UF2820P

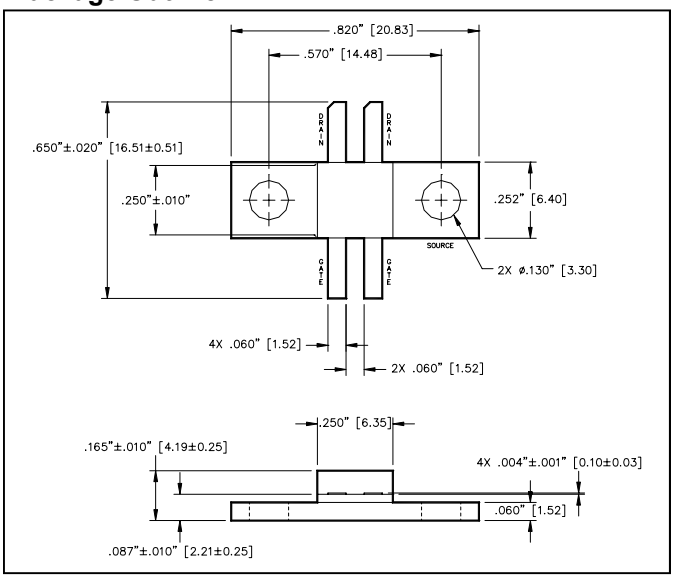
RF Power MOSFET Transistor
20W, 100-500 MHz, 28V

M/A-COM Products
Released; RoHS Compliant

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

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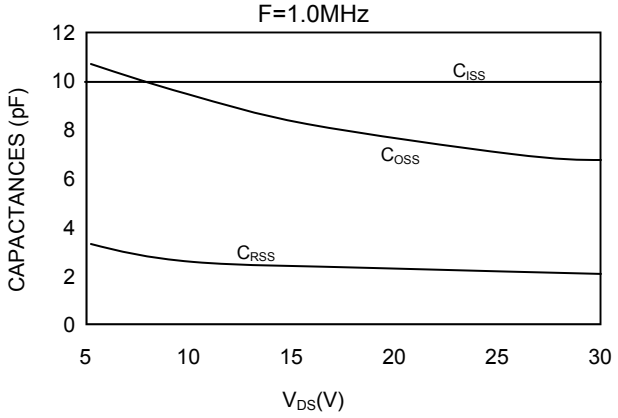
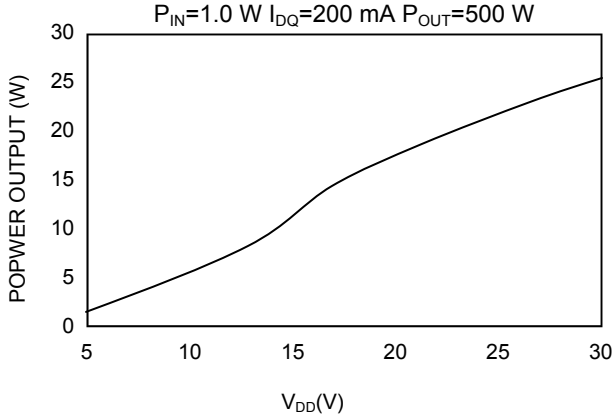
Typical Broadband Performance Curves

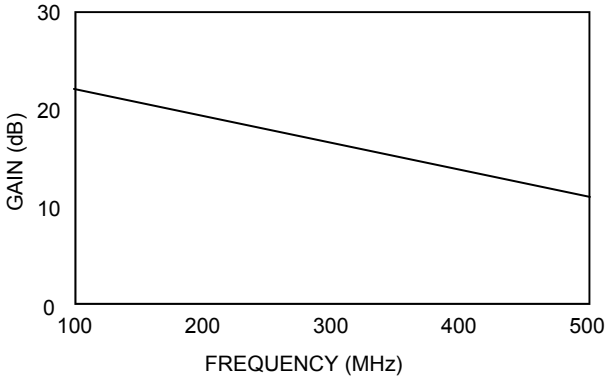
CAPACITANCES vs VOLTAGE
F=1.0MHz



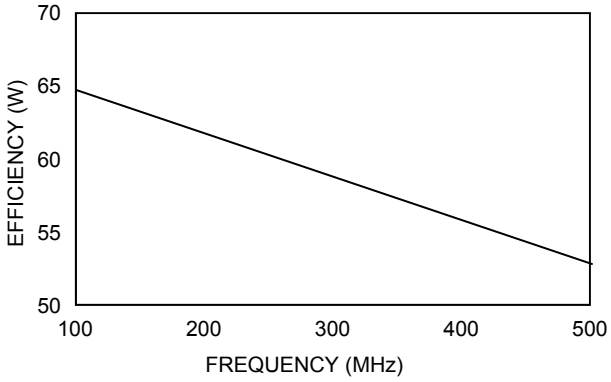
POWER OUTPUT vs VOLTAGE
P_{IN}=1.0 W I_{DQ}=200 mA P_{OUT}=500 W



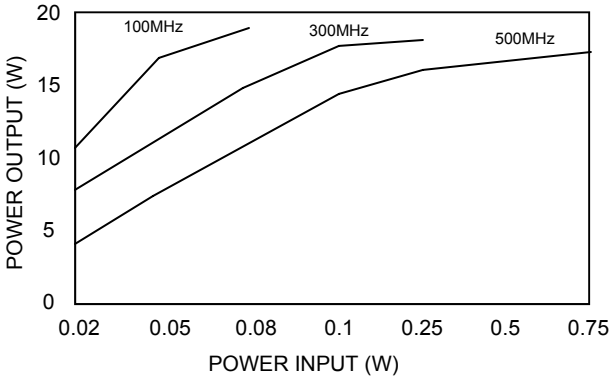
GAIN vs FREQUENCY
V_{DD} =28 V P_{OUT}=20 W I_{DQ} =200 mA



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



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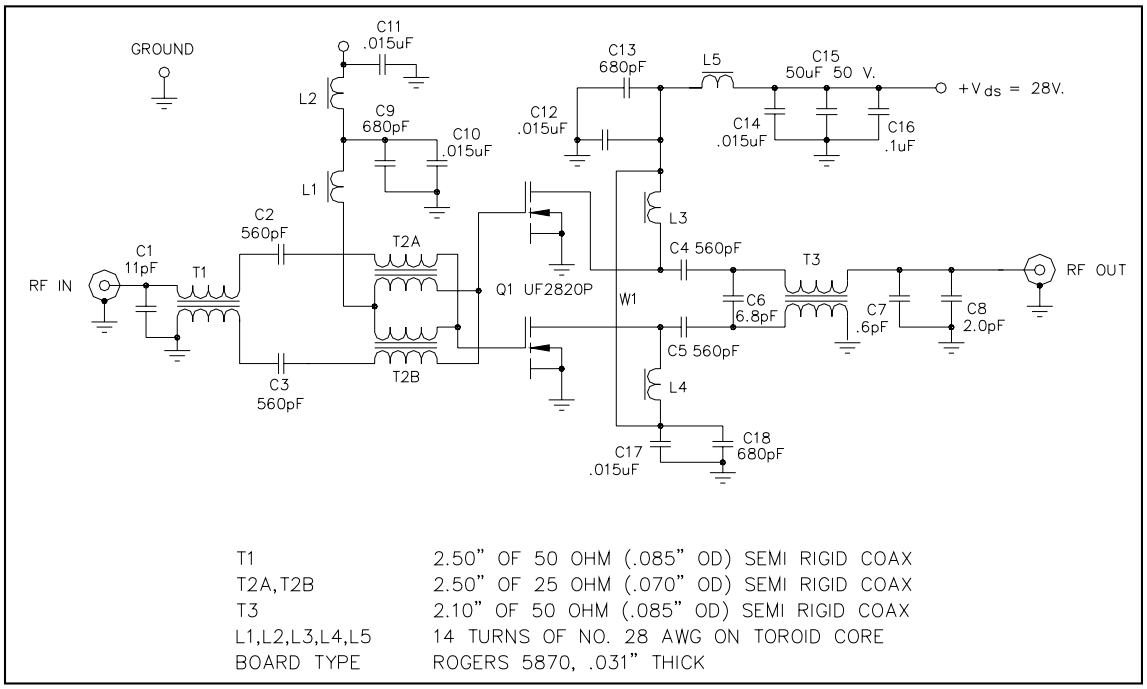
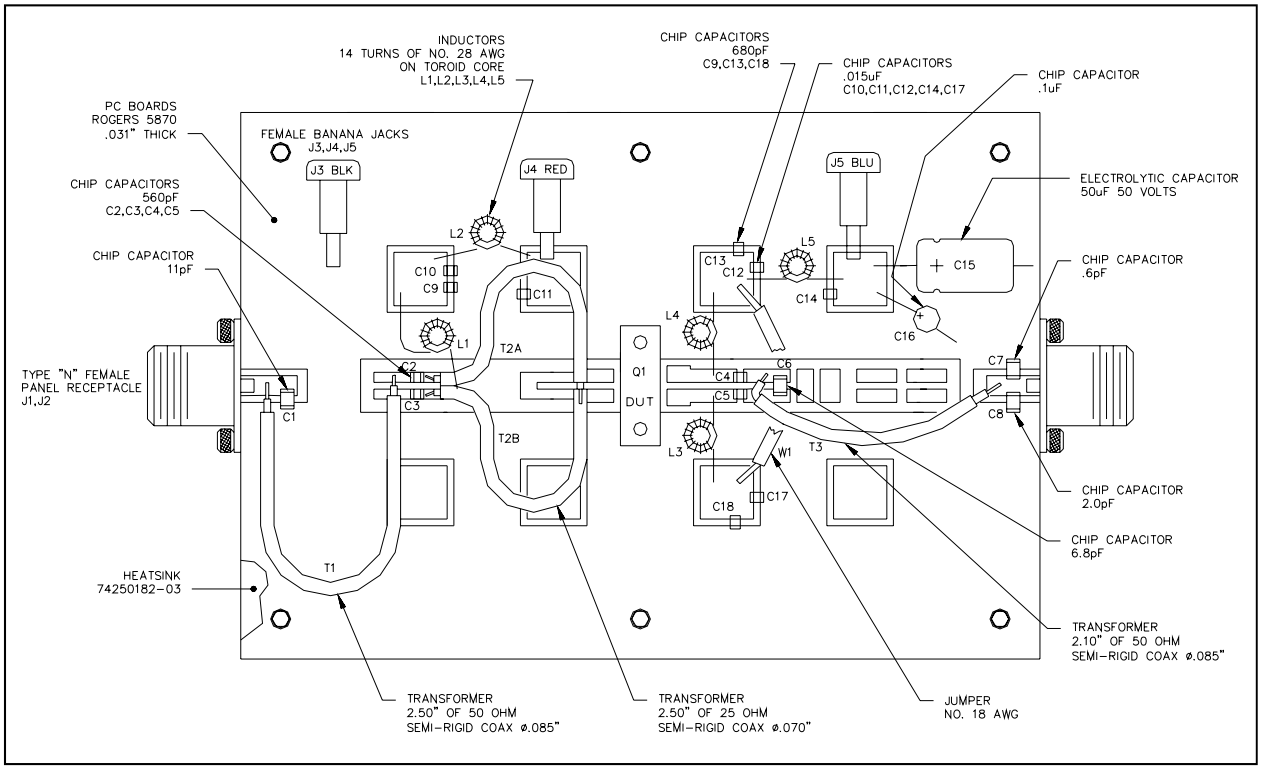
TEST FIXTURE SCHEMATIC



TEST FIXTURE ASSEMBLY



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