

DV1210S ■ DV1210W ■ DV1210Z

N-Channel Enhancement - Mode RF Power FETs



Island Labs



April 1982

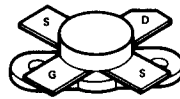
175 MHz **10 W**
10-20 V **10 dB**

Other Devices in Series:
 DV1202, DV1205, DV1220, DV1230, DV1240, DV1260

FEATURES

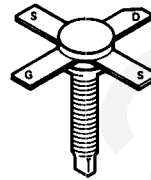
- Infinite VSWR
- No Thermal Runaway
- Broadband Capability
- Class A, B, C, D, E
- Low Noise Figure
- High Dynamic Range
- Simple Bias Circuitry

Package Type S



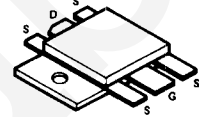
.380 SOE Flange

Package Type Z



.280 SOE Stud

Package Type W



C-220

See page 5-62 for Package Dimensions

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

Gate-Source Voltage	30V	Total Device Dissipation	40W
Drain-Source Voltage	45V	Thermal Resistance, Junction to Case	4.4°C/W
Drain-Gate Voltage	45V	Junction Temperature	200°C
Drain Current (DC)	2A	Storage Temperature	-65°C to 150°C

ELECTRICAL CHARACTERISTICS (T_C = 25° C unless otherwise noted)

Symbol	Characteristics	Min	Typ	Max	Unit	Test Conditions
BV _{DSS}	Drain-Source Breakdown Voltage	45			V	V _{GS} = 0V, I _D = 5 mA
I _{DSS}	Drain-Source Leakage Current			0.5	mA	V _{GS} = 0V, V _{DS} = 15V
I _{GSS}	Gate-Source Leakage Current			100	nA	V _{GS} = 30V, V _{DS} = 0V
g _m	D.C. Forward Transconductance	0.2	0.4		Mho	V _{DS} = 10V, I _D = 1A, ΔV _{GS} = 1.0V
I _{D(on)}	On-State Drain Current		3.5		A	V _{DS} = 12V, V _{GS} = 10V
V _{GS(th)}	Gate Threshold Voltage	2		6	V	V _{GS} = V _{DS} , I _D = 100 mA
C _{iSS}	Common-Source Input Capacitance			50	pF	V _{GS} = 0V, V _{DS} = 12.5V, f = 1.0 MHz
C _{oss}	Common-Source Output Capacitance			60	pF	V _{GS} = 0V, V _{DS} = 12.5V, f = 1.0 MHz
C _{rSS}	Reverse Transfer Capacitance			10	pF	V _{GS} = 0V, V _{DS} = 12.5V, f = 1.0 MHz
G _{ps}	Common-Source Power Gain	10			dB	V _{DD} = 12.5V, P _o = 10W, f = 175 MHz, I _{DQ} = 1.0 A
η	Drain Efficiency		65		%	V _{DD} = 12.5V, P _o = 10W, f = 175 MHz, I _{DQ} = 1.0 A
V _{SWR}	Load Mismatch Tolerance	30:1				V _{DD} = 12.5V, P _o = 10W, f = 175 MHz, I _{DQ} = 1.0 A

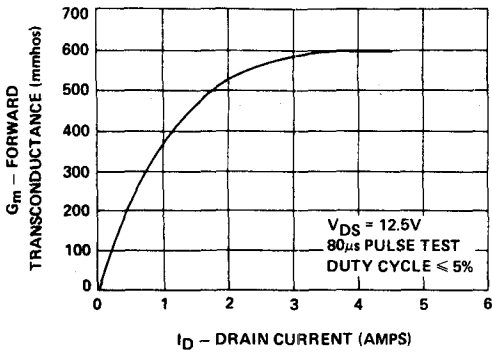
Note 1: Pulse Test—80μs to 300μs, 1% duty cycle

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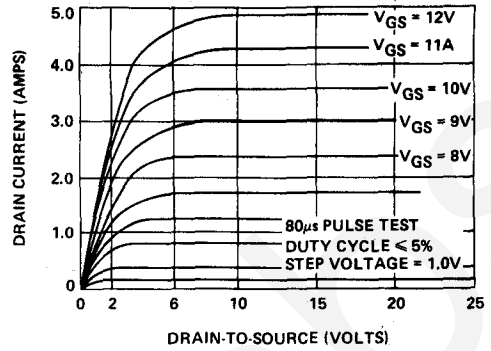
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TYPICAL PERFORMANCE CURVES ($T_C = 25^\circ\text{C}$ unless otherwise noted)

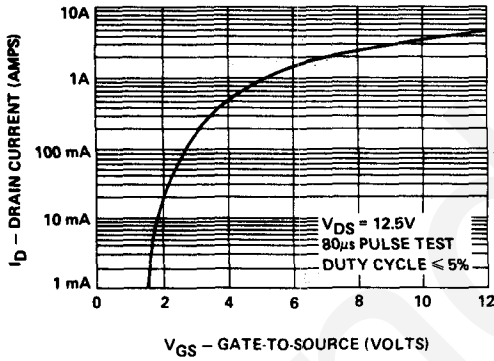
Typical Transconductance vs Drain Current



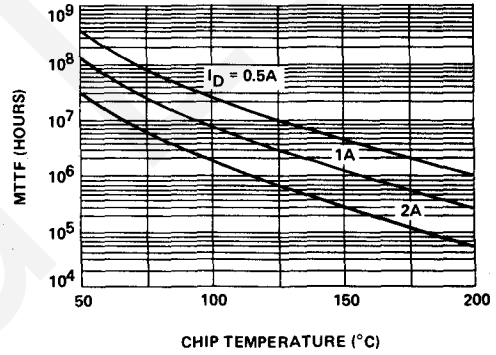
Typical Output Characteristics



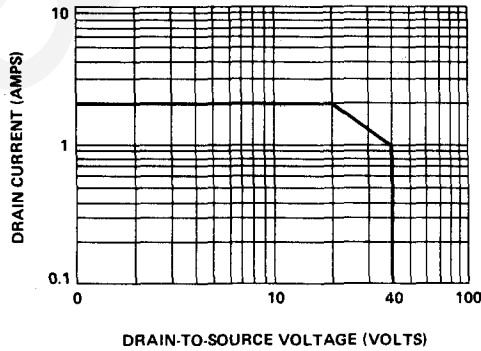
Typical Transfer Characteristics



MTTF vs Chip Temperature

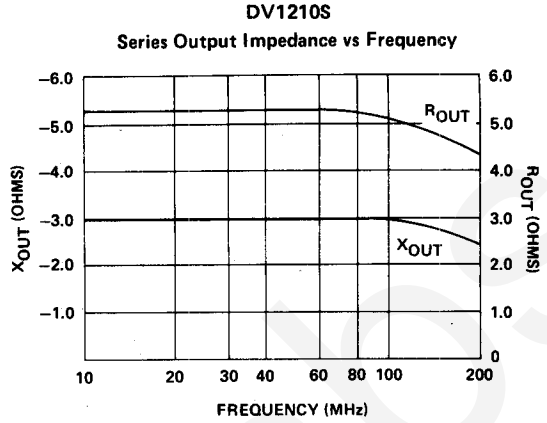
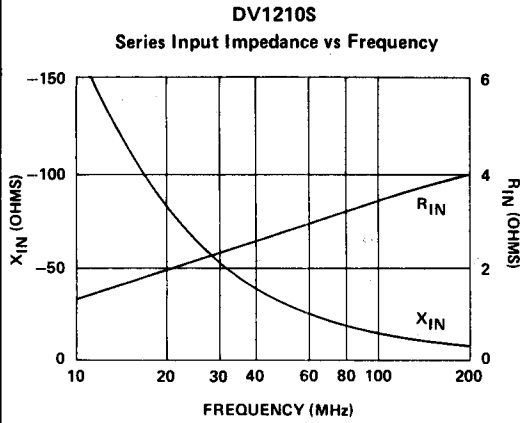


DC Safe Operating Region

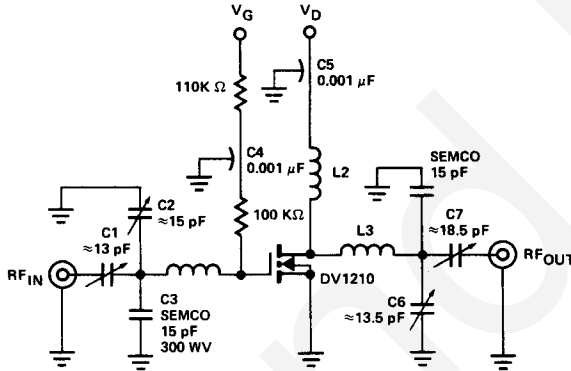


TYPICAL PERFORMANCE CURVES-CONTINUED

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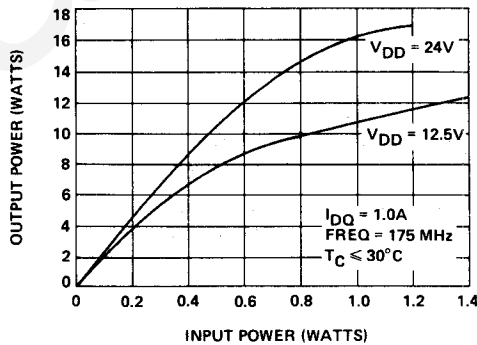
175 MHz TEST FIXTURE



PARTS LIST

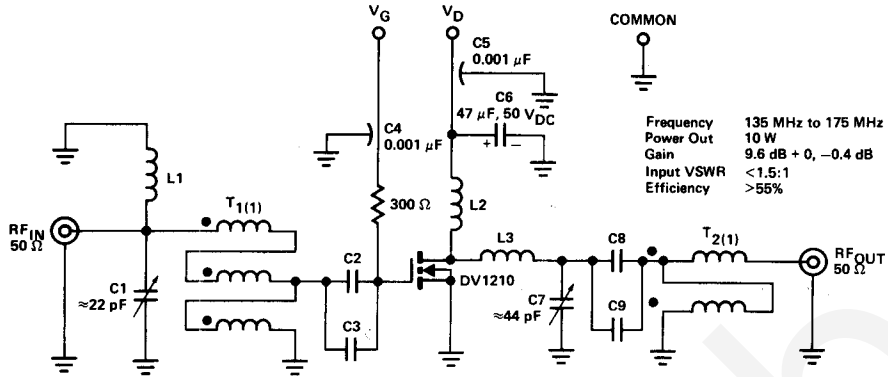
- C1, C2, C5, C6, Arco #462, 5 to 80 pF
- L1, 2 1/2" length of #AWG 12, 1/2 turn on 1/3" diameter
- L2, 8 turns #AWG 22 on 1/4" diameter, close wound
- L3, 1 5/8" length of #AWG 12, 1/2 turn on 1/3" diameter

Typical Output Power vs Input Power



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APPLICATIONS



Frequency 135 MHz to 175 MHz
 Power Out 10 W
 Gain 9.6 dB + 0, -0.4 dB
 Input VSWR < 1.5:1
 Efficiency > 55%

PARTS LIST

- C1, Arco #462 trimmer capacitor, 5 to 80 pF
- C7, Arco #463 trimmer capacitor, 9 to 180 pF
- L1, 2 turns, #AWG 22 on 1/4" diameter close wound
- L2, 7 turns, #AWG 22 on 1/4" diameter close wound
- L3, 1/2" #AWG 18 buss, 1/2-turn on 1/4" diameter

- C2, C3, C8, C9, 0.01 μF chip capacitors, Johanson P/N 201 L64 N 103 MA
- T1, One turn #22 enamel wire trifilar twisted with 13 crests per inch on one Stackpole balun core #57-0973
- T2, One turn 25Ω coax wound on two balun cores placed end on end. Stackpole balun cores #57-0973
- (1) - Dot indicates winding starts

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.