

# RF Power FETs N-Channel Enhancement-Mode

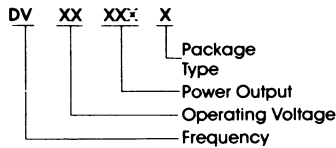
175 MHz 5W  
20-35V 10dB

## Benefits

- Infinite VSWR
- No Thermal Runaway
- Broadband Capability
- Class A, B, or C Operation
- Low Noise Figure
- High Dynamic Range
- Simple Bias Circuitry
- S-Parameter Design

Other devices in series:

DV2810, DV2820, DV2840, DV2880, DV28120



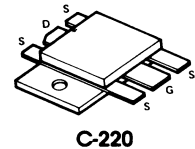
## Absolute Maximum Ratings (25°C)

- Gate-Source Voltage . . . . . 40 V
- Drain-Source Voltage . . . . . 80 V
- Drain-Gate Voltage . . . . . 80 V
- Drain Current (DC) . . . . . 0.5 A
- Total Device Dissipation . . . . . 10 W  
@ 25° Case
- $\theta_{jc}$  . . . . . 17.6°C/W
- Storage Temperature . . . . -65°C to 150°C
- Junction Temperature . . . . . 200°C

### Package Type S



### Package Type W



## Electrical Characteristics (25°C)

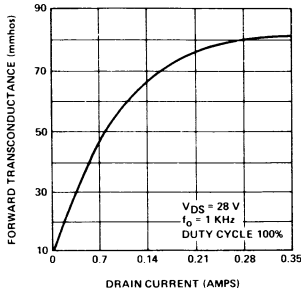
Symbol	Characteristic	Min	Typ	Max	Unit	Test Conditions
P <sub>OUT</sub> (1)	Power Output	5			W	V <sub>DS</sub> =28 V, I <sub>DQ</sub> =0.025 A P <sub>IN</sub> =0.5 W, f=175 MHz
$\eta$ (1)	Drain Efficiency		60		%	
g <sub>m</sub>	Transconductance		65		mmho	V <sub>DS</sub> = 28 V, I <sub>D</sub> = . 25 A
C <sub>oss</sub>	Output Capacity		11			
C <sub>rss</sub>	Reverse Transfer Capacity		1.5		pF	V <sub>DS</sub> =28 V, V <sub>GS</sub> =0 V
C <sub>iss</sub>	Input Capacity		12			
NF(2)	Small Signal Noise Figure		6.8		dB	f=175 MHz, V <sub>DS</sub> =28 V I <sub>D</sub> =0.025 A

Notes: (1) All devices 100% power tested in Siliconix test fixture No. RF12175 [5]  
 (2) Noise figure measured with amplifier source and load power matched at 5 watts output.

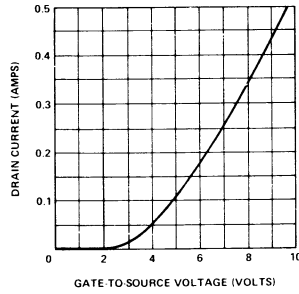


# Typical Performance Curves (25°C)

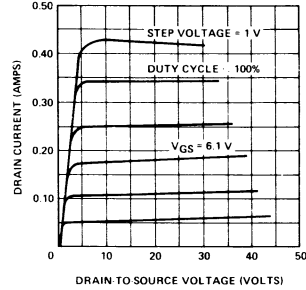
**Transconductance vs Drain Current**



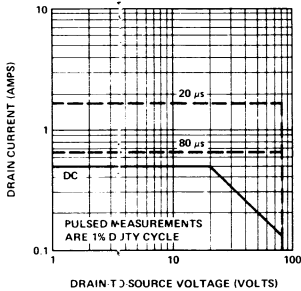
**Drain Current vs Gate-to-Source Voltage**



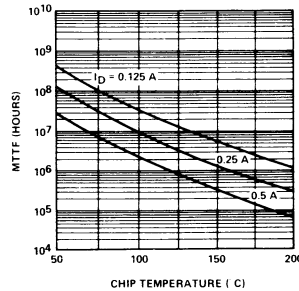
**Output Characteristics vs Drain-to-Source Voltage**



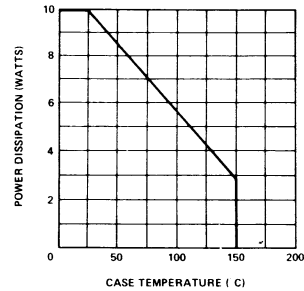
**DC and Inductive Safe Operating Region**  
Tc = 25°C



**MTF vs Chip Temperature**

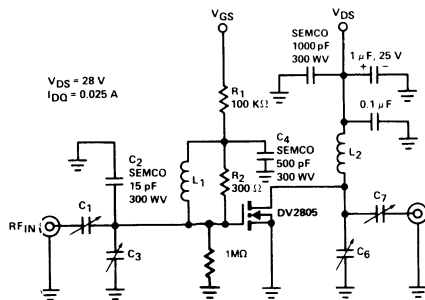


**Power Dissipation vs Case Temperature**



## Test Fixture

DV2805 175 MHz



### Parts List

- C3, 80 to 5 pF ARCO #462 trimmer capacitors
- C6, 30 to 2.7 pF ARCO #461 trimmer capacitors
- L1, 1 turn of #18 AWG on 1/4" diameter
- L2, 2 turns of #18 AWG on 1/4" diameter
- C1, 180 to 9 pF ARCO #463 trimmer capacitor

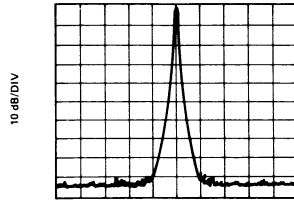
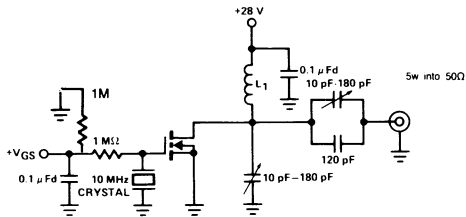
All DV2805s are tested in this test fixture.

Siliconix incorporated



# Applications

## DV2805 10 MHz Crystal Oscillator

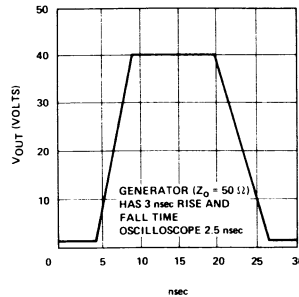
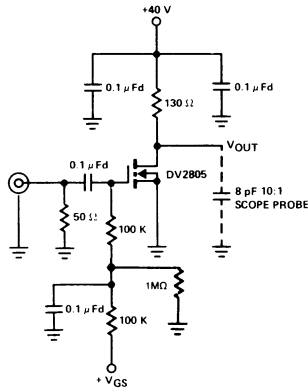


CENTER FREQ 10 MHz  
RESOLUTION BW 10 Hz  
VBW 10 Hz  
SWP 20 sec  
SPAN 1 KHz  
POWER OUT 5 W  
EFFICIENCY 65%

### Parts List

L<sub>1</sub> ~ 18 turns # 22 enamelled on micrometals  
T-50-6 torroid core. ≈ 1.0 .

## DV2805 Video CRT Driver



GENERATOR (Z<sub>o</sub> = 50 Ω)  
HAS 3 nsec RISE AND  
FALL TIME  
OSCILLOSCOPE 2.5 nsec

# RF Power FETs

## N-Channel Enhancement-Mode

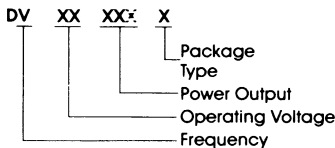
175 MHz 5W  
20-35V 10dB

### Benefits

- Infinite VSWR
- No Thermal Runaway
- Broadband Capability
- Class A, B, or C Operation
- Low Noise Figure
- High Dynamic Range
- Simple Bias Circuitry
- S-Parameter Design

Other devices in series:

DV2805, DV2820, DV2840, DV2880, DV28120



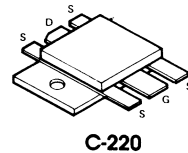
### Absolute Maximum Ratings (25°C)

- Gate-Source Voltage . . . . . 40 V
- Drain-Source Voltage . . . . . 80 V
- Drain-Gate Voltage . . . . . 80 V
- Drain Current (DC) . . . . . 1 A
- Total Device Dissipation . . . . . 20 W @ 25° Case
- $\theta_{jc}$  . . . . . 8.8°C/W
- Storage Temperature . . . . . -65°C to 150°C
- Junction Temperature . . . . . 200°C

Package Type S



Package Type W



### Electrical Characteristics (25°C)

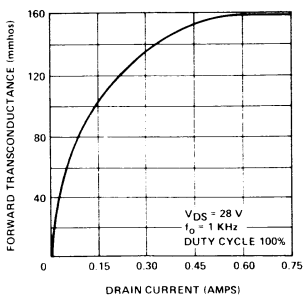
Symbol	Characteristic	Min	Typ	Max	Unit	Test Conditions
P <sub>OUT</sub> (1)	Power Output	10			W	V <sub>DS</sub> = 28 V, I <sub>DQ</sub> = 0.05 A P <sub>IN</sub> = 1 W, f = 175 MHz
$\eta$ (1)	Drain Efficiency		60		%	
g <sub>m</sub>	Transconductance		130		mmho	V <sub>DS</sub> = 28 V, I <sub>D</sub> = .5 A
C <sub>oss</sub>	Output Capacity		24			
C <sub>rss</sub>	Reverse Transfer Capacity		3		pF	V <sub>DS</sub> = 28 V, V <sub>GS</sub> = 0 V
C <sub>iss</sub>	Input Capacity		22			
NF(2)	Small Signal Noise Figure		6.8		dB	f = 175 MHz, V <sub>DS</sub> = 28 V I <sub>D</sub> = 0.05 A

**Notes:** (1) All devices 100% power tested in Siliconix test fixture No. RF12175 [10]  
(2) Noise figure measured with amplifier source and load power matched at 10 watts output.

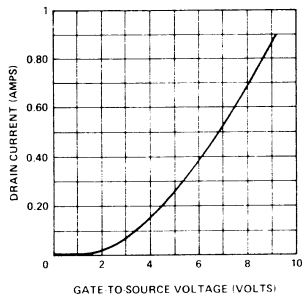


# Typical Performance Curves (25°C)

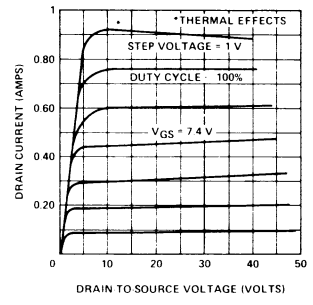
Transconductance vs Drain Current



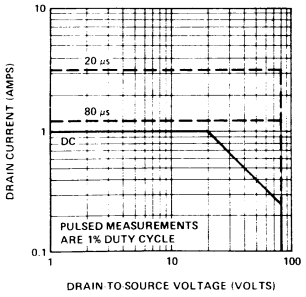
Drain Current vs Gate-to-Source Voltage



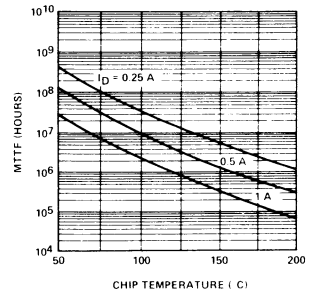
Output Characteristics vs Drain-to-Source Voltage



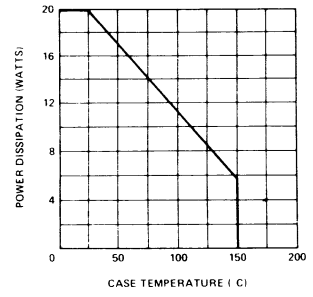
DC and Inductive Safe Operating Region  
TC = 25°C



MTTF vs Chip Temperature

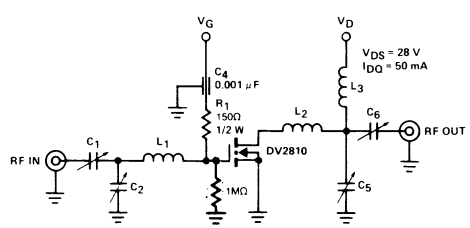


Power Dissipation vs Case Temperature



## Test Fixture

DV2810 175 MHz



### Parts List

- C1, C2, C5, C6, 5 to 80 pF, ARCO#462 trimmer capacitors
- L1, 4 turns#18 AWG on 1/8" diameter, close wound
- L2, 4 turns#16 AWG on 1/8" diameter, close wound
- L3, 10 turns#20 AWG on 1/4" diameter, close wound

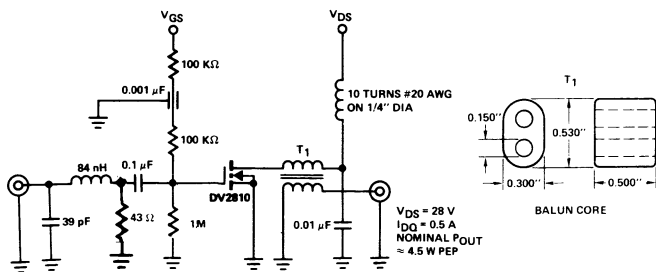
All DV 2810s are tested in this test fixture.



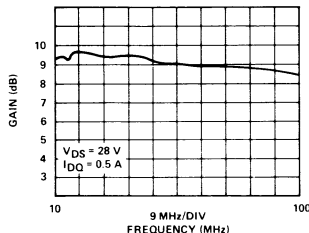


# Applications

## DV2810 28 V Wideband Amplifier



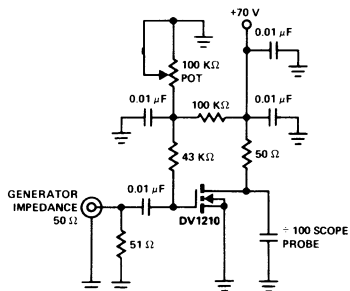
## Gain vs Frequency (Nominal POUT = 9.5)



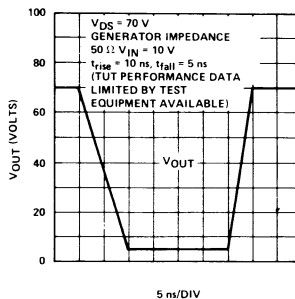
### Parts List

T<sub>1</sub>, 2 turns 50 Ω coax on 3-balun cores stackpole 57-0973,  $\mu_o = 35$

## DV2810 70 V CRT Driver



## tON and tOFF vs Voltage





# RF Power FETs

## N-Channel Enhancement-Mode

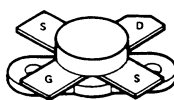
**175 MHz 20W**  
**20-35V 10dB**

Other Devices in Series:  
DV2805, DV2810, DV2840, DV2880, DV28120

### FEATURES

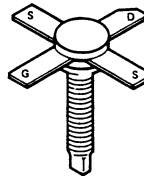
- Infinite VSWR
- No Thermal Runaway
- Broadband Capability
- Class A, B, C, D, E
- Low Noise Figure
- High Dynamic Range
- Simple Bias Circuitry
- S-Parameter Design

Package Type S



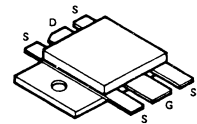
.380 SOE Flange

Package Type Z



.280 SOE Stud

Package Type W



C-220

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

Gate-Source Voltage .....	40V	Total device Dissipation .....	40W
Drain-Source Voltage .....	80V	Thermal Resistance, Junction to Case (S, Z) .....	4.4°C/W
Drain-Gate Voltage .....	80V	<i>W package</i> .....	3.5°C/W
Drain Current (DC) .....	2A	Junction Temperature .....	200°C
		Storage temperature.....	-65°C to 150°C

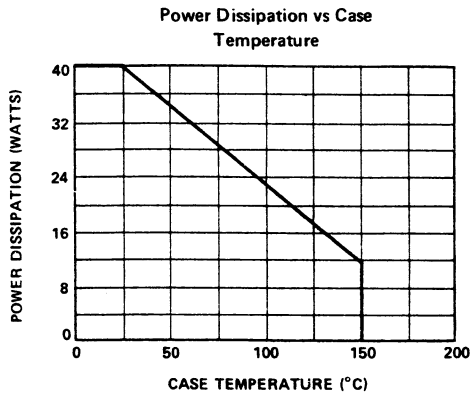
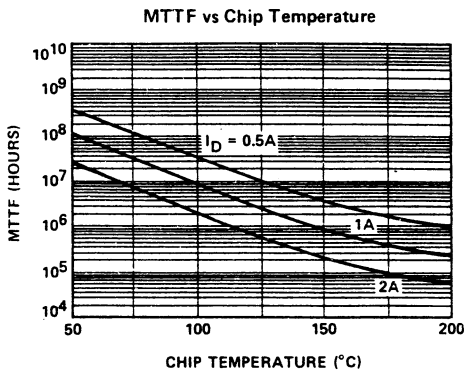
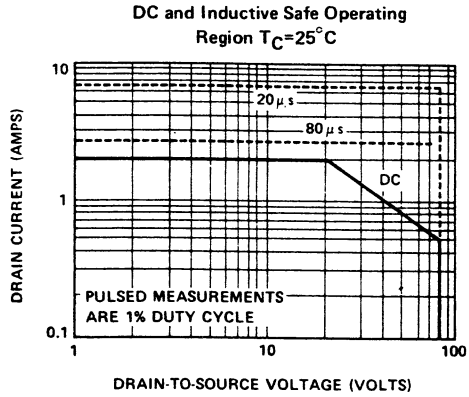
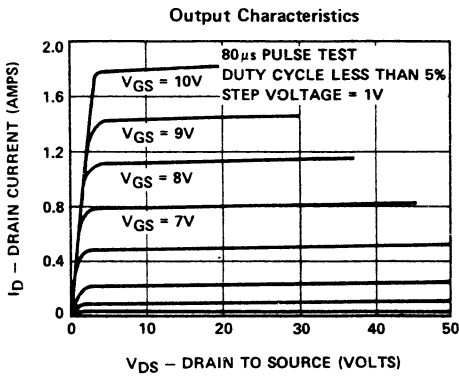
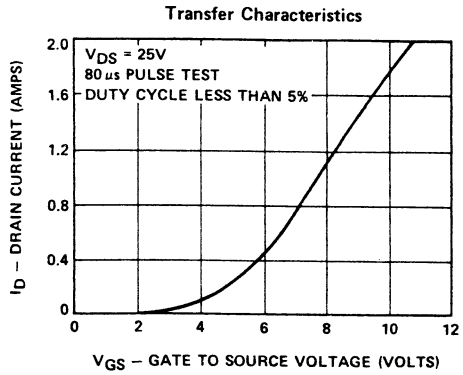
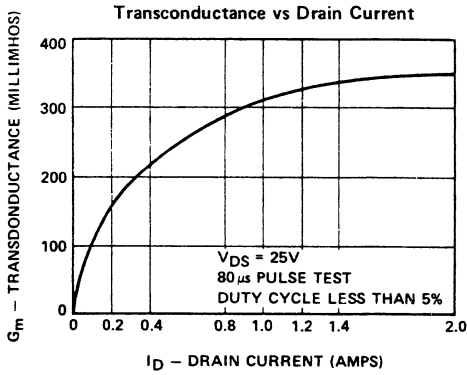
### ELECTRICAL CHARACTERISTICS ( $T_C = 25^\circ\text{C}$ unless otherwise noted)

Symbol	Characteristics	Min	Typ	Max	Unit	Test Conditions
$BV_{DSS}$	Drain-Source Breakdown Voltage	80			V	$V_{GS} = 0V, I_D = 5\text{ mA}$
$I_{DSS}$	Drain-Source Leakage Current			1	mA	$V_{GS} = 0V, V_{DS} = 30V$
$I_{GSS}$	Gate-Source Leakage Current			100	nA	$V_{GS} = 40V, V_{DS} = 0V$
$g_m$	D.C. Forward Transconductance	0.2	0.3		mho	$V_{DS} = 10V, I_D = 1A, \Delta V_{GS} = 1.0V$
$I_{D(on)}$	On-State Drain Current		1.8		A	$V_{DS} = 30V, V_{GS} = 10V$
$V_{GS(th)}$	Gate Threshold Voltage	2		6	V	$V_{GS} = V_{DS}, I_D = 100\text{ mA}$
$C_{iss}$	Common-Source Input Capacitance			50	pF	$V_{GS} = 0V, V_{DS} = 30V, f = 1.0\text{ MHz}$
$C_{oss}$	Common-Source Output Capacitance			40	pF	$V_{GS} = 0V, V_{DS} = 30V, f = 1.0\text{ MHz}$
$C_{rss}$	Reverse Transfer Capacitance			7.5	pF	$V_{GS} = 0V, V_{DS} = 30V, f = 1.0\text{ MHz}$
$G_{ps}$	Common-Source Power Gain	10			dB	$V_{DD} = 28V, P_o = 20W, f = 175\text{ MHz}, I_{DQ} = 0.1A$
$\eta$	Drain Efficiency		65		%	$V_{DD} = 28V, P_o = 20W, f = 175\text{ MHz}, I_{DQ} = 0.1A$
VSWR	Load Mismatch Tolerance	30:1				$V_{DD} = 28V, P_o = 20W, f = 175\text{ MHz}, I_{DQ} = 0.1A$
N.F.	Noise Figure		5.6		dB	$V_{DS} = 28V, I_D = 0.1A, f = 175\text{ MHz}$

TYPICAL PERFORMANCE CURVES (25°C unless otherwise noted)



DV2820S DV2820W DV2820Z



2

SMALL SIGNAL 2-PORT PARAMETERS



POLAR S-PARAMETERS DV2820S IN 50.0 OHM SYSTEM

Freq (MHz)	S <sub>11</sub>		S <sub>21</sub>		S <sub>12</sub>		S <sub>22</sub>	
	(Magn)	(Angl)	(Magn)	(Angl)	(Magn)	(Angl)	(Magn)	(Angl)
10	.93	-36	22.13	150	.03	63	.83	-35
20	.89	-67	18.84	134	.05	50	.78	-65
30	.84	-91	15.85	124	.06	41	.72	-85
40	.79	-107	12.59	113	.06	32	.69	-102
50	.76	-120	10.00	99	.07	19	.65	-114
60	.73	-129	8.41	91	.07	15	.62	-121
70	.72	-137	7.5	85	.07	12	.62	-128
80	.72	-142	6.31	80	.07	9	.62	-133
90	.72	-147	5.31	76	.06	8	.62	-139
100	.72	-151	5.01	73	.06	7	.62	-142
120	.73	-156	3.98	66	.06	6	.64	-148
140	.75	-162	3.35	61	.06	6	.66	-153
160	.76	-166	2.82	56	.06	7	.68	-157
180	.78	-169	2.37	53	.05	11	.71	-162
200	.79	-173	2.04	50	.05	14	.73	-165
225	.80	-175	1.78	45	.05	17	.78	-168
250	.81	180	1.51	40	.05	21	.78	-171
275	.82	175	1.29	37	.05	26	.79	-174
300	.82	173	1.12	35	.05	30	.80	-175
325	.83	171	.99	33	.05	36	.80	-176
350	.84	170	.87	31	.05	40	.81	-176
375	.84	169	.79	30	.06	45	.82	-177

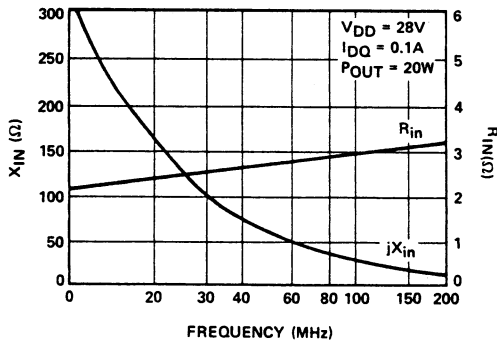
Conditions: 28V @ 450 mA

POLAR S-PARAMETERS DV2820W IN 50.0 OHM SYSTEM

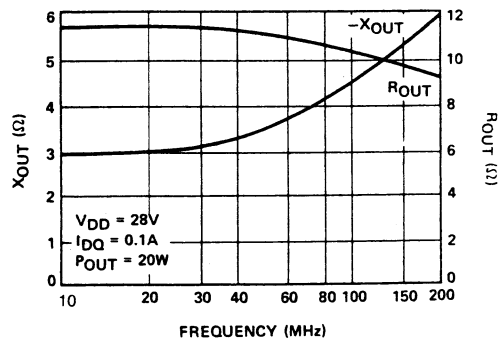
Freq (MHz)	S <sub>11</sub>		S <sub>21</sub>		S <sub>12</sub>		S <sub>22</sub>	
	(Magn)	(Angl)	(Magn)	(Angl)	(Magn)	(Angl)	(Magn)	(Angl)
10	.94	-34	20.89	155	.03	66	.84	-33
20	.92	-61	17.78	137	.05	51	.80	-58
30	.88	-85	14.96	122	.06	37	.76	-80
40	.83	-103	12.30	110	.07	27	.72	-95
50	.79	-115	10.00	102	.07	19	.69	-107
60	.77	-124	8.41	96	.07	15	.67	-116
70	.76	-131	7.24	89	.07	12	.66	-123
80	.76	-137	6.31	85	.07	7	.66	-127
90	.75	-141	5.62	81	.07	5	.66	-131
100	.75	-144	4.95	77	.07	3	.66	-135
120	.76	-151	3.98	72	.07	1	.68	-140
140	.78	-155	3.16	67	.06	-1	.70	-144
160	.79	-159	2.82	64	.06	-3	.71	-149
180	.79	-162	2.37	60	.06	-5	.73	-152
200	.80	-164	2.07	57	.06	-5	.75	-154
225	.81	-167	1.76	53	.06	-6	.77	-156
250	.82	-171	1.51	50	.05	-7	.78	-159
275	.83	-174	1.30	47	.05	-6	.79	-161
300	.84	-174	1.14	45	.05	-5	.82	-161
325	.84	-176	1.00	42	.05	-3	.82	-162
350	.85	-178	.88	41	.04	-1	.83	-163
375	.86	179	.79	40	.04	2	.84	-164
400	.88	175	.74	39	.04	5	.86	-165
425	.88	173	.66	39	.04	9	.86	-166
450	.88	172	.61	39	.04	14	.86	-168
475	.87	170	.57	38	.03	18	.86	-169
500	.87	168	.53	38	.03	24	.86	-172

Conditions: 28V @ 450 mA

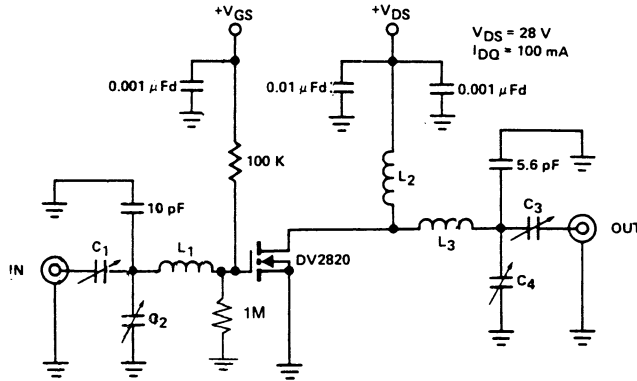
Series Equivalent Input Impedance vs Frequency



Series Equivalent Output Impedance vs Frequency



DV2820 175MHz

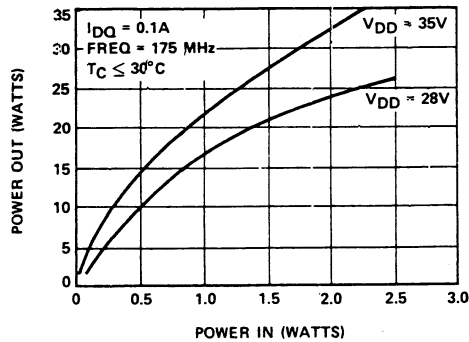


Parts List

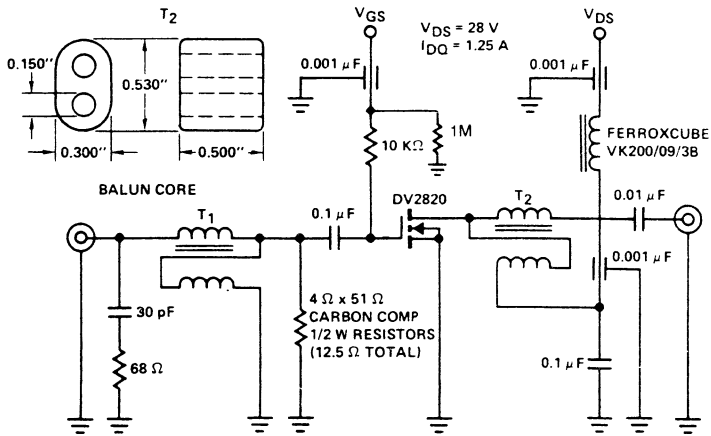
- C1, C3, 5-80 pFd
- C2, C4, 3-30 pFd
- L1, L3, 2 turns #20 enamel wire, close wound on 1/4" dia.
- L2, 7 turns #20 enamel wire, close wound on 1/4" dia.

All DV2820s are tested in this test fixture.

Typical Output Power vs Input Power



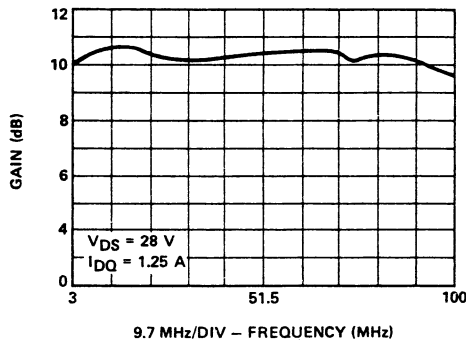
28V WIDEBAND AMPLIFIER



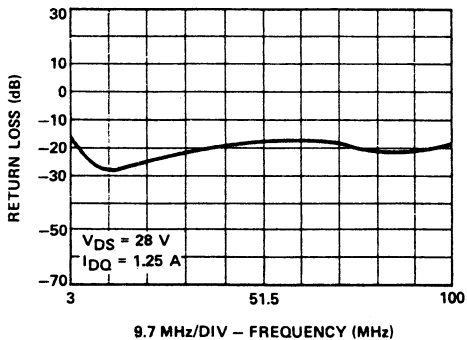
Parts List

- T<sub>1</sub>, 20 turns 30 Ω, #30 bifilar on micrometals T-50-6 Toroid
- T<sub>2</sub>, 1 turn of 2-50 Ω coax cables in parallel through 2 balun cores stackpole #57-9130 μ<sub>o</sub> = 125

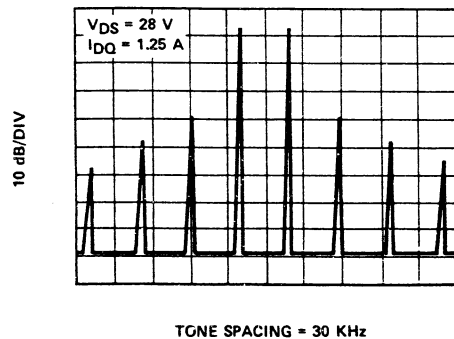
Gain vs Frequency  
(Nominal P<sub>OUT</sub>=19.4 W)



Input Return Loss vs Frequency



Intermodulation Distortion vs Frequency  
(Nominal Power Output 12 W PEP)



# RF Power FETs

## N-Channel

### Enhancement-Mode



DV2840S DV2840T DV2840W

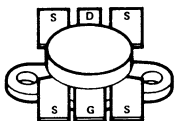
Other Devices in Series:  
DV2805, DV2810, DV2820, DV2880, DV28120

**175 MHz**    **40 W**  
**20-35 V**    **10 dB**

#### FEATURES

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

Package Type T



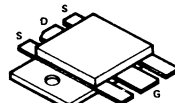
.500 SOE Flange

Package Type S



.380 SOE Flange

Package Type W



C-220

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

Gate-Source Voltage	40V	Total Device Dissipation	80 W
Drain-Source Voltage	80V	Thermal Resistance, Junction to Case	2.2°C/W
Drain-Gate Voltage	80V	Junction Temperature	200°C
Drain Current (DC)	4 A	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	$V_{GS} = 0V, I_D = 10\text{ mA}$
$I_{DSS}$	Drain-Source Leakage Current			2	mA	$V_{GS} = 0V, V_{DS} = 30\text{ V}$
$I_{GSS}$	Gate-Source Leakage Current			100	nA	$V_{GS} = 40V, V_{DS} = 0V$
$g_m$	DC Forward Transconductance	0.4				$V_{DS} = 10V, I_D = 2A, \Delta V_{GS} = 1.0V$
$I_{D(on)}$	On-State Drain Current		3.0		A	$V_{DS} = 30V, V_{GS} = 10V$
$V_{GS(th)}$	Gate Threshold Voltage	2.0		6.0	V	$V_{GS} = V_{DS}, I_D = 200\text{ mA}$
$C_{iss}$	Common-Source Input Capacitance			100	pF	$V_{GS} = 0V, V_{DS} = 30V, f = 1.0\text{ MHz}$
$C_{oss}$	Common-Source Output Capacitance			80	pF	$V_{GS} = 0V, V_{DS} = 30V, f = 1.0\text{ MHz}$
$C_{rss}$	Reverse Transfer Capacitance			12	pF	$V_{GS} = 0V, V_{DS} = 30V, f = 1.0\text{ MHz}$
$G_{ps}$	Common-Source Power Gain	10			dB	$V_{DD} = 28V, P_o = 40W, f = 175\text{ MHz}, I_{DQ} = 0.2A$
$\eta$	Drain Efficiency		65		%	$V_{DD} = 28V, P_o = 40W, f = 175\text{ MHz}, I_{DQ} = 0.2A$
VSWR	Load Mismatch Tolerance	30:1				$V_{DD} = 28V, P_o = 40W, f = 175\text{ MHz}, I_{DQ} = 0.2A$

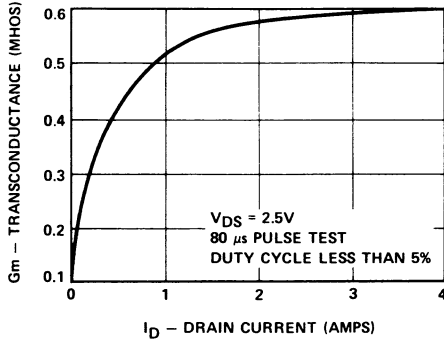
2 × VNR

2

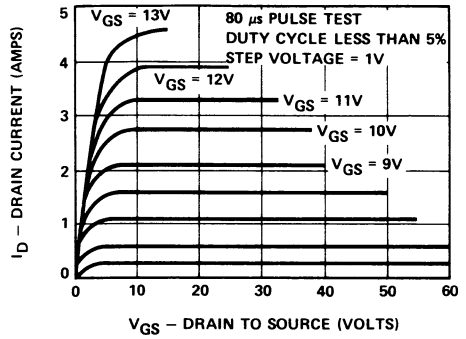
TYPICAL PERFORMANCE CURVES (25° C unless otherwise specified)



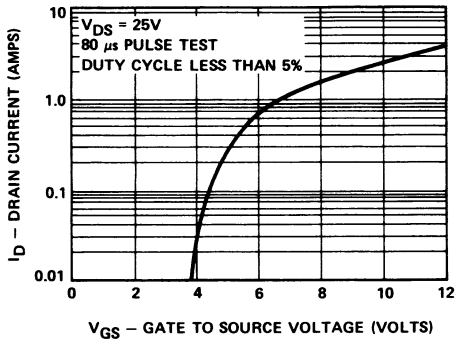
Transconductance vs  
Drain Current



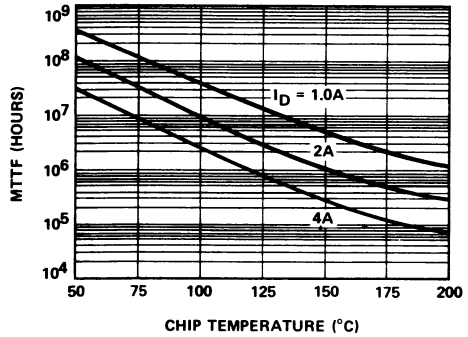
Output Characteristics



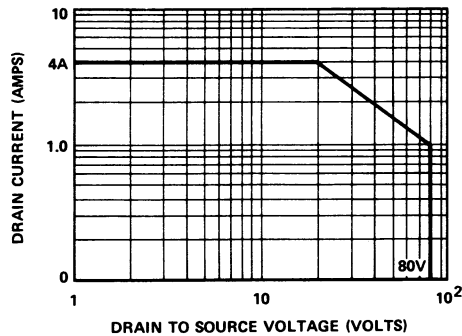
Transfer Characteristics



MTTF vs Chip Temperature



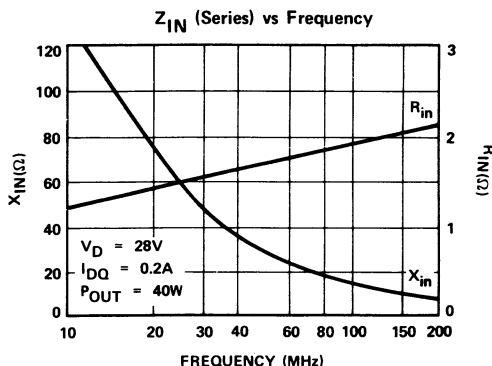
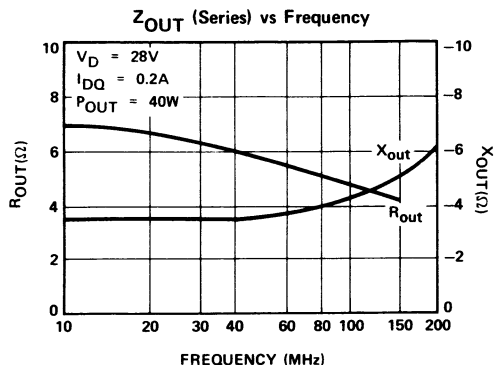
DC Safe Operating Region



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



DV2840S  
DV2840T  
DV2840W



**SMALL SIGNAL 2-PORT PARAMETERS**

**2-PORT S-PARAMETERS DV2840S**

**2-PORT S-PARAMETERS DV2840W**

Freq (MHz)	S <sub>11</sub> (Magn Angl)	S <sub>21</sub> (Magn Angl)	S <sub>12</sub> (Magn Angl)	S <sub>22</sub> (Magn Angl)
10	.78 -92°	28.71 124°	.04 37°	.65 -97°
20	.76 -127	17.44 108°	.05 19°	.66 -131
30	.78 -145	12.19 104	.05 13	.67 -146
40	.81 -151	9.07 91	.05 10	.73 -151
50	.78 -157	6.95 81	.05 10	.69 -155
60	.78 -160	5.71 75	.05 -1	.69 -157
70	.78 -164	4.96 71	.04 -2	.70 -160
80	.79 -165	4.11 67	.04 -4	.71 -161
90	.80 -167	3.39 65	.04 -3	.73 -163
100	.81 -169	3.16 63	.04 -3	.74 -164
120	.83 -170	2.45 57	.04 -3	.76 -166
140	.84 -173	2.01 54	.04 -2	.78 -168
160	.85 -174	1.67 50	.03 1	.80 -170
180	.87 -176	1.38 48	.03 6	.83 -172
200	.88 -177	1.17 46	.03 10	.84 -173
225	.89 -178	1.00 42	.03 14	.87 -175
250	.90 179	.84 38	.03 19	.87 -176
275	.88 180	.88 31	.03 20	.86 -176
300	.90 -177	.62 33	.03 28	.89 -178
325	.91 -176	.55 30	.03 33	.89 -178
350	.91 -175	.48 28	.03 37	.90 -178
375	.91 -175	.43 27	.03 42	.90 -179

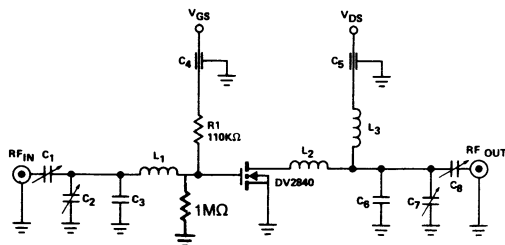
Freq (MHz)	S <sub>11</sub> (Magn Angl)	S <sub>21</sub> (Magn Angl)	S <sub>12</sub> (Magn Angl)	S <sub>22</sub> (Magn Angl)
10	.82 -85°	28.32 129°	.04 40°	.68 -89
20	.78 -121	17.77 108	.05 21	.66 -123
30	.79 -139	12.40 95	.05 10	.68 -139
40	.79 -150	9.22 87	.05 4	.68 -146
50	.79 -153	7.10 82	.05 -1	.69 -150
60	.79 -157	5.75 78	.05 -3	.70 -154
70	.80 -160	4.81 73	.05 -4	.72 -157
80	.80 -162	4.13 70	.05 -8	.72 -157
90	.81 -164	3.62 67	.05 -9	.73 -159
100	.81 -165	3.14 64	.04 -10	.75 -160
120	.83 -167	2.47 60	.04 -11	.77 -167
140	.85 -169	1.91 56	.04 -12	.79 -163
160	.86 -171	1.67 54	.04 -13	.81 -166
180	.87 -172	1.39 51	.04 -14	.83 -167
200	.88 -173	1.19 49	.04 -13	.84 -168
225	.89 -174	1.00 46	.03 -13	.86 -168
250	.89 -176	.85 44	.03 -13	.87 -170
275	.90 -177	.73 42	.03 -11	.88 -171
300	.91 -177	.63 40	.03 -10	.90 -171
325	.91 -178	.55 37	.02 -8	.90 -171
350	.92 -179	.483 37	.02 -5	.90 -172
375	.92 179	.432 37	.02 -1	.91 -172
400	.93 177	.401 37	.02 3	.92 -173
425	.93 176	.358 38	.02 8	.92 -173
450	.93 176	.328 38	.02 13	.92 -174
475	.93 175	.307 38	.02 18	.93 -175
500	.93 174	.286 39	.02 25	.93 -176

2



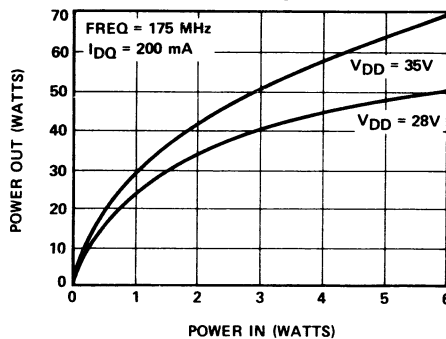
TEST FIXTURE

175 MHz Schematic



- NOTES: C<sub>1</sub>, C<sub>7</sub>, C<sub>8</sub>, ARCO #422 TRIMMER CAPACITORS, 4-40 pF  
 C<sub>2</sub>, ARCO #483 TRIMMER CAPACITOR, 9-180 pF  
 C<sub>3</sub>, C<sub>5</sub>, SEMCO 50 pF POWER CAPACITOR  
 C<sub>4</sub>, C<sub>6</sub>, 0.004 μF FEED-THRU CAPACITORS  
 L<sub>1</sub>, 1 1/4" LENGTH OF #12 AWG COPPER WIRE  
 L<sub>2</sub>, 1 1/2" LENGTH OF #12 AWG COPPER WIRE  
 L<sub>3</sub>, 8-TURNS OF #22 AWG ENAMELED WIRE ON 1/4" DIAMETER, CLOSE WOUND

P<sub>IN</sub> vs P<sub>OUT</sub>



# RF Power FETs



Preliminary

**n-channel enhancement-mode  
RF VMOS power FET  
designed for...**

**Push-Pull  
175 MHz 40W  
28-35V 10dB**

**HF/VHF/UHF Amplifiers  
Class A, B, or C**

**High Dynamic Range Amplifier**

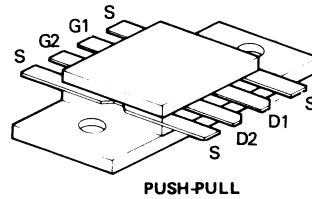
## Benefits

- No Thermal Runaway**
- Withstands Infinite VSWR**
- Class A, B, or C Operation**
- Low Noise Figure**
- High Dynamic Range**
- Simple Bias Circuitry**

### ABSOLUTE MAXIMUM RATINGS (25°C)

Gate-Source Voltage	40 V
Drain-Source Voltage	80 V
Drain-Gate Voltage	80 V
Drain Current	4 A
Total Device Dissipation @ 25°C Case	80 W
$\theta_{jc}$	2.2 °C/W
Storage Temperature	-65°C to 150°C
Max Junction Temp.	+200°C

V-Package



## Electrical Characteristics (25°C)

SYMBOL	CHARACTERISTIC	MIN	TYP	MAX	UNIT	TEST CONDITIONS
$P_{OUT}^{(1)}$	POWER OUTPUT	40			W	$V_{DD} = 28\text{ V}$ , $I_{DQ} = 0.2\text{ A}$ $P_{IN} = 4\text{ W Max}$ , $F = 175\text{ MHz}$
$\eta^{(1)}$	DRAIN EFFICIENCY	60			%	
$g_m^{(2)}$	TRANSCONDUCTANCE		0.5 PARALLEL		Mho	$V_{DS} = 28\text{ V}$ , $I_D = 2\text{ A}$
$C_{oss}$	OUTPUT CAPACITY		28 (Per Side)			
$C_{rss}$	REVERSE TRANSFER CAPACITY		4 (Per Side)		pF	$V_{DS} = 28\text{ V}$ , $V_{GS} = 0\text{ V}$
$C_{iss}$	INPUT CAPACITY		35 (Per Side)			
NF <sup>(3)</sup>	SMALL SIGNAL NOISE FIGURE		7.0		dB	$V_{DS} = 28\text{ V}$ $I_D = 0.2\text{ A}$ $F = 100\text{ MHz}$

© Siliconix incorporated

**NOTES:**

- (1) All devices 100% power tested in Siliconix test fixture No. RF 28175 [PP1].
- (2) Measured under pulsed condition with pulse width 300  $\mu\text{sec}$  > 5% duty cycle.
- (3) Noise figure measured with amplifier source and load power matched at 40 watts output.