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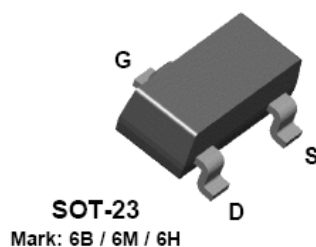
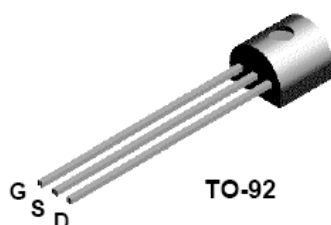
ON Semiconductor®

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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 Derate above 25°C | 350 2.8 | 225 1.8 | mW mW/°C |
| R _{θJC} | Thermal Resistance, Junction to Case | 125 | | °C/W |
| R _{θJA} | 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

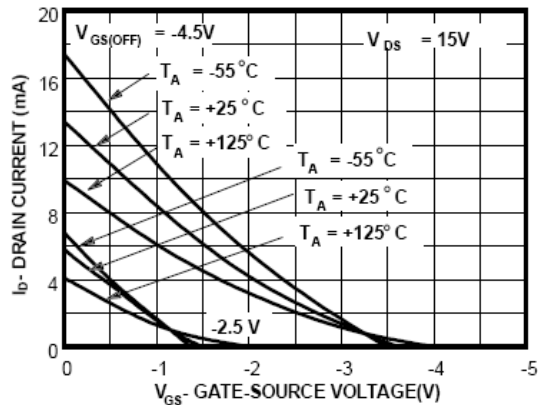
| Symbol | Parameter | Test Conditions | Min | Typ | Max | Units |
|-------------------------------------|----------------------------------|--|--|----------------------|--------------------------|--|
| OFF CHARACTERISTICS | | | | | | |
| $V_{(BR)GSS}$ | Gate-Source Breakdown Voltage | $I_G = -1.0 \mu A, V_{DS} = 0$ | -25 | | | V |
| I_{GSS} | Gate Reverse Current | $V_{GS} = -20 V, V_{DS} = 0$ $V_{GS} = -20 V, V_{DS} = 0, T_A = 100^\circ C$ | | | -1.0 -0.2 | nA μA |
| $V_{GS(off)}$ | Gate-Source Cutoff Voltage | $V_{DS} = 15 V, I_D = 10 nA$ | -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 | $\mu mhos$ $\mu mhos$ $\mu mhos$ |
| $Re(y_{is})$ | 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 | $\mu mhos$ $\mu mhos$ |
| g_{os} | Output Conductance | $V_{DS} = 15 V, V_{GS} = 0, f = 1.0 kHz$ | 5484 5485 5486 | | 50 60 75 | $\mu mhos$ $\mu mhos$ $\mu mhos$ |
| $Re(y_{os})$ | 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 | $\mu mhos$ $\mu mhos$ |
| $Re(y_{fs})$ | 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 | | $\mu mhos$ $\mu mhos$ $\mu mhos$ |
| 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 | $V_{DS} = 15 V, R_G = 1.0 k\Omega, f = 100 MHz$ $V_{DS} = 15 V, R_G = 1.0 k\Omega, f = 400 MHz$ $V_{DS} = 15 V, R_G = 1.0 k\Omega, f = 100 MHz$ $V_{DS} = 15 V, R_G = 1.0 k\Omega, f = 400 MHz$ | 5484 5484 5485 / 5486 5485 / 5486 | | 3.0 4.0 2.0 4.0 | dB dB dB dB |

N-Channel RF Amplifier

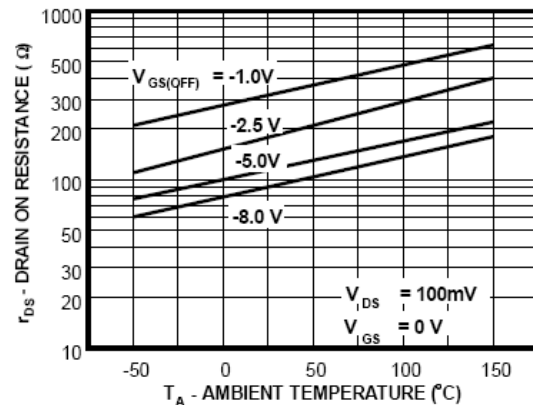
(continued)

Typical Characteristics

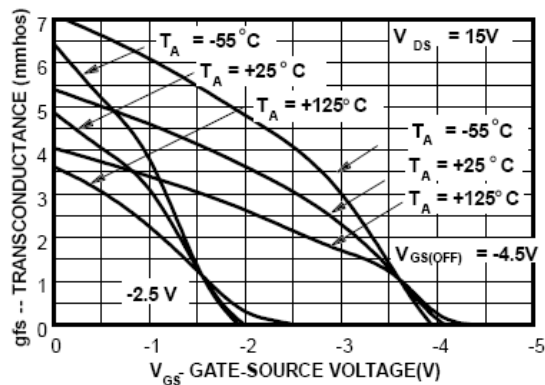
Transfer Characteristics



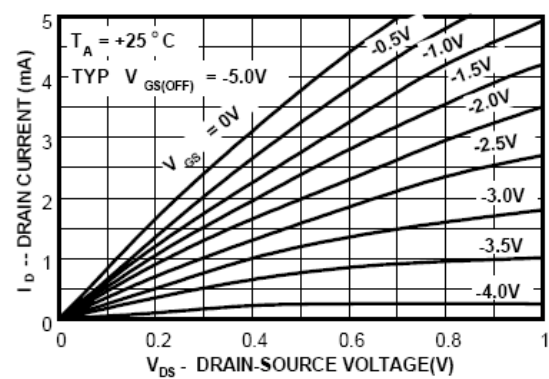
Channel Resistance vs Temperature



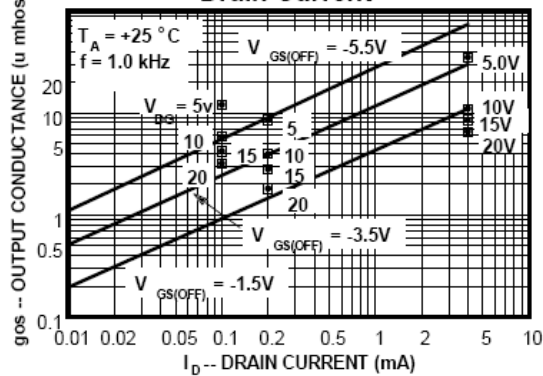
Transconductance Characteristics



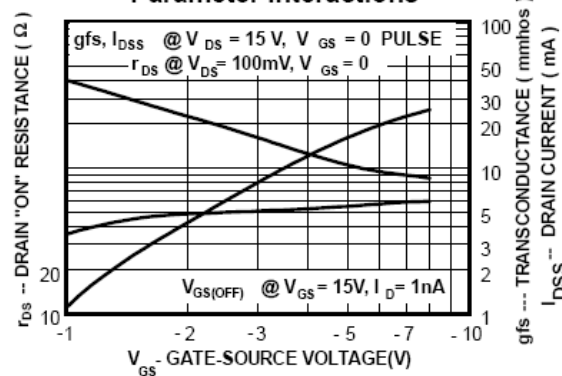
Common Drain-Source Characteristics



Output Conductance vs Drain Current

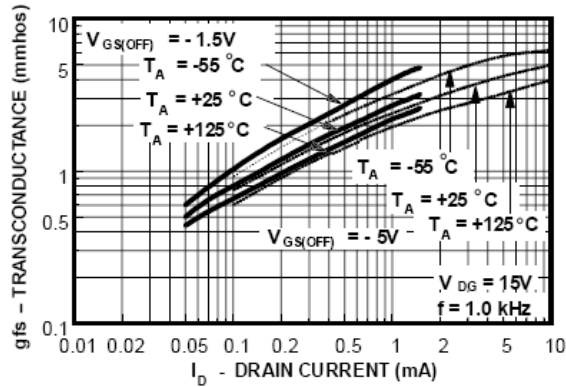


Transconductance Parameter Interactions

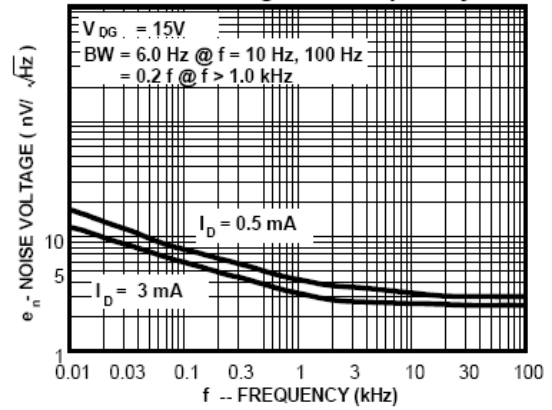


Typical Characteristics (continued)

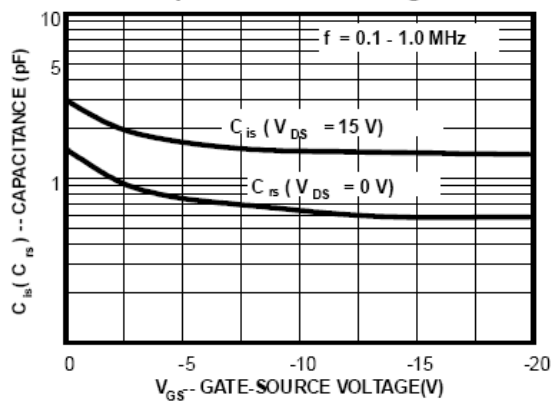
**Transconductance vs
Drain Current**



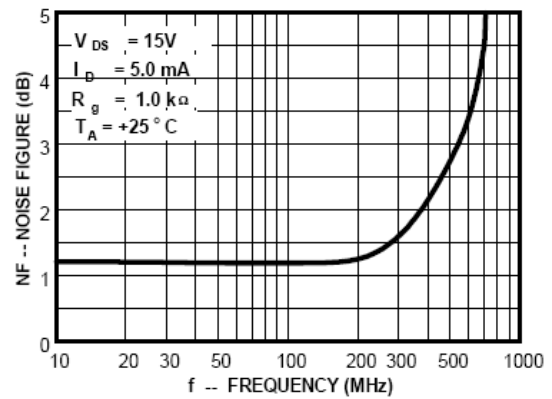
Noise Voltage vs Frequency



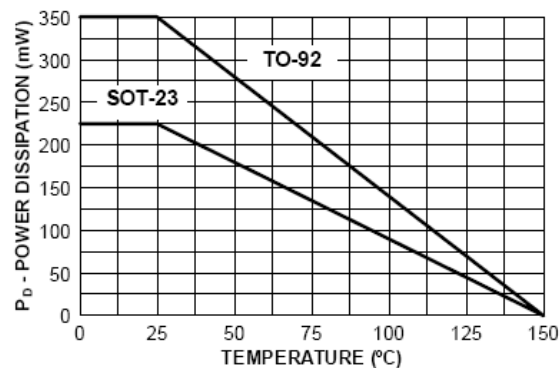
Capacitance vs Voltage



Noise Figure Frequency



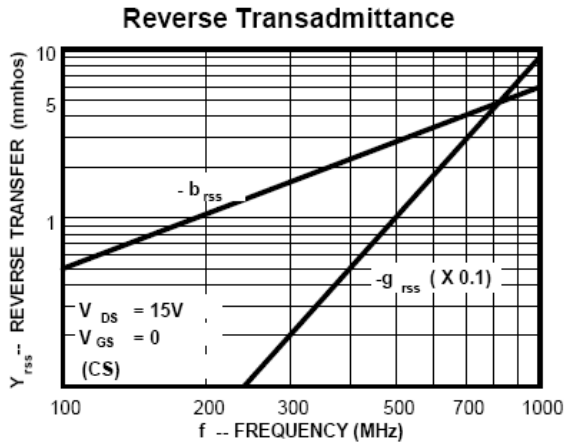
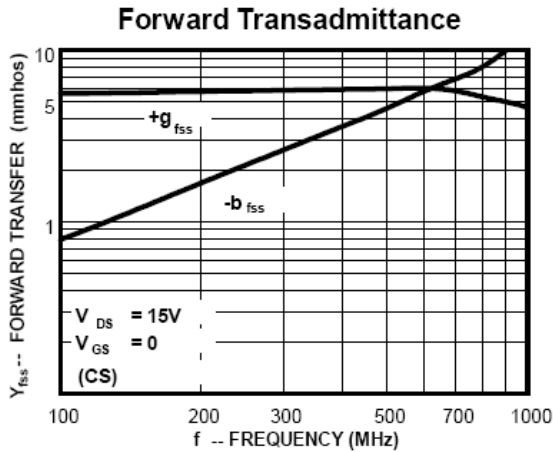
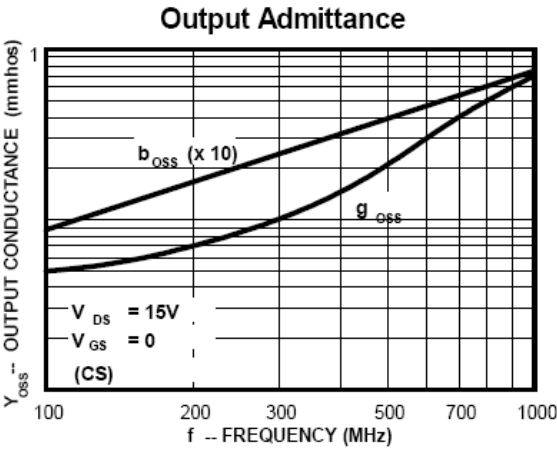
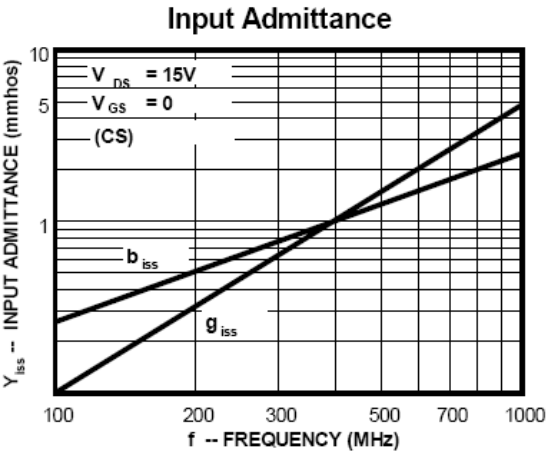
**Power Dissipation vs.
Ambient Temperature**



N-Channel RF Amplifier

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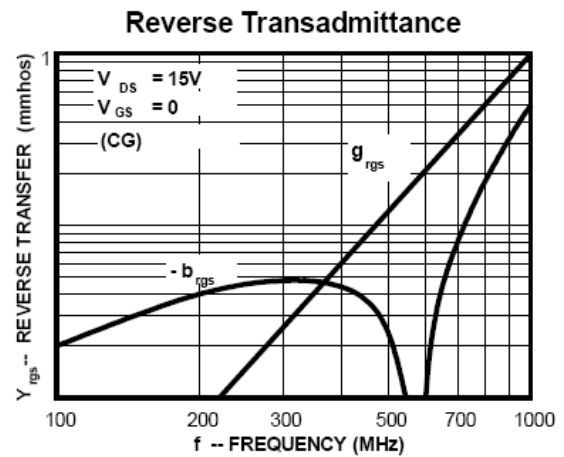
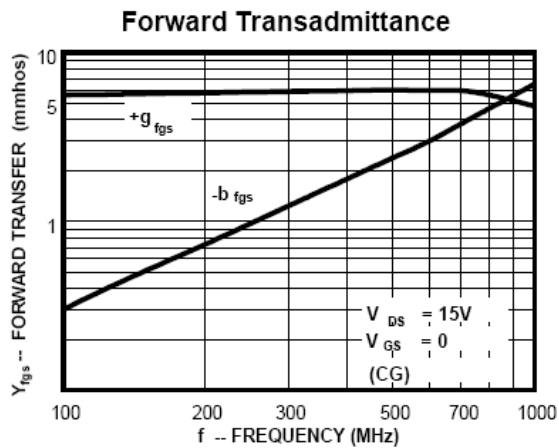
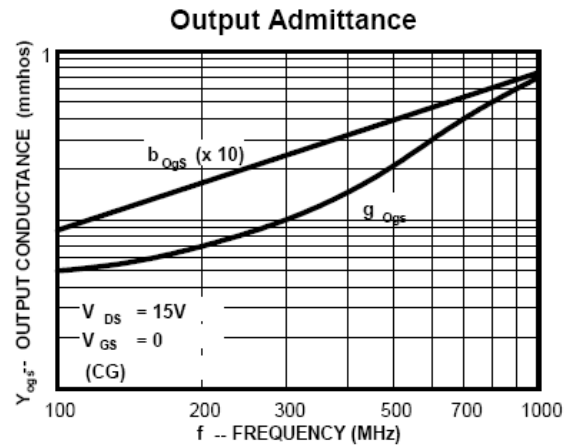
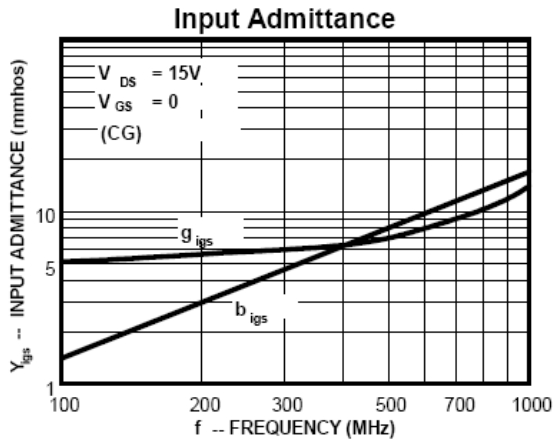
Common Source Characteristics



N-Channel RF Amplifier

(continued)

Common Gate Characteristics





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