depletion-type n-channel dual gate MOSFET

designed for . . .

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

Performance Curves MCB See Section 4

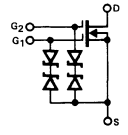
BENEFITS

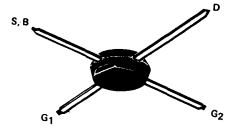
- High Gain
  g_{fs} Typically 14 mmhos
- No Neutralization Required
  Low C_{rss} Typically 0.025 pF
- Automatic Gain Control with Second Gate
- Rugged
  Zener Diode Input Protection

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°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

OD-84
See Section 5



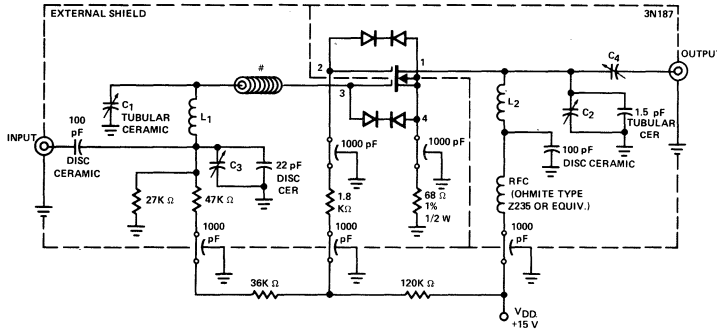


ELECTRICAL CHARACTERISTICS (25°C unless otherwise noted)

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

NOTES:
1. Pulse test pulsewidth = 300 μs, duty cycle ≤ 3%.
2. See Figure 1.

MCB



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

C_1 – 1.8 – 8.7 pF variable air capacitor: E.F. Johnson Type 160-104, or equivalent.

C_2 – 1.5 – 5 pF variable air capacitor: E.F. Johnson Type 160-102, or equivalent.

C_3 – 1 – 10 pF piston-type variable air capacitor: JFD Type VAM-010; Johanson Type 4335, or equivalent.

C_4 – 0.8 – 4.5 pF piston type variable air capacitor: Erie 560-013 or equivalent.

L_1 – 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.

L_2 – 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); Pyroferric Co. "Carbonyl J" 0.09 in. OD; 0.03 in. ID; 0.063 in. thickness.