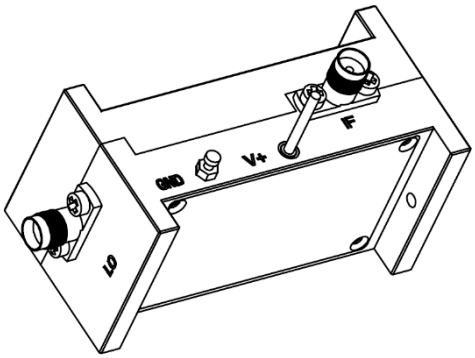
AT-4MIX-4060H

40-60GHz Balance Mixer Integrated with x4

40-60GHz Balance Mixer, WR-19

2023-4-10

LO with X4 AMC (Amplified Multiplier Chain)



Description:

AT-4MIX-4060H is an up and down balance mixer covering 40-60GHz based on GaAs MMIC technology.

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RF Port frequency rage is from 40-60GHz with WR-19 connector. LO range is 10-15GHz as X4 multiplier inside on LO chain. IF port frequency from DC to 20GHz with SMA Female connector.

More information, please visit www.atmicrowave.cm

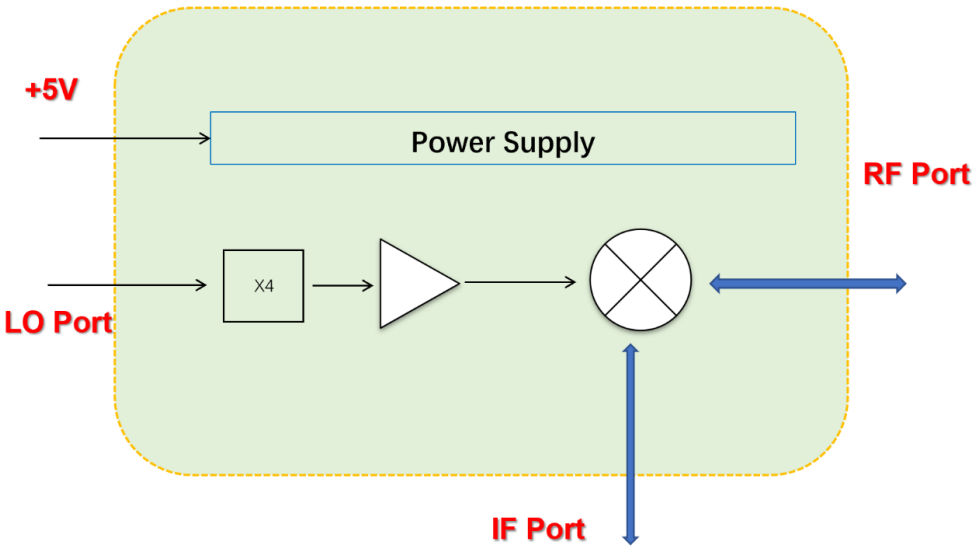
Feature

- ✓ RF Range: 40-60GHz
- ✓ LO Range: 10-15GHz
- ✓ Low Conversion Loss
- ✓ High RF/LO Isolation

Application

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

Diagram Block



Shanghai AT Microwave Limited

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Electronical Specifications: (IF=100MHz if not specified)

Parameter	Min	Typical	Max
RF Frequency Range		40-60GHz	
4XLO Frequency Range		40-60GHz	
LO Frequency Range		10-15GHz	
IF Range		DC-20GHz	
Conversion Loss(IF=100MHz)		-10dB	-15dB
LO Driver	+8	+10dBm	+15dBm
LO Multiplier Factor		X4	
Mixer Type		Fundamental Mixer	
IF Input P1dB		+8dBm	
RF Input P1dB		+0dBm	
4XLO to RF Leakage		-20dBm	
1xLO to IF Leakage		-40dBm	
Vdd		+5V	+8V
Idd		0.5A	
Spec Temp		25C	

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Mechanical Information

Item	Description
RF Port	WR-19
LO Port	SMA Female
IF Port	SMA Female
Case Material	Copper
Finish	Gold Plated
Weight	130g
Size:	See outline

Absolute Maximum Ratings Table

Parameter	**Value**
IF Power	+15dBm
RF Power	+10dBm
LO Power	+23dBm
Vdd	+9V
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.

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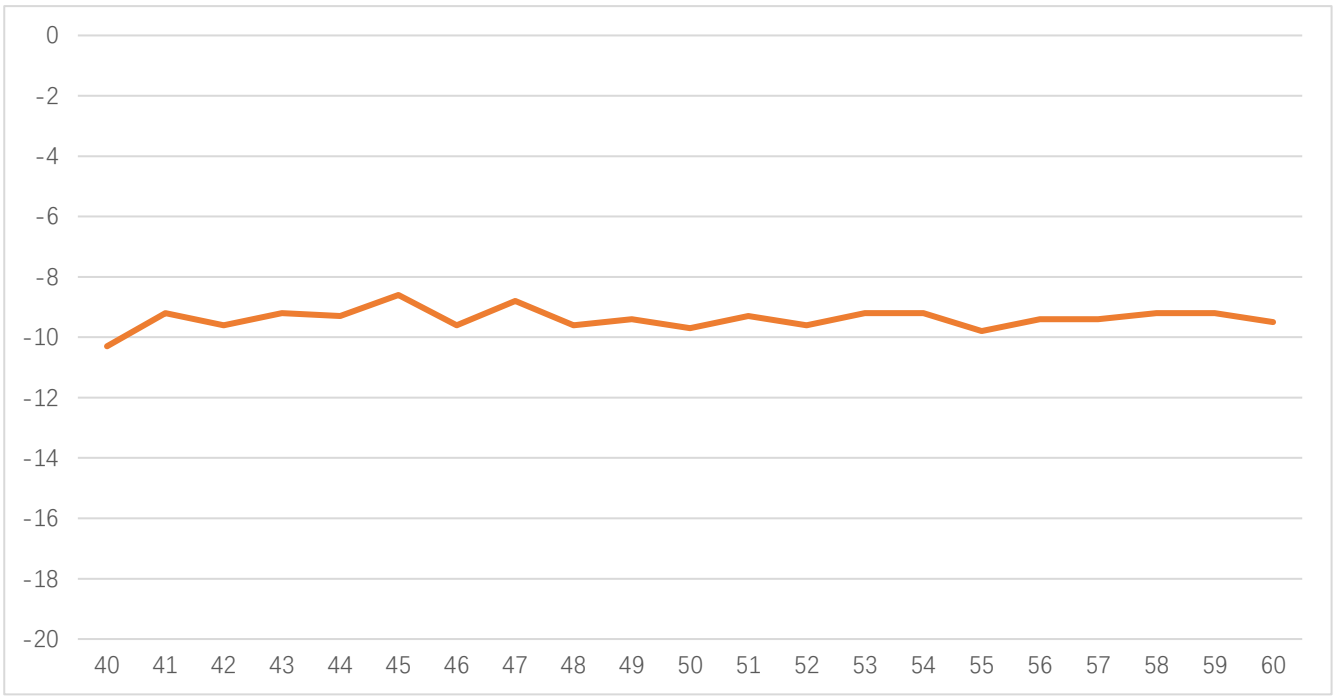
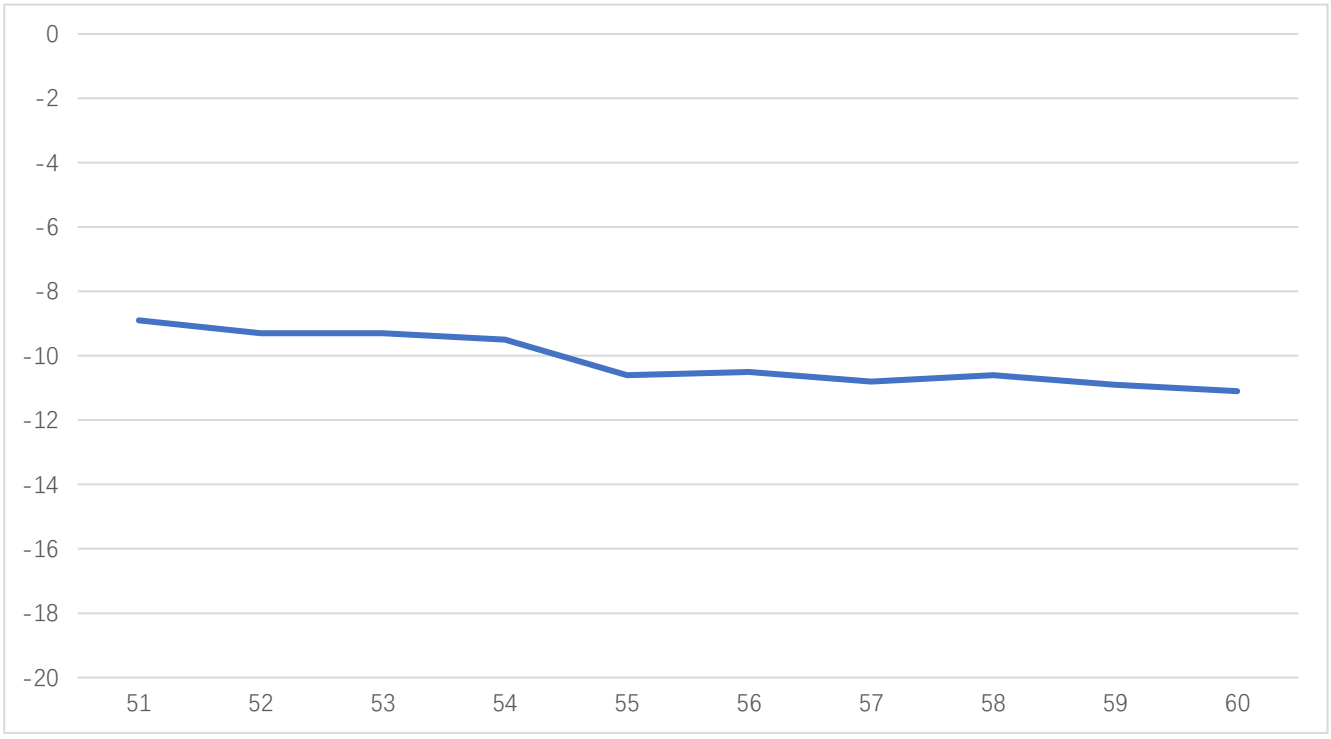
Test Data (25C)

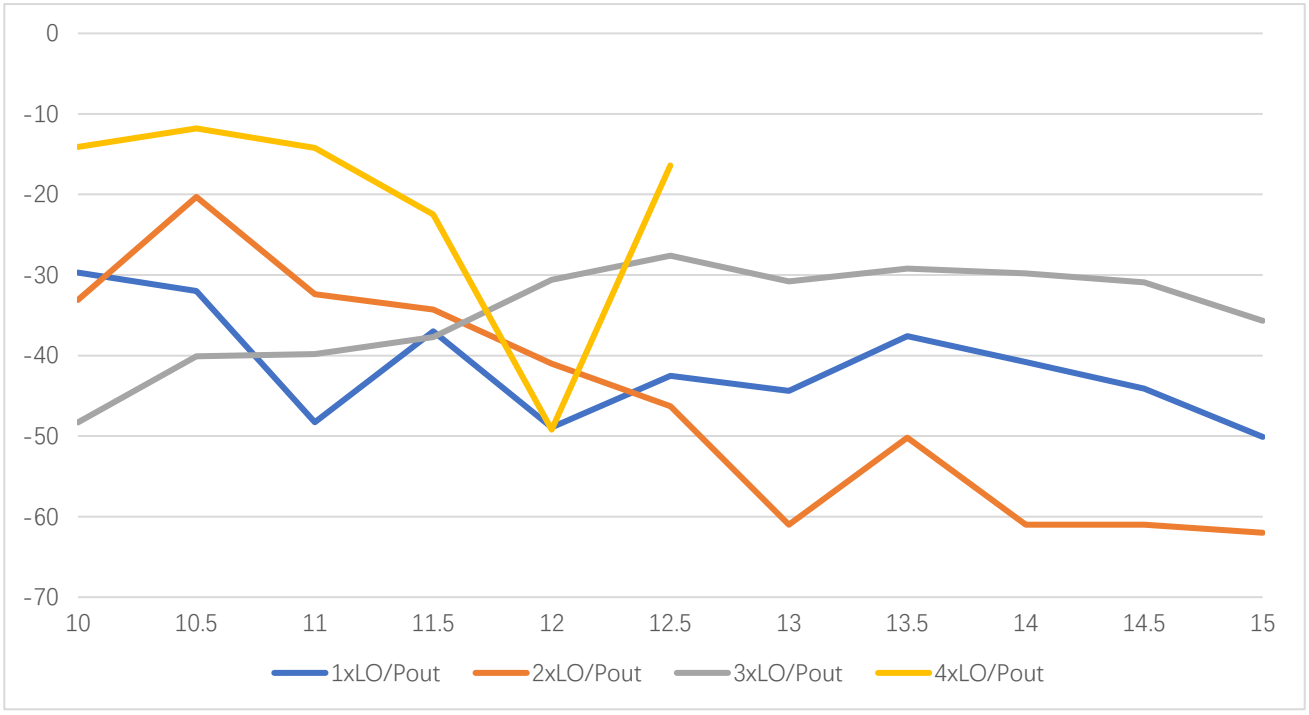
Please note that test curves will vary slightly from unit to unit.



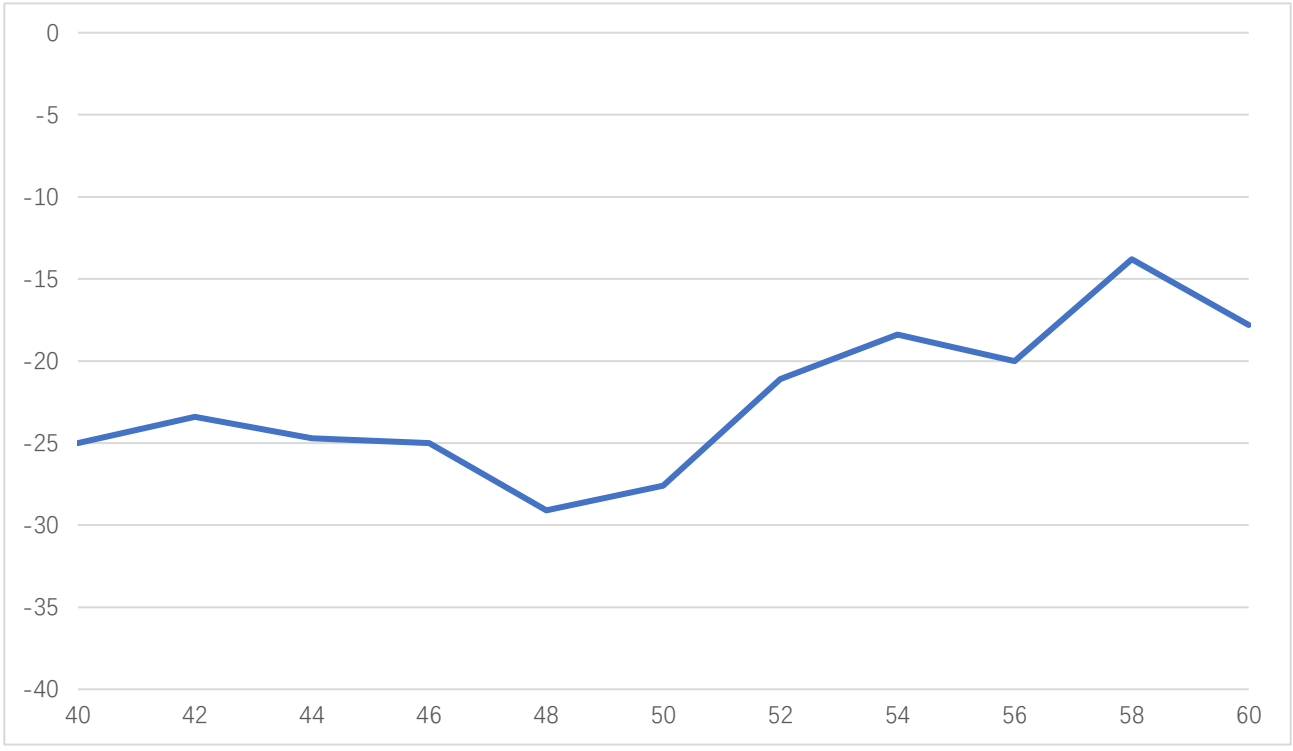
Conversion Loss vs Frequency, IF=100MHz



4XLO=50GHz, IF Response



NX LO to IF Leakage Power/dBm vs LO Frequency



4XLO to RF Port Leakage/dBm

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=94GHz, so there will be 92GHz and 96GHz at RF port with same power level.

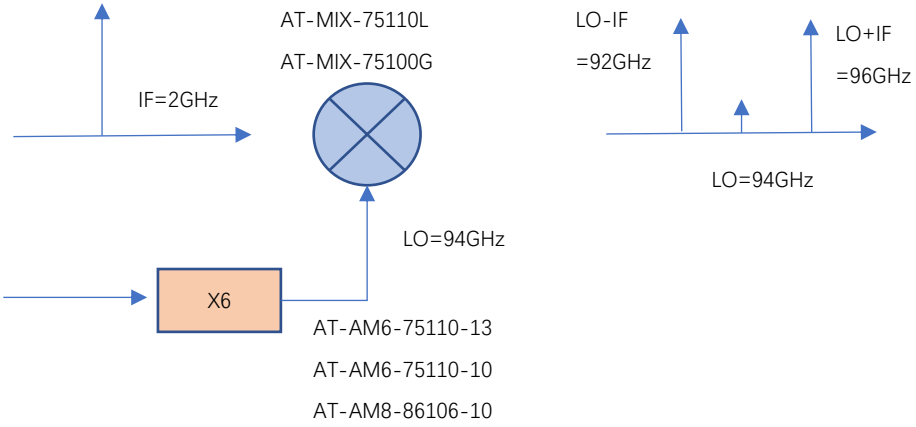


Figure A: General Balance Mixer with Both High and Low Side Output

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.

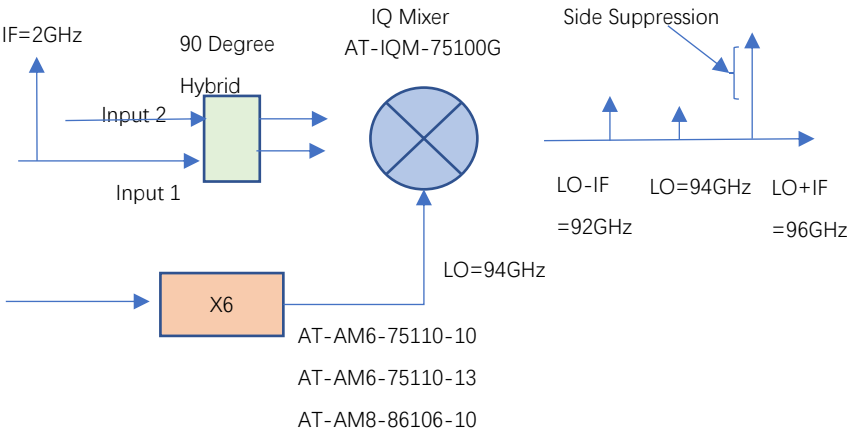


Figure B: IQ Mixer works as side suppression mixer

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Dimension (mm)