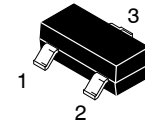


# N-Channel General-Purpose Amplifier

## MMBFJ201, MMBFJ202


**SOT-23 (TO-236)  
CASE 318-08**
**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-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	$^\circ\text{C}$

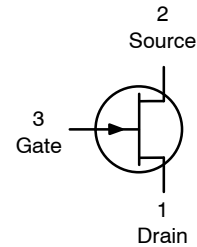
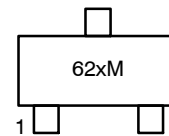
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

1. These ratings are based on a maximum junction temperature of  $150^\circ\text{C}$ .
2. 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	$^\circ\text{C}/\text{W}$

3. Device mounted on FR-4 PCB 36 mm x 18 mm x 1.5 mm; mounting pad for the collector lead minimum  $6\text{ cm}^2$ .


**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 ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Test Condition	Min	Max	Unit
--------	-----------	----------------	-----	-----	------

#### OFF CHARACTERISTICS

$V_{(BR)GSS}$	Gate-Source Breakdown Voltage	$I_G = -1.0\ \mu\text{A}$ , $V_{DS} = 0$	-40		V	
$I_{GSS}$	Gate Reverse Current	$V_{GS} = -20\ \text{V}$ , $V_{DS} = 0$		-100	pA	
$V_{GS(off)}$	Gate-Source Cut-Off Voltage	$V_{DS} = 20\ \text{V}$ , $I_D = 10\ \text{nA}$	MMBFJ201	-0.3	-1.5	V
			MMBFJ202	-0.8	-4.0	

#### ON CHARACTERISTICS

$I_{DSS}$	Zero-Gate Voltage Drain Current (Note 4)	$V_{DS} = 20\ \text{V}$ , $I_{GS} = 0$	MMBFJ201	0.2	1.0	mA
			MMBFJ202	0.9	4.5	

#### SMALL SIGNAL CHARACTERISTICS

$y_{FS}$	Forward Transfer Admittance	$V_{DS} = 20\ \text{V}$ , $f = 1.0\ \text{kHz}$	MMBFJ201	500		$\mu\text{mhos}$
			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  $\leq 300\ \mu\text{s}$ , duty cycle  $\leq 2\%$ .

TYPICAL PERFORMANCE CHARACTERISTICS

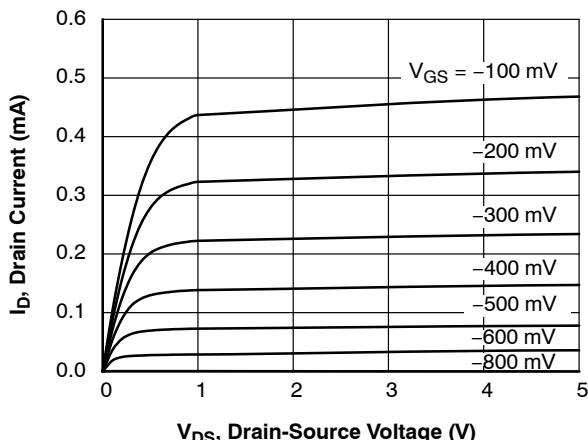


Figure 1. Common Drain-Source (MMBFJ201)

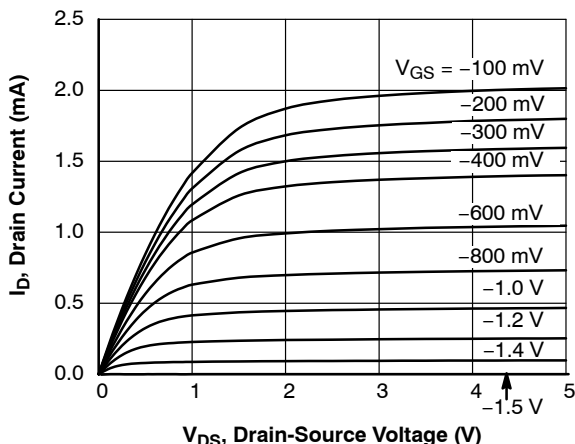


Figure 2. Common Drain-Source (MMBFJ202)

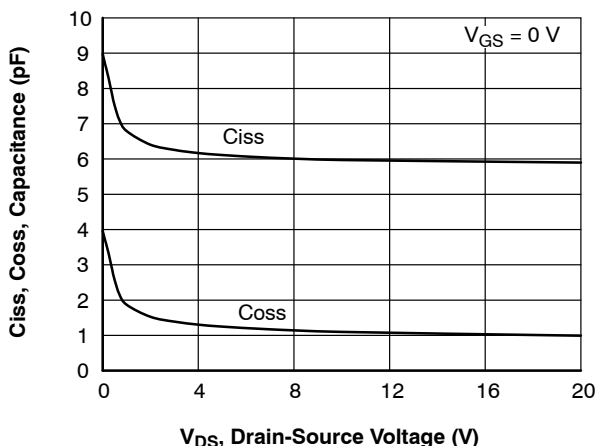


Figure 3. Capacitance vs. Voltage (MMBFJ201)

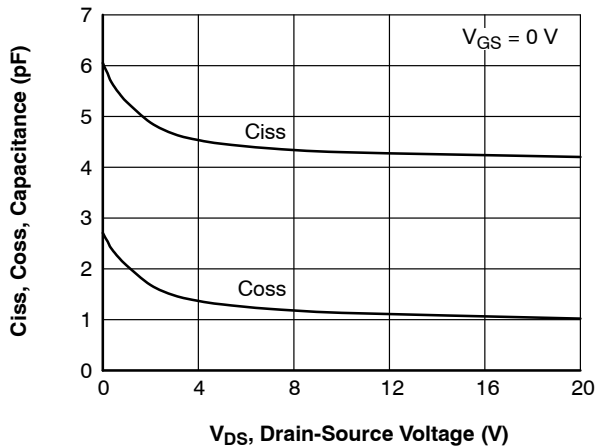


Figure 4. Capacitance vs. Voltage (MMBFJ202)

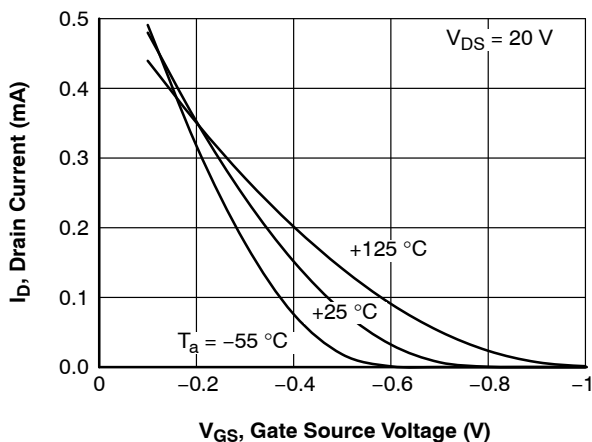


Figure 5. Transfer Characteristics (MMBFJ201)

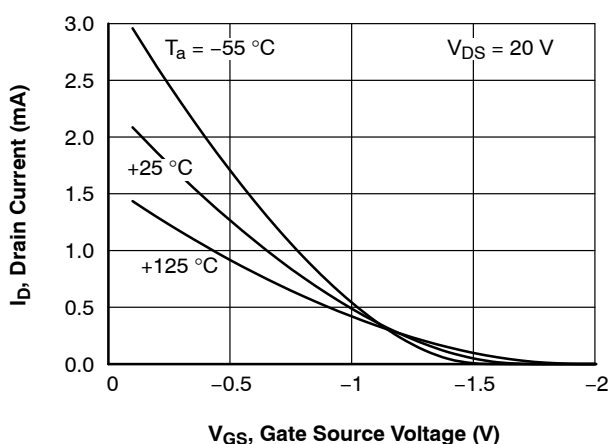


Figure 6. Transfer Characteristics (MMBFJ202)

# MMBFJ201, MMBFJ202

## TYPICAL PERFORMANCE CHARACTERISTICS (continued)

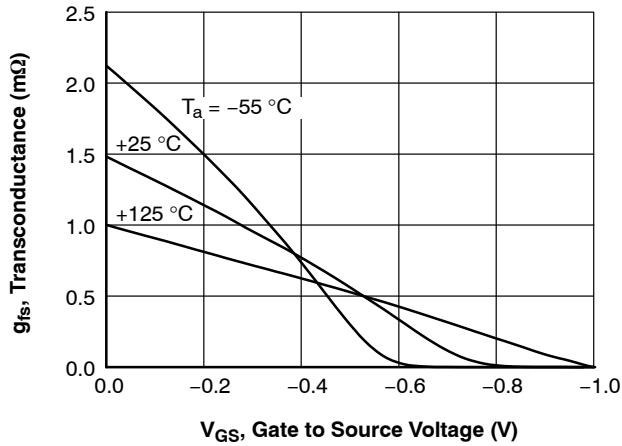


Figure 7. Transfer Characteristics (MMBFJ201)

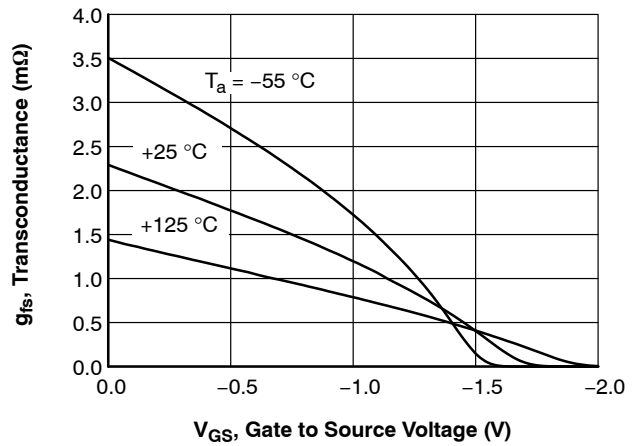


Figure 8. Transfer Characteristics (MMBFJ202)

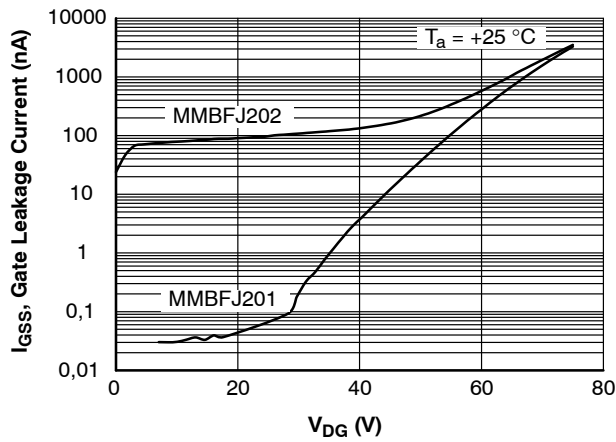


Figure 9. Leakage Current vs. Voltage

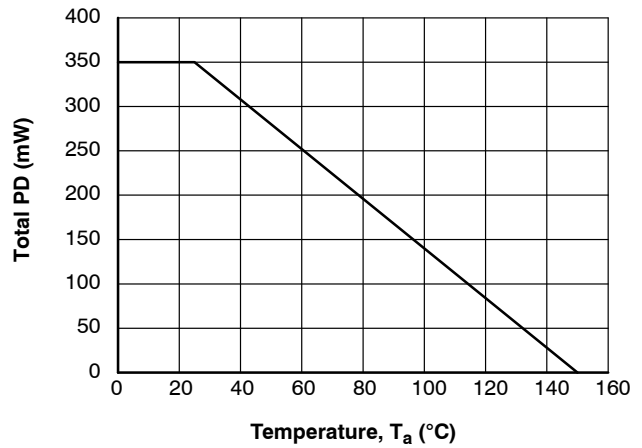


Figure 10. Total PD vs. Temperature

### ORDERING INFORMATION

Part Number	Top Mark	Package	Shipping <sup>†</sup>
MMBFJ201	62P	SOT-23 (TO-236) (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](#).

# MMBFJ201, MMBFJ202

## REVISION HISTORY

Revision	Description of Changes	Date
5	Update of Figures 5, 6, 7 and 8, case outline 318BM removed.	4/2/2026

This document has undergone updates prior to the inclusion of this revision history table. The changes tracked here only reflect updates made on the noted approval dates.



SCALE 4:1

**SOT-23 (TO-236) 2.90x1.30x1.00 1.90P**  
**CASE 318**  
**ISSUE AU**

DATE 14 AUG 2024



MILLIMETERS			
DIM	MIN	NOM	MAX
A	0.89	1.00	1.11
A1	0.01	0.06	0.10
b	0.37	0.44	0.50
c	0.08	0.14	0.20
D	2.80	2.90	3.04
E	1.20	1.30	1.40
e	1.78	1.90	2.04
L	0.30	0.43	0.55
L1	0.35	0.54	0.69
HE	2.10	2.40	2.64
T	0°	---	10°

NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 2018.
2. CONTROLLING DIMENSIONS: MILLIMETERS.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF THE BASE MATERIAL.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS.

**GENERIC MARKING DIAGRAM\***



XXX = Specific Device Code  
M = Date Code  
▪ = Pb-Free Package

\*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "▪", may or may not be present. Some products may not follow the Generic Marking.



\* For additional information on our Pb-Free strategy and soldering details, please download the onsemi Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

**STYLES ON PAGE 2**

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**SOT-23 (TO-236) 2.90x1.30x1.00 1.90P**  
**CASE 318**  
**ISSUE AU**

DATE 14 AUG 2024

STYLE 1 THRU 5:  
CANCELLED

STYLE 6:  
PIN 1. BASE  
2. EMITTER  
3. COLLECTOR

STYLE 7:  
PIN 1. EMITTER  
2. BASE  
3. COLLECTOR

STYLE 8:  
PIN 1. ANODE  
2. NO CONNECTION  
3. CATHODE

STYLE 9:  
PIN 1. ANODE  
2. ANODE  
3. CATHODE

STYLE 10:  
PIN 1. DRAIN  
2. SOURCE  
3. GATE

STYLE 11:  
PIN 1. ANODE  
2. CATHODE  
3. CATHODE-ANODE

STYLE 12:  
PIN 1. CATHODE  
2. CATHODE  
3. ANODE

STYLE 13:  
PIN 1. SOURCE  
2. DRAIN  
3. GATE

STYLE 14:  
PIN 1. CATHODE  
2. GATE  
3. ANODE

STYLE 15:  
PIN 1. GATE  
2. CATHODE  
3. ANODE

STYLE 16:  
PIN 1. ANODE  
2. CATHODE  
3. CATHODE

STYLE 17:  
PIN 1. NO CONNECTION  
2. ANODE  
3. CATHODE

STYLE 18:  
PIN 1. NO CONNECTION  
2. CATHODE  
3. ANODE

STYLE 19:  
PIN 1. CATHODE  
2. ANODE  
3. CATHODE-ANODE

STYLE 20:  
PIN 1. CATHODE  
2. ANODE  
3. GATE

STYLE 21:  
PIN 1. GATE  
2. SOURCE  
3. DRAIN

STYLE 22:  
PIN 1. RETURN  
2. OUTPUT  
3. INPUT

STYLE 23:  
PIN 1. ANODE  
2. ANODE  
3. CATHODE

STYLE 24:  
PIN 1. GATE  
2. DRAIN  
3. SOURCE

STYLE 25:  
PIN 1. ANODE  
2. CATHODE  
3. GATE

STYLE 26:  
PIN 1. CATHODE  
2. ANODE  
3. NO CONNECTION

STYLE 27:  
PIN 1. CATHODE  
2. CATHODE  
3. CATHODE

STYLE 28:  
PIN 1. ANODE  
2. ANODE  
3. ANODE

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