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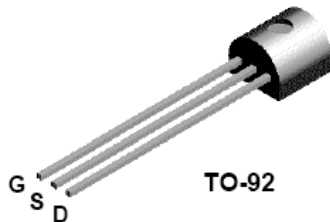
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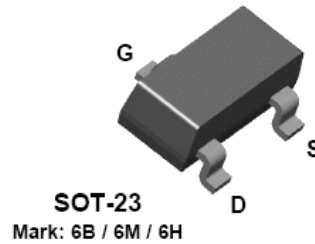
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# 2N5484/5485/5486 MMBF5484/5485/5486



TO-92



SOT-23

Mark: 6B / 6M / 6H

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 |
|----------------|--|-------------|-------|
| $V_{DG}$       | Drain-Gate Voltage                               | 25          | V     |
| $V_{GS}$       | Gate-Source Voltage                              | - 25        | V     |
| $I_{GF}$       | Forward Gate Current                             | 10          | mA    |
| $T_J, T_{stg}$ | 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 |       |
| $P_D$           | Total Device Dissipation                | 350         | 225            | mW    |
|                 | Derate above 25°C                       | 2.8         | 1.8            | mW/°C |
| $R_{\theta JC}$ | Thermal Resistance, Junction to Case    | 125         |                | °C/W  |
| $R_{\theta JA}$ | 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

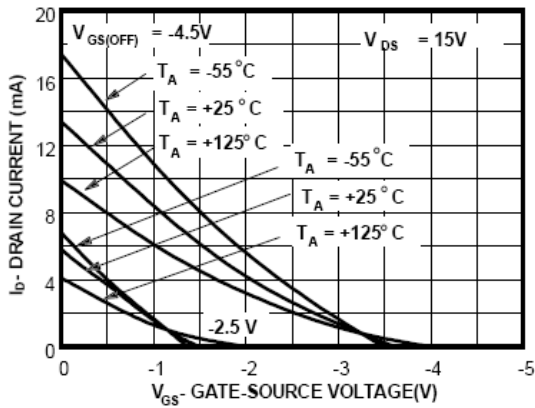
| Symbol                              | Parameter                        | Test Conditions  | Min  | Typ                     | Max                     | Units                               |
|-------------------------------------|----------------------------------|--|--|-------------------------|-------------------------|-------------------------------------|
| <b>OFF CHARACTERISTICS</b>          |                                  |  |  |                         |                         |                                     |
| V <sub>(BR)GSS</sub>                | Gate-Source Breakdown Voltage    | I <sub>G</sub> = - 1.0 μA, V <sub>DS</sub> = 0   | - 25                                       |                         |                         | V                                   |
| I <sub>GSS</sub>                    | Gate Reverse Current             | V <sub>GS</sub> = - 20 V, V <sub>DS</sub> = 0<br>V <sub>GS</sub> = - 20 V, V <sub>DS</sub> = 0, T <sub>A</sub> = 100°C   |  |                         | - 1.0<br>- 0.2          | nA<br>μA                            |
| V <sub>GS(off)</sub>                | Gate-Source Cutoff Voltage       | V <sub>DS</sub> = 15 V, I <sub>D</sub> = 10 nA   | 5484<br>5485<br>5486                       | - 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 <sub>DSS</sub>                    | Zero-Gate Voltage Drain Current* | V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 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 <sub>fs</sub>                     | Forward Transfer Conductance     | V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 0, f = 1.0 kHz   | 5484<br>5485<br>5486                       | 3000<br>3500<br>4000    | 6000<br>7000<br>8000    | μmhos<br>μmhos<br>μmhos             |
| Re(y <sub>is</sub> )                | Input Conductance                | V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 0, f = 100 MHz<br>V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 0, f = 400 MHz   | 5484<br>5485 / 5486                        |                         | 100<br>1000             | μmhos<br>μmhos                      |
| g <sub>os</sub>                     | Output Conductance               | V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 0, f = 1.0 kHz   | 5484<br>5485<br>5486                       |                         | 50<br>60<br>75          | μmhos<br>μmhos<br>μmhos             |
| Re(y <sub>os</sub> )                | Output Conductance               | V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 0, f = 100 MHz<br>V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 0, f = 400 MHz   | 5484<br>5485 / 5486                        |                         | 75<br>100               | μmhos<br>μmhos                      |
| Re(y <sub>fs</sub> )                | Forward Transconductance         | V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 0, f = 100 MHz<br>V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 0, f = 400 MHz   | 5484<br>5485<br>5486                       | 2500<br>3000<br>3500    |                         | μmhos<br>μmhos<br>μmhos             |
| C <sub>iss</sub>                    | Input Capacitance                | V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 0, f = 1.0 MHz   |  |                         | 5.0                     | pF                                  |
| C <sub>rss</sub>                    | Reverse Transfer Capacitance     | V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 0, f = 1.0 MHz   |  |                         | 1.0                     | pF                                  |
| C <sub>oss</sub>                    | Output Capacitance               | V <sub>DS</sub> = 15 V, V <sub>GS</sub> = 0, f = 1.0 MHz   |  |                         | 2.0                     | pF                                  |
| NF                                  | Noise Figure                     | V <sub>DS</sub> = 15 V, R <sub>G</sub> = 1.0 kΩ, f = 100 MHz<br>V <sub>DS</sub> = 15 V, R <sub>G</sub> = 1.0 kΩ, f = 400 MHz<br>V <sub>DS</sub> = 15 V, R <sub>G</sub> = 1.0 kΩ, f = 100 MHz<br>V <sub>DS</sub> = 15 V, R <sub>G</sub> = 1.0 kΩ, f = 400 MHz | 5484<br>5484<br>5485 / 5486<br>5485 / 5486 |                         | 4.0                     | 3.0<br>dB<br>2.0<br>dB<br>4.0<br>dB |

# N-Channel RF Amplifier

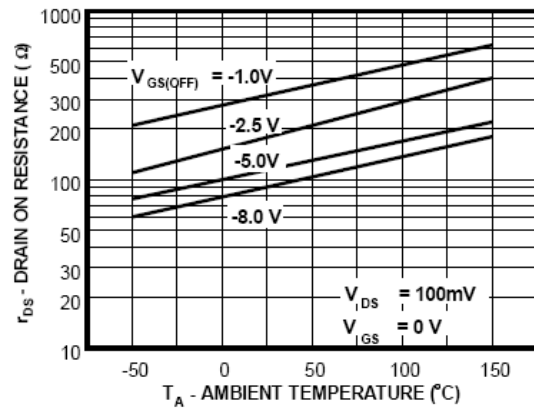
(continued)

## Typical Characteristics

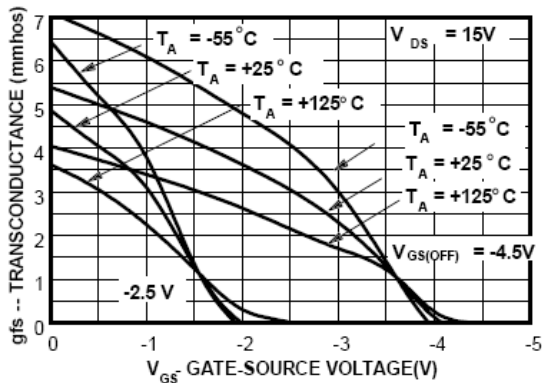
### Transfer Characteristics



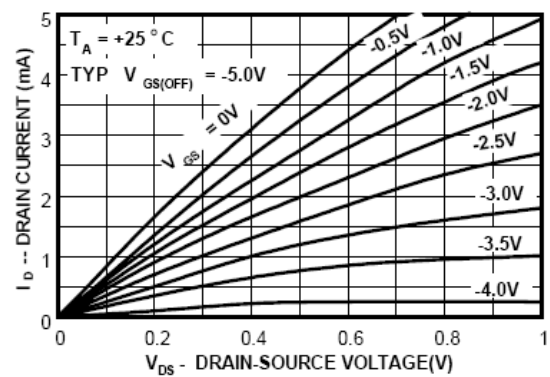
### Channel Resistance vs Temperature



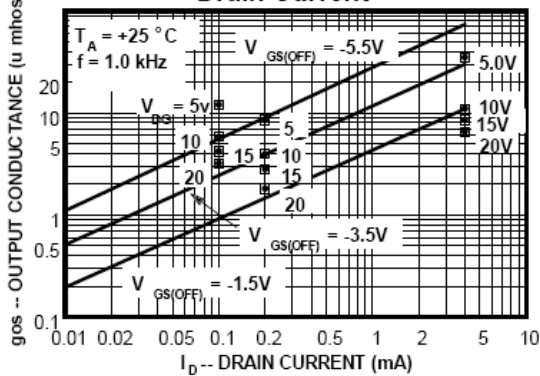
### Transconductance Characteristics



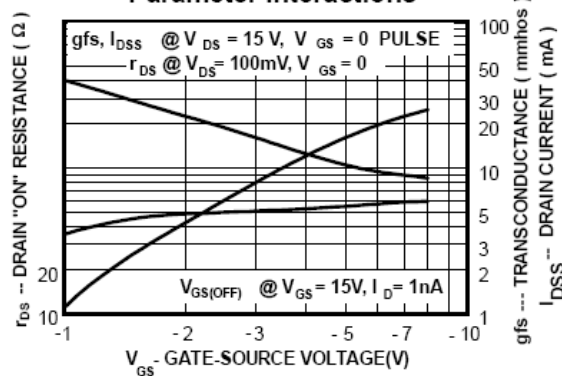
### Common Drain-Source Characteristics



### Output Conductance vs Drain Current

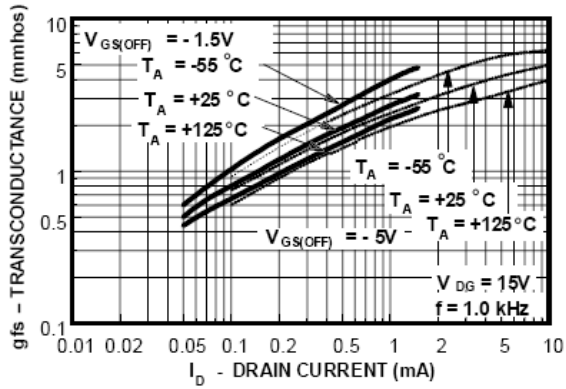


### Transconductance Parameter Interactions

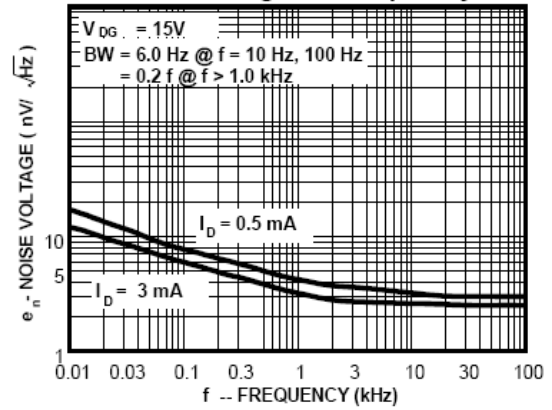


## Typical Characteristics (continued)

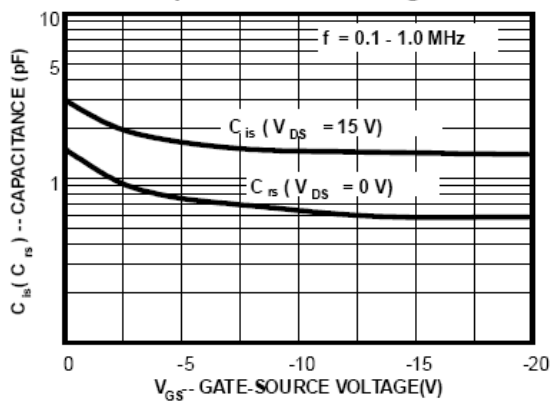
### Transconductance vs Drain Current



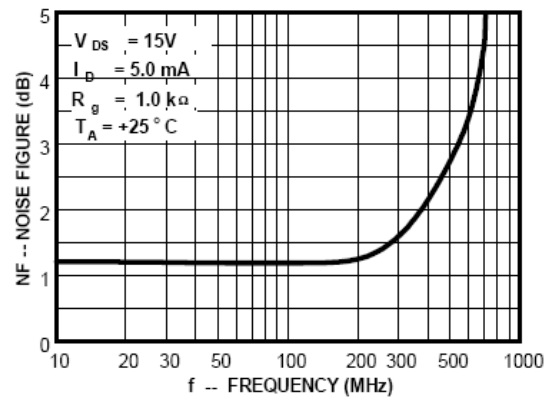
### Noise Voltage vs Frequency



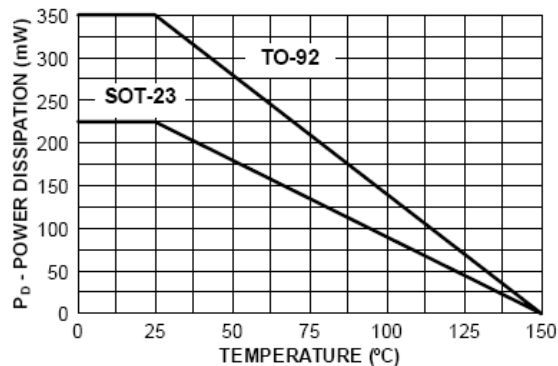
### Capacitance vs Voltage



### Noise Figure Frequency



### Power Dissipation vs. Ambient Temperature

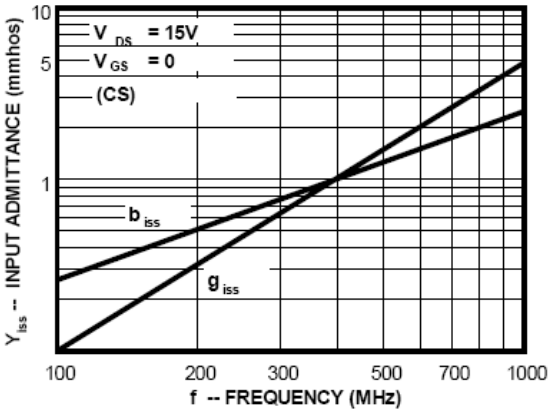


# N-Channel RF Amplifier

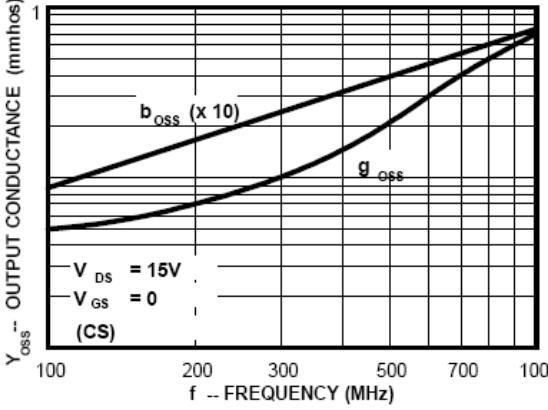
(continued)

## Common Source Characteristics

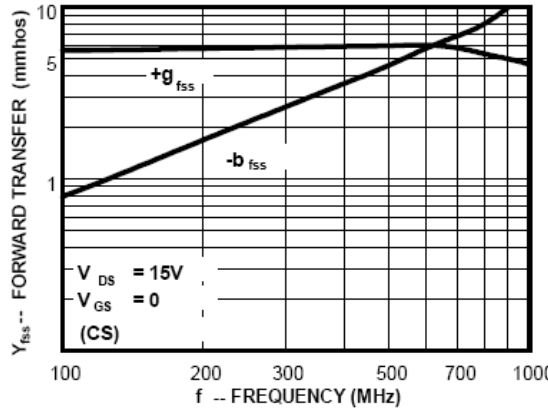
Input Admittance



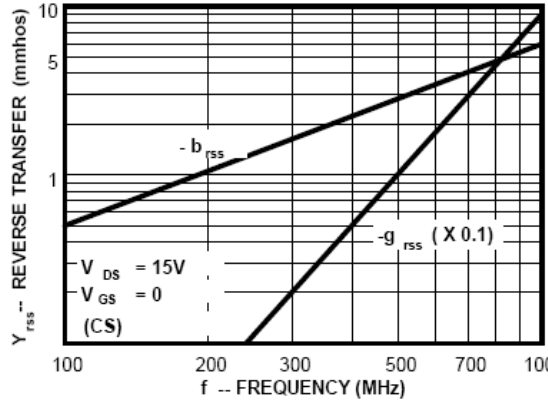
Output Admittance



Forward Transadmittance



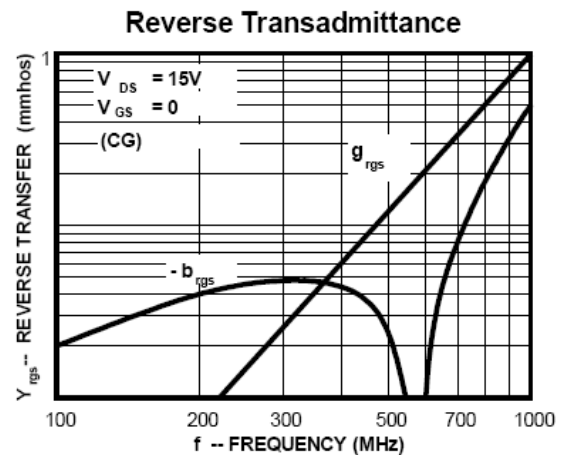
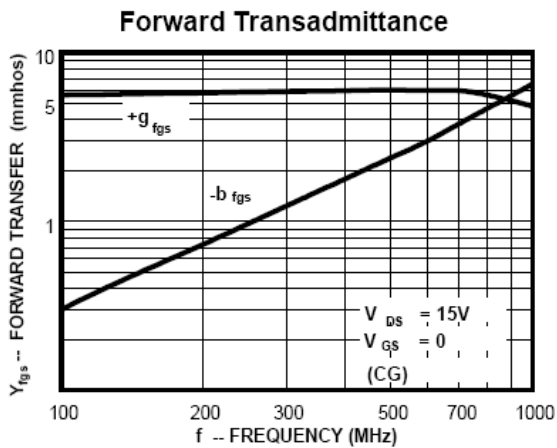
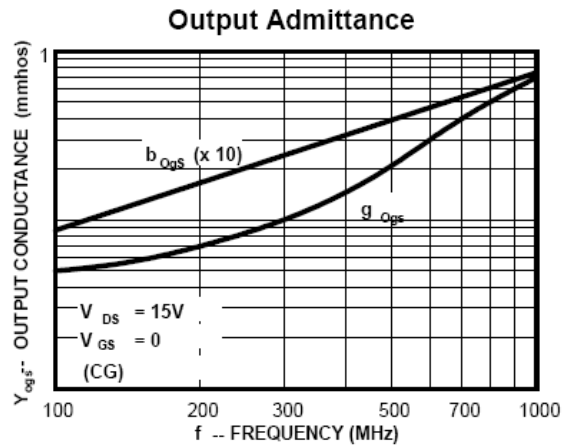
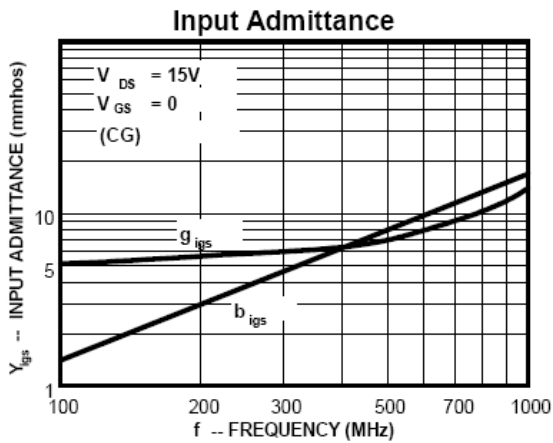
Reverse Transadmittance



# N-Channel RF Amplifier

(continued)




## Common Gate Characteristics





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| FRFET®   |  ® | SuperSOT™-3                | VCX™  |
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