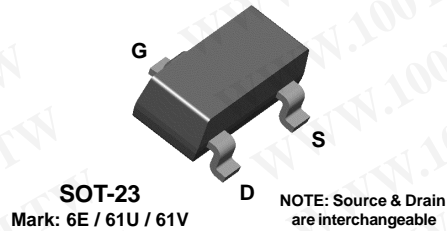
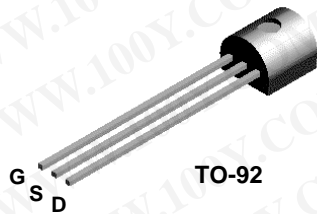


2N5460
2N5461
2N5462

MMBF5460
MMBF5461
MMBF5462



P-Channel General Purpose Amplifier

This device is designed primarily for low level audio and general purpose applications with high impedance signal sources. Sourced from Process 89.

Absolute Maximum Ratings*

TA = 25°C unless otherwise noted

| Symbol | Parameter | Value | Units |
|-----------------------------------|--|-------------|-------|
| V _{DG} | Drain-Gate Voltage | - 40 | V |
| V _{GS} | Gate-Source Voltage | 40 | 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 |
|------------------|---|-------------|----------------|-------|
| | | 2N5460-5462 | *MMBF5460-5462 | |
| P _D | Total Device Dissipation Derate above 25°C | 350 | 225 | mW |
| | | 2.8 | 1.8 | 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."

2N5460 / 5461 / 5462 / MMBF5460 / MMBF5461 / MMBF5462

P-Channel General Purpose 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 = 10 μA, V _{DS} = 0 | 40 | | | V |
| I _{GSS} | Gate Reverse Current | V _{GS} = 20 V, V _{DS} = 0 | | | 5.0 | nA |
| | | V _{GS} = 20 V, V _{DS} = 0, T _A = 100°C | | | 1.0 | μA |
| V _{GS(off)} | Gate-Source Cutoff Voltage | V _{DS} = 15 V, I _D = 1.0 μA | 5460 | 0.75 | 6.0 | V |
| | | | 5461 | 1.0 | 7.5 | V |
| | | | 5462 | 1.8 | 9.0 | V |
| V _{GS} | Gate-Source Voltage | V _{DS} = 15 V, I _D = 0.1 mA | 5460 | 0.5 | 4.0 | V |
| | | V _{DS} = 15 V, I _D = 0.2 mA | 5461 | 0.8 | 4.5 | V |
| | | V _{DS} = 15 V, I _D = 0.4 mA | 5462 | 1.5 | 6.0 | V |

ON CHARACTERISTICS

| | | | | | | |
|------------------|----------------------------------|---|-------------|-------|-------|----|
| I _{DSS} | Zero-Gate Voltage Drain Current* | V _{DS} = 15 V, V _{GS} = 0 | 5460 | - 1.0 | - 5.0 | mA |
| | | | 5461 | - 2.0 | - 9.0 | mA |
| | | | 5462 | - 4.0 | - 16 | mA |

SMALL SIGNAL CHARACTERISTICS

| | | | | | | |
|------------------|--|---|------|-----|------|--------|
| g _{fs} | Forward Transfer Conductance | V _{DS} = 15 V, V _{GS} = 0, f = 1.0 kHz | | | | |
| | | 5460 | 1000 | | 4000 | μmhos |
| | | 5461 | 1500 | | 5000 | μmhos |
| | | 5462 | 2000 | | 6000 | μmhos |
| g _{os} | Output Conductance | V _{DS} = 15 V, V _{GS} = 0, f = 1.0 kHz | | | 75 | μmhos |
| C _{iss} | Input Capacitance | V _{DS} = 15 V, V _{GS} = 0, f = 1.0 MHz | | 5.0 | 7.0 | pF |
| C _{rss} | Reverse Transfer Capacitance | V _{DS} = 15 V, V _{GS} = 0, f = 1.0 MHz | | 1.0 | 2.0 | pF |
| NF | Noise Figure | V _{DS} = 15 V, V _{GS} = 0, R _G = 1.0 megohm, f = 100 Hz, BW = 1.0 Hz | | 1.0 | 2.5 | dB |
| e _n | Equivalent Short-Circuit Input Noise Voltage | V _{DS} = 15 V, V _{GS} = 0, f = 100 Hz, BW = 1.0 Hz | | 60 | 115 | nV/√Hz |

*Pulse Test: Pulse Width ≤ 300 ms, Duty Cycle ≤ 2%

2N5460 / 5461 / 5462 / MMBF5460 / MMBF5461 / MMBF5462

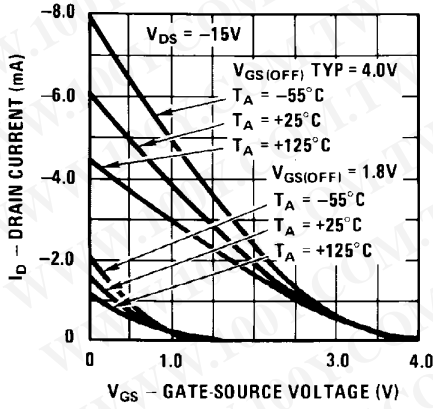
P-Channel General Purpose Amplifier

(continued)

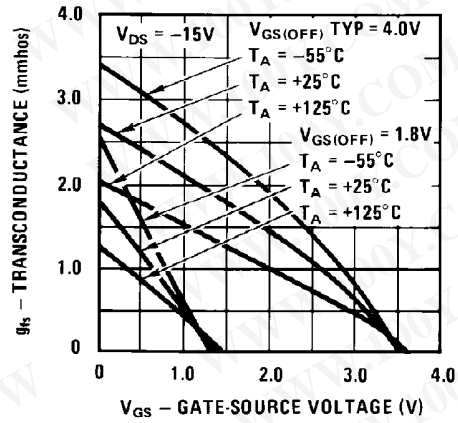
2N5460 / 5461 / 5462 / MMBF5460 / MMBF5461 / MMBF5462

Typical Characteristics (continued)

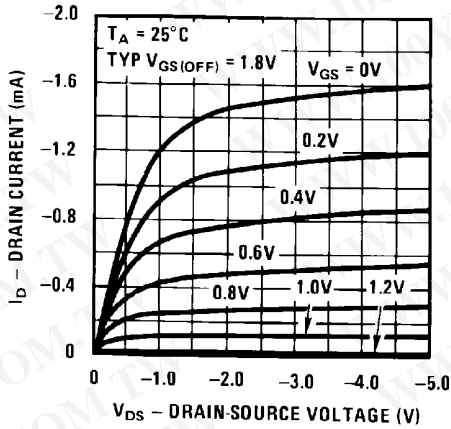
Transfer Characteristics



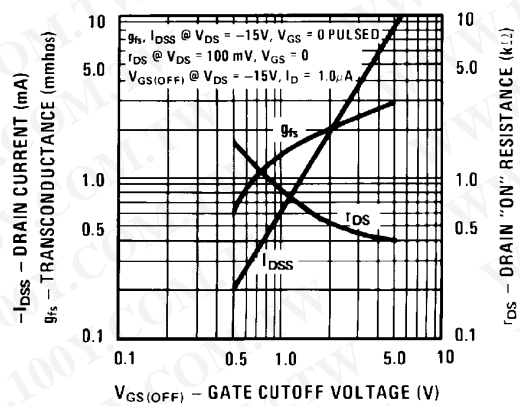
Transfer Characteristics



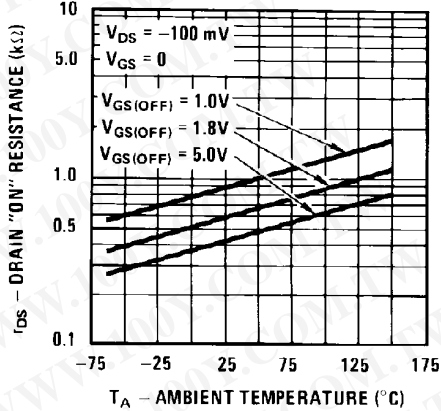
Common Drain-Source



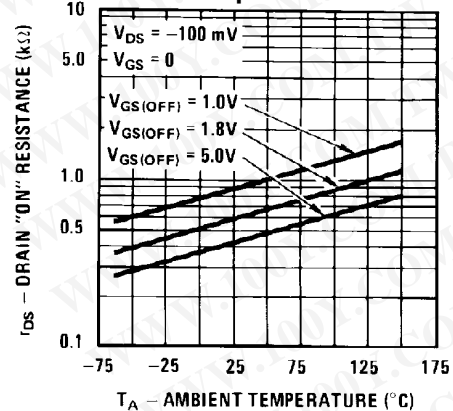
Parameter Interactions



Leakage Current vs. Voltage



Channel Resistance vs. Temperature



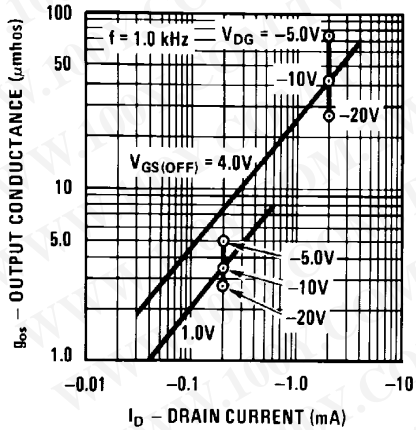
P-Channel General Purpose Amplifier

(continued)

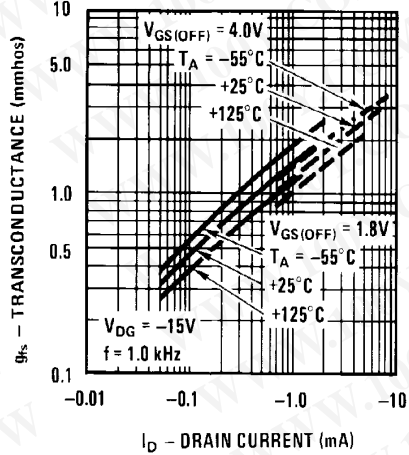
2N5460 / 5461 / 5462 / MMBF5460 / MMBF5461 / MMBF5462

Typical Characteristics (continued)

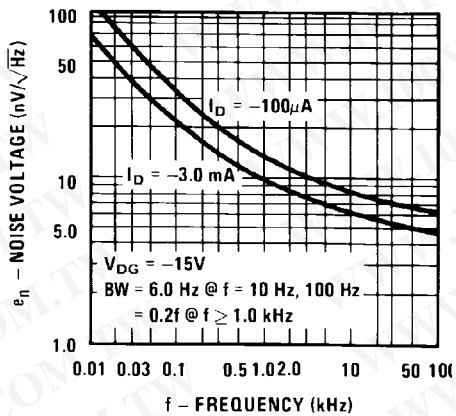
Output Conductance vs. Drain Current



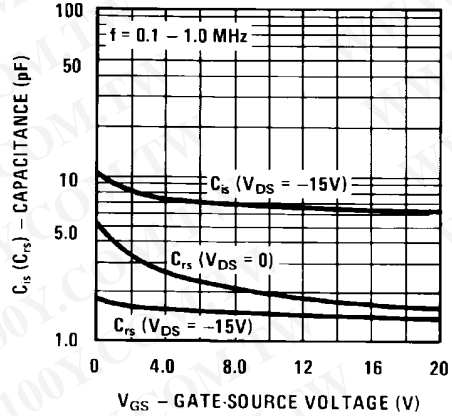
Transconductance vs. Drain Current



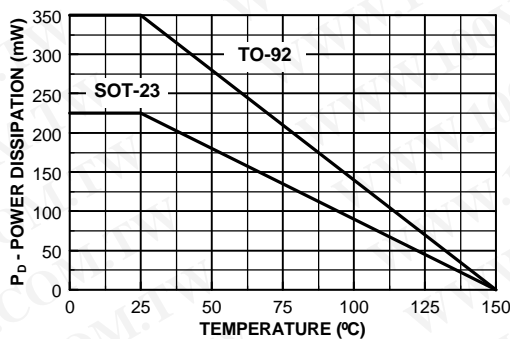
Noise Voltage vs. Frequency



Capacitance vs. Voltage



Power Dissipation vs. Ambient Temperature



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