DU2840S

RF Power MOSFET Transistor
40 W, 2 - 175 MHz, 28 V

Rev. V1

Features

- N-Channel enhancement mode device
- DMOS structure
- Lower capacitances for broadband operation
- High saturated output power
- Lower noise figure than bipolar devices
- RoHS Compliant

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

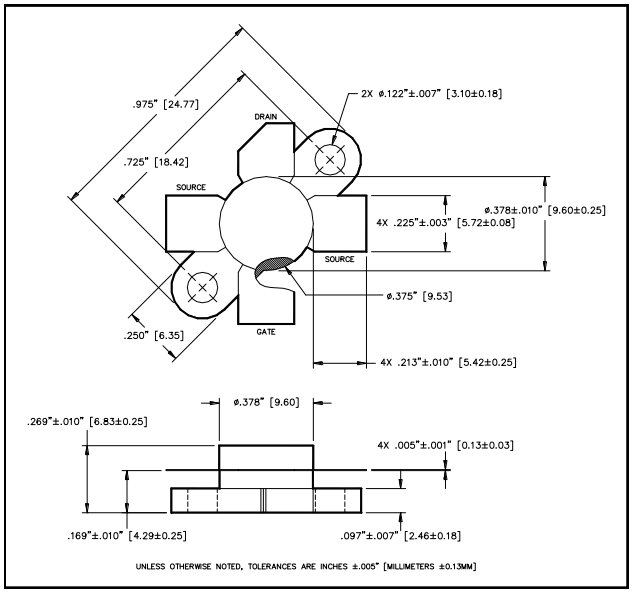
TYPICAL DEVICE IMPEDANCE

F (MHz)	Z_{IN} (Ω)	Z_{LOAD} (Ω)
30	12.0 - j6.8	6.5 - j1.5
50	10.0 - j6.5	6.0 - j1.8
100	6.0 - j5.5	5.5 - j1.8
200	1.1 - j3.0	3.5 - j1.8
V_{DD} = 28V, I_{DQ} = 200mA, P_{OUT} = 40 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.

Package Outline



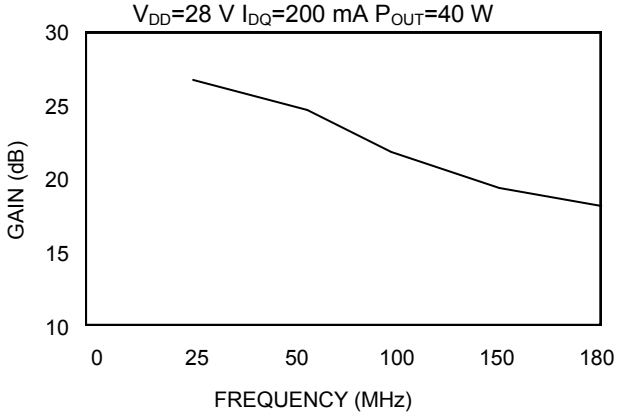
LETTER DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	24.64	24.89	.970	.980
B	18.29	18.54	.720	.730
C	20.07	20.83	.790	.820
D	9.47	9.73	.373	.383
E	6.22	6.48	.245	.255
F	5.64	5.79	.222	.228
G	2.92	3.30	.115	.130
H	2.29	2.67	.090	.105
J	4.04	4.55	.159	.179
K	6.58	7.39	.259	.291
L	.10	.15	.004	.006

ELECTRICAL CHARACTERISTICS AT 25°C

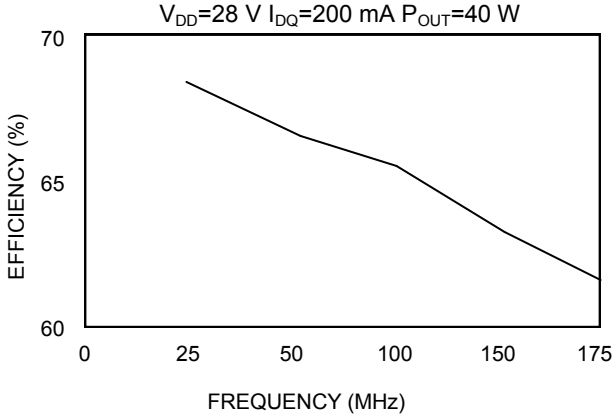
Parameter	Symbol	Min	Max	Units	Test Conditions
Drain-Source Breakdown Voltage	BV_{DSS}	65	-	V	V_{GS} = 0.0 V , I_{DS} = 10.0 mA
Drain-Source Leakage Current	I_{DSS}	-	2.0	mA	V_{GS} = 28.0 V , V_{GS} = 0.0 V
Gate-Source Leakage Current	I_{GSS}	-	2.0	µA	V_{GS} = 20.0 V , V_{DS} = 0.0 V
Gate Threshold Voltage	$V_{GS(TH)}$	2.0	6.0	V	V_{DS} = 10.0 V , I_{DS} = 200.0 mA
Forward Transconductance	G_M	1	-	S	V_{DS} = 10.0 V , I_{DS} = 2000.0 mA , Δ V_{GS} = 1.0V, 80 µs Pulse
Input Capacitance	C_{ISS}	-	90	pF	V_{DS} = 28.0 V , F = 1.0 MHz
Output Capacitance	C_{OSS}	-	80	pF	V_{DS} = 28.0 V , F = 1.0 MHz
Reverse Capacitance	C_{RSS}	-	16	pF	V_{DS} = 28.0 V , F = 1.0 MHz
Power Gain	G_P	13	-	dB	V_{DD} = 28.0 V, I_{DQ} = 200 mA, P_{OUT} = 40 W F =175 MHz
Drain Efficiency	η_D	60	-	%	V_{DD} = 28.0 V, I_{DQ} = 200 mA, P_{OUT} = 40 W F =175 MHz
Load Mismatch Tolerance	VSWR-T	-	30:1	-	V_{DD} = 28.0 V, I_{DQ} = 200 mA, P_{OUT} = 40 W F =175 MHz

Typical Broadband Performance Curves

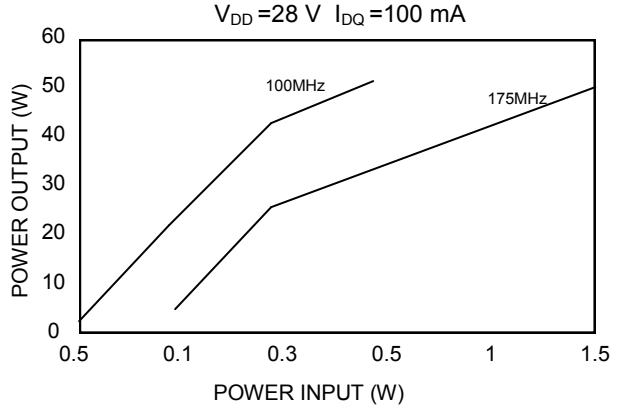
GAIN vs FREQUENCY
V_{DD}=28 V I_{DQ}=200 mA P_{OUT}=40 W



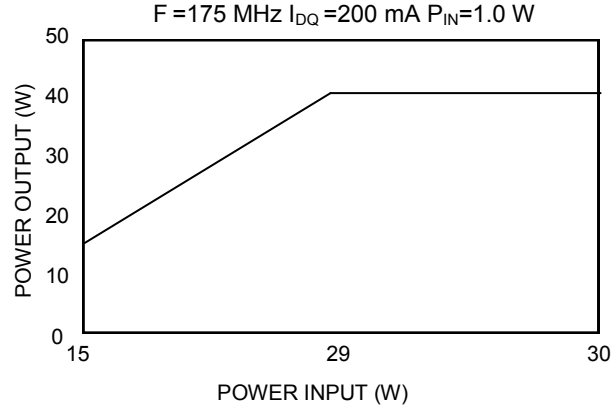
EFFICIENCY vs FREQUENCY
V_{DD}=28 V I_{DQ}=200 mA P_{OUT}=40 W



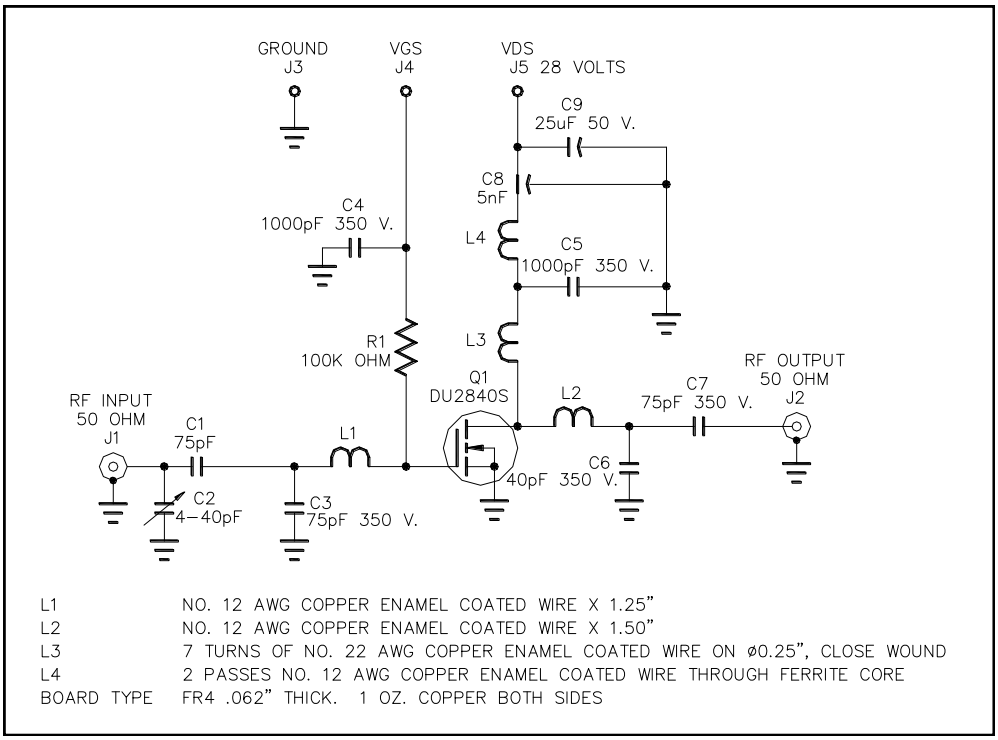
POWER OUTPUT vs POWER INPUT
V_{DD} =28 V I_{DQ} =100 mA



POWER OUTPUT vs SUPPLY VOLTAGE
F =175 MHz I_{DQ} =200 mA P_{IN}=1.0 W



TEST FIXTURE SCHEMATIC



L1	NO. 12 AWG COPPER ENAMEL COATED WIRE X 1.25"
L2	NO. 12 AWG COPPER ENAMEL COATED WIRE X 1.50"
L3	7 TURNS OF NO. 22 AWG COPPER ENAMEL COATED WIRE ON ø0.25", CLOSE WOUND
L4	2 PASSES NO. 12 AWG COPPER ENAMEL COATED WIRE THROUGH FERRITE CORE
BOARD TYPE	FR4 .062" THICK. 1 OZ. COPPER BOTH SIDES

TEST FIXTURE ASSEMBLY