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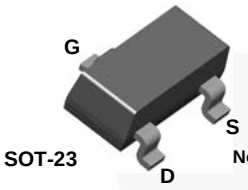
January 2015

MMBFJ201 / MMBFJ202
N-Channel General-Purpose Amplifier

Description

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



SOT-23

Note: Source & Drain are interchangeable

Ordering Information

Part Number	Top Mark	Package	Packing Method
MMBFJ201	62P	SOT-23 3L	Tape and Reel
MMBFJ202	62Q	SOT-23 3L	Tape and Reel

Absolute Maximum Ratings(1), (2)

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only. Values are at T_A = 25°C unless otherwise noted.

Symbol	Parameter	Value	Unit
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 to 150	°C

Notes:

1. These ratings are based on a maximum junction temperature of 150°C.
2. These are steady-state limits. Fairchild Semiconductor should be consulted on applications involving pulsed or low-duty-cycle operations.

Thermal Characteristics[3]

Values are at T_A = 25°C unless otherwise noted.

Symbol	Parameter	Max.	Unit
P_D	Total Device Dissipation	350	mW
	Derate Above 25°C	2.8	mW/°C
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	357	°C/W

Note:

3. Device mounted on FR-4 PCB 36mm × 18mm × 1.5mm; mounting pad for the collector lead minimum 6cm^2.

Electrical Characteristics

Values are at T_A = 25°C unless otherwise noted.

Symbol	Parameter	Conditions		Min.	Typ.	Max.	Unit
Off Characteristics							
$V_{(BR)GSS}$	Gate-Source Breakdown Voltage	I_G = -1.0 µA, V_{DS} = 0		-40			V
I_{GSS}	Gate Reverse Current	V_{GS} = -20 V, V_{DS} = 0				-100	pA
$V_{GS(off)}$	Gate-Source Cut-Off Voltage	V_{DS} = 20 V, I_D = 10 nA	MMBFJ201	-0.3		-1.5	V
			MMBFJ202	-0.8		-4.0	
On Characteristics							
I_{DSS}	Zero-Gate Voltage Drain Current[4]	V_{DS} = 20 V, I_{GS} = 0	MMBFJ201	0.2		1.0	mA
			MMBFJ202	0.9		4.5	
Small Signal Characteristics							
y_{FS}	Forward Transfer Admittance	V_{DS} = 20 V, f = 1.0 kHz	MMBFJ201	500			µmhos
			MMBFJ202	1000			

Note:

4. Pulse test: pulse width ≤ 300 µs, duty cycle ≤ 2.0%

Typical Performance Characteristics

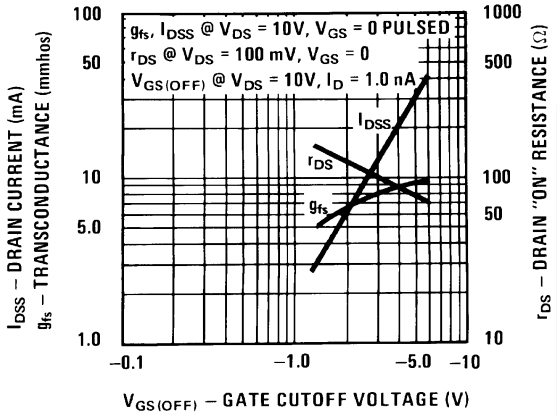


Figure 1. Parameter Interactions

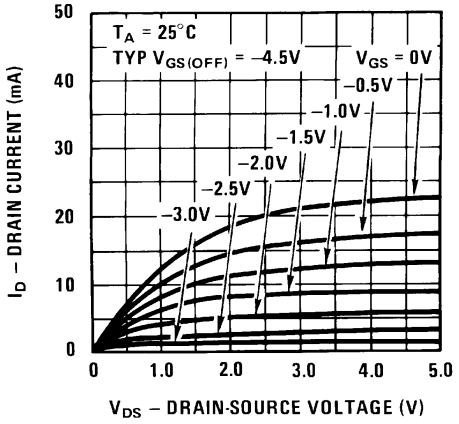


Figure 2. Common Drain-Source

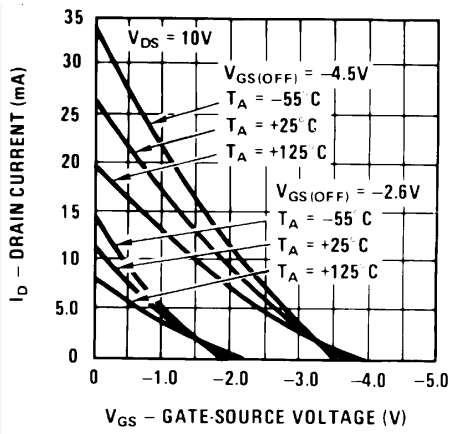


Figure 3. Transfer Characteristics

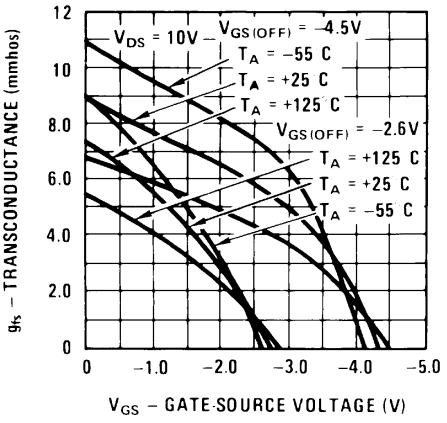


Figure 4. Transfer Characteristics

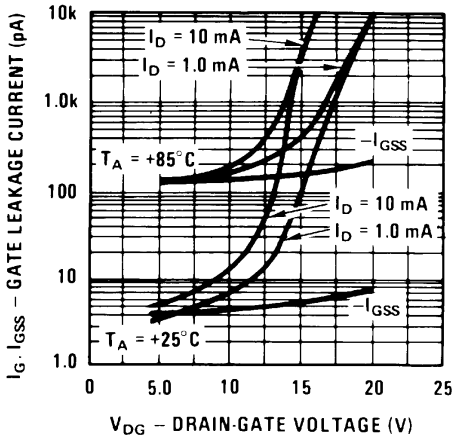


Figure 5. Leakage Current vs. Voltage

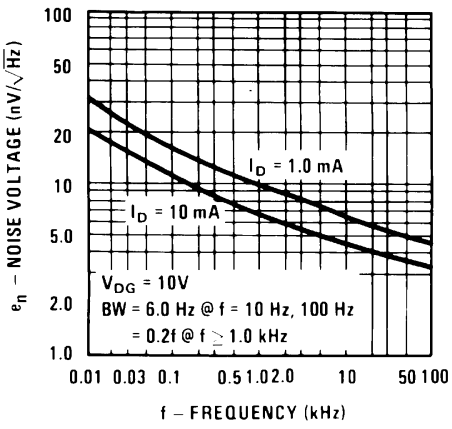


Figure 6. Noise Voltage vs. Frequency

Typical Performance Characteristics (Continued)

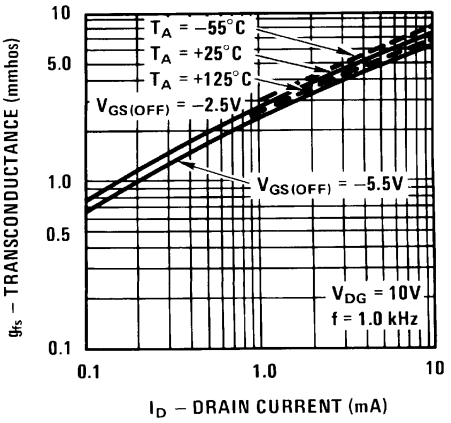


Figure 7. Transconductance vs. Drain Current

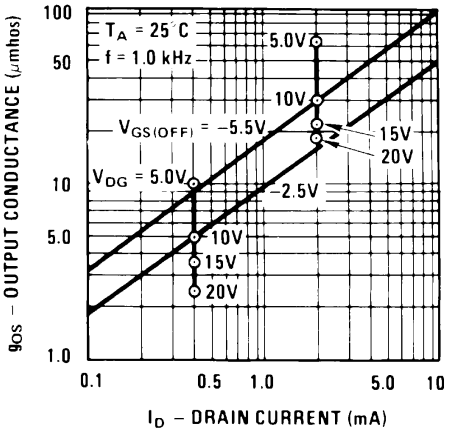


Figure 8. Output Conductance vs. Drain Current

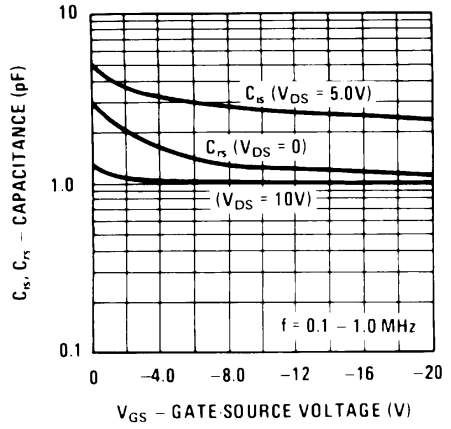


Figure 9. Capacitance vs. Voltage

Common Source Characteristics

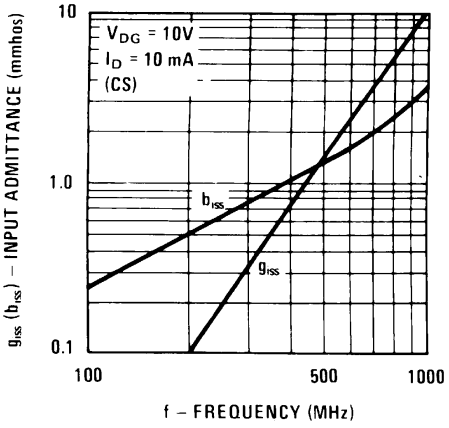


Figure 10. Input Admittance

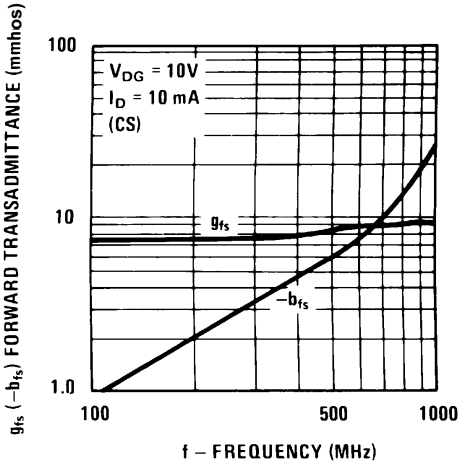


Figure 11. Forward Transadmittance

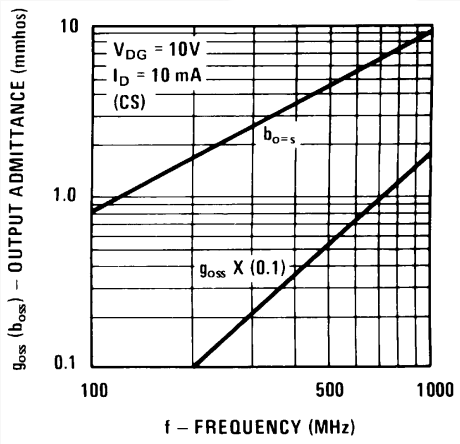


Figure 12. Output Admittance

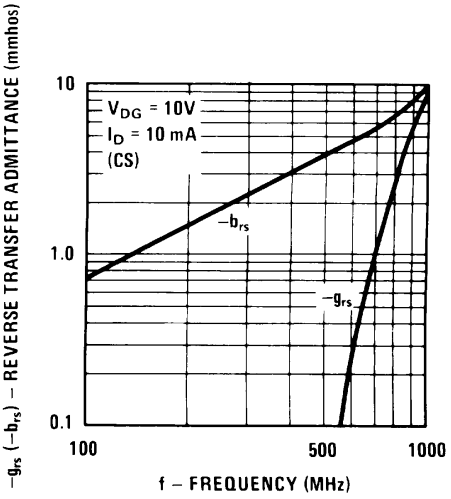


Figure 13. Reverse Transadmittance

Common Gate Characteristics

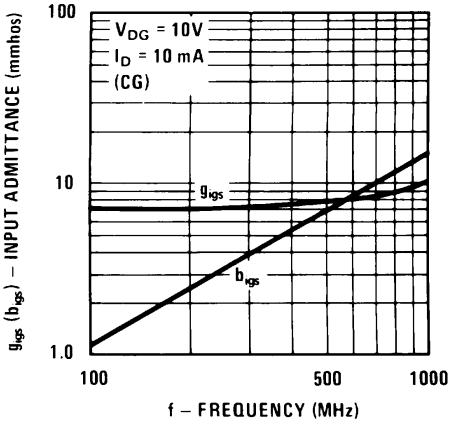


Figure 14. Input Admittance

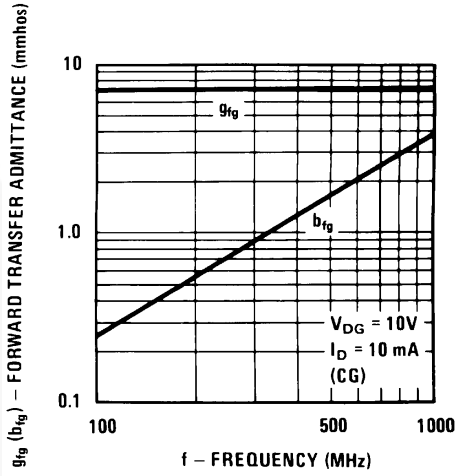


Figure 15. Forward Transadmittance

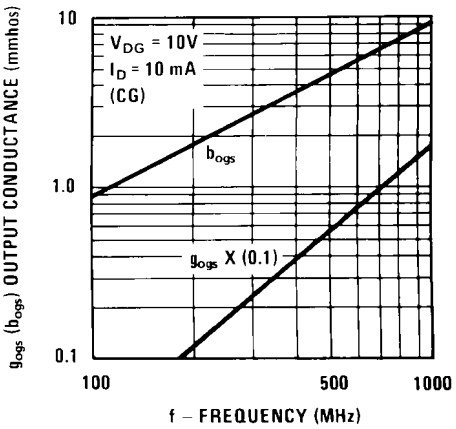


Figure 16. Output Admittance

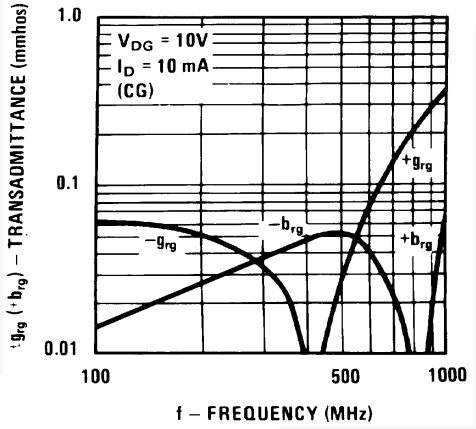


Figure 17. Reverse Transadmittance

Physical Dimensions

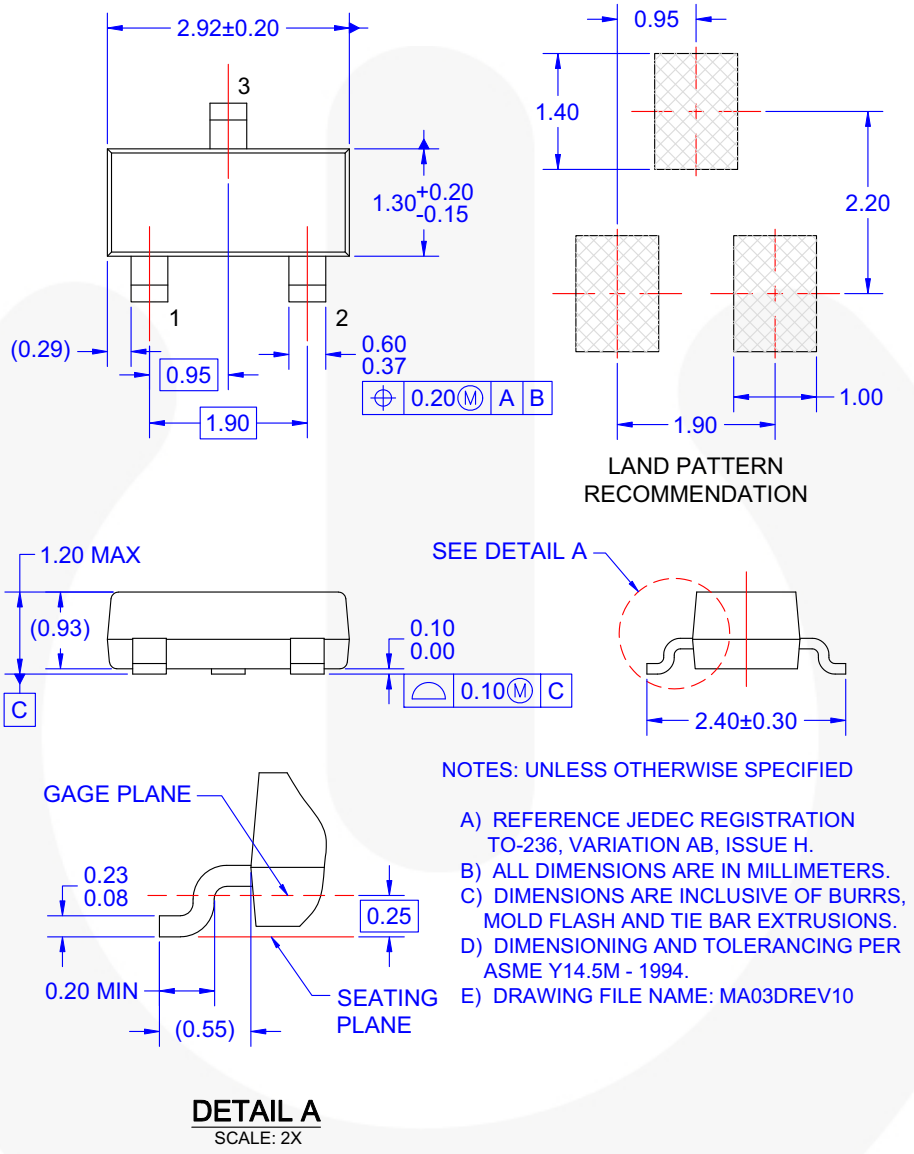


Figure 18. 3-LEAD, SOT23, JEDEC TO-236, LOW PROFILE

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