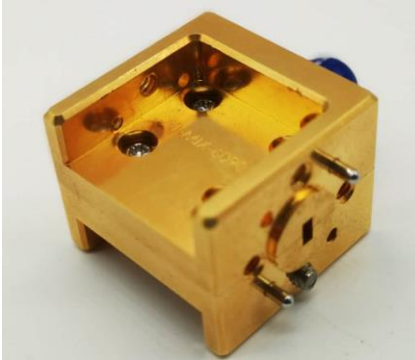


2022-10-1

## 60-90GHz Balance Mixer WR-12



### Description:

AT-MIX-6090L 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 12GHz with SMA Female connector

LO/RF frequency range is 60-90GHz with WR-12 waveguide. LO-RF isolation features 30dB. AT-AM6-6090-17T/L can be used as LO driver for this mixer.

More information, please visit [www.atmicrowave.cm](http://www.atmicrowave.cm)

### Feature

- ✓ RF: 60-90GHz
- ✓ IF: DC-12GHz
- ✓ Low Conversion Loss
- ✓ Low LO power requirement
- ✓ High RF/LO Isolation

### Application

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

### Electronical Specifications:

Parameter	Min	Typical	Max
RF Frequency Range		60-90GHz	
LO Frequency Range		55-90GHz	
IF Range		DC-12GHz	
LO Driver	+14dBm	+16dBm	+20
Conversion Loss (IF=1GHz)		-12dB	
LO-RF Isolation		-30dB	
Spec Temp		25C	





# AT-MIX-6090L

Full E Band Balance Mixer

## Mechanical Information

Item	Description
RF Port	WR-12
LO Port	WR-12
IF Port	SMA Female
Case Material	Copper
Finish	Gold Plated
Weight	30g
Size:	See outline

## Absolute Maximum Ratings Table

Parameter	Value
IF Power	+7dBm
RF Power	+3dBm
LO Power	+23dBm
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.



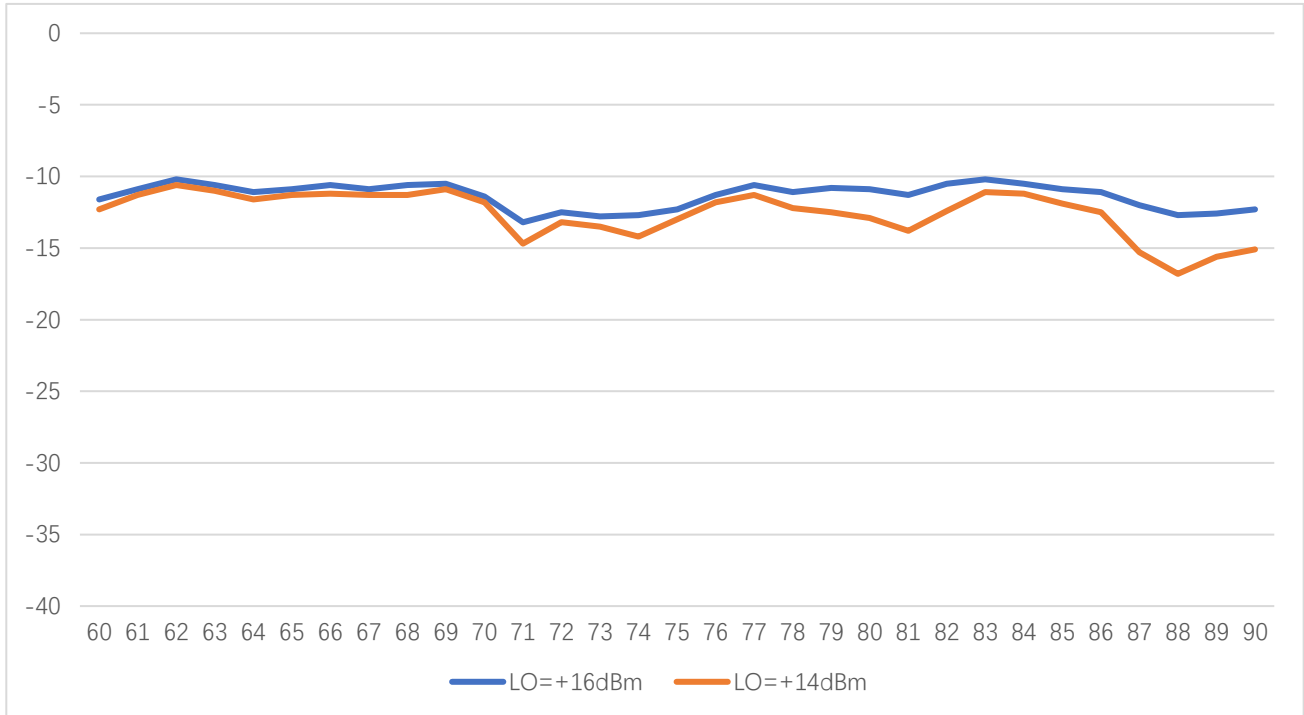


# AT-MIX-6090L

Full E Band Balance Mixer

## Test Data:

Down-converter test, RF=-30dBm, IF=1GHz



Conversion Loss vs Frequency



### 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,  $IF=2GHz$ ,  $LO=80GHz$ , so there will be  $78GHz$  and  $82GHz$  at RF port with same power level.

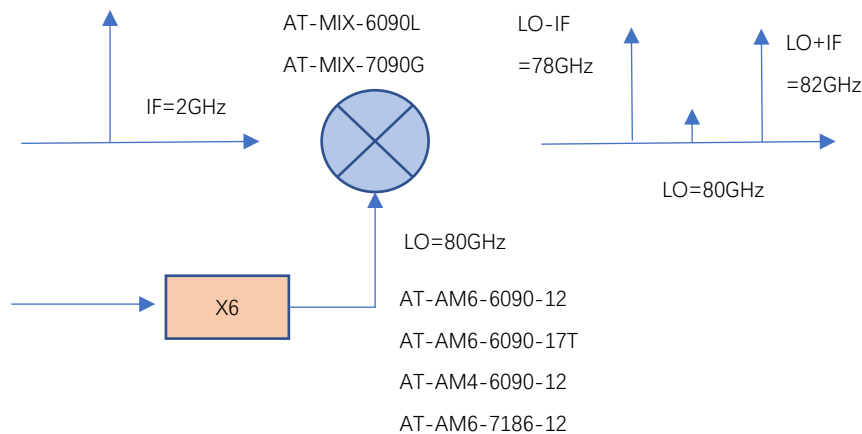


Figure A: General Balance Mixer with Both High and Low Side Output

#### 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  $RF = LO + IF = 82GHz$ , while have side suppression (say  $-25dBc$ ) at Low end frequency  $78GHz$ .

When you need low end frequency  $78GHz$ , and make side suppression for high end frequency  $82GHz$ , just applies IF to Input 2 of the hybrid.

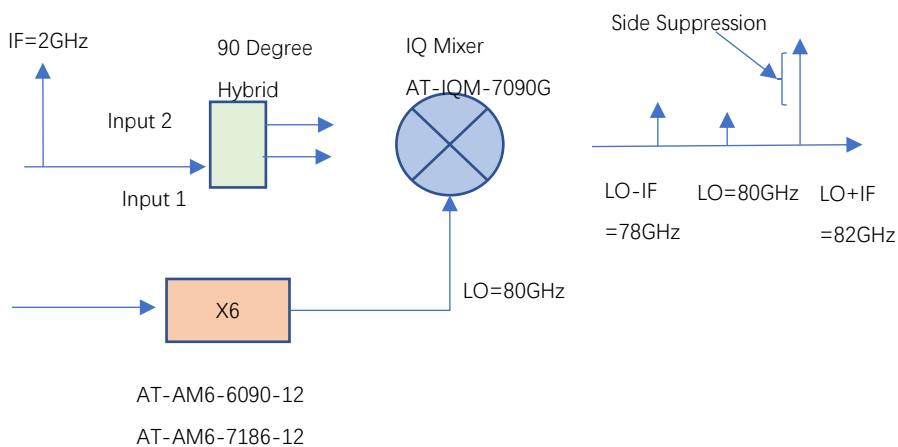
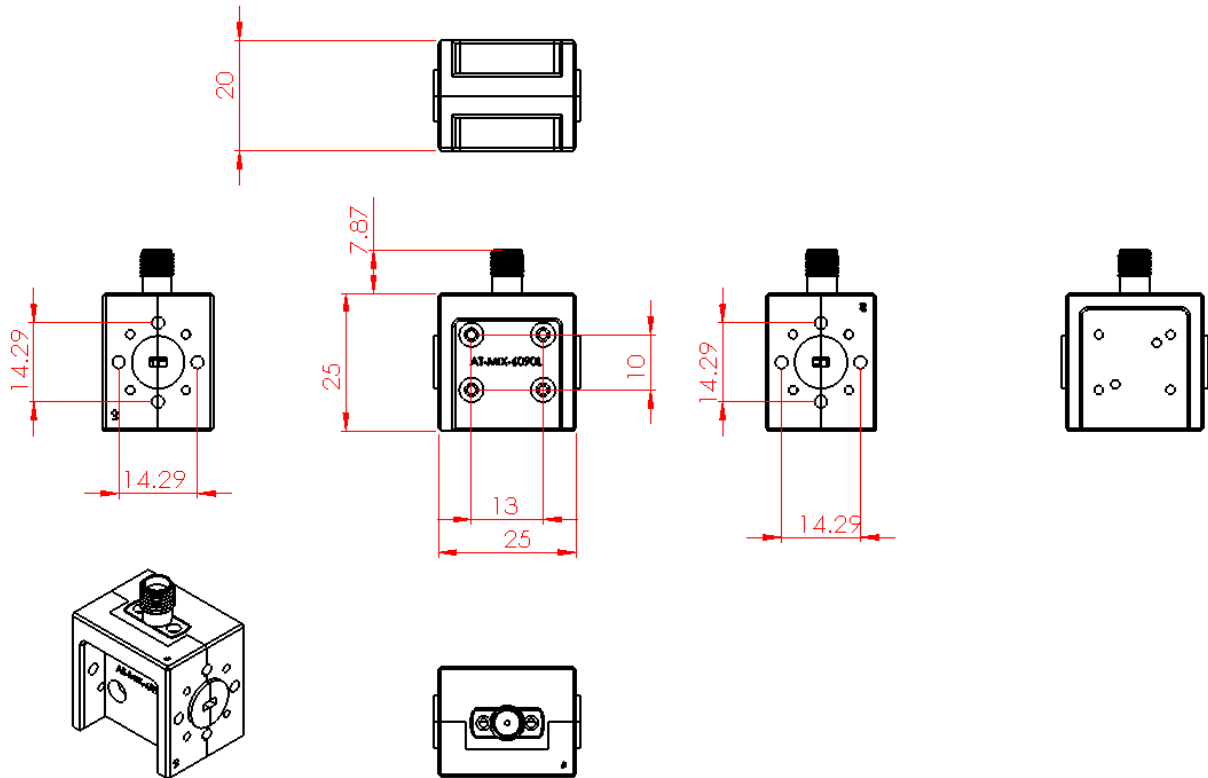


Figure B: IQ Mixer works as side suppression mixer



## Dimension:



## PCN History

Item	Description
2020-1-1	First released
2022-8-20	Updated by anti-cocking flange.

