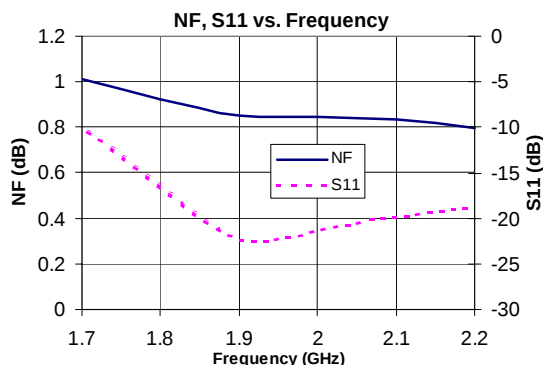


## Product Description

Sirenza Microdevices' SLM-20T amplifier is a low noise amplifier module operating in the 1700-2000 MHz frequency band. This device has been optimized to serve high linearity base station applications where a high intercept point is required with low noise figure. The SLM-20T uses PHEMT device technology and internal bias circuitry to yield a high performance product with proven reliability. Internal RF matching is also included on both the input and output to provide an easy to implement, 50 Ohm circuit block. No additional external components are required. Optimized performance over narrower bands is available for custom specified orders. Contact the sales team for information.



*Preliminary*

## SLM-20T

### 1700-2000 MHz High Linearity Low Noise Amplifier Module



## Product Features

- Very Low Noise Figure: 0.9 dB
- High OIP3: +30 dBm at 1.9 GHz
- Custom Specified Product Options Available
- 50  $\Omega$  I/O Match, No External Components
- Single Supply Operation, Self Biased
- Robust 2000V ESD (HBM), Class 2

## Applications

- PCS, DCS1800, CDMA, W-CDMA receivers

| Symbol           | Parameters: Test Conditions: $Z_0 = 50$ Ohms,<br>$V_{dd} = 5V$ , $T_a = 25^\circ C$ , Typ data shown for 1.9 GHz | Units        | Min. | Typ. | Max. |
|------------------|------------------------------------------------------------------------------------------------------------------|--------------|------|------|------|
| $F_o$            | Frequency Range                                                                                                  | GHz          | 1.7  |      | 2.0  |
| $S_{21}$         | Gain                                                                                                             | dB           | 13.6 | 15.1 | 16.5 |
| $S_{11}$         | Input Return Loss                                                                                                | dB           |      | -18  |      |
| $S_{22}$         | Output Return Loss                                                                                               | dB           |      | -15  |      |
| NF               | Noise Figure (f = 1.9 GHz)                                                                                       | dB           |      | 0.9  | 1.05 |
| OIP <sub>3</sub> | Output Third Order Intercept Point<br>(Pout/Tone = 0 dBm, Tone spacing = 1 MHz)                                  | dBm          |      | 30   |      |
| P <sub>1dB</sub> | Output Power at 1dB Compression                                                                                  | dBm          |      | 17.7 |      |
| $S_{12}$         | Reverse Isolation                                                                                                | dB           |      | -20  |      |
| $V_{dd}$         | Supply Voltage                                                                                                   | V            |      | 5    |      |
| $I_{dd}$         | Supply Current                                                                                                   | mA           | 40   | 44   | 48   |
| $R_{th}$ , j-l   | Thermal Resistance (junction -back)                                                                              | $^\circ C/W$ |      | 250  |      |

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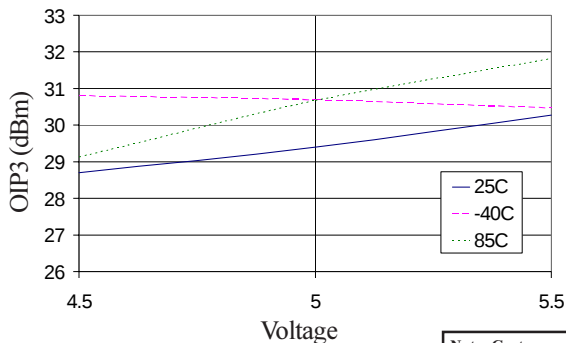
Phone: (800) SMI-MMIC

<http://www.sirenza.com>

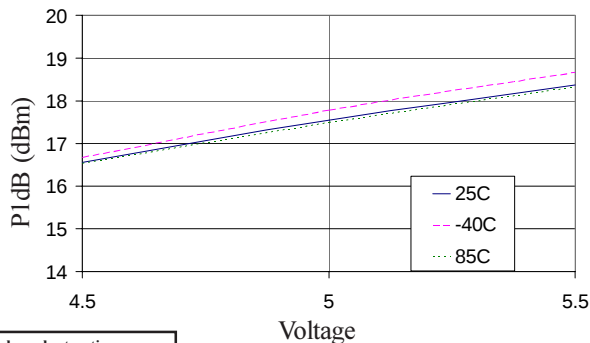
EDS-103671 Rev B

## SLM-20T Performance Over Supply Voltage (Vdd)

OIP3 @ 1.9GHz, 0 dBm tones, 1 MHz spacing

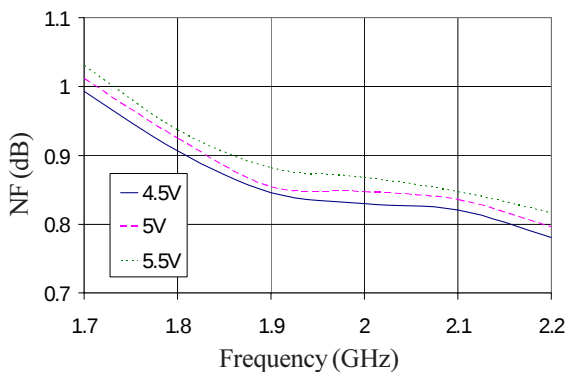


P1dB @ 1.9GHz

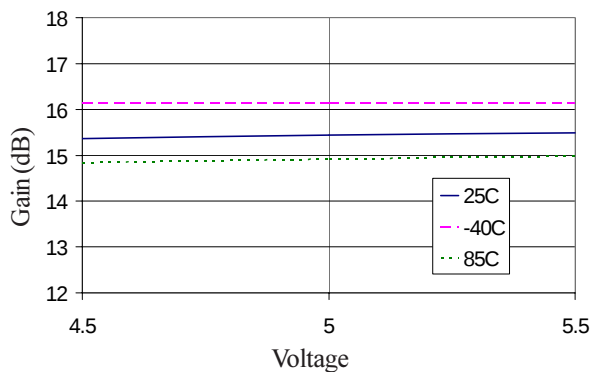


Note: Custom specified product options can be ordered. For 1700-1880MHz applications OIP3=30dBm and NF=0.9dB can be achieved. Contact factory for more information.

NF vs Freq

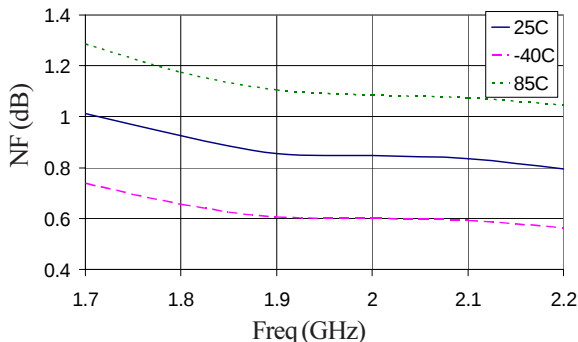


Gain @ 1.9GHz

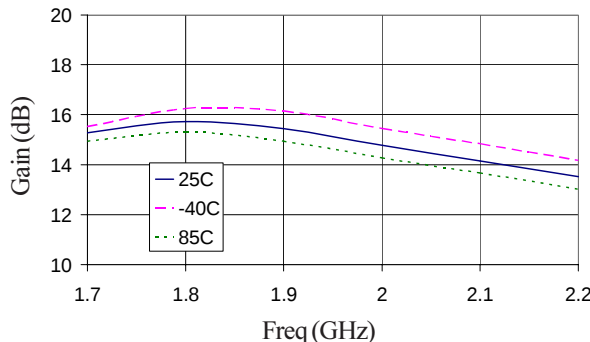


## SLM-20T Performance Over Temperature

NF vs Freq

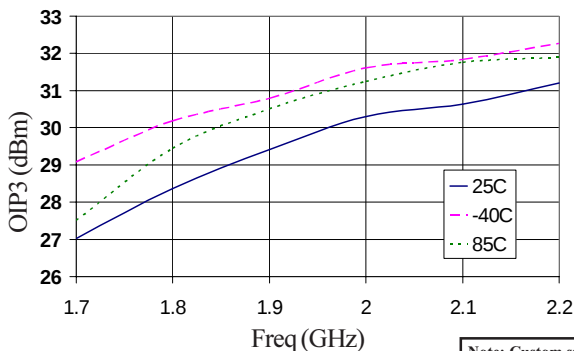


Gain vs Freq

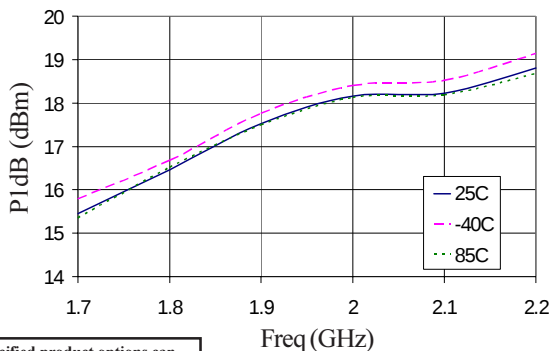


## SLM-20T Performance Over Temperature

OIP3 vs Freq., 0 dBm tones, 1 MHz spacing

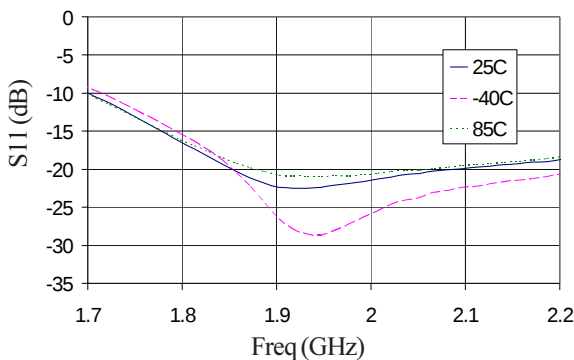


P1dB vs Freq

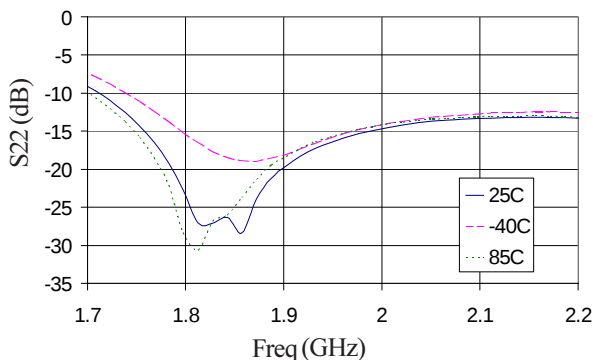


Note: Custom specified product options can be ordered. For 1700-1880MHz applications OIP3=30dBm and NF=0.9dB can be achieved. Contact factory for more information.

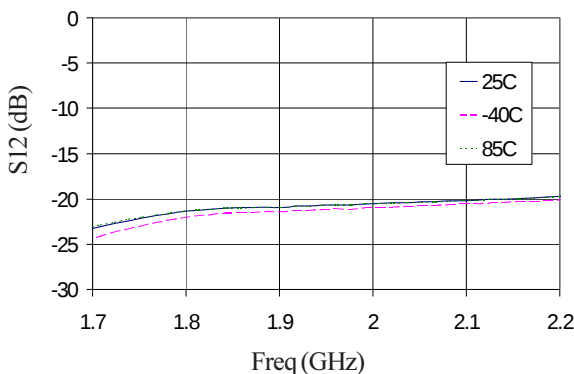
S11 vs Freq



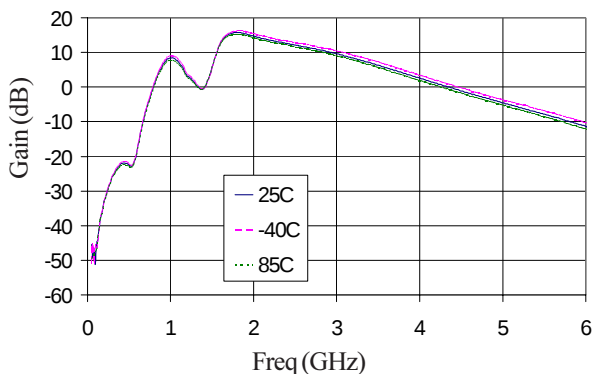
S22 vs Freq



S12 vs Freq



Gain vs Freq



## Absolute Maximum Ratings

| Parameter                         | Absolute Limit |
|-----------------------------------|----------------|
| Supply Current ( $I_{dd}$ )       | 80 mA          |
| Device Voltage ( $V_{dd}$ )       | 5.5 V          |
| Operating Temperature             | -40 to +85 °C  |
| Max. Storage Temperature          | +150 °C        |
| Peak Reflow Temperature (30 sec.) | +220 °C        |
| Operating Junction Temperature    | +150 °C        |
| Maximum Input Power               | +15 dBm        |
| ESD (HBM)                         | Class 2        |

Subjecting this device at or beyond any one of these limits may cause permanent damage. For reliable operation, the device operating voltage and current must not exceed the maximum values shown in "Product Specifications" on page 1.

Bias Conditions should also satisfy the following expression:

$$V_{dd} I_{dd} R_{th} < T_j - T_{op}$$

where  $T_j$  is the junction temperature (150 °C) and  $T_{op}$  is the board temperature.



### Caution: ESD Sensitive

Appropriate precautions in handling, packaging and testing devices must be observed.

*Preliminary*

## SLM-20T 1700-2000 MHz LNA Module

### Part Number Ordering Information

| Part Number | Devices Per Reel | Reel Size |
|-------------|------------------|-----------|
| SLM-20T     | 500              | 13"       |

### Part Symbolization

The part will be symbolized with a "SLM 20T" designator on the top surface of the package.

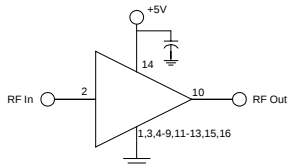
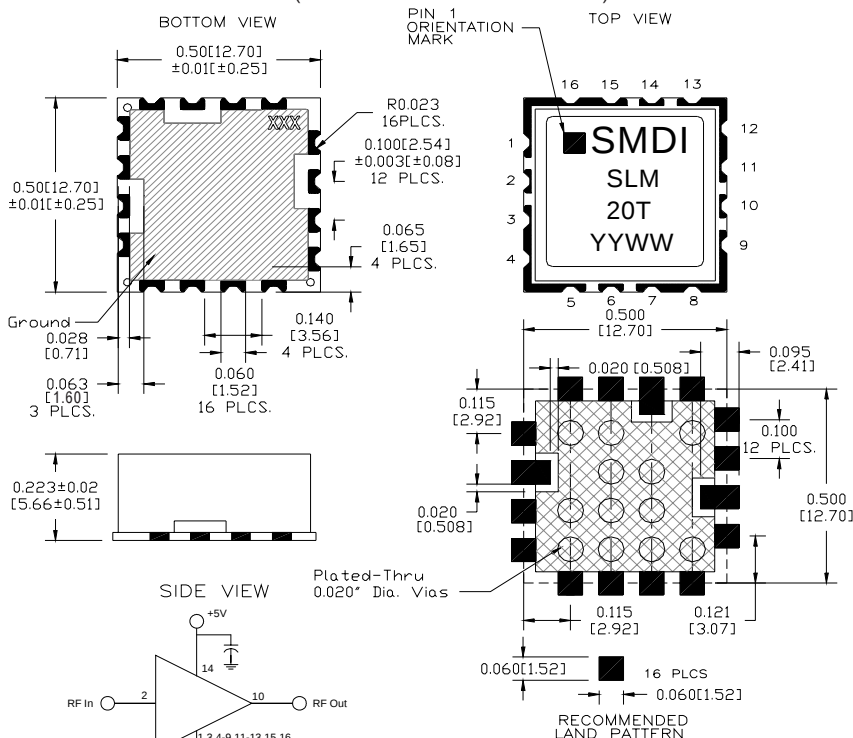
### Pin Description

| Pin # | Function |
|-------|----------|
| 2     | RF In    |
| 10    | RF Out   |
| 14    | Vdd      |

All other pins are ground.

## Package Dimensions

(See SMDI 60035 for tolerances)



Application circuit