

depletion-type n-channel dual gate MOSFET designed for . . .



BF900

- **Tuners—FM and TV**
- **General Common Source RF Amplifier Usage to 600 MHz**
- **UHF Mixer Circuits Up to 900 MHz**

ABSOLUTE MAXIMUM RATINGS (25°C)

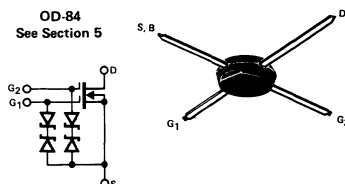
Drain-to-Source Voltage	20 V
Drain-to-Gate Voltage	20 V
Gate-to-Source Voltage	±6 V
Gate-to-Gate Voltage	±12 V
Continuous Drain Current	50 mA
Gate Current	±10 mA
Total Continuous Device Dissipation at (or Below) $T_A = 25^\circ\text{C}$ (Derate 1.5 mW/°C to 125°C)	150 mW
Operating Temperature Range	-55 to +125°C
Storage Temperature Range	-55 to +150°C
Lead Temperature (1/16" from case for 10 seconds)	260°C

Performance Curves MCB See Section 4

BENEFITS

- High Gain
 g_{fs} Typically 14 mmhos
- No Neutralization Required
Low C_{rss} Typically 0.025 pF
- Automatic Gain Control with Second Gate
- Rugged
Zener Diode Input Protection

OD-84
See Section 5



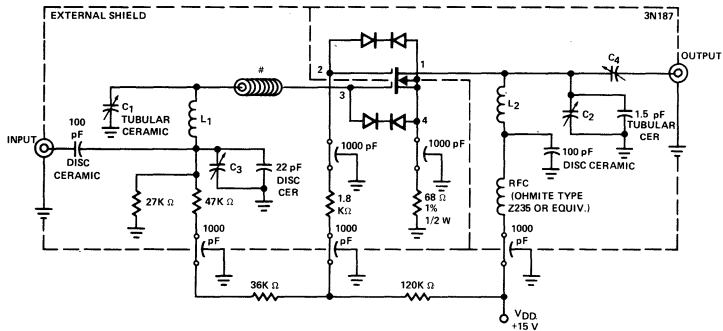
ELECTRICAL CHARACTERISTICS (25°C unless otherwise noted)

	Characteristic	Min	Typ	Max	Unit	Test Conditions
1	I_{G1SS} Gate One to Source Leakage Current			±100	nA	$V_{G1S} = \pm 5 \text{ V}, V_{G2S} = V_{DS} = 0$
2	I_{G2SS} Gate Two to Source Leakage Current			±100	nA	$V_{G2S} = \pm 5 \text{ V}, V_{G1S} = V_{DS} = 0$
3	BV_{DS} Drain to Source Breakdown Voltage	20			V	$I_D = 10 \mu\text{A}, V_{G1S} = V_{G2S} = -4 \text{ V}$
4	BV_{G1SS} Gate One to Source Breakdown Voltage	±6		±30	V	$I_{G1} = \pm 10 \text{ mA}, V_{G2S} = V_{DS} = 0$
5	BV_{G2SS} Gate Two to Source Breakdown Voltage	±6		±30	V	$I_{G2} = \pm 10 \text{ mA}, V_{G1S} = V_{DS} = 0$
6	$V_{G1S(off)}$ Gate One to Source Cutoff Voltage			-5	V	$V_{DS} = 15 \text{ V}, V_{G2S} = 4 \text{ V}, I_D = 20 \mu\text{A}$
7	$V_{G2S(off)}$ Gate Two to Source Cutoff Voltage			-5	V	$V_{DS} = 15 \text{ V}, V_{G1S} = 0, I_D = 20 \mu\text{A}$
8	I_{DS} Zero Gate One Voltage Drain Current (Note 1)	3	15	30	mA	$V_{DS} = 15 \text{ V}, V_{G2S} = 4 \text{ V}, V_{G1S} = 0$
9	g_{fs} Common Source Forward Transconductance (Note 1)	8	14		mmho	$V_{DS} = 15 \text{ V}, V_{G2S} = 4 \text{ V}, V_{G1S} = 0, f = 1 \text{ kHz}$
10	C_{iss} Common Source Input Capacitance		4.0		pF	$V_{DS} = 15 \text{ V}, V_{G2S} = 4 \text{ V}, I_D = 10 \text{ mA}, f = 1 \text{ MHz}$
11	C_{rss} Common Source Reverse Transfer Capacitance		0.025		pF	$V_{DS} = 15 \text{ V}, V_{G2S} = 4 \text{ V}, I_D = 10 \text{ mA}, f = 1 \text{ MHz}$
12	C_{oss} Common Source Output Capacitance		2.0		pF	$V_{DS} = 15 \text{ V}, V_{G2S} = 4 \text{ V}, I_D = 10 \text{ mA}, f = 1 \text{ MHz}$
13	G_{ps} Common-Source Power Gain (Note 2)		20		dB	$V_{DD} = 15 \text{ V}, V_{G2S} = 4 \text{ V}, R_S = 68 \Omega, f = 200 \text{ MHz}, BW = 12 \text{ MHz}$
14	NF (Note 2) Noise Figure		2.0	4.5	dB	$V_{DD} = 15 \text{ V}, V_{G2S} = 4 \text{ V}, R_S = 68 \Omega, f = 200 \text{ MHz}$

NOTES:

1. Pulse test pulsewidth = 300 μs , duty cycle $\leq 3\%$.
2. See Figure 1.

MCB



200 MHz Power Gain and Noise Figure Test Circuit for BF900
Figure 1

- C₁ - 1.8 - 8.7 pF variable air capacitor: E.F. Johnson Type 160-104, or equivalent.
- C₂ - 1.5 - 5 pF variable air capacitor: E.F. Johnson Type 160-102, or equivalent.
- C₃ - 1 - 10 pF piston type variable air capacitor: JFD Type VAM-010; Johanson Type 4335, or equivalent.
- C₄ - 0.8 - 4.5 pF piston type variable air capacitor: Erie 560-013 or equivalent.
- L₁ - 4 turns silver-plated 0.02-in. thick, 0.075-0.085-in. wide, copper ribbon. Internal diameter of winding = 0.25 in., winding length approx. 0.8 in.
- L₂ - 4 1/2 turns silver-plated 0.02-in. thick, 0.085-0.095-in. wide, 5/16-in. ID. Coil = .90 in. long.
- = Ferrite bead (4); Pyroferic Co. "Carbonyl J" 0.09 in. OD; 0.03 in. ID; 0.063 in. thickness.