

# 140-170GHz Compact IQ Receiver



### Description:

AT-DRX-140170 compact D Band receiver covering D band 140-160GHz. It can also be used with lower gain from 135-170GHz. The I LO link is with X12 Multiplier, and IF Frequency range is DC-60GHz

The mixer has high image rejection, low input/output return loss and flat conversion response. It's suitable for D band point to point communication, instrumentation, sensing, security and high resolution imaging applications.

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

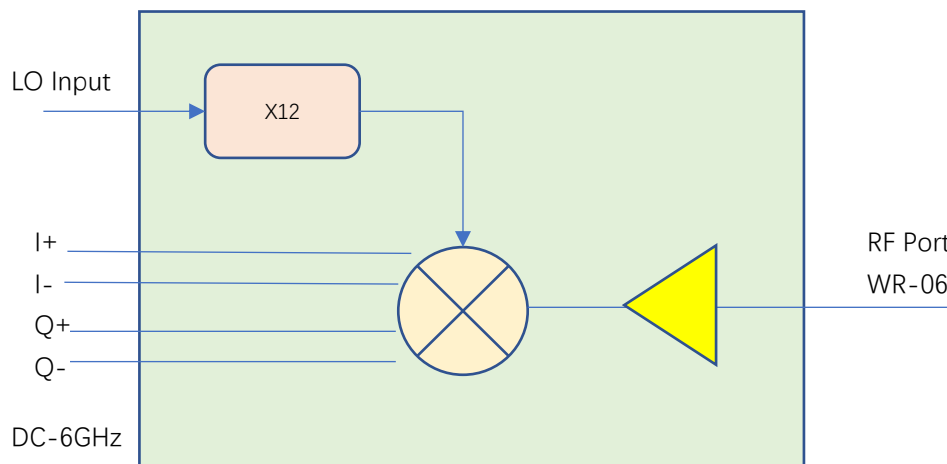
### Feature

- ✓ RF: 140-170GHz
- ✓ LO X12 Insided
- ✓ IF: DC-6GHz
- ✓ Low Conversion Loss
- ✓ Low LO power requirement

### Application

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

### Diagram Block





# AT-DRX-140170

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## Electrical Specifications:

Parameter	Min	Typical	Max
RF		140-160 GHz	170GHz
LO		11.6-13.33 GHz	14.17GHz
LO Driver		+5 dBm	+10
LO E Band Multiplier		X12	
IF Range		DC-6 GHz	
Conversion Gain (140-160GHz)	-3	3 dB	
Imaging Rejection		-15 dBc	
NF(140-160GHz)		8dB	
Power Supply		+5V/ 180mA	
RF Port		WR-06	
LO Port		SMA Female	
IF Port		SMA Female	

## Absolute Maximum Ratings Table

Parameter	Value
RF Port	+5dBm
LO Port	+15dBm
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.





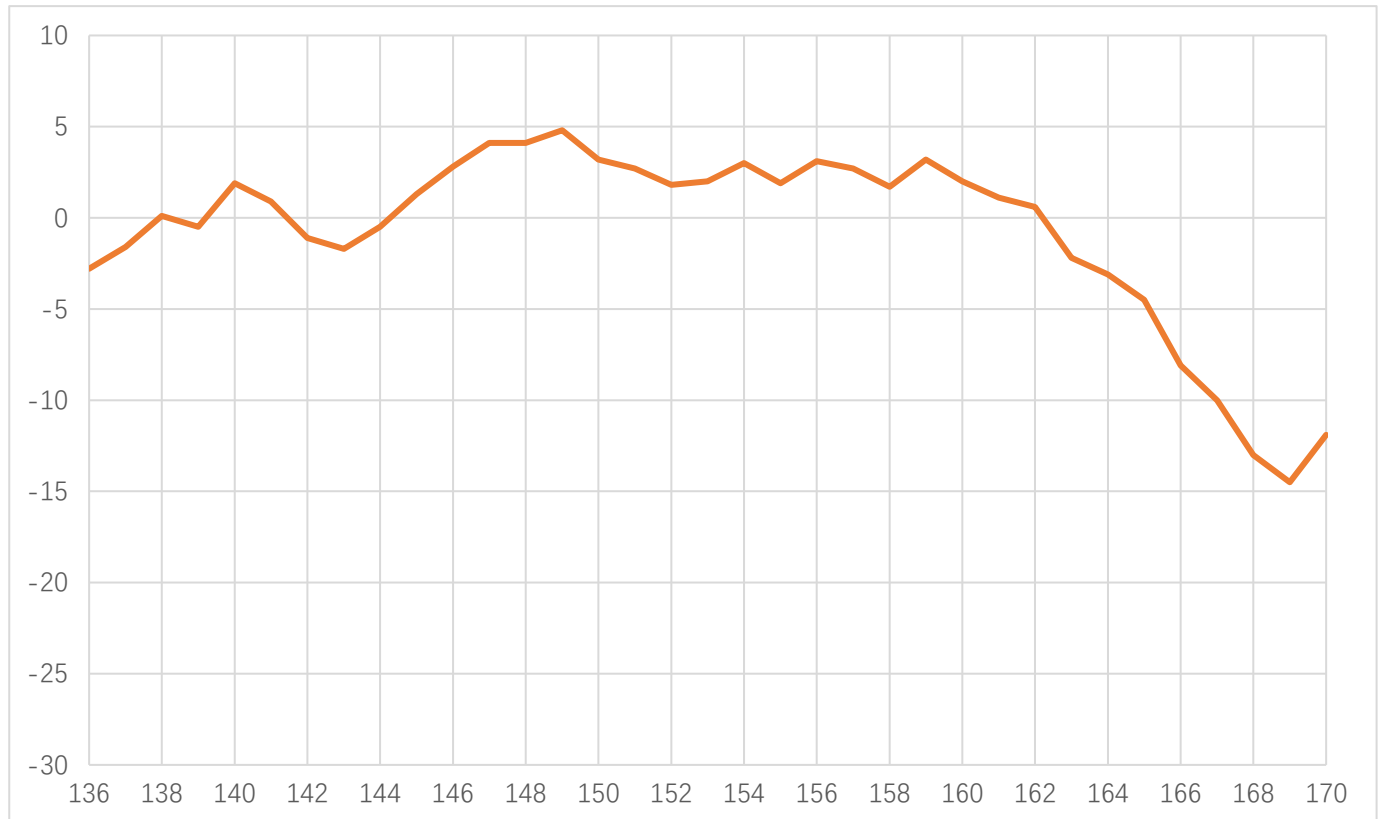
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## Test Data:

RF Pin=-30dBm, IF=1GHz, 25C,

External balun and hybrid are used to combine I+/- Q+/Q- together.



Conversion Gain 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,  $IF=2GHz$ ,  $LO=94GHz$ , so there will be  $92GHz$  and  $96GHz$  at RF port with same power level.

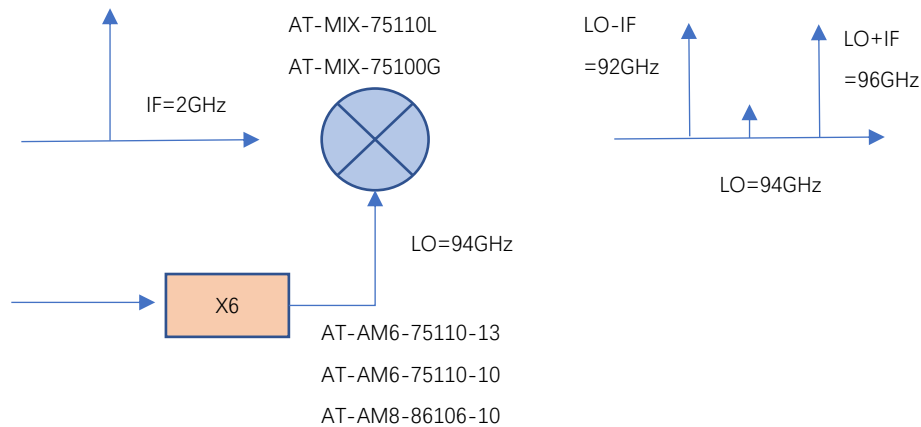


Figure A: General Balance Mixer with Both High and Low Side Output

#### 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.

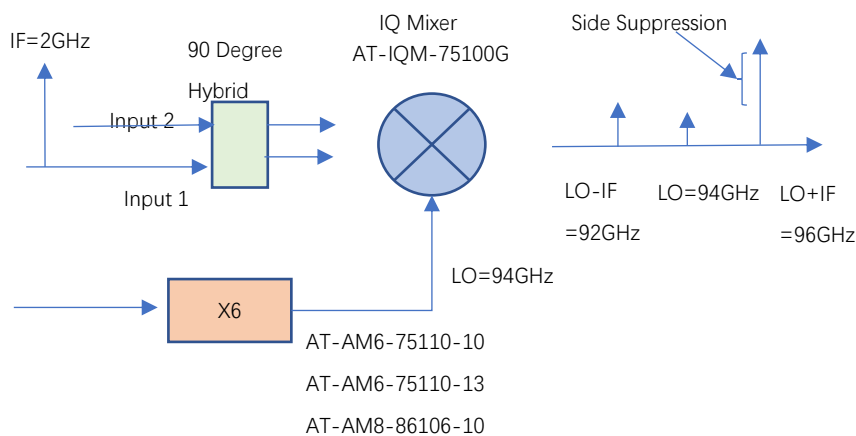


Figure B: IQ Mixer works as side suppression mixer



### Dimension (mm)

