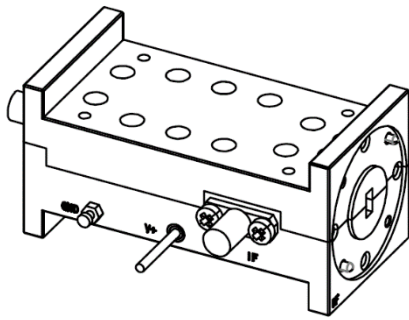


### 33-50GHz Balance Mixer, WR-22

2023-3-10

### LO with X4 AMC (Amplified Multiplier Chain)



#### Description:

AT-4MIX-3350H is an up and down fundamental mixer covering 33-50GHz based on GaAs MMIC technology.

RF Port frequency range is from 33-50GHz with WR-22 connector. LO range is 8.25-12.5GHz as X4 multiplier inside on LO chain. IF port frequency from DC to 20GHz with SMA Female connector.

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

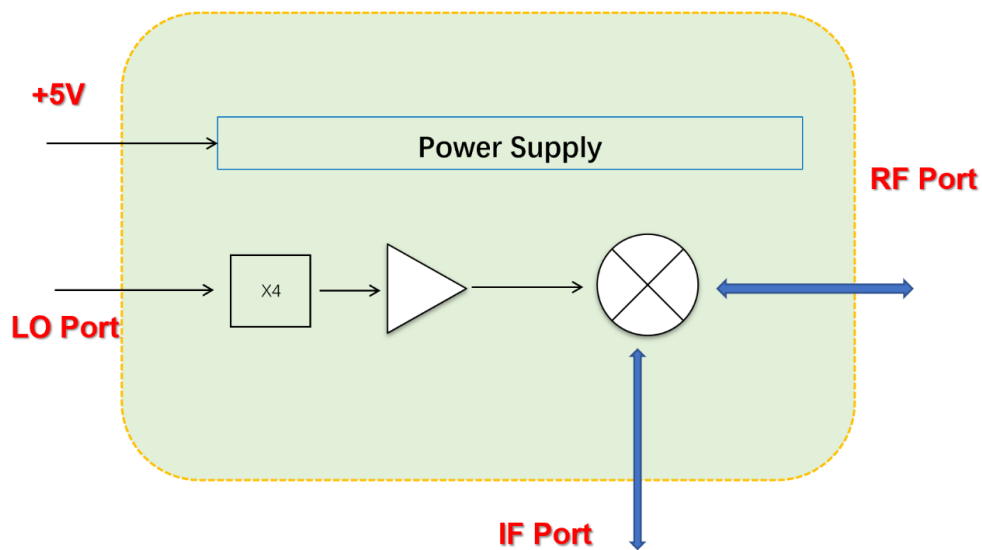
#### Feature

- ✓ RF Range: 33-50GHz
- ✓ LO Range: 8.25-12.5GHz
- ✓ Low Conversion Loss
- ✓ High RF/LO Isolation

#### Application

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

### Diagram Block





# AT-4MIX-3350H

33-50GHz Balance Mixer Integrated with x4

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

Parameter	Min	Typical	Max
RF Frequency		33-50GHz	
4XLO Frequency		33-50GHz	
LO Input Frequency		8.25-12.5GHz	
LO Multiplier Factor		X4	
Mixer Type		Fundamental Mixer	
IF Range		DC-6GHz	
Conversion Loss (IF=100MHz)		-8dB	-12dB
LO Driver	+10	+13dBm	+15
IF Input P1dB		+8dBm	
4XLO to RF Leakage		-20dBm	
LO to IF Isolation		To be added.	
Vdd		+5V	+8V
Idd		0.5A	
Spec Temp		25C	





# AT-4MIX-3350H

33-50GHz Balance Mixer Integrated with x4

## Mechanical Information

Item	Description
RF Port	WR-22
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	+15dBm
LO Power	+20dBm
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.



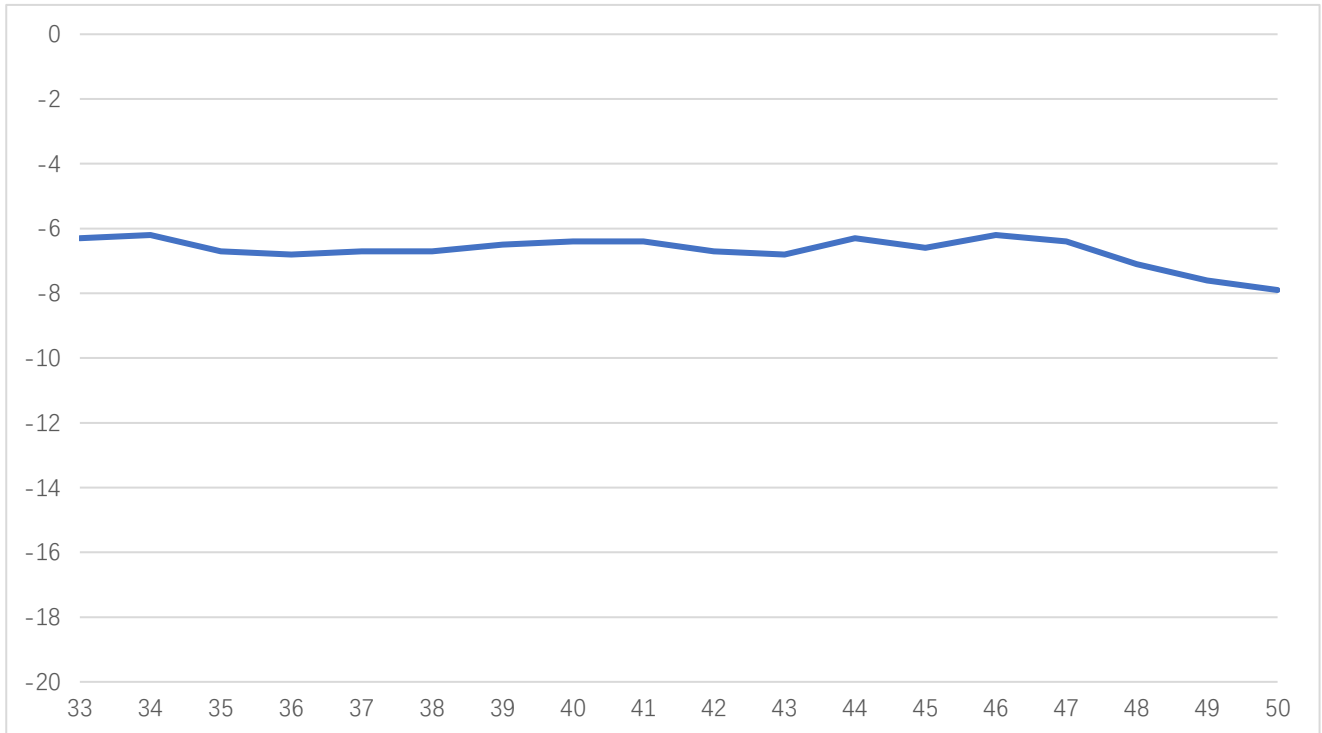


# AT-4MIX-3350H

33-50GHz Balance Mixer Integrated with x4

## Test Data (25C)

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



Conversion Loss vs Frequency, Lf=100MHz



### 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.

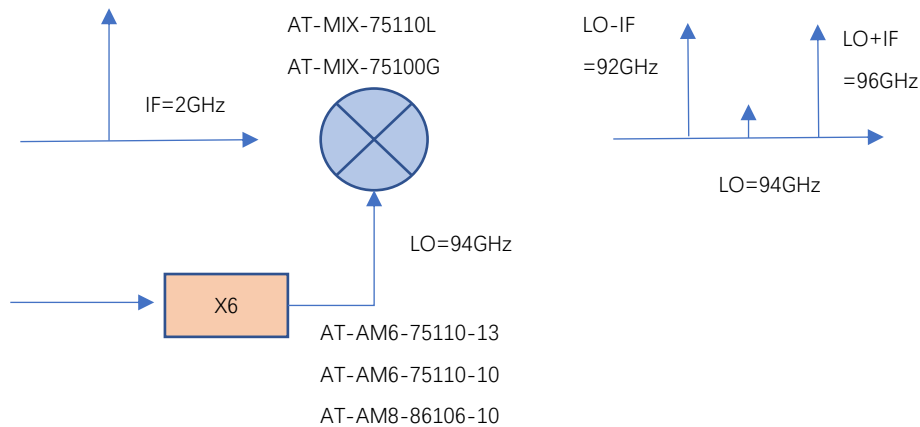


Figure A: General Balance Mixer with Both High and Low Side Output

#### 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.

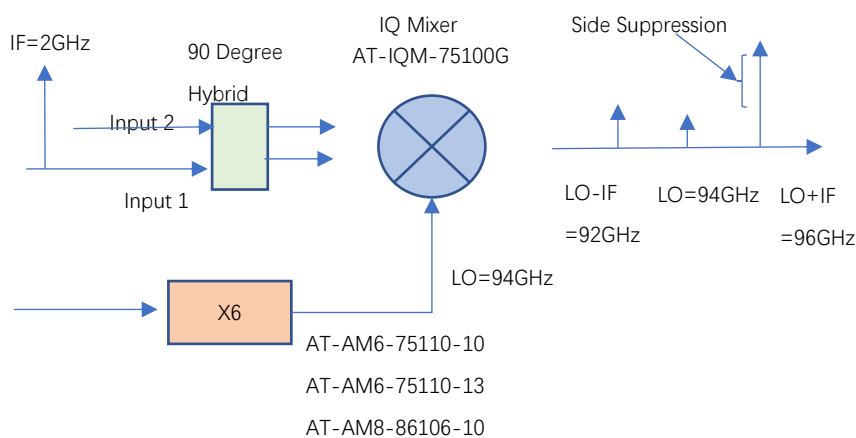
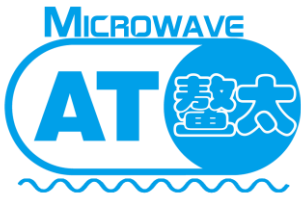


Figure B: IQ Mixer works as side suppression mixer





# AT-4MIX-3350H

33-50GHz Balance Mixer Integrated with x4

## Outline(mm)

