

RF MOSFET Power Transistor, 80W, 28V

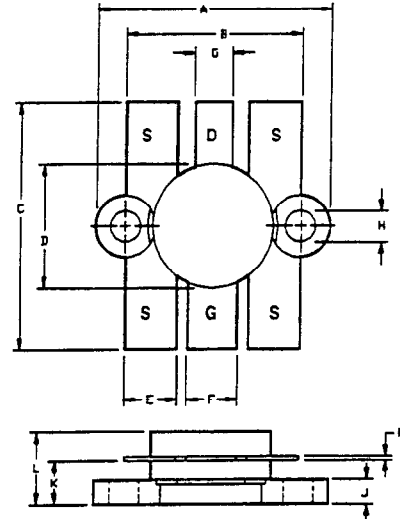
2 - 175 MHz

DU2880T

V2.00

Features

- N-Channel Enhancement Mode Device
- DMOS Structure
- Lower Capacitances for Broadband Operation
- High Saturated Output Power
- Lower Noise Figure Than Competitive Devices



| LETTER DIM | MILLIMETERS | | INCHES | |
|------------|-------------|-------|--------|------|
| | MIN | MAX | MIN | MAX |
| A | 24.38 | 25.15 | .960 | .990 |
| B | 18.29 | 18.54 | .720 | .730 |
| C | 21.36 | 21.74 | .841 | .856 |
| D | 12.60 | 12.85 | .496 | .506 |
| E | 5.33 | 5.59 | .210 | .220 |
| F | 5.08 | 5.33 | .200 | .210 |
| G | 3.81 | 4.06 | .150 | .160 |
| H | 3.10 | 3.15 | .122 | .125 |
| J | 2.51 | 2.67 | .099 | .105 |
| K | 4.06 | 4.57 | .160 | .180 |
| L | 6.68 | 7.49 | .263 | .295 |
| M | .10 | .15 | .004 | .006 |

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} | 16 | A |
| Power Dissipation | P_D | 206 | W |
| Junction Temperature | T_J | 200 | °C |
| Storage Temperature | T_{STG} | -65 to +150 | °C |
| Thermal Resistance | θ_{JC} | 0.85 | °C/W |

Electrical Characteristics at 25°C

| Parameter | Symbol | Min | Max | Units | Test Conditions |
|--------------------------------|--------------|-----|------|---------------|--|
| Drain-Source Breakdown Voltage | BV_{DSS} | 65 | - | V | $V_{GS}=0.0\text{ V}$, $I_{DS}=20.0\text{ mA}$ |
| Drain-Source Leakage Current | I_{DSS} | - | 4.0 | mA | $V_{DS}=28.0\text{ V}$, $V_{GS}=0.0\text{ V}$ |
| Gate-Source Leakage Current | I_{GSS} | - | 4.0 | μA | $V_{GS}=20.0\text{ V}$, $V_{DS}=0.0\text{ V}$ |
| Gate Threshold Voltage | $V_{GS(TH)}$ | 2.0 | 6.0 | V | $V_{DS}=10.0\text{ V}$, $I_{DS}=400.0\text{ mA}$ |
| Forward Transconductance | G_M | 2.0 | - | S | $V_{DS}=10.0\text{ V}$, $I_{DS}=4.0\text{ A}$, $\Delta V_{GS}=1.0\text{ V}$, 80 μs Pulse |
| Input Capacitance | C_{ISS} | - | 180 | pF | $V_{DS}=28.0\text{ V}$, $F=1.0\text{ MHz}$ |
| Output Capacitance | C_{OSS} | - | 160 | pF | $V_{DS}=28.0\text{ V}$, $F=1.0\text{ MHz}$ |
| Reverse Capacitance | C_{RSS} | - | 32 | pF | $V_{DS}=28.0\text{ V}$, $F=1.0\text{ MHz}$ |
| Power Gain | G_P | 13 | - | dB | $V_{DD}=28.0\text{ V}$, $I_{DQ}=400\text{ mA}$, $P_{OUT}=80.0\text{ W}$, $F=175\text{ MHz}$ |
| Drain Efficiency | η_D | 60 | - | % | $V_{DD}=28.0\text{ V}$, $I_{DQ}=400\text{ mA}$, $P_{OUT}=80.0\text{ W}$, $F=175\text{ MHz}$ |
| Load Mismatch Tolerance | VSWR-T | - | 30:1 | - | $V_{DD}=28.0\text{ V}$, $I_{DQ}=400\text{ mA}$, $P_{OUT}=80.0\text{ W}$, $F=175\text{ MHz}$ |

Specifications Subject to Change Without Notice.

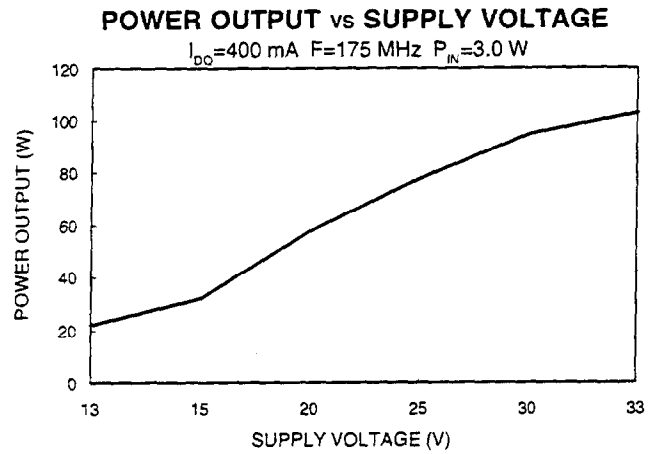
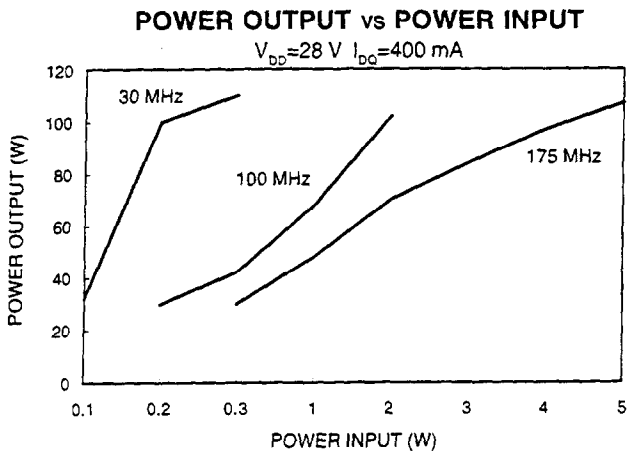
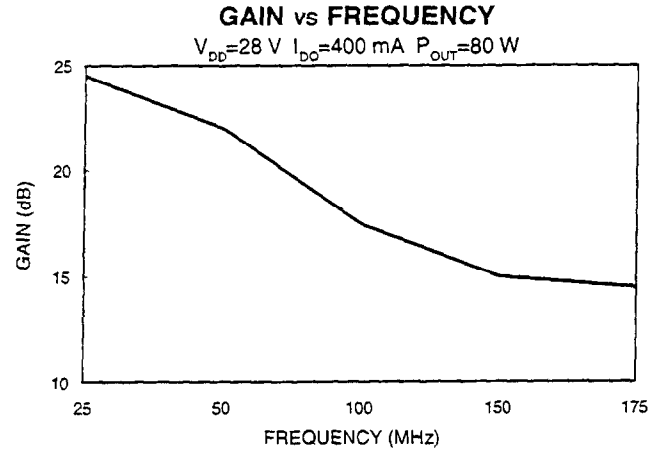
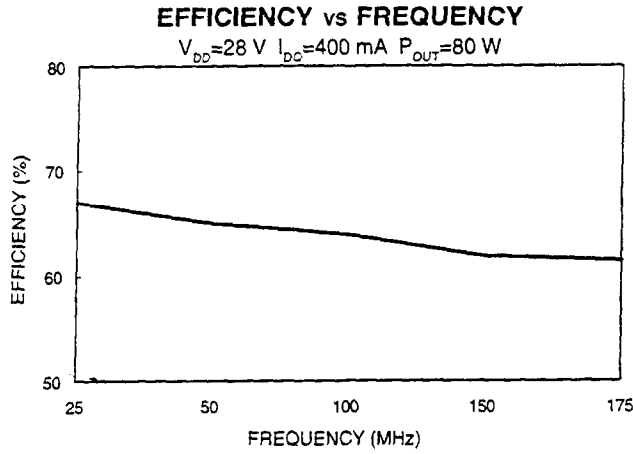
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Typical Broadband Performance Curves



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Typical Device Impedance

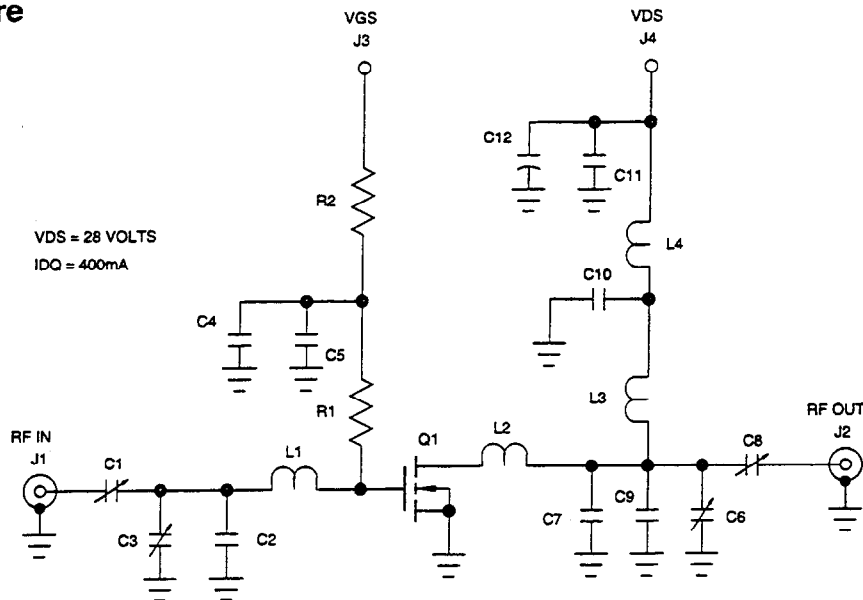
| Frequency (MHz) | Z _{IN} (OHMS) | Z _{LOAD} (OHMS) |
|-----------------|------------------------|--------------------------|
| 30 | 5.4 - j 4.4 | 5.7 + j 4.7 |
| 50 | 2.5 - j 4.4 | 3.4 + j 3.5 |
| 100 | 1.6 - j 3.4 | 2.4 + j 2.4 |
| 175 | 0.7 - j 1.2 | 1.7 + j 0.8 |

V_{DD}=28 V, I_{DO}=400 mA, P_{OUT}=80 Watts

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.

RF Test Fixture



PARTS LIST

- C1,C3 TRIMMER CAPACITOR 4-40pF
- C2,C9,C10 CAPACITOR 50pF
- C4,C11 CAPACITOR 1000pF
- C5 MONOLITHIC CIRCUIT CAPACITOR 0.01uF
- C6,C8 TRIMMER CAPACITOR 9-180pF
- C7 CAPACITOR 15pF
- C12 ELECTROLYTIC CAPACITOR 50uF 50 VOLT
- L1 NO. 12 AWG COPPER WIRE X 1.18" (LOOP 0.5")
- L2 NO. 12 AWG COPPER WIRE X 1" (LOOP 0.4")
- L3,L4 8 TURNS OF NO. 18 AWG ENAMEL WIRE ON 0.25", CLOSE WOUND
- R1 RESISTOR 300 OHMS 0.5 WATT
- R2 RESISTOR 2.7K OHMS 0.25 WATT
- Q1 DU2880T
- BOARD FR4 0.062"

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