DU2805S

RF Power MOSFET Transistor
5W, 2-175MHz, 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 bipolar devices

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}	1.4	A
Power Dissipation	P_D	15.8	W
Junction Temperature	T_J	200	°C
Storage Temperature	T_{STG}	-55 to +150	°C
Thermal Resistance	θ_{JC}	11.1	°C/W

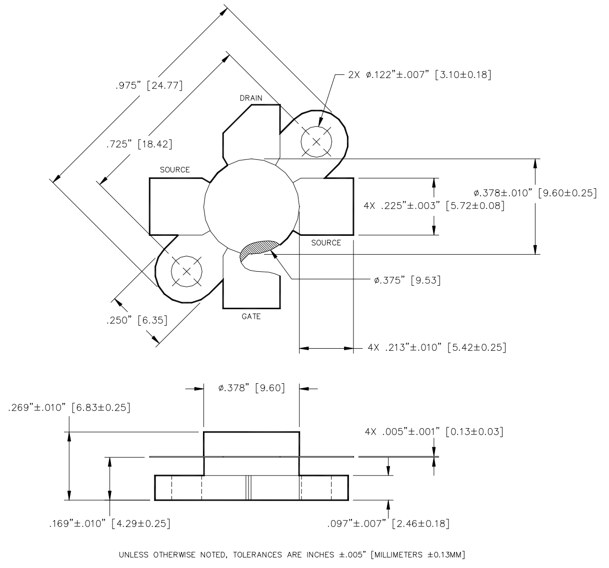
TYPICAL DEVICE IMPEDANCE

F (MHz)	Z_{IN} (Ω)	Z_{LOAD} (Ω)
100	15 - j121.0	57.0 + j23.0
150	39.0 - j77.0	55.0 +j23.0
175	41.0 - j38.0	56.0 + j19.0
200	34.0—j14.0	56.0 + j20.0
V_{DD} = 28V, I_{DQ} = 50mA, P_{OUT} = 5W		

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

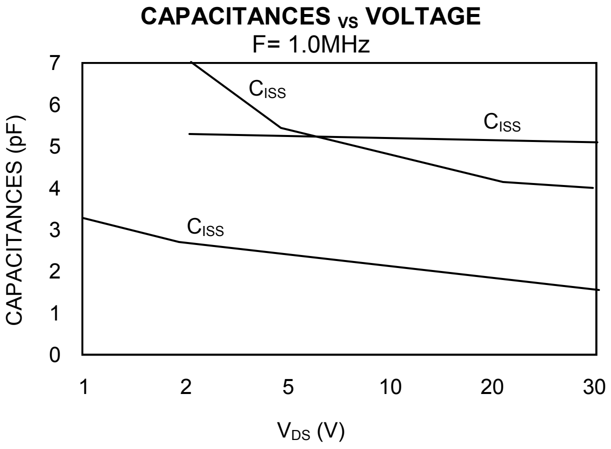


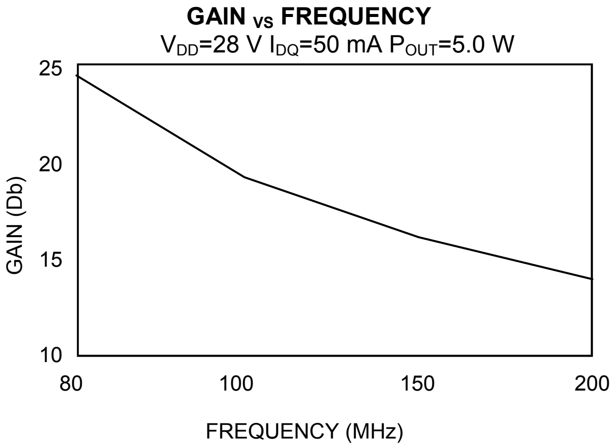
LETTER	MILLIMETERS		INCHES	
DIM	MIN	MAX	MIN	MAX
A	24.64	24.89	.970	.980
B	18.29	18.54	.720	.730
C	20.07	20.83	.790	.820
D	9.47	9.73	.373	.383
E	6.22	6.48	.245	.255
F	5.64	5.79	.222	.228
G	2.92	3.30	.115	.130
H	2.29	2.67	.090	.105
J	4.04	4.55	.159	.179
K	6.58	7.39	.259	.291
L	.10	.15	.004	.006

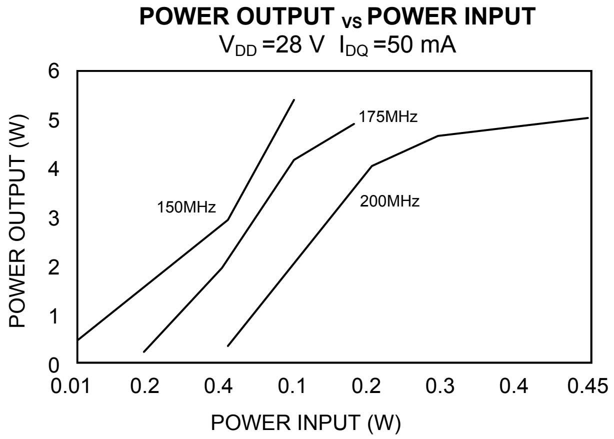
ELECTRICAL CHARACTERISTICS AT 25°C

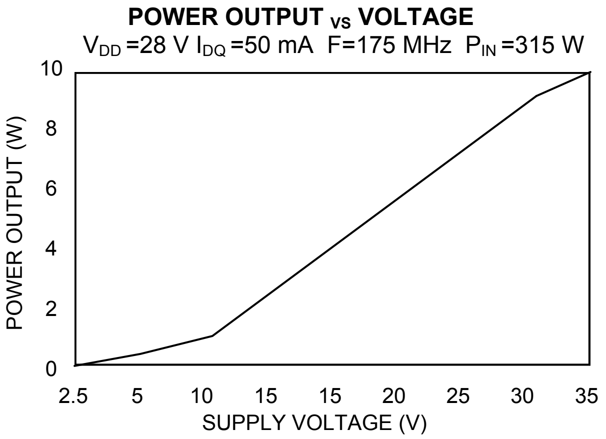
Parameter	Symbol	Min	Max	Units	Test Conditions
Drain-Source Breakdown Voltage	BV_{DSS}	65	-	V	V_{GS} = 0.0 V , I_{DS} = 20.0 mA
Drain-Source Leakage Current	I_{DSS}	-	1.0	mA	V_{GS} = 28.0 V , V_{GS} = 0.0 V
Gate-Source Leakage Current	I_{GSS}	-	1.0	μA	V_{GS} = 20.0 V , V_{DS} = 0.0 V
Gate Threshold Voltage	$V_{GS(TH)}$	2.0	6.0	V	V_{DS} = 10.0 V , I_{DS} = 10 mA
Forward Transconductance	G_M	80	-	S	V_{DS} = 10.0 V , I_{DS} = 10 mA , Δ V_{GS} = 1.0 V, 80 μs Pulse
Input Capacitance	C_{ISS}	-	7	pF	V_{DS} = 28.0 V , F = 1.0 MHz
Output Capacitance	C_{OSS}	-	5	pF	V_{DS} = 28.0 V , F = 1.0 MHz
Reverse Capacitance	C_{RSS}	-	2.4	pF	V_{DS} = 28.0 V , F = 1.0 MHz
Power Gain	G_P	11	-	dB	V_{DD} = 28.0 V, I_{DQ} = 50 mA, P_{OUT} = 5.0 W F =175 MHz
Drain Efficiency	η_D	55	-	%	V_{DD} = 28.0 V, I_{DQ} = 50 mA, P_{OUT} = 5.0 W F =175 MHz
Load Mismatch	VSWR-T	-	20:1	-	V_{DD} = 28.0 V, I_{DQ} = 50 mA, P_{OUT} = 5.0 W F =175 MHz

Typical Broadband Performance Curves

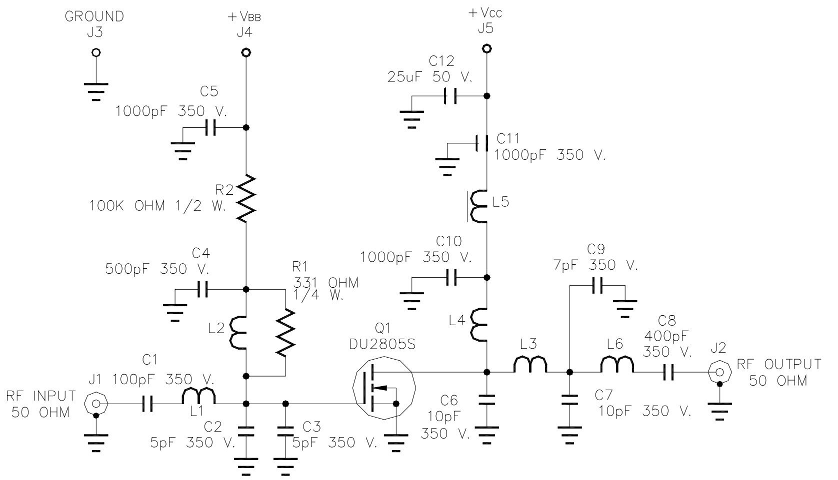

CAPACITANCES vs VOLTAGE
F= 1.0MHz


GAIN vs FREQUENCY
V_{DD}=28 V I_{DQ}=50 mA P_{OUT}=5.0 W


POWER OUTPUT vs POWER INPUT
V_{DD} =28 V I_{DQ} =50 mA

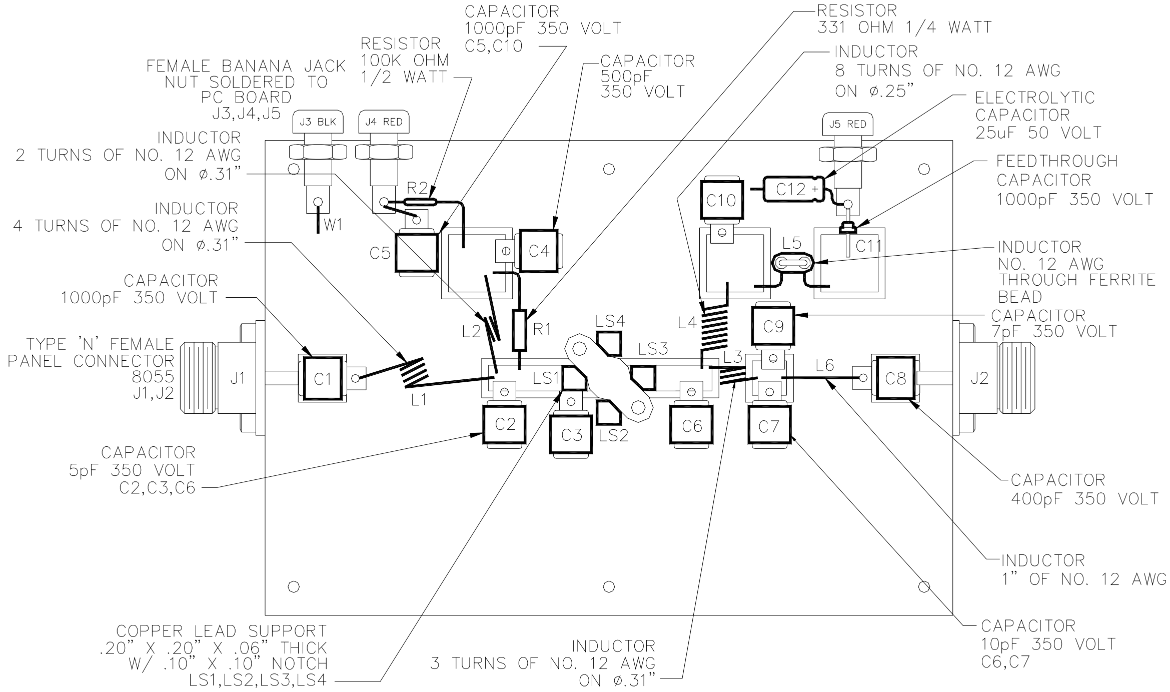

POWER OUTPUT vs VOLTAGE
V_{DD} =28 V I_{DQ} =50 mA F=175 MHz P_{IN} =315 W

TEST FIXTURE SCHEMATIC



L1	4 TURNS OF NO. 12 AWG ON ø.31"
L2	2 TURNS OF NO. 12 AWG ON ø.31"
L3	3 TURNS OF NO. 12 AWG ON ø.31"
L4	8 TURNS OF NO. 12 AWG ON ø.25"
L5	NO. 12 AWG THROUGH FERRITE BEAD
L6	1" OF NO. 12 AWG
BOARD TYPE	FR4 .062" THICK 1 OZ COPPER BOTH SIDES

TEST FIXTURE ASSEMBLY



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