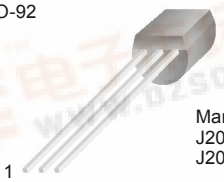
FAIRCHILD SEMICONDUCTOR®

January 2008

# J201 - J202 / MMBFJ201 - MMBFJ203
## N-Channel General Purpose Amplifier

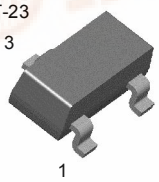
- This device is designed primarily for low level audio and general purpose applications with high impedance signal sources.
- Sourced from Process 52.

TO-92




1. Drain 2. Source 3. Gate

SOT-23




Marking
MMBFJ201 : 62P
MMBFJ202 : 62Q

1. Drain 2. Source 3. Gate

## Absolute Maximum Ratings * $T_a$=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 | 50 | mA |
| $T_J$, $T_{STG}$ | Operating and Storage Junction Temperature Range | -55 ~ 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°C.

2) These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.

## Thermal Characteristics* $T_a$=25°C unless otherwise noted

| Symbol | Parameter | Value | | Units |
|---|---|---|---|---|
| | | J201 - J202 | MMBFJ201 - MMBFJ203 | |
| $P_D$ | Total Device Dissipation<br>Derate above 25°C | 625<br>5.0 | 350<br>2.8 | W<br>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"

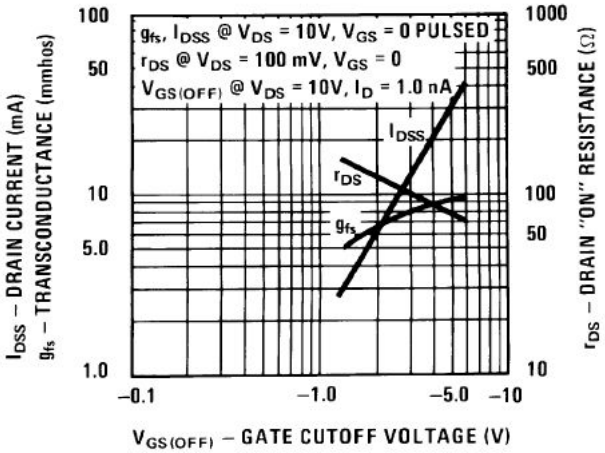
## Electrical Characteristics * $T_C$ = 25°C unless otherwise noted

| Symbol | Parameter | Conditions | | Min. | Max | Units |
|---|---|---|---|---|---|---|
| **Off Characteristics** | | | | | | |
| $V_{(BR)GSS}$ | Gate-Source Breakdwon Voltage | $I_G$ = -1μA, $V_{DS}$ = 0 | | -40 | | V |
| $I_{GSS}$ | Gate Reverse Current | $V_{GS}$ = -20V, $V_{DS}$ = 0 | | | -100 | pA |
| $V_{GS}$(off) | Gate-Source Cutoff Voltage | $V_{DS}$ = 20V, $I_D$ = 10nA | 201<br>202<br>203 | -0.3<br>-0.8<br>-2 | -1.5<br>-4<br>-10 | V |
| **On Characteristics** | | | | | | |
| $I_{DSS}$ | Zero-Gate Voltage Drain Current * | $V_{DS}$ = 20V, $I_{GS}$ = 0 | 201<br>202<br>203 | 0.2<br>0.9<br>4 | 1.0<br>4.5<br>20 | mA |
| **Small Signal Characteristics** | | | | | | |
| $y_{FS}$ | Forward Transfer Admittance | $V_{DS}$ = 20V, f = 1.0kHz | 201<br>202<br>203 | 500<br>1000<br>1500 | | μmhos |

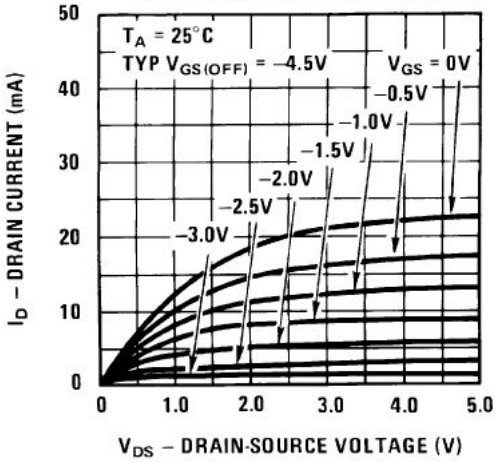
* Pulse Test: Pulse Width ≤ 300ms, Duty Cycle ≤ 2.0%

## Typical Characteristics

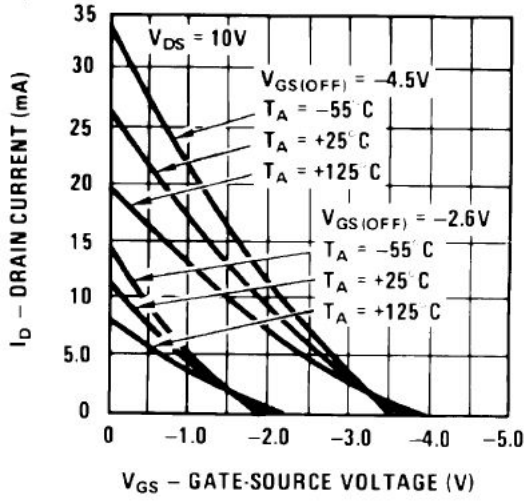
Parameter Interactions



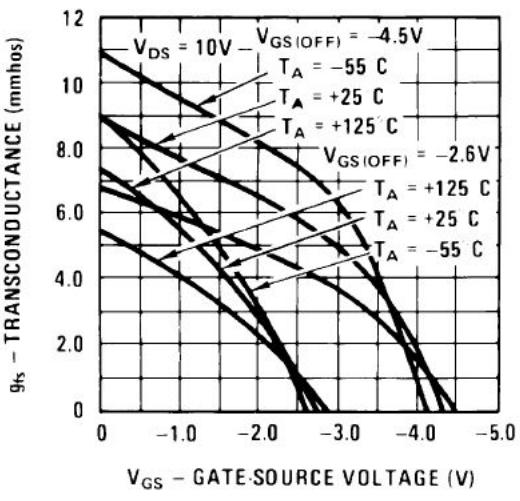

Common Drain-Source



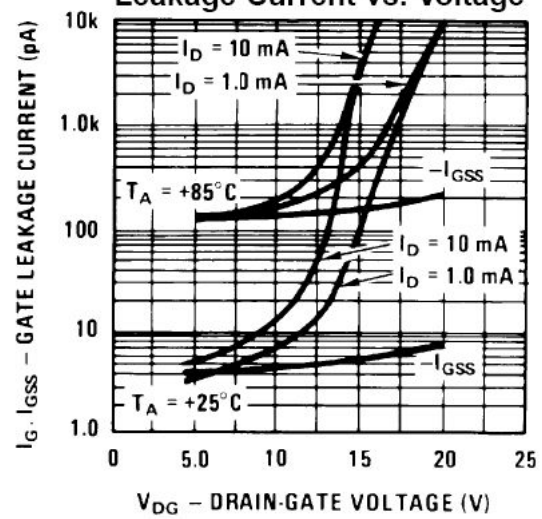

Transfer Characteristics



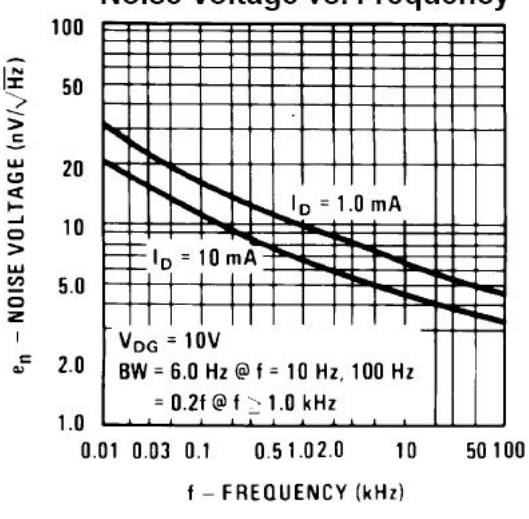

Transfer Characteristics




Leakage Current vs. Voltage

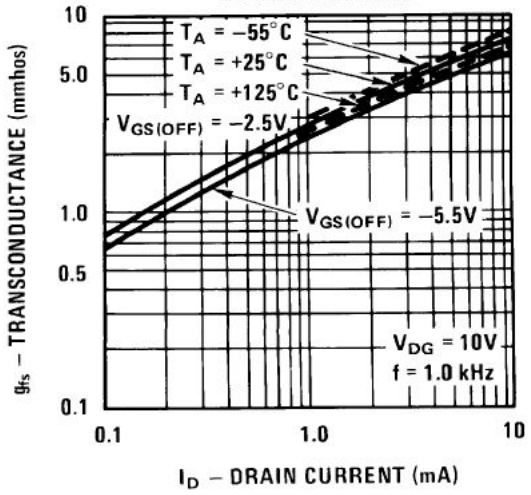



Noise Voltage vs. Frequency

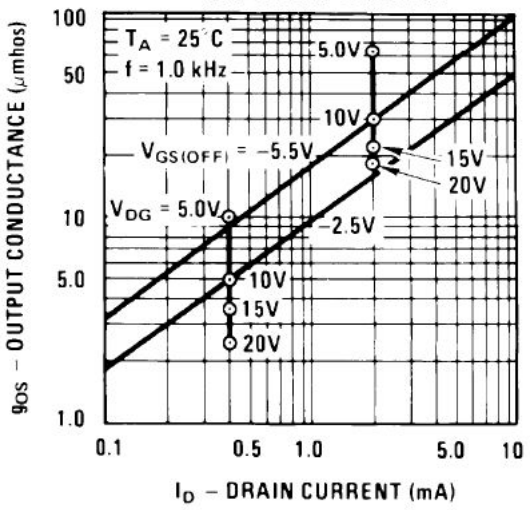


## Typical Characteristics (Continued)

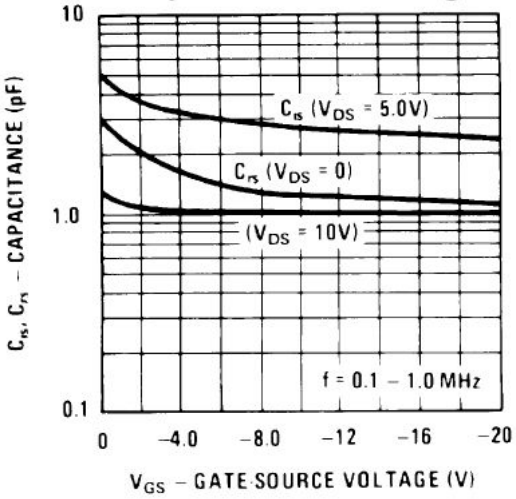
Transconductance vs. Drain Current




Output Conductance vs. Drain Current

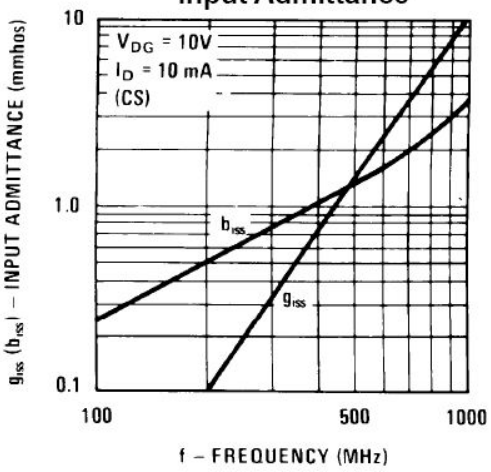



Capacitance vs. Voltage

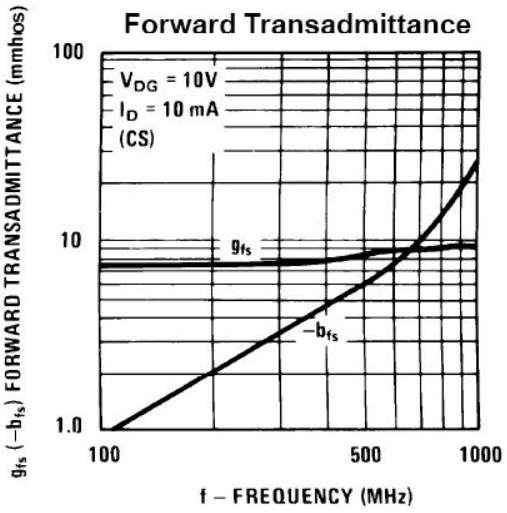


## Typical Characteristics (Continued)

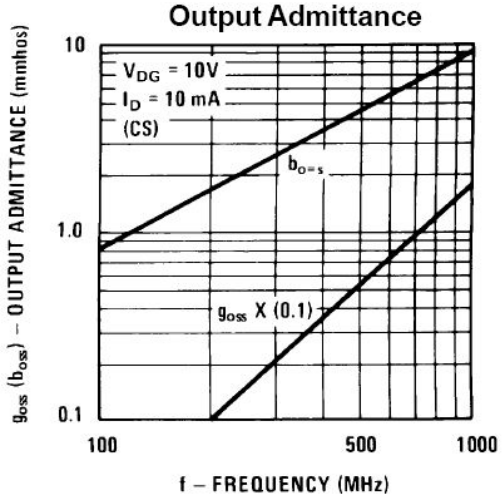
Input Admittance



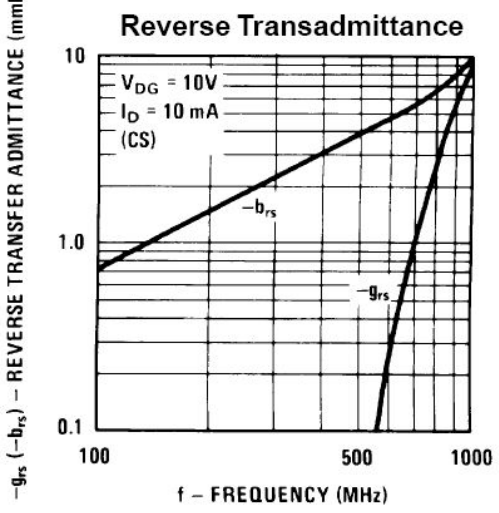

Forward Transadmittance



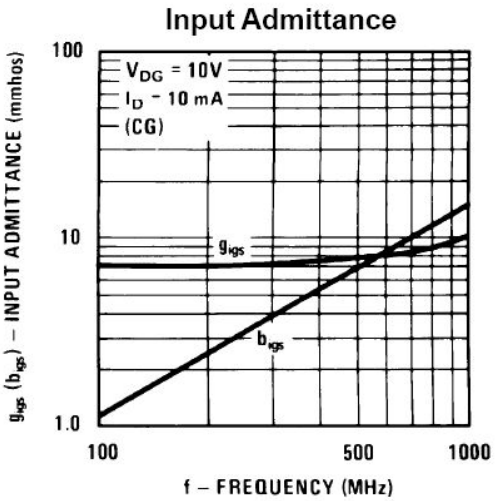

Output Admittance



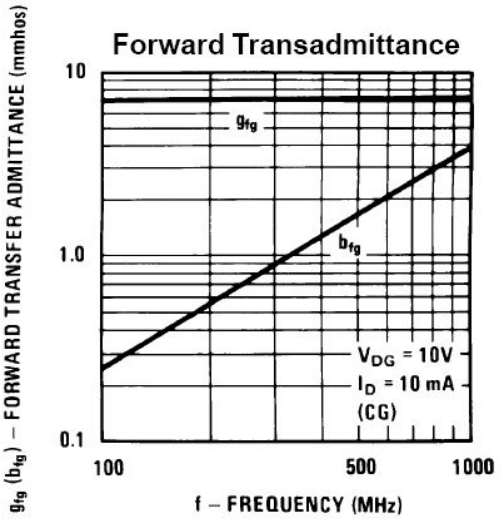

Reverse Transadmittance




Input Admittance




Forward Transadmittance



## Mechanical Dimensions

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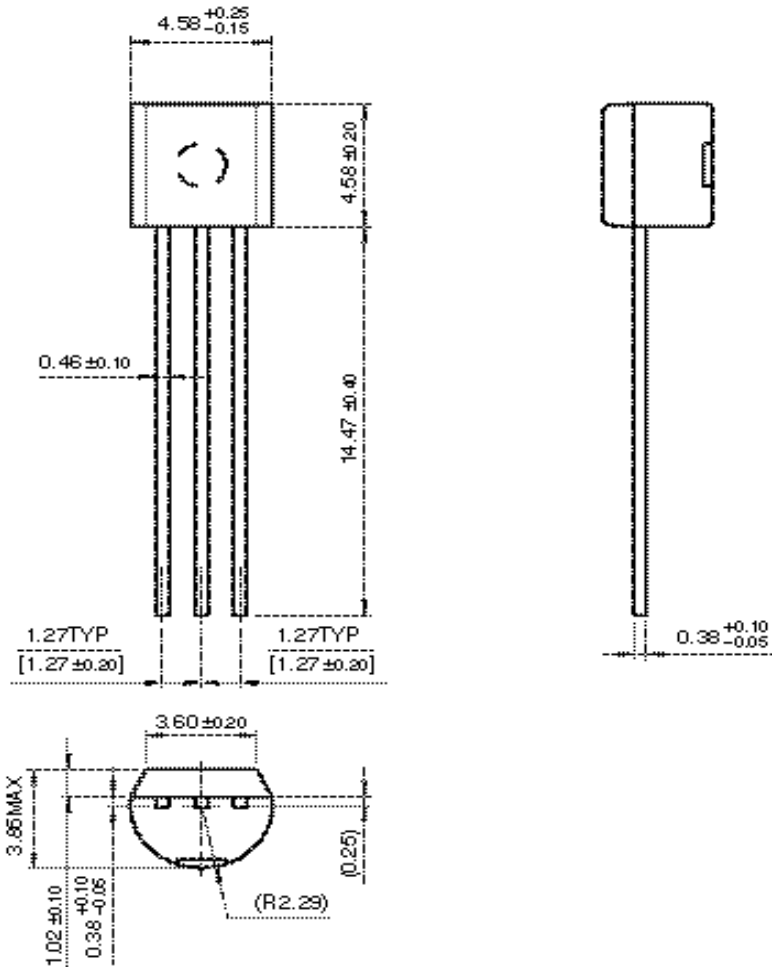

## Mechanical Dimensions

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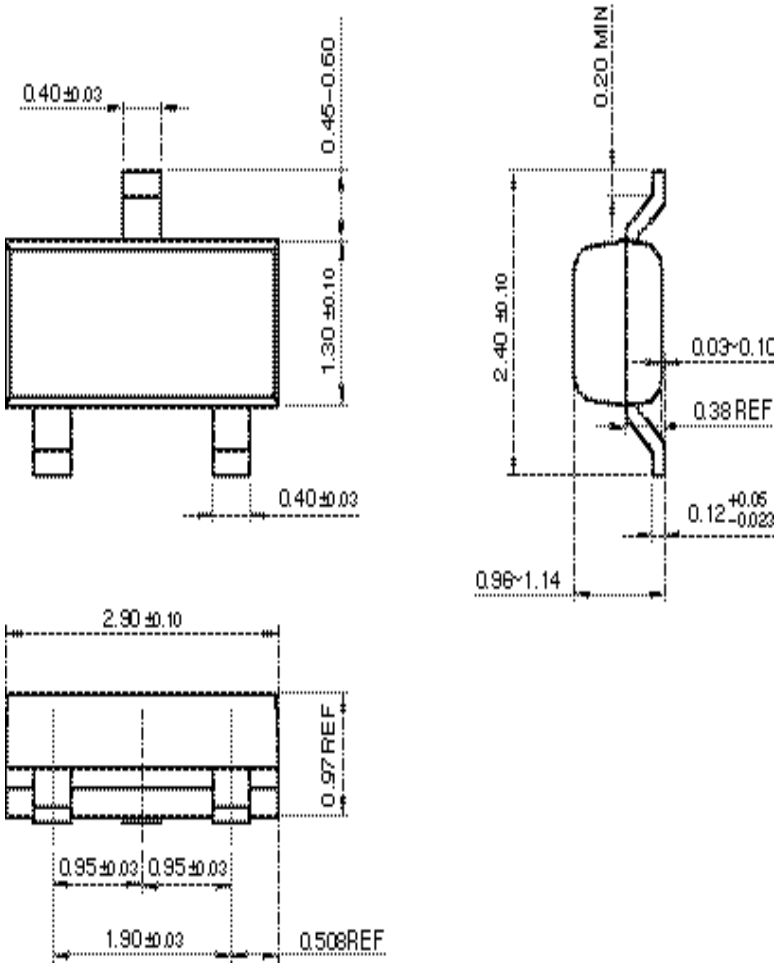


Dimensions in Millimeters

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