

60-90GHz Up-Converter, X4 on LO line Bench-top Test Equipment, WR-12

2023-5-5



Product Overview

AT-BTUC4-6090 is 60-90GHz Up-converter with X4 frequency multiplier inside. The Up converter IF-RF conversion loss is -12dB.

The RF Port is with standard WR-12. LO input port and IF input port are 2.92mm Female. Please note there will be both up and low band for the mixer. AT Microwave provides many kinds of filters if only one side is needed.

PDRO, Band Pass filter and Power amplifier can be integrated internally or externally according to request.

More information, please contact sales@atmicrowave.com

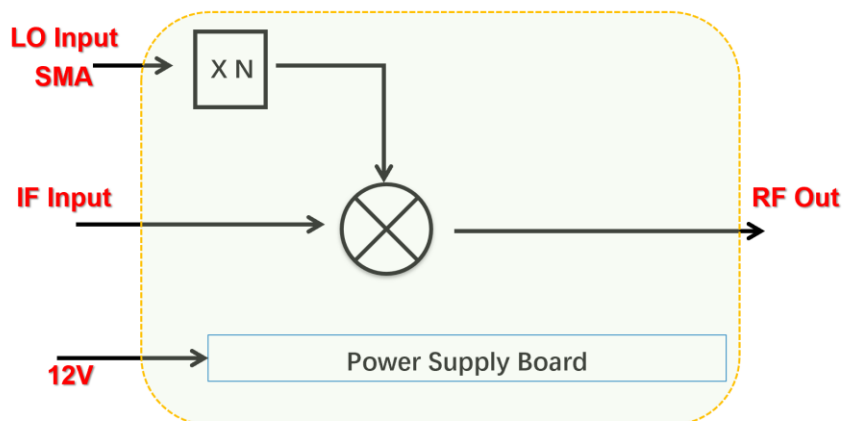
Advantages

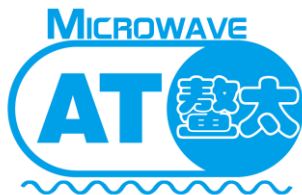
- ✓ Frequency: 60-90GHz
- ✓ Low Loss: -12dB
- ✓ IF: DC-35GHz
- ✓ LO X4 inside
- ✓ Bench-Top Labs Test

Application

- ✓ 5G Communication
- ✓ ROF (RF Over Fiber)
- ✓ Radar System
- ✓ RCS Test

Diagram Block:





AT-BTUC4-6090

Bench-Top 60-90GHz Up-Converter

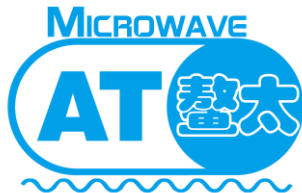
Key Features

| Parameter | Min | Typical | Max |
|-----------------------------------|-------|-------------------|---------|
| RF Frequency | 60GHz | | 90GHz |
| 4XLO Frequency Range | 60GHz | | 90GHz |
| LO Frequency | 15GHz | | 22.5GHz |
| LO Multiplier Factor | | X4 | |
| LO Driver | +3dBm | +5dBm | +8dBm |
| Mixer Type | | Fundamental Mixer | |
| IF Frequency | | DC-30GHz | |
| IF-RF Gain(IF=100MHz) | | -12dB | -15dB |
| IF Port Input P1dB | | +0dBm | |
| RF Port Return Loss | | -10dB | |
| IF Port Return Loss | | -10dB | |
| Power Supply (with AC/DC Adapter) | +90V | +220V | +260V |
| Spec Temp | | 25C | |



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Tel:021-6229 1233 sales@atmicrowave.com
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Mechanical Information:

| Parameter | Value |
|----------------|--|
| RF Port | WR-12 |
| LO | SMA Female |
| IF Port | 2.92mm Female |
| DC Bias | +12V Supply, AC to DC Power Converter included |
| DC Bias Switch | ON-OFF switch with light indicator |
| Dimension | See outline |

Absolute Maximum Ratings Table

| Parameter | Value |
|-----------------------|-------------|
| AC Supply | +260V |
| IF Input Power | +10dBm |
| RF Input Power | +10dBm |
| LO Port Power | +15dBm |
| Operating Temperature | 0 to 50 C |
| Storage Temperature | -45 to +85C |

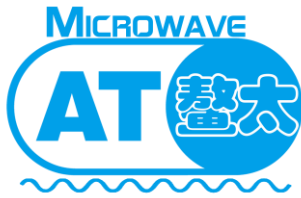
Notes:

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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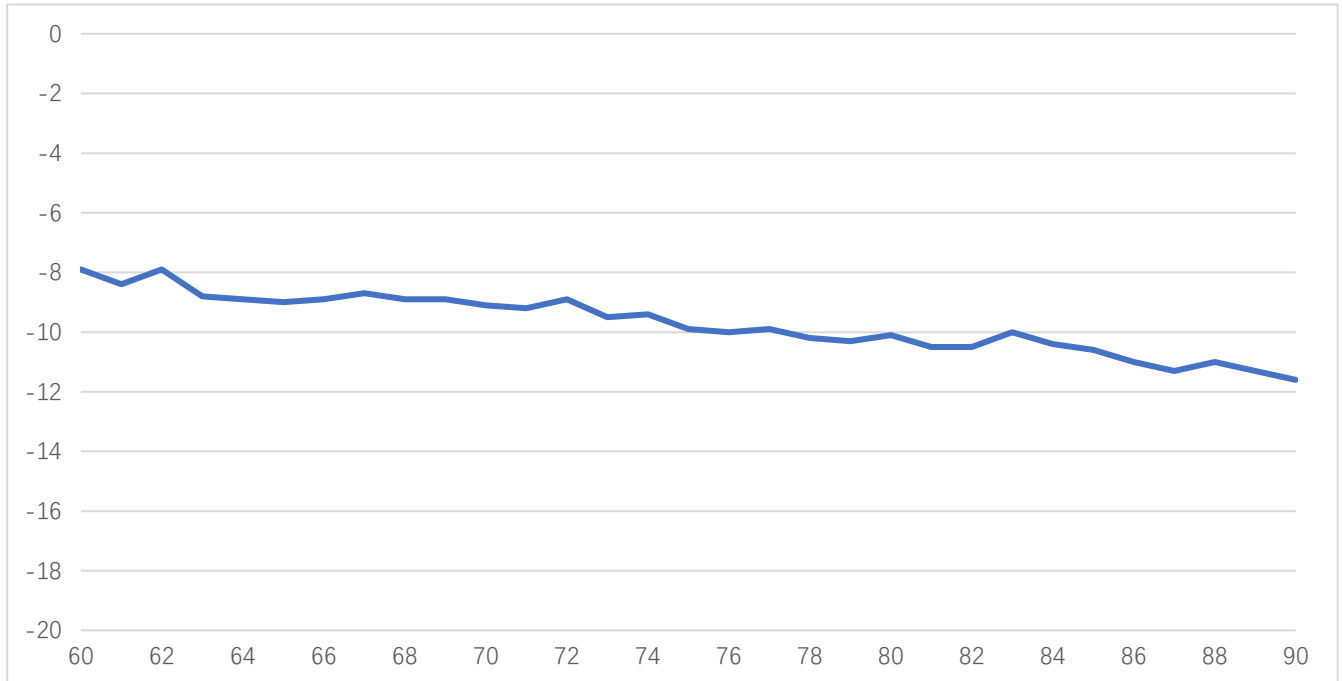




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Test Data(25c)



Conversion Loss vs Frequency, IF=100MHz



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Application Note

Mixer is a three ports 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, $IF = 2GHz$, $LO = 60GHz$, so there will be $38GHz$ and $42GHz$ at RF port with same power level.

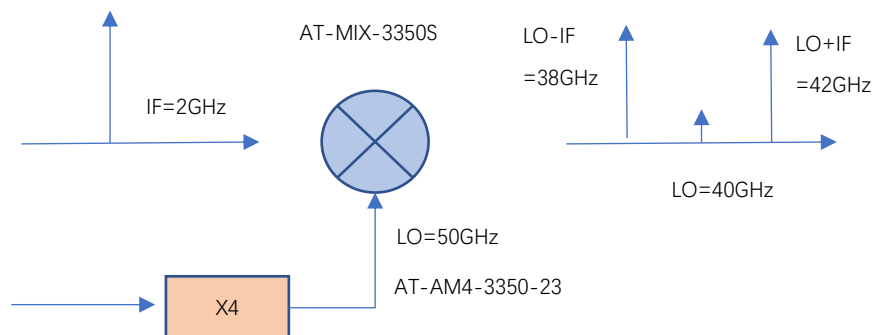


Figure A: General Balance Mixer with Both High and Low Side Output

IQ Mixer used as side suppression Mixer

When $IF = 2GHz$, 90 degree hybrid is used at IF port, when IF applies to Input 1 Port of hybrid, you will have high end frequency $RF = LO + IF = 42GHz$, while have side suppression (say $-25dBc$) at Low end frequency $38GHz$. When you need low end frequency $38GHz$, and make side suppression for high end frequency $42GHz$, just applies IF to Input 2 of the hybrid.

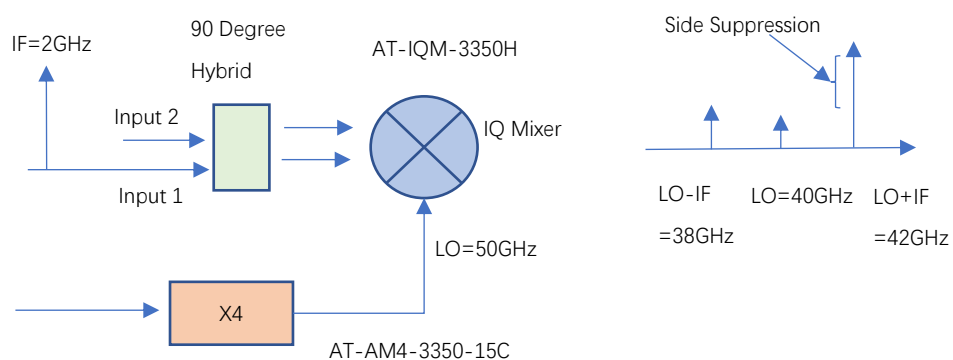
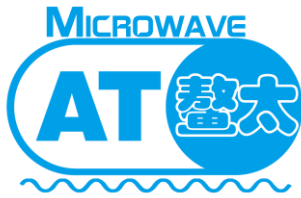


Figure B: IQ Mixer works as side suppression mixer

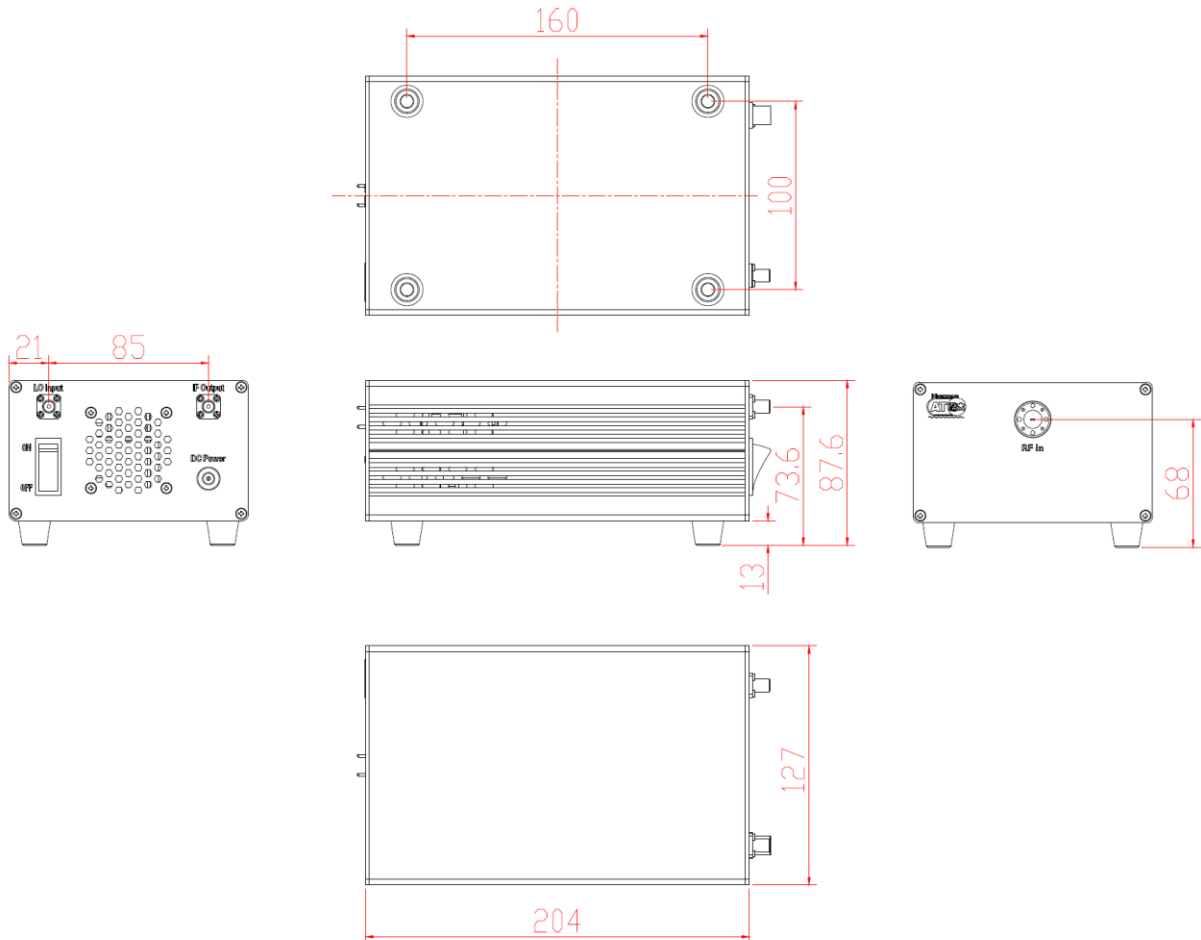




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Dimension: (mm)



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