AT-IQM-4060H

40-60GHz IQ Mixer

2020-11-24

U Band: 40-60GHz IQ Mixer

Description:

AT-IQM-4060H is an up and down balance mixer covering U band based on GaAs MMIC Technology.
IF input is IQ port and can range from DC to 20GHz. LO/RF frequency range is 40-60GHz. LO RF isolation features 30DB. The imaging rejection is 35dB typical.

The mixer is a highly linear and balanced direct IQ modulator or demodulator mixer. AT-AM4-4060-18 can be used as LO Driver.

More information, please visit www.atmicorwave.com

Feature

- ✓ RF/LO: 40-60GHz
- ✓ IF: DC-20GHz
- ✓ Low Conversion Loss
- ✓ Low LO power requirement
- ✓ High RF/LO Isolation

Application

- ✓ U band Communication
- ✓ Test Equipment
- ✓ ROF (RF Over Fiber)
- ✓ Radar System

Electronical Specifications:

Parameter	Min	Typical	Max
RF/LO Frequency		40-60GHz	
IF Range		DC-20GHz	
Conversion Loss		-10dB	-13
LO Driver	+15	+18dBm	+21
IIP3		+21dBm	
Imaging Rejection		30Db	
LO/RF Isolation		30dB	
Bias		NO	
Spec Temp		25C	

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Mechanical Information

Item	Description
RF Port	WR-19
LO Port	WR-19
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+LO Power	+25dBm
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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Application Note

Mixer is a three ports 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=50GHz, so there will be 48GHz and 52GHz at RF port with same power level.

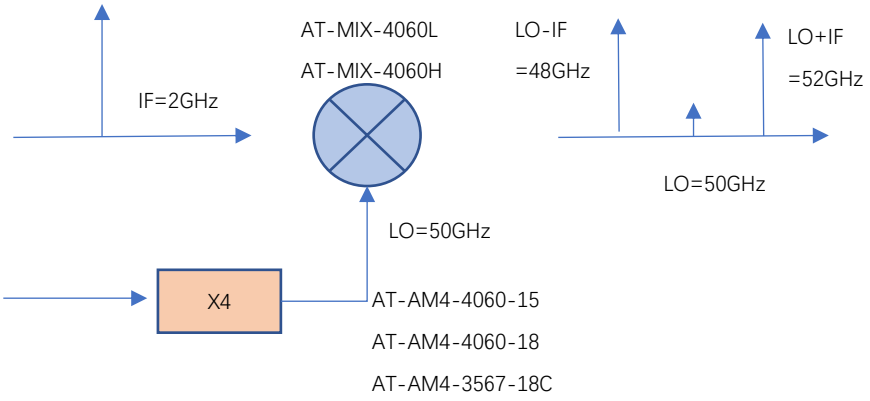

Figure A: General Balance Mixer with Both High and Low Side Output

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=52GHz, while have side suppression (say -25dBc) at Low end frequency 48GHz.

When you need low end frequency 48GHz, and make side suppression for high end frequency 42GHz, just applies IF to Input 2 of the hybrid.

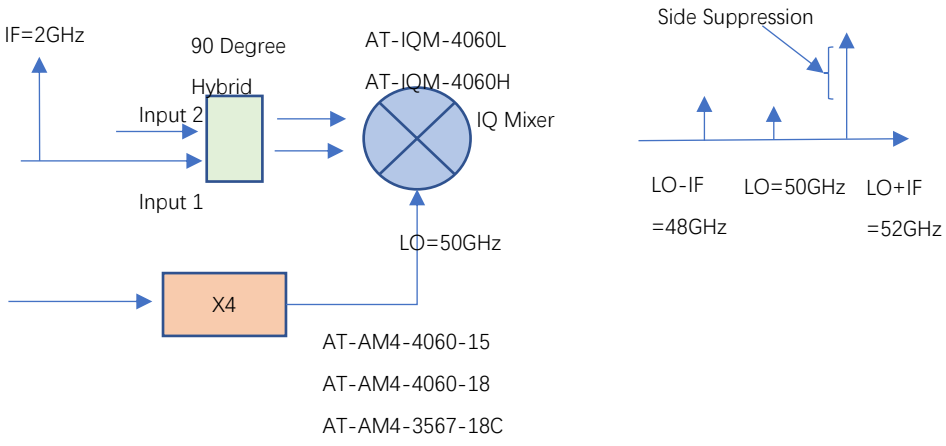

Figure B: IQ Mixer works as side suppression mixer