

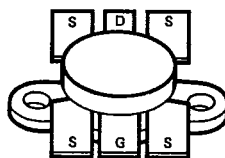
DV28120T ■ DV28120U**N-Channel Enhancement - Mode
RF Power FETs**

175 MHz
20-35 V
120 W
10 dB

FEATURES

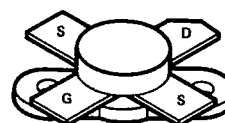
- 20:1 VSWR
- No Thermal Runaway
- Broadband Capability
- Class A, B, C, D, E
- Low Noise Figure
- High Dynamic Range
- Simple Bias Circuitry

Package Type T



.500 JO Flange

Package Type U



.500 SOE Flange

ABSOLUTE MAXIMUM RATINGS ($T_C = 25^\circ\text{C}$ unless otherwise noted)

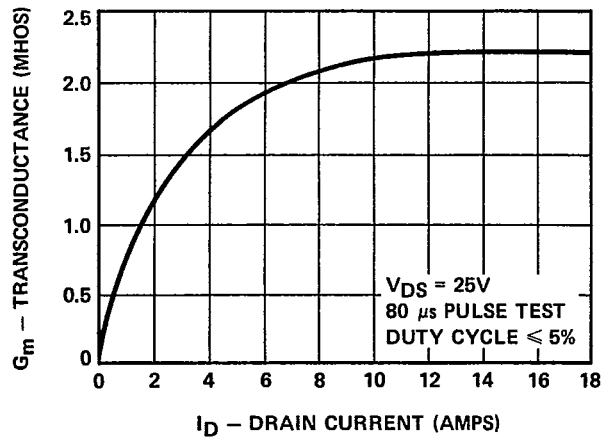
Gate-Source Voltage	20V	Total Device Dissipation	240W
Drain-Source Voltage	80V	Thermal Resistance,	
Drain-Gate Voltage	80V	Junction to Case	0.73°C/W
Drain Current (DC)	12A	Junction Temperature	200°C
		Storage Temperature	-65°C to 150°C

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

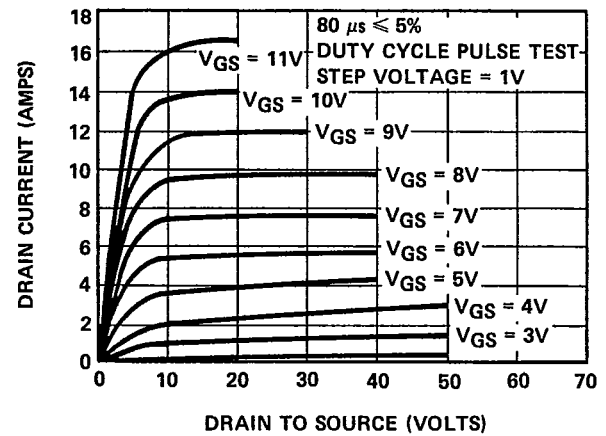
Symbol	Characteristics	Min	Typ	Max	Unit	Test Conditions
BV_{DSS}	Drain-Source Breakdown Voltage	80			V	$V_{GS} = 0V, I_D = 30\text{ mA}$
I_{DSS}	Drain-Source Leakage Current			6	mA	$V_{GS} = 0V, V_{DS} = 30V$
I_{GSS}	Gate-Source Leakage Current			600	nA	$V_{GS} = 20V, V_{DS} = 0V$
g_m	D.C. Forward Transconductance ¹	1.2	1.8		Mho	$V_{DS} = 10V, I_D = 6A, \Delta V_{GS} = 1.0V$
$I_{D(on)}$	On-State Drain Current ¹		12		A	$V_{DS} = 30V, V_{GS} = 10V$
$V_{GS(th)}$	Gate Threshold Voltage	2		6	V	$V_{GS} = V_{DS}, I_D = 600\text{ mA}$
C_{iss}	Common-Source Input Capacitance			300	pF	$V_{GS} = 0V, V_{DS} = 28V, f = 1.0\text{ MHz}$
C_{oss}	Common-Source Output Capacitance			240	pF	$V_{GS} = 0V, V_{DS} = 28V, f = 1.0\text{ MHz}$
C_{rss}	Reverse Transfer Capacitance			35	pF	$V_{GS} = 0V, V_{DS} = 28V, f = 1.0\text{ MHz}$
G_{ps}	Common-Source Power Gain	28120T 28120U	10 8.5		dB	$V_{DD} = 28V, P_o = 120W, f = 175\text{ MHz}, I_{DQ} = 0.6A$
η	Drain Efficiency	55	60		%	$V_{DD} = 28V, P_o = 120W, f = 175\text{ MHz}, I_{DQ} = 0.6A$
VSWR	Load Mismatch Tolerance	20:1				$V_{DD} = 28V, P_o = 120W, f = 175\text{ MHz}, I_{DQ} = 0.6A$

Note 1: Pulse Test— $80\mu\text{s}$ to $300\mu\text{s}$, 1% duty cycle

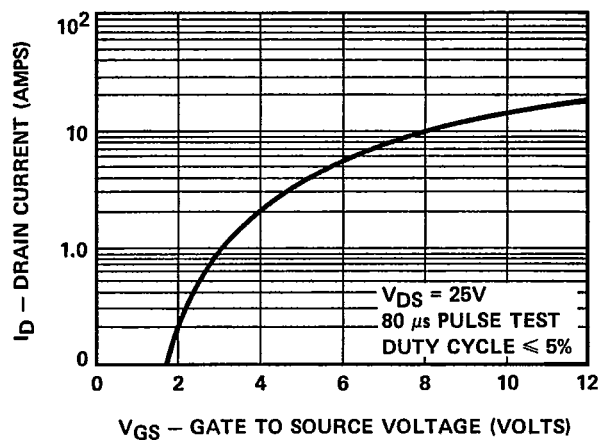
TYPICAL PERFORMANCE CURVES (25°C unless otherwise noted)

Typical Transconductance vs
Drain Current

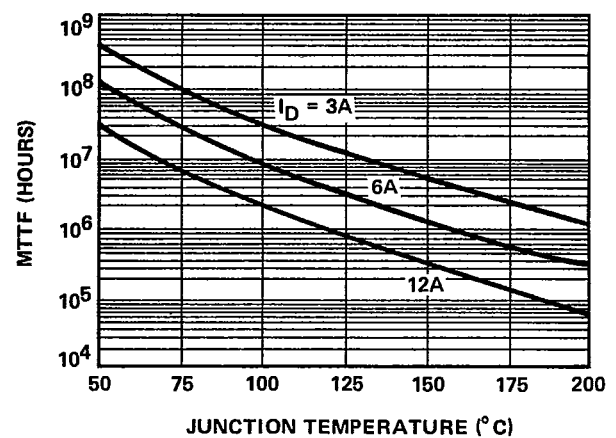
Typical Output Characteristics



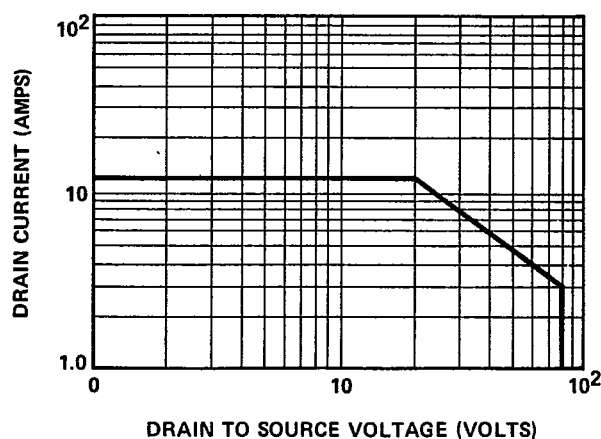
Typical Transfer Characteristics



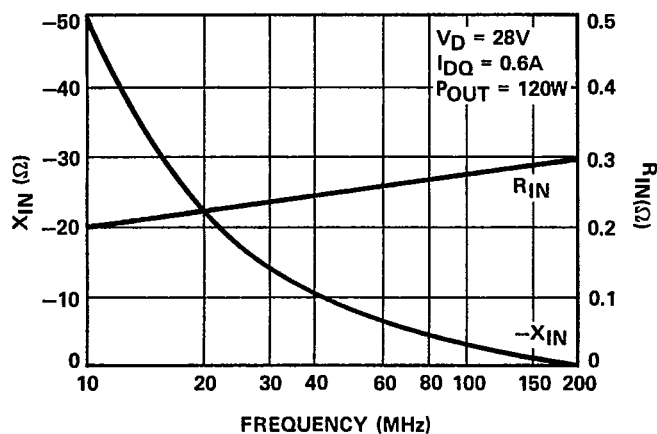
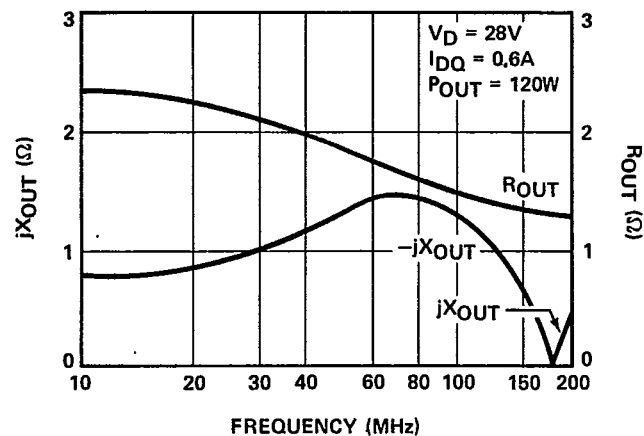
MTTF vs Junction Temperature



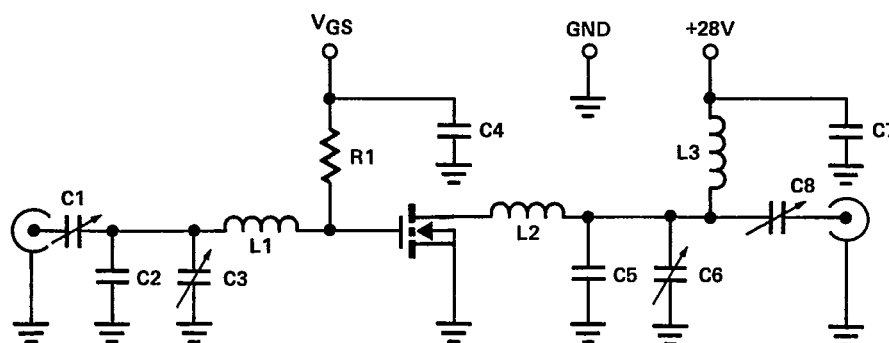
DC Safe Operating Region



TYPICAL PERFORMANCE CURVES—CONTINUED (25°C unless otherwise noted)

Equivalent Large Signal Series Input
Impedance vs FrequencyEquivalent Large Signal Series Output
Impedance vs Frequency

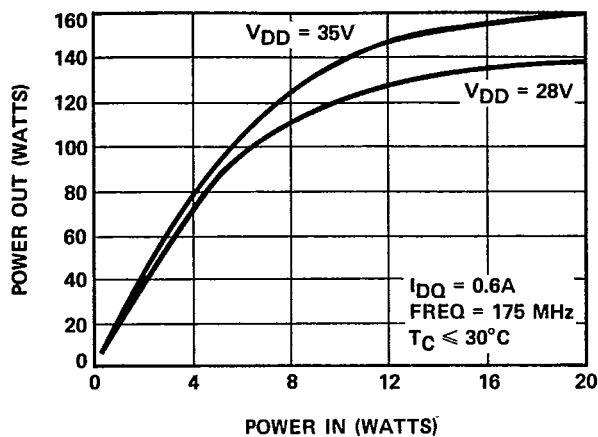
175 MHz RF TEST FIXTURE



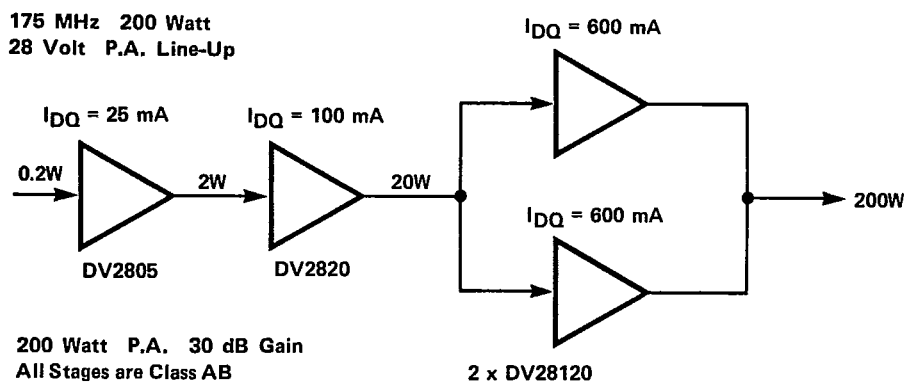
PARTS LIST

C1, C6	5–80 pF (ARCO 462)
C2, C5	50 pF
C3	4–40 pF (ARCO 422)
C4, C7	0.01 μ F
C8	9–180 pF (ARCO 463)
L1	7/8" #12 AWG 0.4" Loop
L2	7/8" #12 AWG 0.4" Loop
L3	8 Turns #16 AWG 1/4" ID
R1	10K 1/4W

Power Out vs Power In



TYPICAL AMPLIFIER LINE-UP



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.