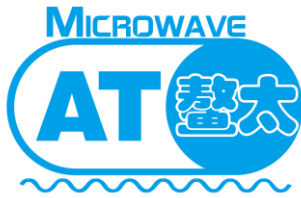


Conversion Loss vs Frequency, IF=100MHz



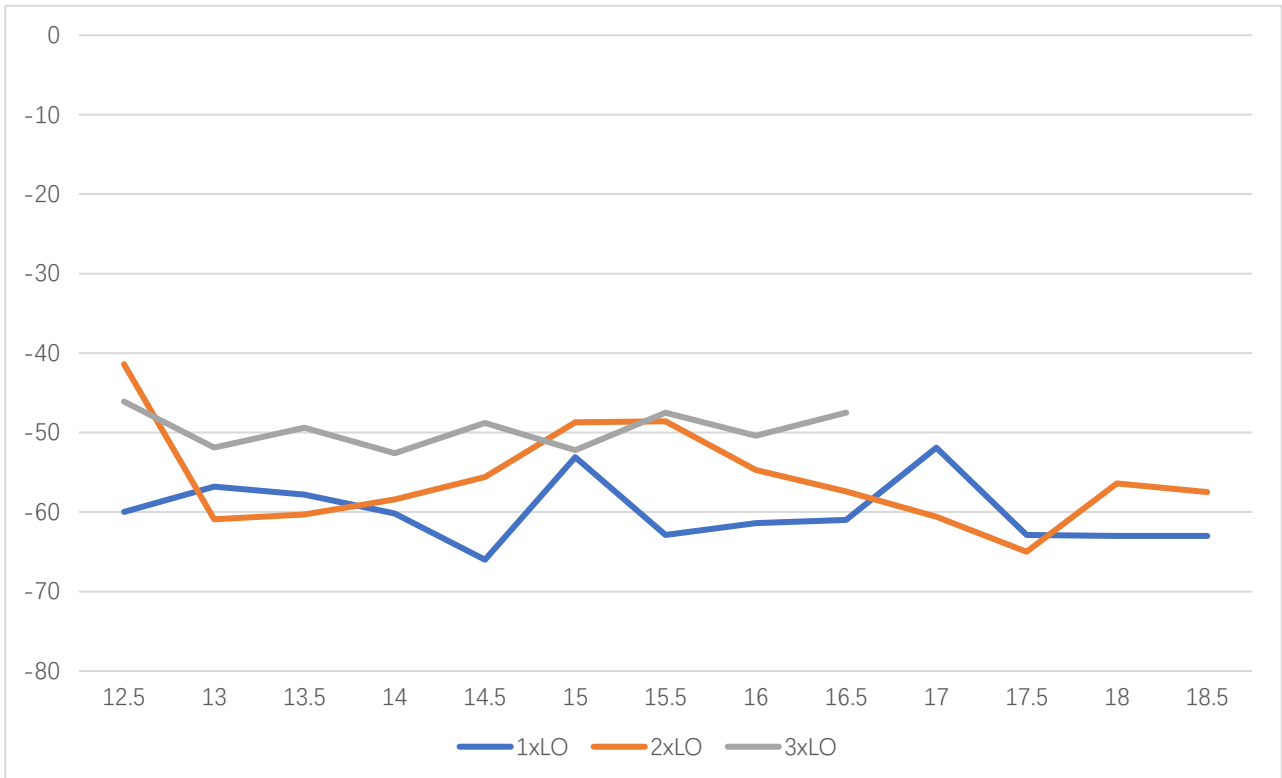
4XLO to RF Leakage/dBm





AT-4MIX-5075H

Full V Band Balance Mixer



LO to IF Isolation



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, $RF = LO \pm IF$. There will be both high end $LO+IF$ and Low End $LO-IF$. Take for example, $IF=2GHz$, $LO=94GHz$, so there will be $92GHz$ and $96GHz$ at RF port with same power level.

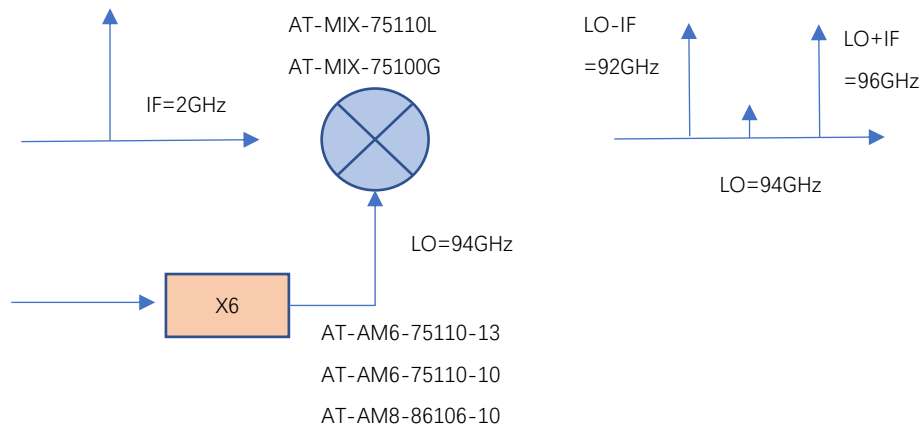


Figure A: General Balance Mixer with Both High and Low Side Output

IQ Mixer used as side suppression Mixer

When $IF=2GHz$, 90 degree hybrid is used at IF port, and IF applies to Input 1 Port of hybrid, you will have high end frequency $RF=LO+IF=96GHz$, while have side suppression (say $-25dBc$) at Low end frequency $92GHz$.

When you need low end frequency $92GHz$, and make side suppression for high end frequency $96GHz$, just applies IF to Input 2 of the hybrid.

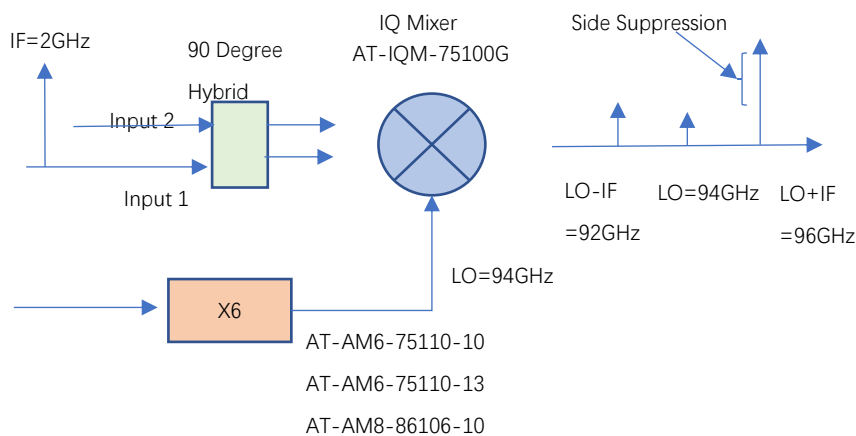


Figure B: IQ Mixer works as side suppression mixer



Dimension (mm)

