


**3N211**  
**3N212**  
**3N213**

TO-72



**DUAL-GATE**  
**MOSFET**  
**VHF AMPLIFIER**

N-CHANNEL — DEPLETION

**MAXIMUM RATINGS**

Rating	Symbol	3N211	3N212	3N213	Unit
Drain-Source Voltage	V <sub>DS</sub>	27	35	35	Vdc
Drain-Gate Voltage	V <sub>DG1</sub> V <sub>DG2</sub>	35	40	40	Vdc
Drain Current	I <sub>D</sub>	50			mAdc
Gate Current	I <sub>G1</sub> I <sub>G2</sub>	± 10			mAdc
Total Device Dissipation @ T <sub>A</sub> = 25°C	P <sub>D</sub>	360			mW
Derate above 25°C		2.4			mW/°C
Total Device Dissipation @ T <sub>C</sub> = 25°C	P <sub>D</sub>	1.2			Watt
Derate above 25°C		8.0			mW/°C
Lead Temperature, 1/16" From Seated Surface for 10 seconds	T <sub>L</sub>	300			°C
Junction Temperature Range	T <sub>J</sub>	- 65 to + 175			°C
Storage Temperature Range	T <sub>stg</sub>	- 65 to + 175			°C

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

Characteristic	Symbol	Min	Max	Unit
<b>OFF CHARACTERISTICS</b>				
Drain-Source Breakdown Voltage (I <sub>D</sub> = 10 μAdc, V <sub>G1S</sub> = V <sub>G2S</sub> = - 4.0 Vdc)	V <sub>(BR)DSX</sub>	25	—	Vdc
		30	—	
Instantaneous Drain-Source Breakdown Voltage(1) (I <sub>D</sub> = 10 μAdc, V <sub>G1S</sub> = V <sub>G2S</sub> = - 4.0 Vdc)	V <sub>(BR)DSX</sub>	27	—	Vdc
		35	—	
Gate 1-Source Breakdown Voltage(2) (I <sub>G1</sub> = ± 10 mAdc, V <sub>G2S</sub> = V <sub>DS</sub> = 0)	V <sub>(BR)G1SO</sub>	± 6.0	—	Vdc
Gate 2-Source Breakdown Voltage(2) (I <sub>G2</sub> = ± 10 mAdc, V <sub>G1S</sub> = V <sub>DS</sub> = 0)	V <sub>(BR)G2SO</sub>	± 6.0	—	Vdc
Gate 1 Leakage Current (V <sub>G1S</sub> = ± 5.0 Vdc, V <sub>G2S</sub> = V <sub>DS</sub> = 0) (V <sub>G1S</sub> = - 5.0 Vdc, V <sub>G2S</sub> = V <sub>DS</sub> = 0, T <sub>A</sub> = 150°C)	I <sub>G1SS</sub>	—	± 10	nAdc
		—	- 10	μAdc
Gate 2 Leakage Current (V <sub>G2S</sub> = ± 5.0 Vdc, V <sub>G1S</sub> = V <sub>DS</sub> = 0) (V <sub>G2S</sub> = - 5.0 Vdc, V <sub>G1S</sub> = V <sub>DS</sub> = 0, T <sub>A</sub> = 150°C)	I <sub>G2SS</sub>	—	± 10	nAdc
		—	- 10	μAdc
Gate 1 to Source Cutoff Voltage (V <sub>DS</sub> = 15 Vdc, V <sub>G2S</sub> = 4.0 Vdc, I <sub>D</sub> = 20 μAdc)	V <sub>G1S(off)</sub>	- 0.5	- 5.5	Vdc
		- 0.5	- 4.0	
Gate 2 to Source Cutoff Voltage (V <sub>DS</sub> = 15 Vdc, V <sub>G1S</sub> = 0, I <sub>D</sub> = 20 μAdc)	V <sub>G2S(off)</sub>	- 0.2	- 2.5	Vdc
		- 0.2	- 4.0	
<b>ON CHARACTERISTICS</b>				
Zero-Gate-Voltage Drain Current(3) (V <sub>DS</sub> = 15 Vdc, V <sub>G1S</sub> = 0, V <sub>G2S</sub> = 4.0 Vdc)	I <sub>DSS</sub>	6.0	40	mAdc
<b>SMALL-SIGNAL CHARACTERISTICS</b>				
Forward Transfer Admittance(4) (V <sub>DS</sub> = 15 Vdc, V <sub>G2S</sub> = 4.0 Vdc, V <sub>G1S</sub> = 0, f = 1.0 kHz)	y <sub>fs</sub>	17	40	mmhos
		15	35	
Reverse Transfer Capacitance (V <sub>DS</sub> = 15 Vdc, V <sub>G2S</sub> = 4.0 Vdc, I <sub>D</sub> = 10 mAdc, f = 1.0 MHz)	C <sub>rSS</sub>	0.005	0.05	pF
<b>FUNCTIONAL CHARACTERISTICS</b>				
Noise Figure (V <sub>DD</sub> = 18 Vdc, V <sub>GG</sub> = 7.0 Vdc, f = 200 MHz)	NF	—	3.5	dB
		—	4.0	
		—	4.0	

