DV2880V

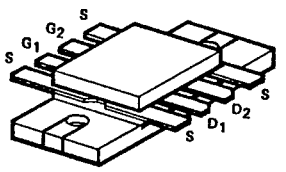
N-Channel Enhancement-Mode PUSH PULL RF MOSPOWER FETs

175 MHz 80 W
28-35 V 10 dB

FEATURES

- 20:1 VSWR
- No Thermal Runaway
- Broadband Capability
- Class A, B, C
- Low Noise Figure
- High Dynamic Range
- Simple Bias Circuitry

V Package



.400 Push-Pull Flange

ABSOLUTE MAXIMUM RATINGS (T_C = 25°C unless otherwise noted)

Gate-Source Voltage	20V
Drain-Source Voltage	70V
Drain-Gate Voltage	70V
Drain Current (DC)	8A
Total Device Dissipation	160W
Thermal Resistance, Junction to Case	1.1°C/W
Junction Temperature	200°C
Storage Temperature	-65°C to 150°C

ELECTRICAL CHARACTERISTICS (T_C=25° unless otherwise noted)

Symbol	Characteristics	Min	Typ	Max	Unit	Test Conditions
BV_{DSS}	Drain-Source Breakdown Voltage	70			V	V_{GS}=OV, I_D=20mA
I_{DSS}	Drain-Source Leakage Current			4	mA	V_{GS}=OV, V_{DS}=30V
I_{GSS}	Gate-Source Leakage Current			400	nA	V_{GS}=20V, V_{DS}=OV
g_m	D.C. Forward Transconductance	0.8	1.1		Mho	V_{DS}=10V, I_D=4A, ΔV_{GS}=1.0V
$I_{D(on)}$	On-State Drain Current		7		A	V_{DS}=30V, V_{GS}=10V
$V_{GS(th)}$	Gate Threshold Voltage	2		6	V	V_{GS}=V_{DS}, I_D=400mA
C_{iss}	Common-Source Input Capacitance			210	pF	V_{GS}=OV, V_{DS}=30V, f=1.0 MHz
C_{oss}	Common-Source Output Capacitance			175	pF	V_{GS}=OV, V_{DS}=30V, f=1.0 MHz
C_{rss}	Reverse Transfer Capacitance			25	pF	V_{GS}=OV, V_{DS}=30V, f=1.0 MHz
G_{ps}	Common-Source Power Gain	10			dB	V_{DD}=28V, P_o=80W, f=175 MHz I_{DQ}=0.4A
η	Drain Efficiency	55	60		%	V_{DD}=28V, P_o=80W, f=175 MHz, I_{DQ}=0.4A
V_{SWR}	Load Mismatch Tolerance	20:1				V_{DD}=28V, P_o=80W, f=175 MHz, I_{DQ}=0.4A

Note: All DC and Capacitance parameters measured with both sides in parallel.

TYPICAL PERFORMANCE CURVES (25°C unless otherwise noted)

FIGURE 1 Transconductance vs Drain Current

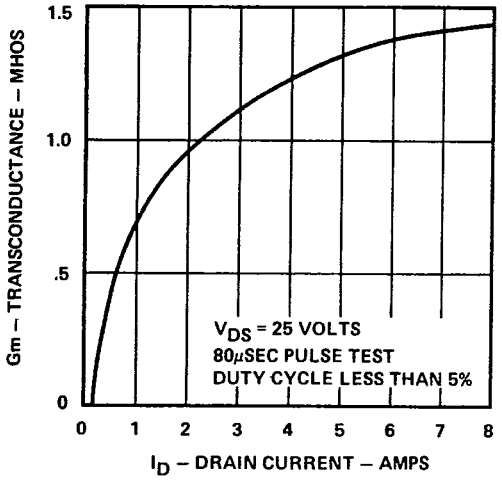


FIGURE 2 Transfer Characteristics

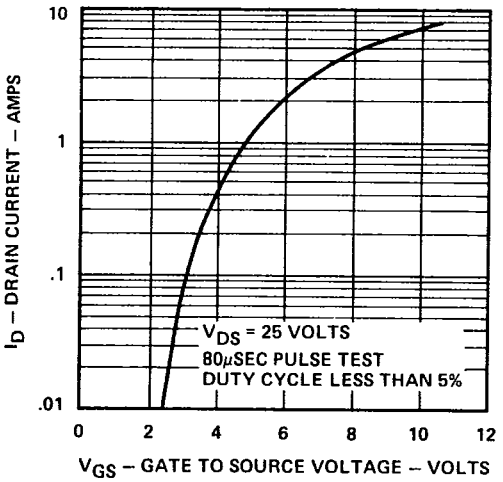


FIGURE 3 Output Characteristics

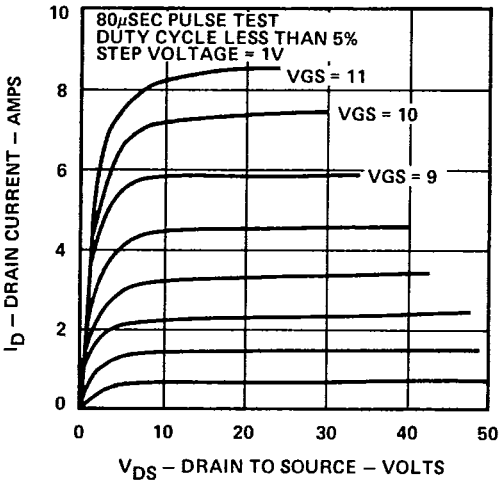


FIGURE 4 DC and Inductive Safe Operating Region

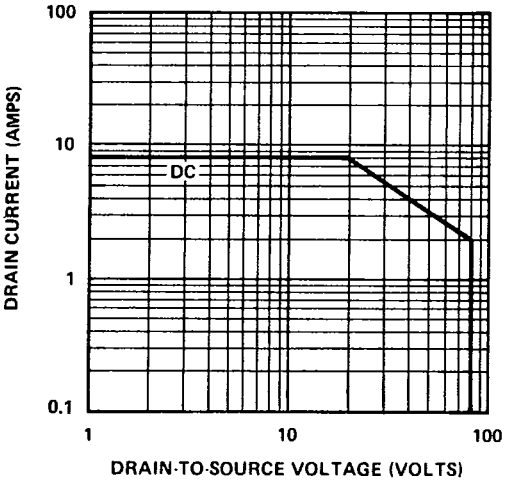
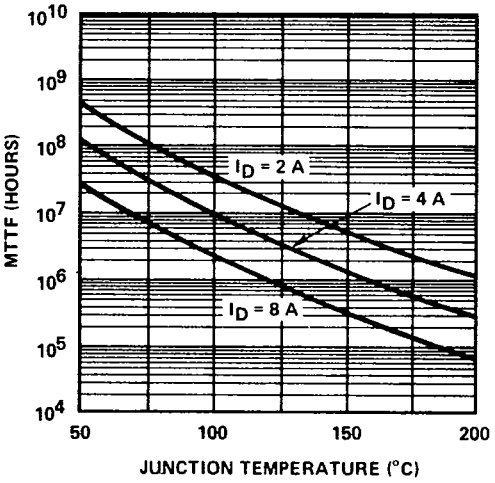


FIGURE 5 MTTF vs Temperature



TYPICAL PERFORMANCE CURVES — Continued

FIGURE 6 Series Equivalent Input Impedance vs Frequency

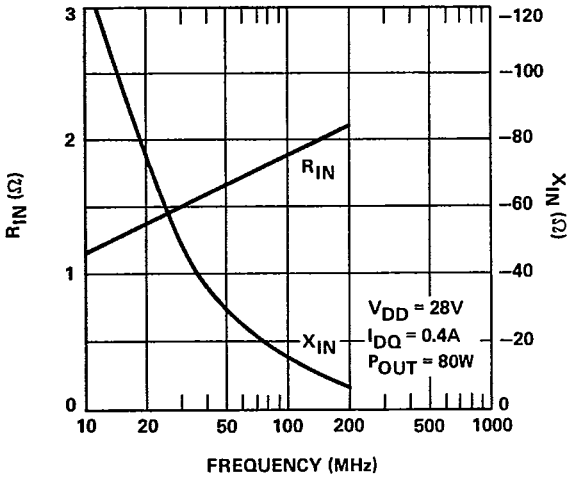
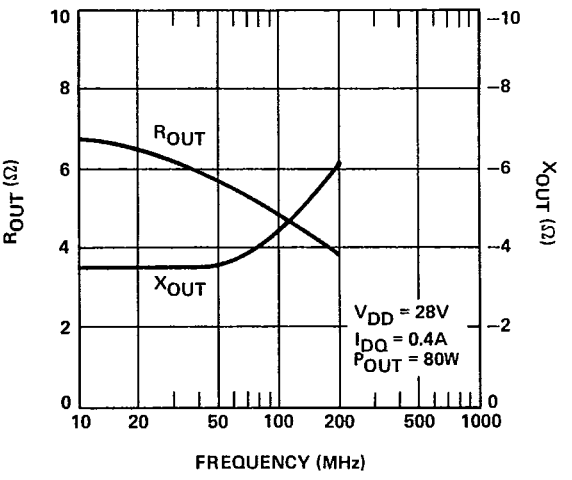
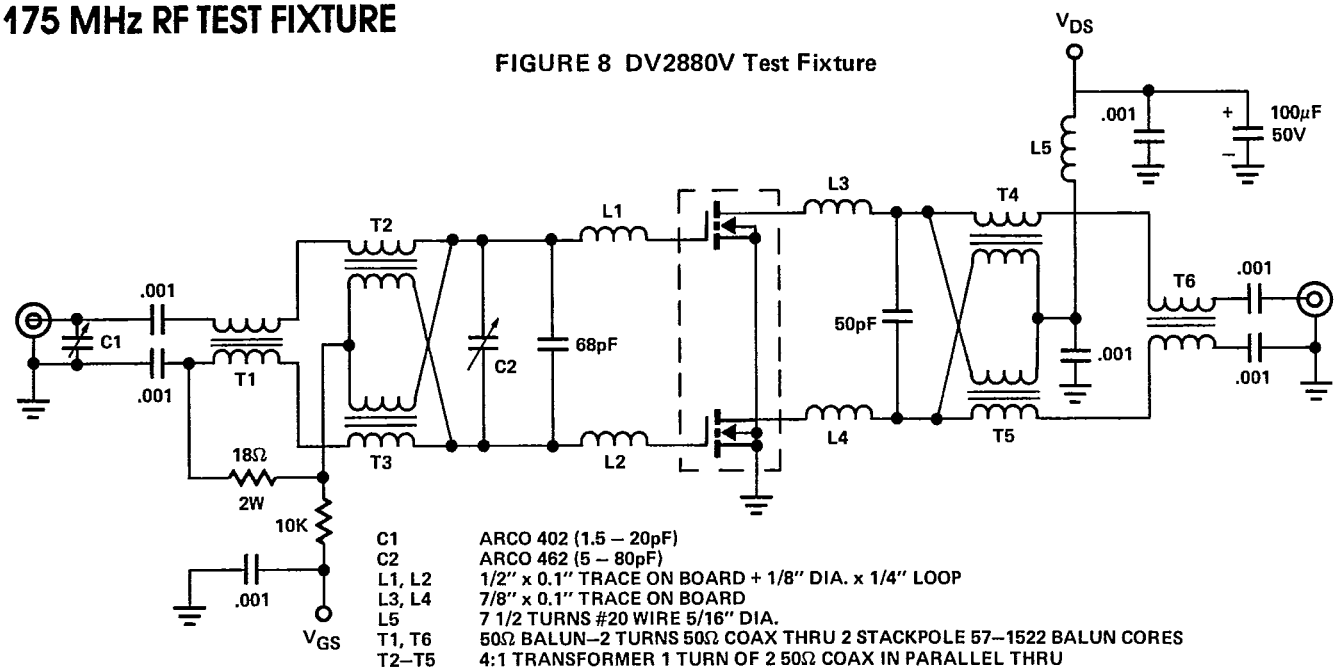


FIGURE 7 Series Equivalent Output Impedance vs Frequency



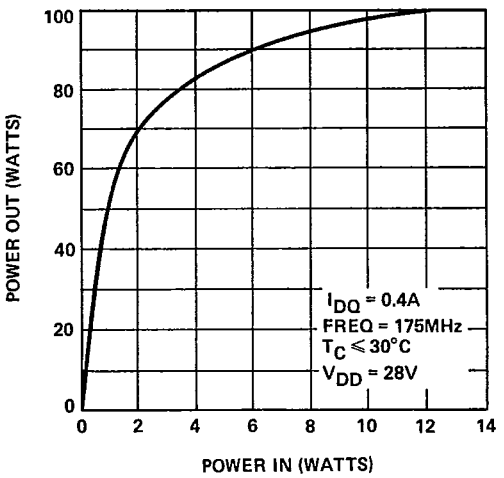
175 MHz RF TEST FIXTURE

FIGURE 8 DV2880V Test Fixture



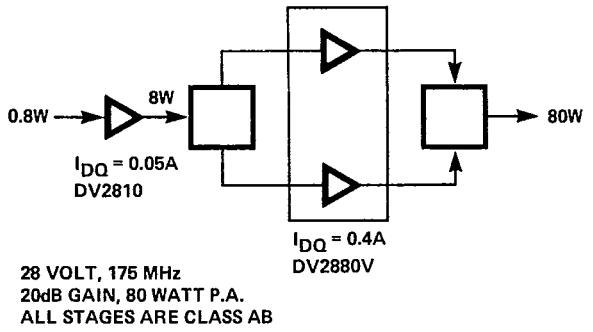
C1	ARCO 402 (1.5 – 20pF)
C2	ARCO 462 (5 – 80pF)
L1, L2	1/2" x 0.1" TRACE ON BOARD + 1/8" DIA. x 1/4" LOOP
L3, L4	7/8" x 0.1" TRACE ON BOARD
L5	7 1/2 TURNS #20 WIRE 5/16" DIA.
T1, T6	50Ω BALUN–2 TURNS 50Ω COAX THRU 2 STACKPOLE 57–1522 BALUN CORES
T2–T5	4:1 TRANSFORMER 1 TURN OF 2 50Ω COAX IN PARALLEL THRU 2 STACKPOLE 57–1522 BALUN CORES

FIGURE 9 Power Out vs Power In



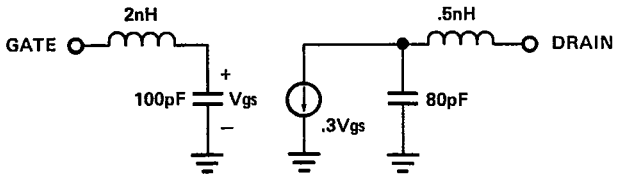
AMPLIFIER LINE-UP

FIGURE 10 Typical Amplifier Line-Up



AC EQUIVALENT CIRCUIT MODEL

FIGURE 11 Simplified AC Equivalent Circuit Model, Each Half



CAUTION: Beryllium Oxide – The top cap of this device is alumina which is harmless. However, the ceramic portion between the leads and the metal flange is Beryllium Oxide, the dust of which is toxic. Care must therefore be taken during handling and mounting the device to prevent any damage to this area.

Steps must be taken to ensure that all those who may handle, use, or dispose of this device are aware of its nature and of these necessary safety precautions. In particular the transistor should never be thrown out with general industrial or domestic waste.