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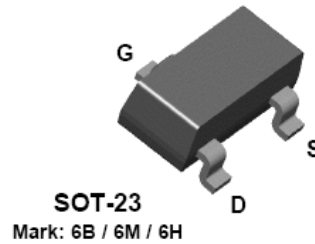
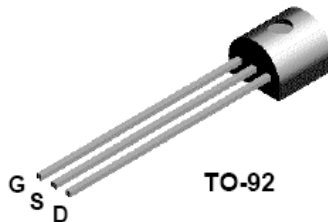
ON Semiconductor®

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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_{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

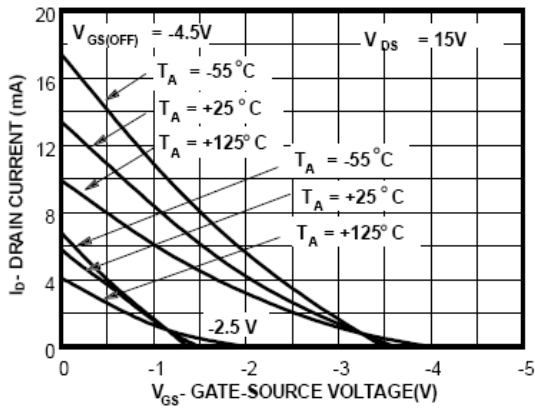
| Symbol | Parameter | Test Conditions | Min | Typ | Max | Units |
|-------------------------------------|----------------------------------|--|--|-------------------------|-------------------------|-------------------------------------|
| OFF CHARACTERISTICS | | | | | | |
| V _{(BR)GSS} | Gate-Source Breakdown Voltage | I _G = - 1.0 μA, V _{DS} = 0 | - 25 | | | V |
| I _{GSS} | Gate Reverse Current | V _{GS} = - 20 V, V _{DS} = 0 V _{GS} = - 20 V, V _{DS} = 0, T _A = 100°C | | | - 1.0 - 0.2 | nA μA |
| V _{GS(off)} | Gate-Source Cutoff Voltage | V _{DS} = 15 V, I _D = 10 nA | 5484 5485 5486 | - 0.3 - 0.5 - 2.0 | - 3.0 - 4.0 - 6.0 | V V V |
| ON CHARACTERISTICS | | | | | | |
| I _{DSS} | Zero-Gate Voltage Drain Current* | V _{DS} = 15 V, V _{GS} = 0 | 5484 5485 5486 | 1.0 4.0 8.0 | 5.0 10 20 | mA mA mA |
| SMALL SIGNAL CHARACTERISTICS | | | | | | |
| g _{fs} | Forward Transfer Conductance | V _{DS} = 15 V, V _{GS} = 0, f = 1.0 kHz | 5484 5485 5486 | 3000 3500 4000 | 6000 7000 8000 | μmhos μmhos μmhos |
| Re _(yis) | Input Conductance | V _{DS} = 15 V, V _{GS} = 0, f = 100 MHz V _{DS} = 15 V, V _{GS} = 0, f = 400 MHz | 5484 5485 / 5486 | | 100 1000 | μmhos μmhos |
| g _{os} | Output Conductance | V _{DS} = 15 V, V _{GS} = 0, f = 1.0 kHz | 5484 5485 5486 | | 50 60 75 | μmhos μmhos μmhos |
| Re _(yos) | Output Conductance | V _{DS} = 15 V, V _{GS} = 0, f = 100 MHz V _{DS} = 15 V, V _{GS} = 0, f = 400 MHz | 5484 5485 / 5486 | | 75 100 | μmhos μmhos |
| Re _(yfs) | Forward Transconductance | V _{DS} = 15 V, V _{GS} = 0, f = 100 MHz V _{DS} = 15 V, V _{GS} = 0, f = 400 MHz | 5484 5485 5486 | 2500 3000 3500 | | μmhos μmhos μmhos |
| 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 kΩ, f = 100 MHz V _{DS} = 15 V, R _G = 1.0 kΩ, f = 400 MHz V _{DS} = 15 V, R _G = 1.0 kΩ, f = 100 MHz V _{DS} = 15 V, R _G = 1.0 kΩ, f = 400 MHz | 5484 5484 5485 / 5486 5485 / 5486 | | 4.0 | 3.0 dB 2.0 dB 4.0 dB |

N-Channel RF Amplifier

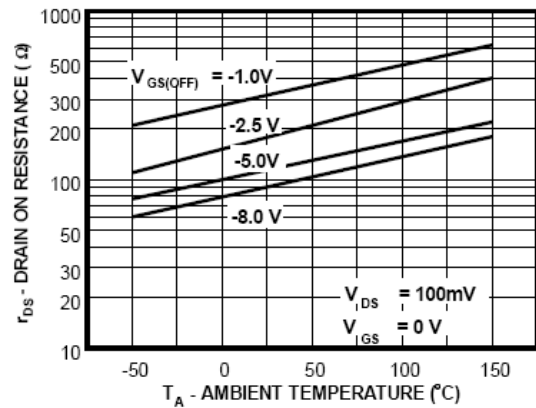
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Typical Characteristics

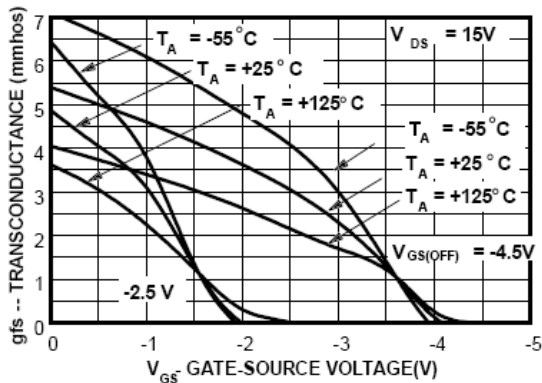
Transfer Characteristics



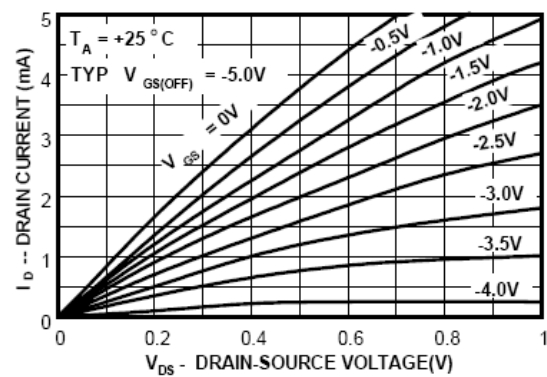
Channel Resistance vs Temperature



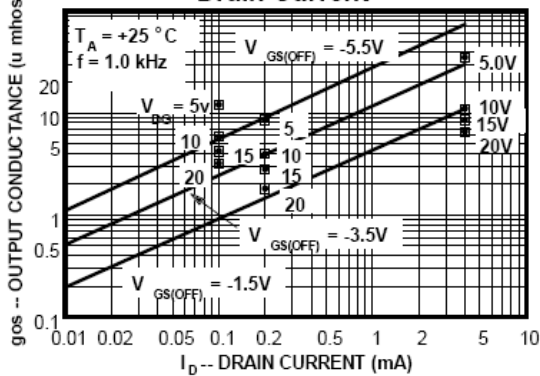
Transconductance Characteristics



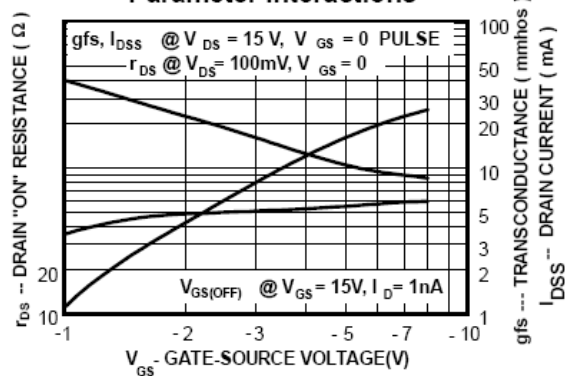
Common Drain-Source Characteristics



Output Conductance vs Drain Current

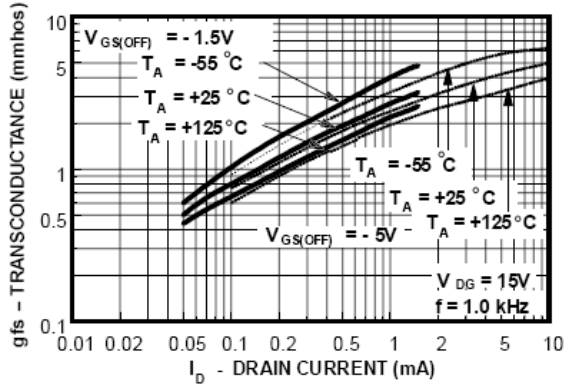


Transconductance Parameter Interactions

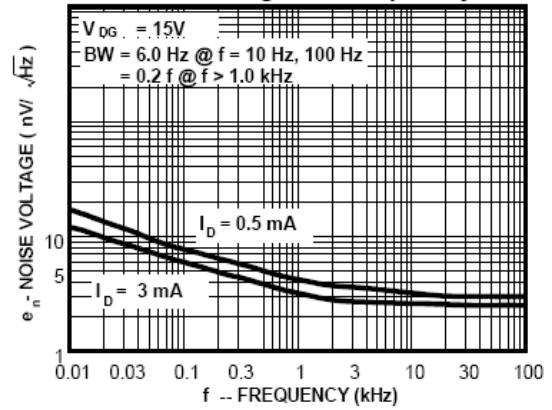


Typical Characteristics (continued)

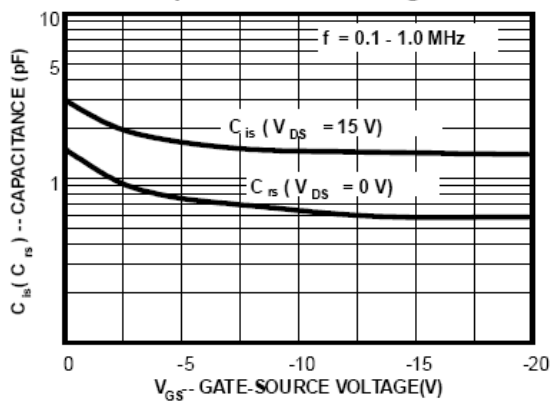
Transconductance vs Drain Current



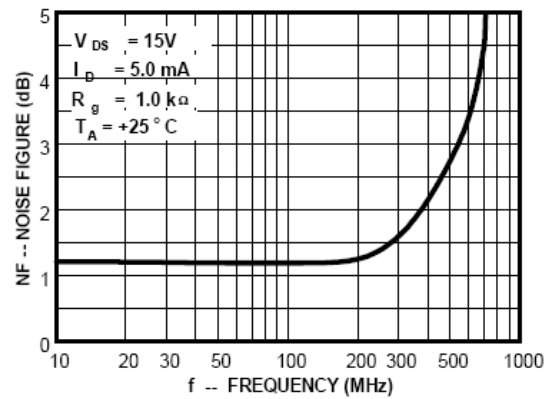
Noise Voltage vs Frequency



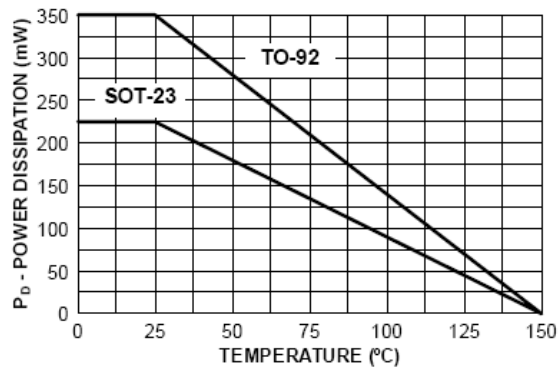
Capacitance vs Voltage



Noise Figure Frequency



Power Dissipation vs. Ambient Temperature

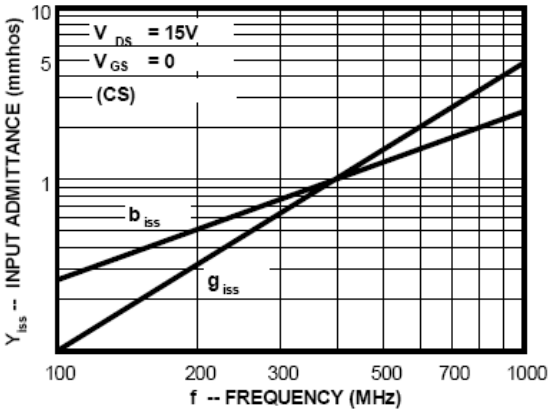


N-Channel RF Amplifier

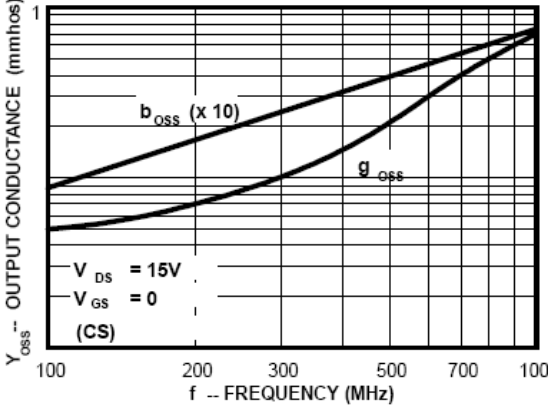
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Common Source Characteristics

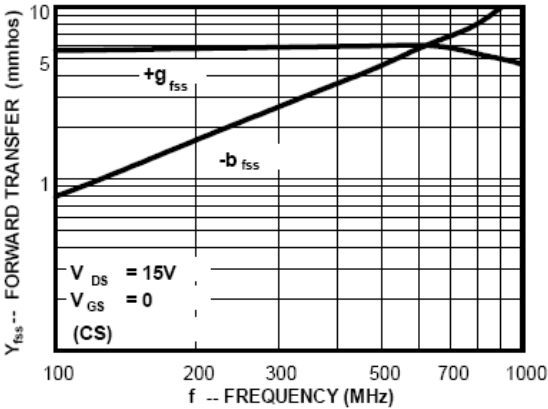
Input Admittance



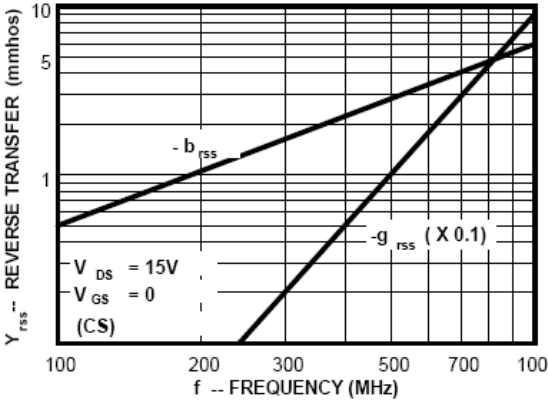
Output Admittance



Forward Transadmittance



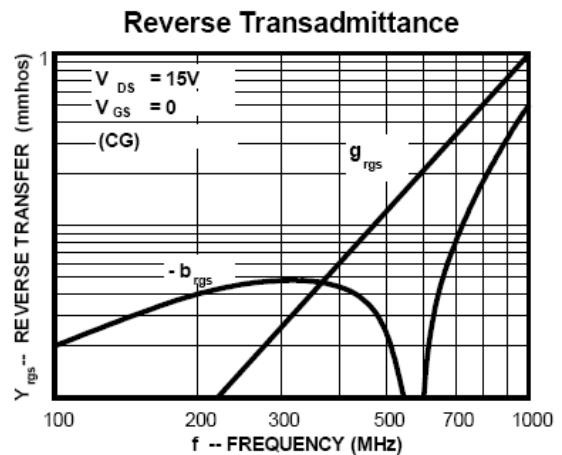
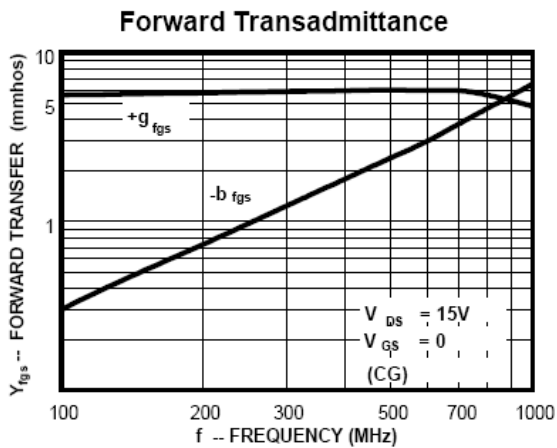
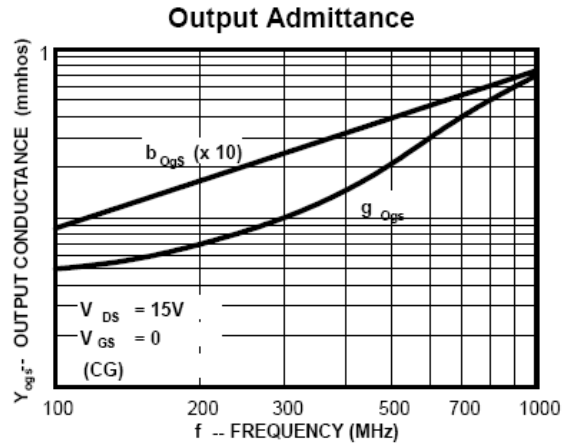
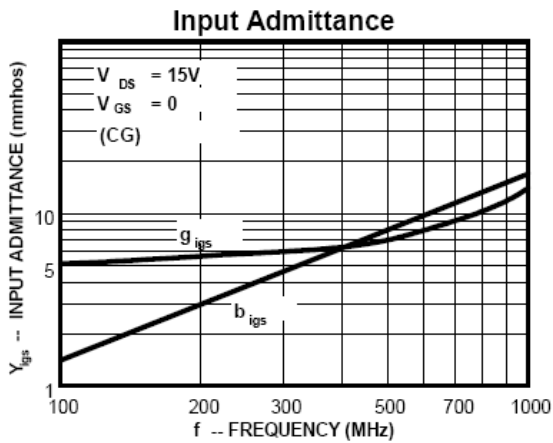
Reverse Transadmittance



N-Channel RF Amplifier

(continued)




Common Gate Characteristics





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