

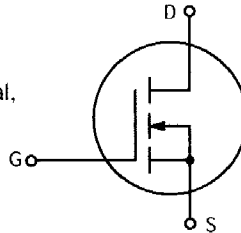
**The RF MOSFET Line**  
**RF Power Field-Effect Transistor**  
**N-Channel Enhancement-Mode MOSFET**

Designed primarily for wideband large-signal output and driver stages from 30-200 MHz.

- Guaranteed Performance at 150 MHz, 28 Vdc  
Output Power = 45 Watts  
Power Gain = 17 dB (Min)  
Efficiency = 60% (Min)
- Excellent Thermal Stability, Ideally Suited for Class A Operation
- Facilitates Manual Gain Control, ALC and Modulation Techniques
- 100% Tested for Load Mismatch At All Phase Angles with 30:1 VSWR
- Low Crss - 8 pF @ V<sub>DS</sub> = 28 V
- Gold Top Metal

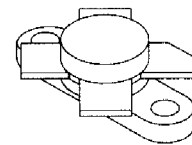
Typical Data For Power Amplifier Applications in Industrial, Commercial and Amateur Radio Equipment

- Typical Performance at 30 MHz, 28 Vdc  
Output Power = 30 Watts (PEP)  
Power Gain = 20 dB (Typ)  
Efficiency = 50% (Typ)  
IMD(d3) (30 Watts PEP) -32 dB (Typ)



**MRF171A**

**45 W, 150 MHz**  
**MOSFET BROADBAND**  
**RF POWER FET**



**CASE 211-07,**

**MAXIMUM RATINGS**

Rating	Symbol	Value	Unit
Drain-Gate Voltage	V <sub>DSS</sub>	65	Vdc
Drain-Gate Voltage (R <sub>GS</sub> = 1.0 MΩ)	V <sub>DGR</sub>	65	Vdc
Gate-Source Voltage	V <sub>GS</sub>	±20	Adc
Drain Current — Continuous	I <sub>D</sub>	4.5	Adc
Total Device Dissipation @ T <sub>C</sub> = 25°C Derate above 25°C	P <sub>D</sub>	115 0.66	Watts W/°C
Storage Temperature Range	T <sub>stg</sub>	-65 to +150	°C
Operating Junction Temperature	T <sub>J</sub>	200	°C

**THERMAL CHARACTERISTICS**

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	R <sub>θJC</sub>	1.52	°C/W

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

Characteristic	Symbol	Min	Typ	Max	Unit
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**OFF CHARACTERISTICS**

Drain-Source Breakdown Voltage (I <sub>D</sub> = 50 mA, V <sub>GS</sub> = 0)	V <sub>(BR)DSS</sub>	65	80	—	Vdc
Zero Gate Voltage Drain Current (V <sub>GS</sub> = 0, V <sub>DS</sub> = 28 V)	I <sub>DSS</sub>	—	—	1.0	mAdc
Gate-Source Leakage Current (V <sub>GS</sub> = 20 V, V <sub>DS</sub> = 0)	I <sub>GSS</sub>	—	—	1.0	μAdc

NOTE - **CAUTION** - MOS devices are susceptible to damage from electrostatic charge. Reasonable precautions in handling and packaging MOS devices should be observed.



**ELECTRICAL CHARACTERISTICS – continued** ( $T_C = 25^\circ\text{C}$  unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
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**ON CHARACTERISTICS**

Gate Threshold Voltage ( $V_{DS} = 10\text{ V}$ , $I_D = 50\text{ mA}$ )	$V_{GS(th)}$	1.5	2.5	4.5	Vdc
Drain–Source On–Voltage ( $V_{GS} = 10\text{ V}$ , $I_D = 3\text{ A}$ )	$V_{DS(on)}$	—	1.0	—	V
Forward Transconductance ( $V_{DS} = 10\text{ V}$ , $I_D = 2\text{ A}$ )	$g_{fs}$	1.4	1.8	—	mhos

**DYNAMIC CHARACTERISTICS**

Input Capacitance ( $V_{DS} = 28\text{ V}$ , $V_{GS} = 0$ , $f = 1.0\text{ MHz}$ )	$C_{iss}$	—	60	—	pF
Output Capacitance ( $V_{DS} = 28\text{ V}$ , $V_{GS} = 0$ , $f = 1.0\text{ MHz}$ )	$C_{oss}$	—	70	—	pF
Reverse Transfer Capacitance ( $V_{DS} = 28\text{ V}$ , $V_{GS} = 0$ , $f = 1.0\text{ MHz}$ )	$C_{rss}$	—	8	—	pF

**FUNCTIONAL CHARACTERISTICS**

Common Source Power Gain ( $V_{DD} = 28\text{ V}$ , $P_{out} = 45\text{ W}$ , $f = 150\text{ MHz}$ , $I_{DQ} = 25\text{ mA}$ )	$G_{ps}$	17	19.5	—	dB
Drain Efficiency ( $V_{DD} = 28\text{ V}$ , $P_{out} = 45\text{ W}$ , $f = 150\text{ MHz}$ , $I_{DQ} = 25\text{ mA}$ )	$\eta$	60	70	—	%
Electrical Ruggedness ( $V_{DD} = 28\text{ V}$ , $P_{out} = 45\text{ W}$ , $f = 150\text{ MHz}$ , $I_{DQ} = 25\text{ mA}$ , VSWR 30:1 at All Phase Angles)		No Degradation in Output Power			

**TYPICAL FUNCTIONAL TESTS (SSB)**

Common Source Power Gain ( $V_{DD} = 28\text{ V}$ , $P_{out} = 30\text{ W (PEP)}$ , $I_{DQ} = 100\text{ mA}$ , $f = 30$ ; 30.001 MHz)	$G_{ps}$	—	20	—	dB
Drain Efficiency ( $V_{DD} = 28\text{ V}$ , $P_{out} = 30\text{ W (PEP)}$ , $I_{DQ} = 100\text{ mA}$ , $f = 30$ ; 30.001 MHz)	$\eta$	—	50	—	%
Intermodulation Distortion ( $V_{DD} = 28\text{ V}$ , $P_{out} = 30\text{ W (PEP)}$ , $I_{DQ} = 100\text{ mA}$ , $f = 30$ ; 30.001 MHz)	IMD(d3)	—	-32	—	dB