

D Band: 140-160GHz Compact Receiver

2022-5-25

LO with X12 Amplified Frequency Multiplier Chain



(Picture for reference only)

Description:

AT-DRX-140160SIF is compact D Band Rx with RF frequency from 140-160GHz. LO link is with x12 amplified multiplier chain with input of 11.66-13.33GHz. IF inputs frequency range is dc-12GHz

It's suitable for D band point to point communication, instrumentation, sensing, security and high resolution imaging applications. AT Microwave also provides D band power amplifiers and band pass filter for communication application.

For more information, please visit www.atmicrowave.com

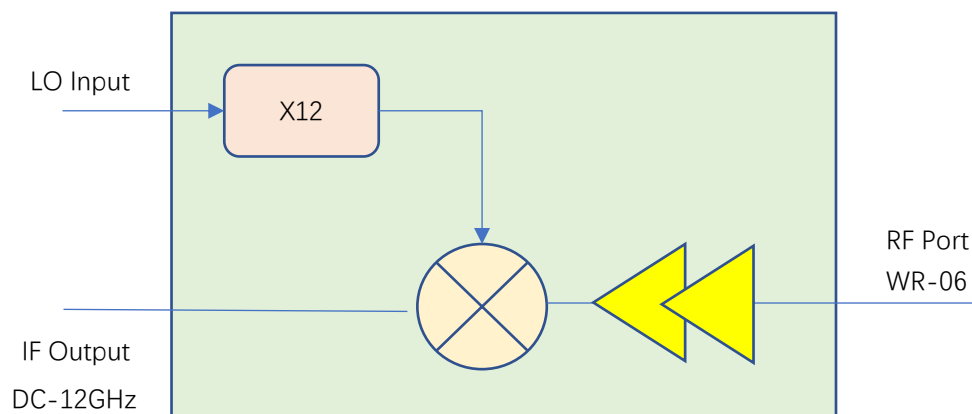
Feature

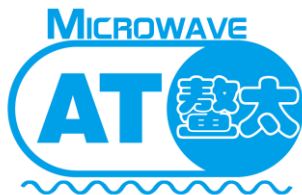
- ✓ RF: 140-160GHz
- ✓ LO:11.66-13.33GHz with X12 Multiplier
- ✓ IF: DC-12GHz
- ✓ High Gain 15dB
- ✓ Low NF=6dB

Application

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

Diagram Block





AT-DRX-140160SIF

140-160GHz D Band Receiver

Electrical Specifications:

Parameter	Min	Typical	Max
RF		140-160 GHz	
LO		10.41-11.66 GHz	
LO Driver	+3dBm	+5 dBm	+10
LO AMC (Amplified Multiplier Chain)		X12	
Conversion Gain		15dB	
NF		6dB	9dB
RF Input P1dBm		-35dBm	
Power Supply		+5V/ 150mA	
Temp Spec		25C	

Mechanical Information

Parameter	Description
RF Port	WR-06
LO Port	SMA Female
IF Port	SMA Female
Weight	To be added
Dimension	See outline

Absolute Maximum Ratings Table

Parameter	Value
RF Power	+0dBm
LO Port	+15dBm
Power Supply	+7V
Operating Temperature	0 to +50C
Storage Temperature	-65 to +150C



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, $IF = 2\text{GHz}$, $LO = 94\text{GHz}$, so there will be 92GHz and 96GHz at RF port with same power level.

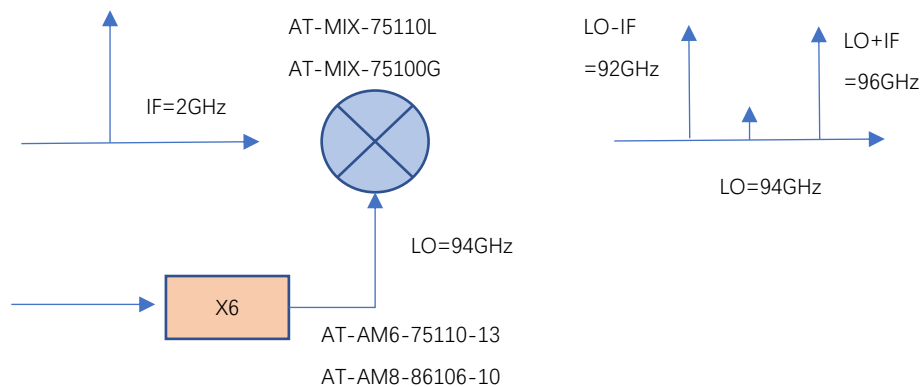


Figure A: General Balance Mixer with Both High and Low Side Output

IQ Mixer used as side suppression Mixer

When $IF = 2\text{GHz}$, 90 degree hybrid is used at IF port, and IF applies to Input 1 Port of hybrid, you will have high end frequency $RF = LO + IF = 96\text{GHz}$, 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.

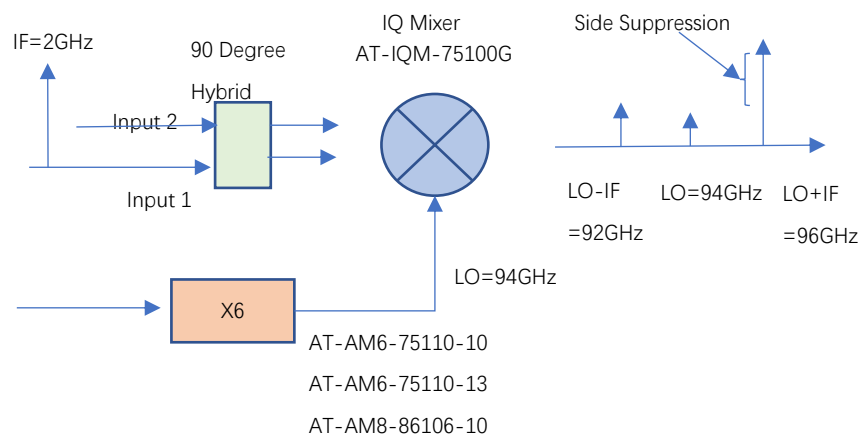
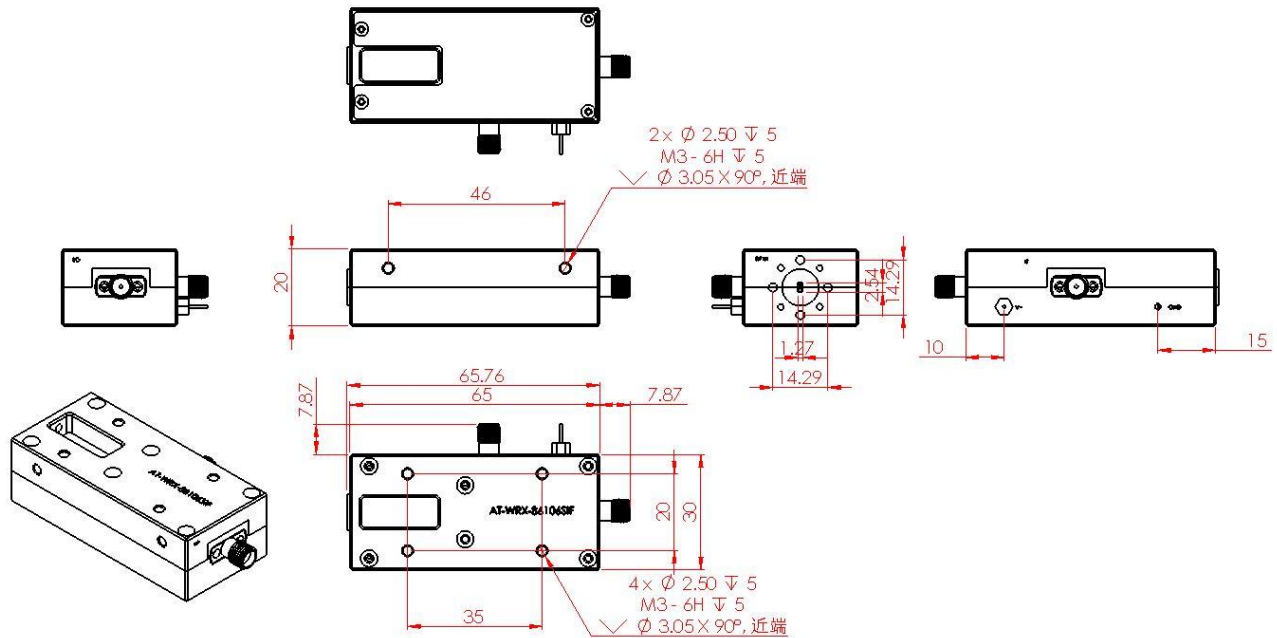


Figure B: IQ Mixer works as side suppression mixer



Dimension (mm)



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.

