

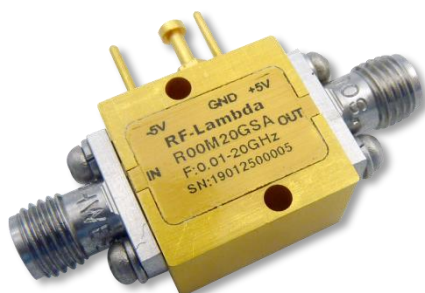


# RF-LAMBDA

LEADER OF RF BROADBAND SOLUTIONS

## ROOM20GSA

### Ultra Wide Band Low Noise Amplifier 0.01GHz~20GHz



#### Features

- Gain: 16dB Typical
- Noise Figure: 2.5dB Typical
- P1dB Output Power: +21dBm Typical
- Supply Voltage: +5V & -5V

#### Typical Applications

- Wireless Infrastructure
- RF Microwave & VSAT
- Military & Aerospace
- Test Instrument

Electrical Specifications, TA = +25°C, Vcc = +5V, Vgg = -5V

| Parameter                                      | Min.                           | Typ. | Max. | Min. | Typ. | Max. | Min. | Typ. | Max. | Units  |
|------------------------------------------------|--------------------------------|------|------|------|------|------|------|------|------|--------|
| Frequency Range                                | 0.01                           |      | 6    | 6    |      | 12   | 12   |      | 20   | GHz    |
| Gain                                           | 14.5                           | 16   |      | 14   | 15   |      | 14   | 15   |      | dB     |
| Gain Flatness                                  |                                | ±1.5 |      |      | ±0.5 | ±1.0 |      | ±0.5 | ±1.0 | dB     |
| Gain Variation Over Temperature<br>(-45 ~ +85) |                                | ±1.0 |      |      | ±1.0 |      |      | ±1.0 |      | dB     |
| Noise Figure                                   |                                | 3.5  | 5.5  |      | 2.0  | 3.5  |      | 2.5  | 5.0  | dB     |
| Input VSWR                                     |                                | 1.3  |      |      | 1.4  | 1.8  |      | 1.5  | 1.8  | :1     |
| Output VSWR                                    |                                | 1.3  |      |      | 1.5  | 1.8  |      | 1.5  | 1.8  | :1     |
| Output 1dB Compression Point (P1dB)            | 20                             | 21   |      | 19.5 | 21   |      | 17.5 | 19   |      | dBm    |
| Saturated Output Power (Psat)                  |                                | 22   |      |      | 22   |      |      | 20   |      | dBm    |
| Output Third Order Intercept (OIP3)            |                                | 28   |      |      | 28   |      |      | 26   |      | dBm    |
| Supply Current<br>(Vcc=+5V, Vgg=-5V)           |                                | 160  |      |      | 160  |      |      | 160  |      | mA     |
| Isolation S12                                  |                                | -40  |      |      | -35  |      |      | -30  |      | dB     |
| Weight                                         | 0.35                           |      |      |      |      |      |      |      |      | Ounces |
| Impedance                                      | 50                             |      |      |      |      |      |      |      |      | Ohms   |
| Input / Output Connectors                      | SMA-Female                     |      |      |      |      |      |      |      |      |        |
| Finish                                         | Gold Plated                    |      |      |      |      |      |      |      |      |        |
| Material                                       | Aluminum                       |      |      |      |      |      |      |      |      |        |
| Package Sealing                                | Epoxy Sealed (Standard)        |      |      |      |      |      |      |      |      |        |
|                                                | Hermetically Sealed (Optional) |      |      |      |      |      |      |      |      |        |

Ultra Wide Band Low Noise Amplifier 0.01GHz~20GHz



### Absolute Maximum Ratings

|                   |        |
|-------------------|--------|
| Operating Voltage | +8V    |
| RF Input Power    | +20dBm |

### Biasing Up Procedure

|                     |                          |
|---------------------|--------------------------|
| Step 1              | Connect Ground Pin       |
| Step 2              | Connect input and output |
| Step 3              | Connect -5V biasing      |
| Step 4              | Connect +5V biasing      |
| Power OFF Procedure |                          |
| Step 1              | Turn off +5V biasing     |
| Step 2              | Turn off -5V biasing     |
| Step 3              | Remove RF connection     |
| Step 4              | Remove Ground            |

### Environmental Specifications and Test Standards

| Parameter                        | Standard      | Description                                                                                                                                                                                                     |
|----------------------------------|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operational Temperature          | MIL-STD-39016 | -45°C~+85°C                                                                                                                                                                                                     |
| Storage Temperature              |               | -55°C~+125°C                                                                                                                                                                                                    |
| Thermal Shock                    |               | 1 Hour@ -45°C → 1 Hour @ +85°C (5 Cycles)                                                                                                                                                                       |
| Random Vibration                 |               | Acceleration Spectral Density 6 (m/s)<br>Total 92.6 RMS                                                                                                                                                         |
| Electrical & Temperature Burn In |               | Temperature +85°C for 72 Hours                                                                                                                                                                                  |
| Shock                            |               | 1. Weight >20g, 50g half sine wave for 11ms, Speed variation 3.44m/s<br>2. Weight <=20g, 100g Half sine wave for 6ms, Speed variation 3.75m/s<br>3. Total 18 times (6 directions, 3 repetitions per direction). |
| Altitude                         | MIL-STD-883   | Standard: 30,000 Ft (Epoxy Sealed Controlled Environment)<br>Optional: Hermetically Sealed (60,000 ft. 1.0 PSI min)                                                                                             |
| Hermetically Sealed (Optional)   |               | MIL-STD-883 (For Hermetically Sealed Units)                                                                                                                                                                     |



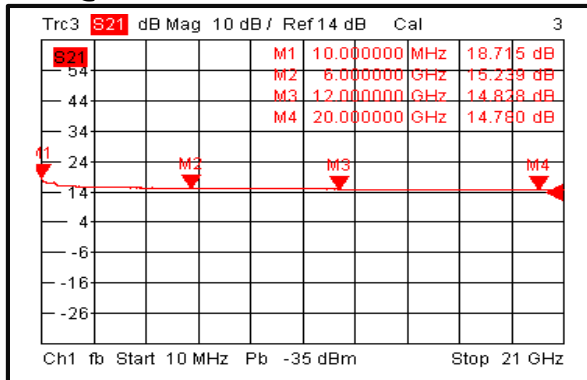
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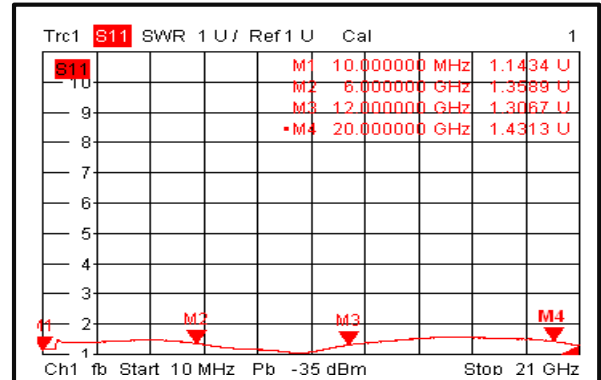
## ROOM20GSA

### Typical Performance Plots

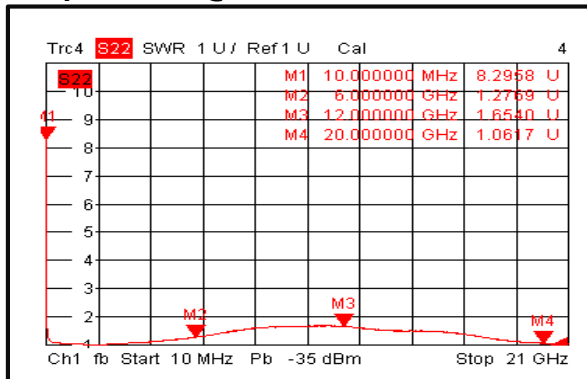
#### Gain@+25°C



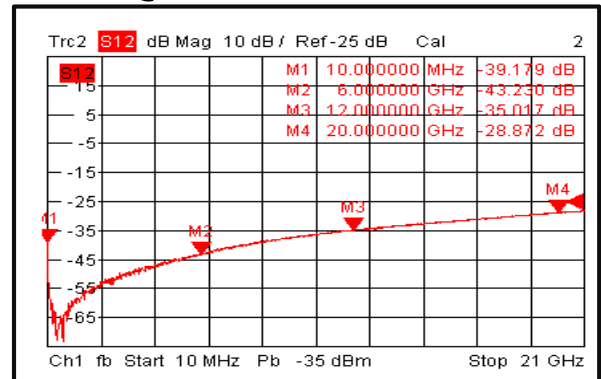
#### Input VSWR@+25°C



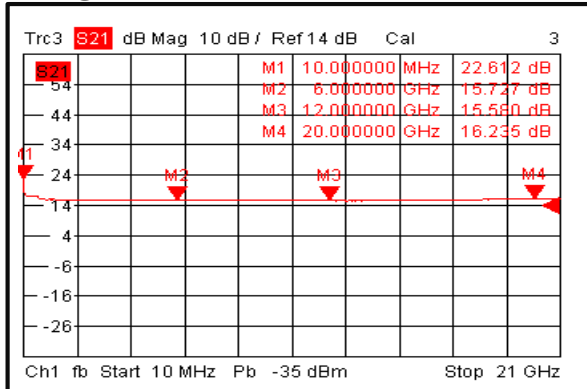
#### Output VSWR@+25°C



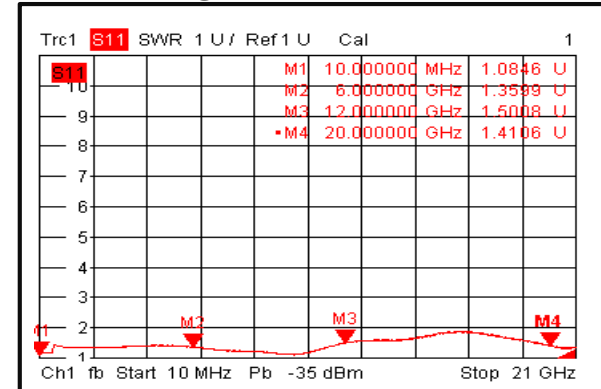
#### Isolation@+25°C



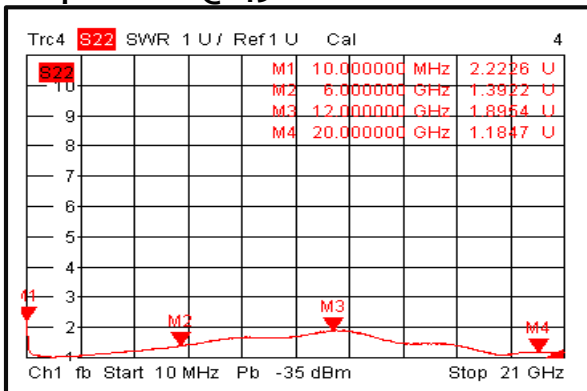
#### Gain@-45°C



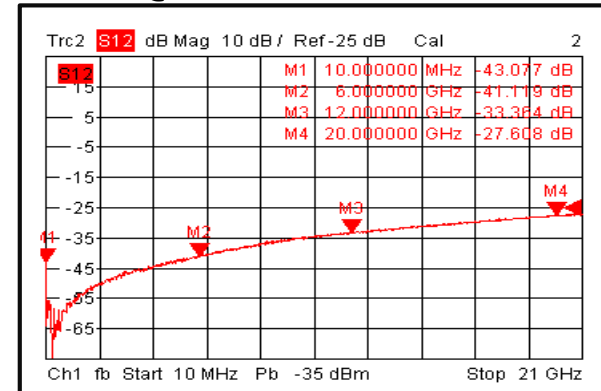
#### Input VSWR@-45°C



#### Output VSWR@-45°C



#### Isolation@-45°C



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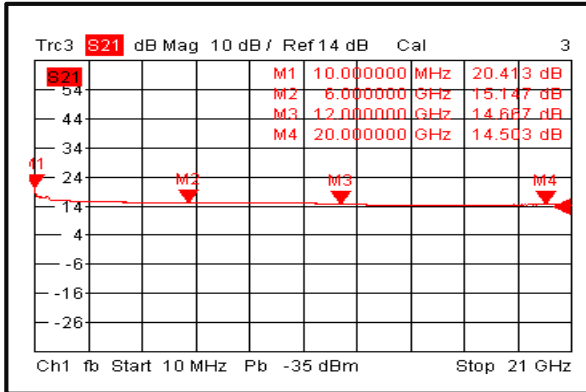


# RF-LAMBDA

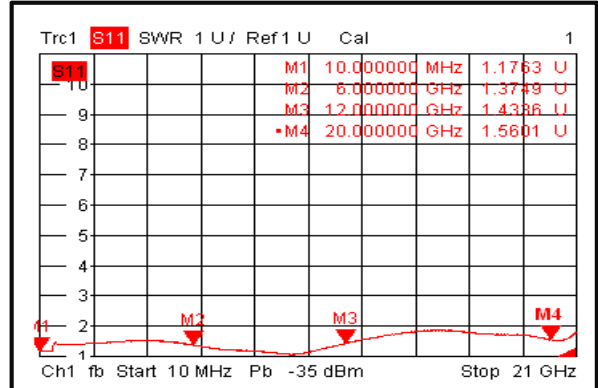
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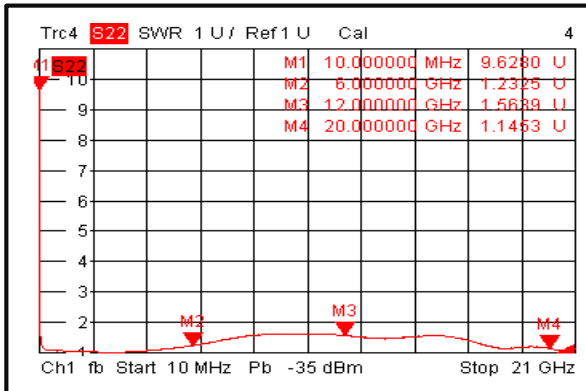
### Gain@+85°C



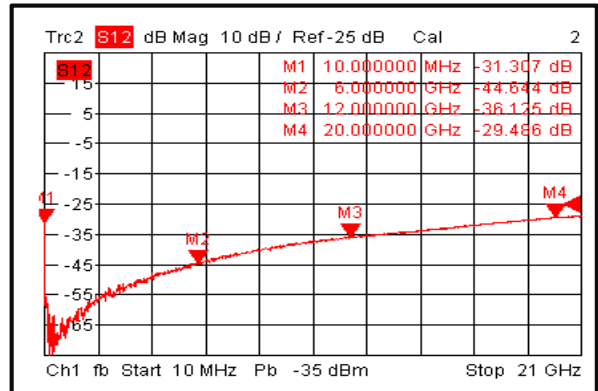
### Input VSWR@+85°C



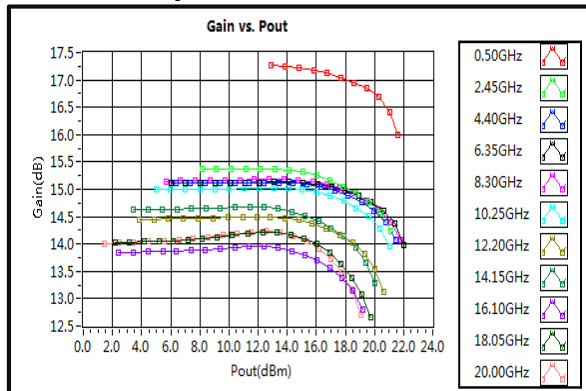
### Output VSWR@+85°C



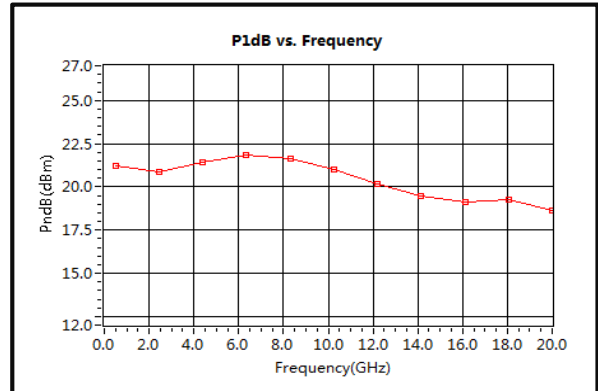
### Isolation@+85°C



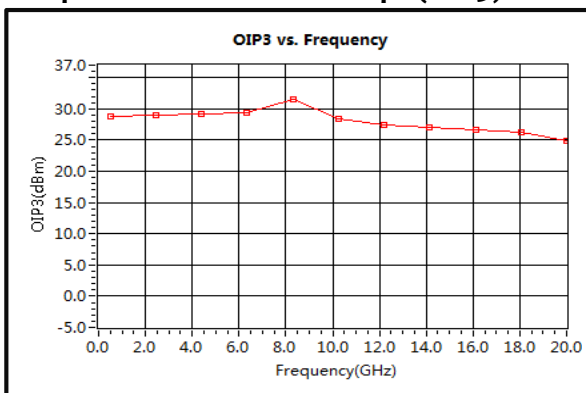
### Gain vs. Output Power



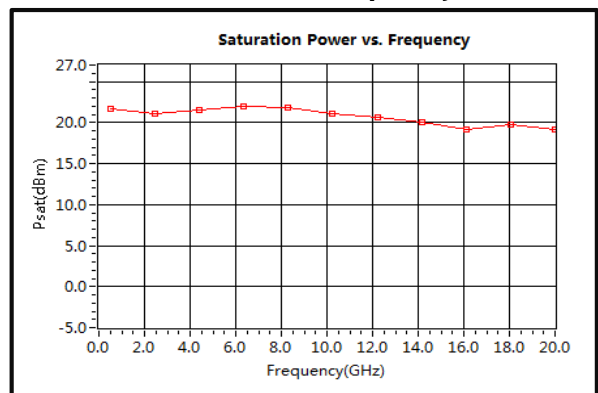
### P1dB vs. Frequency



### Output Third Order Intercept (OIP3)



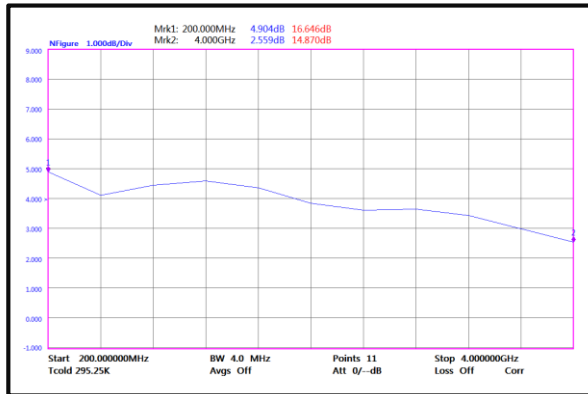
### Saturation Power vs. Frequency



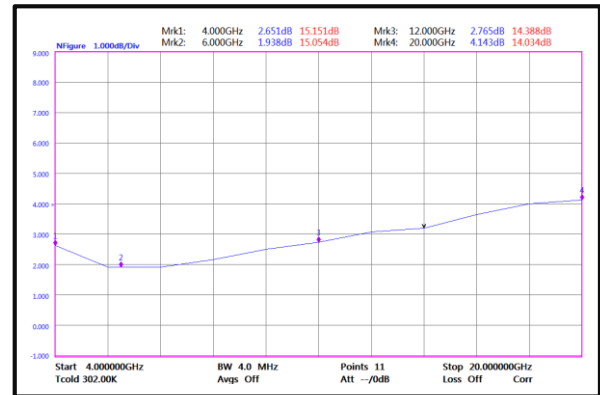
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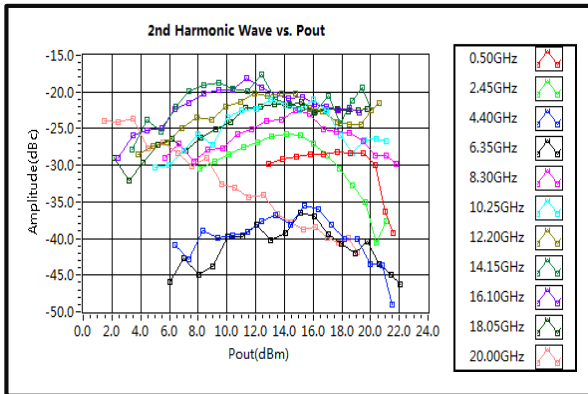
### Noise Figure (200MHz-4GHz)



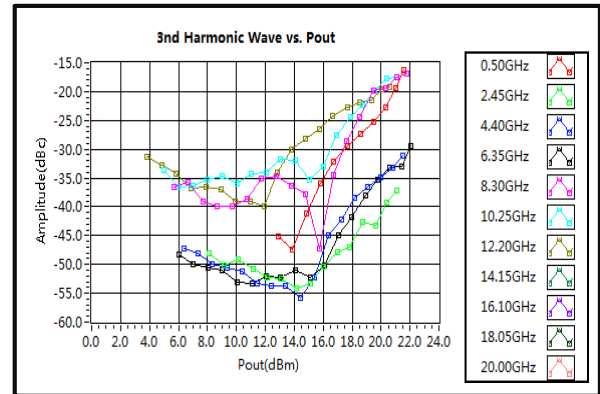
### Noise Figure (4GHz-20GHz)



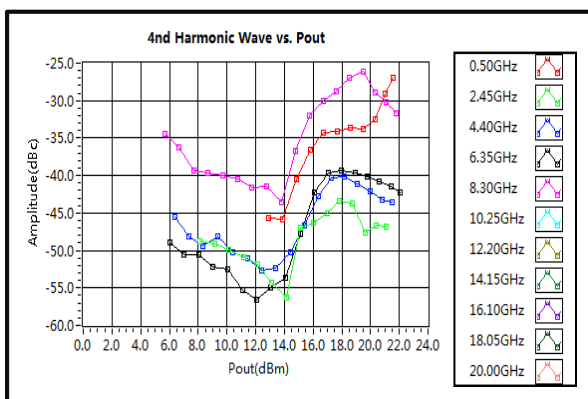
### 2nd Harmonic Wave Output Power



### 3rd Harmonic Wave Output Power



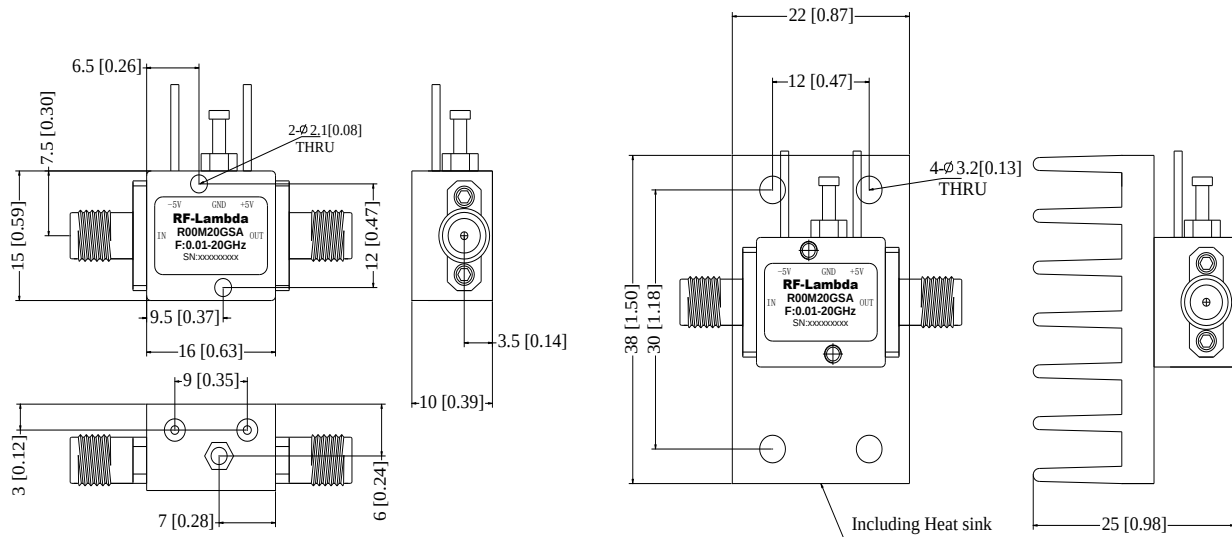
### 4th Harmonic Wave Output Power





## Outline Drawing:

All Dimensions in mm [inches]



Heat Sink required during operation (Sold Separately)



## Ordering Information

| Part No.  | Description                    |
|-----------|--------------------------------|
| Room20GSA | 0.01-20GHz Low Noise Amplifier |

## Important Notice

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