AT-IQM-75100G

75-100GHz Down-convertor IQ Mixer

75-100GHz IQ Down-converter

2022-5-1

Description:

AT-IQM-75100G is a down convertor IQ mixer covering E and W band. IF input is IQ port and can range from DC to 12GHz. LO/RF frequency range is 75-100GHz. The imaging rejection is -30dB typical.

One of the advantages of using this mixer is that LO driver power is +7dBm typical. This eliminates the need for an expensive local amplifier, making system integrations much easier and cheaper.
Frequency multiplier AT-AM8-86106-10 and AT-AM6-75110-10 can be used as LO driver for this mixer.

More information, please visit www.atmicrowave.com

Feature

- ✓ RF/LO: 75-100GHz
- ✓ IF: DC-12GHz
- ✓ Low Conversion Loss
- ✓ Low LO power requirement
- ✓ High Image Rejection

Application

- ✓ W band Imaging
- ✓ FOD (Foreigner Objects Debris)
- ✓ Test Equipment
- ✓ ROF (RF Over Fiber)
- ✓ Radar System

Electronical Specifications:

Parameter	Min	Typical	Max
RF/LO Frequency		75-100GHz	
IF Range		DC-12GHz	
Conversion Loss (Single I/Q)		-12dB	-18dB
LO Driver	+5dBm	+8dBm	+10dBm
Imaging Rejection	-20	-30dBc	
LO-RF Isolation		-15dBc	
Power Supply		+5V	+6V
Current		1mA	
Spec Temp		25C	

Test Condition, Down-convertor, IF=1GHz if not specified. RF input=-10dBm

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Mechanical Information

Item	Description
RF Port	WR-10
LO Port	WR-10
IF Port	SMA Female
Case Material	Copper
Finish	Gold Plated
Weight	130g
Size:	See outline

Absolute Maximum Ratings Table

Parameter	**Value**
IF Port Power	+5dBm
RF Port Power	+5dBm
LO Port Power	+13dBm
Vdd	+8V
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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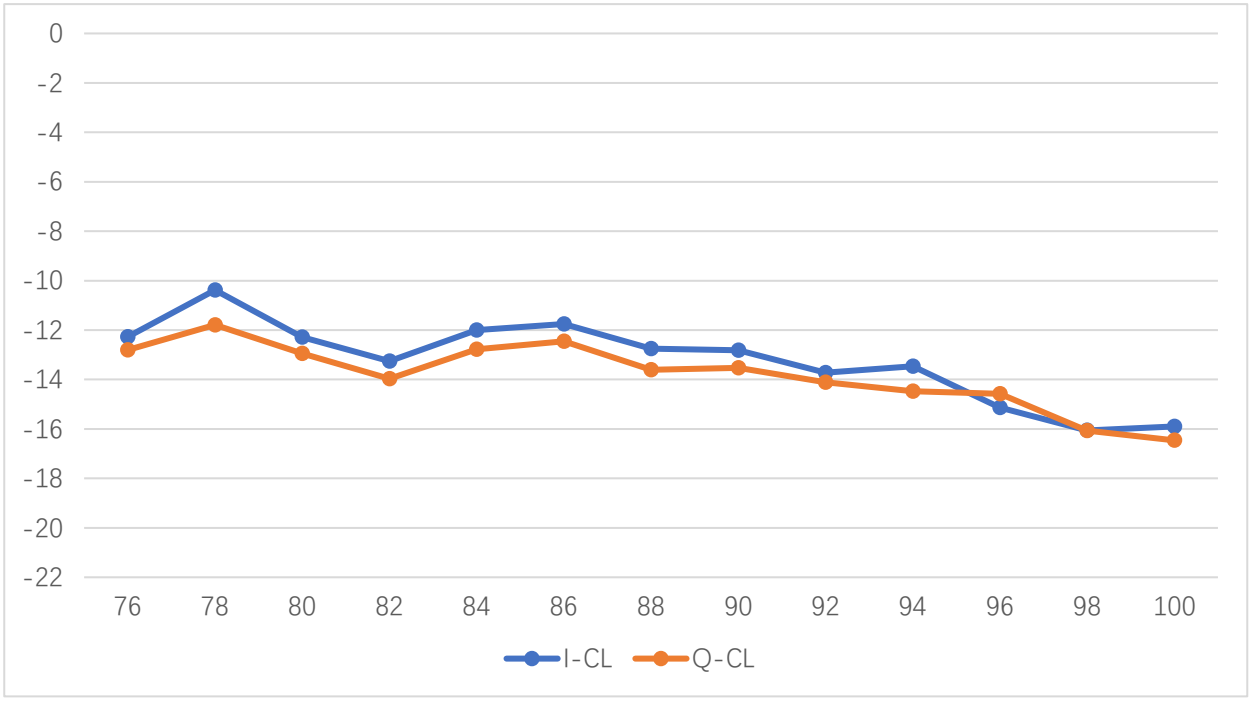
Test Data(25c)

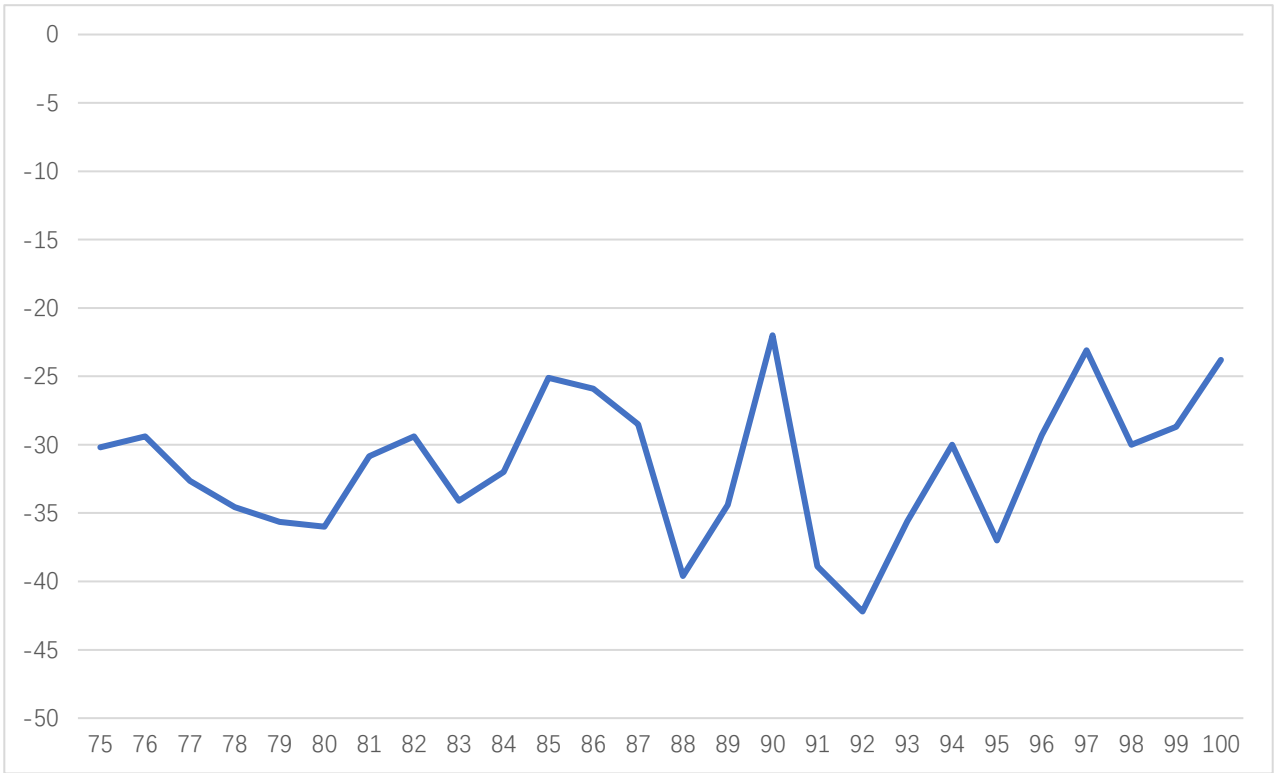
IF=1GHz, RF Input Power=-10dBm



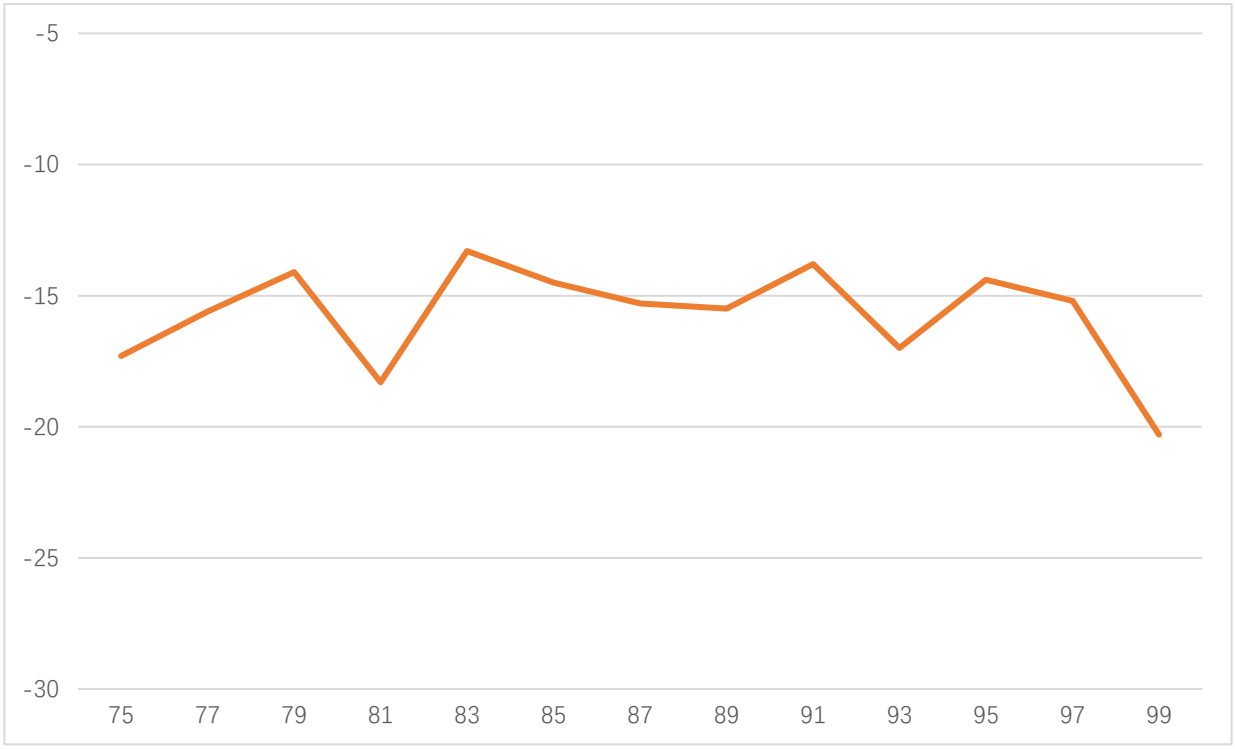
Conversion Loss vs Frequency, LO=+7dBm

IF response, LO=75GHz

IF response, LO=80GHz



Imaging Rejection



LO-RF 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 +/- 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.

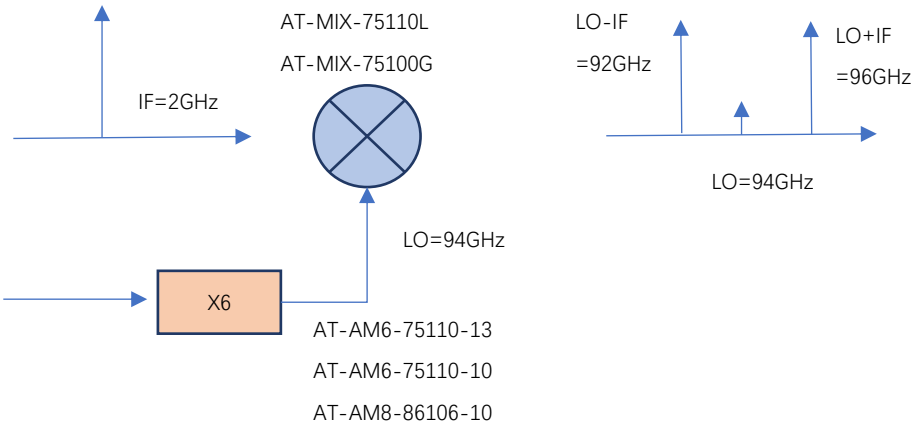


Figure A: General Balance Mixer with Both High and Low Side Output

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.

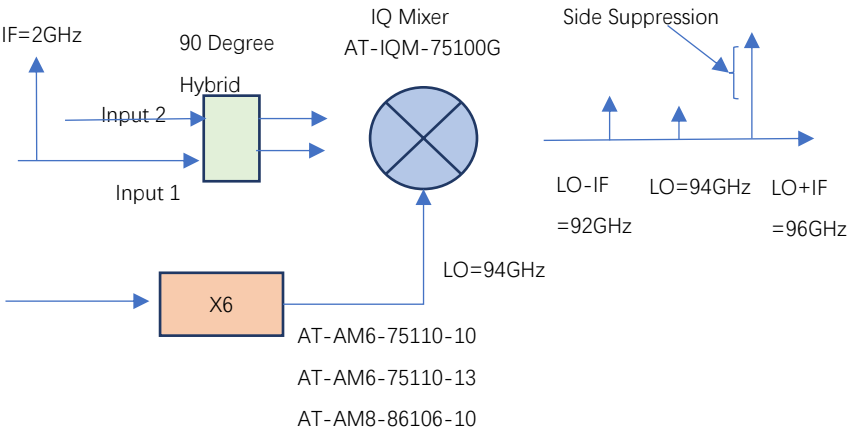


Figure B: IQ Mixer works as side suppression mixer

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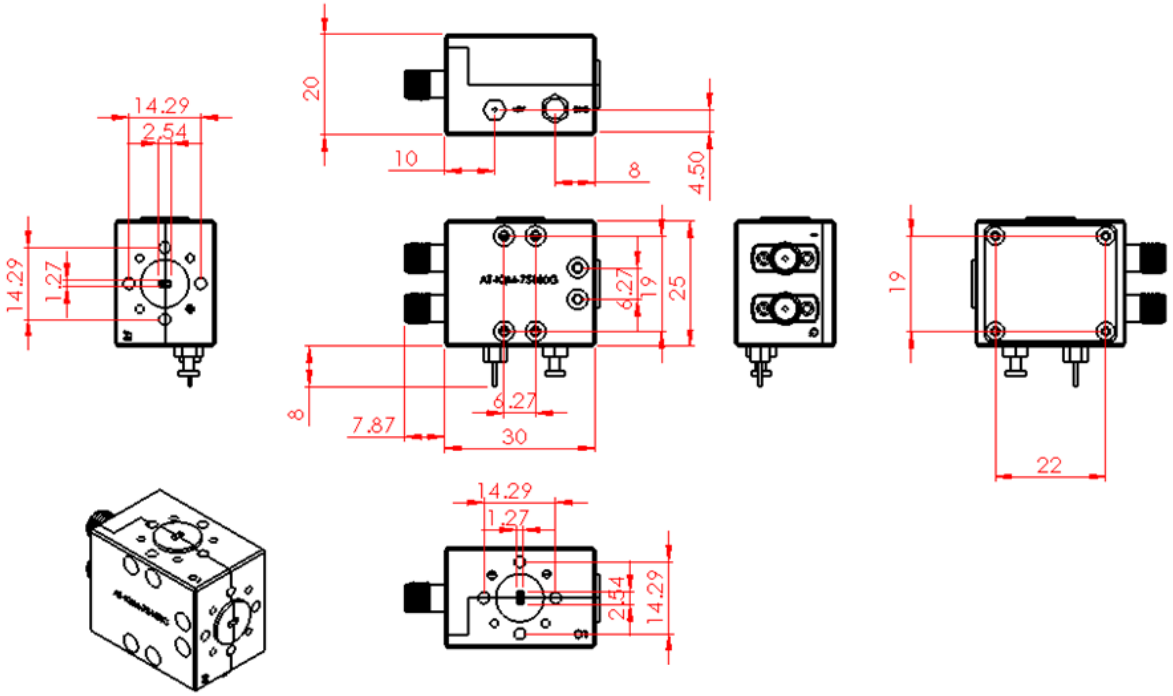
Dimension(mm)



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