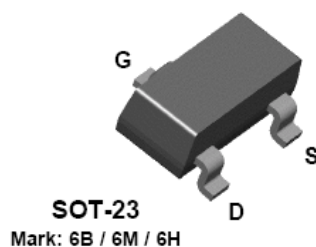
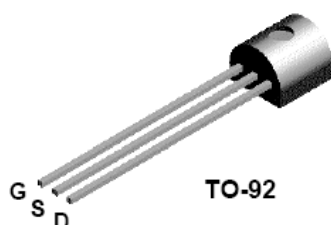


# 2N5484/5485/5486 MMBF5484/5485/5486



NOTE: Source & Drain  
are interchangeable

## N-Channel RF Amplifier

This device is designed primarily for electronic switching applications such as low On Resistance analog switching. Sourced from Process 50.

### Absolute Maximum Ratings\*

TA = 25°C unless otherwise noted

| Symbol                            | Parameter                                        | Value       | Units |
|-----------------------------------|--------------------------------------------------|-------------|-------|
| V <sub>DG</sub>                   | Drain-Gate Voltage                               | 25          | V     |
| V <sub>GS</sub>                   | Gate-Source Voltage                              | - 25        | V     |
| I <sub>GF</sub>                   | Forward Gate Current                             | 10          | mA    |
| T <sub>J</sub> , T <sub>stg</sub> | Operating and Storage Junction Temperature Range | -55 to +150 | °C    |

\*These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

#### NOTES:

- 1) These ratings are based on a maximum junction temperature of 150 degrees C.
- 2) These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.

### Thermal Characteristics

TA = 25°C unless otherwise noted

| Symbol           | Characteristic                                | Max         |                | Units       |
|------------------|-----------------------------------------------|-------------|----------------|-------------|
|                  |                                               | 2N5484-5486 | *MMBF5484-5486 |             |
| P <sub>D</sub>   | Total Device Dissipation<br>Derate above 25°C | 350<br>2.8  | 225<br>1.8     | mW<br>mW/°C |
| R <sub>θJC</sub> | Thermal Resistance, Junction to Case          | 125         |                | °C/W        |
| R <sub>θJA</sub> | Thermal Resistance, Junction to Ambient       | 357         | 556            | °C/W        |

\* Device mounted on FR-4 PCB 1.6" X 1.6" X 0.06."

## N-Channel RF Amplifier

(continued)

### Electrical Characteristics

TA = 25°C unless otherwise noted

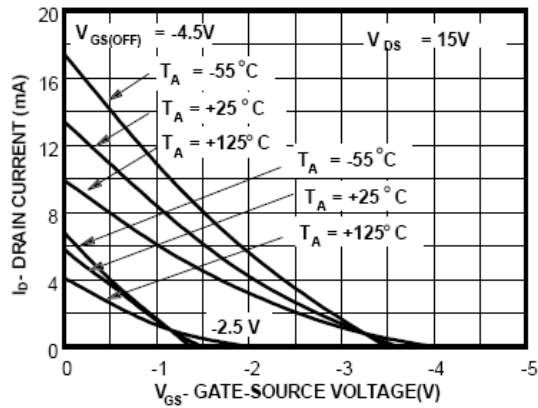
| Symbol                              | Parameter                        | Test Conditions                                                                                                                                                                                          | Min                                        | Typ                  | Max                      | Units                                  |
|-------------------------------------|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|----------------------|--------------------------|----------------------------------------|
| <b>OFF CHARACTERISTICS</b>          |                                  |                                                                                                                                                                                                          |                                            |                      |                          |                                        |
| $V_{(BR)GSS}$                       | Gate-Source Breakdown Voltage    | $I_G = -1.0 \mu A, V_{DS} = 0$                                                                                                                                                                           | -25                                        |                      |                          | V                                      |
| $I_{GSS}$                           | Gate Reverse Current             | $V_{GS} = -20 V, V_{DS} = 0$<br>$V_{GS} = -20 V, V_{DS} = 0, T_A = 100^\circ C$                                                                                                                          |                                            |                      | -1.0<br>-0.2             | nA<br>$\mu A$                          |
| $V_{GS(off)}$                       | Gate-Source Cutoff Voltage       | $V_{DS} = 15 V, I_D = 10 nA$                                                                                                                                                                             | -0.3<br>-0.5<br>-2.0                       |                      | -3.0<br>-4.0<br>-6.0     | V<br>V<br>V                            |
| <b>ON CHARACTERISTICS</b>           |                                  |                                                                                                                                                                                                          |                                            |                      |                          |                                        |
| $I_{DSS}$                           | Zero-Gate Voltage Drain Current* | $V_{DS} = 15 V, V_{GS} = 0$                                                                                                                                                                              | 5484<br>5485<br>5486                       | 1.0<br>4.0<br>8.0    | 5.0<br>10<br>20          | mA<br>mA<br>mA                         |
| <b>SMALL SIGNAL CHARACTERISTICS</b> |                                  |                                                                                                                                                                                                          |                                            |                      |                          |                                        |
| $g_{fs}$                            | Forward Transfer Conductance     | $V_{DS} = 15 V, V_{GS} = 0, f = 1.0 kHz$                                                                                                                                                                 | 5484<br>5485<br>5486                       | 3000<br>3500<br>4000 | 6000<br>7000<br>8000     | $\mu mhos$<br>$\mu mhos$<br>$\mu mhos$ |
| $Re(y_{is})$                        | Input Conductance                | $V_{DS} = 15 V, V_{GS} = 0, f = 100 MHz$<br>$V_{DS} = 15 V, V_{GS} = 0, f = 400 MHz$                                                                                                                     | 5484<br>5485 / 5486                        |                      | 100<br>1000              | $\mu mhos$<br>$\mu mhos$               |
| $g_{os}$                            | Output Conductance               | $V_{DS} = 15 V, V_{GS} = 0, f = 1.0 kHz$                                                                                                                                                                 | 5484<br>5485<br>5486                       |                      | 50<br>60<br>75           | $\mu mhos$<br>$\mu mhos$<br>$\mu mhos$ |
| $Re(y_{os})$                        | Output Conductance               | $V_{DS} = 15 V, V_{GS} = 0, f = 100 MHz$<br>$V_{DS} = 15 V, V_{GS} = 0, f = 400 MHz$                                                                                                                     | 5484<br>5485 / 5486                        |                      | 75<br>100                | $\mu mhos$<br>$\mu mhos$               |
| $Re(y_{fs})$                        | Forward Transconductance         | $V_{DS} = 15 V, V_{GS} = 0, f = 100 MHz$<br>$V_{DS} = 15 V, V_{GS} = 0, f = 400 MHz$                                                                                                                     | 5484<br>5485<br>5486                       | 2500<br>3000<br>3500 |                          | $\mu mhos$<br>$\mu mhos$<br>$\mu mhos$ |
| $C_{iss}$                           | Input Capacitance                | $V_{DS} = 15 V, V_{GS} = 0, f = 1.0 MHz$                                                                                                                                                                 |                                            |                      | 5.0                      | pF                                     |
| $C_{rss}$                           | Reverse Transfer Capacitance     | $V_{DS} = 15 V, V_{GS} = 0, f = 1.0 MHz$                                                                                                                                                                 |                                            |                      | 1.0                      | pF                                     |
| $C_{oss}$                           | Output Capacitance               | $V_{DS} = 15 V, V_{GS} = 0, f = 1.0 MHz$                                                                                                                                                                 |                                            |                      | 2.0                      | pF                                     |
| NF                                  | Noise Figure                     | $V_{DS} = 15 V, R_G = 1.0 k\Omega, f = 100 MHz$<br>$V_{DS} = 15 V, R_G = 1.0 k\Omega, f = 400 MHz$<br>$V_{DS} = 15 V, R_G = 1.0 k\Omega, f = 100 MHz$<br>$V_{DS} = 15 V, R_G = 1.0 k\Omega, f = 400 MHz$ | 5484<br>5484<br>5485 / 5486<br>5485 / 5486 |                      | 3.0<br>4.0<br>2.0<br>4.0 | dB<br>dB<br>dB<br>dB                   |

# N-Channel RF Amplifier

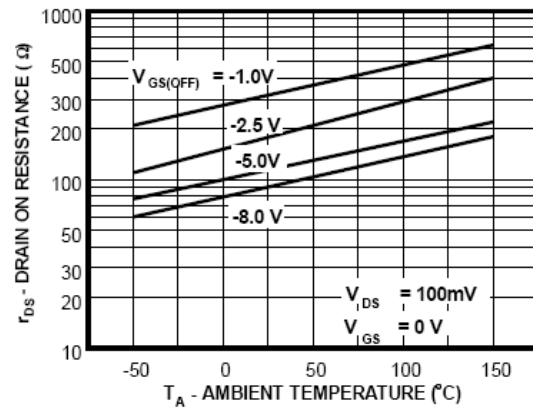
(continued)

## Typical Characteristics

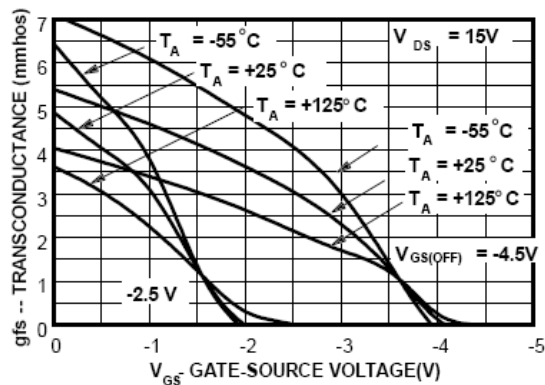
Transfer Characteristics



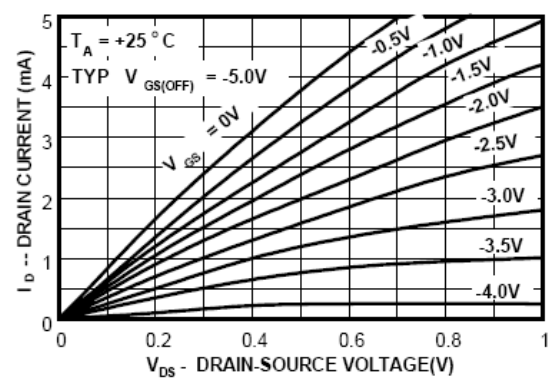
Channel Resistance vs Temperature



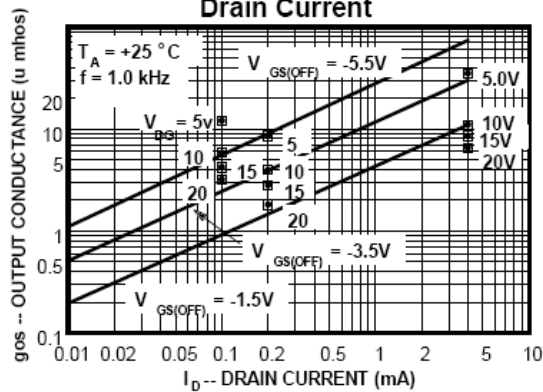
Transconductance Characteristics



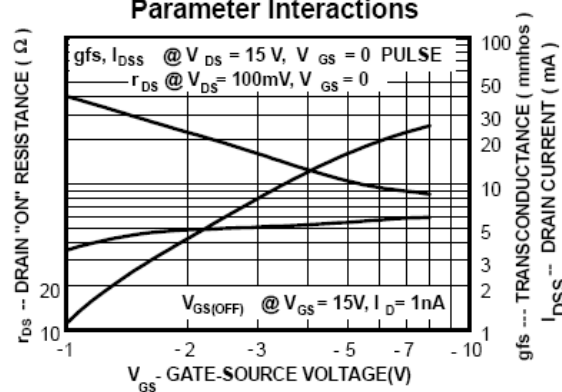
Common Drain-Source Characteristics



Output Conductance vs Drain Current

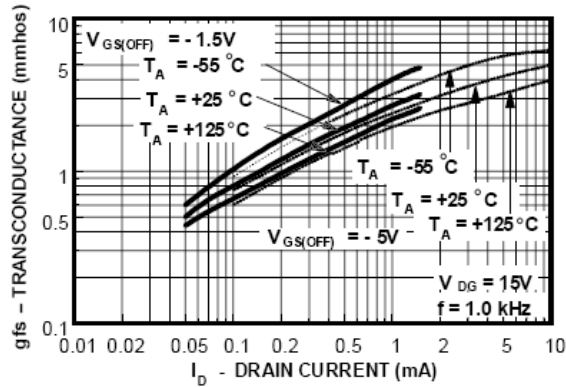


Transconductance Parameter Interactions

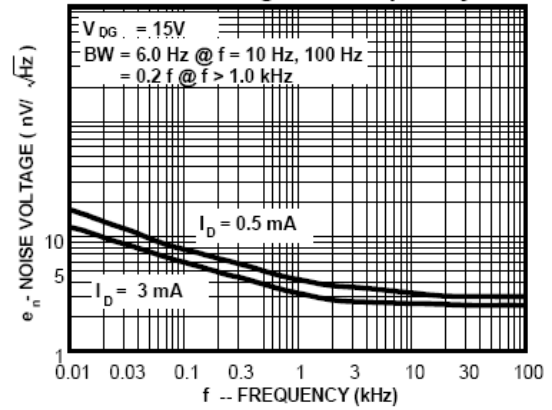


## Typical Characteristics (continued)

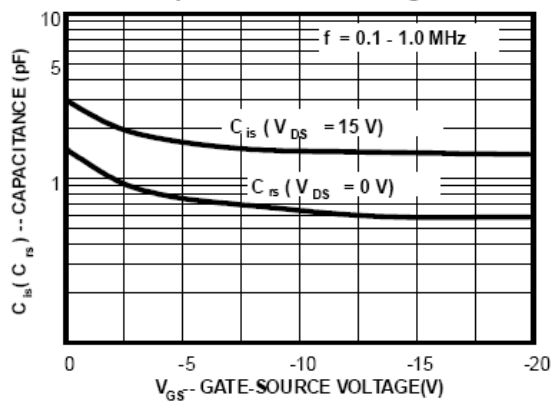
### Transconductance vs Drain Current



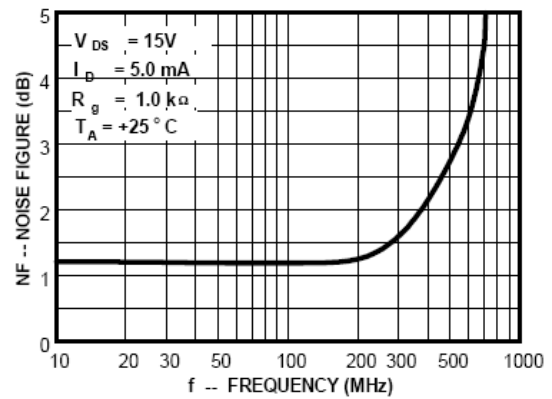
### Noise Voltage vs Frequency



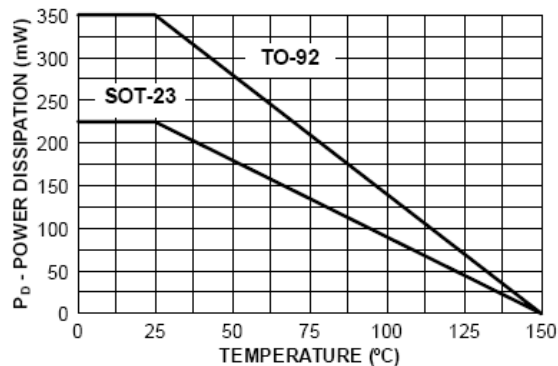
### Capacitance vs Voltage



### Noise Figure Frequency



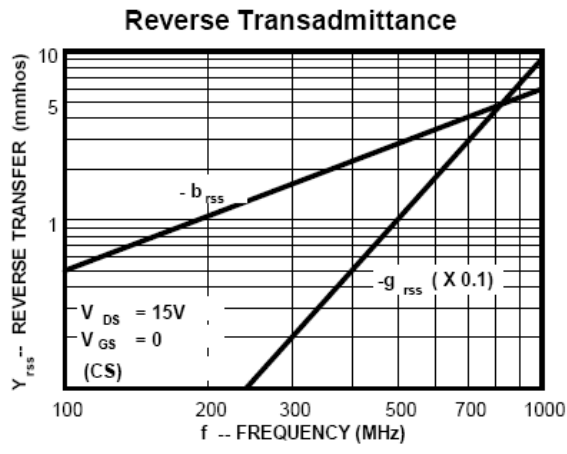
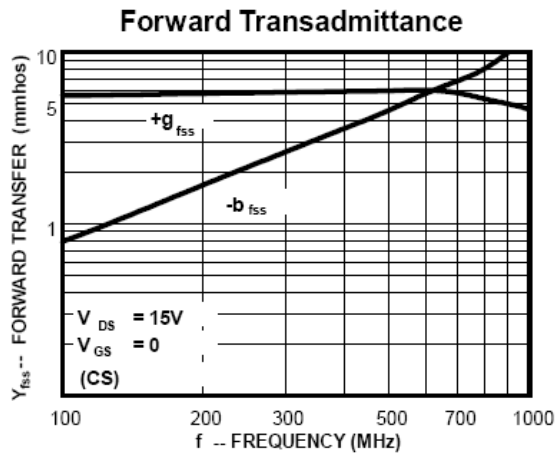
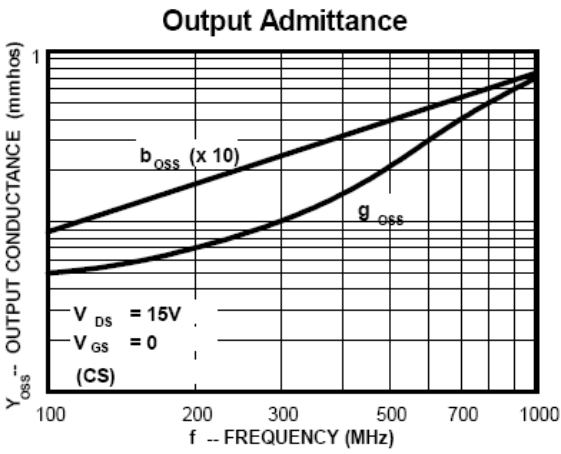
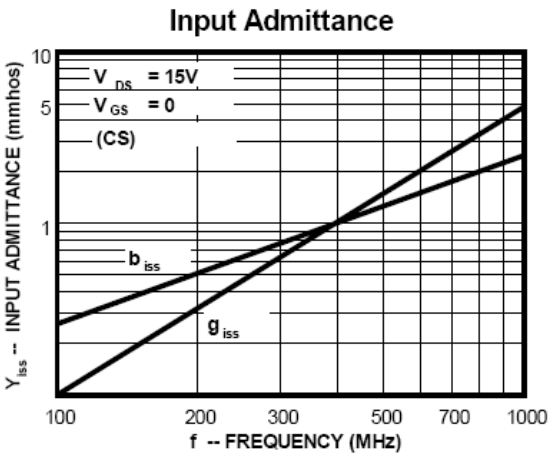
### Power Dissipation vs. Ambient Temperature



# N-Channel RF Amplifier

(continued)

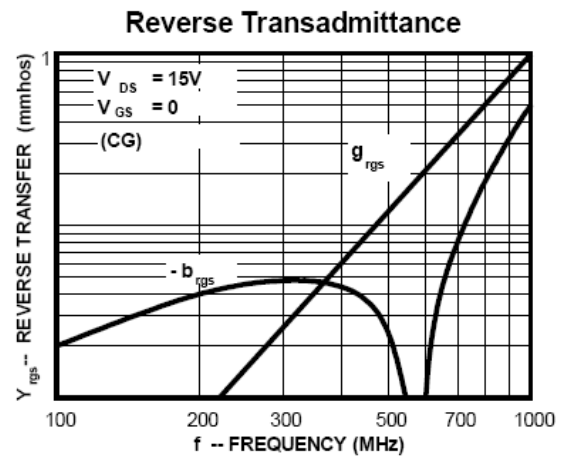
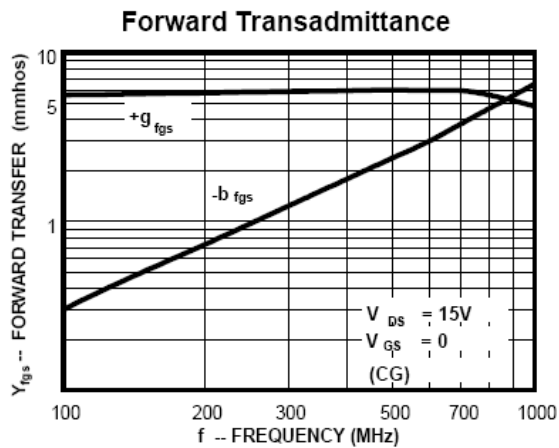
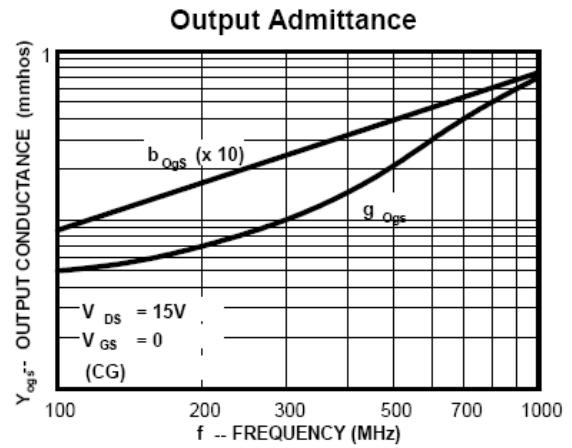
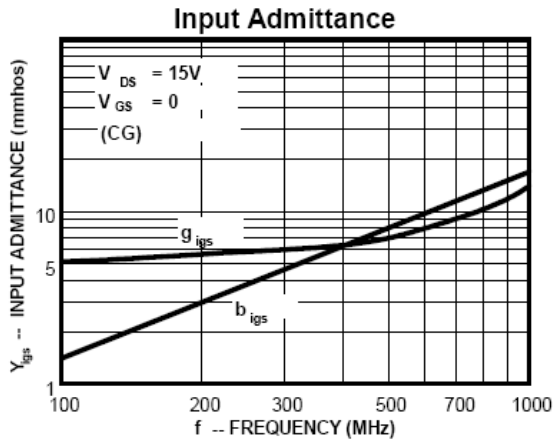
## Common Source Characteristics



# N-Channel RF Amplifier

(continued)

## Common Gate Characteristics





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