UF2820P

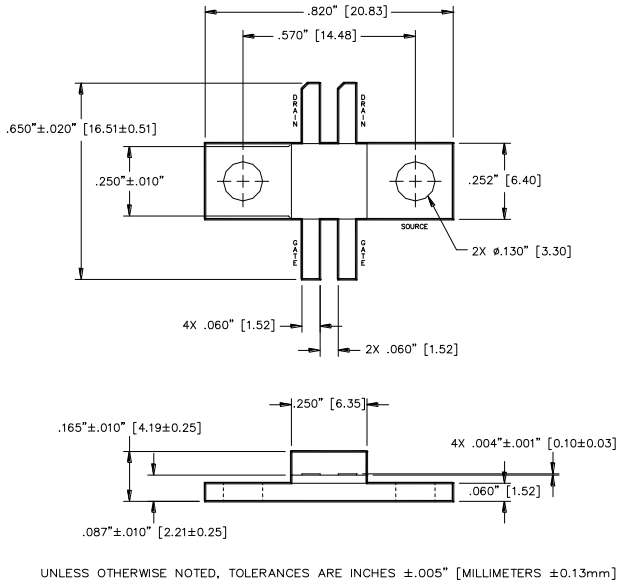
RF Power MOSFET Transistor
20W, 100-500 MHz, 28V

Rev. V1

Features

- N-channel enhancement mode device
- DMOS structure
- Lower capacitances for broadband operation
- Common source configuration
- Lower noise floor

Package Outline



UNLESS OTHERWISE NOTED, TOLERANCES ARE INCHES ±.005" [MILLIMETERS ±0.13mm]

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}	2.8	A
Power Dissipation	P_D	53	W
Junction Temperature	T_J	200	°C
Storage Temperature	T_{STG}	-55 to 150	°C
Thermal Resistance	θ_{JC}	3.3	°C/W

TYPICAL DEVICE IMPEDANCES

F (MHz)	Z_{IN} (Ω)	Z_{LOAD} (Ω)
100	9.5-j60.0	4.0+j68.0
300	5.0-j35.0	40.0+j48.0
500	2.0-j22.0	36.0+j34.0
V_{DD}=28V, I_{DQ}=200 mA, P_{OUT} =20.0 W		

Z_{IN} is the series equivalent input impedance of the device from gate to source.

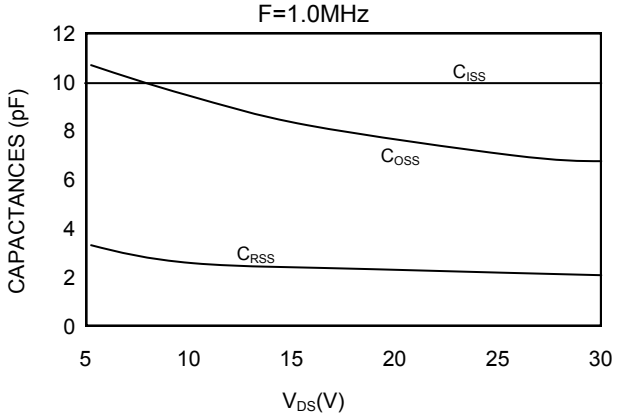
Z_{LOAD} is the optimum series equivalent load impedance as measured from drain to ground.

ELECTRICAL CHARACTERISTICS AT 25°C

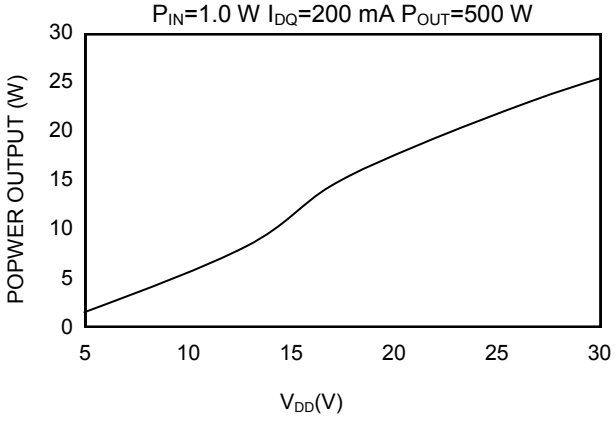
Parameter	Symbol	Min	Max	Units	Test Conditions
Drain-Source Breakdown Voltage	BV_{DSS}	65	-	V	V_{GS} = 0.0 V , I_{DS} = 4.0 mA
Drain-Source Leakage Current	I_{DSS}	-	2.0	mA	V_{GS} = 28.0 V , V_{GS} = 0.0 V
Gate-Source Leakage Current	I_{GSS}	-	2.0	µA	V_{GS} = 20.0 V , V_{DS} = 0.0 V
Gate Threshold Voltage	$V_{GS(TH)}$	2.0	6.0	V	V_{DS} = 10.0 V , I_{DS} = 200.0 mA
Forward Transconductance	G_M	.160	-	S	V_{DS} = 10.0 V , I_{DS} 200.0 mA , Δ V_{GS} = 1.0V, 80 µs Pulse
Input Capacitance	C_{ISS}	-	14	pF	V_{DS} = 28.0 V , F = 1.0 MHz
Output Capacitance	C_{OSS}	-	10	pF	V_{DS} = 28.0 V , F = 1.0 MHz
Reverse Capacitance	C_{RSS}	-	4.8	pF	V_{DS} = 28.0 V , F = 1.0 MHz
Power Gain	G_P	10	-	dB	V_{DD} = 28.0 V, I_{DQ} = 200.0 mA, P_{OUT} = 20.0 W F =500 MHz
Drain Efficiency	η_D	50	-	%	V_{DD} = 28.0 V, I_{DQ} = 200.0 mA, P_{OUT} = 20.0 W F =500 MHz
Load Mismatch Tolerance	VSWR-T	-	20:1	-	V_{DD} = 28.0 V, I_{DQ} = 200.0 mA, P_{OUT} = 20.0 W F =500 MHz

Typical Broadband Performance Curves

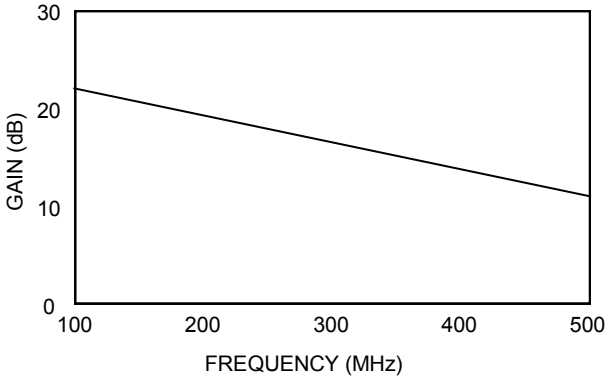
CAPACITANCES vs VOLTAGE
F=1.0MHz



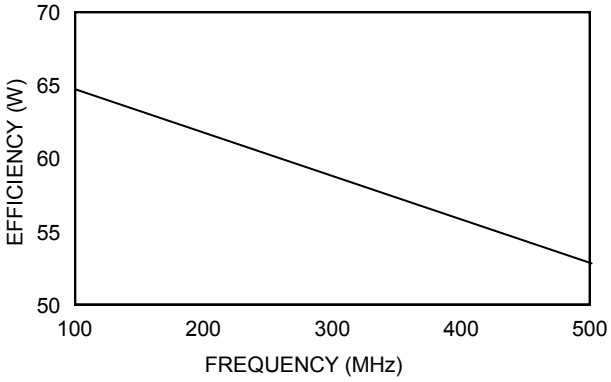
POWER OUTPUT vs VOLTAGE
P_{IN}=1.0 W I_{DQ}=200 mA P_{OUT}=500 W



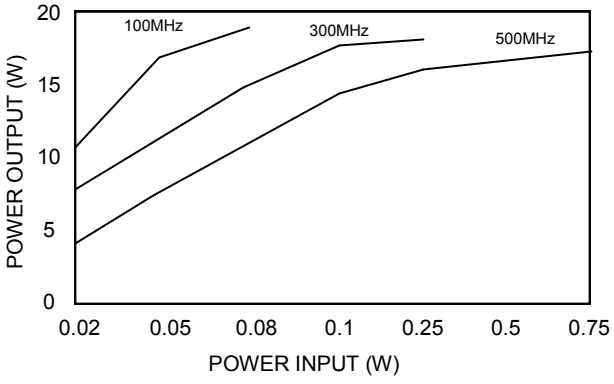
GAIN vs FREQUENCY
V_{DD} =28 V P_{OUT}=20 W I_{DQ} =200 mA



EFFICIENCY vs FREQUENCY
I_{DD}=200 mA P_{OUT} =20 W F =500 MHz



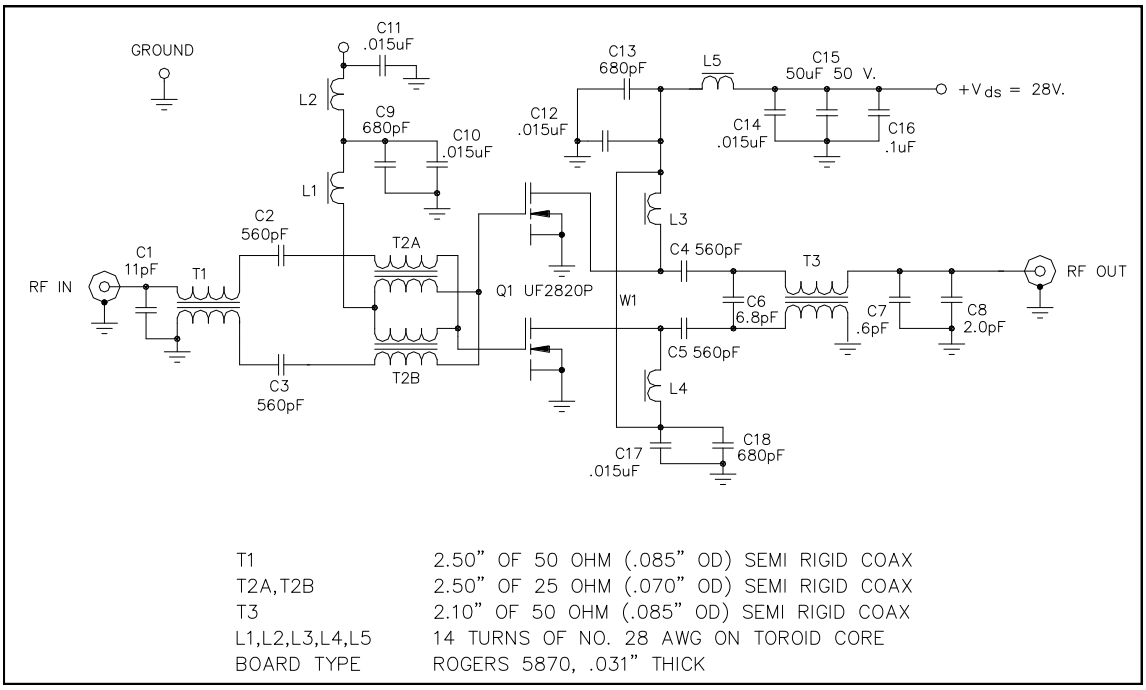
POWER OUTPUT vs POWER INPUT
V_{DD} =28 V I_{DQ} =150 mA



RF Power MOSFET Transistor
20W, 100-500 MHz, 28V

Rev. V1

TEST FIXTURE SCHEMATIC



T1	2.50" OF 50 OHM (.085" OD) SEMI RIGID COAX
T2A,T2B	2.50" OF 25 OHM (.070" OD) SEMI RIGID COAX
T3	2.10" OF 50 OHM (.085" OD) SEMI RIGID COAX
L1,L2,L3,L4,L5	14 TURNS OF NO. 28 AWG ON TOROID CORE
BOARD TYPE	ROGERS 5870, .031" THICK

TEST FIXTURE ASSEMBLY