September 2015

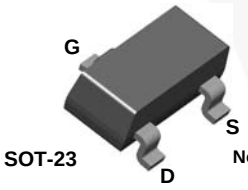
J211 / MMBFJ211
N-Channel RF Amplifier

Description

This device is designed for HF/VHF mixer/amplifier and applications where process 50 is not adequate. Sufficient gain and low-noise for sensitive receivers. Sourced from process 90.

TO-92
1. Drain
2. Source
3. Gate

Figure 1. J211 Device Package



SOT-23

Note: Source & Drain are interchangeable

Figure 2. MMBFJ211 Device Package

Ordering Information

Part Number	Top Mark	Package	Packing Method
J211_D74Z	J211	TO-92 3L	Ammo
MMBFJ211	62W	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	25	V
V_{GS}	Gate-Source Voltage	-25	V
I_{GF}	Forward Gate Current	10	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

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

Symbol	Parameter	Max.		Unit
		J211[3]	MMBFJ211[3]	
P_D	Total Device Dissipation	350	225	mW
	Derate Above 25°C	2.8	1.8	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

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.	Max.	Unit
Off Characteristics					
$V_{(BR)GSS}$	Gate-Source Breakdown Voltage	I_G = 1.0 µA, V_{DS} = 0	-25		V
I_{GSS}	Gate Reverse Current	V_{GS} = 15 V, V_{DS} = 0		-100	pA
V_{GS}(off)	Gate-Source Cut-Off Voltage	V_{DS} = 15 V, I_D = 1.0 nA	-2.5	-4.5	V
On Characteristics					
I_{DSS}	Zero-Gate Voltage Drain Current[4]	V_{DS} = 15 V, V_{GS} = 0	7.0	20	mA
Small Signal Characteristics					
g_{fs}	Common Source Forward Transconductance	V_{DS} = 15 V, V_{GS} = 0, f = 1.0 kHz	7000	12000	µmhos
g_{oss}	Common Source Output Conductance	V_{DS} = 15 V, V_{GS} = 0, f = 1.0 kHz		200	µmhos

Note:

4. Pulse test: pulse width ≤ 300 µs

Typical Performance Characteristics

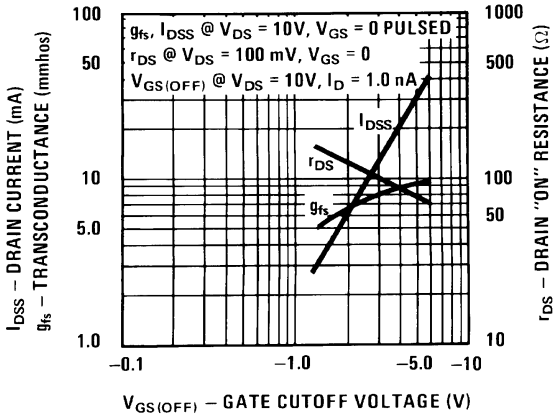


Figure 3. Parameter Interactions

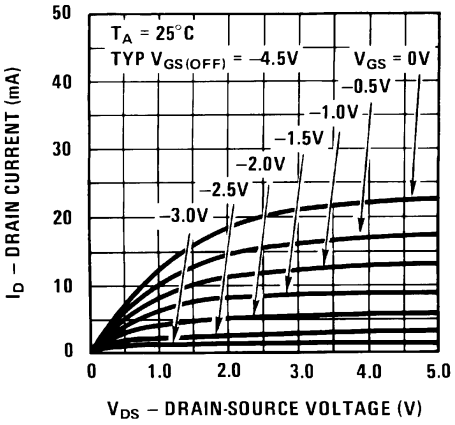


Figure 4. Common Drain-Source

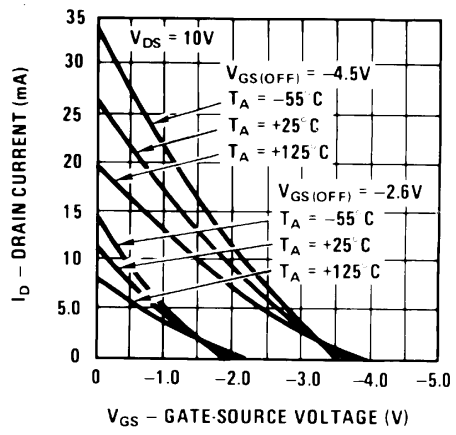


Figure 5. Transfer Characteristics

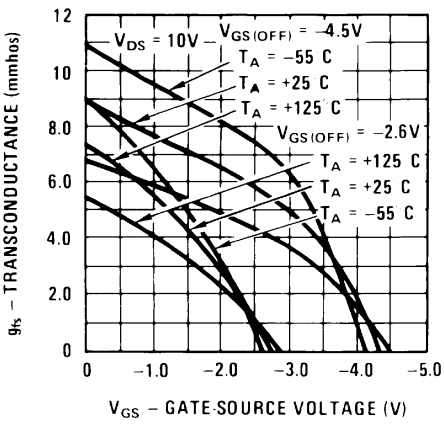


Figure 6. Transfer Characteristics

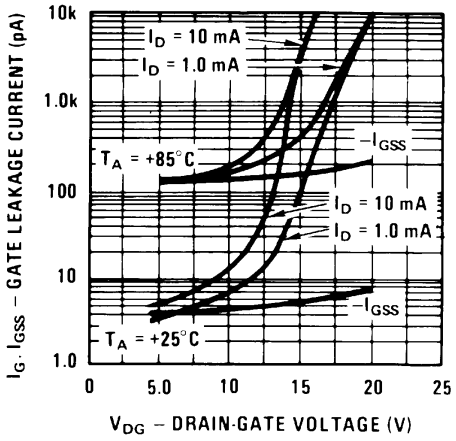


Figure 7. Leakage Current vs. Voltage

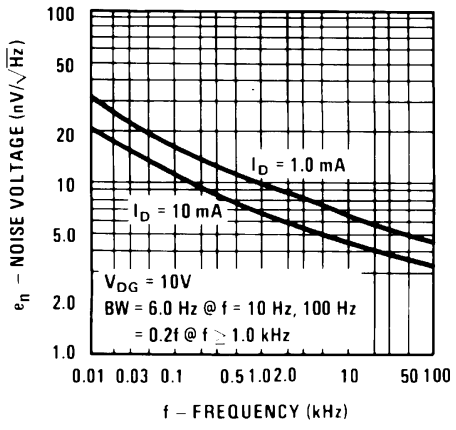


Figure 8. Noise Voltage vs. Frequency

Typical Performance Characteristics (Continued)

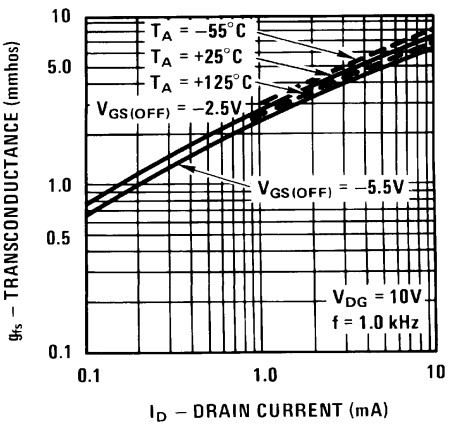


Figure 9. Transconductance vs. Drain Current

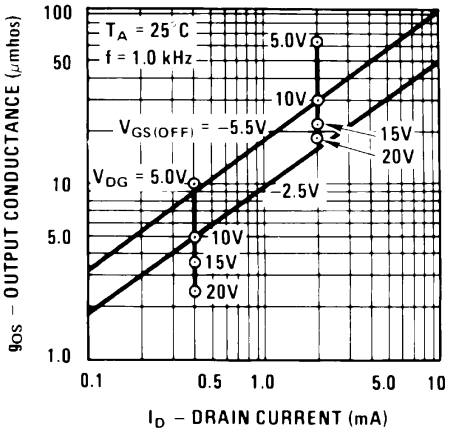


Figure 10. Output Conductance vs. Drain Current

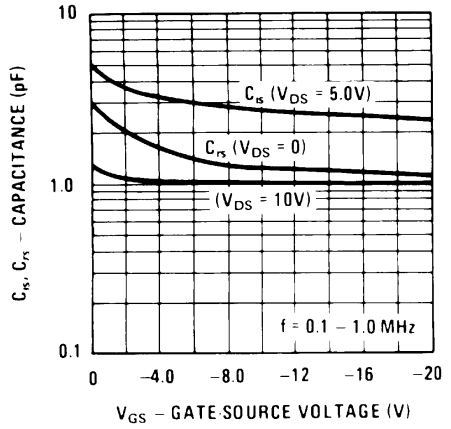


Figure 11. Capacitance vs. Voltage

Common Source Characteristics

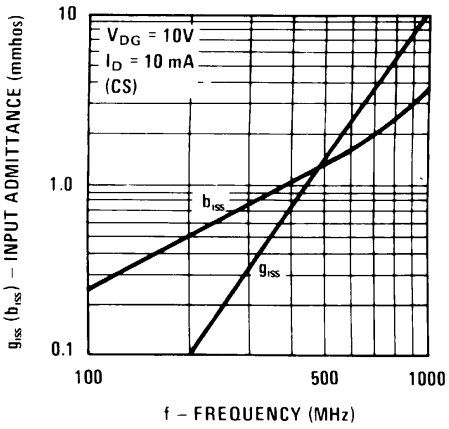


Figure 12. Input Admittance

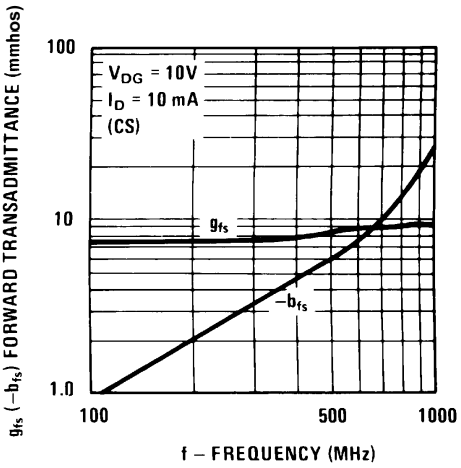


Figure 13. Forward Transadmittance

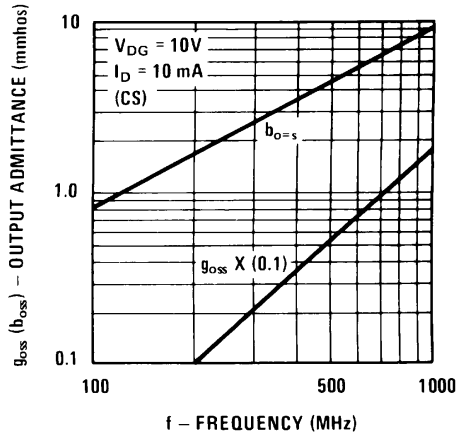


Figure 14. Output Admittance

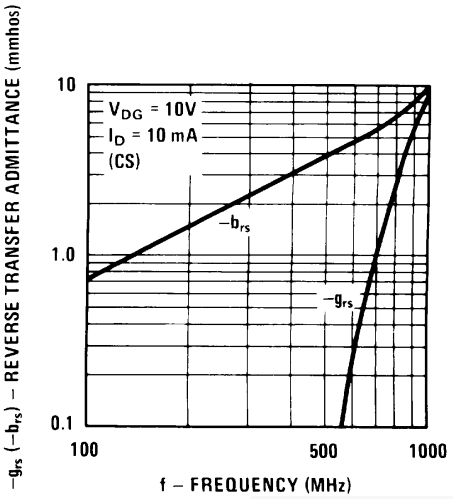


Figure 15. Reverse Transadmittance

Common Gate Characteristics

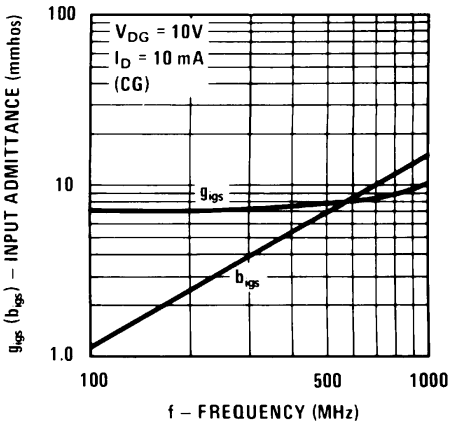


Figure 16. Input Admittance

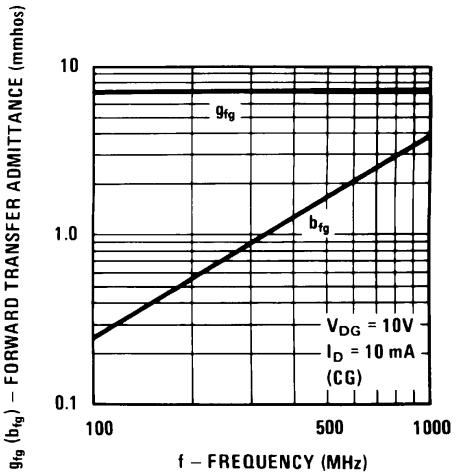


Figure 17. Forward Transadmittance

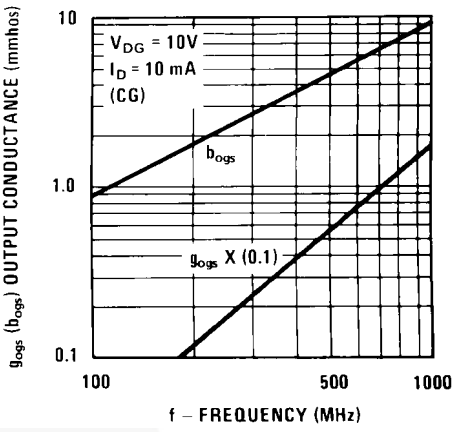


Figure 18. Output Admittance

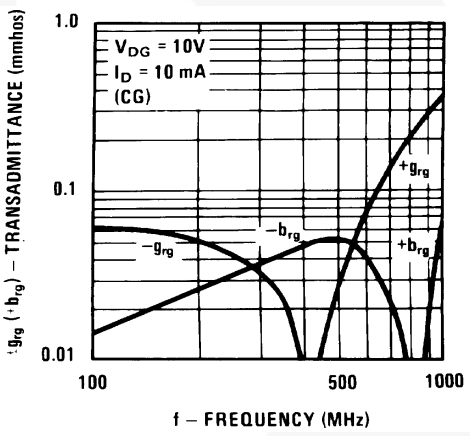


Figure 19. Reverse Transadmittance

Physical Dimensions

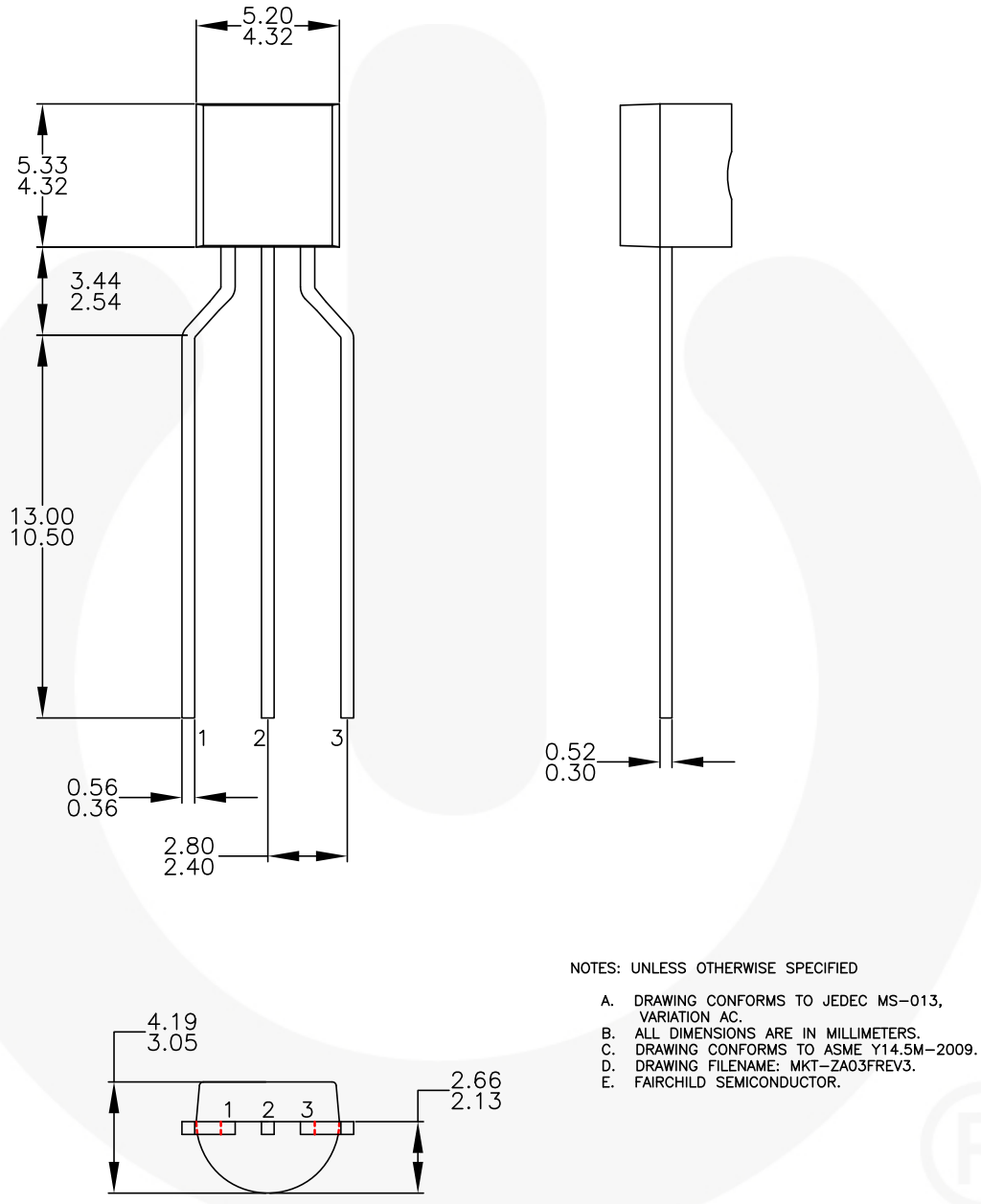


Figure 20. 3-Lead, TO-92, Molded, 0.2 In Line Spacing Lead Form

Physical Dimensions (Continued)

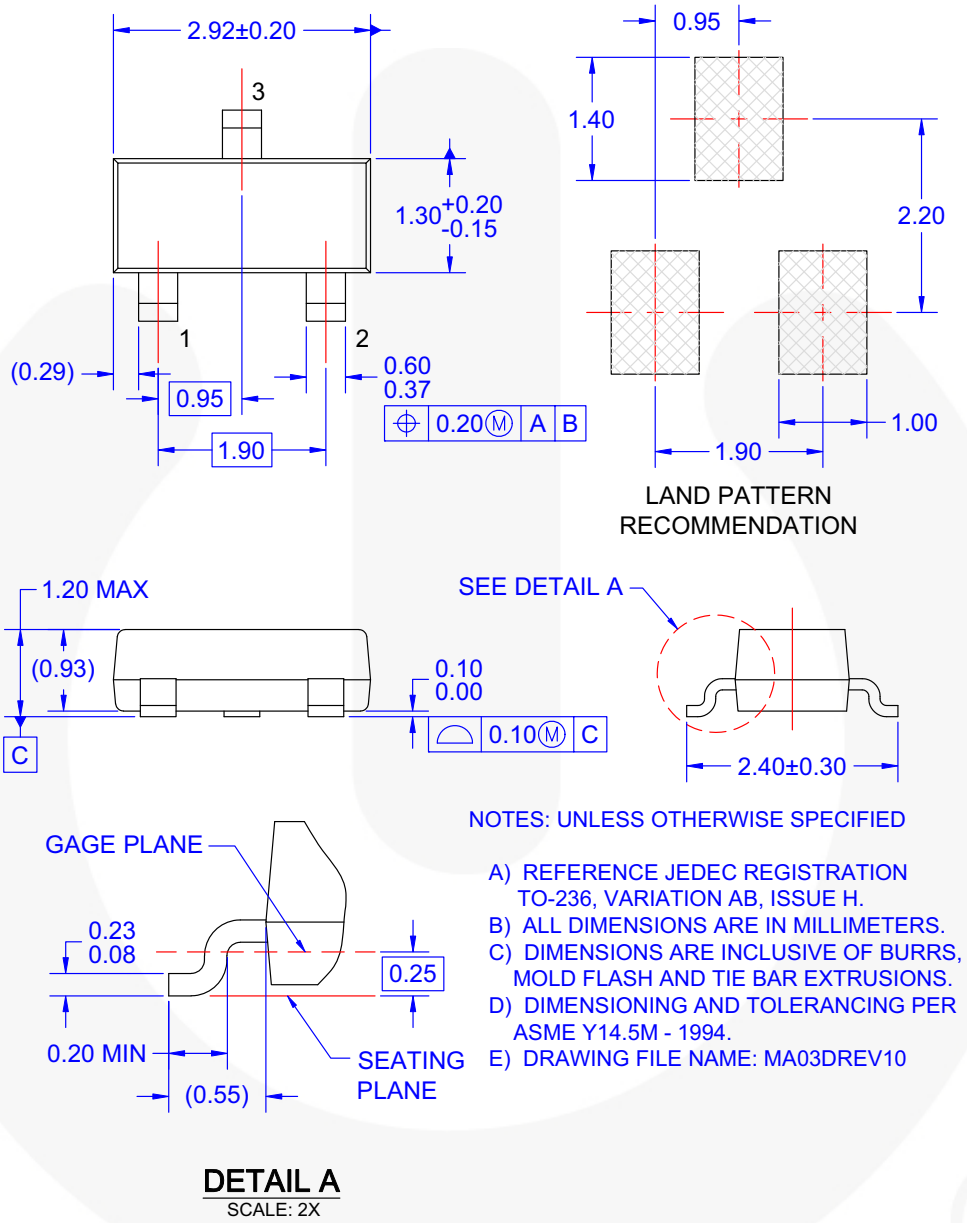


Figure 21. 3-LEAD, SOT23, JEDEC TO-236, LOW PROFILE

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