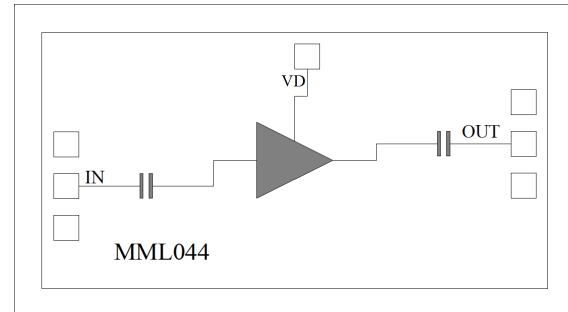


Features

- Single Biasing Voltage (Self Biased)
- Frequency: 8-20GHz
- Small Signal Gain: 20.5dB Typical
- Gain Flatness: ± 0.5 dB Typical
- Noise Figure: 1.8dB Typical
- P1dB: 16dBm Typical
- Power Supply: +4.5V@69mA
- Input/Output: 50 Ω
- Chip Size: 2.02 x 1.12 x 0.1mm

Functional Block Diagram

Typical Applications

- Test Instrumentation
- Microwave Radio & VSAT
- Military & Space
- Telecom Infrastructure
- Fiber Optics

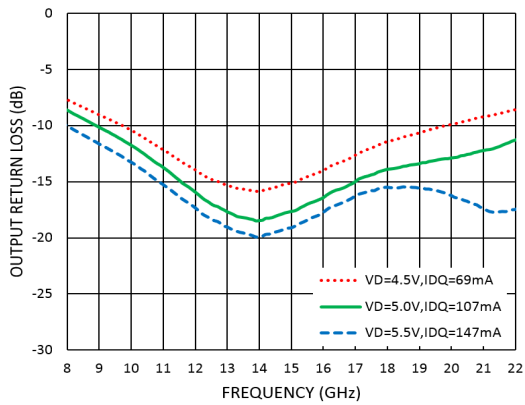
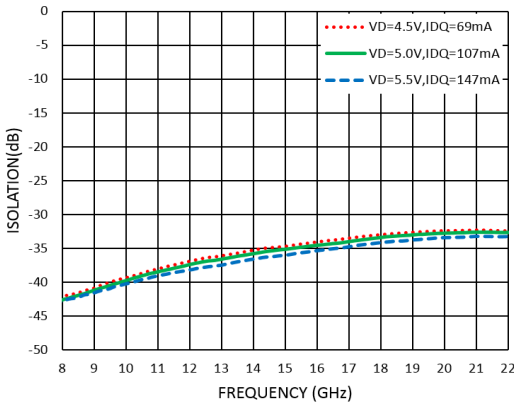
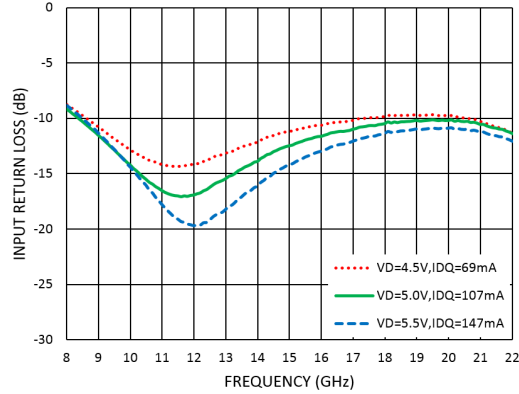
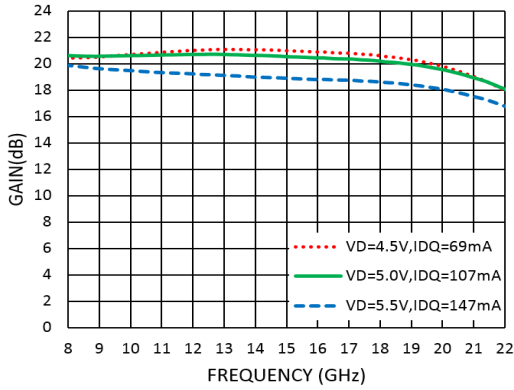
Electrical Specifications

TA = +25°C, VD = +4.5V, IDD = 69mA Typical

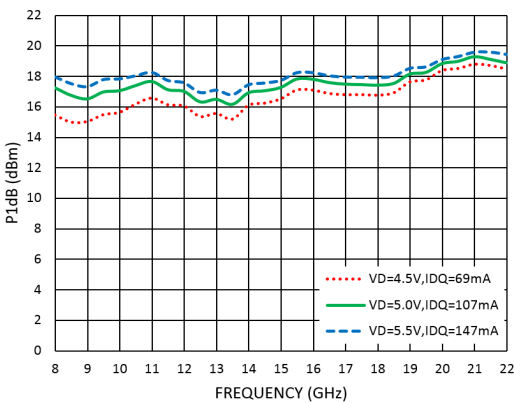
| Parameters | Min. | Typ. | Max. | Units |
|-------------------------------------|------|-----------|------|-------|
| Frequency | 8 | | 20 | GHz |
| Small Signal Gain | 19 | 20.5 | | dB |
| Gain Flatness | | ± 0.5 | | dB |
| Noise Figure | | 1.7 | 2.1 | dB |
| P1dB - Output 1dB Compression | 14 | 16 | | dBm |
| Psat - Saturated Output Power | | 18 | | dBm |
| OIP3 - Output Third Order Intercept | | 25 | | dBm |
| Input Return Loss | | -12 | | dB |
| Output Return Loss | | -12 | | dB |



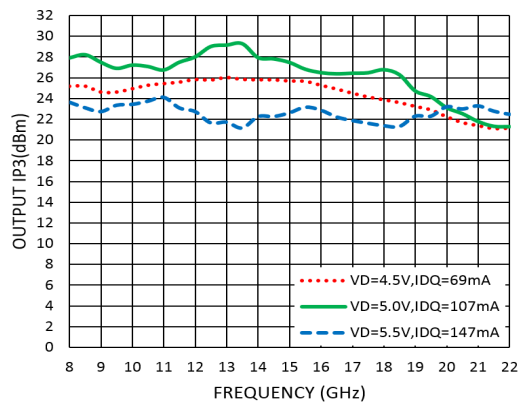
Measurement Plots: S-parameters

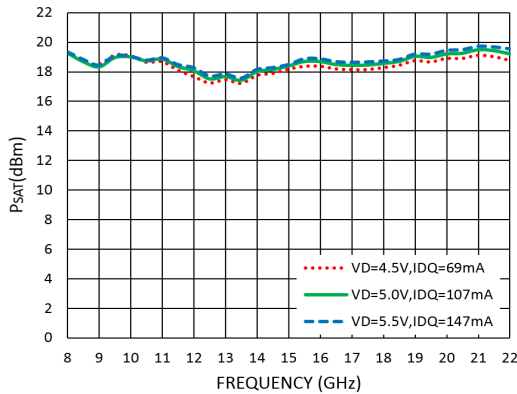
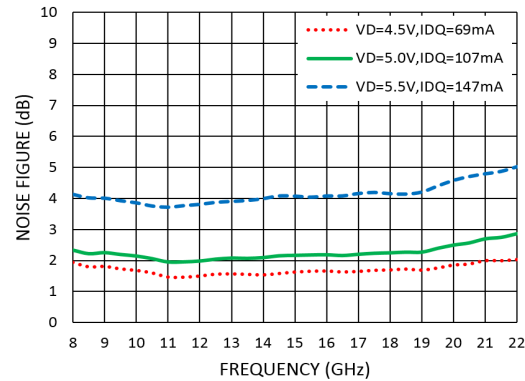


Measurement Plots: P1dB



Measurement Plots: OIP3



Measurement Plots: PSAT

Measurement Plots: Noise Figure

Absolute Maximum Ratings

| | |
|--|------------------|
| Drain Bias Voltage (VD) | +6.5V |
| RF Input Power (RFIN)@(+5V) | +3dBm |
| Channel Temperature | 175°C |
| Continuous P _{diss} (T = 85 °C) (derate 13.5mW/°C above 85 °C) | 1.2W |
| Thermal Resistance (channel to die bottom) | 50°C/W |
| Operating Temperature | -40°C to +85 °C |
| Storage Temperature | -65°C to +150 °C |

Typical Supply Current vs. VD

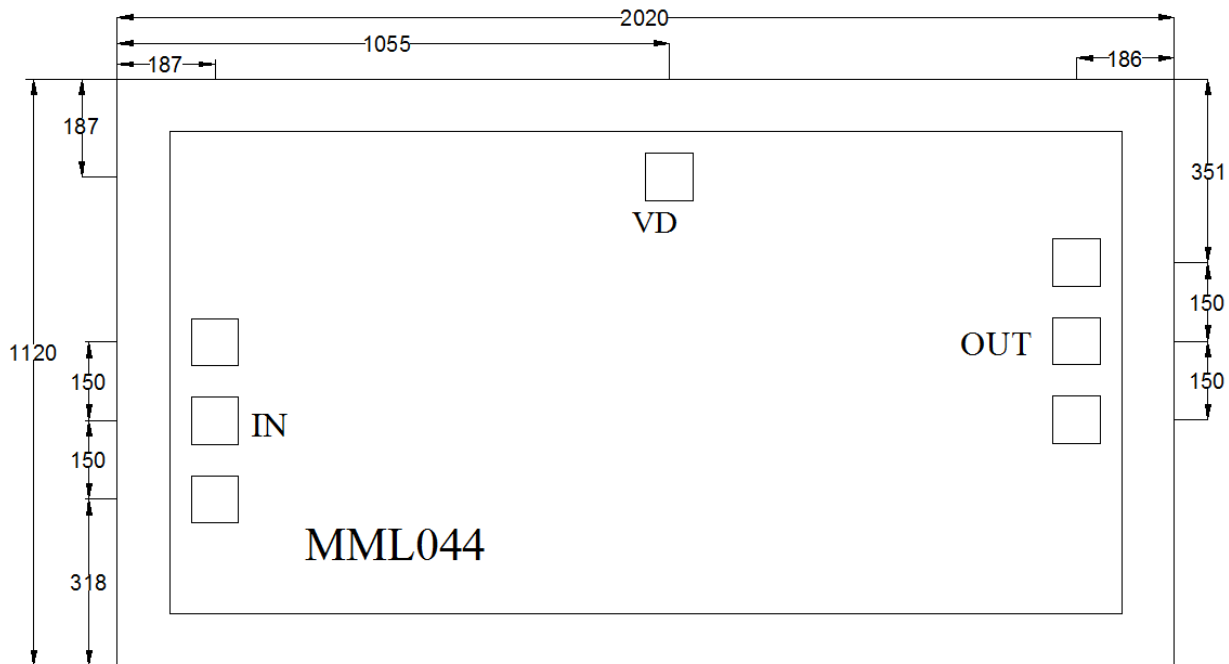
| VD (V) | IDD (mA) |
|--------|----------|
| +4.5 | 69 |
| +5.0 | 107 |
| +5.5 | 147 |



**ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS**



Outline Drawing:
All Dimensions in μm

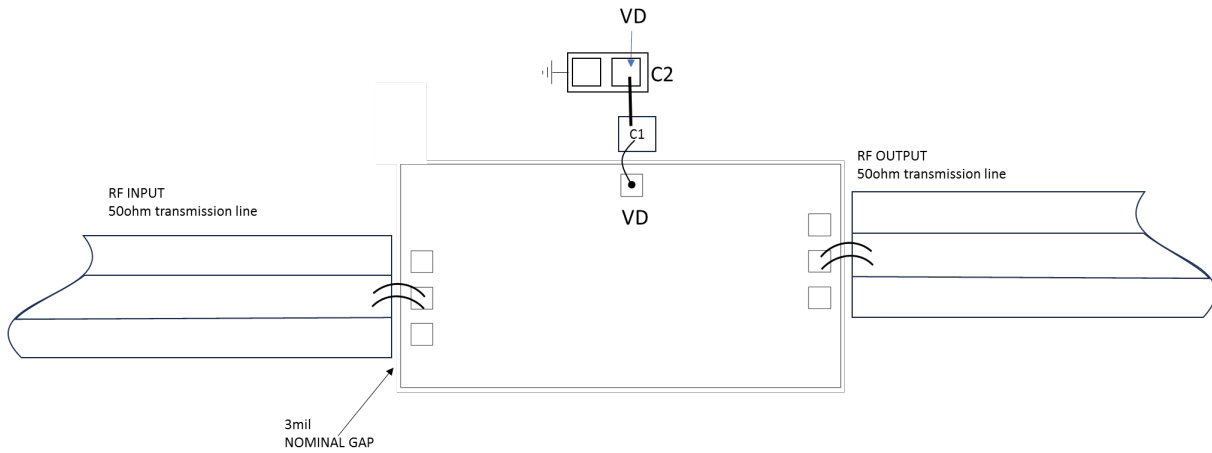


Notes:

1. Die thickness: 100 μm
2. VD bond pad is 90*90 μm^2
3. RF IN/OUT bond pad is 90*90 μm^2
4. Bond pad metalization: Gold
5. Backside metalization: Gold

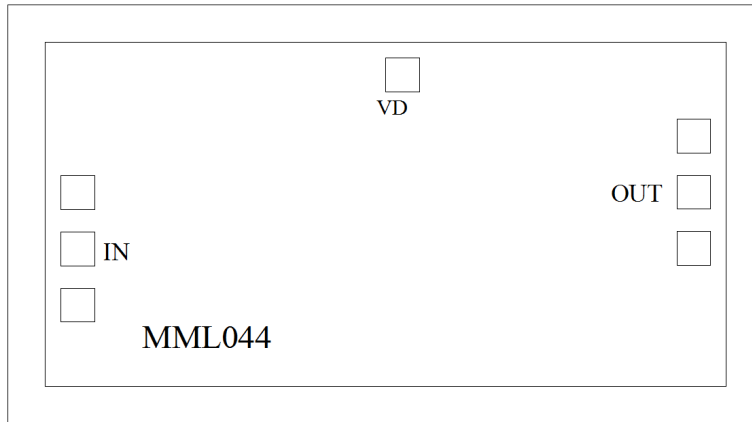


Assembly Drawing



| Item | Description |
|------|--|
| C1 | 100pF Example: Presidio Part: MVB3030X103M2H5C1 |
| C2 | 1μF Example: KYOCERA AVX Part:116XK102M100TT |

| No | Function | Description |
|----|------------|--|
| 1 | RF IN | RF signal input terminal; no blocking capacitor required. |
| 2 | RF OUT | RF signal output terminal; no blocking capacitor required. |
| 3 | VD | Drain Biases for the Amplifier. External bypass capacitors of 1μf and 100pf are required for these pads. |
| 4 | Die Bottom | Die bottom must be connected to RF and dc ground. |



Biasing and Operation

Turn ON procedure:

1. Connect GND to RF and dc ground.
2. Apply positive drain voltage V_D and set to +4.5V .
3. Apply RF signal.

Turn OFF procedure:

1. Turn off the RF signal.
2. Turn off the positive drain voltage V_D .

Miller MMIC Inc. All rights reserved

Miller MMIC, Inc. holds exclusive rights to the information presented in its Data Sheet and any accompanying materials. As a premier supplier of cutting-edge RF solutions, Miller MMIC has made this information easily accessible to its clients.

Although Miller MMIC believes the information provided in its Data Sheet to be trustworthy, the company does not offer any guarantees as to its accuracy. Therefore, Miller MMIC bears no responsibility for the use of this information. It is worth mentioning that the information within the Data Sheet may be altered without prior notification.

Customers are encouraged to obtain and verify the most recent and pertinent information before placing any orders for Miller MMIC products. The information in the Data Sheet does not confer, either explicitly or implicitly, any rights or licenses with regards to patents or other forms of intellectual property to any third party.

The information provided in the Data Sheet, or its utilization, does not bestow any patent rights, licenses, or other forms of intellectual property rights to any individual or entity, whether in regards to the information itself or anything described by such information. Furthermore, Miller MMIC products are not intended for use as critical components in applications where failure could result in severe injury or death, such as medical or life-saving equipment, or life-sustaining applications, or in any situation where failure could cause serious personal injury or death.