

RF MOSFET Power Transistor, 40W, 28V

2 - 175 MHz

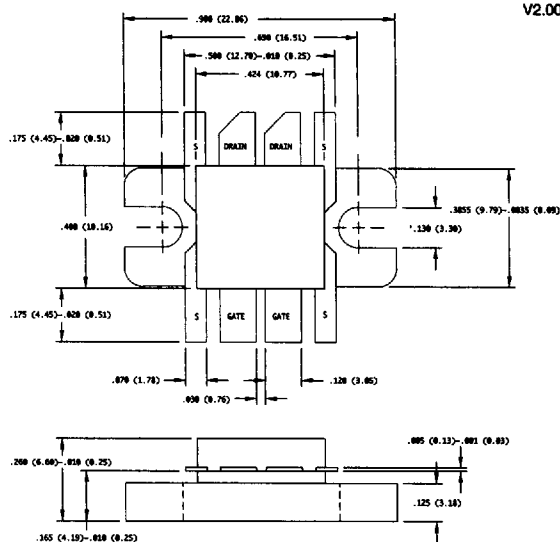
DU2840V

Features

- N-Channel Enhancement Mode Device
- HF to VHF Applications
- 40 Watts CW
- Common Source Push-Pull Configuration
- DMOS Structure
- Aluminum Metallization

Absolute Maximum Ratings at 25°C

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	65	V
Gate-Source Voltage	V_{GS}	20	V
Drain-Source Current	I_{DS}	8	A
Power Dissipation	P_D	125	W
Junction Temperature	T_J	200	°C
Storage Temperature	T_{STG}	-55 to +150	°C
Thermal Resistance	θ_{JC}	1.4	°C/W



Electrical Characteristics at 25°C

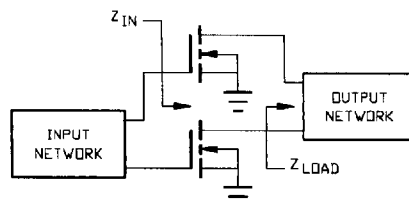
Parameter	Symbol	Min	Max	Units	Test Conditions
Drain-Source Breakdown Voltage	BV_{DSS}	65	-	V	$I_D=5.0 \text{ mA}$, $V_{GS}=0.0 \text{ V}^*$
Drain-Source Leakage Current	I_{DSS}	-	1.0	mA	$V_{DS}=28.0 \text{ V}$, $V_{GS}=0.0 \text{ V}^*$
Gate-Source Leakage Current	I_{GSS}	-	1.0	μA	$V_{GS}=20 \text{ V}$, $V_{DS}=0.0 \text{ V}^*$
Gate Threshold Voltage	$V_{GS(TH)}$	2.0	6.0	V	$V_{DS}=10.0 \text{ V}$, $I_{DS}=100 \text{ mA}^*$
Forward Transconductance	G_M	500	-	mS	$V_{DS}=10.0 \text{ V}$, $I_{DS}=1000 \text{ mA (pulsed)}^*$
Input Capacitance	C_{iss}		45	pF	$V_{DS}=28.0 \text{ V}$, $F=1.0 \text{ MHz}^*$
Output Capacitance	C_{oss}		40	pF	$V_{DS}=28.0 \text{ V}$, $F=1.0 \text{ MHz}^*$
Reverse Capacitance	C_{rss}		8	pF	$V_{DS}=28.0 \text{ V}$, $F=1.0 \text{ MHz}^*$
Power Gain	G_P	13	-	dB	$V_{DD}=26.0 \text{ V}$, $I_{DQ}=200 \text{ mA}$, $P_{OUT}=40 \text{ W}$, $F=175 \text{ MHz}$
Drain Efficiency	η_{DQ}	60	-	%	$V_{DD}=26.0 \text{ V}$, $I_{DQ}=200 \text{ mA}$, $P_{OUT}=40 \text{ W}$, $F=175 \text{ MHz}$
Load Mismatch Tolerance	VSWR-T	-	30:1	-	$V_{DD}=26.0 \text{ V}$, $I_{DQ}=200 \text{ mA}$, $P_{OUT}=40 \text{ W}$, $F=175 \text{ MHz}$

* Per Side

Typical Optimum Device Impedances

F(MHz)	$Z_{IN}(\Omega)$	$Z_{LOAD}(\Omega)$
30	30 - j23	30 + j5.0
50	25 - j28	29 + j6.0
100	15 - j25	22 + j10
200	10 - j13	18 + j11

$V_{DD}=28 \text{ V}$, $I_{DQ}=200 \text{ mA}$, $P_{OUT}=40 \text{ W}$



MACOM, Inc.

Specifications Subject to Change Without Notice.

North America: Tel. (800) 366-2266
Fax (800) 618-8883

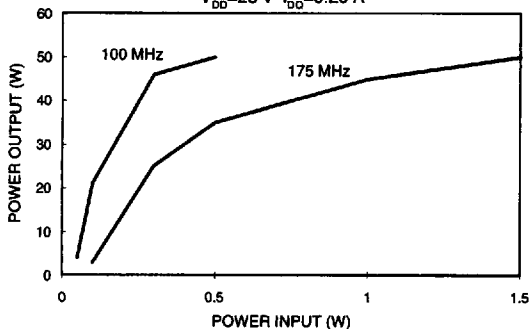
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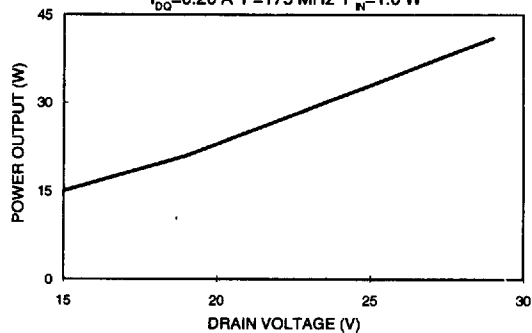
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Typical Broadband Performance Curves

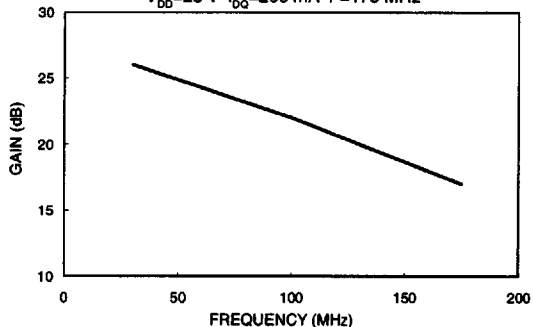
OUTPUT POWER vs INPUT POWER

 $V_{DD}=28\text{ V}$ $I_{DQ}=0.20\text{ A}$ 

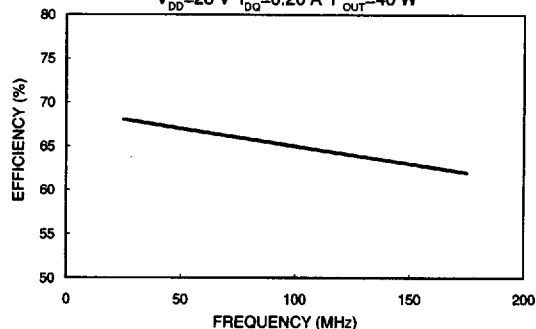
OUTPUT POWER vs DRAIN VOLTAGE

 $I_{DQ}=0.20\text{ A}$ $F=175\text{ MHz}$ $P_{IN}=1.0\text{ W}$ 

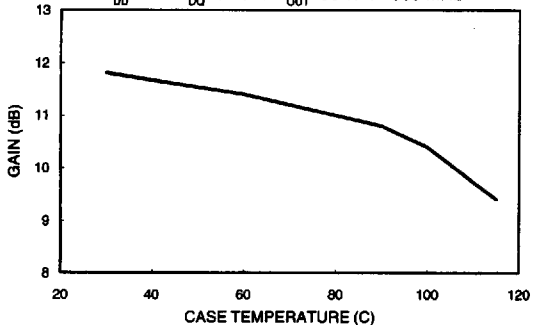
GAIN vs FREQUENCY

 $V_{DD}=28\text{ V}$ $I_{DQ}=200\text{ mA}$ $F=175\text{ MHz}$ 

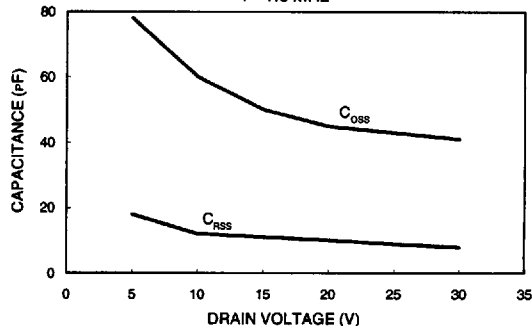
EFFICIENCY vs FREQUENCY

 $V_{DD}=28\text{ V}$ $I_{DQ}=0.20\text{ A}$ $P_{OUT}=40\text{ W}$ 

GAIN vs TEMPERATURE

 $V_{DD}=26\text{ V}$ $I_{DQ}=0.40\text{ A}$ $P_{OUT}=80\text{ W}$ $F=960\text{ MHz}$ 

CAPACITANCE vs VOLTAGE

 $F=1.0\text{ MHz}$ 

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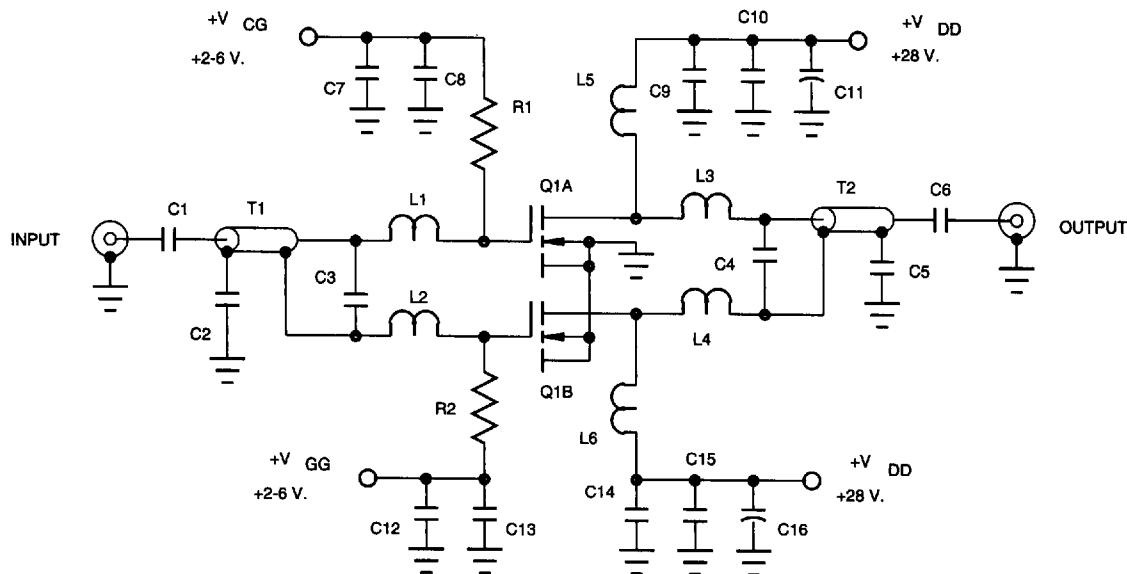
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RF Test Fixture



PARTS LIST

C1 C6	ATC 300 pF
C2 C5	ATV 820 pF
C3	ATC 55 pF
C4	ATC 12 pF
C7 C9 C12 C14	ATC 5000 pF
C8 C10 C13 C15	CERAMIC .01 uF
C11 C16	ELECTROLYTIC 47 uF
R1 R2	470 OHMS .25 W
L1 L2 L3 L4	NO. 18 AWG 1.0" LONG X .75" HIGH
L5 L6	9 TURNS OF NO. 18 AWG ON .25" ID
T1 T2	50 OHM .085" OD X 3.0" LONG
Q1	DU2840V

28 VOLT 40 WATT

 $I_{DQ} = .2 \text{ AMP}$
 175 MHZ

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