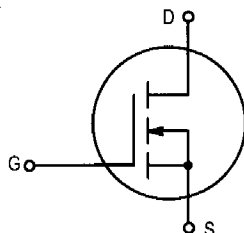


The RF MOSFET Line RF Power Field-Effect Transistor N-Channel Enhancement-Mode

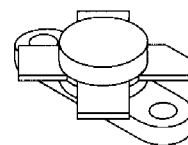
... designed for wideband large-signal amplifier and oscillator applications up to 400 MHz range.

- Guaranteed 28 Volt, 150 MHz Performance
Output Power = 5.0 Watts
Minimum Gain = 11 dB
Efficiency — 55% (Typical)
- Small-Signal and Large-Signal Characterization
- Typical Performance at 400 MHz, 28 Vdc, 5.0 W
Output = 10.6 dB Gain
- 100% Tested For Load Mismatch At All Phase Angles
With 30:1 VSWR
- Low Noise Figure — 2.0 dB (Typ) at 200 mA, 150 MHz
- Excellent Thermal Stability, Ideally Suited For Class A Operation



MRF134

5.0 W, to 400 MHz
N-CHANNEL MOS
BROADBAND RF POWER
FET



CASE 211-07,

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Drain-Source Voltage	V_{DSS}	65	Vdc
Drain-Gate Voltage ($R_{GS} = 1.0 \text{ M}\Omega$)	V_{DGR}	65	Vdc
Gate-Source Voltage	V_{GS}	± 40	Vdc
Drain Current — Continuous	I_D	0.9	Adc
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	17.5 0.1	Watts W/ $^\circ\text{C}$
Storage Temperature Range	T_{stg}	-65 to +150	$^\circ\text{C}$

THERMAL CHARACTERISTICS

Rating	Symbol	Value	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	10	$^\circ\text{C/W}$

Handling and Packaging — MOS devices are susceptible to damage from electrostatic charge. Reasonable precautions in handling and packaging MOS devices should be observed.

NJ Semi-Conductors reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by NJ Semi-Conductors is believed to be both accurate and reliable at the time of going to press. However, NJ Semi-Conductors assumes no responsibility for any errors or omissions discovered in its use. NJ Semi-Conductors encourages customers to verify that datasheets are current before placing orders.

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

Characteristic	Symbol	Min	Typ	Max	Unit
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OFF CHARACTERISTICS

Drain–Source Breakdown Voltage ($V_{GS} = 0, I_D = 5.0 \text{ mA}$)	$V_{(BR)DSS}$	65	—	—	Vdc
Zero Gate Voltage Drain Current ($V_{DS} = 28 \text{ V}, V_{GS} = 0$)	I_{DSS}	—	—	1.0	mAdc
Gate–Source Leakage Current ($V_{GS} = 20 \text{ V}, V_{DS} = 0$)	I_{GSS}	—	—	1.0	μAdc

ON CHARACTERISTICS

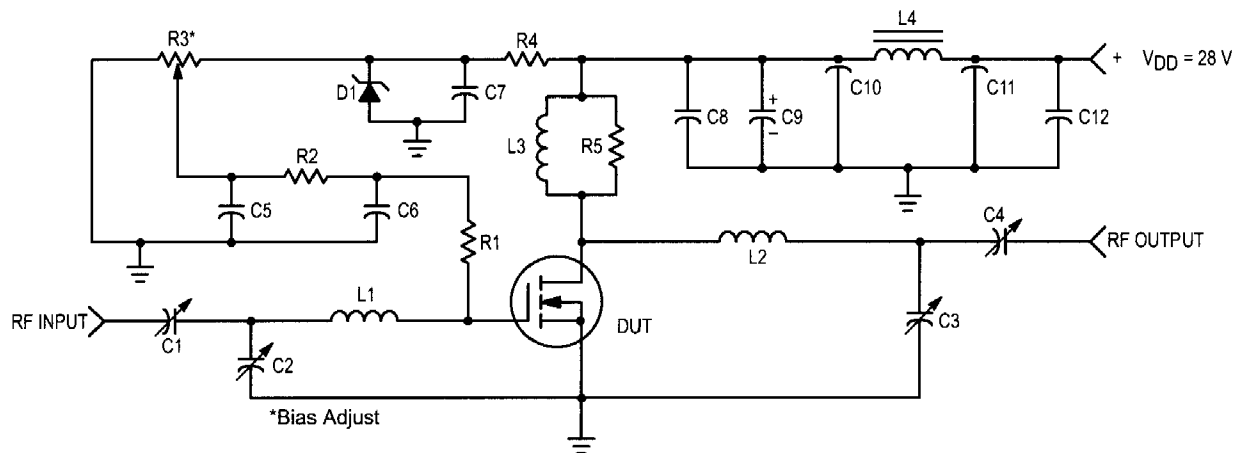
Gate Threshold Voltage ($I_D = 10 \text{ mA}, V_{DS} = 10 \text{ V}$)	$V_{GS(th)}$	1.0	3.5	6.0	Vdc
Forward Transconductance ($V_{DS} = 10 \text{ V}, I_D = 100 \text{ mA}$)	g_{fs}	80	110	—	mmhos

DYNAMIC CHARACTERISTICS

Input Capacitance ($V_{DS} = 28 \text{ V}, V_{GS} = 0, f = 1.0 \text{ MHz}$)	C_{iss}	—	7.0	—	pF
Output Capacitance ($V_{DS} = 28 \text{ V}, V_{GS} = 0, f = 1.0 \text{ MHz}$)	C_{oss}	—	9.7	—	pF
Reverse Transfer Capacitance ($V_{DS} = 28 \text{ V}, V_{GS} = 0, f = 1.0 \text{ MHz}$)	C_{rss}	—	2.3	—	pF

FUNCTIONAL CHARACTERISTICS

Noise Figure ($V_{DS} = 28 \text{ Vdc}, I_D = 200 \text{ mA}, f = 150 \text{ MHz}$)	NF	—	2.0	—	dB
Common Source Power Gain ($V_{DD} = 28 \text{ Vdc}, P_{out} = 5.0 \text{ W}, I_{DQ} = 50 \text{ mA}$) $f = 150 \text{ MHz}$ (Fig. 1) $f = 400 \text{ MHz}$ (Fig. 14)	G_{ps}	11 —	14 10.6	— —	dB
Drain Efficiency (Fig. 1) ($V_{DD} = 28 \text{ Vdc}, P_{out} = 5.0 \text{ W}, f = 150 \text{ MHz}, I_{DQ} = 50 \text{ mA}$)	η	50	55	—	%
Electrical Ruggedness (Fig. 1) ($V_{DD} = 28 \text{ Vdc}, P_{out} = 5.0 \text{ W}, f = 150 \text{ MHz}, I_{DQ} = 50 \text{ mA},$ $VSWR 30:1$ at all Phase Angles)	ψ	No Degradation in Output Power			



- C1, C4 — Arco 406, 15–115 pF
- C2 — Arco 403, 3.0–35 pF
- C3 — Arco 402, 1.5–20 pF
- C5, C6, C7, C8, C12 — 0.1 μF Erie Redcap
- C9 — 10 μF , 50 V
- C10, C11 — 680 pF Feedthru
- D1 — 1N5925A Motorola Zener
- L1 — 3 Turns, 0.310" ID, #18 AWG Enamel, 0.2" Long
- L2 — 3-1/2 Turns, 0.310" ID, #18 AWG Enamel, 0.25" Long

- L3 — 20 Turns, #20 AWG Enamel Wound on R5
- L4 — Ferroxcube VK-200 — 19/4B
- R1 — 68 Ω , 1.0 W Thin Film
- R2 — 10 k Ω , 1/4 W
- R3 — 10 Turns, 10 k Ω Beckman Instruments 8108
- R4 — 1.8 k Ω , 1/2 W
- R5 — 1.0 M Ω , 2.0 W Carbon
- Board — G10, 62 mils

Figure 1. 150 MHz Test Circuit