

# N-Channel General-Purpose Amplifier

## MMBFJ201, MMBFJ202

### Description

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

### Applications

- These are Pb-Free Devices

### ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted) (Note 1, 2)

Symbol	Parameter	Value	Unit
$V_{DG}$	Drain-Source 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	$^\circ\text{C}$

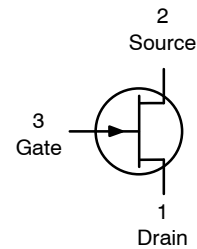
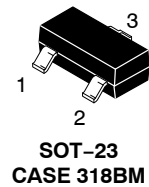
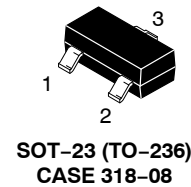
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

- These ratings are based on a maximum junction temperature of  $150^\circ\text{C}$ .
- These are steady-state limits. onsemi should be consulted on applications involving pulsed or low-duty-cycle operations.

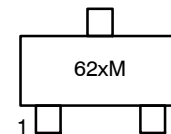
### THERMAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ unless otherwise noted) (Note 3)

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

- Device mounted on FR-4 PCB 36 mm x 18 mm x 1.5 mm; mounting pad for the collector lead minimum 6 cm<sup>2</sup>.



### MARKING DIAGRAM



62x = Specific Device Code  
 x = P or Q  
 M = Date Code

### ORDERING INFORMATION

See detailed ordering and shipping information on page 4 of this data sheet.

# MMBFJ201, MMBFJ202

## ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C unless otherwise noted)

Symbol	Parameter	Test Condition	Min	Max	Unit
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### OFF CHARACTERISTICS

V <sub>(BR)GSS</sub>	Gate-Source Breakdown Voltage	I <sub>G</sub> = -1.0 μA, V <sub>DS</sub> = 0		-40	-	V
I <sub>GSS</sub>	Gate Reverse Current	V <sub>GS</sub> = -20 V, V <sub>DS</sub> = 0		-	-100	pA
V <sub>GS(off)</sub>	Gate-Source Cut-Off Voltage	V <sub>DS</sub> = 20 V, I <sub>D</sub> = 10 nA	MMBFJ201	-0.3	-1.5	V
			MMBFJ202	-0.8	-4.0	

### ON CHARACTERISTICS

I <sub>DSS</sub>	Zero-Gate Voltage Drain Current (Note 4)	V <sub>DS</sub> = 20 V, I <sub>GS</sub> = 0	MMBFJ201	0.2	1.0	mA
			MMBFJ202	0.9	4.5	

### SMALL SIGNAL CHARACTERISTICS

y <sub>FS</sub>	Forward Transfer Admittance	V <sub>DS</sub> = 20 V, f = 1.0 kHz	MMBFJ201	500		μmhos
			MMBFJ202	1000		

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

4. Pulse test: pulse width ≤ 300 μs, duty cycle ≤ 2%.

# MMBFJ201, MMBFJ202

## TYPICAL PERFORMANCE CHARACTERISTICS

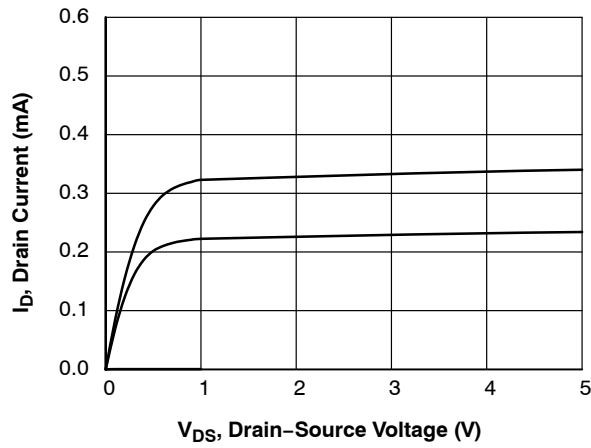


Figure 1. Common Drain-Source (MMBJF201)

Figure 2. Common Drain-Source (MMBJF202)

$C_{iss}$ ,  $C_{oss}$ , Capacitance (pF)

Figure 3. Capacitance vs. Voltage (MMBJF201)

Figure 4. Capacitance vs. Voltage (MMBJF202)

Figure 5. Transfer Characteristics (MMBJF201)

Figure 6. Transfer Characteristics (MMBJF202)

# MMBFJ201, MMBFJ202

## TYPICAL PERFORMANCE CHARACTERISTICS (continued)

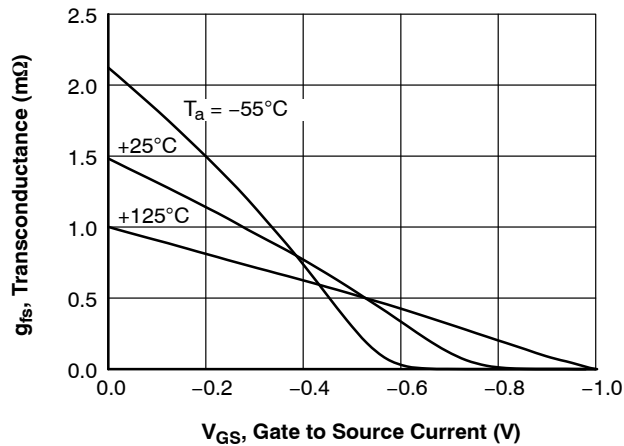


Figure 7. Transfer Characteristics (MMBFJ201)

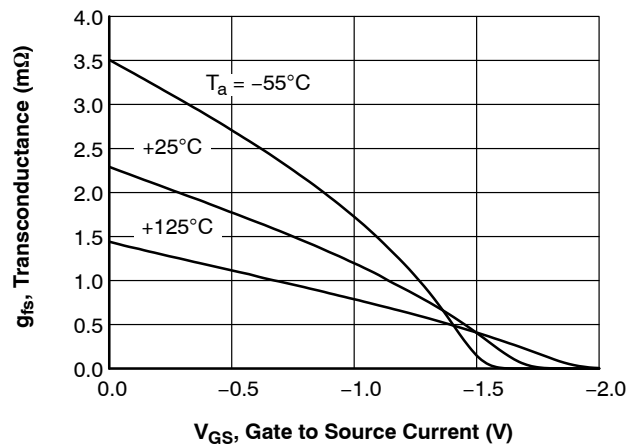


Figure 8. Transfer Characteristics (MMBFJ202)

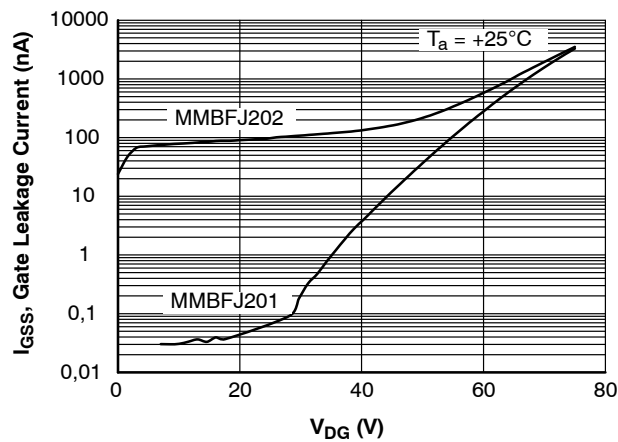


Figure 9. Leakage Current vs. Voltage

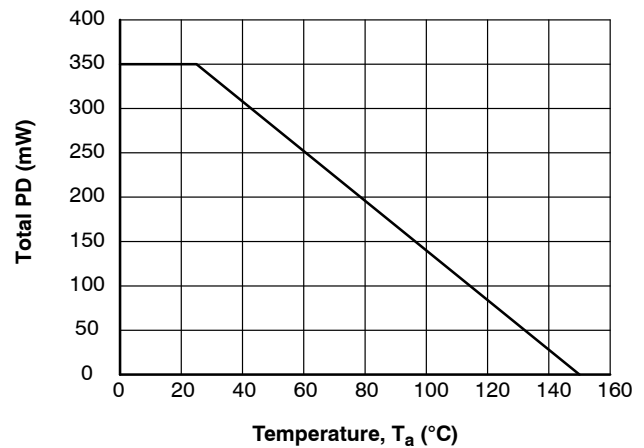


Figure 10. Total PD vs. Temperature

## ORDERING INFORMATION

Part Number	Top Mark	Package	Shipping <sup>†</sup>
MMBFJ201	62P	SOT-23 (Pb-Free)	3000 / Tape & Reel
MMBFJ202	62Q	SOT-23 (TO-236) (Pb-Free)	3000 / Tape & Reel

<sup>†</sup>For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, [BRD8011/D](#).

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