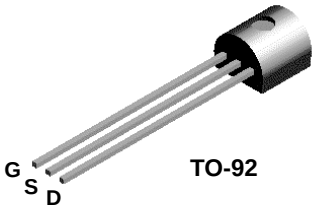
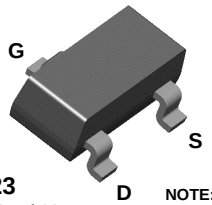
FAIRCHILD
SEMICONDUCTOR®

J210
J211
J212

MMBFJ210
MMBFJ211
MMBFJ212



TO-92



SOT-23
Mark: 62V / 62W / 62X

NOTE: Source & Drain are interchangeable

N-Channel RF Amplifier

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.

Absolute Maximum Ratings* TA = 25°C unless otherwise noted

Symbol	Parameter	Value	Units
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

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

Thermal Characteristics TA = 25°C unless otherwise noted

Symbol	Characteristic		Max	Units
		J210-212	*MMBFJ210-212	
P_D	Total Device Dissipation Derate above 25°C	350 2.8	225 1.8	mW 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."

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N-Channel RF Amplifier
(continued)

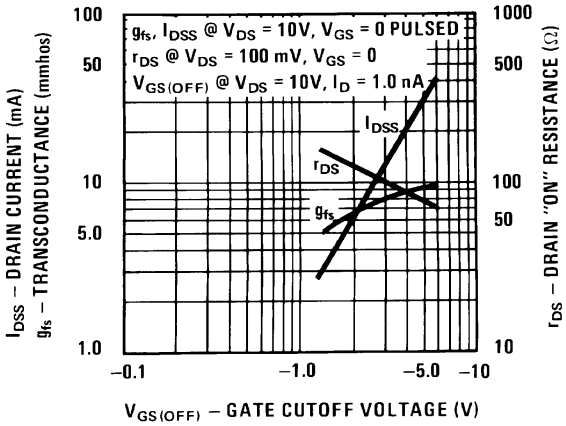
Electrical Characteristics
TA = 25°C unless otherwise noted

Symbol	Parameter	Test Conditions		Min	Max	Units
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 Cutoff Voltage	V_{DS} = 15 V, I_D = 1.0 nA	**210**	-1.0	-3.0	V
			211	- 2.5	- 4.5	V
			212	- 4.0	- 6.0	V
ON CHARACTERISTICS						
I_{DSS}	Zero-Gate Voltage Drain Current*	V_{DS} = 15 V, V_{GS} = 0	**210**	2.0	15	mA
			211	7.0	20	mA
			212	15	40	mA
SMALL SIGNAL CHARACTERISTICS						
g_{fs}	Common Source Forward Transconductance	V_{DS} = 15 V, V_{GS} = 0, f = 1.0 kHz				
			210	4000	12,000	µmhos
			211	6000	12,000	µmhos
			212	7000	12,000	µmhos
g_{oss}	Common Source Output Conductance	V_{DS} = 15 V, V_{GS} = 0, f = 1.0 kHz			200	µmhos

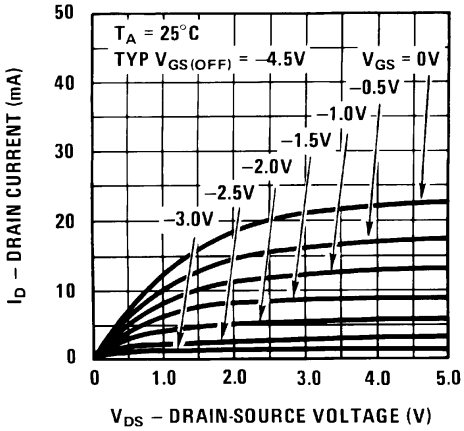
*Pulse Test: Pulse Width ≤ 300 µS

Typical Characteristics

Parameter Interactions

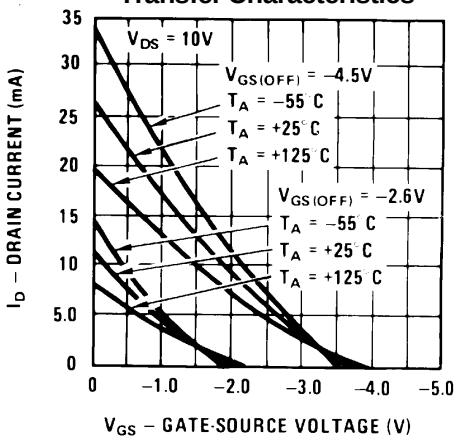


Common Drain-Source

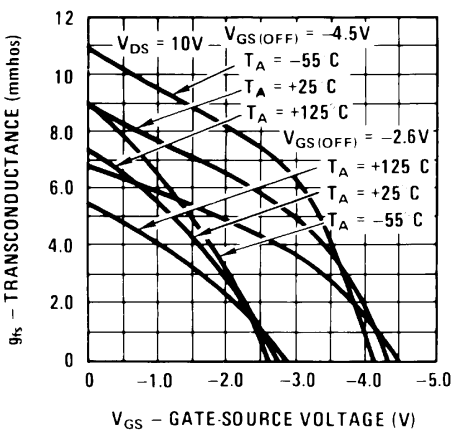


Typical Characteristics (continued)

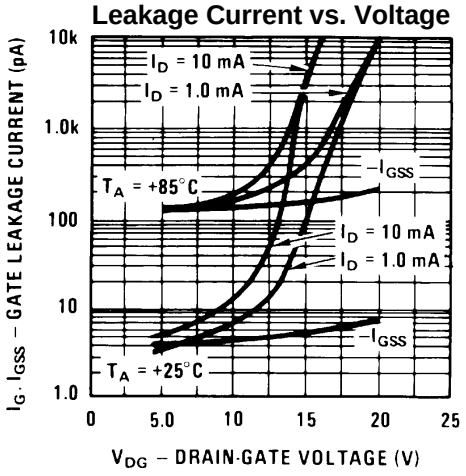
Transfer Characteristics



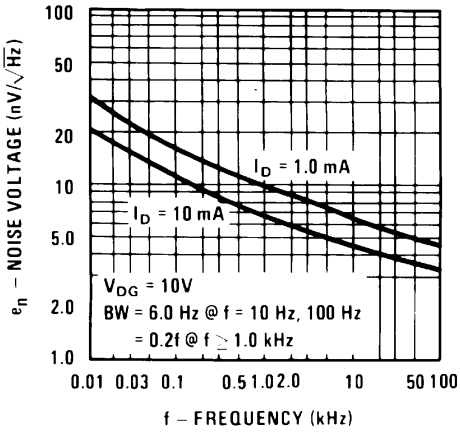
Transfer Characteristics



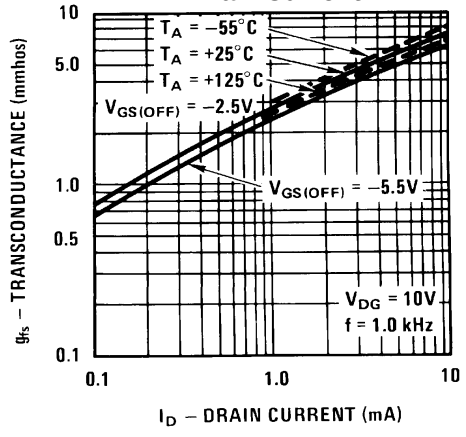
Leakage Current vs. Voltage



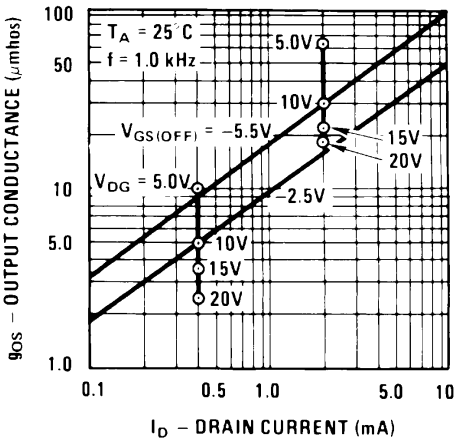
Noise Voltage vs. Frequency



Transconductance vs. Drain Current

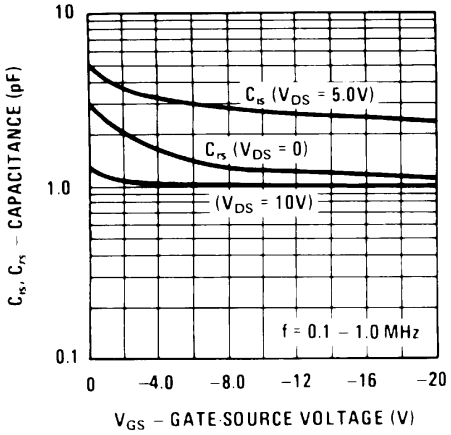


Output Conductance vs. Drain Current



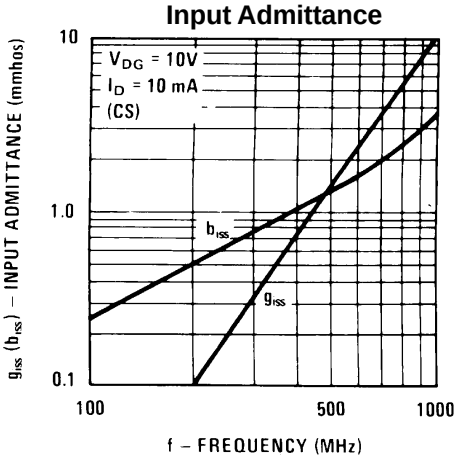
Typical Characteristics (continued)

Capacitance vs. Voltage

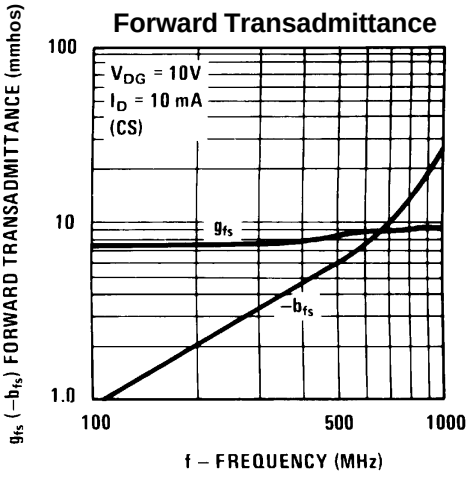


Common Source Characteristics

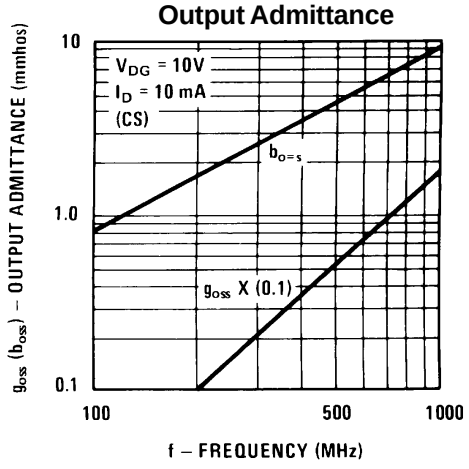
Input Admittance



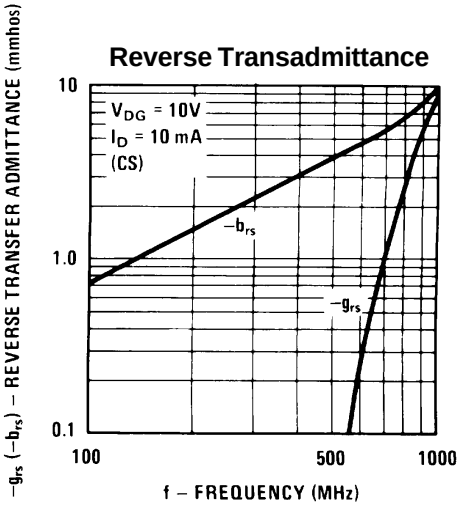
Forward Transadmittance



Output Admittance

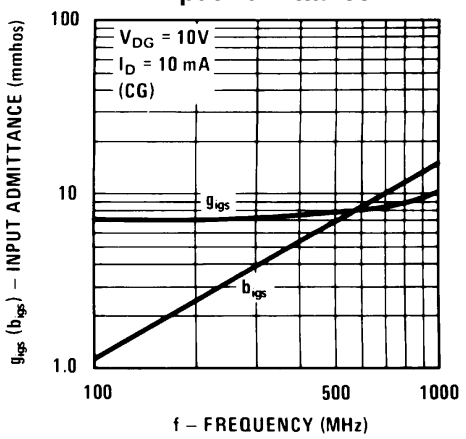


Reverse Transadmittance

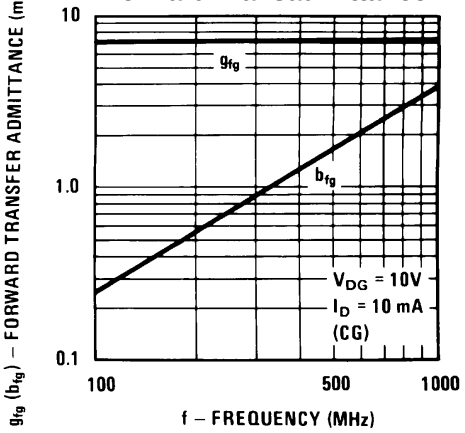


Common Gate Characteristics

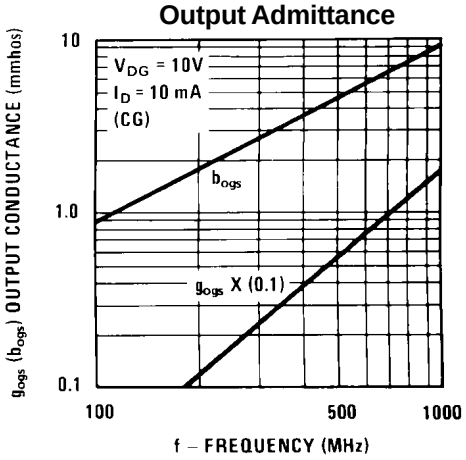
Input Admittance



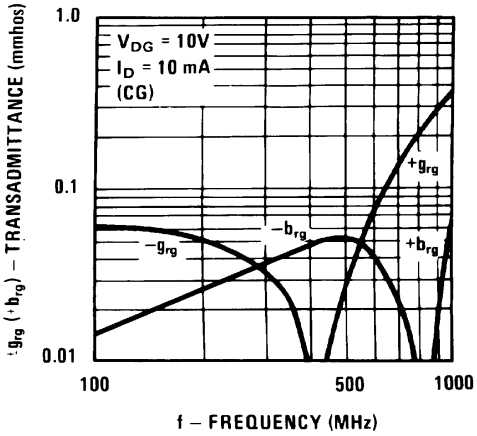
Forward Transadmittance



Output Admittance



Reverse Transadmittance



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