UF2820R

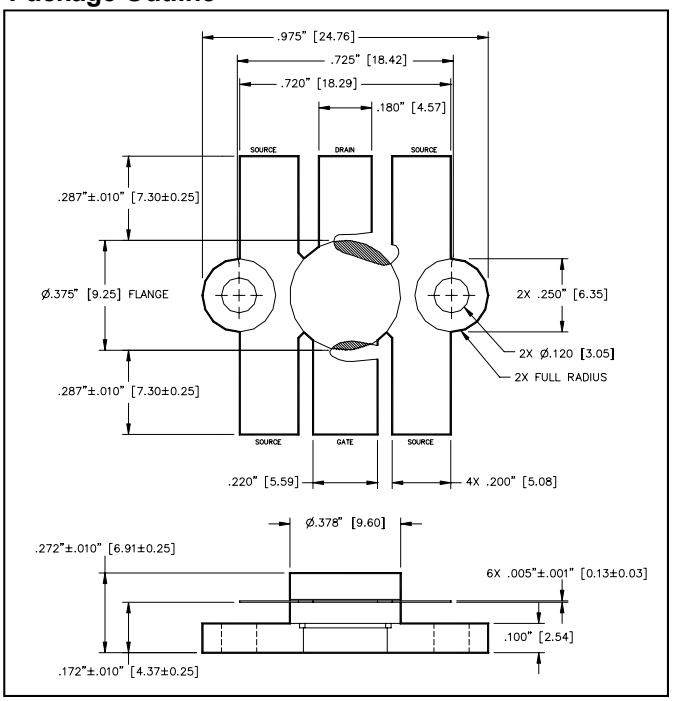
RF Power MOSFET Transistor
20W, 100-500 MHz, 28V

M/A-COM Products
Released; RoHS Compliant

Features

- N-channel enhancement mode device
- DMOS structure
- Lower capacitances for broadband operation
- High saturated output power
- Lower noise figure than competitive devices

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}	4	A
Power Dissipation	P_D	61	W
Junction Temperature	T_J	200	°C
Storage Temperature	T_{STG}	-55 to 150	°C
Thermal Resistance	θ_{JC}	2.86	°C/W

TYPICAL DEVICE IMPEDANCES

F (MHz)	Z_{IN} (Ω)	Z_{LOAD} (Ω)
100	8.0-j16.0	12.0+j6.0
300	5.5-j8.0	9.3+j6.0
500	4.0-j3.8	4.5+j4.5
V_{DD}=28V, I_{DQ}=100 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.

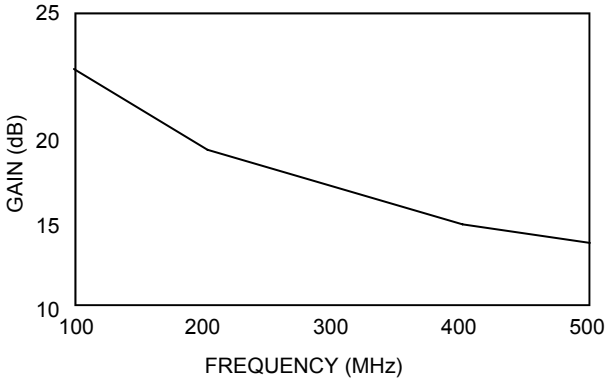
ELECTRICAL CHARACTERISTICS AT 25°C

Parameter	Symbol	Min	Max	Units	Test Conditions
Drain-Source Breakdown Voltage	BV_{DSS}	65	-	V	V_{GS} = 0.0 V , I_{DS} = 5.0 mA
Drain-Source Leakage Current	I_{DSS}	-	1.0	mA	V_{GS} = 28.0 V , V_{GS} = 0.0 V
Gate-Source Leakage Current	I_{GSS}	-	1.0	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} = 100.0 mA
Forward Transconductance	G_M	.500	-	S	V_{DS} = 10.0 V , I_{DS} 1000.0 mA , Δ V_{GS} = 1.0V, 80 µs Pulse
Input Capacitance	C_{ISS}	-	45	pF	V_{DS} = 28.0 V , F = 1.0 MHz
Output Capacitance	C_{OSS}	-	30	pF	V_{DS} = 28.0 V , F = 1.0 MHz
Reverse Capacitance	C_{RSS}	-	8	pF	V_{DS} = 28.0 V , F = 1.0 MHz
Power Gain	G_P	10	-	dB	V_{DD} = 28.0 V, I_{DQ} = 100.0 mA, P_{OUT} = 20.0 W F =500 MHz
Drain Efficiency	η_D	50	-	%	V_{DD} = 28.0 V, I_{DQ} = 100.0 mA, P_{OUT} = 20.0 W F =500 MHz
Load Mismatch Tolerance	VSWR-T	-	20:1	-	V_{DD} = 28.0 V, I_{DQ} = 100.0 mA, P_{OUT} = 20.0 W F =500 MHz

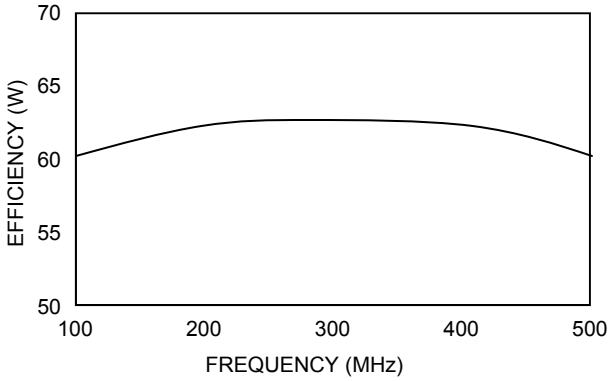
- **North America** Tel: 800.366.2266 / Fax: 978.366.2266
- **Europe** Tel: 44.1908.574.200 / Fax: 44.1908.574.300
- **Asia/Pacific** Tel: 81.44.844.8296 / Fax: 81.44.844.8298
Visit www.macomtech.com for additional data sheets and product information.

Typical Broadband Performance Curves

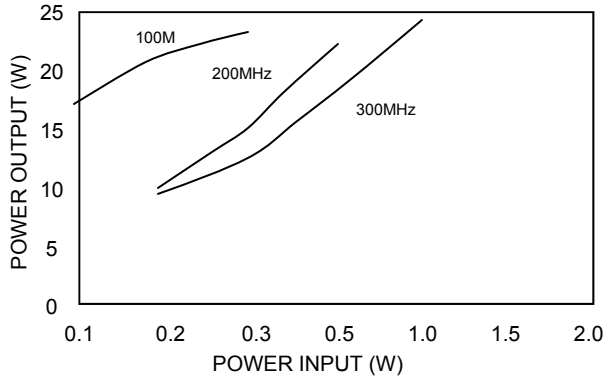
GAIN vs FREQUENCY
V_{DD} =28 V I_{DQ}=100 mA P_{OUT} =20 W



EFFICIENCY vs FREQUENCY
V_{DD}=200 V I_{DD} =100 mA P_{OUT} =20 W



POWER OUTPUT vs POWER INPUT
V_{DD} =28 V I_{DQ} =100 mA



POWER OUTPUT vs POWER INPUT
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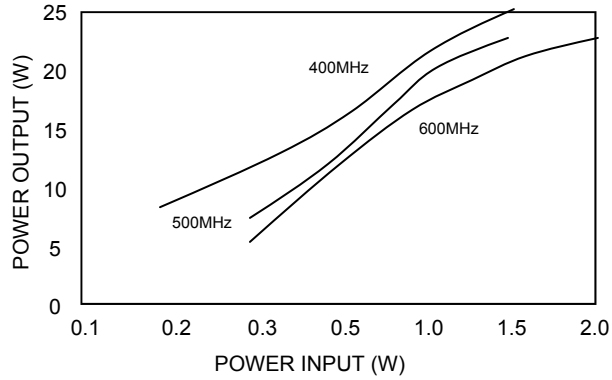
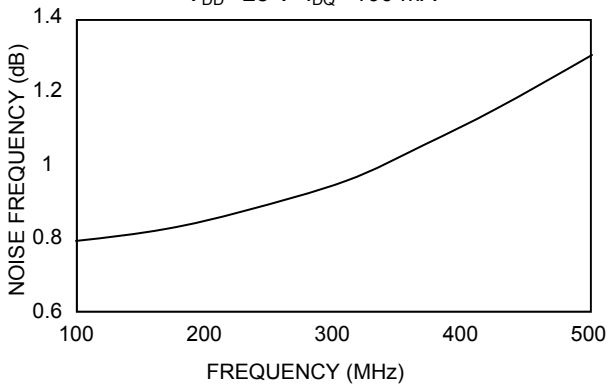


NOISE FIGURE vs FREQUENCY
V_{DD} =28 V I_{DQ} =100 mA



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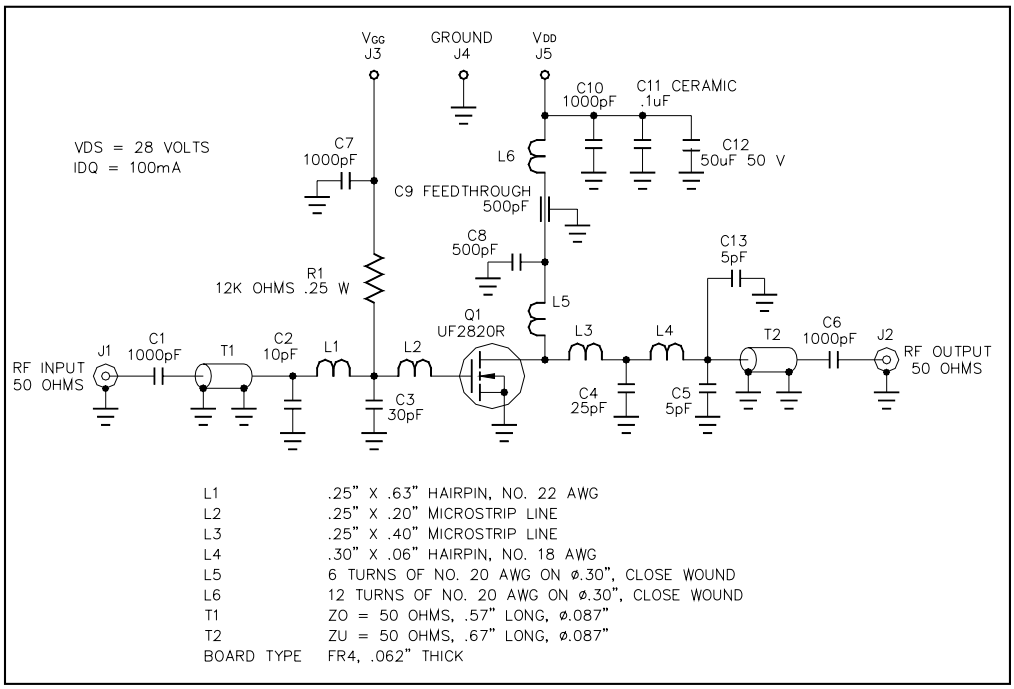
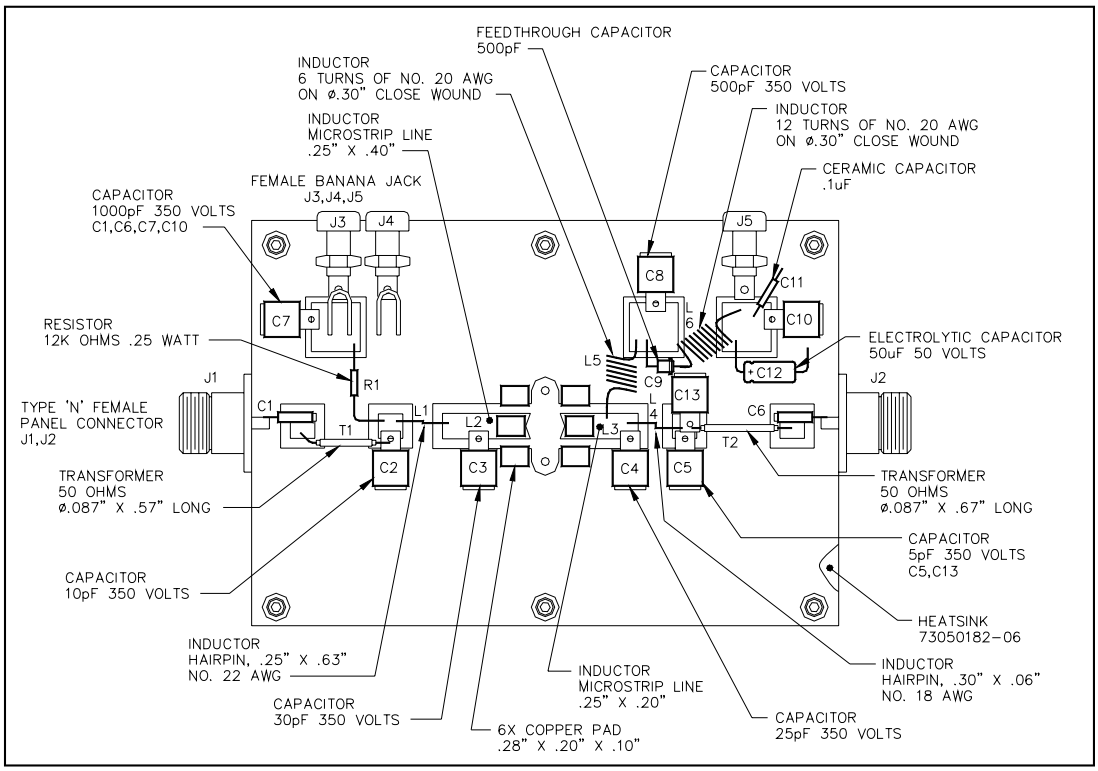
TEST FIXTURE SCHEMATIC



L1	.25" X .63" HAIRPIN, NO. 22 AWG
L2	.25" X .20" MICROSTRIP LINE
L3	.25" X .40" MICROSTRIP LINE
L4	.30" X .06" HAIRPIN, NO. 18 AWG
L5	6 TURNS OF NO. 20 AWG ON ø.30", CLOSE WOUND
L6	12 TURNS OF NO. 20 AWG ON ø.30", CLOSE WOUND
T1	ZO = 50 OHMS, .57" LONG, ø.087"
T2	ZU = 50 OHMS, .67" LONG, ø.087"
BOARD TYPE	FR4, .062" THICK

TEST FIXTURE ASSEMBLY



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