DU1215S

RF Power MOSFET Transistor
15 W, 2 - 175 MHz, 12 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
- Specifically designed for 12 volt applications
- RoHS Compliant

ABSOLUTE MAXIMUM RATINGS AT 25° C

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	40	V
Gate-Source Voltage	V_{GS}	20	V
Drain-Source Current	I_{DS}	4	A
Power Dissipation	P_D	87.5	W
Junction Temperature	T_J	200	°C
Storage Temperature	T_{STG}	-55 to +150	°C
Thermal Resistance	θ_{JC}	2	°C/W

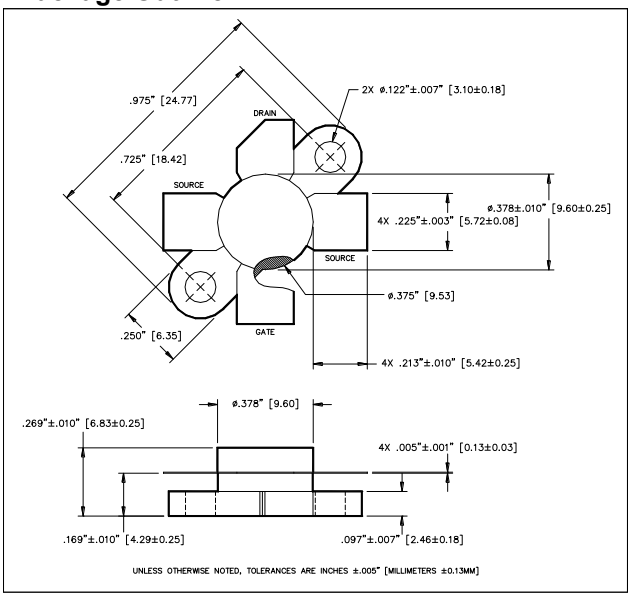
TYPICAL DEVICE IMPEDANCE

F (MHz)	Z_{IN} (Ω)	Z_{LOAD} (Ω)
30	3.0 - j25	4.0 - j3.0
100	3.0 - j15	3.5 - j1.5
175	5.0 - j8	4.0 - j0.0
V_{DD} = 12V, I_{DQ} = 100mA, P_{OUT} = 15W		

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

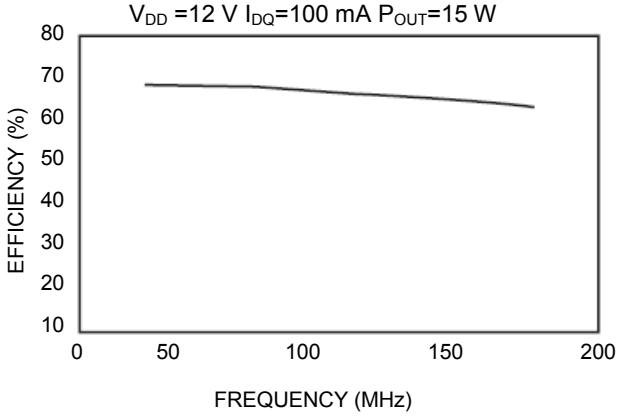
ELECTRICAL CHARACTERISTICS AT 25°C

Parameter	Symbol	Min	Max	Units	Test Conditions
Drain-Source Breakdown Voltage	BV_{DSS}	40	-	V	V_{GS} = 0.0 V , I_{DS} = 5.0 mA
Drain-Source Leakage Current	I_{DSS}	-	1.0	mA	V_{GS} = 15.0 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 mA
Forward Transconductance	G_M	0.5	-	S	V_{DS} = 10.0 V , I_{DS} = 1000 mA , Δ V_{GS} = 1.0 V
Input Capacitance	C_{ISS}	-	50	pF	V_{DS} = 12.0 V , F = 1.0 MHz
Output Capacitance	C_{OSS}	-	60	pF	V_{DS} = 12.0 V , F = 1.0 MHz
Reverse Capacitance	C_{RSS}	-	12	pF	V_{DS} = 12.0 V , F = 1.0 MHz
Power Gain	G_P	9.5	-	dB	V_{DD} = 12.0 V, I_{DQ} = 100 mA, P_{OUT} = 15 W F =175 MHz
Drain Efficiency	η_D	60	-	%	V_{DD} = 12.0 V, I_{DQ} = 100 mA, P_{OUT} = 15 W F =175 MHz
Load Mismatch	VSWR-T	-	30:1	-	V_{DD} = 12.0 V, I_{DQ} = 100 mA, P_{OUT} = 15 W F =175 MHz

Typical Broadband Performance Curves

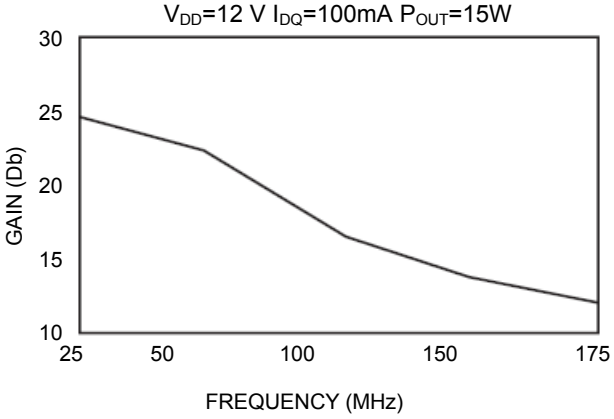
EFFICIENCY vs FREQUENCY

V_{DD} =12 V I_{DQ}=100 mA P_{OUT}=15 W



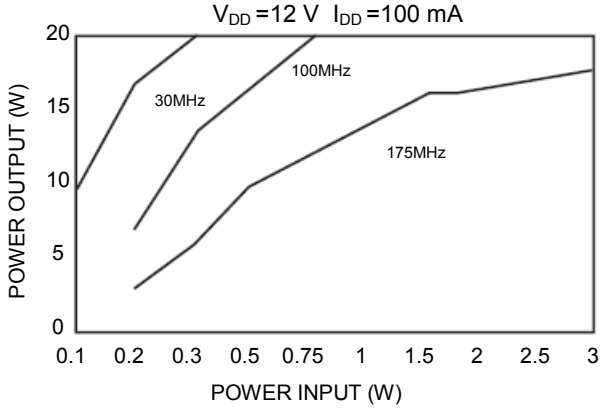
GAIN vs FREQUENCY

V_{DD}=12 V I_{DQ}=100mA P_{OUT}=15W



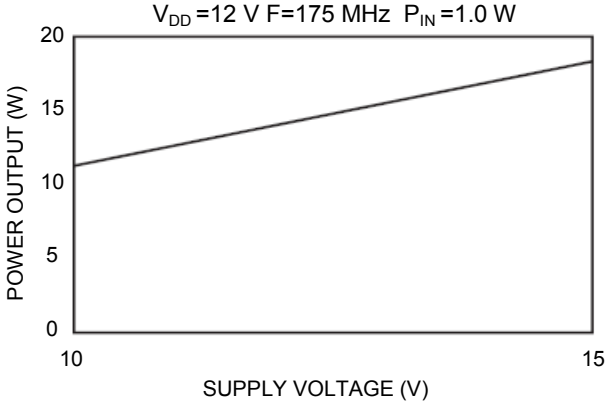
POWER OUTPUT vs POWER INPUT

V_{DD} =12 V I_{DD} =100 mA

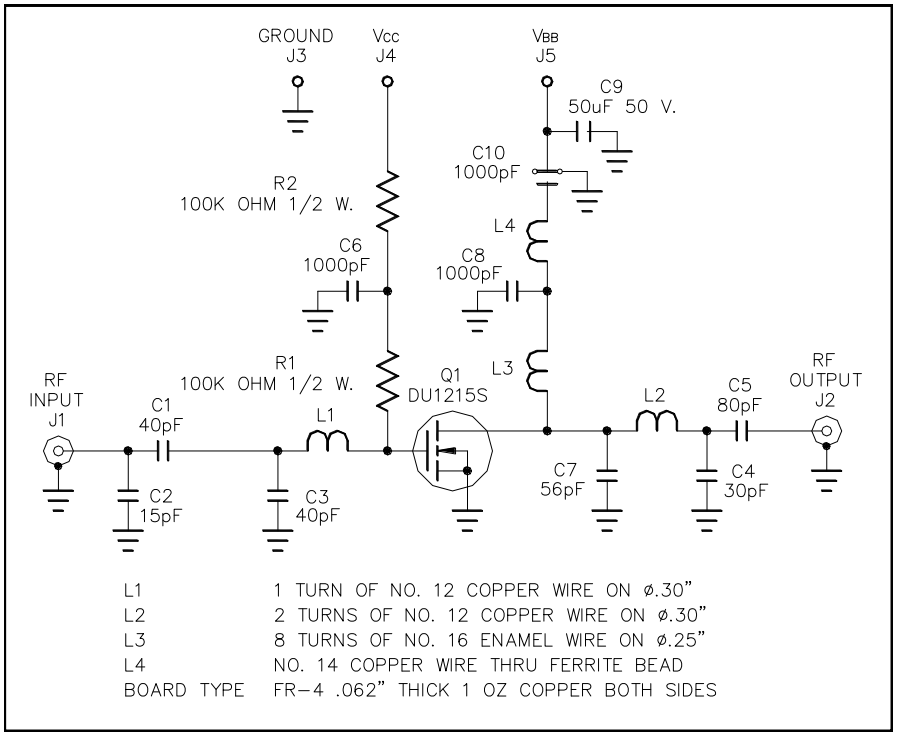


POWER OUTPUT vs SUPPLY VOLTAGE

V_{DD} =12 V F=175 MHz P_{IN} =1.0 W



TEST FIXTURE SCHEMATIC



TEST FIXTURE ASSEMBLY